Specification of Jean Dominique Hilaire Théodore Decamps : apparatus for raising and suporting invalids, &c.;

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A.D. 1872, 20th MARCH. N° 844.

SPECIFICATION

OF

JEAN DOMINIQUE HILAIRE THÉODORE DECAMPS.

APPARATUS FOR RAISING AND SUPPORTING INVALIDS, &c.

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Apparatus for Raising and Supporting Invalids, &c.

LETTERS PATENT to Jean Dominique Hilaire Théodore Decamps, of Brest, and of 37, Boulevard Bonne-Nouvelle, Paris, France, for the Invention of "AN IMPROVED SUSPENSORY APPARATUS FOR RAISING AND SUPPORTING THE SICK OR WOUNDED, AND OTHERS."

Sealed the 17th September 1872, and dated the 20th March 1872.

PROVISIONAL SPECIFICATION left by the said Jean Dominique Hilaire Théodore Decamps at the Office of the Commissioners of Patents, with his Petition, on the 20th March 1872.

I, JEAN DOMINIQUE HILAIRE THÉODORE DECAMPS, of Brest, and of 37. Boulevard Bonne-Nouvelle, Paris, France, do hereby declare the nature of the said Invention for "AN IMPROVED SUSPENSORY APPARATUS FOR RAISING AND SUPPORTING THE SICK OR WOUNDED AND OTHERS," to be as follows:—

My improved apparatus may be adapted to every kind of bedstead; the uprights or head and foot pieces may be brought closer together or set further apart at pleasure; it is composed of three parts (see annexed Sheet of Drawing), namely, a fixed part, a moveable part, and an actuating mechanism.

Fixed Part.—The fixed part consists of two uprights or head and foot pieces, preferably of round iron or other metal, each composed of three vertical bars, the two ends of which spread apart, bending to an S shape to form the base of the upright, the middle bar remaining vertical. Each of these three bars terminates at its lower part in a tenon pierced with a hole to receive, the middle one a nut bolt, and the two outer ones two longitudinal cross pieces intended to unite the two uprights or head and foot pieces. A horizontal bar placed about 12 inches from the ground strengthens the upright and keeps it in position. The upper horizontal bar uniting the three vertical bars is rounded at the angles. The lower part of the upright is about 39 inches from the ground, and the distance apart of the two outside bars about 28 inches. Three tenons are let into three mortises made vertically in a wooden socket of about 39 inches in length by a thickness of about 4 inches. The two uprights or head and foot pieces are united at their base by two longitudinal cross pieces of rod iron or other metal or material, having a total length of about 7 feet 10 inches, and provided at each end with a screw thread of about 8 inches in length to permit the uprights or head and foot pieces to be brought closer together or be set further apart. These two longitudinal cross pieces are themselves kept at a proper distance apart by a flat cross piece bent over at each end into a ring, and this cross piece is kept in the middle of the two longitudinal cross pieces by an adjusting screw at each end.

Moveable Part.—This part is composed, 1°, of two bars of rod iron or other suitable metal or material, herein-after termed the main supports or bearings, of about 7 feet 10 inches in length, and each having at both ends a screw thread of about 8 inches in length. 2°, of three cross tie pieces of flat iron, pierced at the end with openings to receive the main supports or bearings; five smaller supplementary supporting bars of a total length of about four feet 3 inches, with screw thread at each end of about 12 inches and which may be shifted when required, are fixed on the tie pieces by two nuts at each end. One of the cross pieces is placed in the middle of the two main supporting bars to keep them at the proper distance apart; the two end cross pieces have on their middle part and directed downwards, an extension or lug pierced with a hole. 3°, of six slide rods of round iron or other suitable material, three for each upright or head and foot piece, having a height of about 3 feet 11 inches. Each rod has a ring at its upper and is screw-threaded at its

lower part; these rods are pierced in their length with several horizontal openings intended to receive a stud or pin acting as a stop. 4°, of two bottom cross pieces of flat iron, of about 2 feet 6 inches in length, pierced with three screw-threaded holes to receive the lower part of the slide rods. These slide rods are fixed to the main supports or bearings by two nuts at each end.

Actuating Mechanism.—This part intended to raise the moveable part of the suspensory apparatus is composed, 1°, of a bent lever of about 7 feet 8 inches in length, having two curves in contrary directions and terminating at the point of resistance in a slot with two lateral cheeks, each pierced with a hole to receive a nut bolt which at the same time passes into the lug of the outer tie pieces which connect the main supporting bars, and into the ring of the median slide bar. This extremity is slightly bent inward to give to the two levers a convergent direction, which permits its being operated by a single person. At the junction of the two-thirds with the remaining third at the fulcrum is a boss pierced for the passage of a nut bolt; lastly, the outer end of the lever where the power is applied ends in a ring which permits if required, the passage of a wooden bar for operating the two levers at the same time. 2°, of a fulcrum rod or standard of about 4 feet 1 inch in height, having at the top two cheeks or jaws pierced with a hole for the passage of a nut bolt, and which enters a motise made vertically in a dado or wooden block held against the longitudinal bars of the apparatus by a hook screwed into the wood, and which embraces the said front longitudinal bar. This dado is pierced laterally with a hole for the passage of the nut bolt which passes at the same time into the ring of the fulcrum rod.

Appendages of the Apparatus.—As appendages to the suspensory apparatus there is an arrangement of belts or bands and straps, intended to keep the sick person secured to the supporting bars, and consequently to the moveable part of the apparatus. The belts are five in number, and made of strong linen or canvas; 1°, a belt for the head furnished with a pillow; 2°, belt for the chest made double to form case for a small mattress; 3°, belt for the pelvis furnished with a square cushion pierced in the middle with a hole for the chamber pan; 4°., two belts for the lower extremities. These five pieces may be laced together like a pair of stays and thus form but one piece to support every part of the

patient; on the other hand the independence of each of these belts permits the use of that only which the condition of the sick person renders necessary. Each of these belts has at each end a buckle to receive a corresponding strap passed over each main supporting bar.

Action of the Apparatus.—The suspensory apparatus is completely independent of the bedstead, which, resting on slides or grooved supports placed athwart the horizontal cross pieces of the apparatus, may by the aid of supplementary slides or grooved pieces placed successively end to end with the first slides be rolled to the middle of the apartment, so that the bedding may be aired, the sheets changed and so on, while the sick person remains suspended in his belts or bands. Further, the suspensory apparatus itself resting on slides or grooved supports and being provided with rollers, may in the same manner be run from the bedstead into the middle of the apartment, which is even necessary in order to set it up easily in the middle of the room, and then have simply to run it, say, into an alcove where it would be difficult to set up the various pieces composing it. The several slide pieces are connected by means of two small plates pierced with a hole at each end, this hole corresponding with a hole made vertically in the slide pieces and into which is passed a flat headed pin; to preserve the level these plates are let into the grooves of the slide pieces, and the holes should be countersunk. When the sick person is placed in these belts buckled on to the main supporting bars, it is only necessary to press upon the two levers to raise him to the desired height and leave the bedstead free. As all the apparatus can be taken to pieces it is easily packed and carried.

For hospitals, naval, military or civil, I construct an iron bedstead with this modification, that the uprights or head and foot pieces will have three vertical bars set about 28 inches apart, that is to say, the two outer of these three bars. These three bars will carry ten guide rings for the slide rods, and the whole of the suspensory apparatus may be applied thereto.

SPECIFICATION in pursuance of the conditions of the Letters Patent, filed by the said Jean Dominique Hilaire Théodore Decamps in the Great Seal Patent Office on the 18th September 1872.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, JEAN DOMINIQUE HILAIRE THÉODORE DECAMPS, of Brest, and of 37, Boulevard Bonne-Nouvelle, Paris, France, send greeting.

WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Twentieth day of March, in the year of our Lord One thousand eight hundred and seventy-two, in the thirty-fifth year of Her reign, did, for Herself, Her heirs and successors, give and grant unto me, the said Jean Dominique Hilaire Théodore Decamps, Her special licence that I, the said Jean Dominique Hilaire Théodore Decamps, my executors, administrators, and assigns, or such others as I, the said Jean Dominique Hilaire Théodore Decamps, my executors, administrators, and assigns, should at any time agree with, and no others, from time to time and at all times thereafter during the term therein expressed, should and lawfully might make, use, exercise, and vend, within the United Kingdom of Great Britain and Ireland, the Channel Islands, and Isle of Man, an Invention for "AN IMPROVED SUSPENSORY APPARATUS FOR RAISING AND SUPPORTING THE SICK OR WOUNDED, AND OTHERS," upon the condition (amongst others) that I, the said Jean Dominique Hilaire Théodore Decamps, my executors or administrators, by an instrument in writing under my, or their, or one of their hands and seals, should particularly describe and ascertain the nature of the said Invention, and in what manner the same was to be performed, and cause the same to be filed in the Great Seal Patent Office within six calendar months next and immediately after the date of the said Letters Patent.

NOW KNOW YE, that I, the said Jean Dominique Hilaire Théodore Decamps, do hereby declare the nature of my said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement :—

This Invention relates to a combination of uprights and connecting rods carrying suspension bands with actuating levers in such a manner as to form a suspensory apparatus which may be adapted to every kind of

bedstead for the purpose of lifting the occupant with ease and comfort while the bed is being made, or to ease any portion of the body.

Figure 1 is an end view of the head piece of an apparatus embodying my Invention seen from the inside (the foot piece being identical is not shown), and Figures 1* to 20 inclusive show detached parts of my apparatus.

The upright at the head piece A is composed of two vertical rods; these two rods spreading out at the upper part to form two species of lateral ears, which lengthening the upper horizontal rod or bar of the head piece, give a better fulcrum to the stop pins intended to keep the movable parts of the apparatus in position by preventing their sliding along the vertical part of the rod. The upper part of the head piece is about 4 feet 8 inches from the floor or ground, and the rods are about 2 feet 4 inches apart (the width may be 2 feet 8 inches or 2 feet 10 inches, at pleasure). The uprights A also spread out at their lower part to form a wider base, and thus present a width of about 3 feet. A horizontal bar B keeping the uprights apart is about 1 foot 8 inches from the ground. The two lateral rods or bars cross the ground upon which they rest by a shoulder on the cross piece or socle G, to which they are fixed by nuts *c*. The head piece may be fixed on the socle G in another way, for example, by a tenon pierced by a hole traversed horizontally by a nut bolt which passes at the same time through socle and tenon. From the horizontal bar which limits the width between the vertical rods of the head piece, there may also branch two rods each trending outwards and terminating in a flat end clasping the two sides of the socle, the head piece being thus fixed on this socle by a nut bolt which passes through both the flat ends and the socle. The head and foot pieces are joined at their base by two longitudinal tie rods D, D, D, D, made of flat iron, the flat part of each being placed vertically in its entire length, excepting at its point of junction with the socle, where it is twisted on itself, so as to lie flat on the said socle; it is pierced at each extremity by two holes E, E, E, E, receiving the bolts F, F, there held head down and screw thread upward by a plate screwed into the socle; thus each tie rod may be raised at will and is secured by four nuts, two at each end. These bars are about 7 feet to 8 feet long, according to the length of the bed for which the apparatus is intended. The socle G, of oak or other hard material, is about 3 feet 8 inches to 3 feet 10 inches long, by about 4 inches thick, its two extremities ending in what is called technically a diamond head

(a truncated cone), and carries at each end two rollers H, H, placed laterally and supported by iron claws; this gives 8 rollers or wheels for the whole apparatus. A groove is cut on the top of the socle at each extremity to countersink the screw plate, which keeps in position the bolts intended to receive the tie rods or bars. Four conducting rings or guides I, I, I, I, are fixed on the vertical part of the rods of the head piece, the lower at 28 inches from the ground and the upper at 32 inches. Above these upper guides are 4 holes Y, Y, bored through to receive temporarily the stop pins until they are required for use.

Movable Portion of Apparatus.—This portion is composed, 1°, of two bars of round iron, each formed by joining two half-round iron bars riveted to each other at short intervals. These two bars, termed the main suspension bars, thus approach an oval form, and are from 7 feet to 8 feet in length, according to the length of the bed for which the apparatus is intended. Each is pierced by two holes L, L, L, L, at each end to receive stop pins, which thus keep it fixed to the outer or end tie piece and to the sliding rod. 2°, of three cross or tie pieces K and P in flat iron pierced with oval holes at the ends to receive the main suspension bars, and with five smaller holes to receive three lighter supplementary suspension bars M of round iron of about 4 feet 4 inches long, and carrying a button at the end corresponding with the middle tie piece, and a screw thread N of about 11 inches at the opposite ends with nut. These supplementary bars are shifted at will according to whether the wounded are disabled in the upper or lower limbs. The middle tie piece or cross bar P is hooked and rides on the main lower longitudinal bars to keep them at a proper distance apart; it is held in position by a small flat iron piece Q, Q, forming hinge at each end and kept closed by a pin. The two outer tie pieces or cross pieces K have a rod O about 10 inches long descending from their centres, and terminating in a socket R intended to receive between its two cheeks, the end of a lever forming joint. 3°, of 4 upright sliding rods S, S, S, S, of rod iron, two for each post of the head piece, and about 4 feet 8 inches long without the head. Each rod, flattened at its upper end, there terminates in an oval hole to receive the main suspension bars, and at its lower end by a screw thread of a little less diameter than the rod itself, so that this latter may serve as a stop point.

I would here observed that at Fig. 1, one of the sliding rods is masked by the lever arm hereafter to be referred to. These four rods are pierced

at every 2 inches by eleven holes serving to receive the stop pins. 4°, of two lower cross bars T of flat iron, serving to complete the parallelogram of the moveable portion of the apparatus, and to compel the sliding rods to rise vertically without deviation. These cross bars, about 28 inches long without the extension, are pierced with two screw-threaded holes to receive when required the lower ends of the sliding rods. The said sliding rods are attached to the main suspension bars and kept in position by the pins intended for the holes at the ends of these suspension bars. These two cross bars rest on the socle.

Actuating Mechanism.—This portion of the apparatus designed to lift the moveable part thereof is composed,—1°, of two levers V, V, V, V, of flat iron presenting three curves, two upward and one downward. Each lever is composed of two parts, the small arm curved upward to a length taken in straight line, of about 18 inches from its joint R to that which constitutes its fulcrum X. Outside this latter joint it is terminated by a rounded extension of about 4 inches in length, intended to enter into a socket made in one of the ends of the large arm; these two parts are firmly maintained in position by a pin. The large or main arm forms two curves, that in the middle concave beneath, and the smaller one of the outer extremity concave above. Its length (in straight line) is about 4 feet. Its outer end, where power is exerted, is terminated by a socket Z forming right angle with the main arm, and intended to receive two sticks or handles suitable for obtaining greater moving power in lowering the lever, and consequently raising the invalid together with the movable part of the apparatus. At the resisting end R, the lever terminates by a rounded flat surface placed vertically and gearing into the socket of the descending rod above mentioned. These three pieces, pierced by a hole in their centre, are traversed by a nut bolt to make the joint. 2°, of two fulcrum rods of the lever U, each of a total length of about 4 feet 8 inches without the terminating lug or socket piece which is at its upper end. This socket is intended to receive between its two cheeks a flattened round piece formed immediately before the extension of the small arm, to make the junction which constitutes the fulcrum. The bolt is screw-threaded, and screws into one of the cheeks of the socket or coupling box. The lower part of this fulcrum rod terminates in a flattened surface which enters a large mortice in the socle. A nut bolt traverses the socle horizontally, and this flat part thus forms a joint permitting the

fulcrum rod to move to and fro, following the action of the lever. By increasing the length (calculating in a straight line) of the small arm, and placing higher the lower conducting or guide ring, the sick person could be raised higher. Also by increasing (in a direct line) the length of the main lever bar less strength would be required to be expended; but in lieu of this extra length, weights may be placed at the end where the resistance power is to be exerted, and the force required will be diminished accordingly.

Additions to or Appendages of the Apparatus.—These additions or appendages are composed of three bands, Figures 1, 2, 3, either separate or united to each other by means of five laces or ties, Fig. 19, placed opposite each other; of 14 straps, see Fig. 11; of two supporting sticks, Fig. 6, made of ash, and of two rod iron head pieces, Fig. 5, with socket at each end; of 14 pins, Fig. 7, to hold these head pieces; and lastly, of 14 small rods or wooden pins, Fig. 16, to support the straps. These additions are for the purpose of supporting the wounded or sick person fixed on to the suspension bars, so that he forms as it were part of the moveable portion of the apparatus.

1°. Band for the Head and Back, Fig. 1.—The dimensions are about 32 inches (0·80$^{c}/_{m}$) wide by 26 inches (0·65$^{c}/_{m}$) high. It is formed of two cloths, one coarse and strong, the other fine, as for sheets, being in immediate contact with the body. The two cloths of this band have four seams which divide it into five cross grooves or parts into which one may easily slide one or more thin boards (Fig. 4) of poplar wood of from about $^{1}/_{4}$ to $^{1}/_{3}$ of an inchi n thickness. These grooves or pockets stop at about 6 inches short of the edge of the band, and the space thus left between the two cloths permits the supporting sticks or rods, Fig. 6, to be placed and by the aid of eyelet holes, Fig. 13, placed near the edges of the band and of a cord, Fig. 14, passing into these eyelet holes to hold the supporting rods, Fig. 6, two lateral grooves are formed. Finally on the lateral edges of the band thus fitted are two pieces of strong and supple leather forming each two lugs (Fig. 10) about 4 inches in width, by about 6 inches in length, doubled and very strongly fitted to the band which they envelope on both sides of the coarse cloth, and project from the edge of the band by about from 10 to 12 inches, so as to allow one of the small sticks (Fig. 16) to be passed through the said lugs. These rods or sticks are about 6 inches long, thinning along the middle for about 4 inches, giving a diameter

of about $^1/_2$ an inch, the ends being made olive-shaped to render their insertion into the lugs easy. These lugs, each about 4 inches wide, $0{\cdot}03^c/_m$, form two ears of about an inch, the third part of this lug having been removed to allow the strap to pass, as will be hereafter described. Lastly, the upper edge of this same band carries near its corners two lugs to receive the head straps.

2°. Band for the Pan or Close Stool (Fig. 2).—This band is about 32 inches wide by 18 inches long, made in the same manner as the preceding band as regards the cloth of which it is composed. There are only two grooves or pockets in this band for the reception of the thin poplar bands, Fig. 4, and two lateral grooves to receive the supporting rods, as herein-after described. On the middle part of the lateral edges is a lug (Fig. 10), one on each side of the band to receive the stick, Fig. 16. This band is made with a hole in its centre to receive a close stool, and the two cross grooves or pockets are placed above and below this opening.

3°. Band for the Lower Limbs, Fig. 3.—The dimensions of this band are about 32 inches in breadth by about 22 inches in length; it is made in a similar manner as those for the head and back, having five cross grooves or pockets, two lateral ones and two lugs on each side, but the boards which slide into these pockets being intended to support the lower limbs in a perfectly horizontal position in cases of fracture should be somewhat thicker and of fir wood. The lower edge of this band is furnished with the leathern lugs or pieces before described, Fig. 10, to receive the foot bands or straps. This band is also furnished longitudinally with three cloth stays or loops (Fig. 15), placed equidistant, prepared to receive the boxwood stick of 20 inches in length which is attached to a band of strong double cloth, forming sheath or pocket at its lower part (Fig. 20); this is upheld in a vertical position by two bands buckled to the small sustaining supplemental bar (middle of the apparatus), and is intended to establish at pleasure a separation of the lower limbs in case of fractures.

(Note) 1°. The leathern lugs or loop holes, five in number on each side, are placed on the three bands joined into a single and complete band by the tags or laces which are opposite and about equidistant from each other.

2°. Each of these bands may if needful be covered with oiled cloth,

moleskin, or any other impermeable cloth, to avoid the necessity of changing them too often in case of soiling.

3°. The separation of the bands permits only one or more to be used, as judged best for the sick person.)

4°. Straps, Fig. 11.—These are in number 14; ten take their fulcrum on the head sticks placed at the sides of the bands and four on those at the head and feet. They are 7 feet in length by about an inch wide, pierced with holes about 2 inches apart. They finish with a saddler's buckle, and shew above the buckle an eye, Fig. 12, formed by doubling the strap at this point, which allows the stick to pass into this eye and prevents the strap running on its fulcrum.

5°. Supporting Rods (Fig. 6).—These are two in number, about an inch in diameter, and about 6 feet 2 inches to 6 feet 4 inches long, pierced with a hole at each end, and intended to pass into and through the grooves at each side of the bands so as to make a moveable framing.

6°. Head Pieces.—Two in number; made of rod iron strong enough to keep asunder the supporting rods; their ends have sockets, the axes of which are about 32 inches from one another; these sockets are to receive the supporting rods, and so constitute the moveable framing.

7°. Pins, Fig. 7.—Four in number; placed outside and forming stop points for the two head pieces.

8°. Handles or Holders (Fig. 16).—14 in number, before described, serving as fulcrum for the bands of the apparatus.

Working of the Apparatus—.The suspending apparatus is completely independent of the bed of the invalid; it may be applied to any description or form of bed. The principle of this apparatus is based upon the elevation, by the aid of two levers, of three bands forming frame or hammock at pleasure, fastened together by laces if required to form a single piece, and obtaining their upper fulcrums by the assistance of straps upon the two main suspension bars, and their lower bearings on two rods which pass through lateral grooves made in each of the united bands to form framing, and on the short laces ("cabillots") on the edges of the bands if it is desired to form a hammock. As it is furnished with small wheels the apparatus can be separated from the bed and rolled into the middle of the apartment. In a hospital it may be easily moved to any of the beds where its presence may be required. Or it may remain

in its place and the bed of the sick person be removed from the recess, permitting the bed furniture to be aired and the sheets to be changed, while the invalid is held suspended on the bands.

The apparatus may be easily taken to pieces for packing and transport; the pushing out of 8 pins and unscrewing of 8 nuts effects this object. The 8 nuts which hold together the tie rods D, D, D, may be replaced by a hinge placed in the direction of the axis of the socle or base, the movable bar of this hinge passes between the two bolts of the sockle and closes on to a ring fixed in a plate screwed on the ends of the socle or base, a key retaining it in position. By this means the time required for unscrewing 4 nuts is saved.

The moveable and actuating parts of the suspensory apparatus may be placed at will within or without the framing or head piece (fixed part); to effect this it suffices to change the position of the head and foot pieces furnished with their moveable and actuating parts.

One attendant is sufficient to arrange the straps and place the sick person in a very short time in position to be suspended, and it is only at the moment of action that a second attendant is required to assist in working the two levers simultaneously. But if need be the one man may by alternately actuating the levers raise the sick person to a sufficient height to enable any requisite operations to be effected.

Utility and Advantages obtained for the Sick.—The suspensory apparatus is made to render the following services :—

In internal affections, such as paralysis, typhus, typhoid fevers, gout, and rheumatism, which produce extreme exhaustion or prostration, rendering motion most difficult to the patient, the apparatus will place him in any required position, seated or recumbent, on the right side or the left by means of the leverage, to place him on the close stool or to allow his bed to be made.

In affections of the chest, as asthma, phthisis, or where the respiration is difficult, auxious, the fits of coughing frequent and painful, the sick person will find himself much relieved by being able, without fatigue, to preserve a sitting posture.

In case of scrub or scab the invalid may, by the loosening or tightening of the straps, be placed on either of his sides at will, thus permitting the surgeon easily to dress his sores.

The invalid, by seizing with both hands the two main suspension bars, may move the whole of his body and place himself on the right or left side at will.

The three supplementary suspension bars may be used as supports to hold a shower bath, so that the liquid shall fall directly on the wounded member of the sick person. These same bars also give the practitioner the option of treating fractures of the lower limbs either by suspending or inclining the parts.

A trapeze bar or head stick suspended at the middle bar allows the invalid to draw himself up to a sitting posture; he may be maintained in this sitting position at all degrees of inclination by the addition of a thin board passed into one of the transverse pockets of the back band, and by the arrangement given to the strap, which from the lateral part of this back band takes a turn over the middle bar aforesaid, and is buckled at the lateral part of said band. In case of need the invalid may be raised to this seated position for the making of his bed or placing him on the close stool.

The apparatus moving on rollers or wheels by momentarily unscrewing the nuts of one of the tie rods which secure the head and foot pieces in position at the base, and rolling the said apparatus outside the bed, the invalid (previously suspended on his bands by means of the straps) into an easy chair, or be placed in a bath. But it is principally in surgical matters, such as compound fractures of the lower members, and above all fracture of the thigh or thighs, that it renders essential service, by the possibility it gives of moving the whole body, and consequently making the bed of the invalid as often as may be considered necessary without giving him a single jolt; the movement given by the action of the levers being so easy that the invalid is unaware of the movement so actuated.

I will now describe an application of the suspending apparatus to beds employed in civil, naval, and military hospitals. I construct or I transform one of these iron bedsteads on the hospital model with this modification, that I lengthen the two lateral tie rods or bars of the head and foot pieces of these bedsteads, reuniting them above by a horizontal cross piece; I effect no change in the distance apart of these lateral bars; I place 4 guide rings turned outside, and then the 4 sliding rods, and to this all the moveable part and working mechanism of my apparatus may

be applied. In this manner the regularity of the sick wards will be preserved, the dressing of the line of beds remaining the same.

The object I have sought to attain is the removal of the sick from their beds, and the ability to place them in all positions without calling on them to make always painful, and sometimes impossible, movements; and I will conclude by giving succinctly the composition of the different parts which constitute my surgical and medical suspensory apparatus. It is composed of head and foot pieces A standing on two socles or bases G furnished with 8 friction rollers, casters, or small wheels H, and united at their lower part by two tie rods D, and at their upper part by two main suspension bars J kept apart by three cross pieces K and P pierced with holes. The suspension bars or bearers and tie rods are the only parts which may vary in length according to the length of the bed to which the apparatus is to be applied. Two jointed levers V acting on two supporting rods U, serving thus for fulcrum at X, and jointed on to the socle at W are fitted to every head or foot piece, and raise the two end tie pieces furnished with a descending rod O jointed at its point of resistance R. These tie pieces lift 4 sliding rods S, S, which run in four conducting rings I. The parallelogram formed by the sliding rods and the fulcrum is composed by that which I call the lower cross piece T. The outer end of the lever, where power is applied, Z is terminated by a socket which receives a handle (Fig. 8). The middle tie piece P permits with the assistance of one of the outer tie pieces K, the arrangement of three small supplementary bearing or suspension bars M, N. The mode of action of the apparatus is based upon the elevation by means of two levers of the moveable part of the apparatus, consisting of the suspension bars or bearers, the tie pieces, the sliding rods, and the lower cross pieces which carry with them three bands (Figures 1, 2, 3,) suspended from straps (Fig. 11), and united into one by tags or laces (Fig. 19), so as to form at pleasure either a frame or a hammock on which the sick person lies. Rings or leather pieces (Fig. 10), wooden sticks (Fig. 16), to serve as bearing points or fulcrums to the straps (Fig. 11), and thin boards (Fig. 4) to preserve the rigidity of the bands complete the suspensory apparatus.

Having now described and ascertained the nature of my said Invention, and in what manner the same is or may be performed, I would have it understood that I do not confine myself to the precise details herein given, as such may be varied while retaining all the essential

features of my Invention, and that I claim as secured to me by the herein-before in part recited Letters Patent, the use of,—

1°. The combination of the suspension bars J with the straps, Fig. 11, and the three bands, Figures 1, 2, 3, whether these latter be separate or united, substantially as and for the purposes herein-before set forth.

2°. The combination of the sliding rods S, S, S, S, with the bars J, substantially as and for the purposes herein-before set forth.

3°. The combination of the levers V, V, V, substantially as and for the purposes set forth.

4°. The combination of the thin boards, Fig. 4, with the pockets, substantially as and for the purpose specified.

In witness whereof, I, the said Jean Dominique Hilaire Théodore Decamps, have hereunto set my hand and seal, this Twelfth day of September, in the year of our Lord One thousand eight hundred and seventy-two.

J. D. H. TH. DECAMPS. (L.S.)

LONDON:
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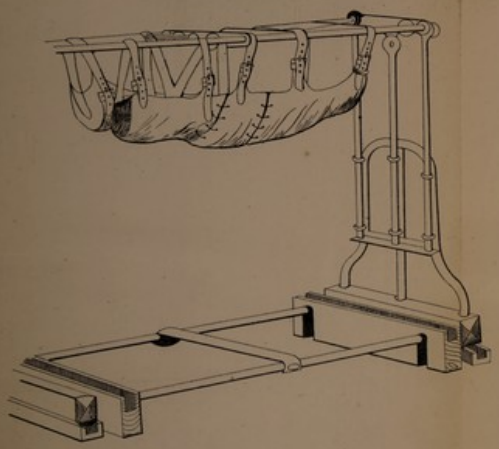
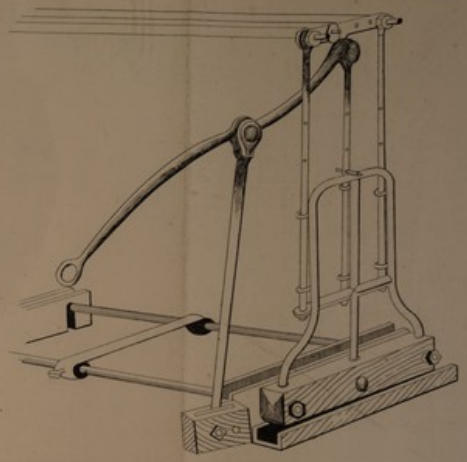
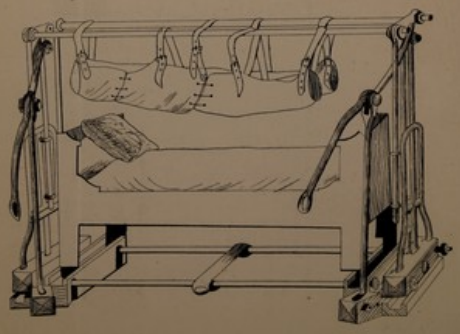
Printers to the Queen's most Excellent Majesty. 1872.

A.D. 1872. MAR.20. Nº 844.
DECAMPS PROVISIONAL SPECIFICATION.

(1 SHEET)







The filed drawing is not colored.

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DECAMPS' Specification.

(1 SHEET)

FIG. 1.

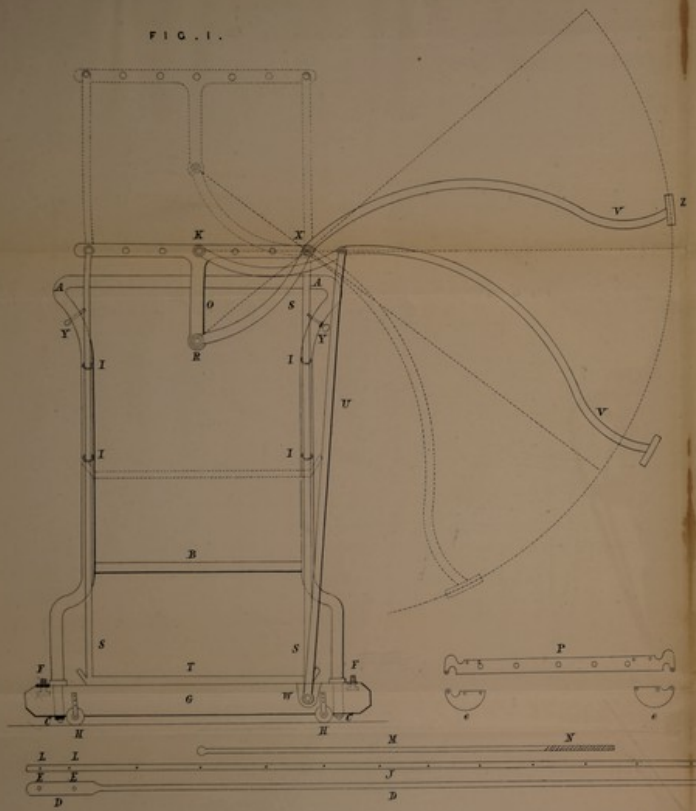


FIG. 1*.

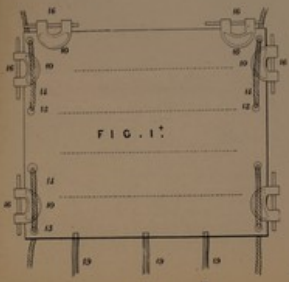


FIG. 2.

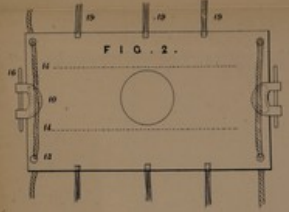


FIG. 3.

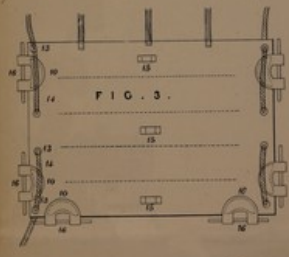


FIG. 9.

FIG. 8.

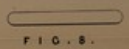


FIG. 12.

FIG. 17.

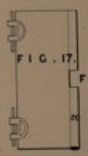


FIG. 18.

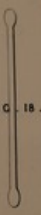


FIG. 11.

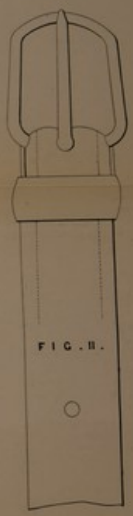


FIG. 4.

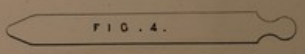


FIG. 5.

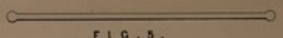
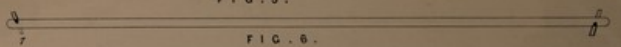


FIG. 6.



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