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THE ROLLER BANDAGE

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ROLLER BANDAGE

BY

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WITH ILLUSTRATIONS

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Preface to the Fifth Edition.

As general proficiency in bandaging and in the application of dressings can only be obtained by acquiring skill in the handling of the roller bandage, the use of the latter may well be regarded as the basis of all bandaging, for it possesses principles which once learned are susceptible of modification to an infinite variety of requirements. The title of this book, therefore, has its significance. It means more than a mere monograph on the roller bandage, for the book is intended to teach the principles of bandaging as well.

The destruction by fire of all the plates and electrotypes of the former edition has necessitated the preparation of new illustrations throughout and a complete remodelling of the book.

Preface to the Fourth Edition.

THE plan which has been adopted in this book, as will be seen at a glance, is to teach by numerous illustrations rather than by elaborate description the method of applying the roller bandage. In order that the student may most readily familiarize himself with this very important subject, a series of illustrations is presented which were made in the following manner: Each bandage was applied to a living model, and whenever the roller pursued a course which the author has found in his association with students was the cause of uncertainty it was at once photographed. From these photographs the reproductions were made. In this way it is hoped that the intricate course traversed by the roller in the most complex dressing has been made sufficiently plain to enable the student to apply it

for himself almost unaided by the text. The latter will be found very brief and devoid of everything but the rule for application and the use to which the dressing is commonly put.

A series of definitions and general rules for bandaging occupy the earlier pages of the book.

W. B. H.

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LIST OF ILLUSTRATIONS

The Roller Bandage.

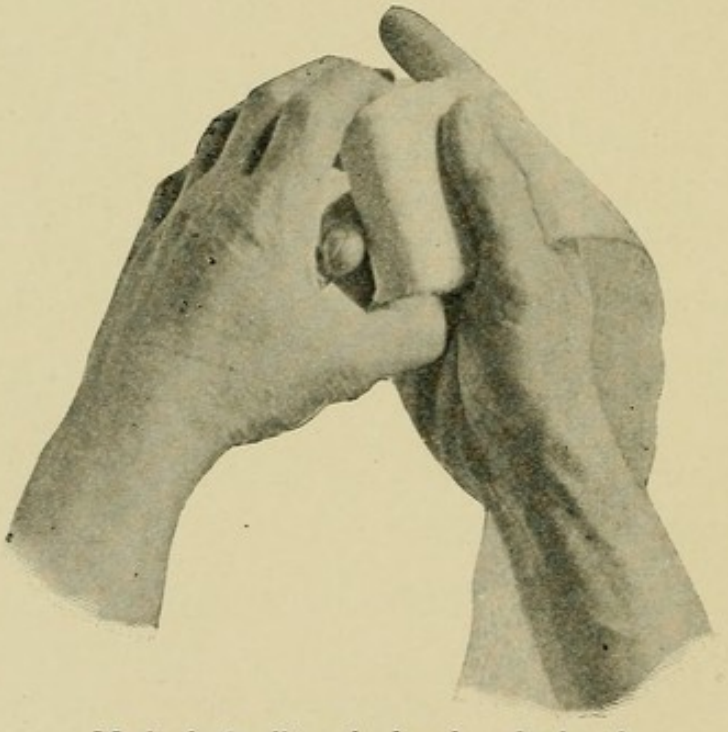
Definition.—The term roller bandage is used to describe a strip of muslin or other material rolled into a cylindrical form. When other material than muslin is employed, however, the bandage is usually designated as a rubber, a gauze, a flannel, or a crinoline bandage.

Materials.—Unbleached muslin of medium quality is best adapted for the purposes of the ordinary roller. This is torn into strips of the required length and breadth, removing the selvage and leaving the ravel as much undisturbed as possible. Gauze for aseptic bandages and crinoline for plaster-of-Paris are *cut* into strips of the required dimensions, as these materials cannot be torn evenly. India-rubber rollers are usually

procured ready made, though pure rubber sheeting of different weights is available for special bandages.

Rolling.—The strip of muslin having been torn, may be rolled either by hand, by a key,

FIG. 1.



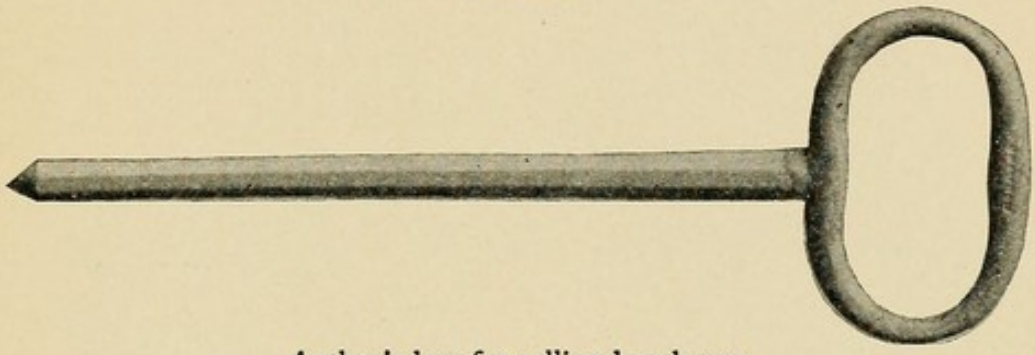
Method of rolling the bandage by hand.

or by a machine. In rolling by hand, one extremity of the bandage is folded upon itself three or four times, when it is handled as a cigarette is rolled until the core becomes sufficiently firm to resist pressure on end. It is then held between the thumb and index

finger of the left hand, and is made to revolve upon its long axis by the thumb and fingers of the right hand, as shown in Fig. 1.

A bandage may be more quickly and firmly rolled by using a key, shown in Fig. 2. This

FIG. 2.

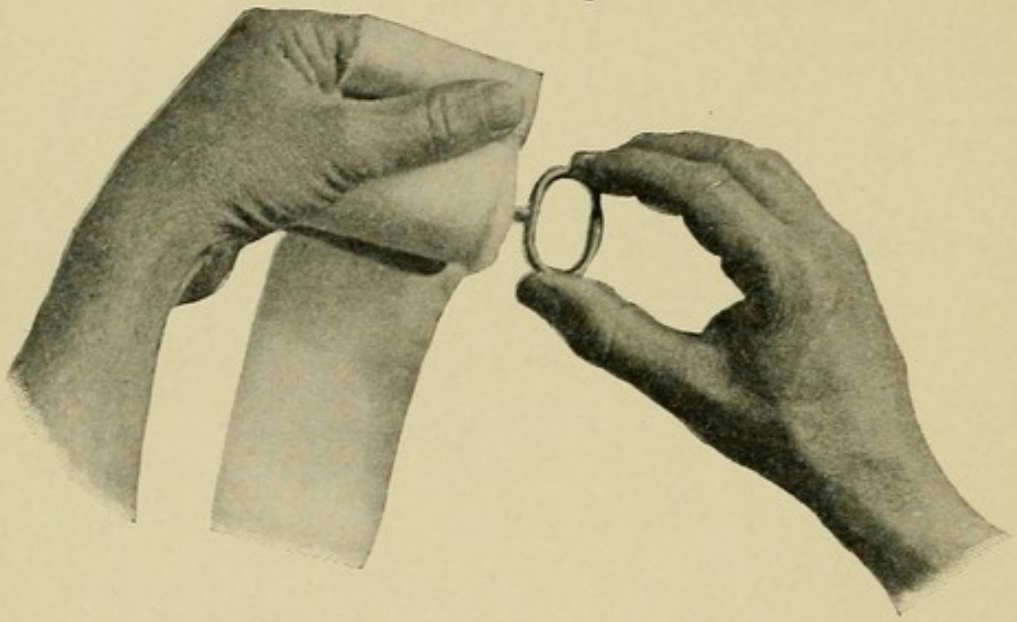


Author's key for rolling bandages.

is made of brass, has an ordinary key-handle, a tapering octagonal shaft, and a smooth tip. The dimensions of the shaft are,—four inches in length, one-quarter of an inch in diameter at the shoulder, and one-fifth at the tip. After fixing one extremity of the bandage on the key, the latter is made to revolve by the right hand, while the left holds the tip of the instrument in its palm, and guides the course of the bandage between the thumb and fingers. When the roller has reached a

certain size, it may be held in the manner shown in Fig. 3. Any tendency of the roller to run off its proper course may be overcome by pressure with the little finger of the left

FIG. 3.



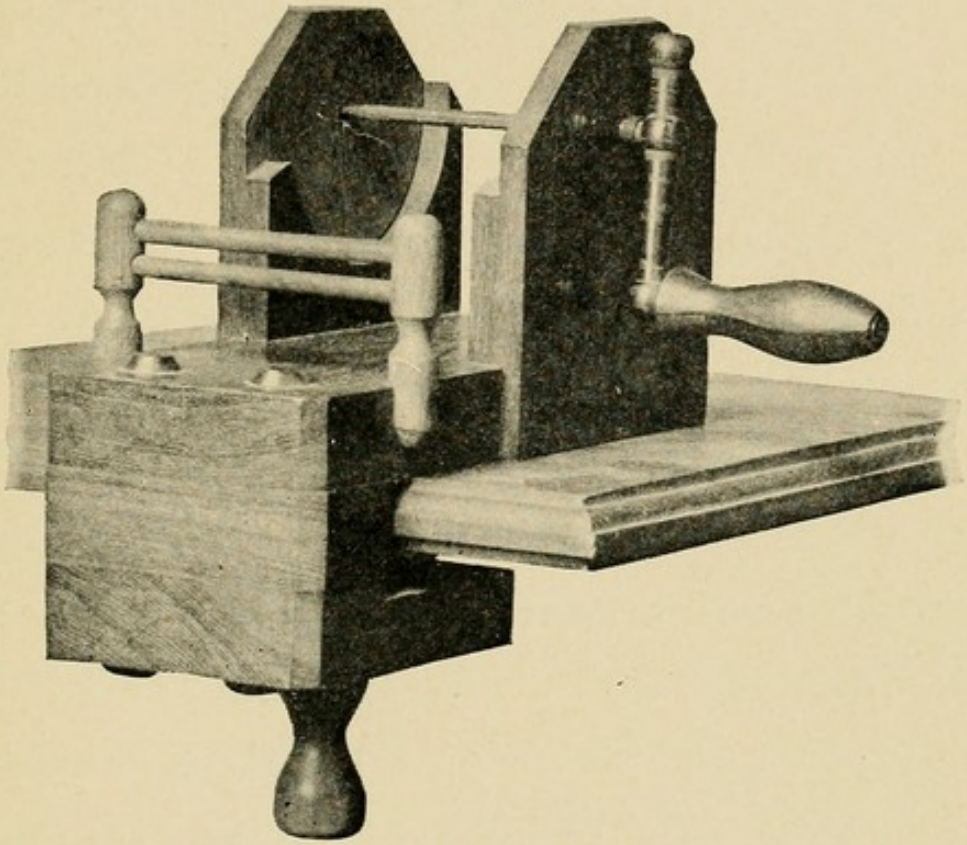
Method of rolling the bandage with the key.

hand, if it deviates towards the handle of the key, and by pressure with the index finger if towards the tip.

The bandage machine consists of a reel, with a crank and octagonal shaft, mounted upon a base which is made to screw to a table. Set in the base are two uprights, which support wooden rods. Through these

the bandage travels in its course from the left hand to the reel, their object being to regulate the direction and tension of the

FIG. 4.



Machine for rolling bandages.

roller. After the bandage is rolled, it may readily be withdrawn from the machine by reversing the direction of the crank and pulling out the shaft, as the latter is quite movable. This apparatus is shown in Fig. 4.

Size.—Although bandages vary in length

from two to ten yards, and in width from three-quarters of an inch to four inches, there are two sizes in common use with which almost any dressing may be applied. They are the *roller* (two-and-a-half inches by seven yards) and the *finger roller* (three-quarters of an inch by three yards). For children, a bandage about half the length and breadth of one suitable for an adult may be used.

Uses.—The roller bandage is used for so great a variety of purposes that it would be quite beyond the scope of these definitions to attempt to enumerate them, except in the most general way. To retain almost all dressings and splints; and, by giving support or pressure, to prevent or control œdema, oozing of blood or serum, spasm of muscles after fracture, or as itself a fracture dressing.

Tension.—Too much care cannot be exercised in applying a bandage in each individual case, to estimate how much tension should be used, in order to fulfil the object for which it is employed, advantageously and prudently.

A bandage may be applied *tightly*, *moderately*, or *loosely*. These grades may be readily tried upon one's own person. A tight bandage makes a healthy hand throb. A bandage moderately applied gives the support of a comfortable glove, and a loose bandage is one which may retain a compress resting upon the eye without causing discomfort. The conditions governing the tension of the roller will be formulated as (*a*) those depending upon the roller itself, and (*b*) those which exist in the part bandaged:

a. 1. *The Circumference of the Part Bandaged.*—The greater the circumference, the more force must be used. Thus, in applying a roller to the lower extremity, it is necessary, in order to secure an equal support for the entire limb, that each successive turn covering a greater circumference should be drawn a little more firmly than the preceding turn. The thigh turns require, therefore, considerably more force to produce a given tension than those at the ankle.

2. *Whether the Bandage includes the entire or only half the Circumference of the Limb, as in the Application of Splints.*—When these are applied, much of the force used is directed upon them, the limb receiving less pressure than if the roller surrounds it alone.

3. *Incomplete Bandaging.*—Any bandage which leaves a considerable portion of the distal extremity of a limb uncovered is very liable to induce swelling. If the hand or the foot is left uncovered, while the rest of the limb is bandaged, swelling is very likely to occur. Once started, it progresses very rapidly, because it increases the tension of the lower border of the bandage. This of course promotes the swelling, and so these active and passive agents may react upon each other to the complete strangulation of the limb.

4. *The Character of the Dressing beneath.*—Where a mass of soft yielding material like cotton or gauze is interposed, much more force is necessary to give the requisite tension

than where a thin dressing or none at all is used.

5. *Increase of Tension from Flexion or Extension.*—If a spica bandage is applied to the shoulder with the arm elevated, its tension will be much increased by bringing the arm to the side of the body. In the same manner the tension of a spica of the groin, applied with the thigh flexed upon the abdomen, will be increased when the latter is extended.

6. *The Number of Turns.*—Each additional turn applied to the same part of a limb increases the tension nearly double. When, therefore, a roller starts at the wrist, passes to the hand, and returns to the wrist, the latter receives too much tension, unless the first wrist turns are made very loosely. The same is true to a less extent when successive turns are made very close together.

7. *Shrinkage.*—Due allowance should always be made for shrinking of the muslin, if it is known or suspected that from any cause it will become wet.

b. 1. *Texture and Condition of the Tissues.*—Hard infiltrated tissue, such as is frequently found accompanying ulcers of the leg, requires very firm pressure, while very moderate pressure only can be employed in bandaging the flabby, unresisting limbs of delicate children and aged persons. An acute inflammatory condition of a part will not admit of pressure, while very considerable tension is well borne by a doughy, œdematous condition of the tissues.

2. *Habit.*—Independent of advance or subsidence of swelling, a bandage may be applied more firmly when the patient has become accustomed to its presence.

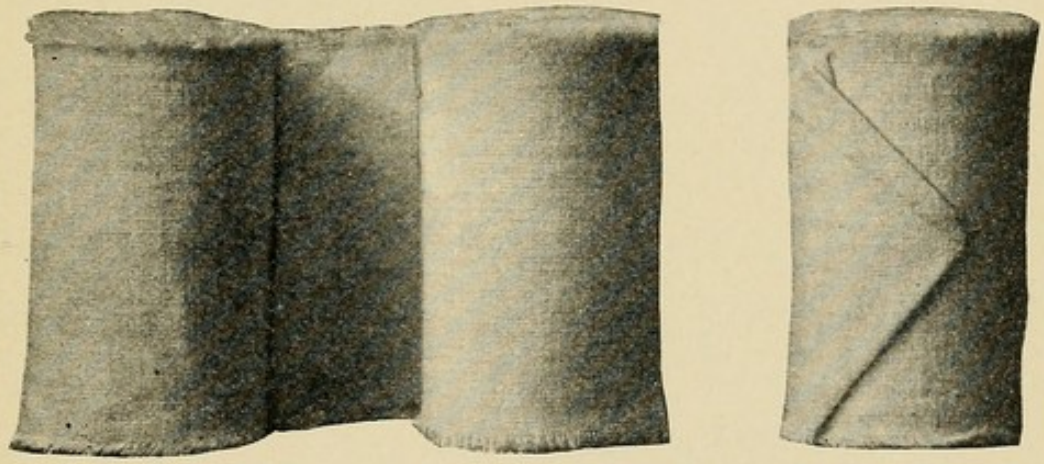
3. *Situation.*—Care must be observed, when bandages about the chest are applied, that respiration shall not be interfered with, particularly if the dressing is completed before the patient has quite recovered from the effects of an anæsthetic.

4. *Change in Position.*—Marked swelling always occurs when a limb which has been

kept horizontal for many weeks is suddenly allowed to hang. In this way a fixed dressing of silicate of sodium or plaster-of-Paris, comfortable while the patient is on his back, frequently has to be cut when he gets up.

Varieties.—The single roller, which is almost invariably used, and the double roller. They are shown in Fig. 5.

FIG. 5.



Double- and single-headed bandages.

Parts of the Roller.—The single roller is composed of seven parts,—the initial and terminal extremities, the upper and lower borders, the external and internal surfaces, and the body. The initial extremity is the free end, while the terminal extremity is that

in the centre of the cylinder. The borders, upper and lower, are designated according to the position they occupy when the subject stands erect. The surfaces, inner and outer, are denoted by their relation to the centre of the cylinder, and the body includes all. The double roller has eight parts,—two terminal extremities, two borders, two surfaces, two bodies, and no initial extremity.

Application.

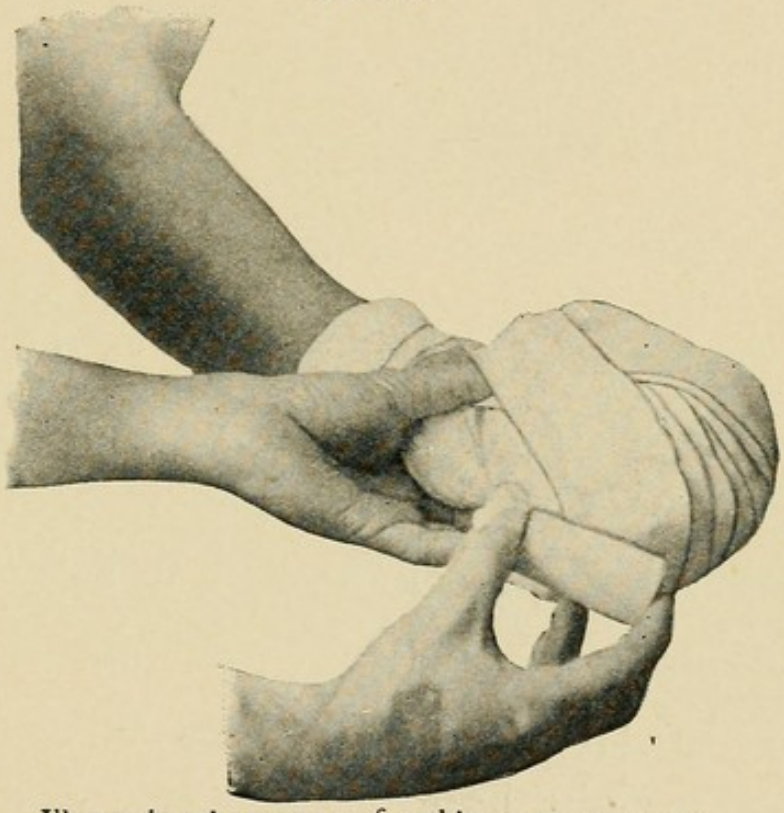
To Fix.—A roller is *fixed* by placing the outer surface of the initial extremity upon the point at which it is to start and holding it with the thumb and index finger of the left hand. With the body of the roller held in the right hand two turns are made in the direction taken by the hands of a clock. The first turn must be made by the right hand alone, after which the left hand, being free, may alternate with it.

To Repeat.—To repeat is to make a second turn completely hide a preceding turn. This

is always done in a circular bandage, and in fixing the initial extremity.

To Overlap.—To overlap is to make a second turn cover one-half, two-thirds, or three-quarters of a preceding turn. This is done in all spirals.

FIG. 6.

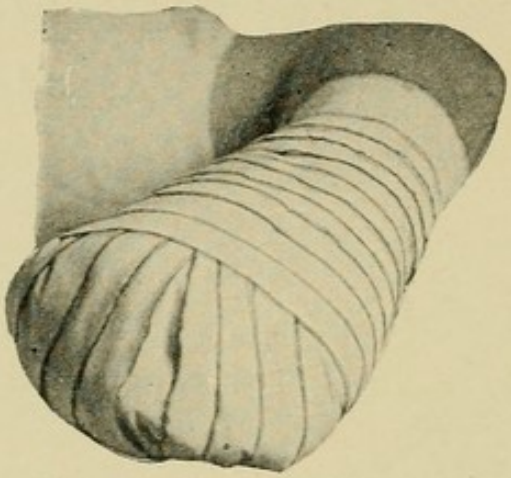


Illustrating the manner of making recurrent turns.

To Recur.—To recur is to catch a turn at some point and reflect it upon itself, so that it either exactly retraces its course or slightly diverges in another direction (Fig. 6). This

is done in recurrents of the stump (Fig. 7) and the recurrent of the scalp. (See Fig. 21.)

FIG. 7.

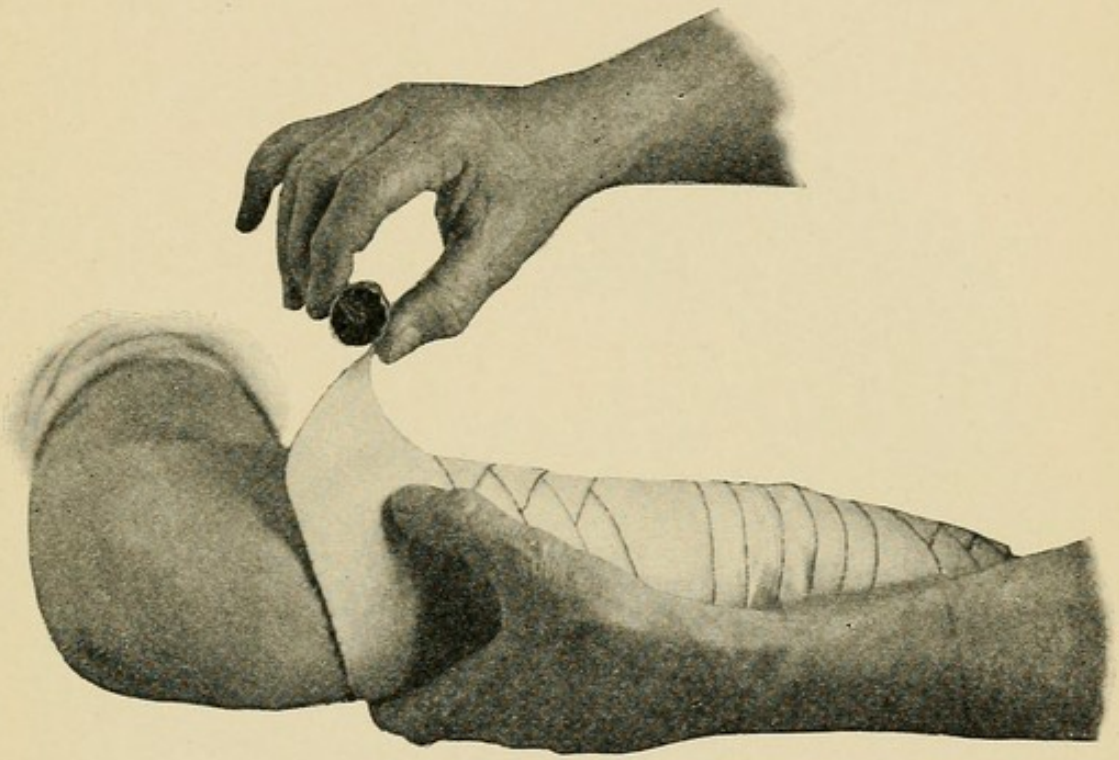


Recurrent bandage of the stump.

To Reverse.—To reverse is to bring the inner surface of the roller next the skin instead of the external. The right hand being in a state of supination when it receives the body of the roller from the left, makes a reverse by simply being pronated (Fig. 8). While the right hand effects this movement, the thumb or index finger of the left is placed upon the last turn, which has been applied in order to retain it in position, as the free portion of the roller should hang perfectly slack when the reverse is being made. After

making the reverse, the roller is passed around the limb and delivered to the left hand, and not until then is the traction necessary to produce the required tension employed. The succeeding reverses are made

FIG. 8.

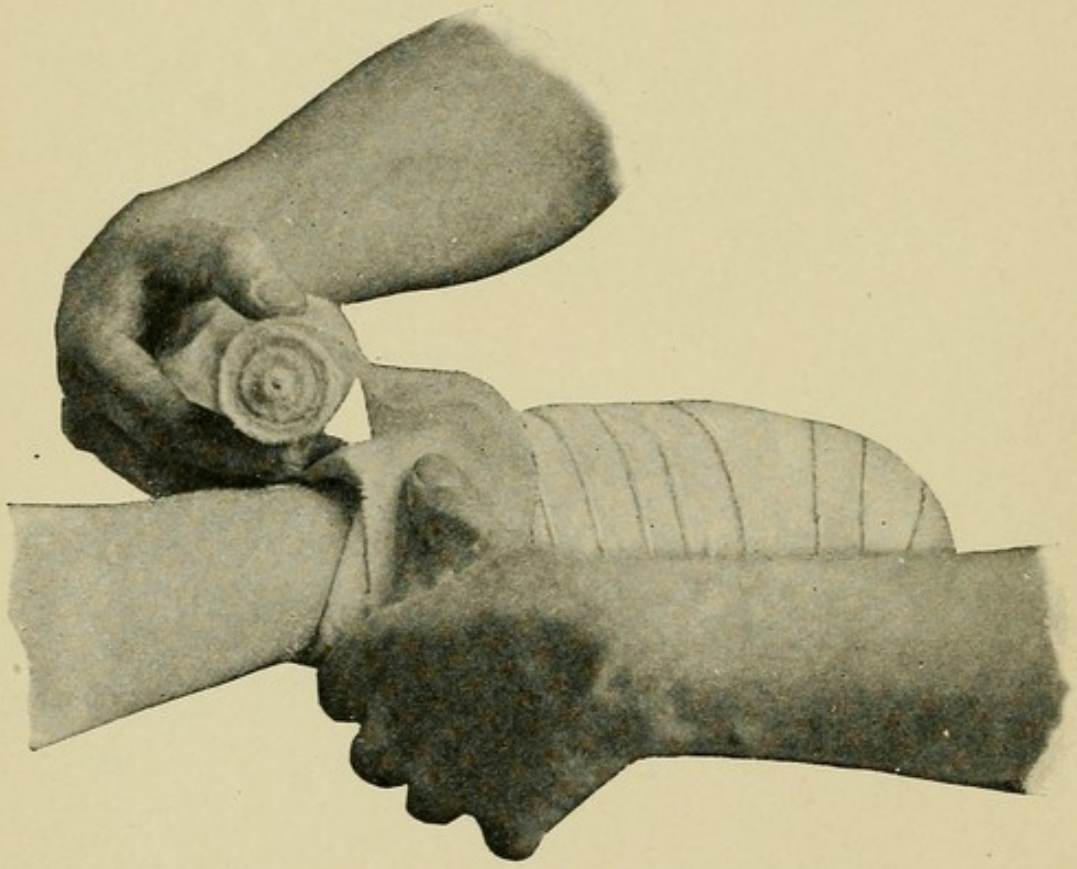


Showing manner of making reverse.

in the same manner, and they will be even and symmetrical if the thumb or index finger of the left hand is placed in the same perpendicular line it before occupied while retaining the preceding turn, and if each turn is

made to overlap the preceding one to the same extent in its entire circumference. The object of the reverse is to make the roller adapt itself to a conical cylinder, whose diameter is increasing, as from the ankle to the calf of the leg.

FIG. 9.



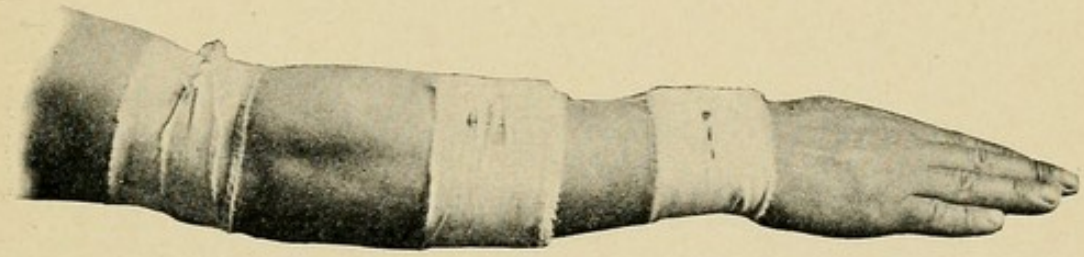
Showing manner of making descending reverse.

To Reverse, Descending.—To make a descending reverse, the right hand is placed in a state of pronation when about to receive the body of the roller from the left, and is simply turned

to supination, while the left thumb retains the turn already made as in the ordinary reverse (Fig. 9). The descending reverse becomes necessary when the roller is applied to a part the diameter of which is constantly diminishing, as in the leg from the calf to the knee when the former is very large, and when thickly padded splints are applied to the hand, etc.

To Secure.—To secure the terminal extremity of the roller, either a pin is used,

FIG. 10.



Methods of securing the bandage.

which includes one or more of the previous turns, or the end is slit into two tails, which are carried around the part in opposite directions and tied. The pin may be introduced parallel or at right angles with the long axis of the limb. These methods of securing are

shown in Fig. 10. The pin should always be directed downwards; it should appear to view at least twice in its course through the underlying layers of muslin, and its point should be carefully buried. These precautions are necessary to prevent the pin doing harm, as the hand of the operator is usually carried down the limb to ascertain if the roller has been properly applied.

To Remove.—When removing the roller, each turn should be gathered compactly in the hand, no loops or ends being allowed to trail.

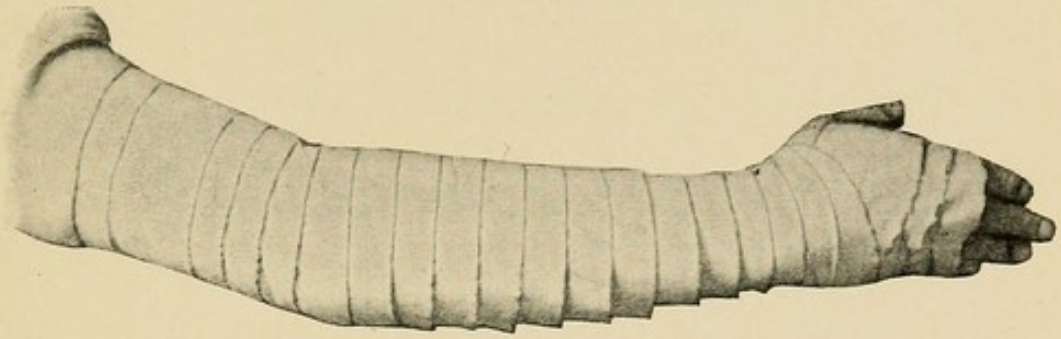
Special Bandages.

A Circular Bandage.—A circular bandage consists of a series of three turns which repeat each other.

A Spiral Bandage.—A spiral bandage is one each turn of which, after the initial extremity has been fixed, overlaps one-half, two-thirds, or three-quarters of the preceding turn. Such a bandage applied to a part having varying

diameters will not adapt itself evenly and neatly (Fig. 11).

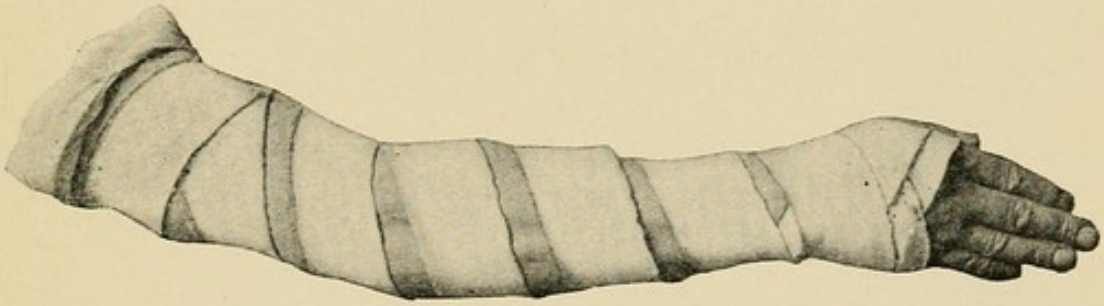
FIG. 11.



Spiral bandage applied without reverses.

An Oblique Bandage.—An oblique bandage resembles a spiral, except that the limb is ascended so rapidly that the borders of the

FIG. 12.



Oblique bandage.

turns do not touch one another. It is only used to retain a temporary or loose dressing (Fig. 12).

A Spica Bandage.—A spica bandage is composed of two sets of turns alternating with

one another, and coming in contact only at the point where it is intended to make pressure or retain a dressing. (See Fig. 41, page 71.)

A Figure-of-Eight Bandage.—A figure-of-eight bandage frequently resembles a spica very closely. It also is composed of two sets of turns made in different directions, but the direction of these turns gradually converges. (See Fig. 49, page 80.)

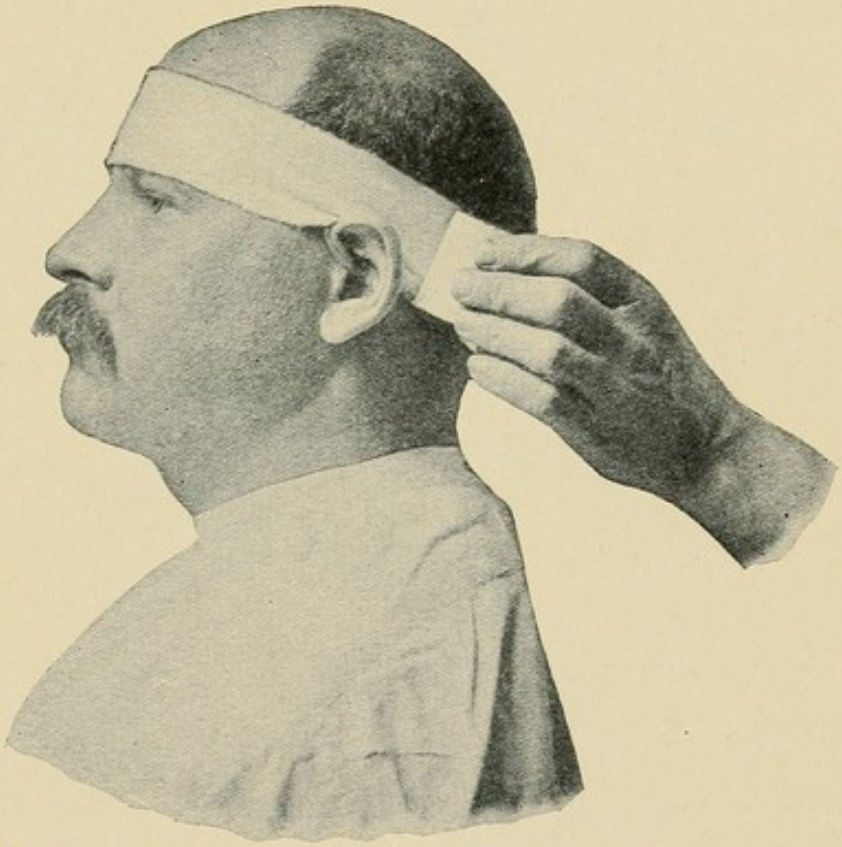
A Spiral Reversed Bandage.—A spiral reversed bandage consists of a series of spiral turns, most of which have been reversed. (See Fig. 48, page 78.)

A Recurrent Bandage.—A recurrent bandage is composed of a series of recurrent turns. (See *To Recur*, page 21.)

Bandages of the Head.

ALL bandages applied to the head, except Barton's, are fixed either by circular turns

FIG. 13.

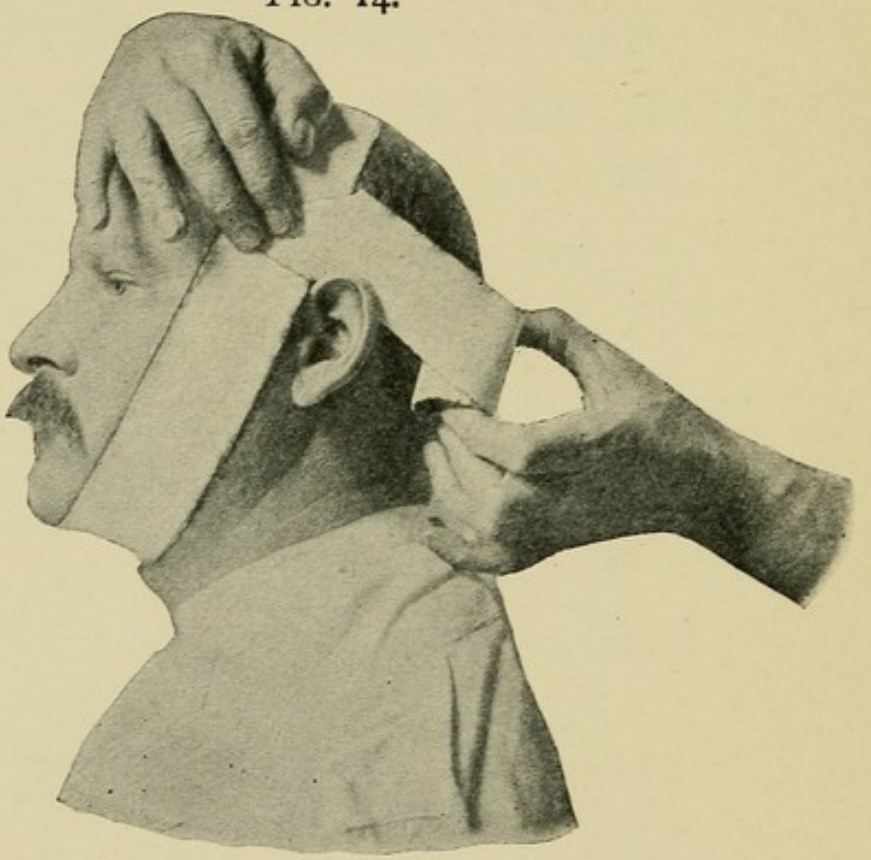


Manner of fixing the bandage by horizontal turns.

running horizontally about the vault of the cranium, or by circular turns vertically around

the face. After the former method are fixed the crossed of the angle of the jaw, recurrent of scalp, figure-of-eights of the eye, Hunter's,

FIG. 14.



Manner of fixing the bandage by vertical turns.

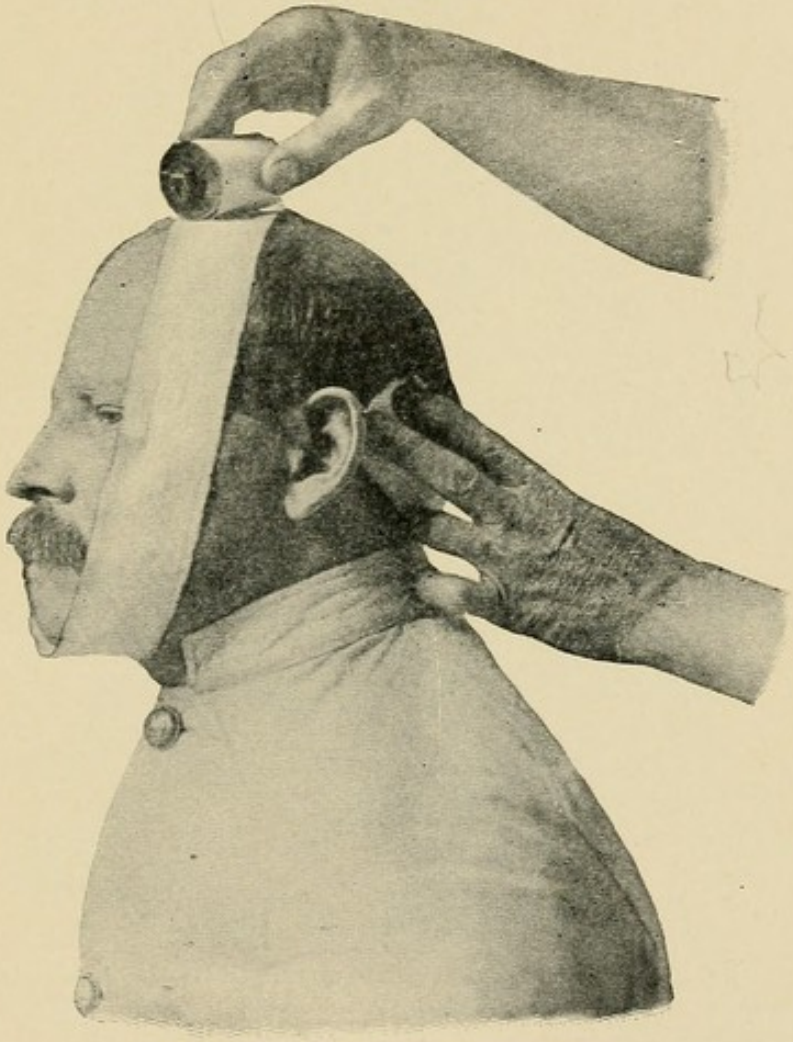
White's, and the knotted bandage (Fig. 13), while Gibson's and the occipito-facial are fixed by the latter (Fig. 14).

Barton's Bandage.

2 inches by 5 yards.

Place the initial extremity of the roller behind the ear on the sound side. Carry the

FIG. 15.

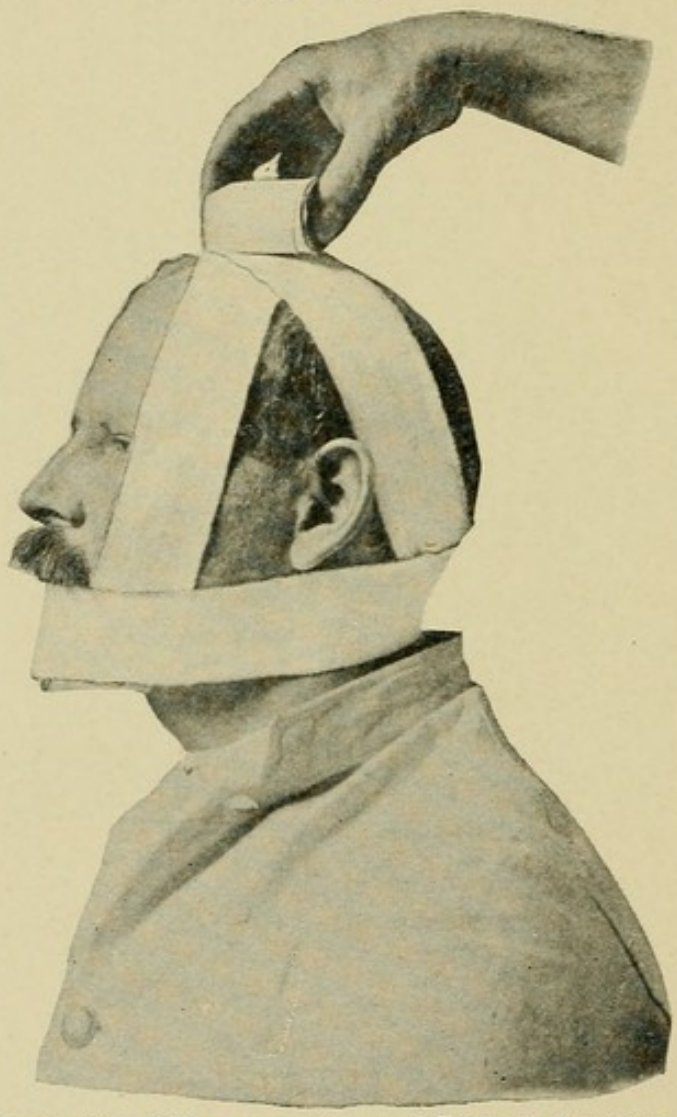


The first turn of Barton's bandage.

roller beneath the occiput to a corresponding point behind the ear on the injured side.

Thence to the vertex, and down the sound side of the face to the chin. Up on the injured side to the vertex, intersecting the

FIG. 16.

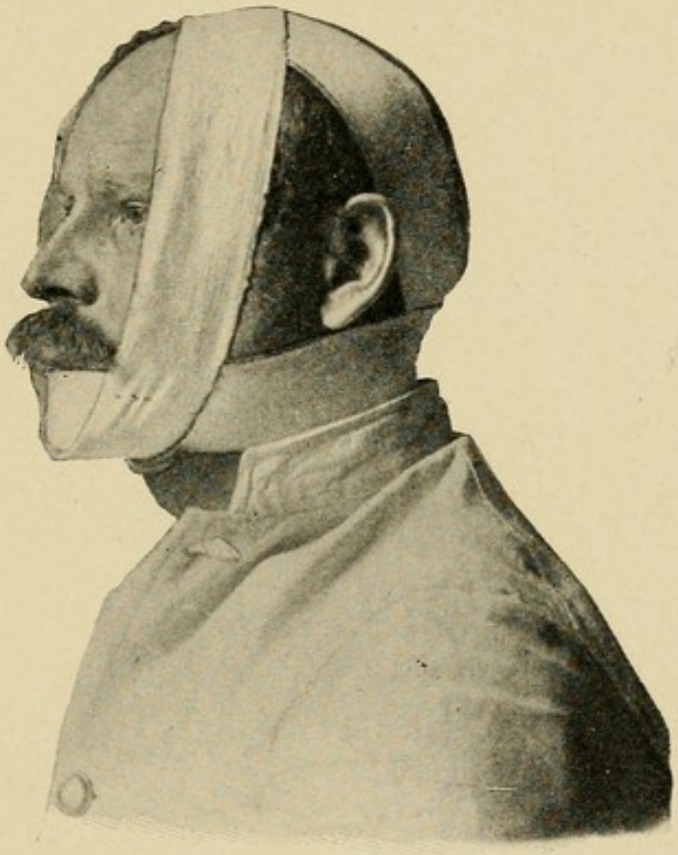


The beginning of the second turn of Barton's bandage.

former turn directly in the median line, and back to the starting-point. Not until then is the bandage fixed. The fingers holding the

initial extremity are now released, and the roller may be conveniently passed from one hand to the other (Fig. 15). The roller passes from here to the occiput, and along

FIG. 17.



Barton's bandage completed.

the injured side of the jaw to the chin, and back to the occiput. From the occiput to the vertex (Fig. 16). Each of these turns is repeated in a similar manner twice, when the

bandage is terminated at the vertex. Every intersection of turns requires a pin (Fig. 17).

Uses.—Fracture of the body of the lower jaw, after luxation, and to retain dressings at various points along the course traversed by the bandage.

It is also a useful substitute for the leather head-gear of Sayre's suspension apparatus for applying the plaster jacket, when the latter is not available.

Gibson's Bandage.

2 inches by 5 yards.

Fix the roller by vertical turns around the face. The direction it takes in starting is determined by the location of the fracture, the roller always ascending on the injured side. After making three of these vertical turns, a right-angled reverse is made at the temple, on whichever side is more convenient, and the bandage is carried back to the occiput

(Fig. 14). Three horizontal turns are then made around the vault of the cranium, and, on reaching the occiput the third time, the chin

FIG. 18.

Gibson's bandage.

turns are begun. These are made by carrying the roller beneath the ear, along the side of the jaw, to the front of the chin, and back to the occiput. Three of these turns are made.

On reaching the occiput the third time, the bandage is completed by a right-angled reverse at this point, whence it is carried over the top of the head to the forehead in the median line (Fig. 18). A pin is introduced at the reverse over the occiput, and at each intersection. The dressing will be seen to consist of three sets of circular turns.

Uses.—Fracture of the body of the lower jaw, after luxation, and to retain dressings.

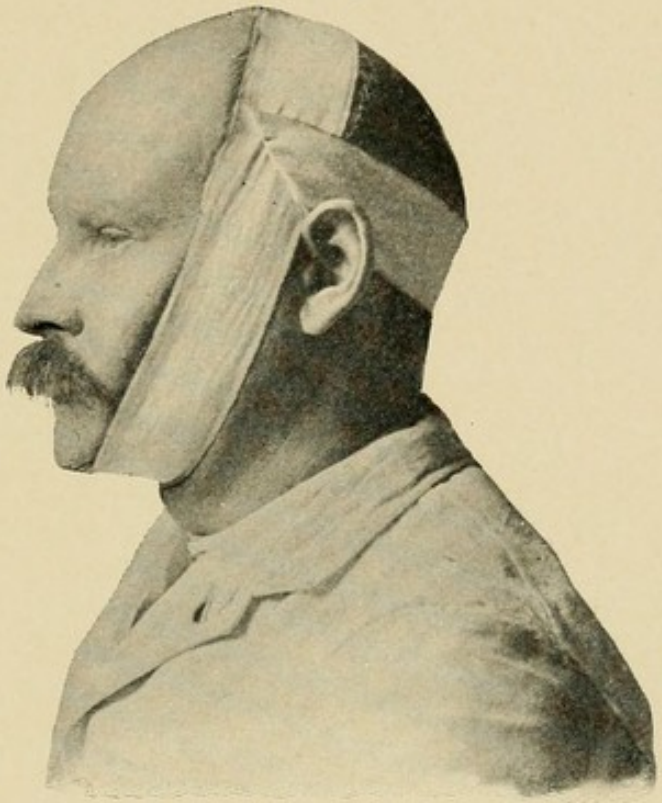
Occipito-Facial Bandage.

2 inches by 2 yards.

Fix the roller by vertical turns around the face. After making three of these turns, reverse over the temple on the more convenient side, carry the roller to the occiput, and back to the opposite temple. It may be pinned here (Fig. 19), or continued around the forehead to the point at which the reverse was made. The reverse must also be pinned.

The bandage consists simply of the first and part of the second circulars of Gibson's.

FIG. 19.



Occipito-facial bandage.

Uses.—To restrict the movement of the jaw after luxation, and to retain dressings.

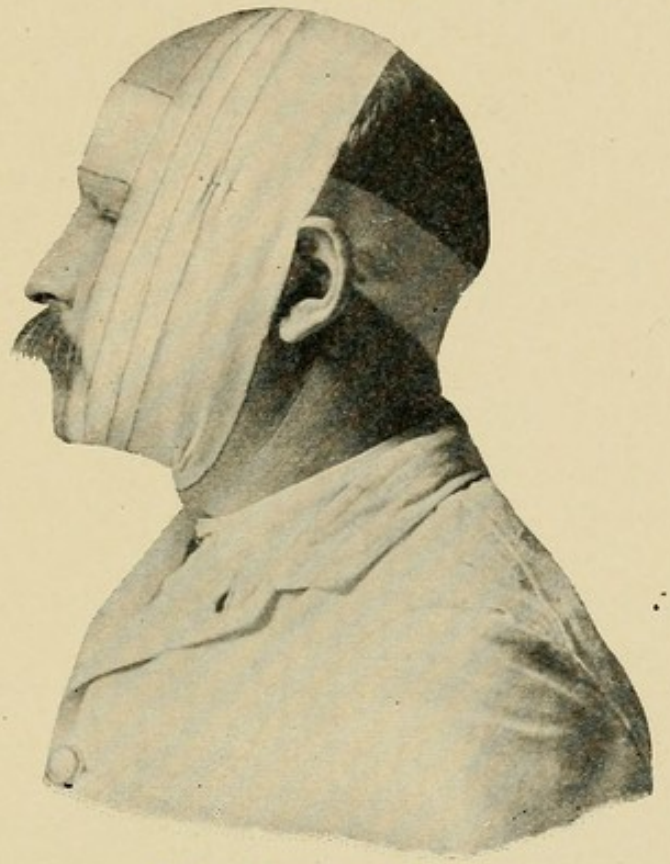
Crossed Bandage of the Jaw.

2 inches by 5 yards.

Fix the roller about the vault of the cranium, delivering it from the left to the right hand, if the jaw is fractured on the left side, and from the right to the left, if the fracture is on the right side. On reaching the occiput the third time, carry the roller beneath the ear, under the chin to the angle of the mouth on the opposite side. Ascend to the vertex. Descend behind the ear on the sound side to the throat, and up again on the injured side to the vertex. Each ascending turn overlaps the preceding turn three-quarters. Each descending turn passes behind the ear on the sound side, and exactly repeats the preceding turn. So continue until the angle of the jaw on the injured side is covered. This is usually accomplished in about four turns, when the bandage may be pinned (Fig. 20), or a right-angled reverse made over the temple, and a

circular turn, repeating those applied at the beginning, carried around the head.

FIG. 20.



Crossed bandage of the jaw.

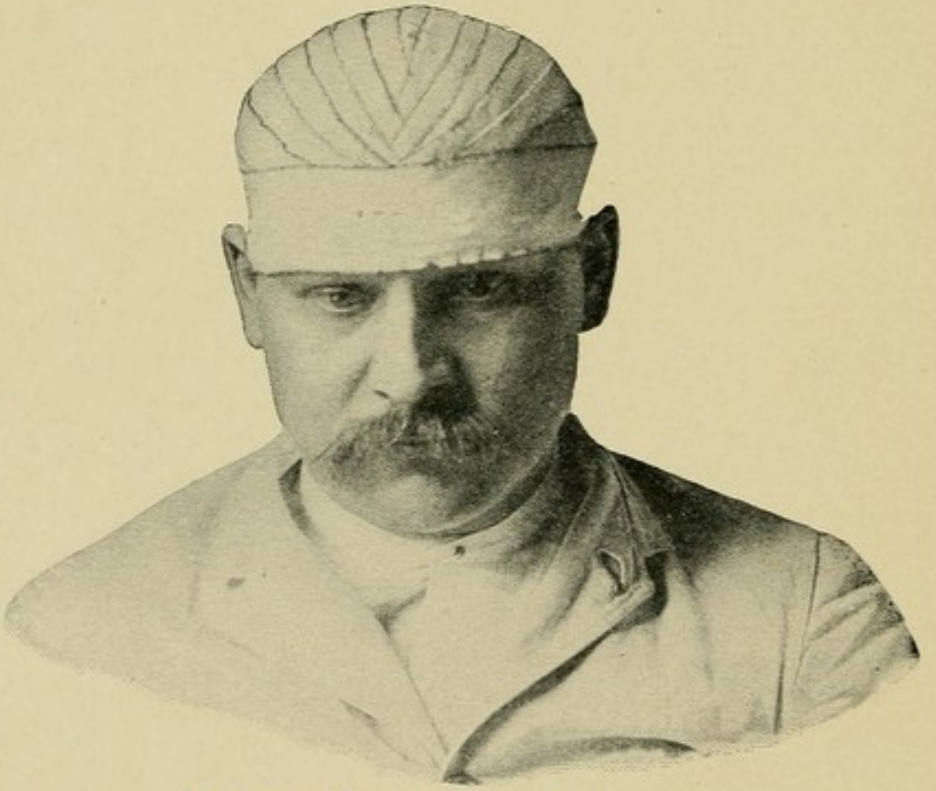
Use.—Fracture of the lower jaw with lateral displacement.

Recurrent Bandage.

2 inches by 7 yards.

Fix the roller about the vault of the cranium. On reaching the occiput the third time, make a right-angled reverse, and carry

FIG. 21.



Recurrent bandage of the scalp.

the roller in the median line over the top of the head to the brow, at which point the finger of an assistant must hold the bandage. Recur to the occiput, overlapping three-

quarters of the first turn on one side. Recur to the forehead, overlapping three-quarters on the other side of the first turn. So continue until the entire scalp is covered, when two circular turns are made to fix the recurrents. Pin deeply into the layers in front and at the the back (Fig. 21).

Uses.—To retain dressings to the scalp, and to make compression.

Double-Headed Recurrent Bandage.

2 inches by 14 yards.

Place the free portion between the two bodies of the roller upon the forehead and by carrying the heads around the vault of the cranium make one horizontal turn. At the occiput a hitch is made, and while one head of the bandage is carried forward accurately in the median line, the other head begins its continuous course horizontally about the vault of the cranium. Passing beneath this

(Fig. 22), the recurrent head of the bandage is reflected upon itself, and diverging to the left from its original course so that it shall overlap the preceding turn three-quarters of its width at the vertex, it is carried back to

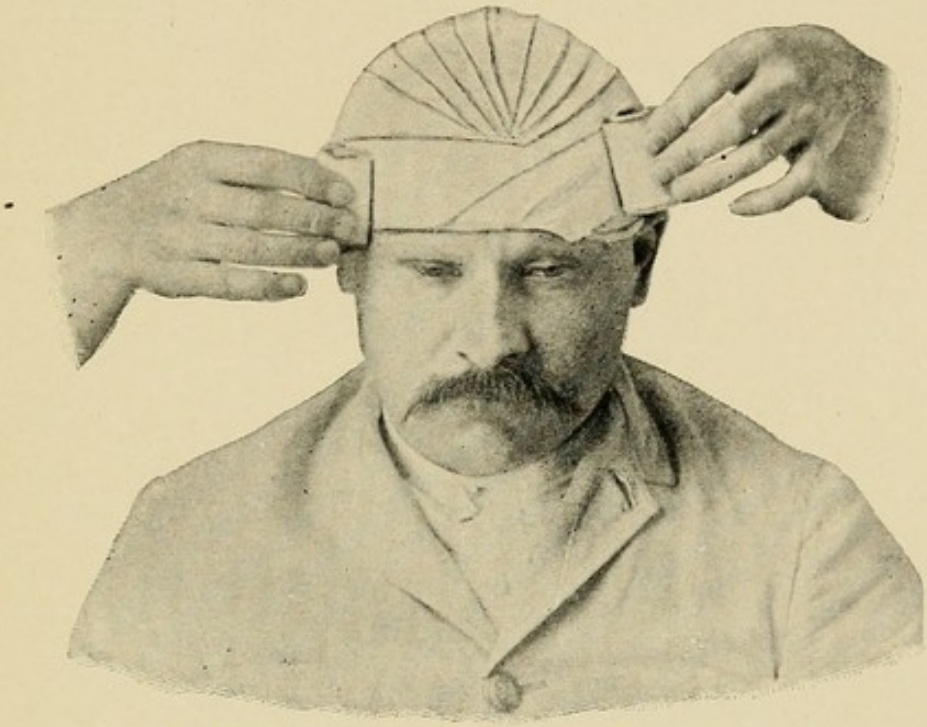
FIG. 22.

The first turn of the double-headed recurrent of the scalp.

the occiput. Here, again retained firmly in place by the horizontal head, it is reflected upon itself and carried forward to the right of the median line. Thus each recurrent turn is retained by a circular turn both anteriorly

and posteriorly until a sufficient number are made to completely cover the scalp (Fig. 23), when the terminal ends are pinned together at any convenient point.

FIG. 23.



The double-headed recurrent of the scalp completed.

Uses.—To retain dressings in restless or delirious subjects. Though somewhat difficult to apply neatly, it is so secure that it cannot become disarranged.

Figure-of-Eight Bandage of One Eye.

2 inches by 5 yards.

Fix the roller about the vault of the cranium, bandaging from left to right, if the right eye is to be covered, and from right to left, if the

FIG. 24.

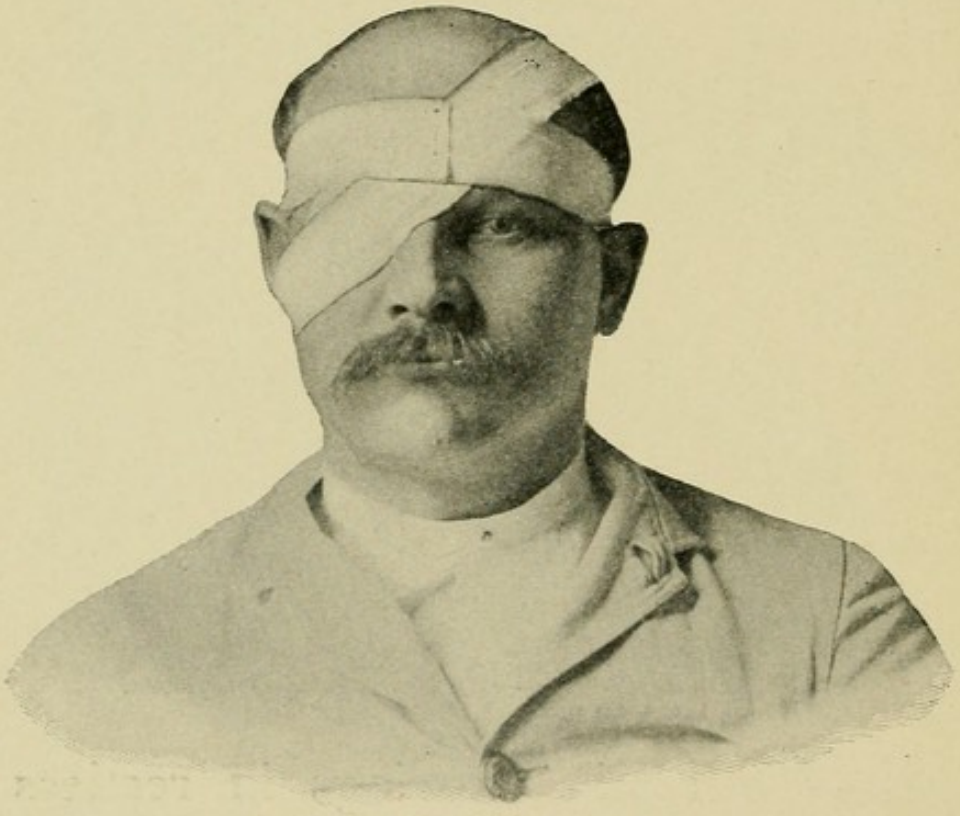


Figure-of-eight bandage of the eye.

left eye. On reaching the occiput the third time, pass the bandage below the ear, across the eye, and to the tuberosity of the parietal bone on the opposite side. Thence to the occiput. Repeat this turn twice, and again

follow the initial turns around the head. Pin both intersections (Fig. 24).

Uses.—To retain dressings, and make compression upon the orbit.

Figure-of-Eight Bandage of Both Eyes.

2 inches by 7 yards.

Fix the roller around the head. Cover one eye as in the preceding bandage, and,

FIG. 25.

Figure-of-eight bandage of both eyes.

after making one circular about the head, proceed, on reaching the forehead, to cover

the other eye in a similar manner (Fig. 25).

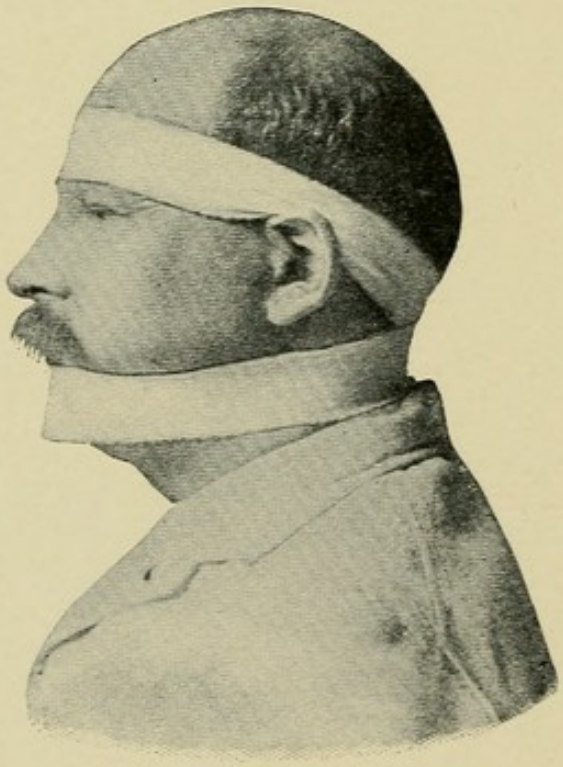
Uses.—To retain dressings, or compress both eyes.

Hunter's V Bandage.

2 inches by 3 yards.

Fix the roller about the vault of the cranium. On reaching the occiput the third time, carry

FIG. 26.



Hunter's V bandage.

the bandage beneath the ear, along the jaw to the front of the chin, and back to the

occiput. Then alternate between head and chin turns, making two or three of each. This bandage follows the same course as the second and third circulars of Gibson's (Fig. 26).

Uses.—To retain dressings after injuries and operation about the chin or lower lip.

White's Head and Neck Bandage.

2 inches by 3 yards.

Fix the roller about the vault of the cranium, and on reaching the occiput the third time,

FIG. 27.

White's head and neck bandage.

pass directly down in front of the throat. Alternate two or three head and neck turns, and pin the bandage at the most convenient point (Fig. 27).

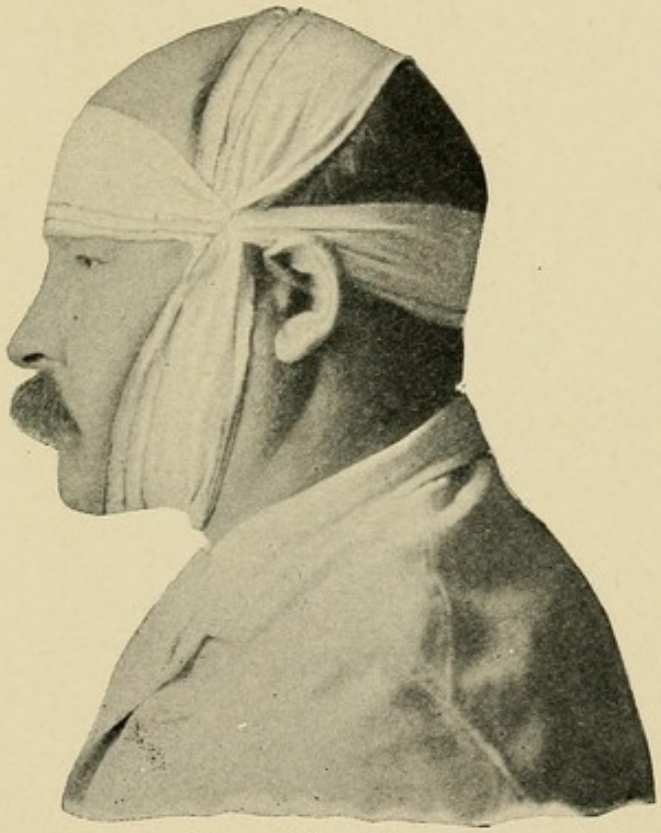
Uses.—To retain dressings after injuries and operation of the throat or neck.

Knotted Bandage.

2 inches by 7 yards.

For this a double-headed roller is employed. Place the free portion between the bodies upon the temple on the injured side, and carry the

FIG. 28.



Knotted bandage.

heads around the vault of the cranium to a corresponding point on the opposite side. Here the heads of the roller pass each other, and continue their course back to the starting-

point. When this point is reached, they make a half turn upon each other, and pursue a vertical course around the face, passing as before on the sound side. Reaching the injured side again, another hitch is made, and the roller is carried horizontally around the head. So alternate face and head turns until three or four knots have been made, when the terminal extremities may be tied together or pinned at the most convenient point (Fig. 28).

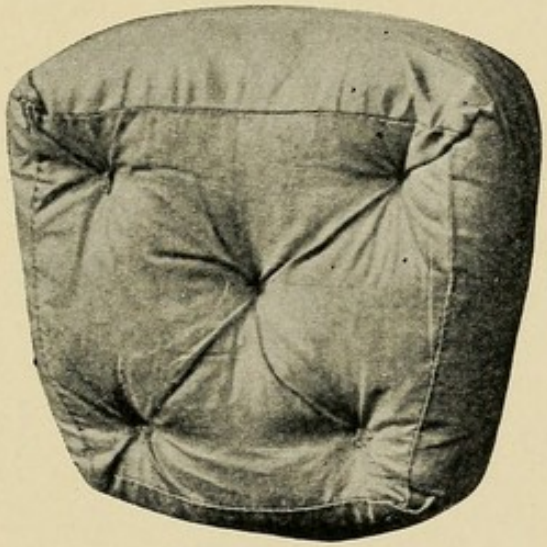
Use.—To make pressure upon the temple, especially for the control of hemorrhage.

Bandages of the Upper Extremity.

Desault's Dressing.

THIS bandage is compound in character, requiring for its application three rollers and

FIG. 29.



Wedge-shaped axillary pad.

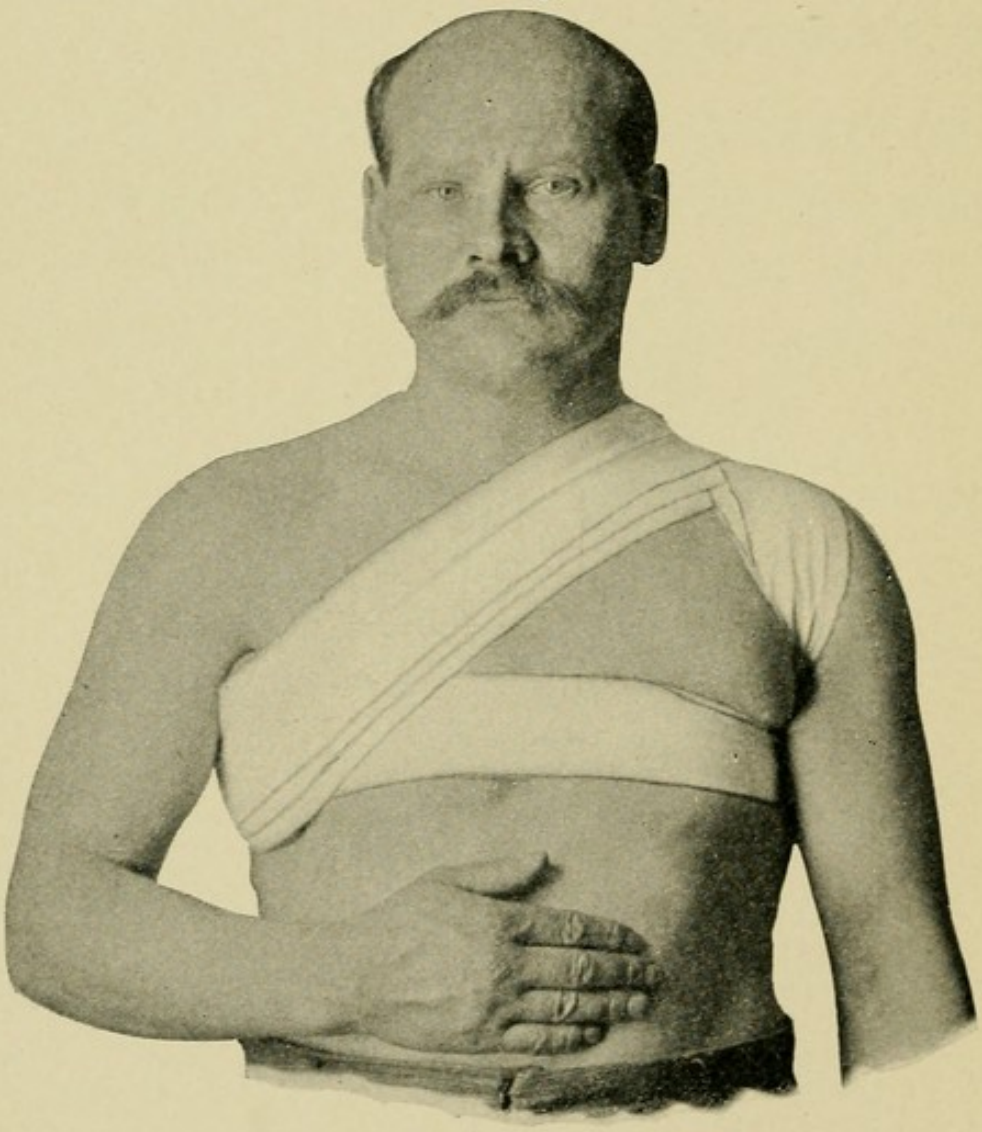
a wedge-shaped pad. The pad is made of strong muslin stuffed with hair or bran, is about five inches square, two inches thick at the base, and bevels off to nothing at its apex (Fig. 29).

First Roller of Desault.

2½ inches by 5 yards.

Place the initial extremity of the roller on the pad, the base of which is thrust into the

FIG. 30.



First roller of Desault's dressing.

axilla on the injured side, and make four spiral turns, encircling the thorax and pad.

On reaching the pad the fourth time, carry the roller well down under its apex, and thence across the front of the chest to the shoulder on the sound side. Here a figure-of-eight turn around the arm is made, and the roller conveyed across the back to the apex of the pad again. Two more of these turns are made, either repeating each other, or, as shown in Fig. 30, overlapping to form a spica on the shoulder. The terminal extremity is then pinned at the most convenient point in front.

Use.—The spiral turns are to fix the pad, and the figure-of-eight turns to force it up into the axilla. A mass of oakum compressed into a wedge-shaped form and folded in lint or muslin may well be used instead of the prescribed pad, as it better retains its position and can be renewed at each dressing.

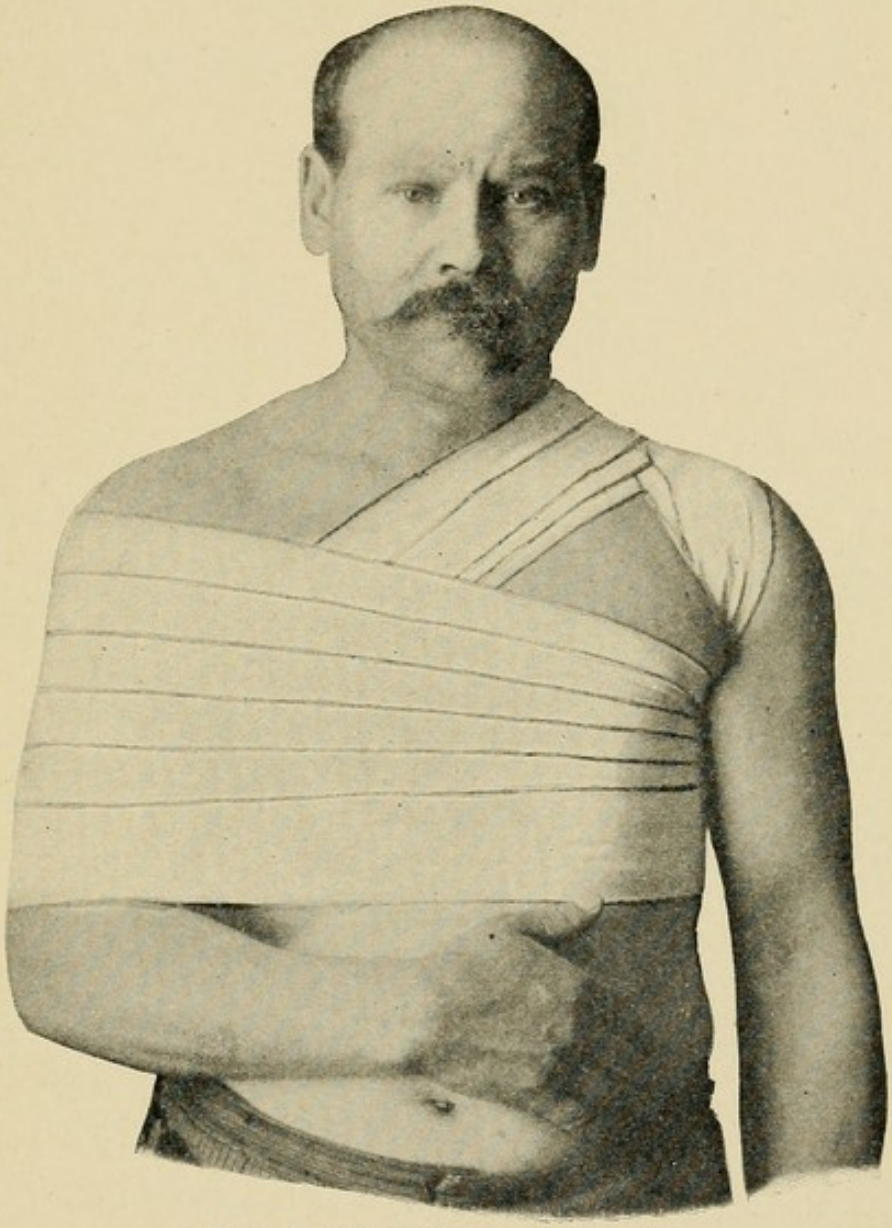
Second Roller of Desault.

2½ inches by 7 yards.

Fix the initial extremity of the roller by two circular turns, which include the thorax and the arm on the injured side. They pass over the head of the humerus and under the sound axilla. Descend the chest and arm by spirals, overlapping one-half. These turns must constantly increase in tension until the elbow is reached, when the bandage is pinned. The spirals may converge somewhat on the sound side, so that they overlap three-quarters (Fig. 31).

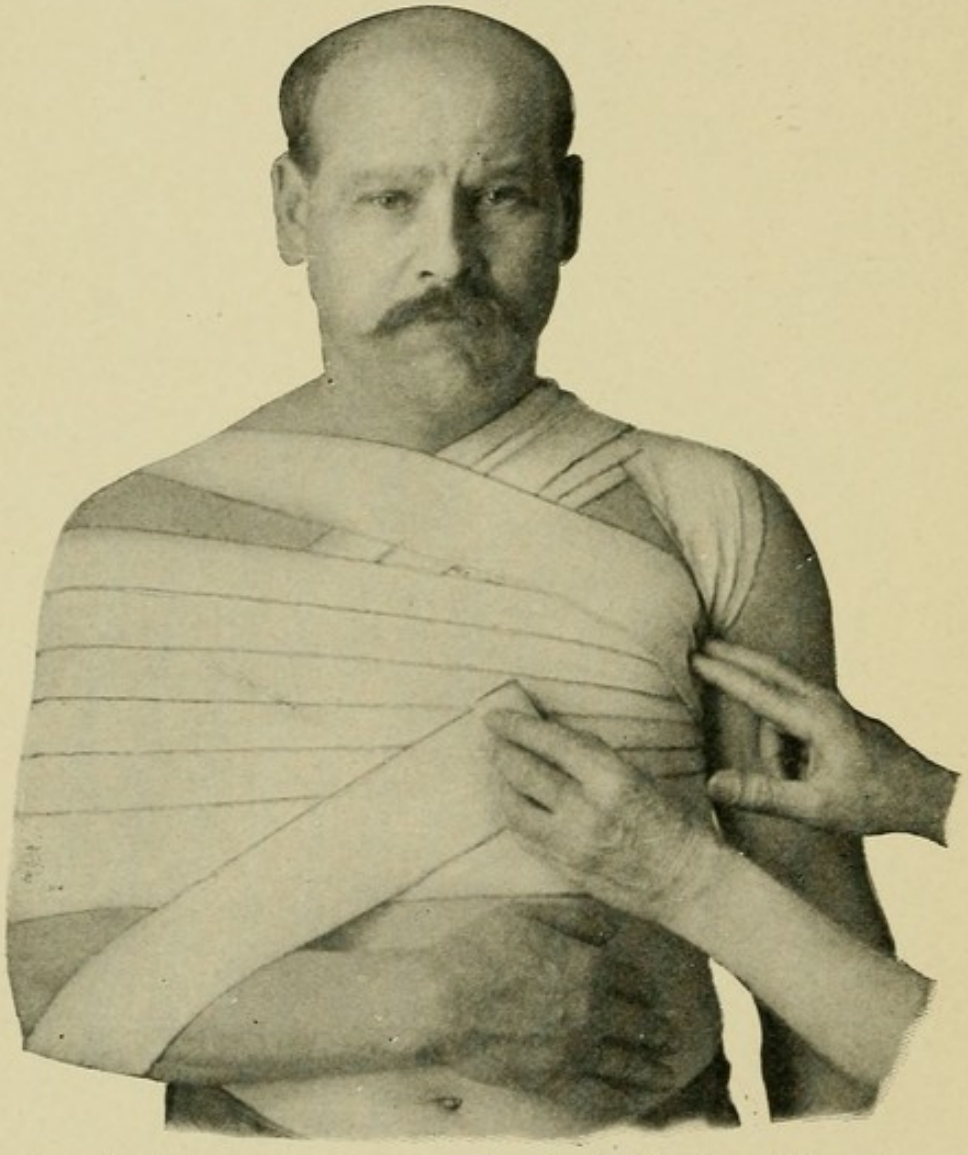
Use.—To force the head of the humerus outwards. This is done by the action of the lower spiral turns. These being applied with more tension than the upper ones convert the shaft of the bone into a lever, the fulcrum of which corresponds to the pad.

FIG. 31.



Second roller of Desault's dressing.

FIG. 32.



Showing the manner of commencing the third roller of Desault.

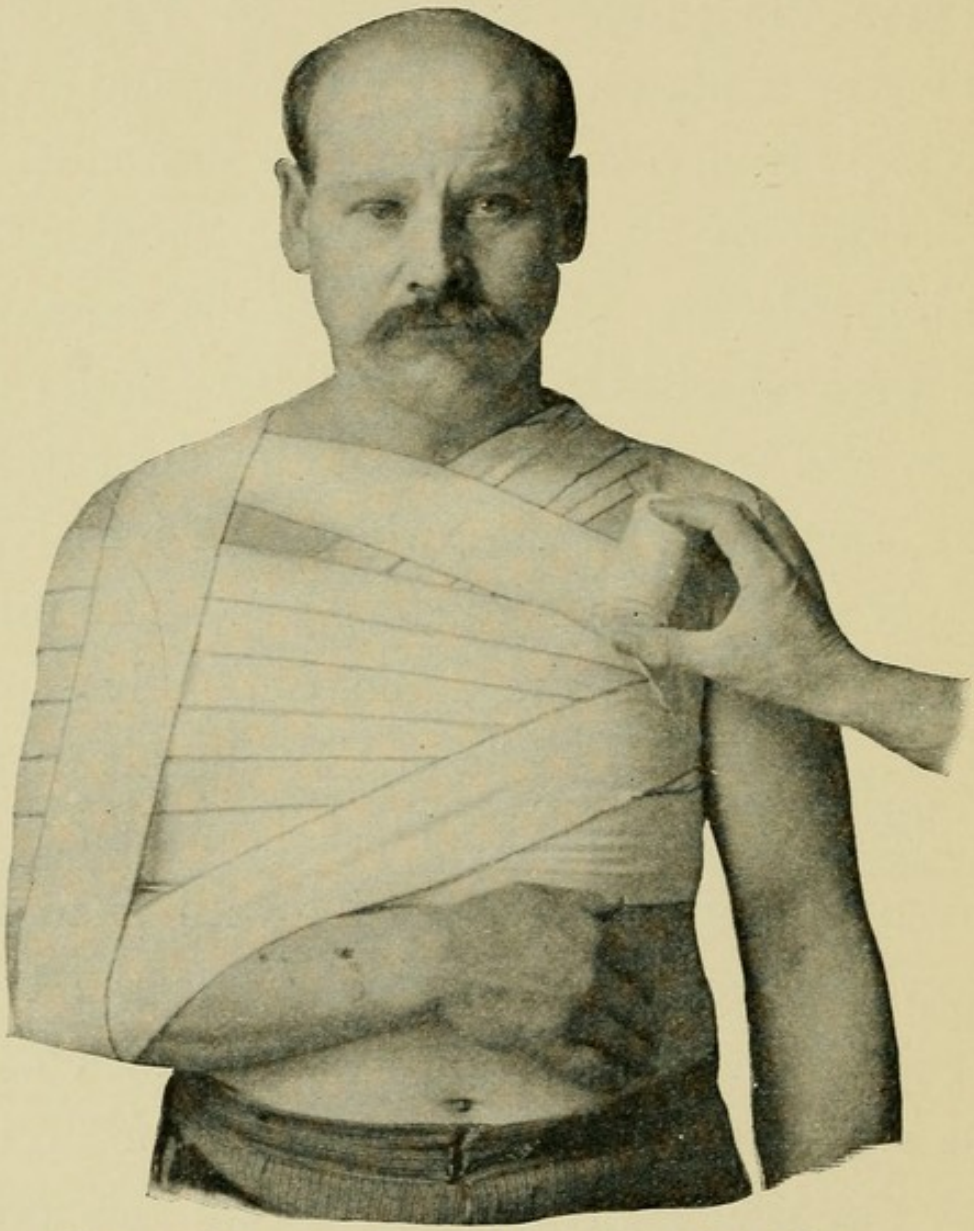
Third Roller of Desault.

2½ inches by 7 yards.

Place the initial extremity of the roller under the axilla on the sound side, and carry it obliquely across the front of the chest to the middle of the summit of the shoulder on the injured side. Down behind the humerus, and parallel with it, to the elbow; under the latter, and across the front of the chest to the axilla on the sound side, where the initial extremity is met and fixed (Fig. 32). The roller now passes under the axilla, obliquely across the back to the middle of the summit of the shoulder on the injured side. Down in front of the humerus, and parallel with it to the elbow; under the elbow, and across the back to the axilla on the sound side, which completes one entire turn,—an anterior and a posterior triangle (Fig. 33). From this point it emerges, and is in position to cross the front of the chest to the shoulder on the injured side as before, and descend behind the

humerus, and pass under the elbow, back again to the axilla. Another posterior turn

FIG. 33.

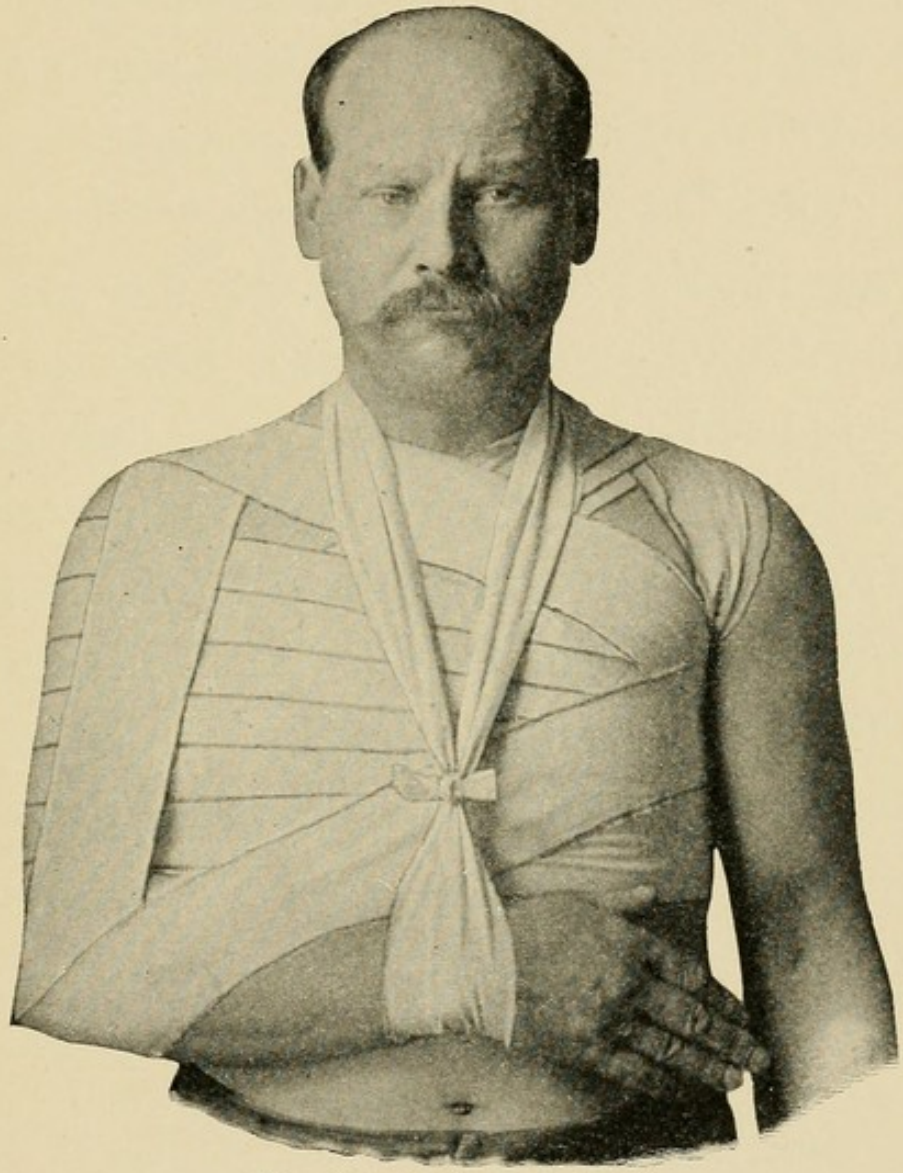


Showing the manner of continuing the third roller of Desault.

is then made. In this way three anterior and three posterior triangles are formed, which

exactly repeat each other, and the end of the roller is pinned at any point in front. Each

FIG. 34.



Desault's dressing completed.

intersection also must be secured by pins or adhesive plaster, and a sling to support the

forearm and hand completes the dressing (Fig. 34).

Use.—To draw the shoulder upwards and backwards. To accomplish this, it is evident that the posterior turns must be applied with more tension than the anterior.

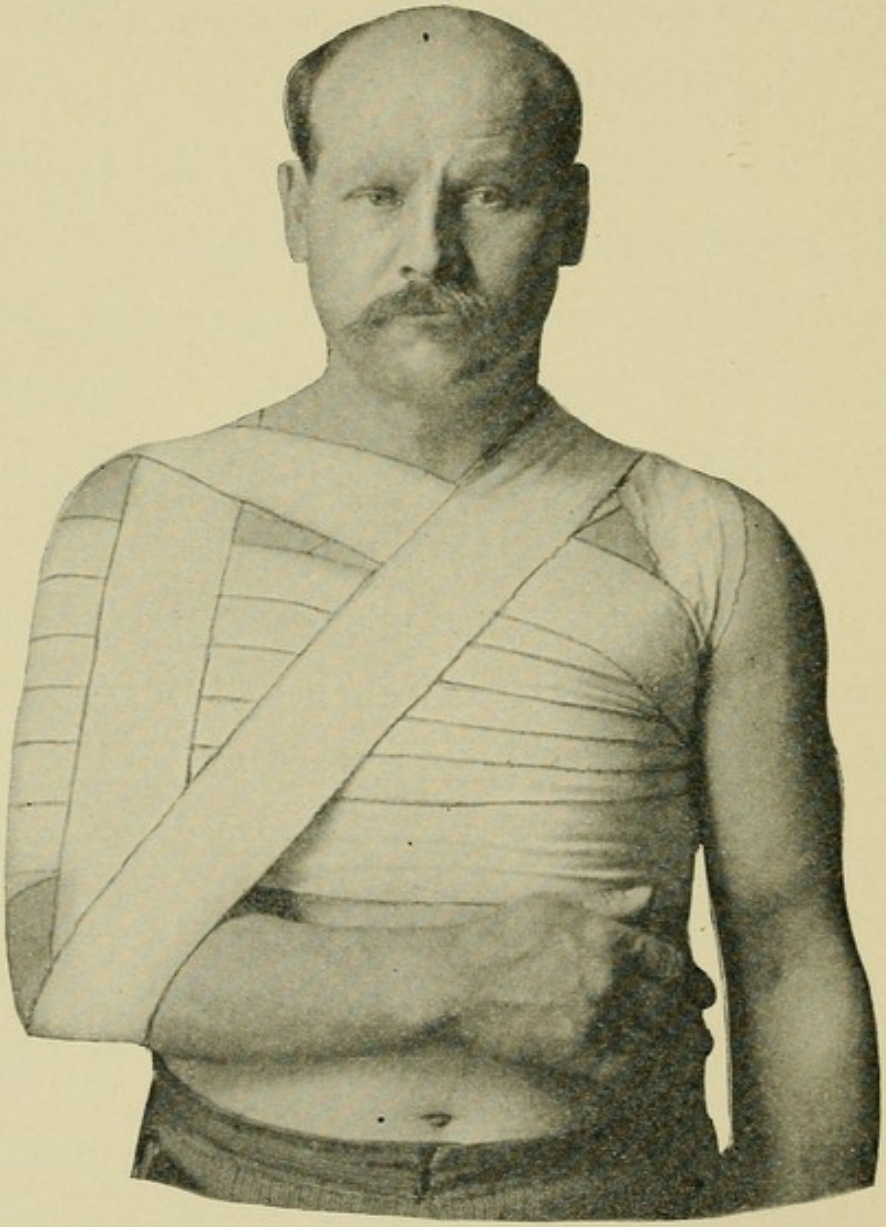
The bandage of Desault as a whole is employed usually for fracture of the clavicle. Portions of the dressing are, however, frequently used for other purposes; the second roller being applied when it becomes necessary to retain the arm to the side of the body for any cause, as in fracture of the humerus. The third roller may be used after dislocation of the head of the humerus or of the acromial end of the clavicle.

Third Roller of Desault Modified by the Author.

In order to obtain a more direct elevating force, the third roller may be applied as shown in Fig. 35. To do this, place the initial extremity under the sound axilla, carry the roller obliquely across the front of the chest to the shoulder on the injured side, down behind the arm and parallel to it, and under the elbow, as in Desault. From the elbow the roller ascends obliquely across the forearm and front of the chest *to the summit of the shoulder on the sound side, and down obliquely across the back to the elbow on the injured side.* Thence it ascends the arm to the shoulder on the injured side, and returns across the back to the axilla on the sound side. Here it fixes the initial extremity, and two more similar turns are made, which exactly repeat each other, when the terminal end is secured as in the original bandage. The anterior turns applied in this way lose

to a great extent their power to draw the shoulder forward. The necessary precaution,

FIG. 35.



Third roller of Desault as modified by the author.

to use more tension for the posterior than the anterior turns, when the roller is applied in

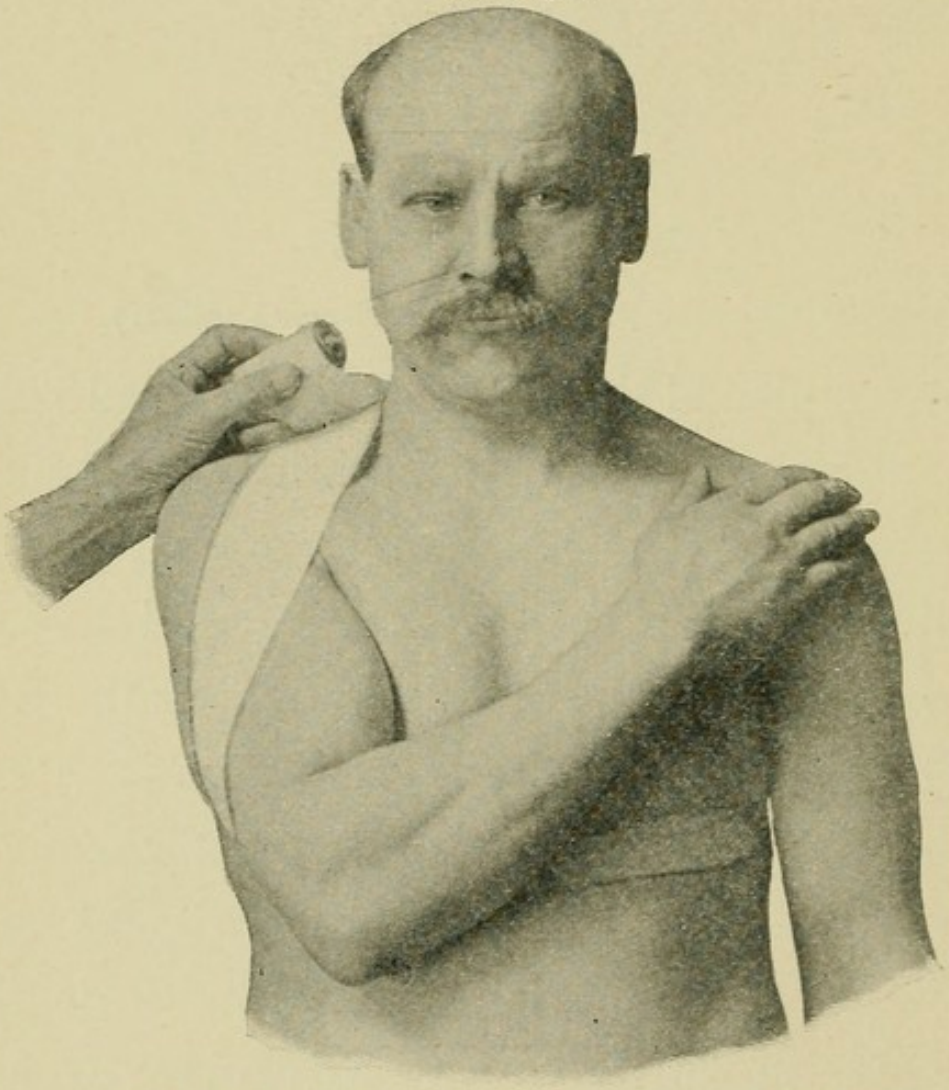
the ordinary way, is therefore not required, as the direction of the forces and their relative points of application are of themselves sufficient to effect this result, besides gaining a greater elevating force.

Velpeau's Bandage.

2½ inches by 14 yards (two seven-yard rollers).

Having placed the hand of the injured side upon the sound shoulder, the initial extremity is started over the spine of the scapula on the sound side, and the roller carried across the back to the injured side, pursuing the following course: the middle of the summit of the shoulder; the middle of the outer aspect of the arm, behind the elbow, across to the axilla on the sound side, and under it to the starting-point. Repeat this turn to fix the bandage (Fig. 36). On reaching the scapula the second time, make a circular turn around the thorax, including in it the arm on the injured side. The external con-

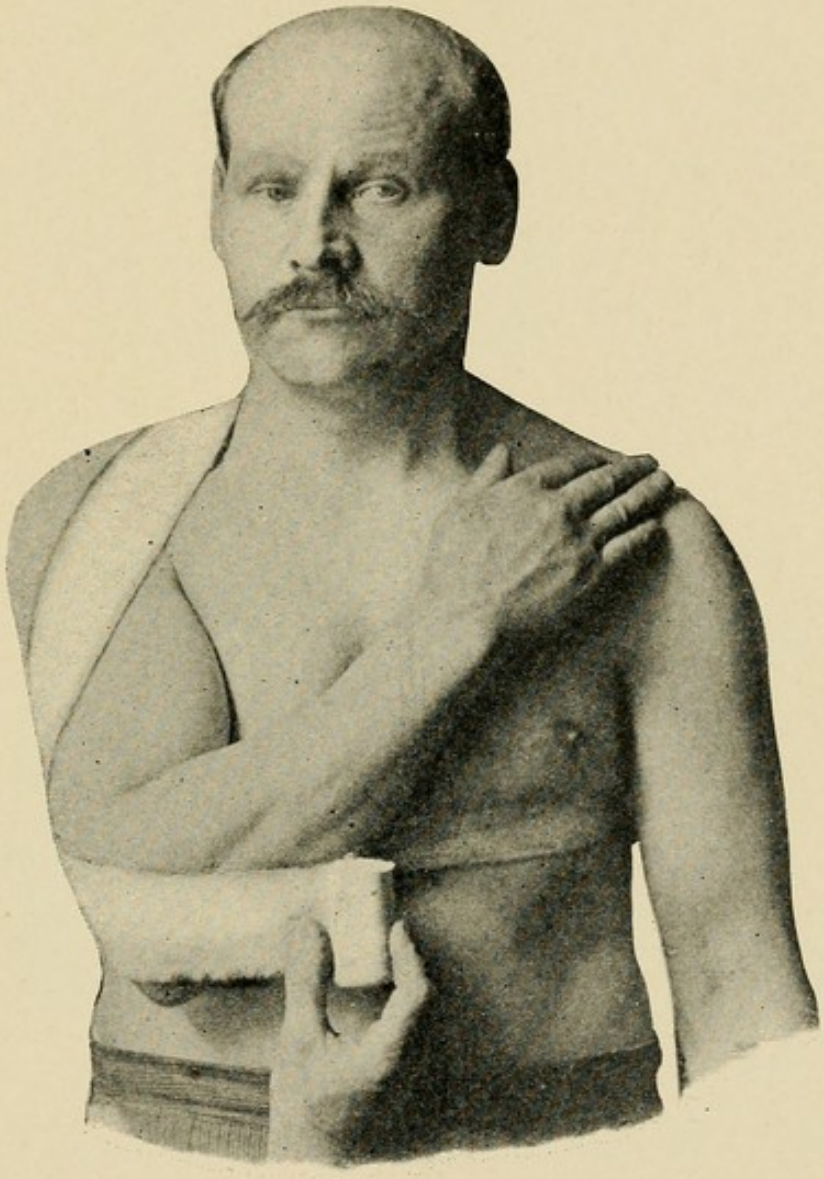
FIG. 36.



Showing the manner of commencing Velpeau's bandage.

dyle of the humerus being the point over which the middle of the roller passes (Fig.

FIG. 37.

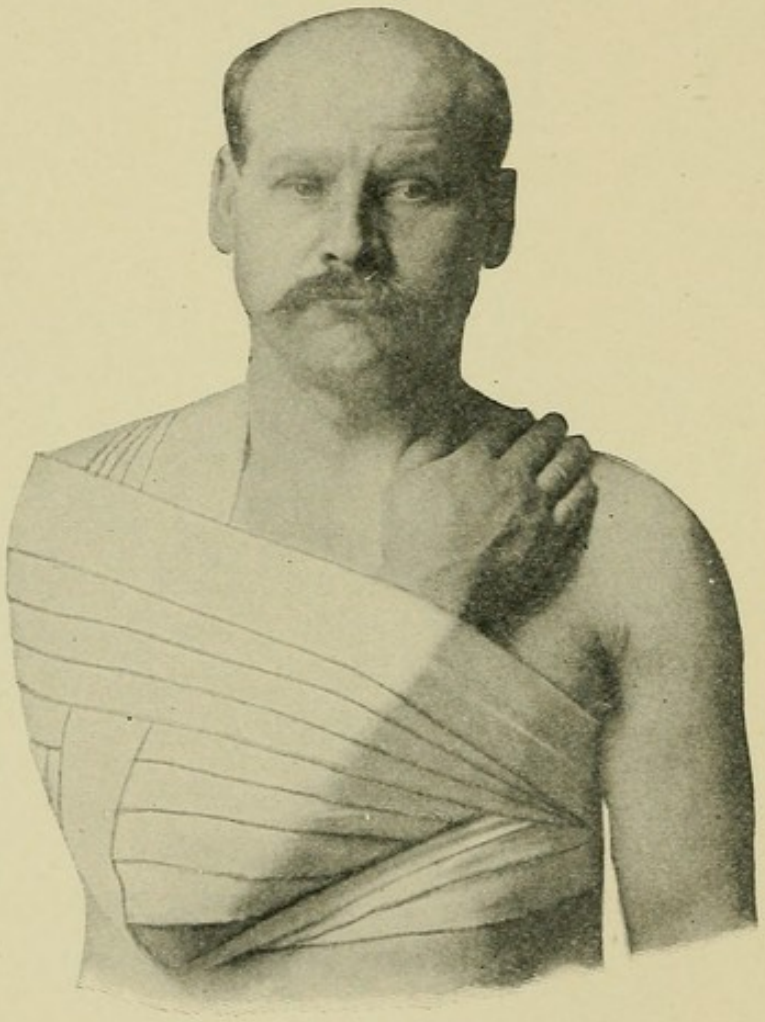


Showing the course of the first spiral turn of Velpeau's bandage.

37), on its way back to the starting-point. A shoulder turn is now made, which overlaps the fixing turn three-quarters towards

the median line of the body. Then another circular (ascending spiral) turn overlapping the preceding turn one-half. So, shoulder turns

FIG. 38.



Velpeau's bandage completed.

and spiral turns alternate until the former support the point of the elbow. After this spiral turns alone are continued, until the entire extremity up to the wrist is thoroughly

supported. No sling is used in this dressing. Pins or adhesive plaster must be freely used over the shoulder and about the elbow (Fig. 38).

Uses.—Fracture of the clavicle, and after dislocation of the humerus. The point of the elbow should be carefully protected from pressure by a perforated lint pad.

Figure-of-Eight Bandage of the Neck and Axilla.

2 inches by 4 yards.

Fix the initial extremity by circular turns around the neck. Descend from the neck to the axilla, carrying the roller from before backwards, if the right axilla is to be included, and from behind forwards, if the left. Pass under the axilla, ascend to the neck, and encircle it. So alternate between neck, and axillary turns, until three have been made, either repeating one another, or, as

shown in Fig. 39, overlapping three-quarters. It may be terminated and secured at any point the roller runs out.

FIG. 39.

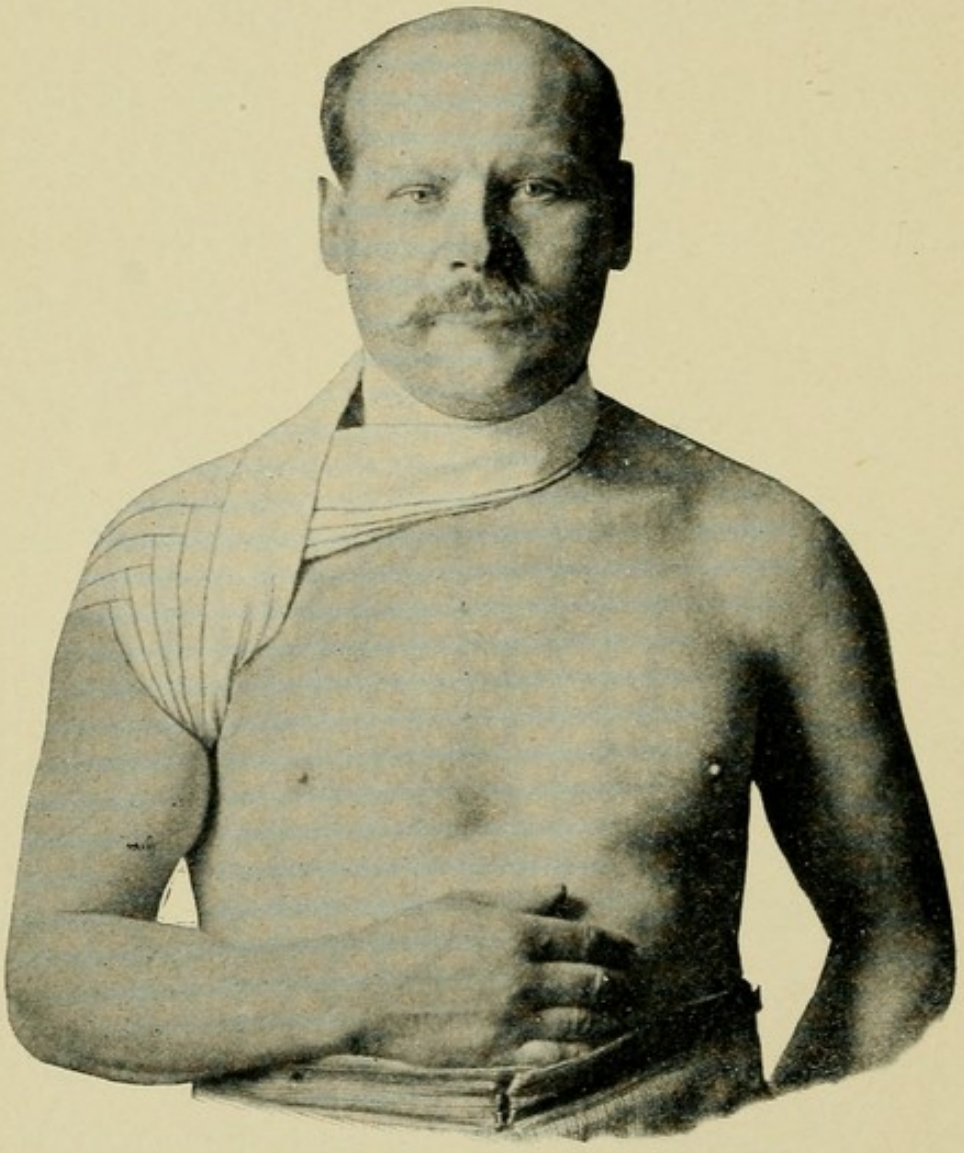


Figure-of-eight bandage of the neck and axilla.

Uses.—To retain dressings after injuries and operation about the shoulder and axilla.

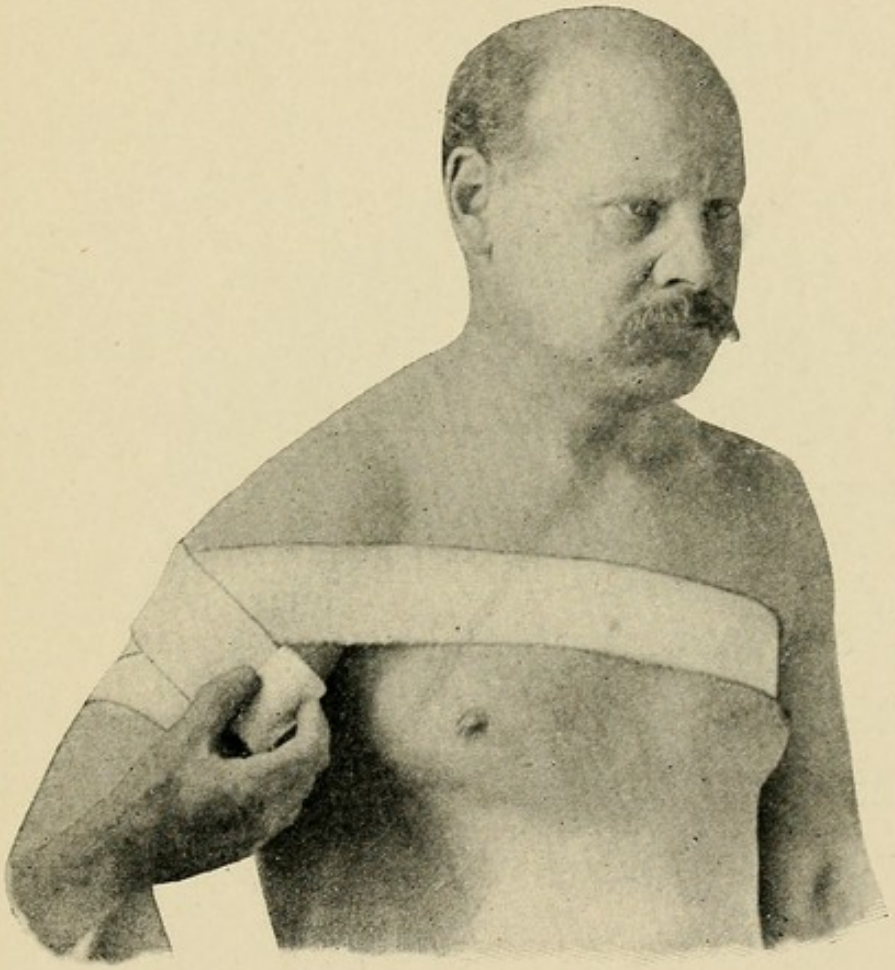
Spica Bandages of the Shoulder.

ASCENDING SPICA.

2½ inches by 7 yards.

Fix the initial extremity slightly above the middle of the arm on the injured side.

FIG. 40.



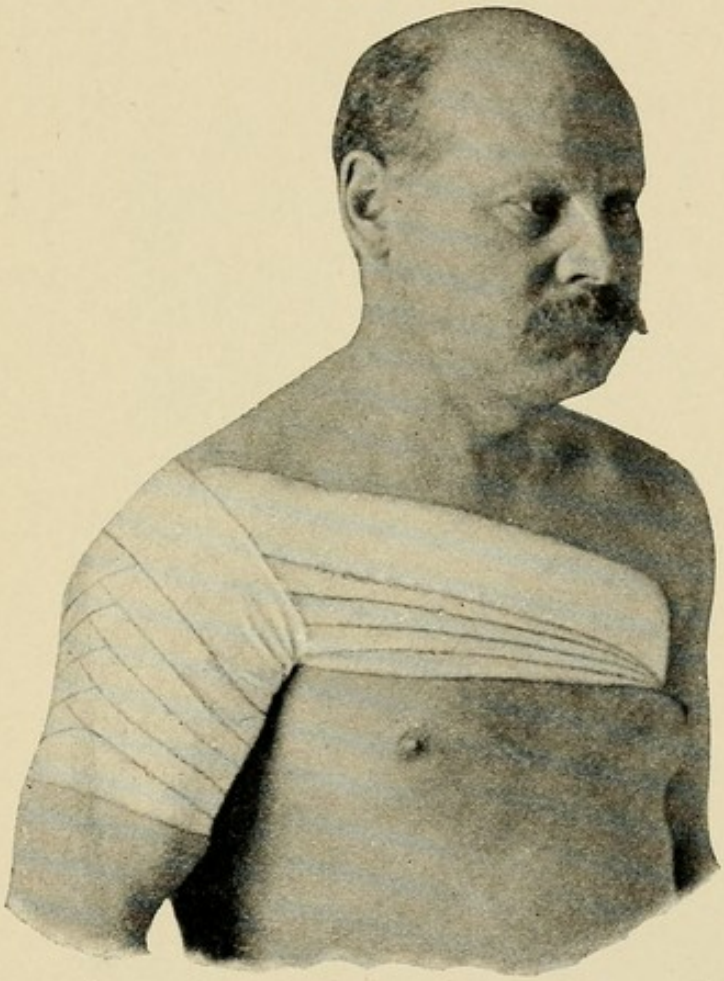
Showing the first turn of the ascending spica of the shoulder.

Carry the roller across the front of the chest (if the right is the injured side, across

the back if the left) to the opposite axilla; passing under this, return by the back (or by the chest if the left side is being bandaged) to the injured side. In the ascending spica the lower border of the roller determines the position of the spica. This turn, therefore, should cross the previous turn, so that the lower borders of both intersect at the outer side of the arm (Fig. 40). Encircle the arm and overlap ascending two-thirds. Pass to the opposite axilla, gradually converging with the preceding turn so that at this point it will repeat it. So alternate between body and arm turns until the shoulder is covered, when the bandage may be secured by a pin at any convenient point (Fig. 41).

Uses.—To retain dressings and splints to the shoulder.

FIG. 41.



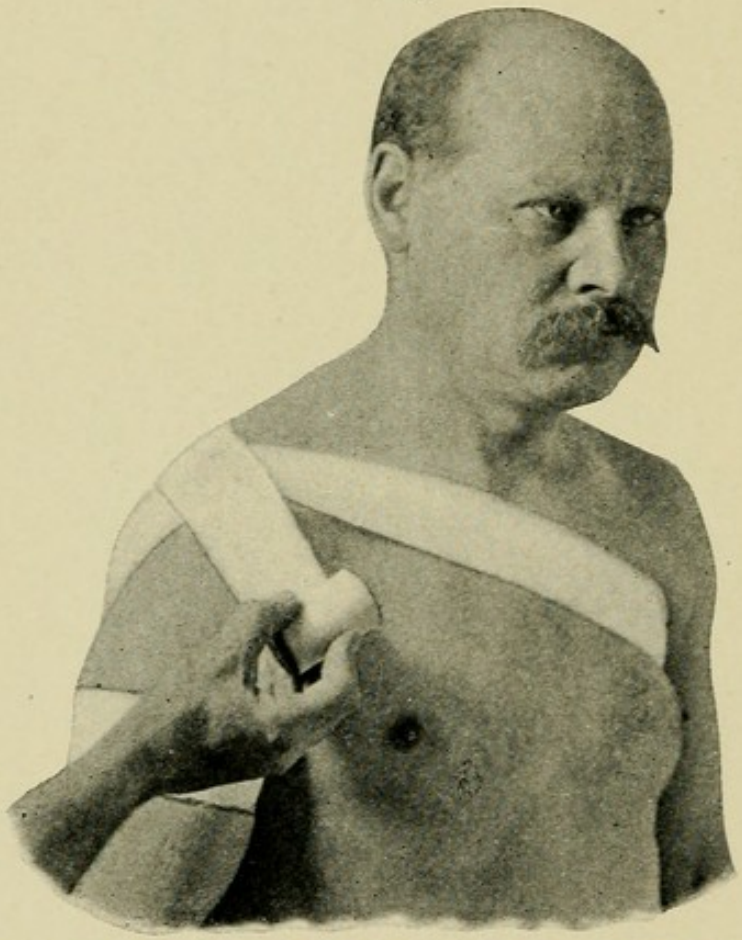
Ascending spica of the shoulder.

DESCENDING SPICA.

2½ inches by 7 yards.

Fix the initial extremity to the upper part of the arm. Carry the roller to the base of

FIG. 42.

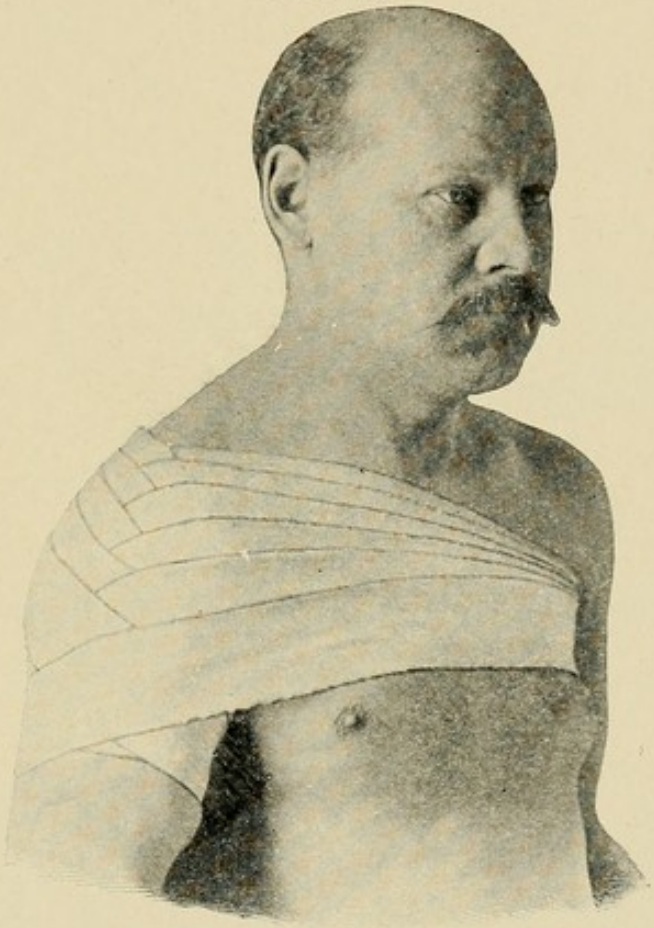


Showing the first turn of the descending spica of the shoulder.

the neck, and pass across the front of the chest (or the back, if the left side is being bandaged) to the opposite axilla. Return

across the back (or front of the chest, if the left side) to the base of the neck on the injured side. In the descending spica, the

FIG. 43.



Descending spica of the shoulder.

upper border of the bandage determines the position of the spica. The upper borders of this turn and the preceding one should, therefore, coincide at the junction of the base of the neck and summit of the shoulder

(Fig. 42). Pass under the axilla on the injured side, and so continue overlapping two-thirds descending at the spica and converging under the axilla on the sound side, until the shoulder is covered (Fig. 43). Pin the terminal extremity at the spica, or at any convenient point.

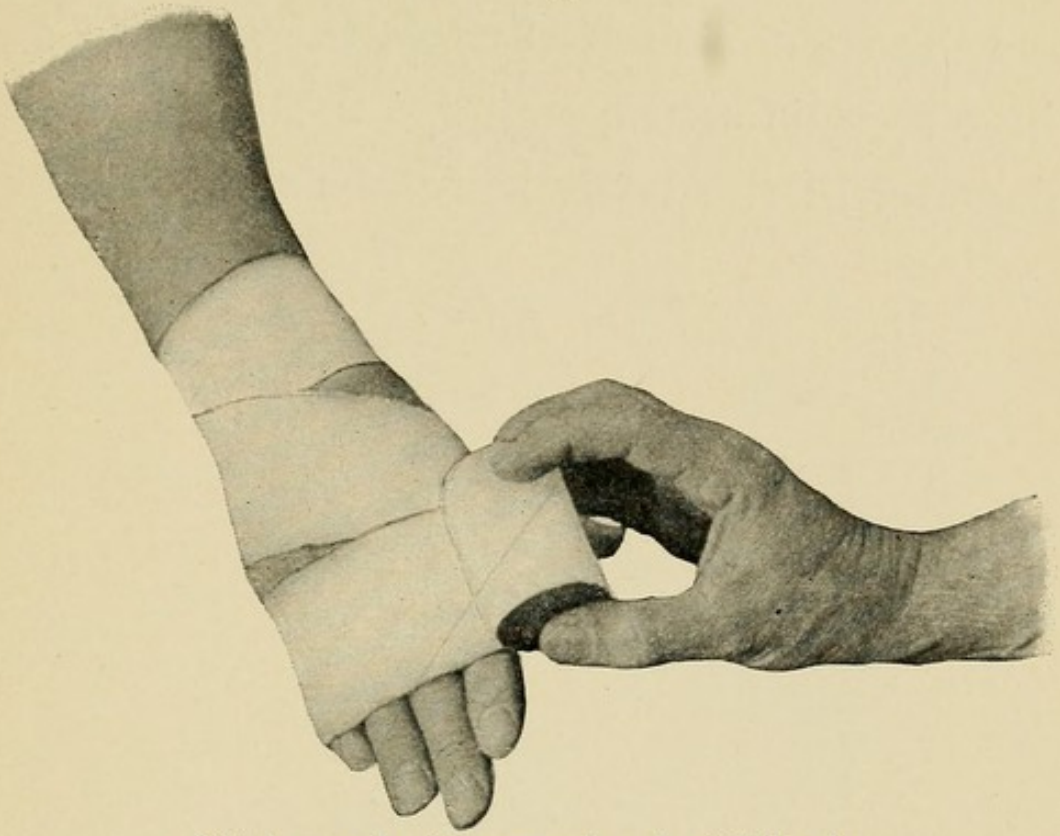
Uses.—To retain dressings higher up on the shoulder than can be neatly done by the ascending spica.

Spiral Reversed Bandage of the Upper Extremity.

2½ inches by 7 yards.

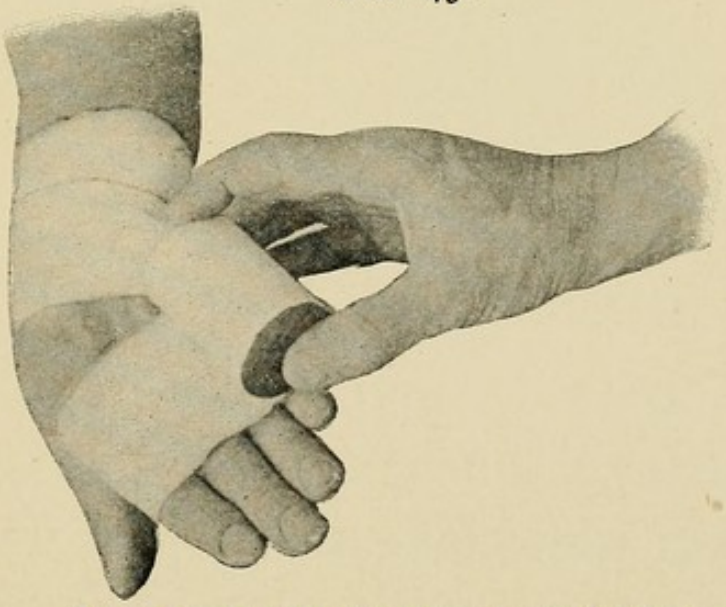
Fix the initial extremity at the wrist, carrying the roller from left to right in bandaging either side. Pass across the back of the hand (from the ulnar to the radial side, if the right hand, and from the radial to the ulnar, if the left) to the tips of the fingers (Figs. 44 and 45). Here make a circular and a spiral reversed turn. Two figure-of-eight turns above and

FIG. 44.



Initial turns of spiral reversed on the right hand.

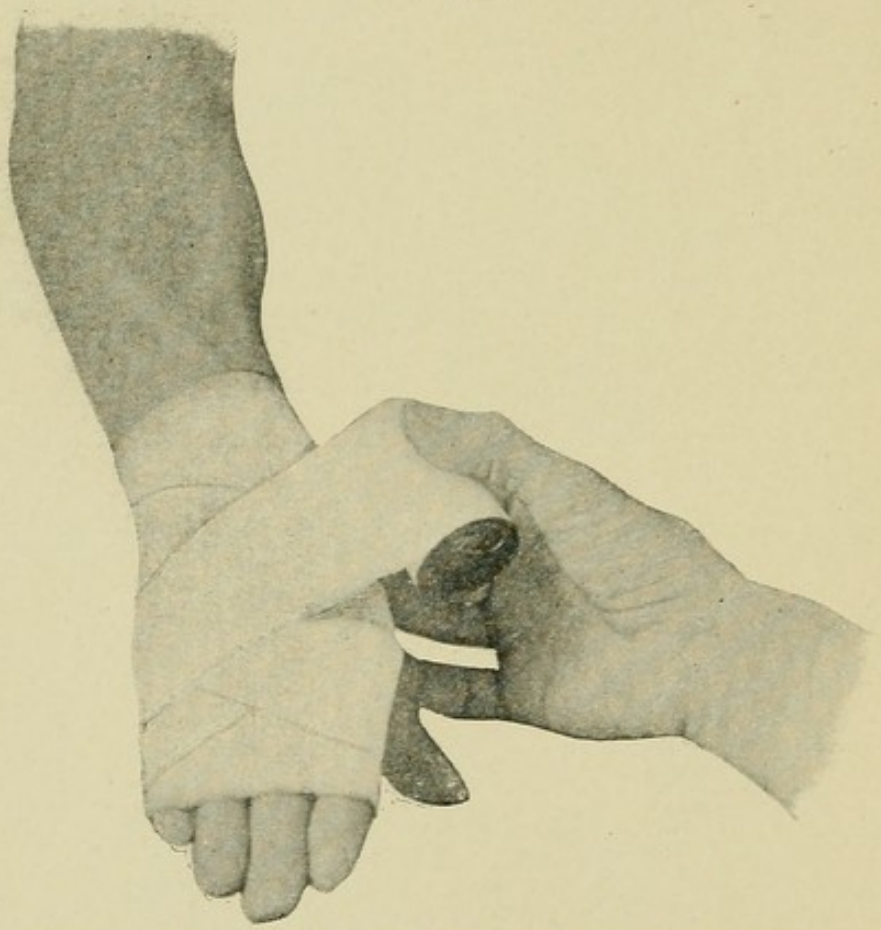
FIG. 45.



Initial turns of spiral reversed on the left hand.

below the thumb are then made (Fig. 46), and the roller is carried up to the wrist. Continue up the forearm with spiral turns until the diameter of the latter increases sufficiently to

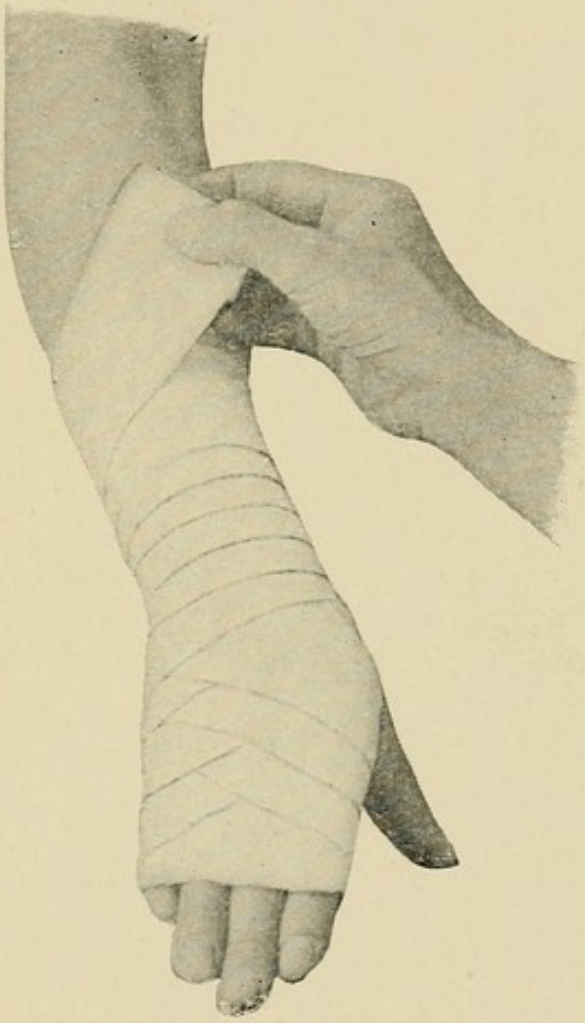
FIG. 46.



Showing figure-of-eight turns above and below the thumb.

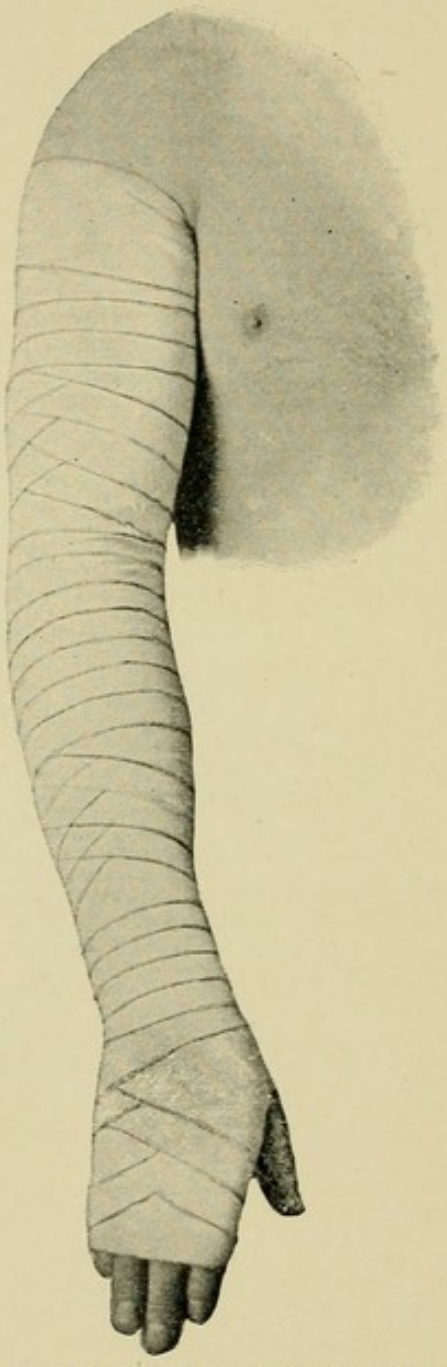
render reverses necessary (Fig. 47). Make these until a point near the elbow is reached, when spiral turns take their place until the increasing diameter of the arm requires

FIG. 47.



Showing the point at which reversing begins.

FIG. 48.



Spiral reversed bandage of the upper extremity completed.

reversing upon. A few more spiral turns complete the bandage (Fig. 48). The elbow may be covered by figure-of-eight turns, particularly if the forearm is to be retained in a flexed position, as shown in Fig. 49, and presently to be described.

Uses.—To retain dressings and splints to the part, etc.

Figure-of-eight Bandage of the Elbow.

2½ inches by 2 yards.

Fix the initial extremity by circular turns over the point of the elbow. After reaching the front of the joint the third time carry the roller upwards, so that a turn shall be made which overlaps the fixing turns two-thirds ascending. On returning to the front of the joint carry the roller downwards, so that a turn shall be made which overlaps the fixing turns two-thirds descending. Thus alternate above and below the joint with turns which continue to diverge from the olecranon, but

overlap (approximately) in front of the elbow, until four or five complete figures-of-eight have been made, when the terminal extremity is pinned at the front (Fig. 49).

FIG. 49.

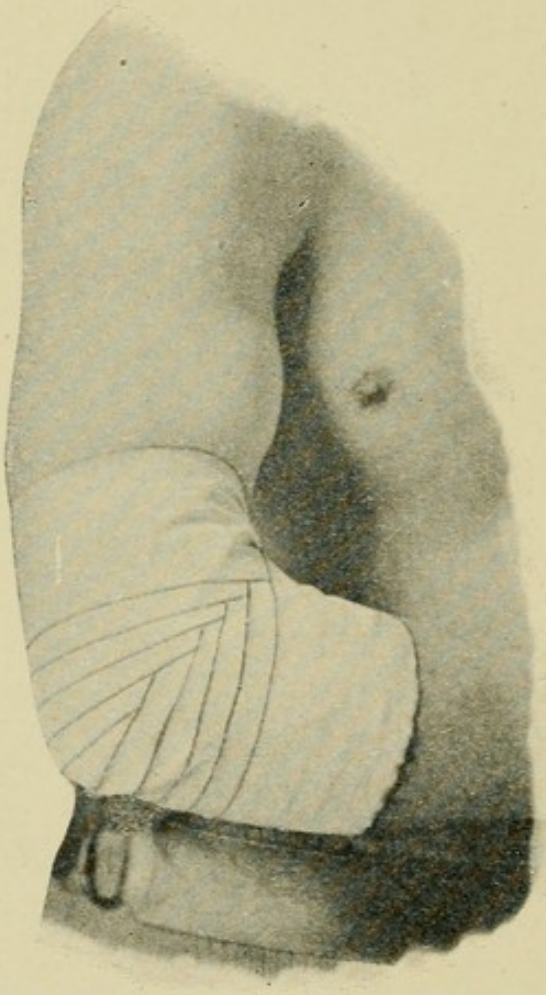


Figure-of-eight bandage of the elbow.

Uses.—To retain dressings and as part of the spiral reversed bandage of the upper extremity.

Spica Bandage of the Thumb.

ASCENDING SPICA.

1 inch by 3 yards.

Fix the initial extremity at the wrist, carry the roller to the tip of the thumb, and make a

FIG. 50.

Ascending spica of the thumb.

circular turn. Make a series of figure-of-eight turns of the thumb and wrist, overlapping (ascending) two-thirds; the intersections, or spicas, being made over the dorsum

of the thumb (Fig. 50). Pin the terminal end at the wrist.

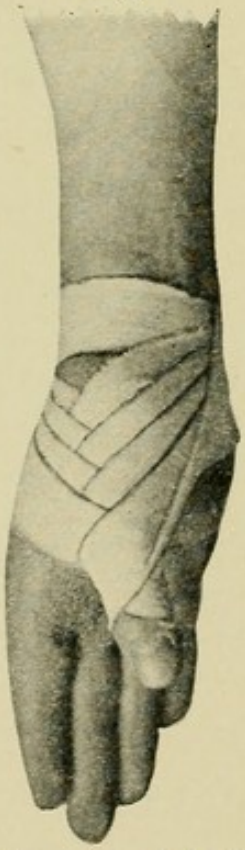
Uses.—To retain dressings and splints to the part.

DESCENDING SPICA.

1 inch by 3 yards.

Fix the initial extremity at the wrist, carry the roller to the metacarpo-phalangeal joint

FIG. 51.



Descending spica of the thumb.

of the thumb, and make a circular turn. Return to the wrist, and, with alternating thumb,

and wrist turns which overlap two-thirds, descend towards the tip of the thumb. Here also each spica should be made over the dorsum of the thumb. The terminal end is secured at the wrist (Fig. 51).

Uses.—To retain dressings, and after luxation of the base of the metacarpal bone of the thumb.

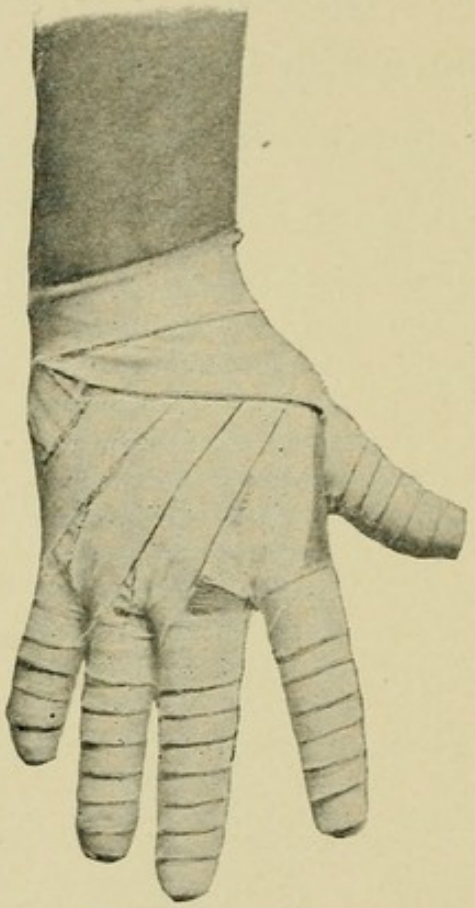
Gauntlet Bandage.

1 inch by 5 yards.

Fix the initial extremity at the wrist, and carry the roller abruptly across the back of the hand to the tip of the index finger (if the right hand, to the tip of the little finger if the left), and make a circular turn, after which the finger is ascended by a series of spiral turns. Some reverses may be necessary if the fingers are œdematous, or if a very bulky dressing is to be retained, but ordinarily none. When the finger is covered, pass across the back of the hand to the wrist, and there make

another circular turn. In like manner each finger is bandaged, and finally the thumb,

FIG. 52.



Gauntlet bandage.

when the terminal end is pinned at the wrist (Fig. 52).

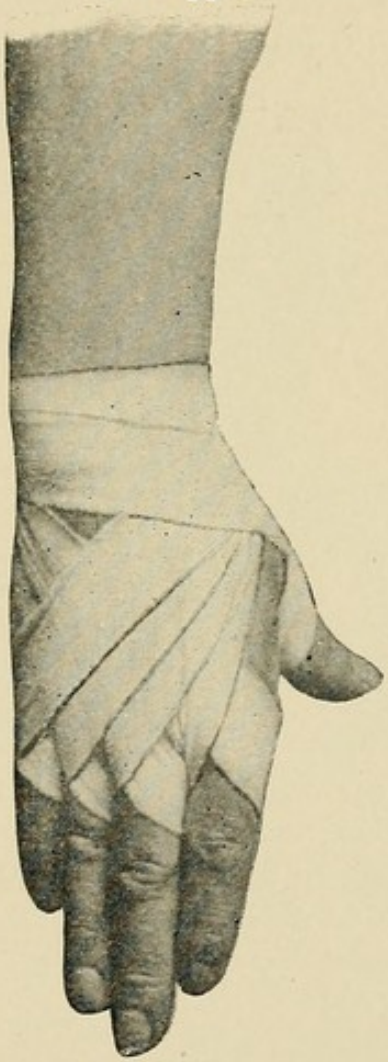
Uses.—To retain dressings after burns and scalds. To apply splints. One or two fingers only are generally covered, the dressing as a whole being seldom used.

Demi-Gauntlet Bandage.

1 inch by 3 yards.

Fix the initial extremity at the wrist. Carry the roller across the back of the hand to the

FIG. 53.



Demi-gauntlet bandage.

base of the index finger (if the right hand, to the base of the little finger if the left),

encircle this, and return in the opposite direction across the back of the hand to the wrist. So continue until all the fingers have had this loop thrown over them, including finally the thumb, when the terminal extremity is pinned at the wrist (Fig. 53). Here, as in the gauntlet, it is better to make a complete circular turn of the wrist after each finger is covered.

Uses.—To retain light dressings to the dorsum of the hand.

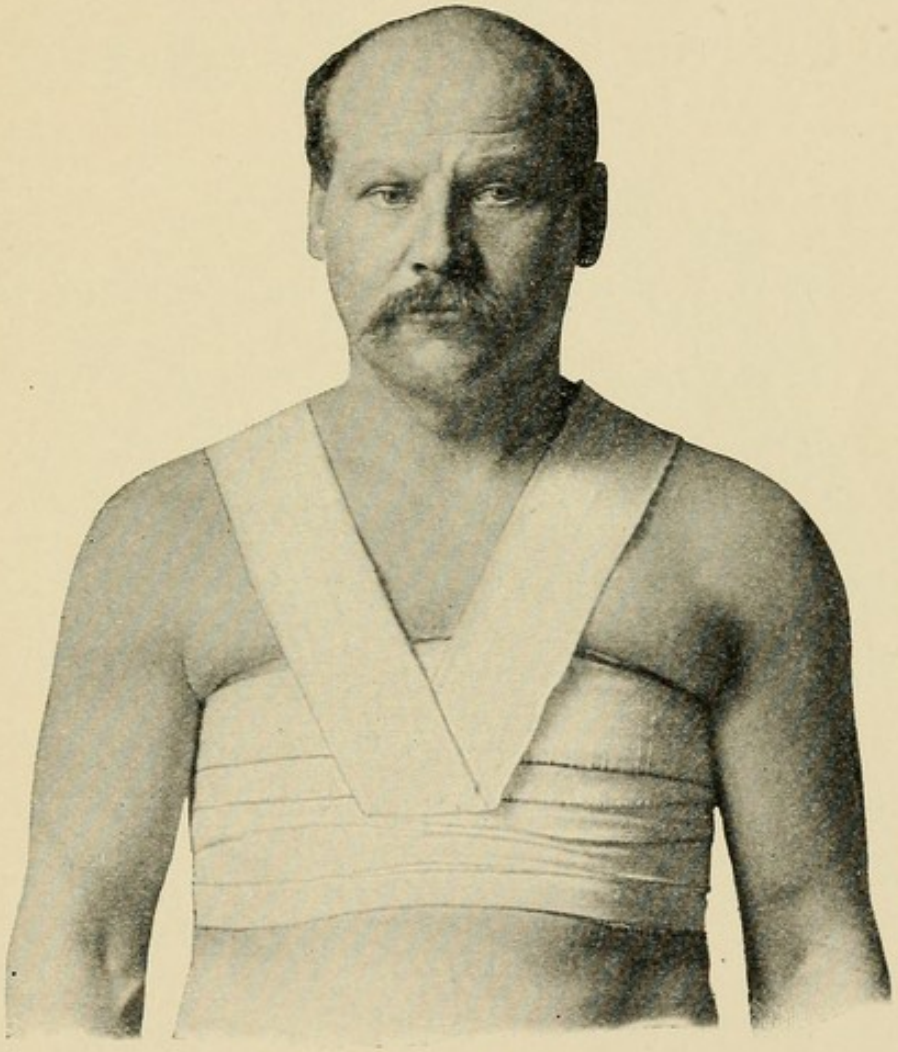
Bandages of the Trunk.

Spiral Bandage of the Chest.

3 inches by 7 yards.

Fix the initial extremity about the waist.

FIG. 54.



Spiral bandage of the chest.

Ascend the chest by spiral turns, overlap-

ping one-half, until a point just below the level of the axillæ is reached. At the spine, recur across the left shoulder to the sternum, and back across the right shoulder to the spine. Secure each recurrent with a pin (Fig. 54).

Uses.—To support the chest, as after fracture of the ribs, or to retain dressings to it.

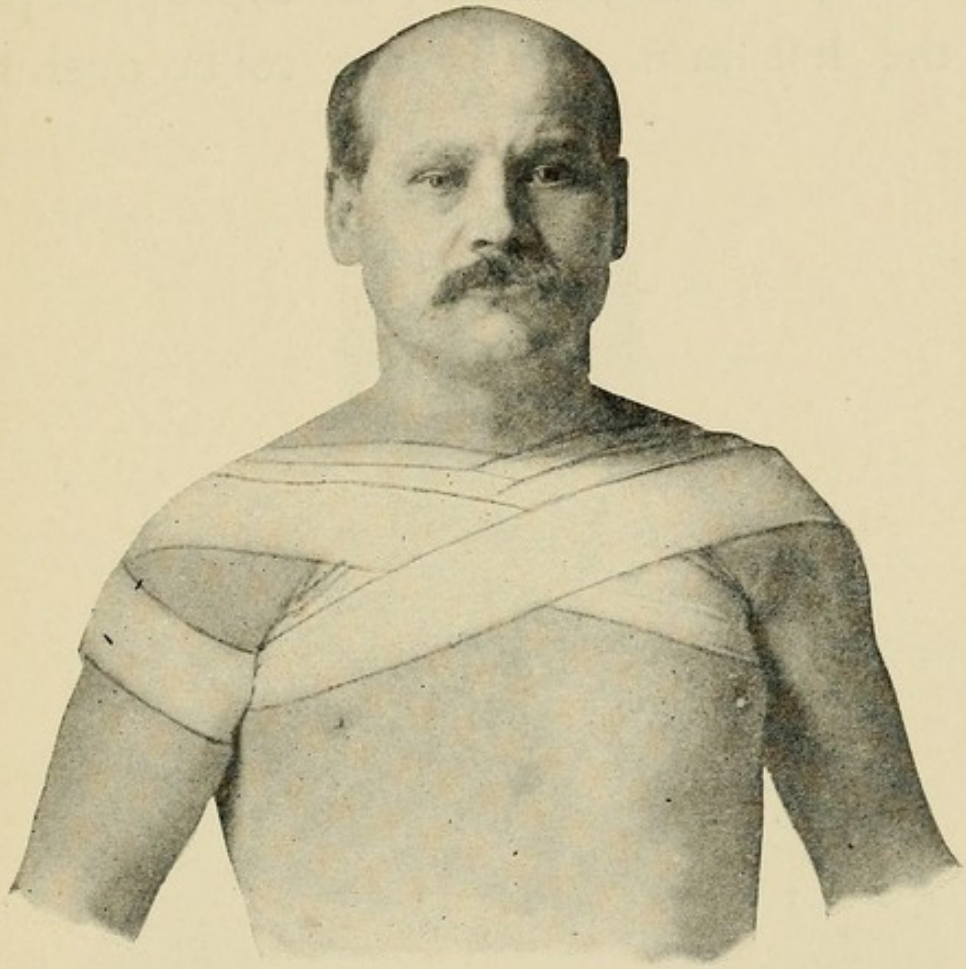
Anterior Figure-of-Eight Bandage of the Chest.

2½ inches by 7 yards.

Fix the initial extremity on the upper part of the right arm, and carry the roller across the shoulder and front of the chest to the left axilla. Pass under this, over the left shoulder, and across the front of the chest to the right axilla. Encircle the right shoulder from below upwards, and return to the left side as before. So proceed until three or four turns have been made. These may repeat one another throughout, or may overlap three-quar-

ters over the sternum. The terminal end is secured at any convenient point in front (Fig. 55).

FIG. 55.



Anterior figure-of-eight of the chest.

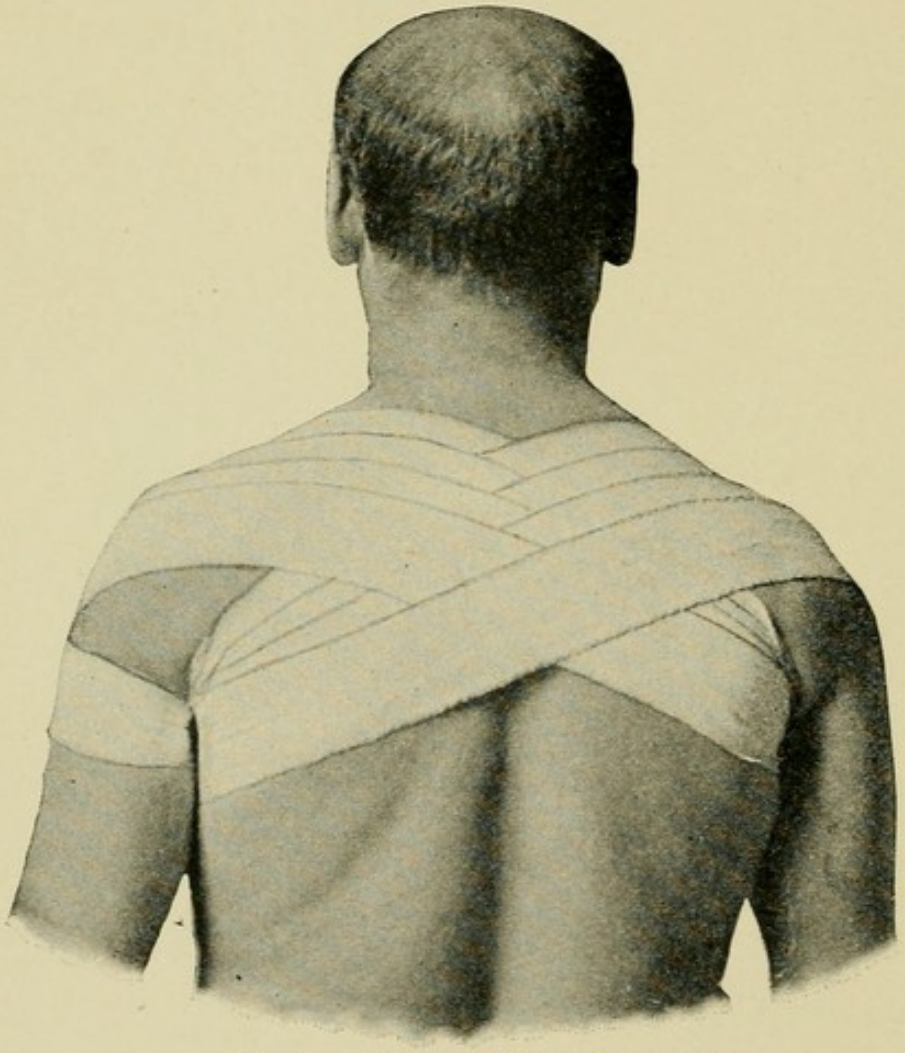
Uses.—To draw the shoulders together anteriorly, and to retain dressings.

Posterior Figure-of-Eight Bandage of the Chest.

2½ inches by 7 yards.

Fix the initial extremity on the upper part of the left arm. Carry the roller over the

FIG. 56.



Posterior figure-of-eight of the chest.

summit of the left shoulder, and across the back to the right axilla. Passing under this

and to the summit of the shoulder, again cross the back to the left axilla, where the left shoulder is encircled in a similar manner. After making four or five of these turns, pin the terminal end in front. Each turn may repeat throughout, or overlap over the spine three-quarters, as shown in Fig. 56.

Uses.—To draw the shoulders together posteriorly, and to retain dressings over the upper part of the back.

Spica Suspensory Bandages of the Breast.

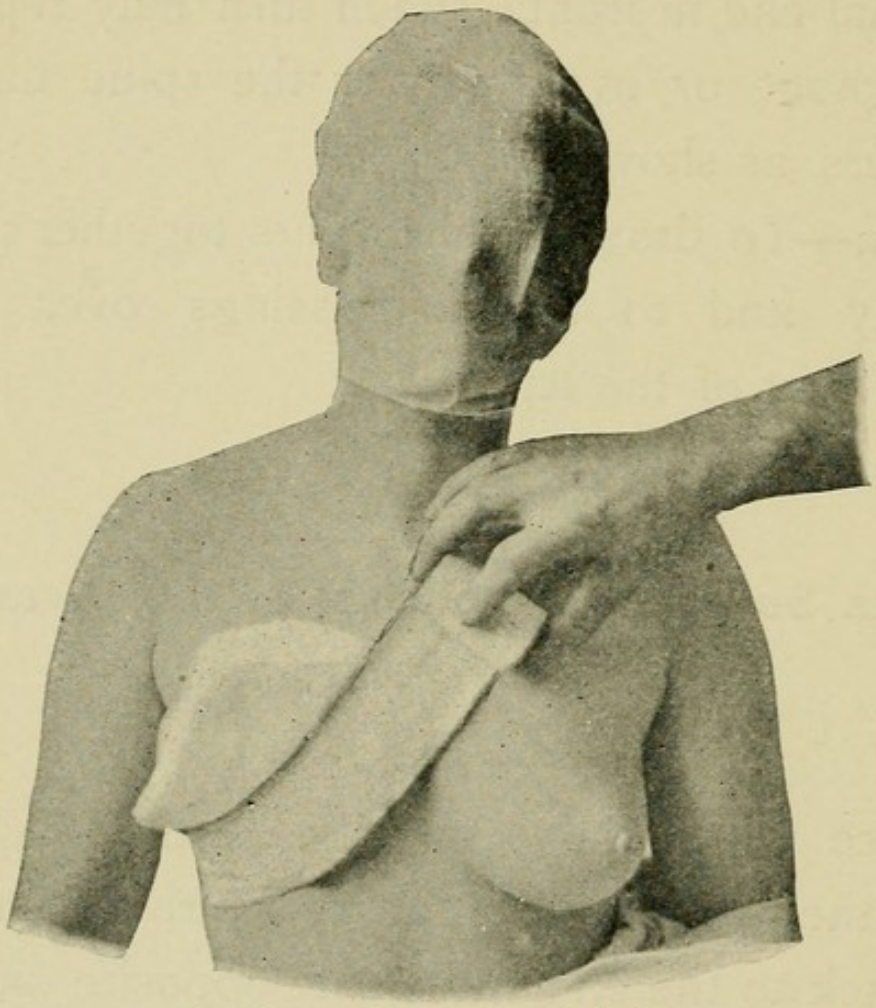
SINGLE SPICA.

2½ inches by 7 yards.

Place the initial extremity on the scapula upon the affected side. Carry the roller across the back to the summit of the opposite shoulder, and thence down under the lower portion of the affected breast, beneath the axilla, to the starting-point. Repeat this turn (Fig. 57) to fix the initial extremity. On reaching the scapula the second time, make the first circular

turn around the chest. This should pass under the sound breast and across the lower border of the affected breast. Having com-

FIG. 57.

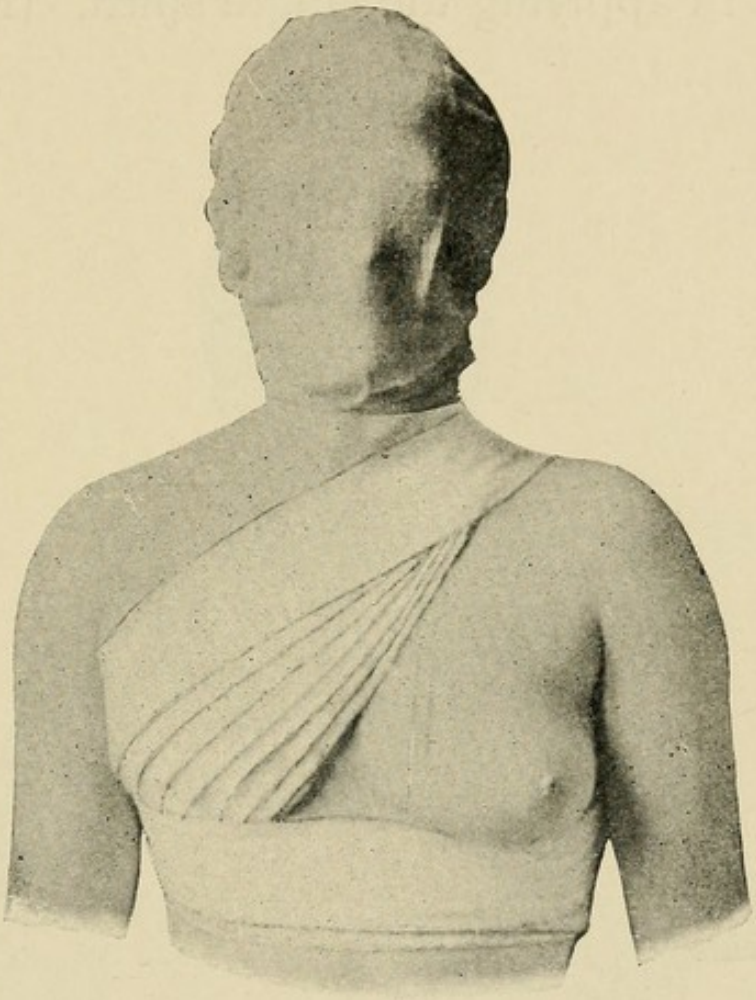


Initial turn of suspensory of the breast.

pleted this circular, another shoulder turn is made, which overlaps the previous one three-quarters, ascending. Then another circular, which overlaps the preceding circular one-

half over the affected breast, three-quarters under the sound breast. So shoulder turns and circulars alternate, until the breast is

FIG. 58.



Single spica or suspensory of the breast.

thoroughly supported, when the terminal end may be pinned at any point in front (Fig. 58).

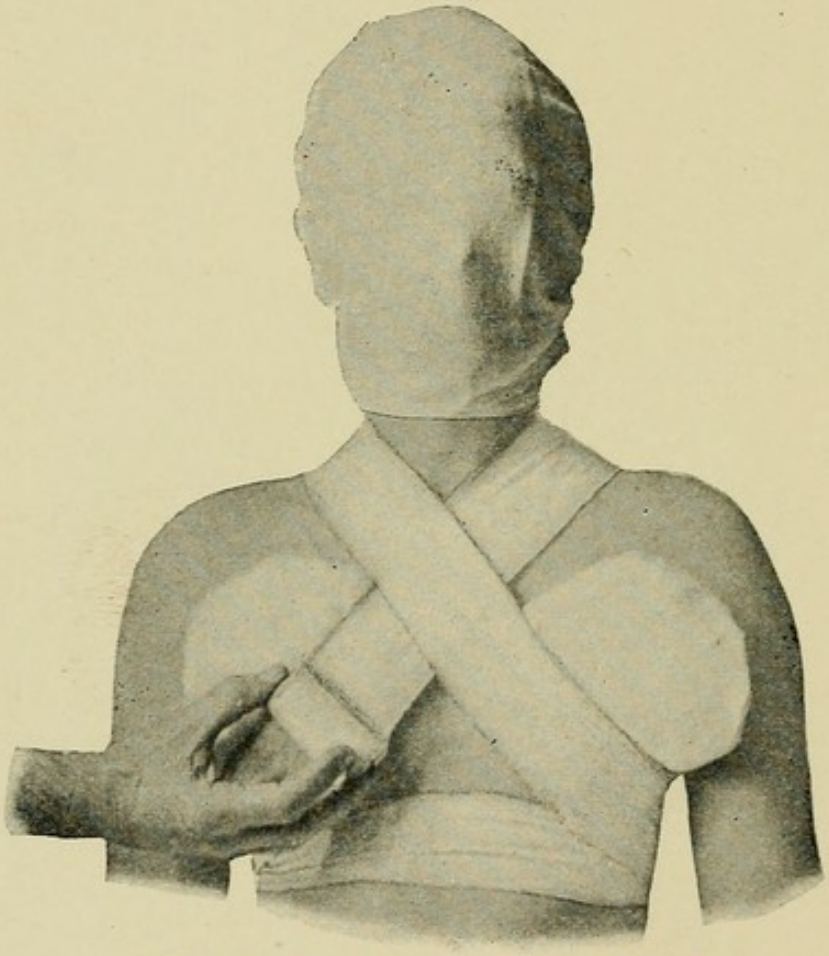
Uses.—To retain dressings to the part. To give support or compression.

Double Spica.

2½ inches by 10 yards.

The initial extremity is fixed in the same way as in applying the single spica. (Fig. 57).

FIG. 59.

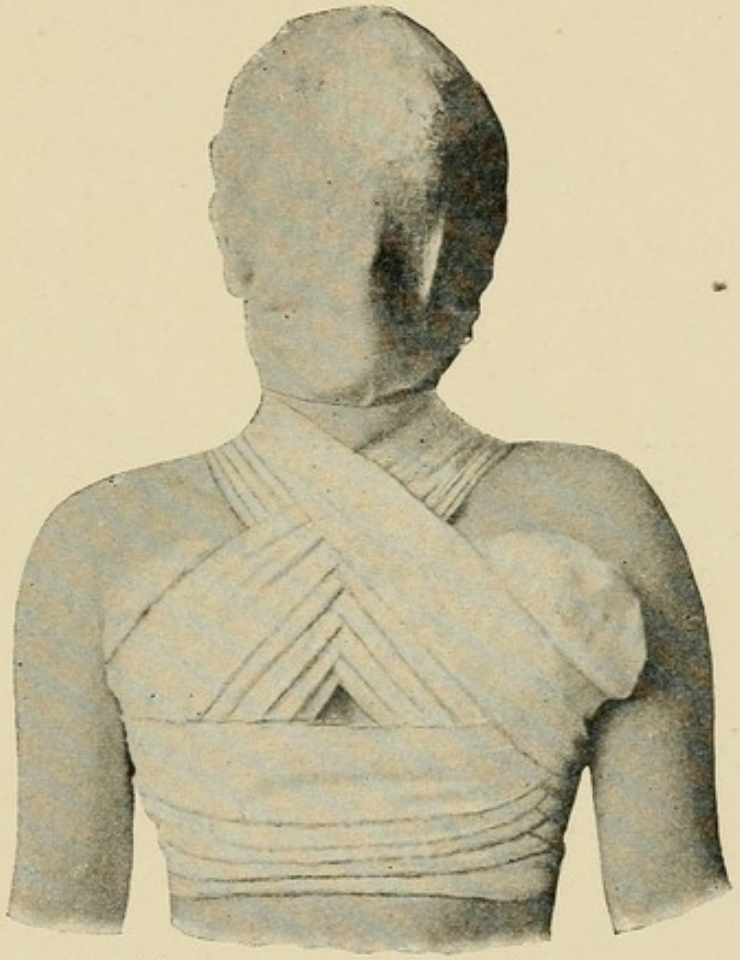


Initial turns of double spica of the breast.

On reaching the left scapula the second time, carry the roller straight across the back to the right scapula, under the axilla and right breast

to the opposite shoulder. Passing from here to the right scapula, the first circular turn begins. It should encircle the chest on a line that will include the lower border of both

FIG. 60.



Double spica or suspensory of the breast.

breasts (Fig. 59). When this turn is completed, the roller passes to the summit of the right shoulder, and descends to include the left breast. Again it is carried across the

back, under the right axilla, and ascends, including the right breast, to the left shoulder. Then a second circular turn is made. In this way left breast, right breast, and circular turns alternate, the two former overlapping two-thirds, the latter one-half, until both breasts are covered. Three series of spicas are thus formed,—one over the sternum and one under each breast (Fig. 60). The terminal extremity may be pinned at any point in front.

Uses.—To retain dressings, and to give support or pressure to both mammæ.

Bandages of the Lower Extremity.

Single Spica Bandage of the Groin.

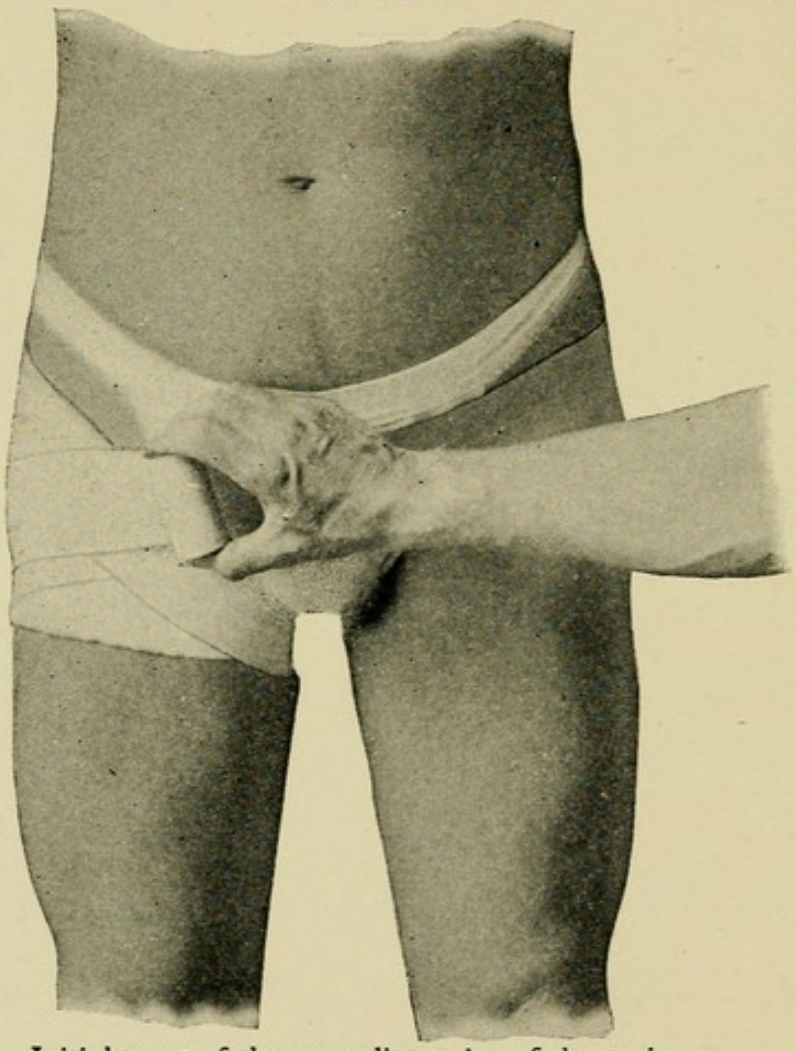
2½ inches by 7 yards.

ASCENDING SPICA.

Fix the initial extremity about the upper part of the thigh, and carry the roller across the pubis to the crest of the ilium on the opposite side (if the right groin, while if the left the roller is carried first to the crest of the ilium on the affected side). Thence around the body, return to the starting-point and encircle the thigh. As the lower border of the roller in each turn determines the position of the spica, it should intersect directly in front of the thigh and the roller be made to overlap two-thirds, ascending (Fig. 61). On crossing the pubis a second time the roller is made to converge towards

the former turn, so that when it reaches the crest of the ilium it will repeat it. Proceed again to the thigh, and so continue until

FIG. 61.

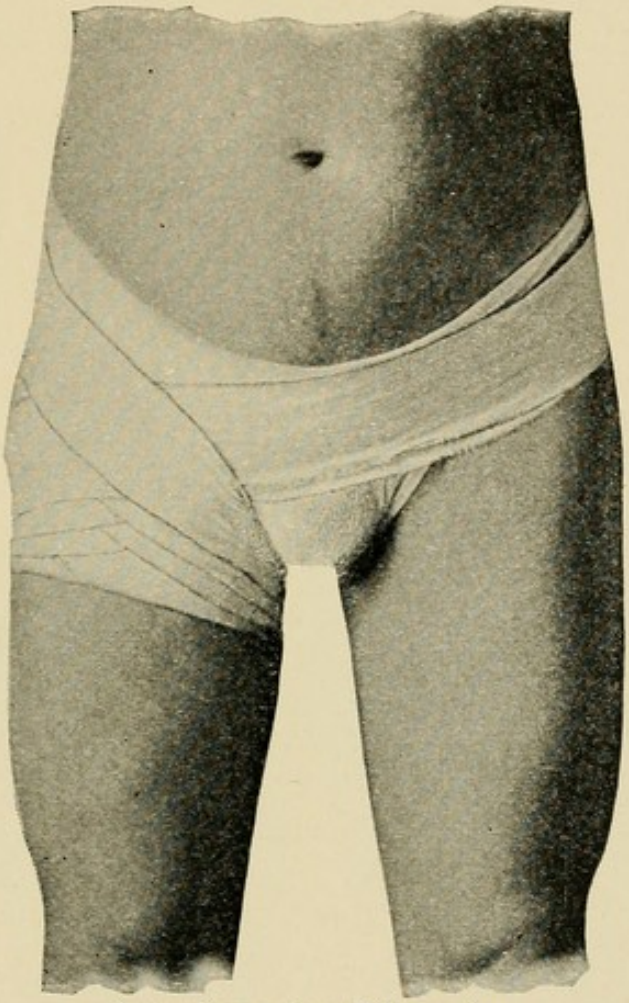


Initial turns of the ascending spica of the groin.

the bandage is exhausted. In securing the terminal end, thrust the pin in a sufficient depth to include any dressing which may have

been applied, as the latter is very liable to become displaced (Fig. 62).

FIG. 62.



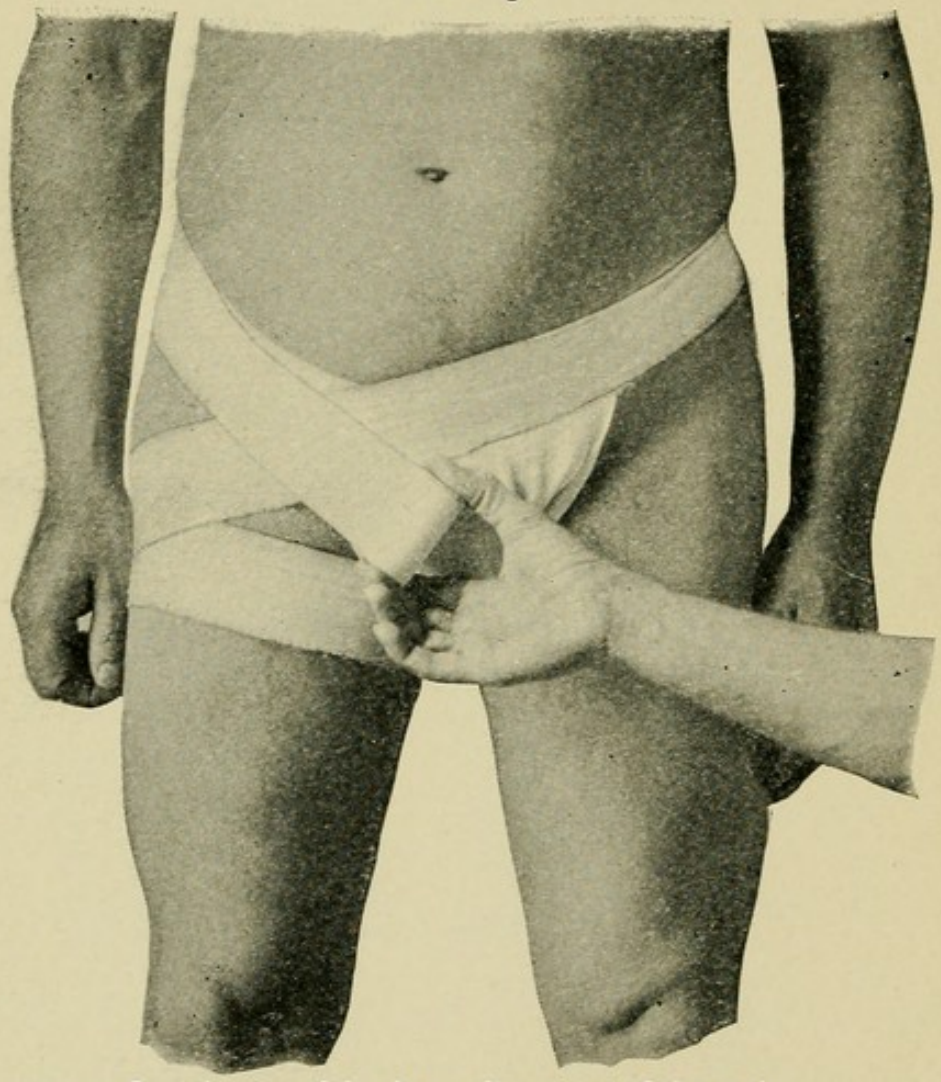
Ascending spica of the groin.

Uses.—To retain dressings to the groin, and to complete the application of splints to the thigh.

DESCENDING SPICA.

Fix the initial extremity at the uppermost portion of the thigh. Carry the roller across

FIG. 63.

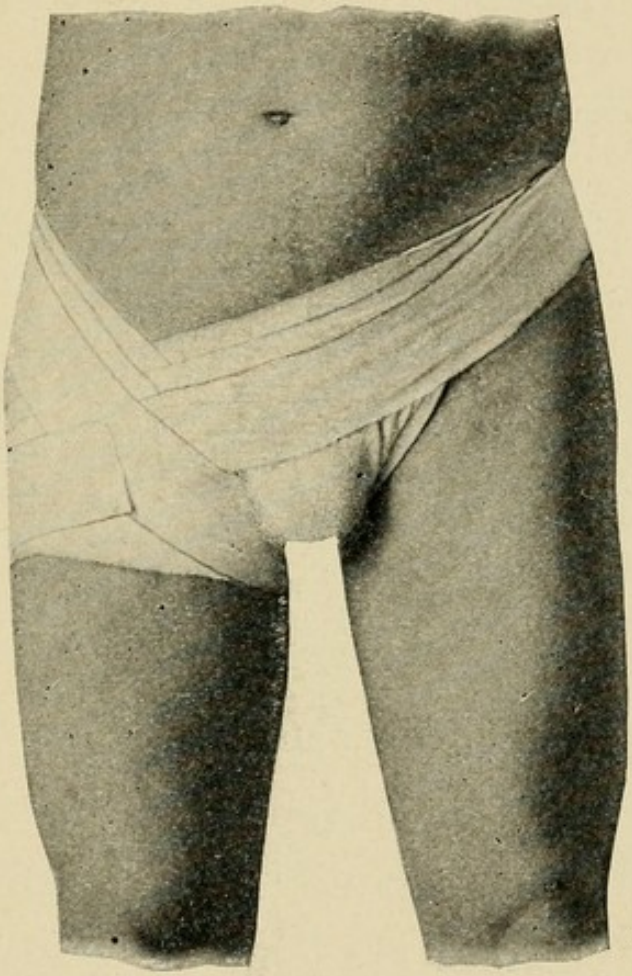


Initial turns of the descending spica of the groin.

the highest part of the abdomen which it is intended to cover, and proceed across the back to the groin In this bandage the upper

border of the roller forms the spica ; this turn, therefore, must cross the preceding one so that their upper borders coincide directly in front (Fig. 63). Encircle the thigh, overlap-

FIG. 64.



Descending spica of the groin completed.

ping, descending, two-thirds. Pass the roller across the abdomen and make it converge towards the former turn, so that when the

opposite side is reached it will repeat it, when it at once begins to diverge towards the groin. So continue until the roller runs out, when the terminal end is pinned deeply over the spica (Fig. 64).

Uses.—The same as the preceding bandage. It is often not decided which of these to apply until after the first turn is made, when it may seem desirable to extend the turns above or below the starting-point.

Double Spica Bandage of the Groin.

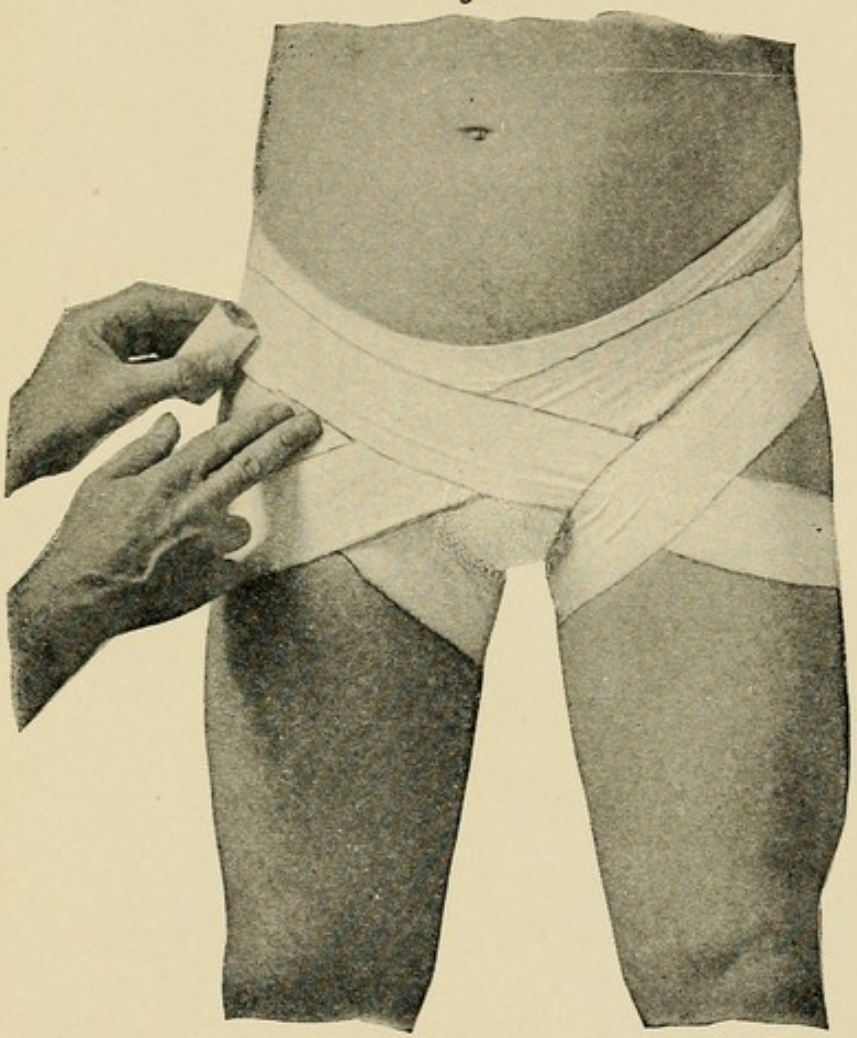
2½ inches by 10 yards.

ASCENDING SPICA.

Fix the initial extremity upon the upper portion of the right thigh, or retain it with the thumb of the left hand until the first turn is made (the latter economizes the bandage). After encircling the thigh, carry the roller across the pubis to the left iliac crest and directly across the back to the corresponding point on the right side. Passing over the

pubis again, encircle the left thigh, and return by the back to the starting-point in front of the right thigh (Fig. 65). Three

FIG. 65.

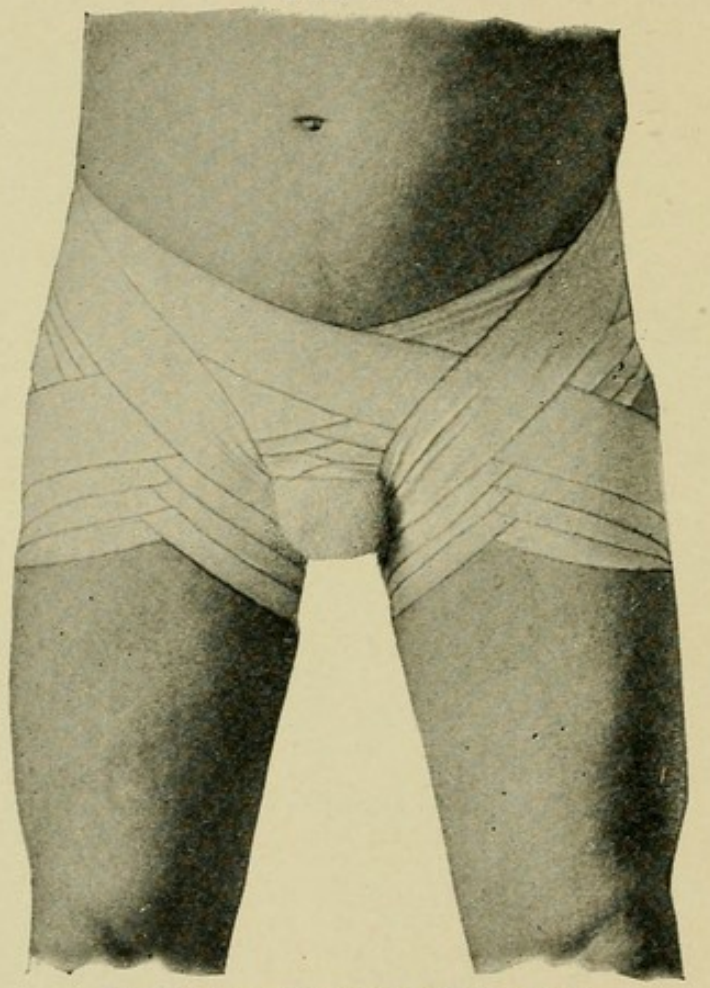


Initial turns of the double ascending spica of the groin.

spicas are begun in the first series of turns, and as each intersection of the lower border of the roller determines the location of these spicas, each must be made in its proper place

respectively in the median line of the abdomen and directly in front of each thigh. So continue overlapping two-thirds, ascending in

FIG. 66.



Double ascending spica of the groin.

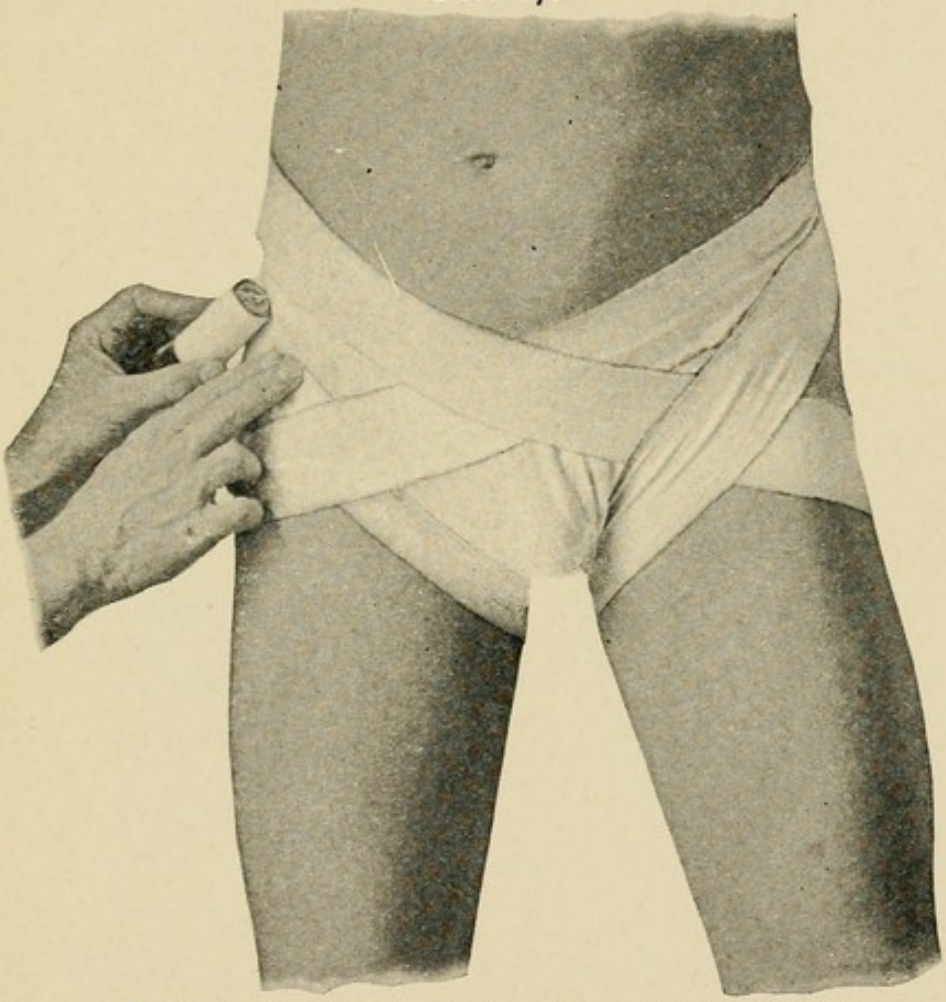
front and repeating behind, in the order right thigh, body, left thigh, body, right thigh, etc., until three or four complete turns have been made, when the terminal end may be pinned over a spica (Fig. 66).

Uses.—To retain double hernia. To make pressure or apply dressings to both groins.

DESCENDING SPICA.

Fix the initial extremity on the uppermost portion of the right thigh, or retain it with the

FIG. 67.

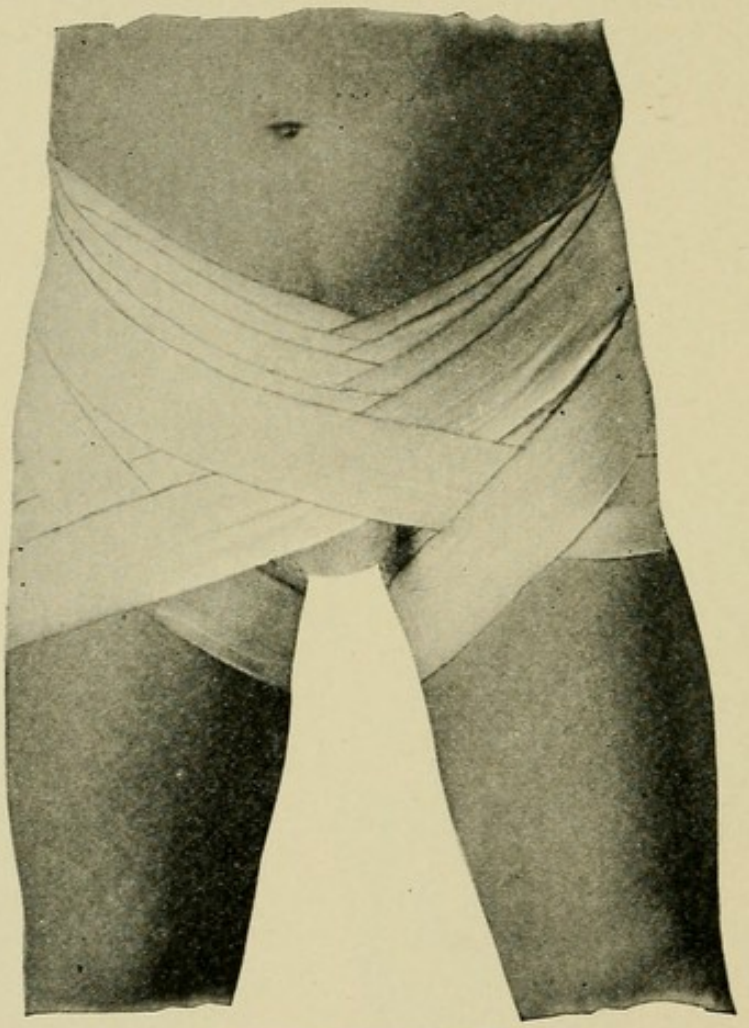


Initial turns of the double descending spica of the groin.

thumb of the left hand until the first turn is made. Having encircled the thigh, carry the

roller across the highest part of the abdomen, which is to be covered, to the opposite side. Cross the back horizontally, and descend over

FIG. 68.



Double descending spica of the groin.

the abdomen to the left thigh, and encircle it. Convey the roller again across the back, descending on the right side to the starting-point over the right thigh (Fig. 67). Here,

as in the preceding dressing, there are to be three spicas. The intersection of the upper border of the roller in the median line and in front of each thigh determines, therefore, the position of each spica. So proceed, overlapping two-thirds, descending in the order just described for the ascending spica, until three or four complete turns have been made, when the terminal extremity may be pinned over either spica (Fig. 68).

Uses.—The same as the preceding bandage. Whether to employ one or the other is often decided, as in the single spica, after the first turn is made.

Figure-of-eight Bandage of the Knee.

2½ inches by 2 yards.

Fix the initial extremity by circular turns over the patella. On reaching the popliteal space the third time carry the roller upwards, so that a turn shall be made which overlaps the fixing turns two-thirds, ascending. On returning to the back of the joint carry the

roller downwards, so that a turn shall be made which overlaps the fixing turns two-thirds, descending. Thus alternate above and below the joint with turns which continue to diverge from the patella, but overlap (approximately) at the popliteal space until three complete figures-of-eight have been made, when the terminal extremity is pinned at any point (Fig. 69).

FIG. 69.

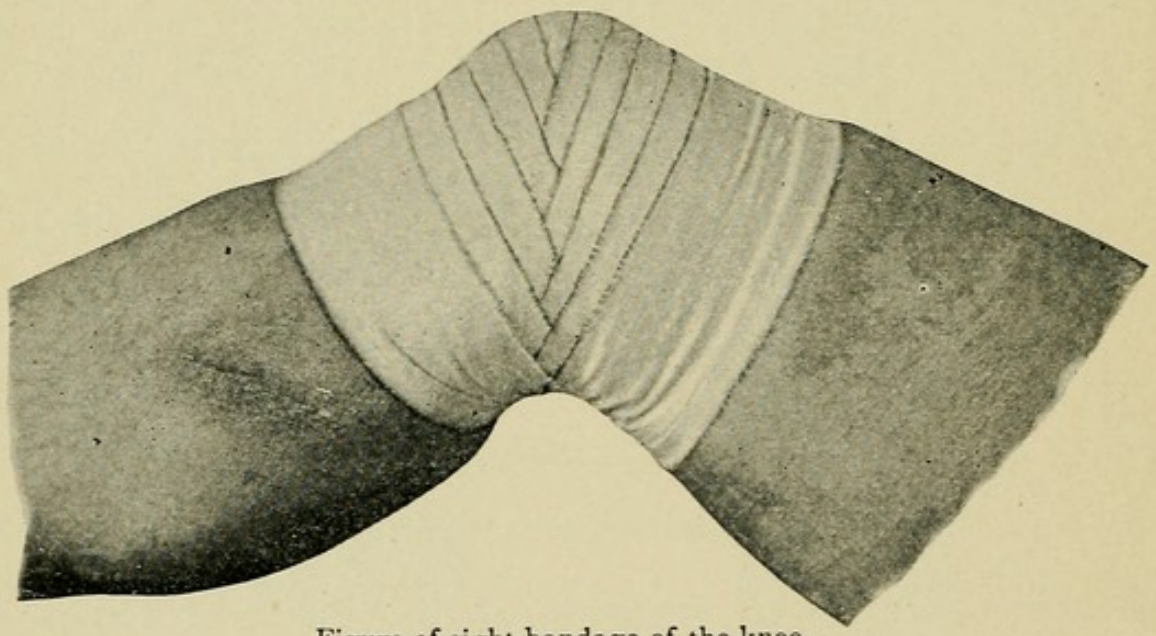


Figure-of-eight bandage of the knee.

When this bandage is used as a part of the spiral reversed of the lower extremity, a slight modification in the lay of the initial and terminal turns becomes necessary.

Uses.—To retain splints and dressings to the knee-joint, and as a part of the spiral reversed bandage of the lower extremity.

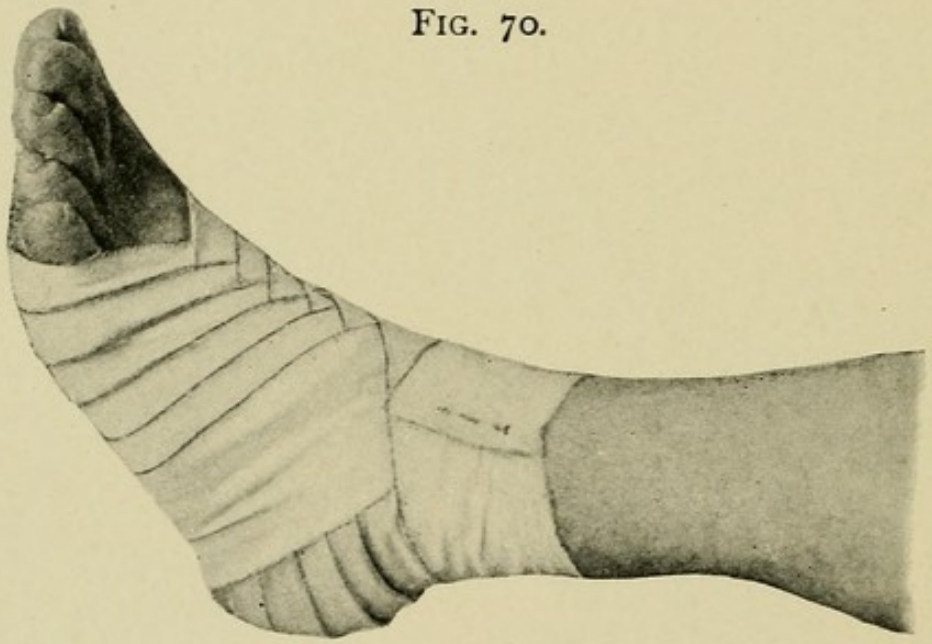
Spica Bandage of the Foot.

2½ inches by 3 yards, for the foot alone.

Fix the initial extremity at the ankle, and convey the roller abruptly across the dorsum of the foot to the base of the toes. Around the foot at this point make a circular turn, then a spiral, and proceed to the heel. The roller crosses the latter at a point which will bring its lower border on a level with the sole of the foot. Thence return across the dorsum and make the first spica. The lower border of the roller being the guide for the proper location of the spica turns (as this is an ascending spica), it must intersect the lower border of the preceding turn in the median line of the foot and overlap three-quarters, ascending. Unlike all other spicas, this ascending overlap does not converge at

any point, but continues a three-quarter overlap throughout the entire course of each turn, behind the heel, as well as around the foot. Another foot turn being completed, the roller is carried to the heel. So foot, and heel turns alternate until the former is completely covered, and the latter, except at its point (Fig.

FIG. 70.



Spica bandage of the foot.

70). The terminal end may be pinned at any convenient point, or the bandage continued up the leg.

Uses.—To retain dressings to any part of the foot. To make pressure or give support.

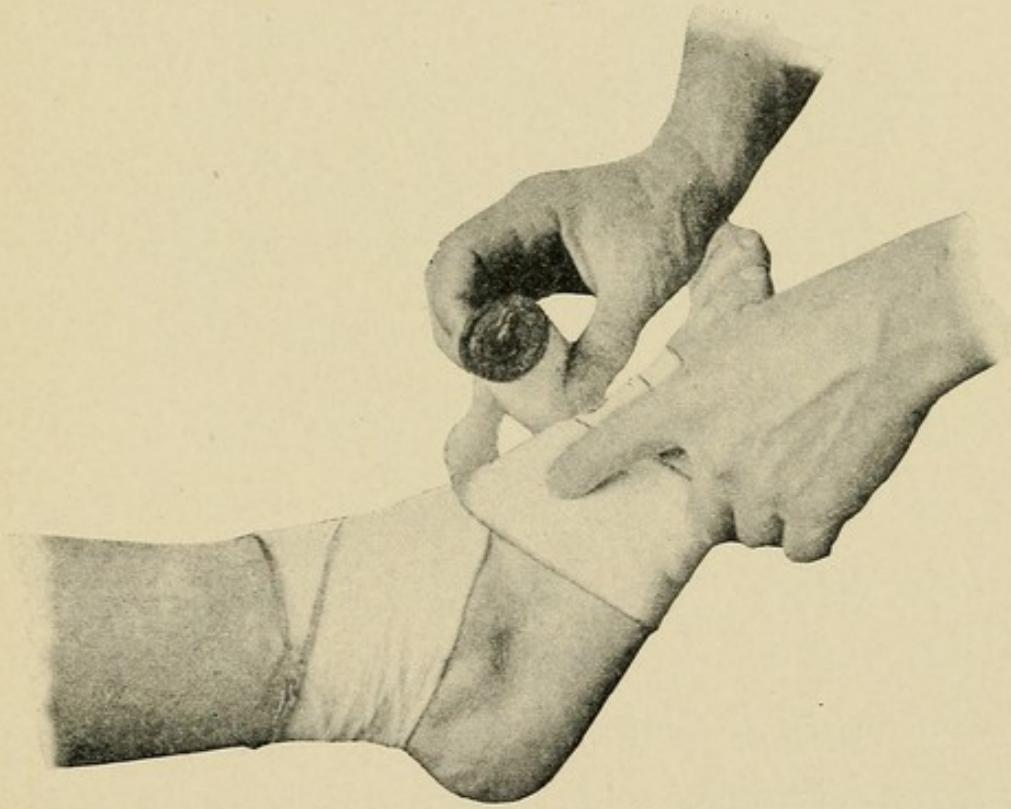
Also to commence the spiral reversed bandage of the lower extremity.

Incomplete Bandage of the Foot.

2½ inches by 2 yards, for the foot alone.

Fix the initial extremity at the ankle, and carry the roller across the dorsum of the foot,

FIG. 71.

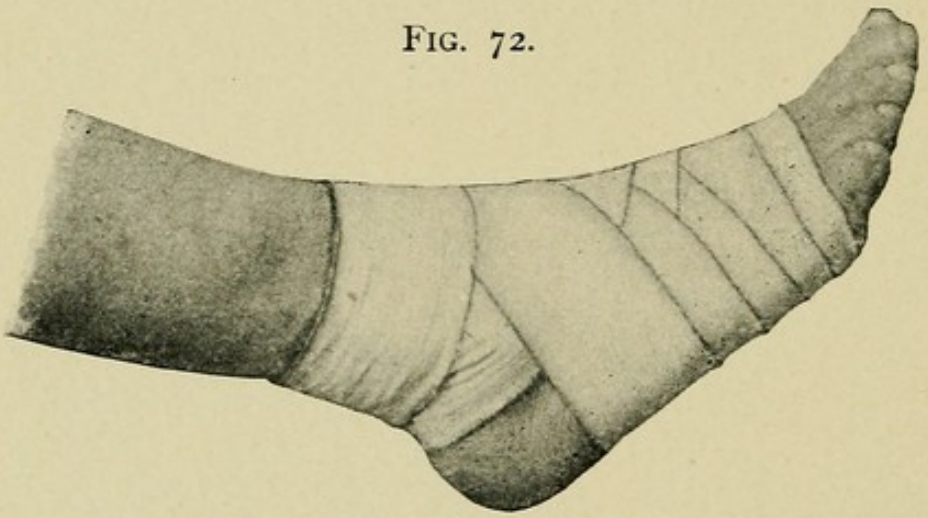


Initial turns of the incomplete bandage of the foot.

as in the preceding dressing. Make one circular, one spiral, and one spiral reversed turn

around the foot, overlapping two-thirds, ascending (Fig. 71), and proceed across the instep to the ankle. Here make a circular, and again crossing the instep, make another foot turn. The ankle and foot each receive another turn, overlapping the preceding one

FIG. 72.



The incomplete bandage of the foot.

two-thirds, when the terminal end is either pinned at the ankle or the roller continued up the leg (Fig. 72). The heel is not covered.

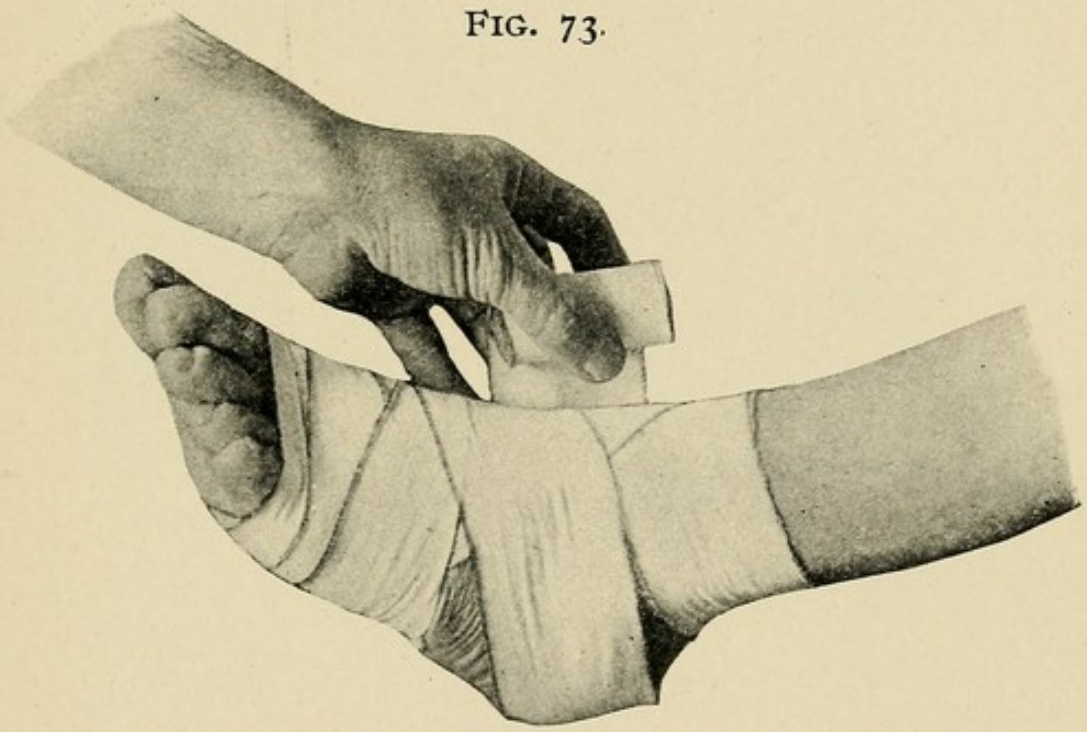
Uses.—To retain dressings, and to commence the spiral reversed bandage of the lower extremity.

Complete Bandage of the Foot.

2½ inches by 3 yards, for the foot alone.

Fix the initial extremity at the ankle, carry the roller across the foot, make a circular turn,

FIG. 73.

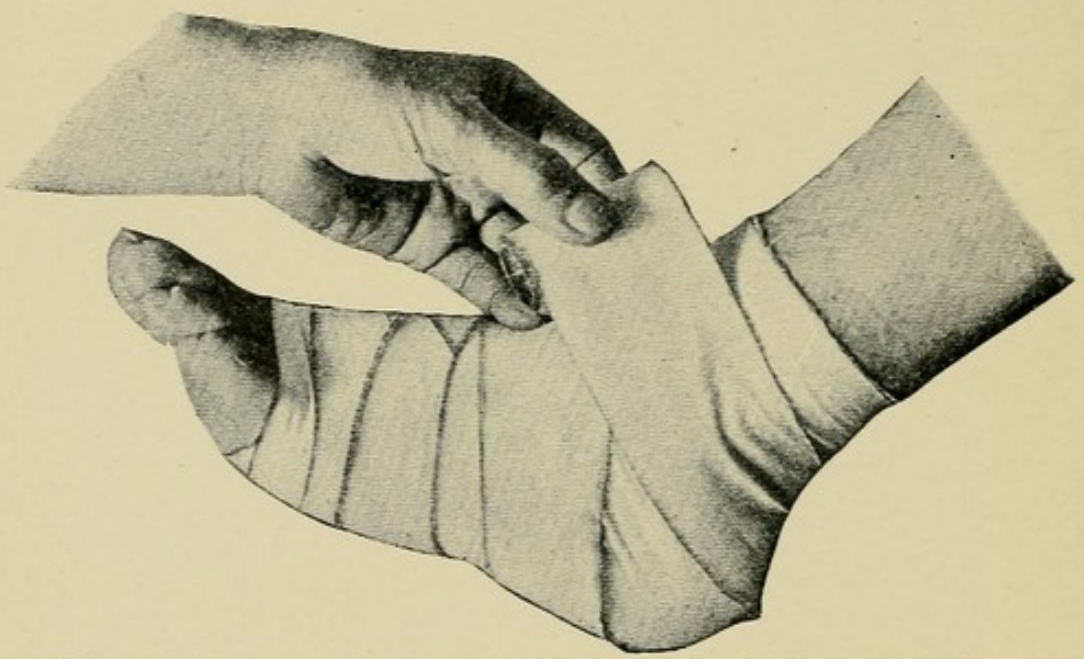


Showing the heel turn in the complete bandage of the foot.

a spiral, and a spiral reversed, all as in the dressing just described. Starting, after these turns have been made, at the instep, carry the roller across the point of the heel and back again to the instep (Fig. 73). From there

pass to the sole of the foot, and around the side of the heel under the malleolus (the outer, if the right foot, the inner, if the left), to the tendo Achillis (Fig. 74), and to the instep. Again to the sole of the foot, beneath

FIG. 74.

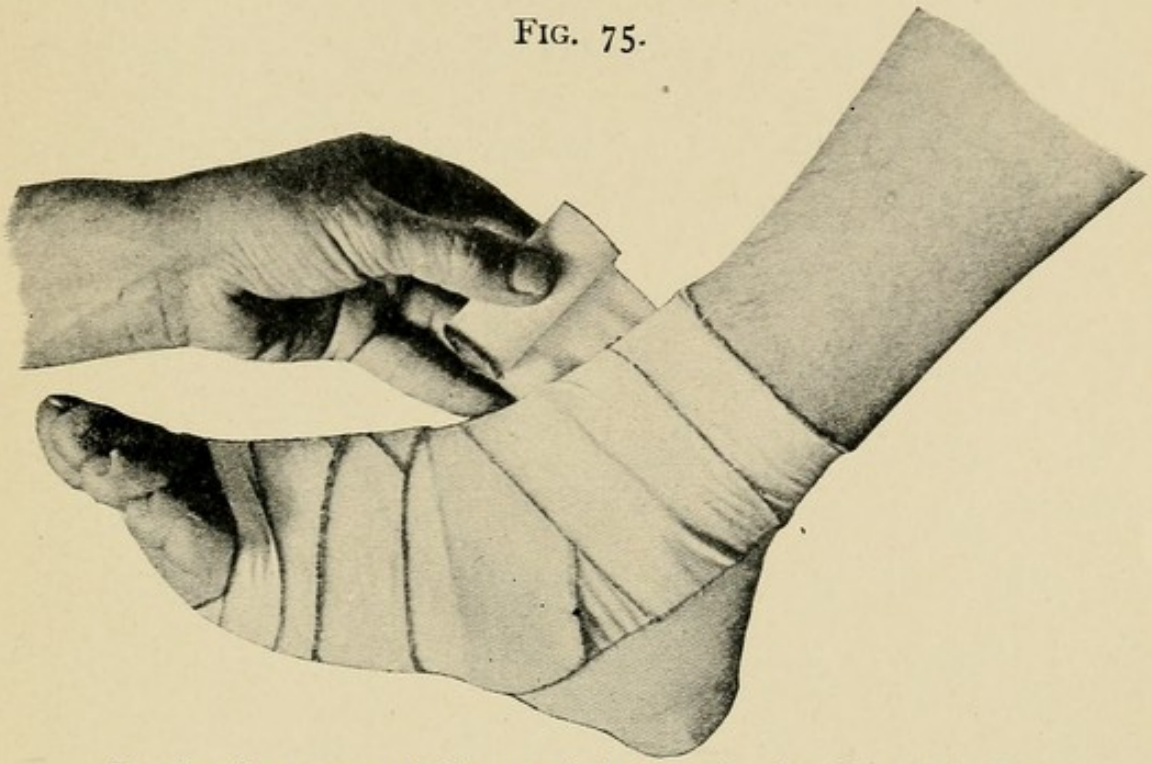


Showing the inner malleolar turn in the complete bandage of the foot.

the other malleolus to the tendo Achillis, and back to the instep (Fig. 75). The terminal extremity is either pinned here, or the roller carried up the leg. The turns under each malleolus must also be pinned. This bandage covers the heel.

Uses.—To retain dressings, and make uniform pressure upon the ankle-joint. Also to

FIG. 75.



Showing the outer malleolar turn in the complete bandage of the foot.

commence the spiral reversed bandage of the lower extremity.

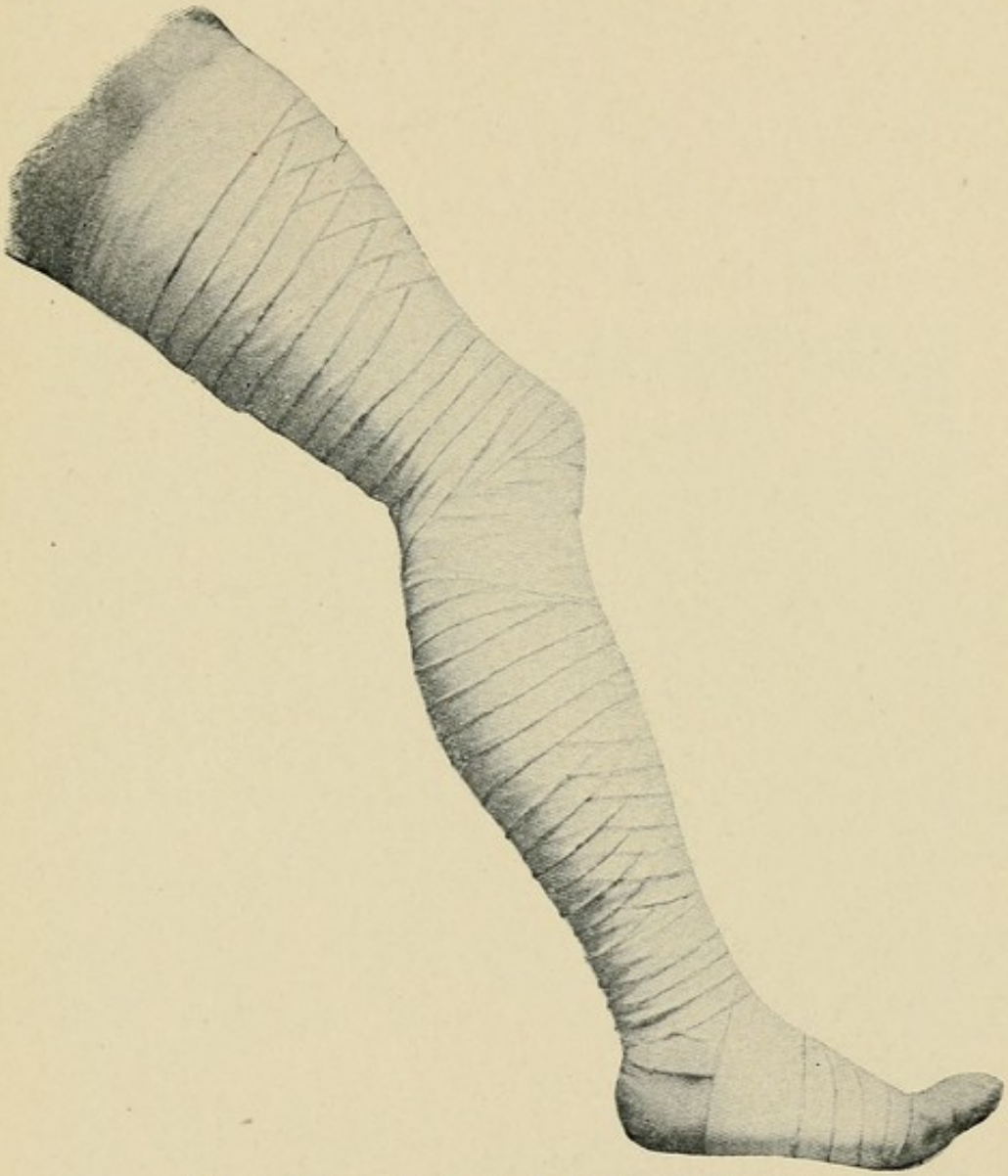
Spiral Reversed Bandage of the Lower Extremity.

2½ inches by 7 yards to the knee, 14 yards to the groin.

Fix the initial extremity, and cover the foot by either of the three methods above described. After the foot has been covered, proceed with spiral turns, overlapping two-thirds up the leg, until its increasing diameter necessitates reverses. After which spiral turns, or if the calf be very much swollen or a bulky dressing has been applied to it, descending spiral reverses, continue until the knee is reached. The terminal end is here pinned. If the roller is to be carried up to the groin, figure-of-eight turns will be made to cover the knee (see page 108), and spirals and spiral reverses, as indicated by the contour of the limb, will complete the dressing (Fig. 76).

Uses.—To retain dressings, splints, extension apparatus to the part, and to give support for various conditions.

FIG. 76.

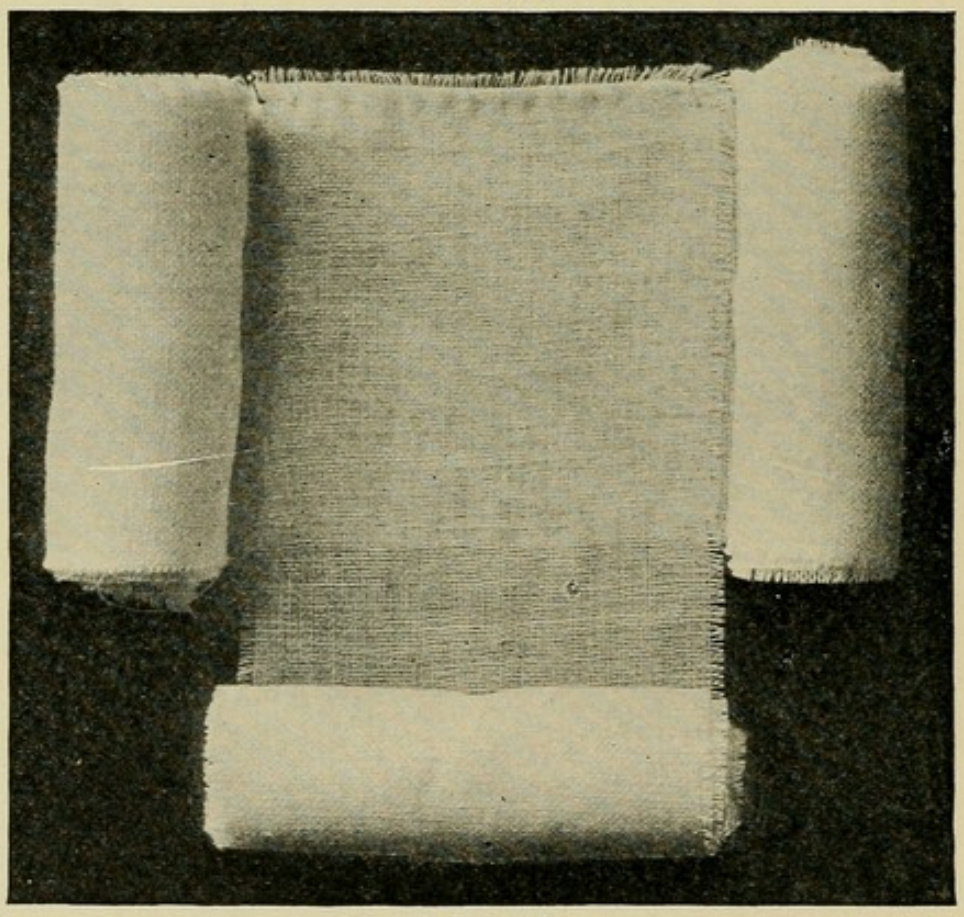


Spiral reversed bandage of the lower extremity.

T-Bandages, Slings, Binders, and Knots.

T-BANDAGES, slings, binders, and knots, while not always made of the roller bandage, may

FIG. 77.



Single T-bandage.

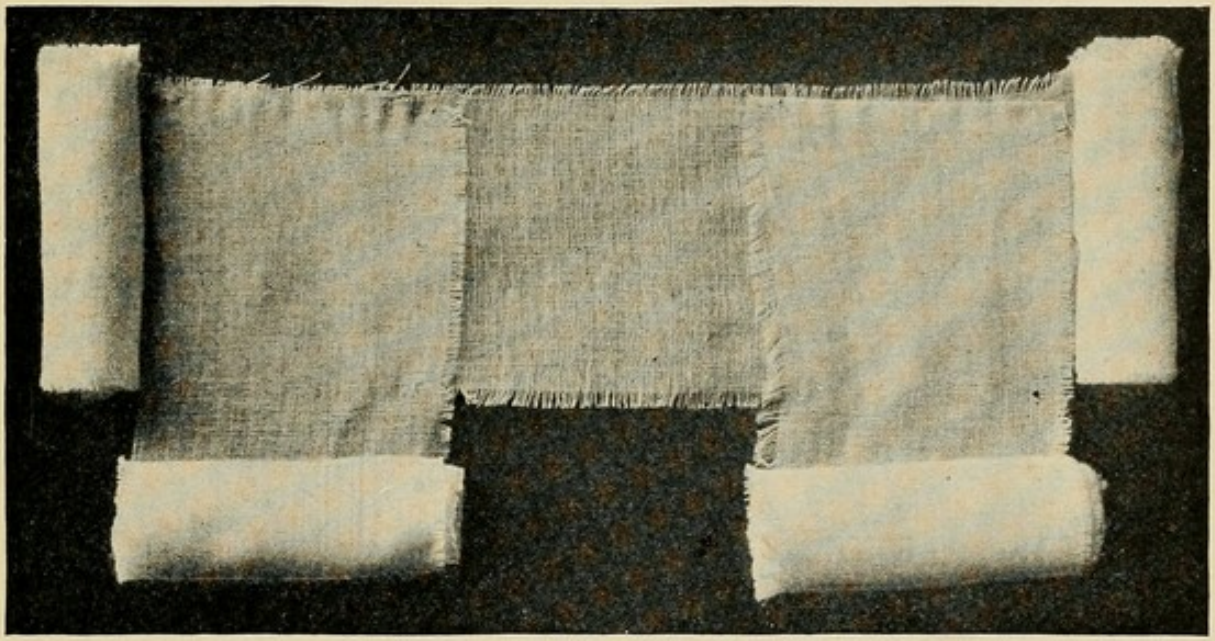
properly be described, because the latter may be used for the purposes of them all and

because a description of them in this connection will probably best demonstrate the principles of their mode of construction, their form, and their uses.

T-Bandages.

A T-bandage consists of two rollers, the one a single, the other a double roller sewn

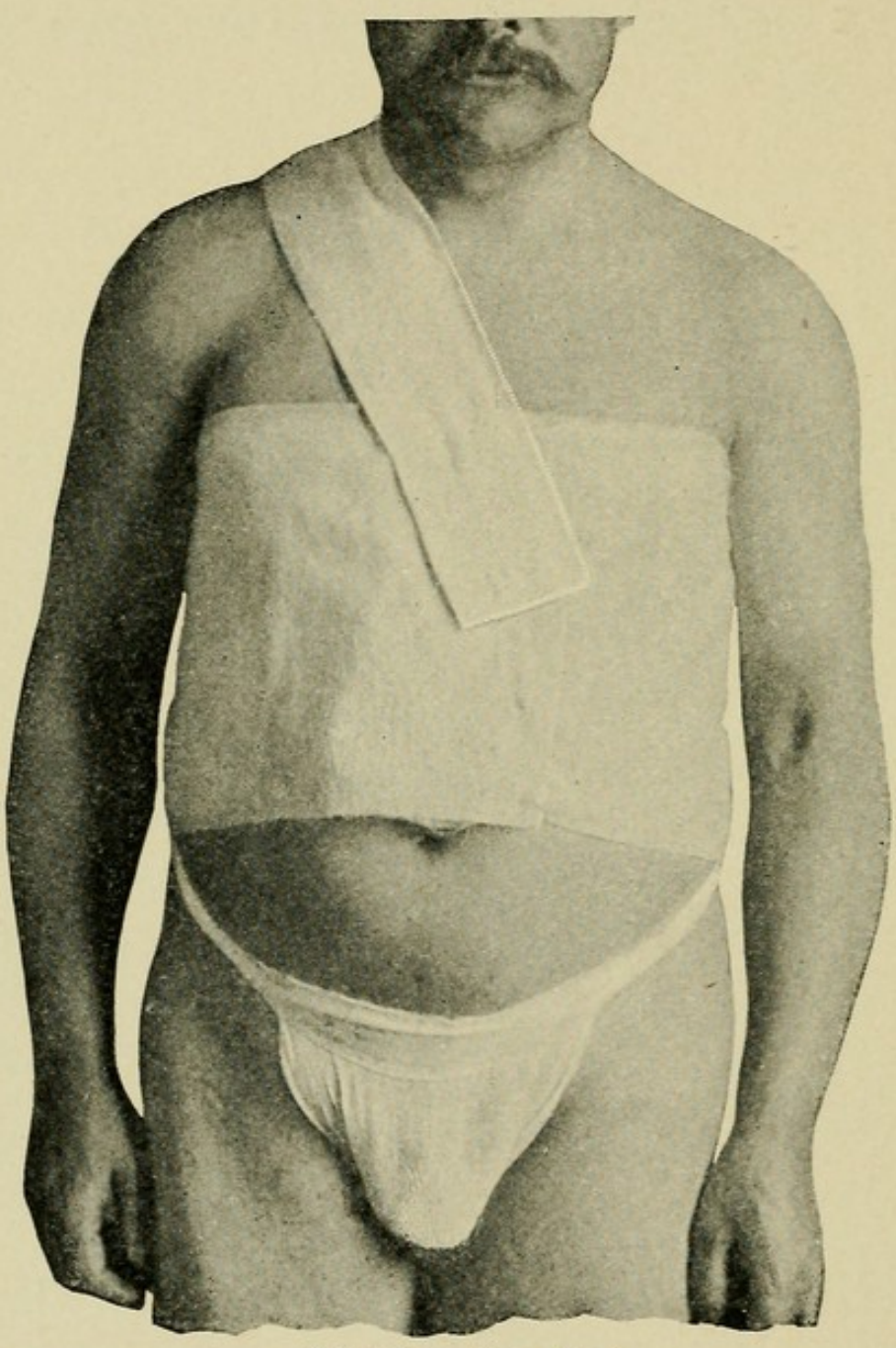
FIG. 78.



Double T-bandage.

together at a right angle. It may be made of any material, though usually of gauze or muslin, and the two rollers composing it may be of equal width, as shown in Fig. 77, or they

FIG. 79.



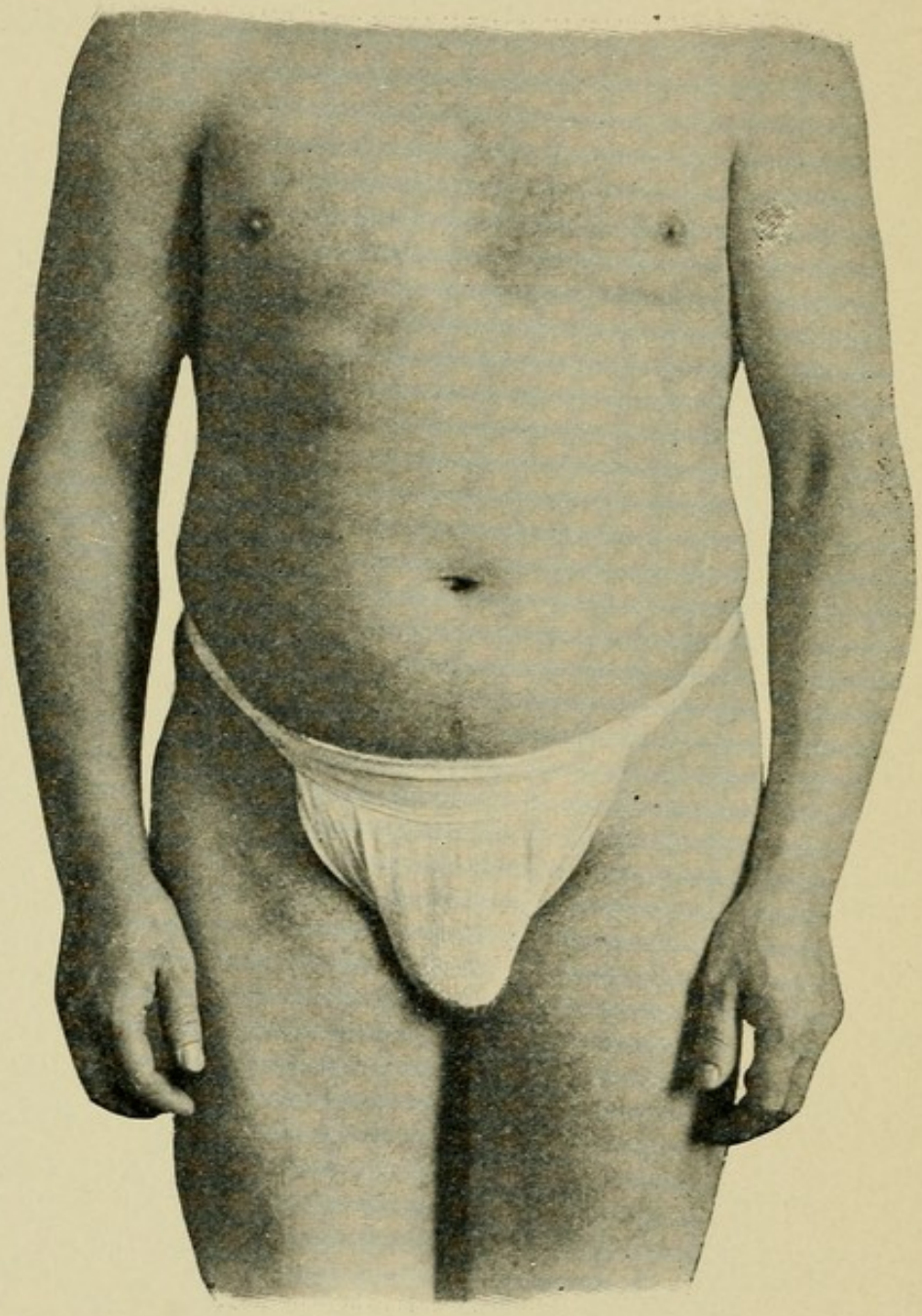
T-bandage of the chest.

may vary to any extent in all their dimensions. The double T-bandage, seldom used, is shown in Fig. 78, which, like Fig. 77, represents a bandage made of gauze.

The T-Bandage of the Chest.—The T-bandage of the chest consists of a double roller, fifty inches long by ten inches wide, to the middle of which is sewn at a right angle a single roller thirty inches long and four inches wide. The broad portion is applied to the chest, and being drawn to the state of tension desired, is retained in position by safety-pins neatly inserted at regular intervals. The narrow strip is then carried over the shoulder and fastened in front to keep the chest bandage in place. (Fig. 79.) The double T-bandage of the chest having two tails, one is carried over each shoulder.

The T-Bandage of the Pubis.—The T-bandage of the pubis consists of a strip of muslin eighteen inches long and six inches wide, to which is sewn a double-headed roller thirty inches long and three inches wide. The

FIG. 80.



T-bandage of the pubis.

broad portion is applied to the pubis and beneath the perineum, while the narrow bandage is carried around the lower abdomen and attached to the extremity of the broad bandage over the sacrum. (Fig. 80.) It may, at times, be convenient to split the posterior portion of the broad bandage into two tails three inches wide in order to attach them at the loin on either side to the long tails.

The T-Bandage of the Ear.—The T-bandage of the ear consists of a double-headed roller two yards long and one inch wide, to the middle of which is sewn a single roller one yard long and one inch wide. The double-headed roller is applied to the vault of the cranium, while the single roller, retaining any dressing applied to the ear, is carried vertically around the face.

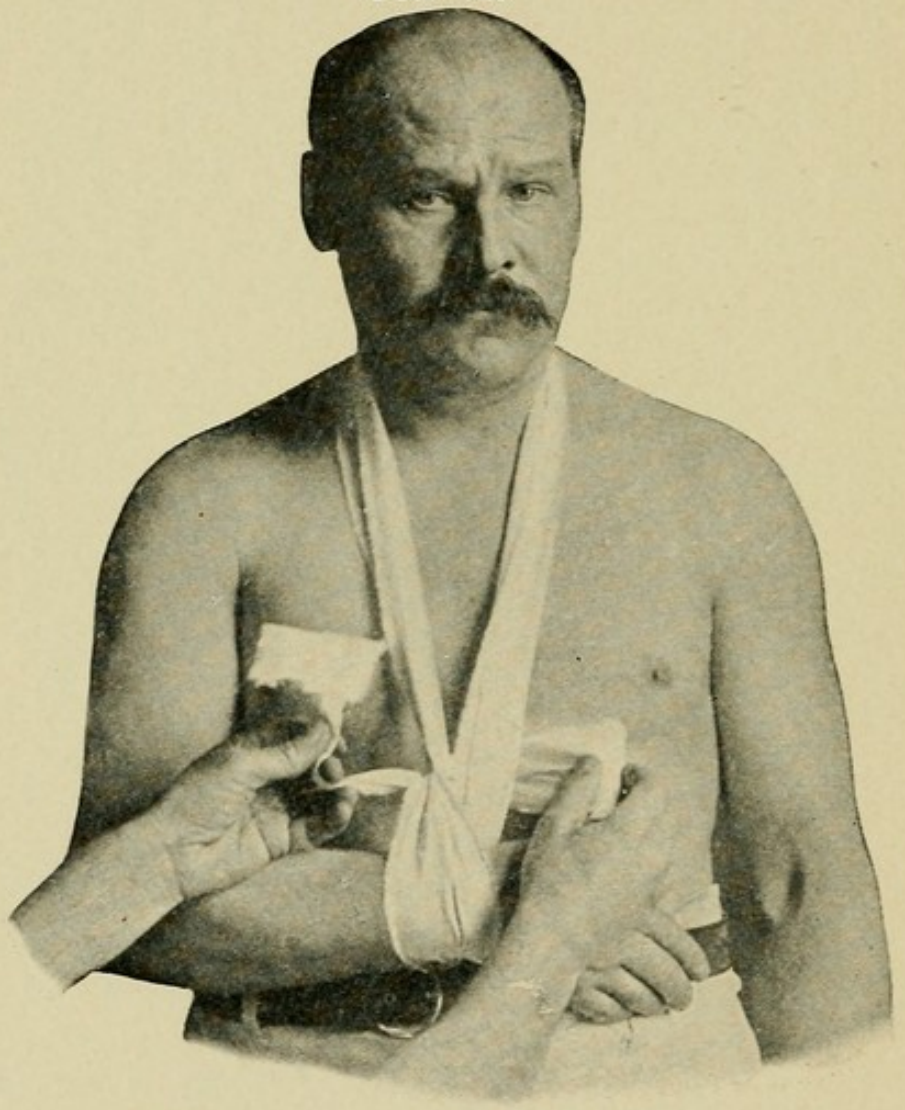
T-bandages are used to retain light dressings to the part.

Other T-bandages may take the place of certain slings presently to be described, but the latter will generally be found more useful.

Slings.

The sling most commonly used is that to support the upper extremity. A two-and-

FIG. 81.

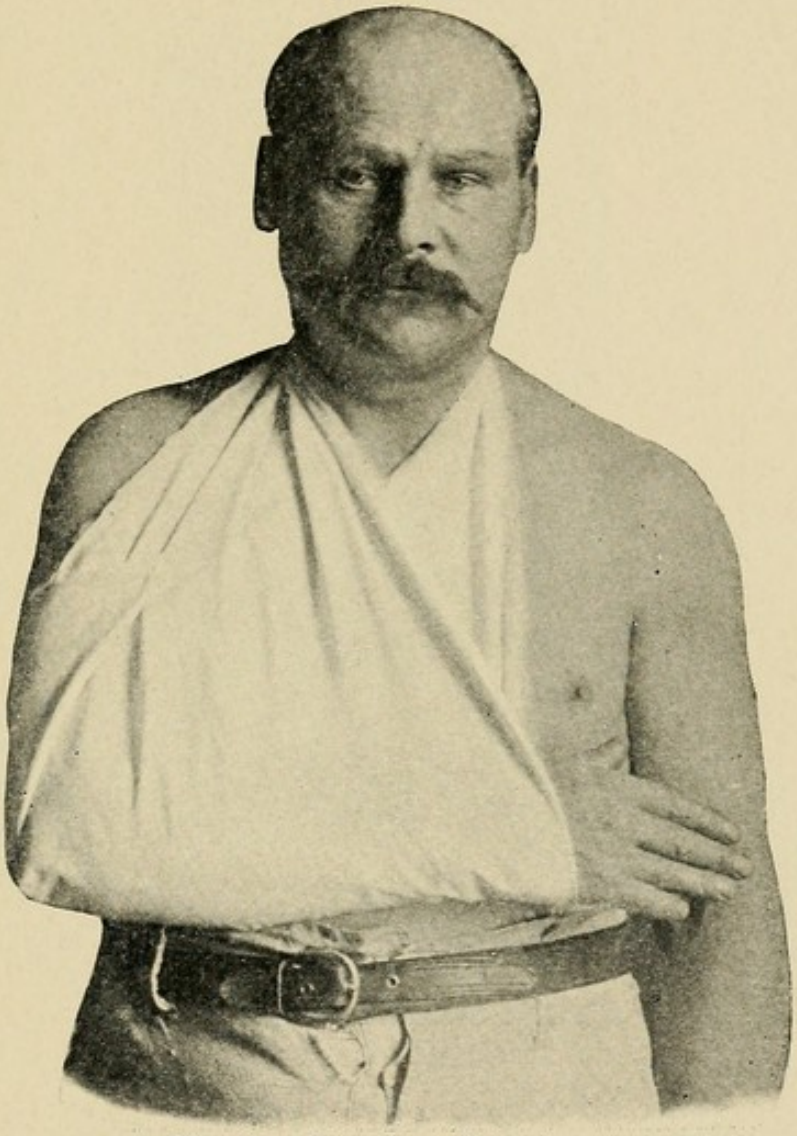


Roller bandage sling of the forearm.

a-half-inch roller carried around the neck and wrist is given a hitch just above the latter, as shown in Fig. 81. The ends are

then drawn upon sufficiently to get the required elevation of the forearm, when they are made into a knot which includes in it the

FIG. 82.

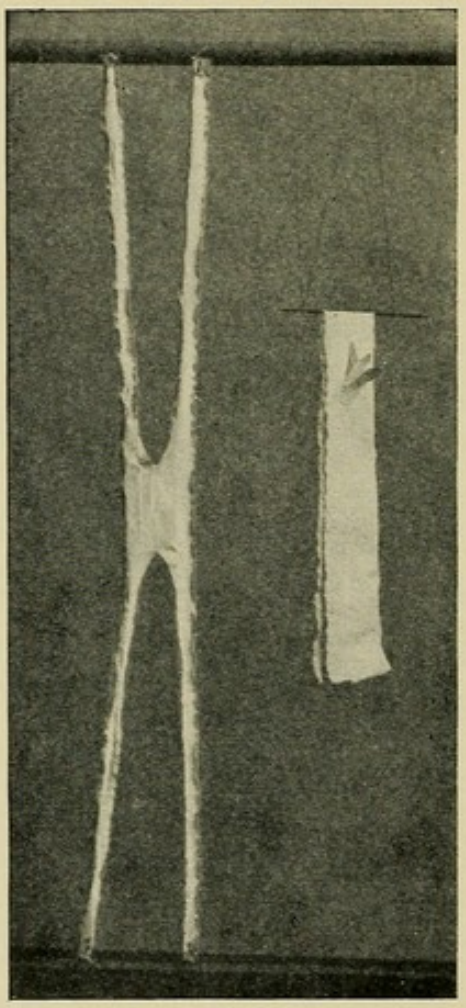


Handkerchief sling of the forearm.

free portion of the roller. This sling is useful after minor injuries of the fingers and hand and to keep up slight restraint of the

arm after splints or dressings for various fractures and dislocations have been discarded, but it is not appropriate for the support of heavy

FIG. 83.



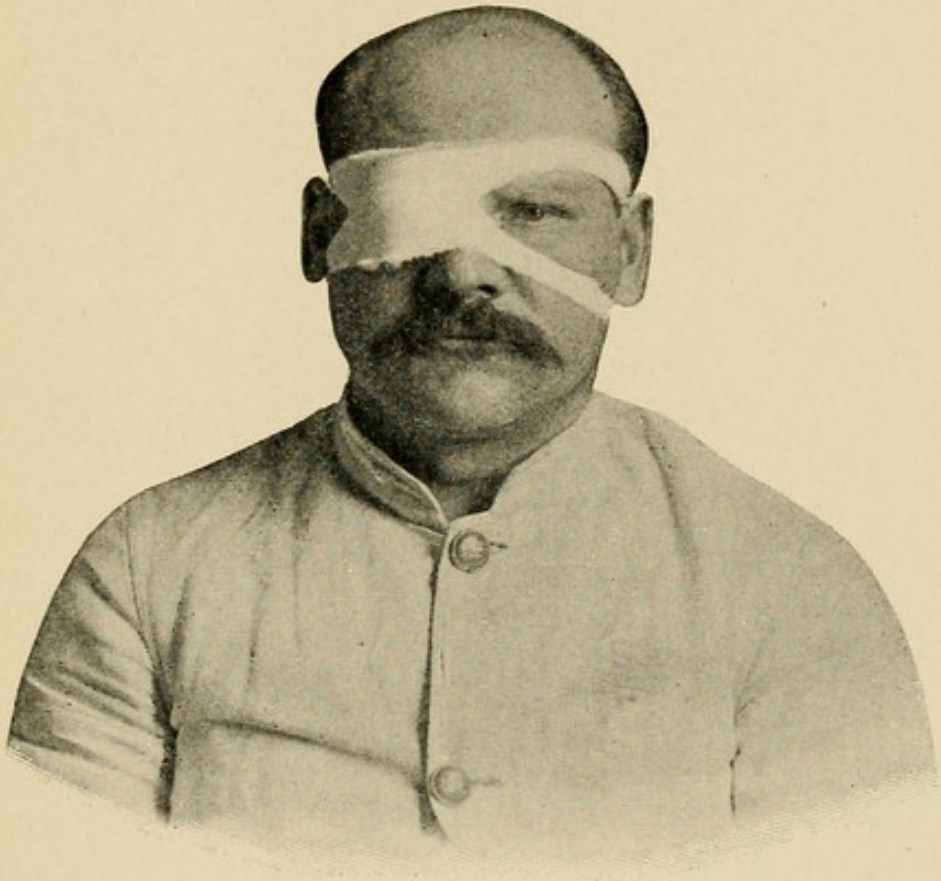
Four-tailed sling.

splints or dressings, as the weight of the latter concentrates the pressure too much at the wrist. For these, a handkerchief sling made of a piece of muslin one yard square, folded

diagonally and applied as shown in Fig. 82, gives much better support by distributing the pressure throughout the whole forearm.

Four-Tailed Sling.—This can be quickly made by folding a strip one yard long of a two-and-

FIG. 84.

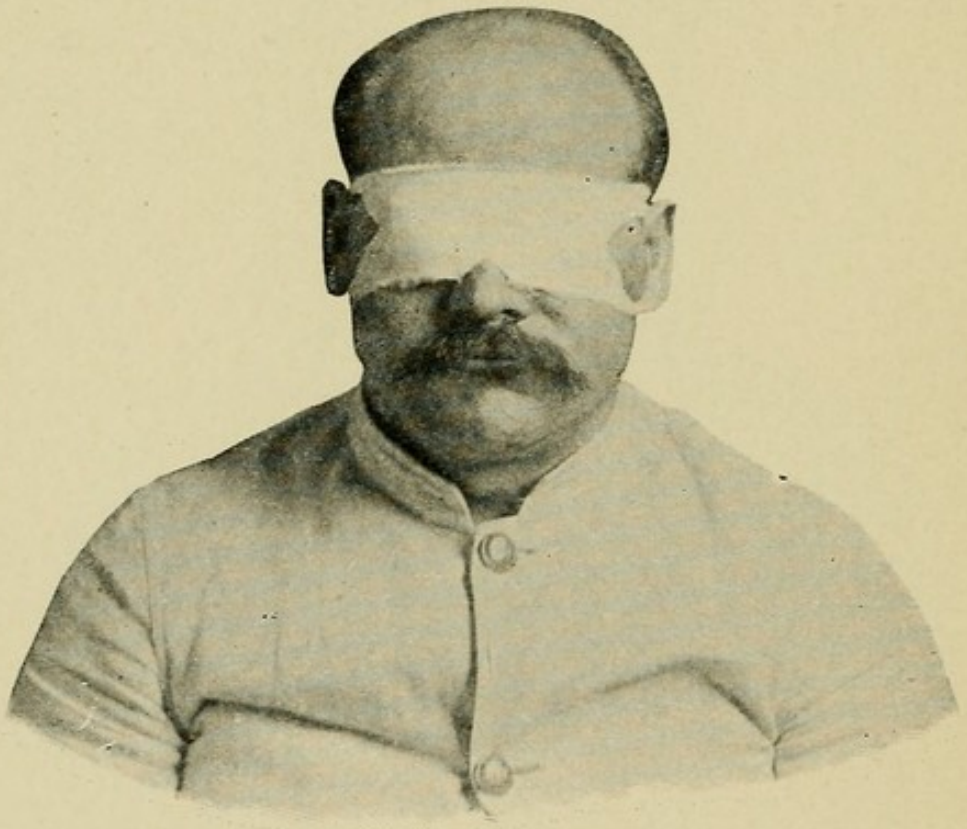


Four-tailed sling of the eye.

a-half-inch roller and scoring it with scissors, as shown in Fig. 83. The scored portion is then torn out, leaving four tails attached to the sling.

Four-Tailed Sling of the Eye.—Applying the sling to a dressing of the eye, the upper tails are carried around the head above the ears and tied at the back, while the lower tails are carried below the ears and tied also at the back of the head, as shown in Fig. 84.

FIG. 85.

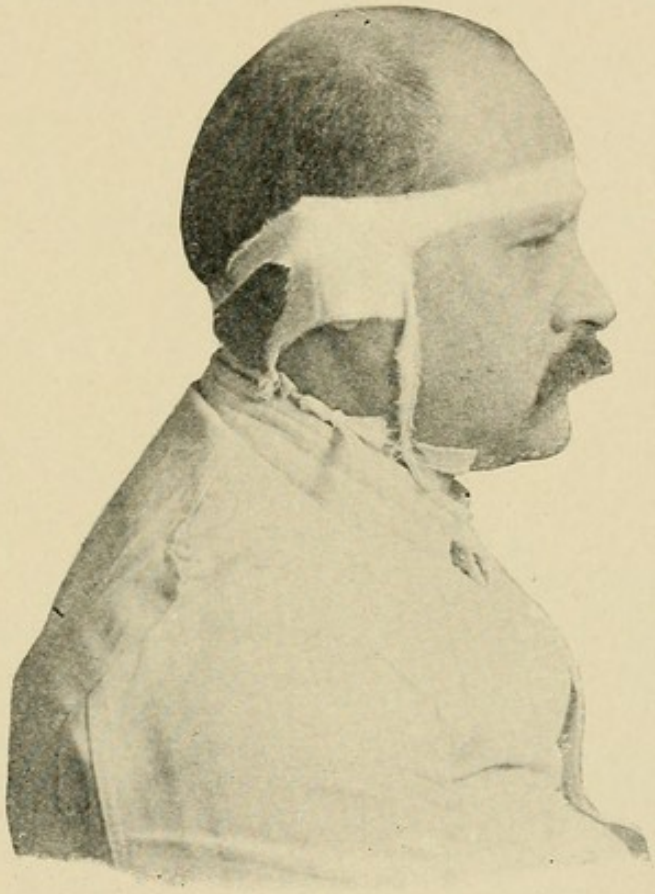


Four-tailed sling of both eyes.

Four-Tailed Sling of Both Eyes.—For this dressing the scoring of the roller is done at a point in the fold which will make a sling as long

again as that required for one eye. The sling is applied to both eyes, the upper tails being carried above the ears and the lower tails beneath the ears and all tied at the back of the head. (Fig. 85.)

FIG. 86.



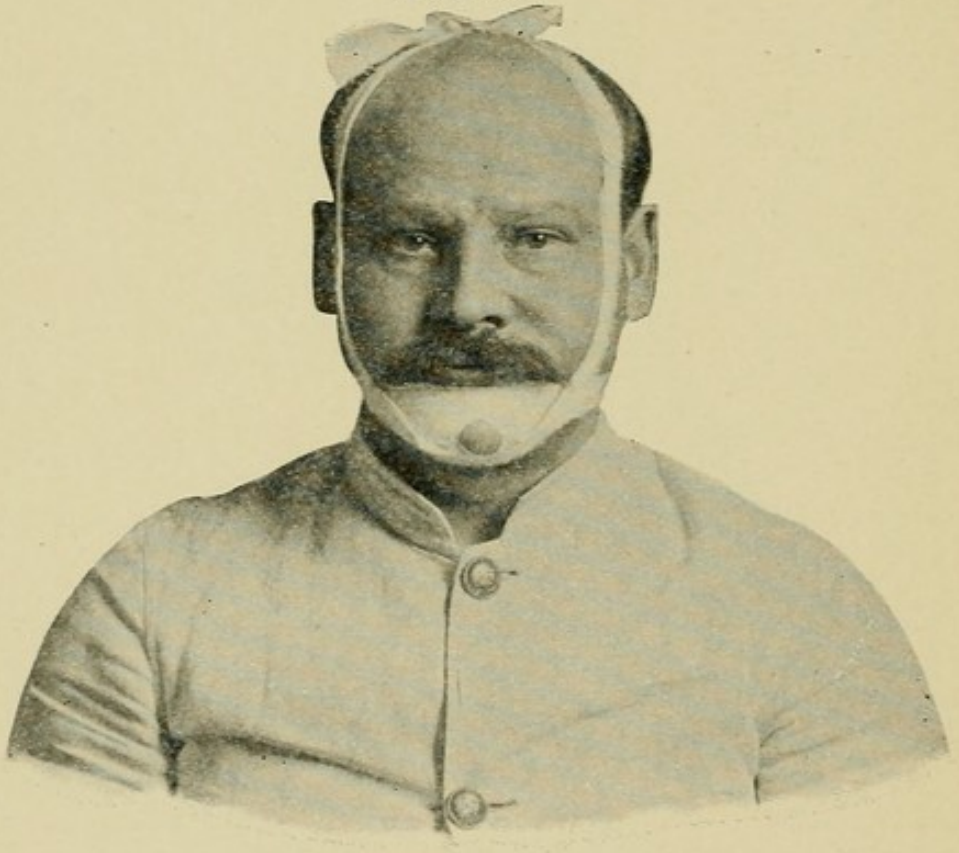
Four-tailed sling of the ear.

Four-Tailed Sling of the Ear, prepared as the sling for one eye, retains a dressing upon the ear. The upper tails are carried around the head and crossing one another on the opposite

side are brought back around the neck and made into a knot, while the two lower tails are carried abruptly down to the neck and tied to the former, as shown in Fig. 86.

Four-Tailed Sling of the Chin.—This is prepared by scoring the folded roller to make

FIG. 87.



Four-tailed sling of the chin.

the tails, and, at the same time, snipping the corner of the fold out with the scissors, in order to leave a hole in the centre of the sling. Placing the sling upon the chin, the

upper tails are carried along the jaw on either side and tied at the back of the neck, while the lower tails ascending the sides of the face are first tied at the vertex, and, after continuing as one from the knot, are fastened at any convenient point to the other tails, as shown in Fig. 87. This is a useful dressing to limit the movements of the inferior maxillary after dislocation and to retain dressings.

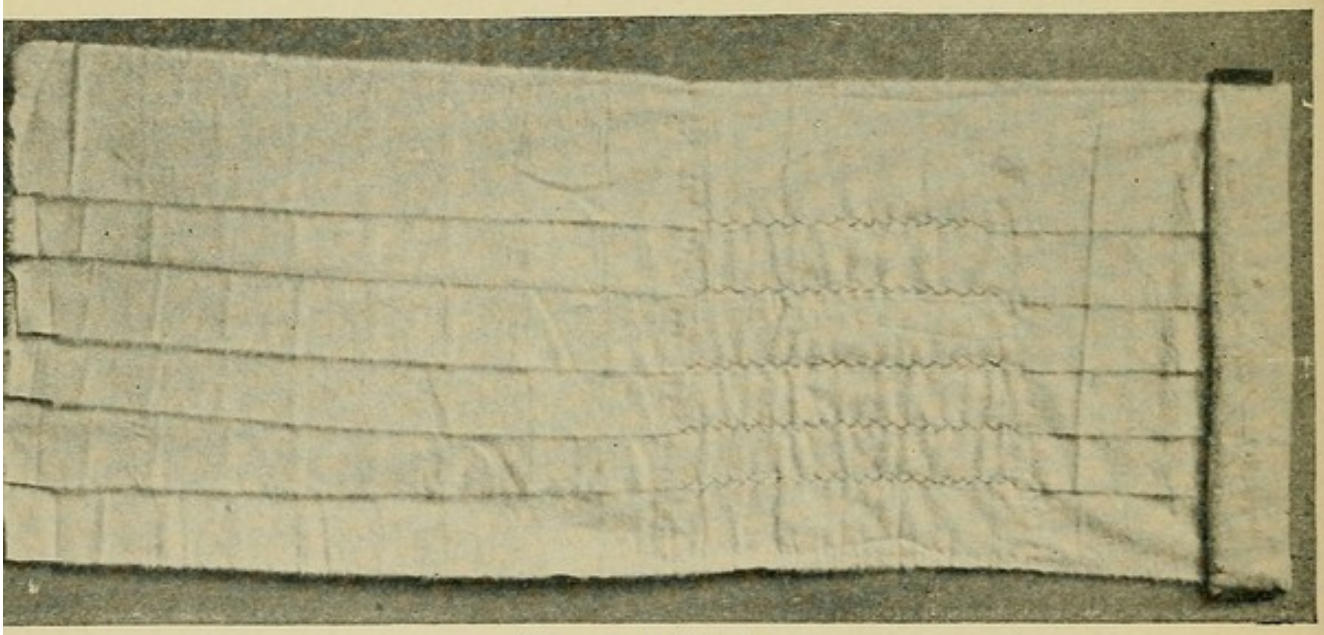
Binders.

Instead of a single bit of broad muslin, pinned or otherwise fastened to give support or retain dressings to a part, strips of roller may be sewn together at their edges, leaving their ends free and thus forming a many-tailed sling. The binder or sling thus made is seldom used except for the abdomen, though it may be adapted for other purposes. The binder used after all abdominal operations is usually made of canton flannel, each strip being one yard-and-a-half long and four inches wide. Six of these, spread out

smoothly upon a table so that they shall overlap one another one-half of their width, are sewn together at their middle third by a cat-stitch, as shown in Fig. 88.

Their free ends are rolled upon strips of cardboard into a compact form which can

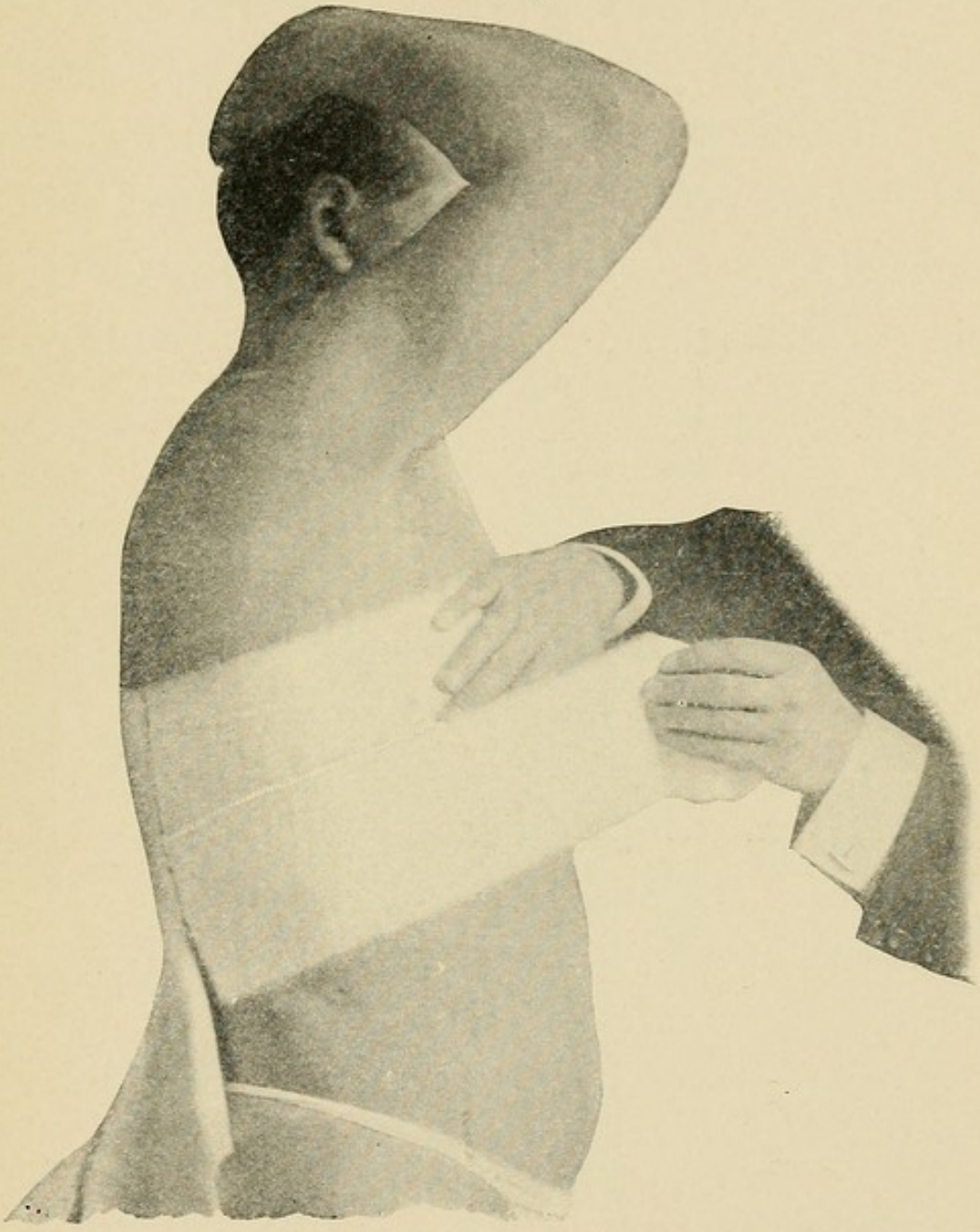
FIG. 88.



Many-tailed binder.

easily be slipped under the patient. The reproduction represents the tails on the right partially rolled upon the strip of cardboard. The binder is applied by inserting one roll beneath the back as the patient lies in bed and unrolling the tails on either side. The uppermost pair of tails is carried across the

FIG. 89.



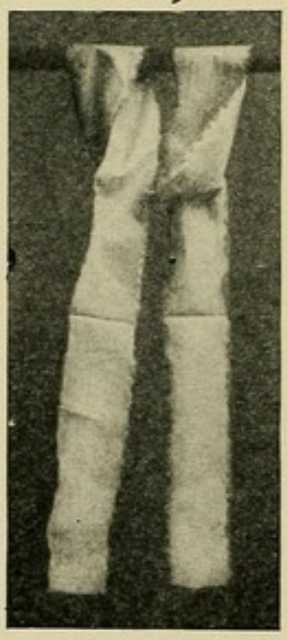
Method of applying the binder.

lower portion of the chest in opposite directions and held in place by the hands of an assistant while the next two lower tails are being similarly applied. (Fig. 89.) So each pair of tails in turn is adjusted until the lowest one is finished, when it is fastened with a safety-pin. At times it may be necessary to pin each tail if very firm support is required.

Knots.

Various knots, usually made in the form

FIG. 90.

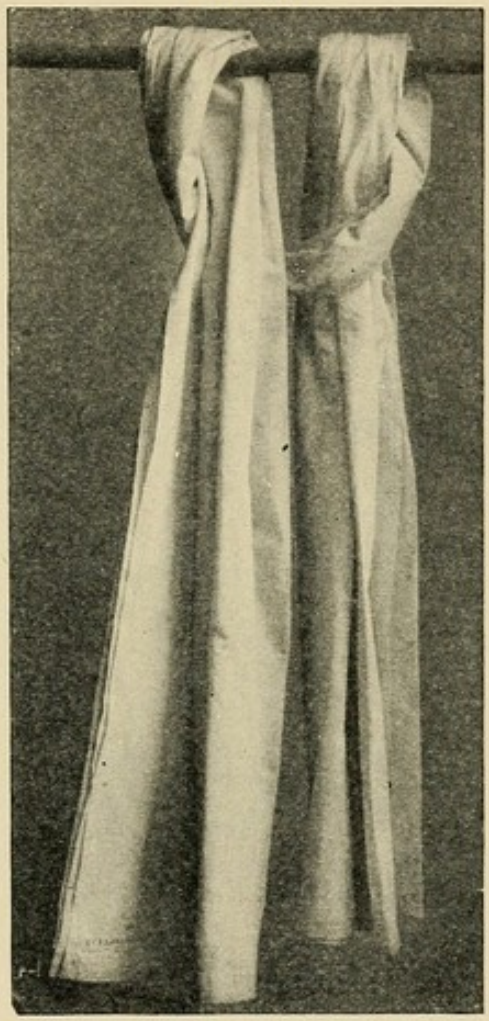


Double half-hitch of roller bandage.

of a double half-hitch, are occasionally used for the purposes of temporary traction or exten-

sion. They may be made of a bit of roller bandage (Fig. 90), of a handkerchief, or of a sheet (Fig. 91). When it is desired to use

FIG. 91.

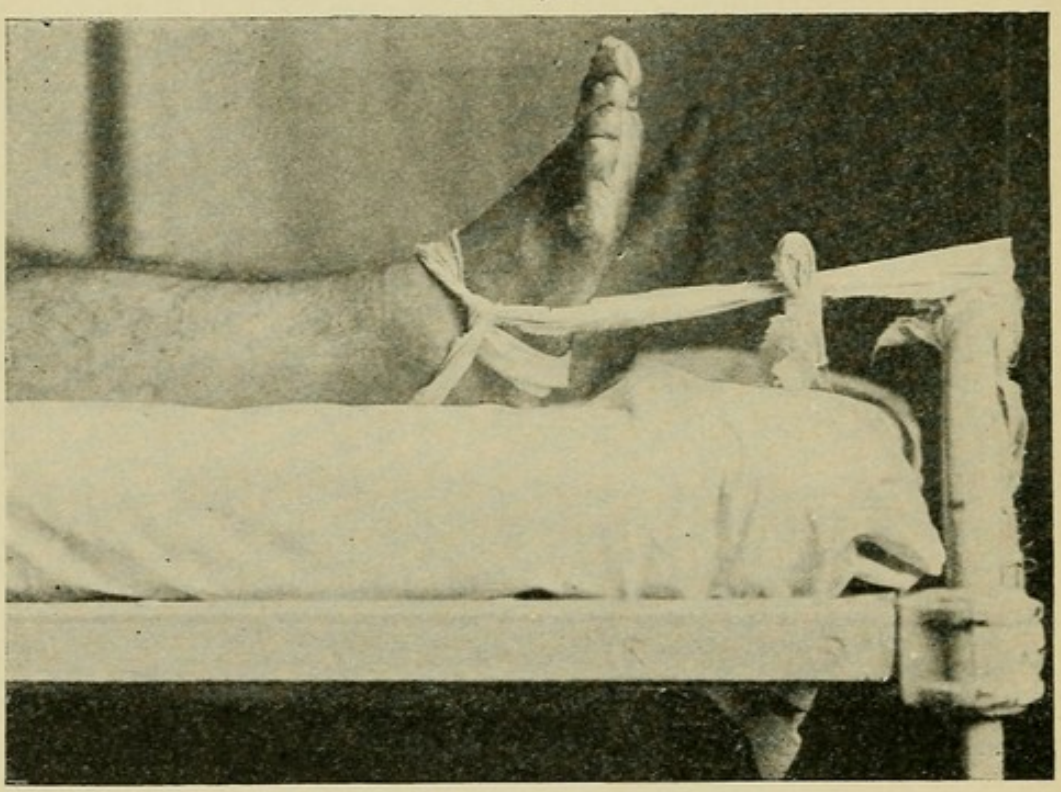


Double half-hitch of a sheet.

forcible traction in efforts at reduction of dislocations of the hip-joint or of old dislocations of the shoulder-joint, one sheet is thus knotted at the ankle or wrist, while another passed

over one shoulder and under the other arm of the operator is tied through a loop made of the tails of the first sheet. A slight modification of such a hitch is a convenient form

FIG. 92.



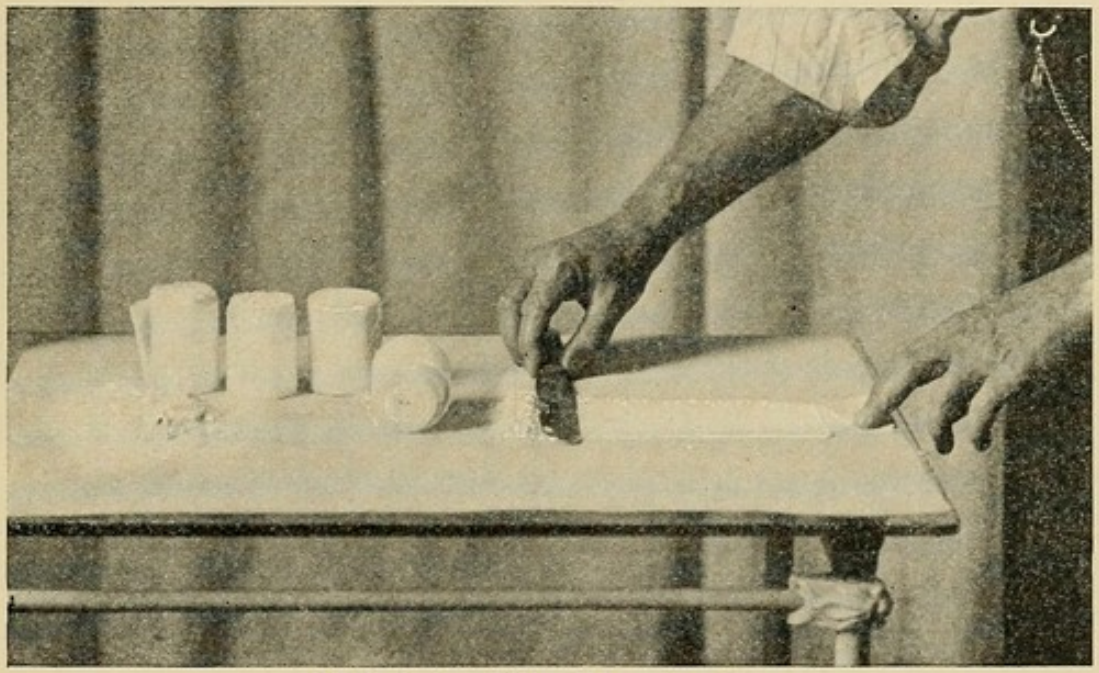
Ankle hitch for temporary extension.

of making moderate extension on the foot, but the pressure is too much concentrated behind the ankle and at the instep to allow of much weight. This knot is shown in Fig. 92.

Plaster-of-Paris Bandages.

THESE are best prepared in the following manner: Cut crinoline with scissors into strips seven yards long and two-and-a-half

FIG. 93.



Method of making plaster bandages.

inches wide, and roll them loosely by hand, with the key, or with the machine (see page 13). Unrolling the initial extremity of a bandage to the extent of one yard, spread

upon it with a spatula a layer of dry plaster-of-Paris about one-sixteenth of an inch thick, as shown in Fig. 93. This portion of the bandage is firmly rolled so that it will retain as much of the plaster as possible between its layers. Another similar length is then spread and rolled, and thus the process is continued with the whole bandage. A rubber band is applied to retain it, it is wrapped in wax paper to exclude moisture, and is then ready for use.

Method of Applying the Plaster-of-Paris Bandage.—The bandage is immersed, standing on end, in cold water. When it ceases to yield bubbles of air, it is carefully removed from the water and pressed firmly in the hand to make it as dry as possible. It is then ready to be applied.

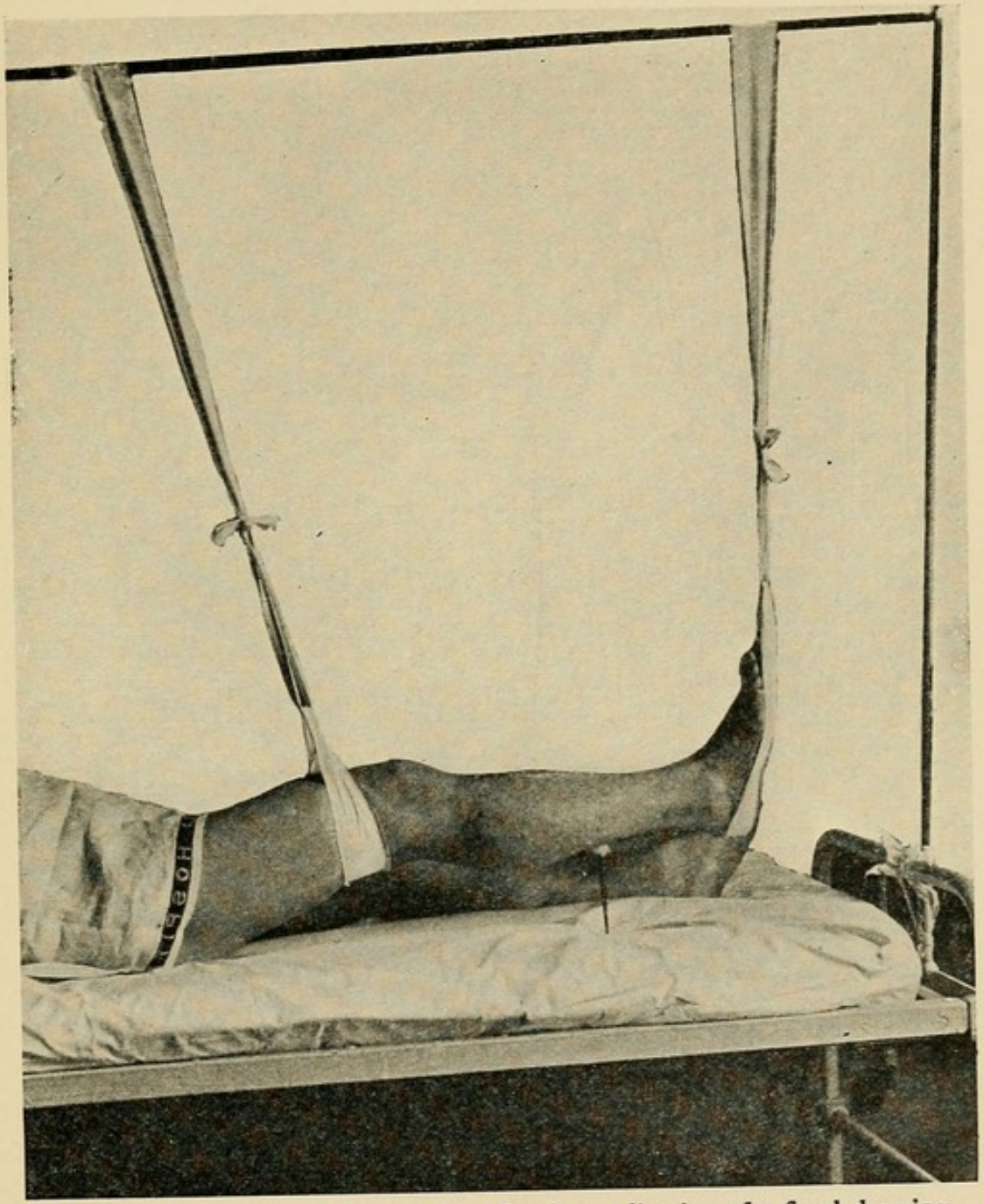
Mode of Application of Plaster-of-Paris Bandages.—Though applied for other purposes, the plaster-of-Paris bandage has these three uses to which it is most commonly put: as a fixed dressing after fracture of the leg; as a dressing

to immobilize the thigh, the hip-joint, and the pelvis after fracture, or in the treatment of coxalgia; and in the form of a jacket applied to the trunk in the treatment of diseases of the spine.

Application of Fixed Dressings to the Leg.— The limb should be perfectly under control while the plaster-of-Paris is being applied. Three trained assistants are required, one to support the thigh, another to support the leg and foot, and the third to assist the surgeon with the plaster bandages and the manipulation of the plaster-of-Paris. If so much help is not at command, some device which will support the limb in proper position may be used: Two uprights (clothes-props), attached vertically to the head and foot of the bed, are joined by a third horizontal bar resting upon them and held in place by cord or wire nails. The patient lies in bed in such a position that the fractured leg is directly beneath the horizontal bar. The fractured leg is then placed upon two pillows, which will

elevate it about five inches from the bed, producing thereby slight flexion of the knee-joint. Rubber adhesive suspension straps are then applied to the middle of the thigh and the foot. These are turned upon themselves so that they shall form a loop above through which a cord can be passed, which, having been drawn taut, is made fast to the horizontal bar. On removing the pillows, the limb may be found sufficiently supported. If a third point of support is needed, it should be in the form of a prop from beneath the limb to the bed. For this purpose a slender stick, like a lead-pencil, cut to the proper length and padded with a little knob of muslin, is placed at the desired point, there to remain until the application of the plaster-of-Paris bandage is completed. By a little experimental slackening and tightening of the suspension cords, the limb will finally be suspended in a very correct position without any manual aid. This method of preparing the leg for the application of a fixed dressing is

FIG. 94.



Method of suspending a fractured leg for the application of a fixed dressing.

shown in Fig. 94. Gentle pressure with the finger or between the fingers and thumb at some point where slight deformity persists may, at times, be necessary to perfect the modelling process. Having applied a flannel bandage from the foot to just below the knee or just above the knee according to the point to which it is intended that the dressing shall reach, the plaster bandages, starting from the toes, are used as an ordinary roller, except that they seldom need reversing.

Having applied from three to six bandages, according to the degree of firmness required, free plaster, mixed with water to the consistence of thick cream, is smoothly spread over the dressing with the hands, thickly enough to completely hide the turns of the bandage. When this layer has begun to set, a very bright, shining surface may be given to it by rubbing with a pad of cotton saturated with alcohol.

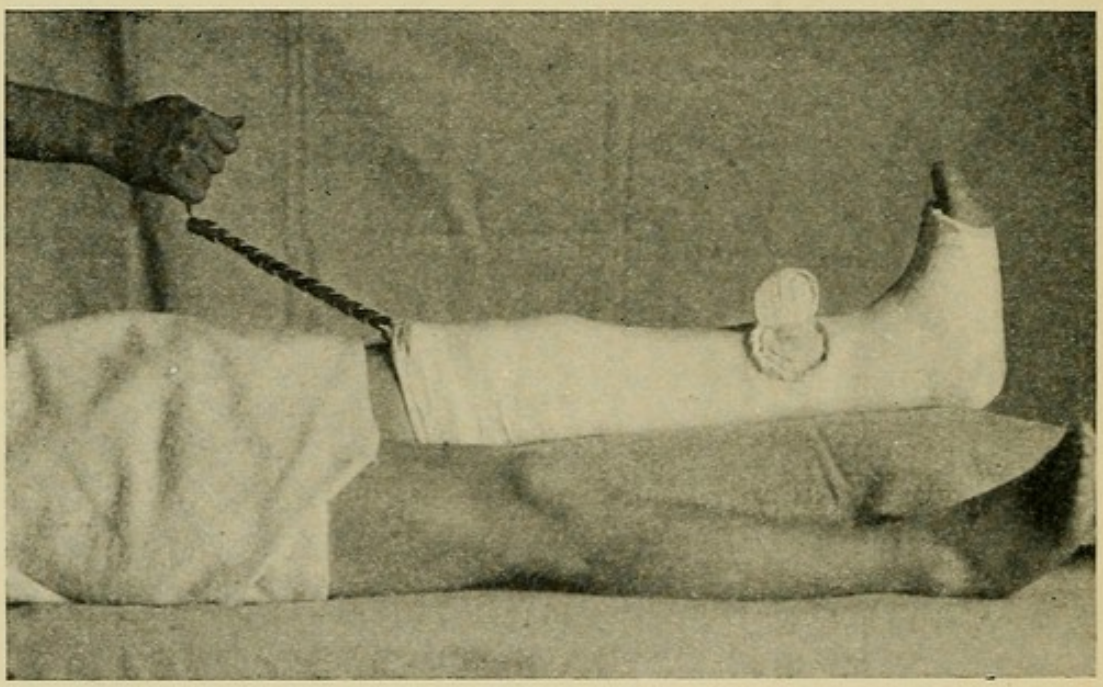
In the use of plaster-of-Paris, the proper care of the hands should not be overlooked.

A little vaseline applied in and around the nails facilitates the removal of the plaster from the finger-tips, while the unpleasant harshness of the skin, which the plaster causes, is best removed by granulated sugar. The latter is used by simply dissolving it upon the fingers with plain water.

A window or trap-door in a plaster-of-Paris dressing, in order to give access to a wound, especially one of compound fracture, may be conveniently made in the following manner: A half-inch band of lead tape of a length equal to the circumference required for the window is formed into a loop or ring by closing the ends together with a bit of rubber adhesive plaster. This is applied to the limb, and, modelled into an ellipse, circle, or square, is held in position by the initial flannel bandage, which also retains the wound-dressing. After the plaster-of-Paris has set, the outline of the lead wall, being distinctly apparent, is cut down upon with a penknife, except at one point which is to act as a hinge, and the lead

band removed, as shown in Fig. 95. Beneath the everted flange-like edge of the window absorbent cotton should be inserted in order to prevent the leakage of blood or pus between the fixed dressing and the skin. The trap thus formed is afterwards kept in place

FIG. 95.



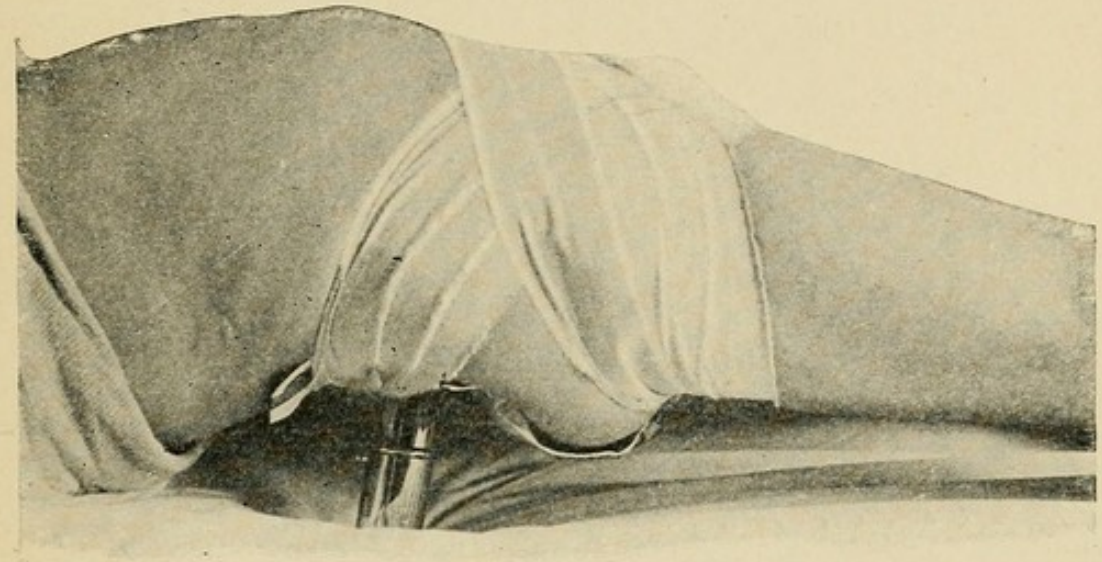
Showing trap-door; also vertebrated chain employed to facilitate the removal of the fixed dressing.

by a bandage. Should the window exceed in width one third the circumference of the limb, the dressing may be reinforced by strips of tin laid at the back during the application of the plaster bandages. In this way extensive

compound fractures of the leg may often be appropriately managed.

Plaster-of-Paris Dressings of the Hip.—The pelvis may be elevated from the bed and so held by the hands of an assistant, or, if the patient is an adult, this posture may be con-

FIG. 96.



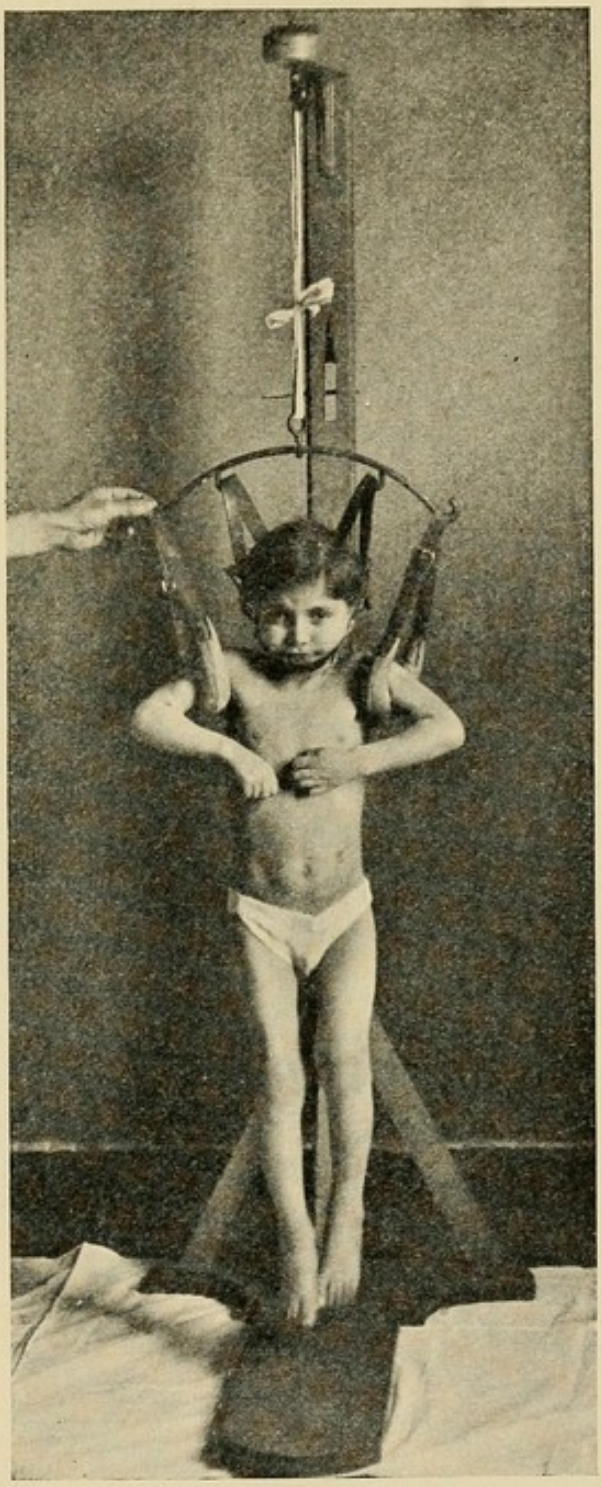
Pelvic rest used for the application of a fixed dressing to the hip.

veniently maintained by the use of the metallic rest, as shown in Fig. 96. A flannel roller in the form of a spica of the groin extended well around the hip and including the buttock is first applied in order to protect the skin from contact with the plaster. The plaster bandages to the number of from three to six, accord-

ing to the size of the pelvis and the requirements of firm fixation, are applied somewhat in the form of a spica, so modified, however, that the upper third of the thigh and buttock, hip and pelvis will all be covered. Between layers of these bandages longitudinal strips of tin or sheet-iron, half an inch wide, may be inserted to give additional strength. In the same way, any metal splint employed should be inserted between the strips of bandage.

Plaster-of-Paris Jacket.—The patient, wearing a closely-fitting undershirt, is placed in a position tending more or less to correct the deformity of the spine; if by suspension, as shown in Fig. 97, the hips must be steadied by an assistant during the application of the plaster bandages, which are begun immediately upon the undershirt and are carried from a point just below the crests of the ilia to the level of the axillæ. From three to six rollers are usually required to give sufficient firmness, when the whole is covered with a smooth-spread layer of plaster-cream.

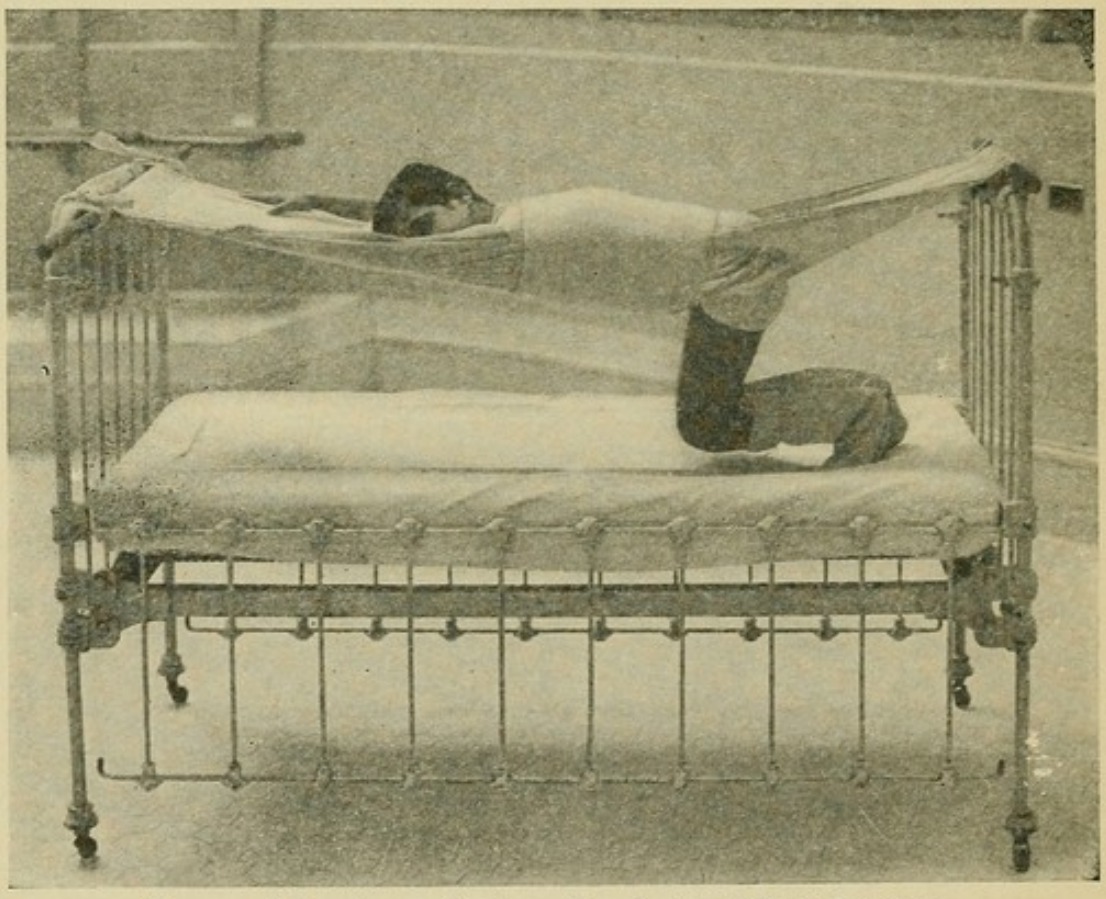
FIG. 97.



Suspension apparatus for the application of a plaster-of-Paris jacket.

The dressing is applied in a similar manner if some other posture than that of suspension is used. Fig. 98 represents the method of retaining the spine in a more or less corrected position by the use of a hammock. Such an

FIG. 98.



Hammock for the application of a plaster-of-Paris bandage.

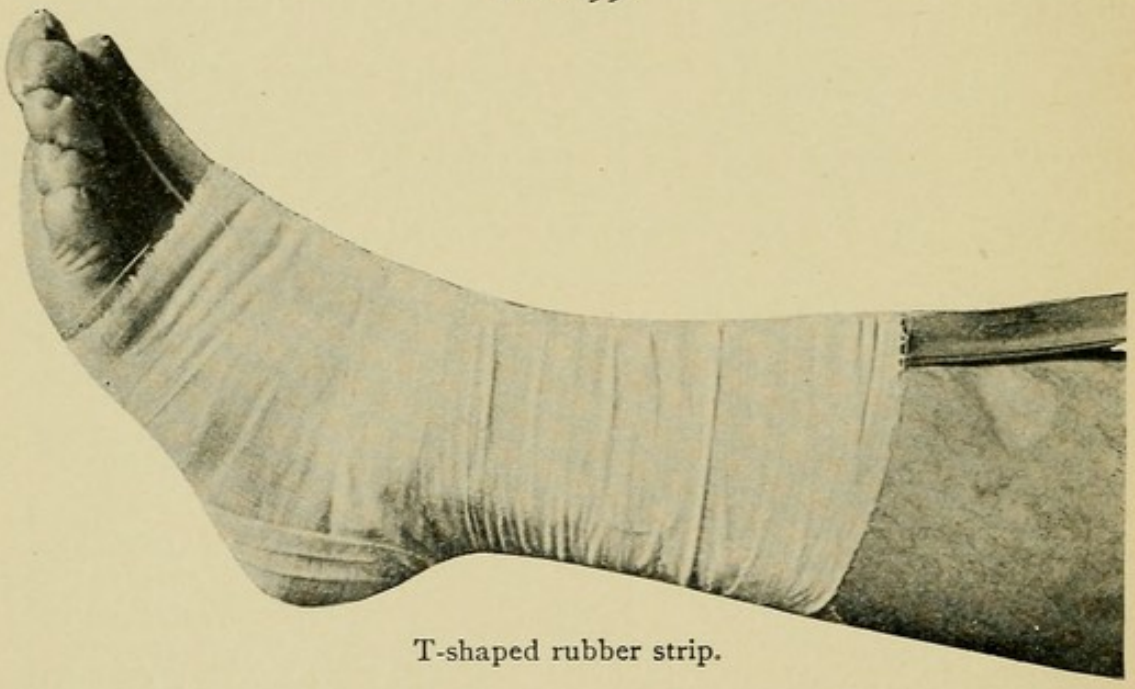
apparatus may be made as an ordinary hammock with a strip of muslin two yards long and a yard wide, at the ends of which are sewn broad hems. Into these hems at either end is

inserted a broomstick, or the hammock may be stretched from the head to the foot of the bedstead. The patient lies in the position which best corrects the deformity, and the hammock is made to sag to a degree which is found by experiment to give the best result. Two holes are cut in it, through which the patient's legs are thrust, and the bandages are then applied. They include in their turns the hammock as well as the undershirt; the former after the plaster has set being cut off with scissors at the upper and lower edges of the dressing.

The Removal of Fixed Dressings.—The preliminary steps to facilitate the ready removal of fixed dressings are often taken when the dressing is being applied. A strip of lead tape placed upon the limb, the length the dressing is planned to be, next to the skin, protects the latter from the point of a penknife which may be used to make a long section in the dressing immediately after the plaster has set. The lead tape is then with-

drawn. Some device, however, which leaves in the dressing a hollow longitudinal ridge best prepares it for easy removal. A convenient device for this purpose consists of a T-shaped rubber strip provided at one end with a knob, Fig. 99, and so formed that when it is placed

FIG. 99.



T-shaped rubber strip.

upon a part prior to the application of a fixed dressing, it will, on withdrawal, as soon as the dressing has set, leave behind it in the latter a hollow longitudinal ridge. This may be readily divided by a knife or plaster shears at any time it is desired to remove the dressing, and, a

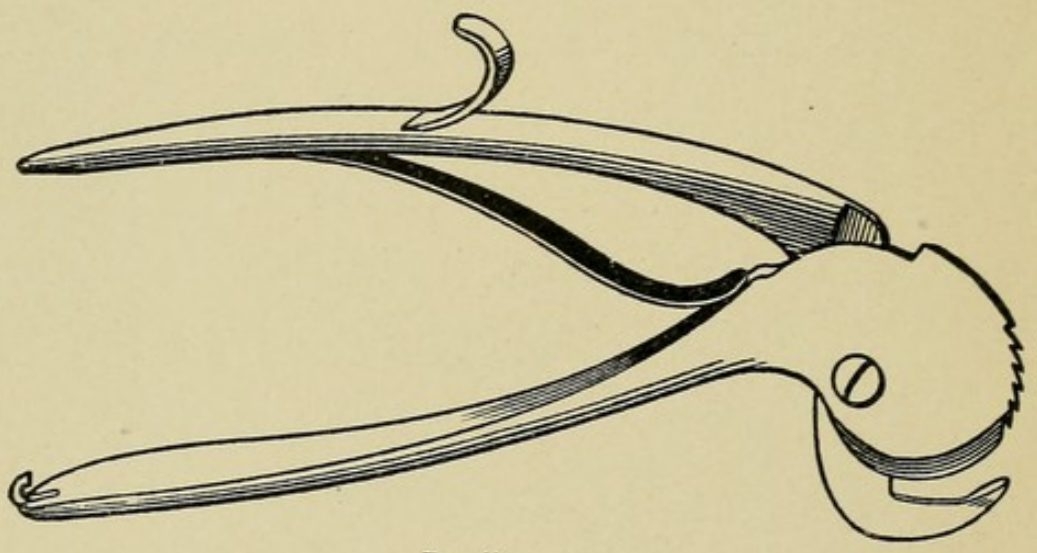
clean, straight cut being thus made, the splint will be in a suitable condition to reapply if necessary. As applied to the part, the strip presents on cross-section the form of an inverted T; and although it increases the circumference of the limb a fraction of an inch, it does not affect the proper tension of the dressing. When a hinge in the dressing is required, two strips are applied, the ridge formed by the one in front being cut, while that behind makes the joint. If the strip has to travel over a very sharp curve, it should be wrapped in wax-paper in order to lessen friction on withdrawal. The strip is placed upon the limb after the initial flannel bandage has been applied, and is held in position until the turns of the plaster bandage themselves retain it. After the dressing has set, traction upon the strip easily withdraws it, because its thickness is diminished by stretching. If this apparatus is not at hand, a piece of rope covered with wax-paper may be improvised for the purpose.

Whether such a hollow ridge has been made

in the dressing or not, either of the following instruments may be used to cut through it.

Reed's cutter is perhaps the most generally useful device for cutting plaster dressings. It is shown in Fig. 100. With it a clean cut is easily and rapidly made by the upper blade, which has a rotary movement, and is pre-

FIG. 100.

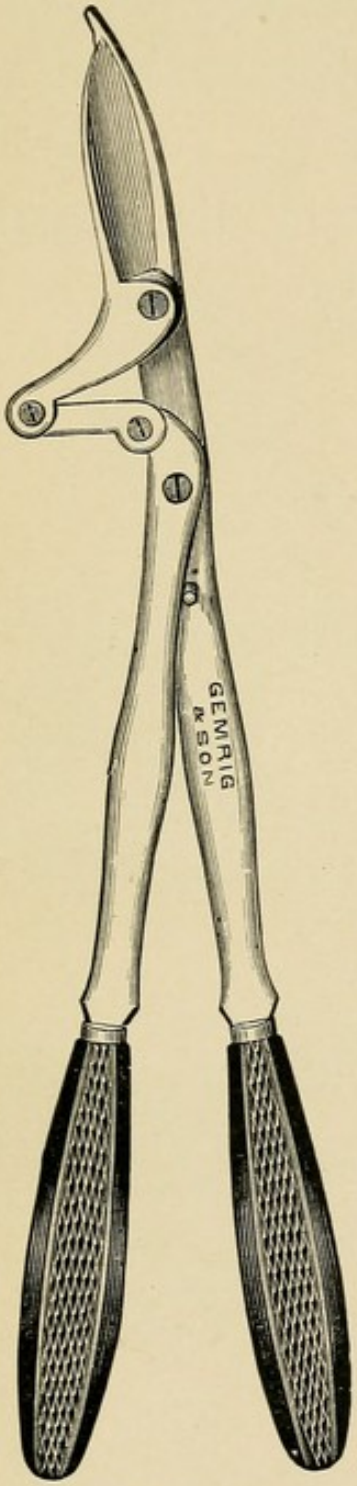


Reed's cutter.

vented from slipping by the serrations on its anterior edge.

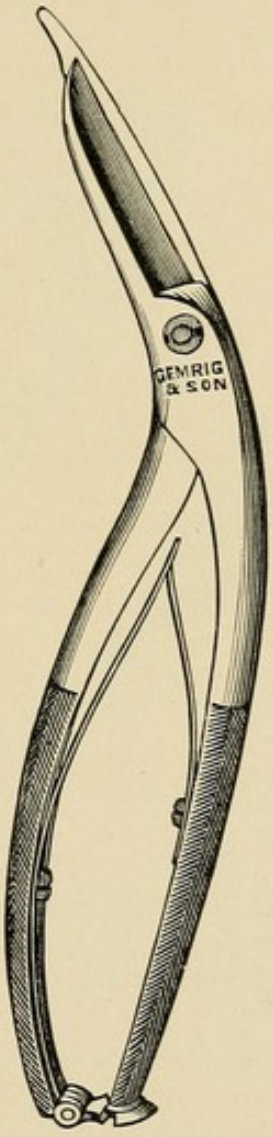
Van Brun's cutter (Fig. 101) is a powerful instrument, but the leverage it exerts is liable to be too great for the strength of the lower blade. Short cuts at a time must therefore be made with it.

FIG. 101.



Van Brun's cutter.

FIG. 102.

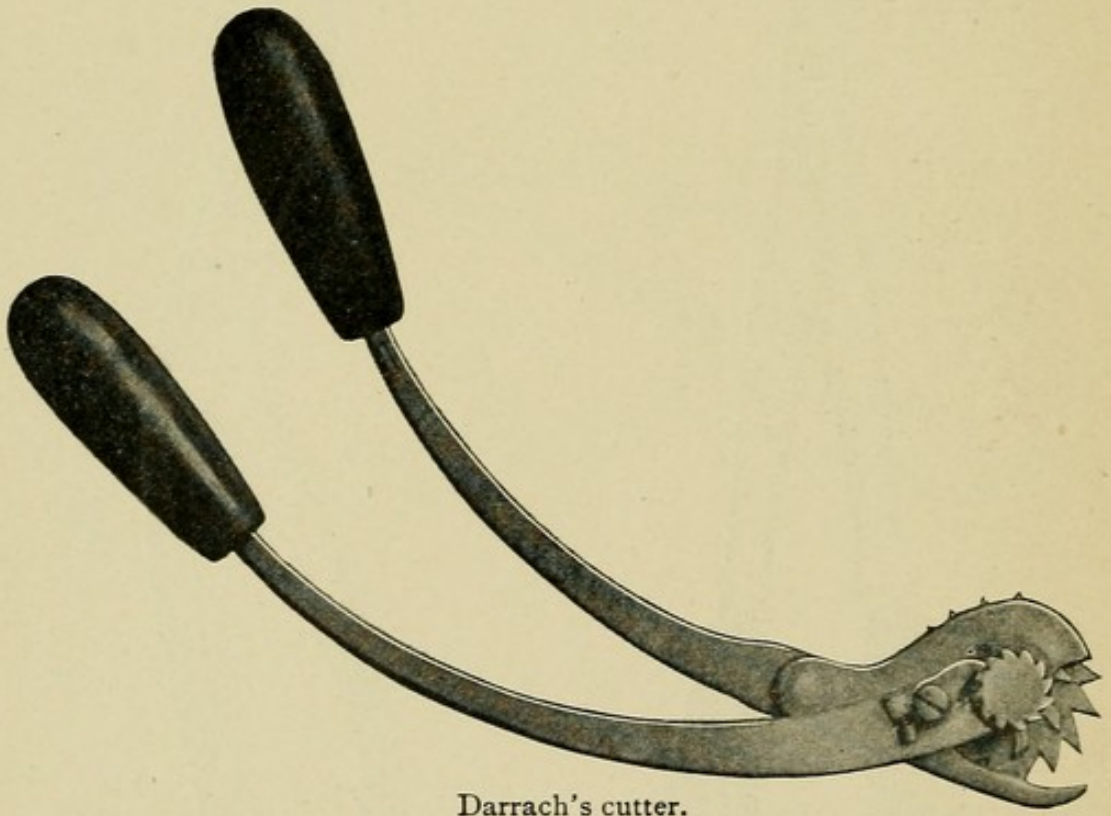


Plaster shears.

The shears shown in Fig. 102 will cut through a thin dressing, but are not adapted either by their power or their mode of action for section of heavy dressings.

Darrach's cutter, shown in Fig. 103, is an

FIG. 103.



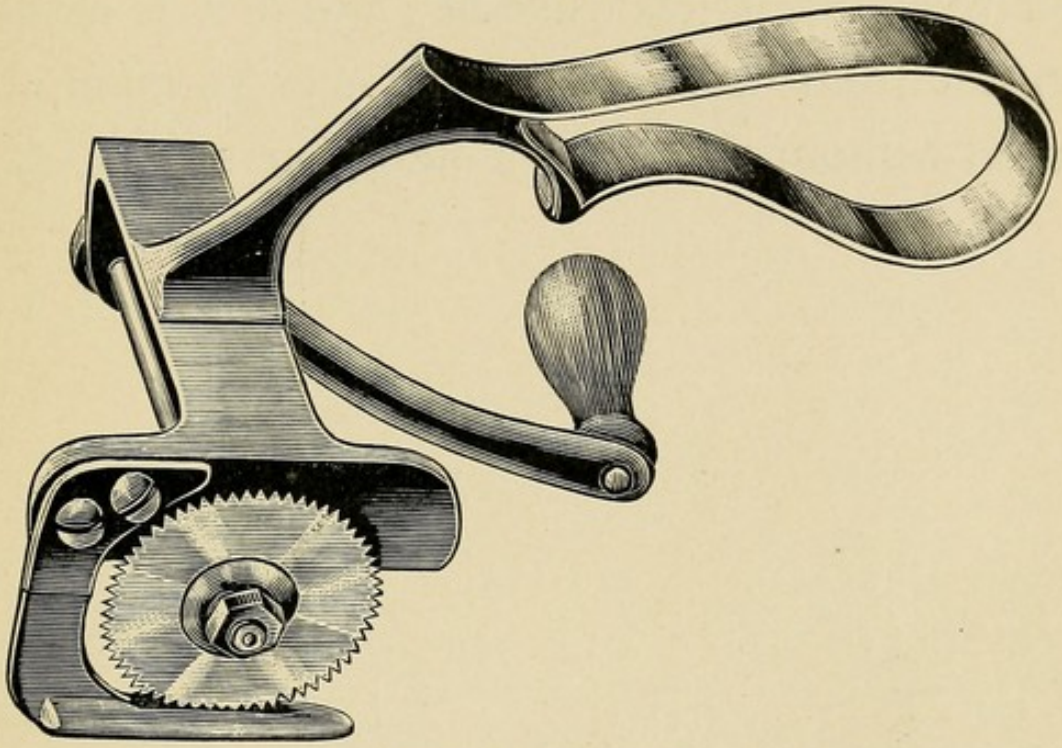
Darrach's cutter.

ingenious device which operates by the action of a rachet upon the cutter.

Pearson's circular saw is shown in Fig. 104. It, at times, works admirably, and slightly

modified, so that its handle would draw in line with the saw instead of to one side of

FIG. 104



Pearson's circular saw.

it, it might be made a most useful instrument.

FIG. 105.

Saw.

With the saw shown in Fig. 105 any plaster dressing may be removed, but its work is slow

and laborious. It is, however, useful at times in conjunction with one of the various cutters.

A heavy pruning-knife with the concavity on the edge is also useful; and if it is made to cut from within outwards, may be manipulated without risk of wounding the skin.

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