

Specification of James Coles : prevention and treatment of distortions of the spine, chest, &c.;

Contributors

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A.D. 1846 N° 11,364.

S P E C I F I C A T I O N

OF

JAMES COLES.

PREVENTION AND TREATMENT OF
DISTORTIONS OF THE SPINE, CHEST, &c.

L O N D O N :

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A.D. 1846 N° 11,364.

Prevention and Treatment of Distortions of the Spine,
Chest, &c.

COLES' SPECIFICATION.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, JAMES COLES,
of Harley Street, Cavendish Square, in the County of Middlesex, Surgeon,
send greeting.

5 WHEREAS Her present most Excellent Majesty Queen Victoria, by Her Royal
Letters Patent under the Great Seal of the United Kingdom of Great Britain
and Ireland, bearing date at Westminster, the Third day of September, One
thousand eight hundred and forty-six, in the tenth year of Her reign, did,
for Herself, Her heirs and successors, give and grant unto me, the said James
10 Coles, my executors, administrators, and assigns, Her especial licence, full
power, sole privilege and authority, that I, the said James Coles, my executors,
administrators, and assigns, or such others as I, the said James Coles, my
executors, administrators, or assigns, should at any time agree with, and no
others, from time to time and at all times during the term of years therein
15 expressed, should and lawfully might make, use, exercise, and vend, within
England, Wales, and the Town of Berwick-upon-Tweed, my Invention of
"IMPROVEMENTS IN APPARATUS FOR THE PREVENTION AND TREATMENT OF DIS-
TORTIONS OF THE SPINE AND CHEST; ALSO FOR TREATMENT OF DISEASES OF THE
SPINE AND OTHER DISORDERS WHERE A RECUMBENT POSITION OF THE PATIENT IS
20 REQUIRED;" in which said Letters Patent is contained a proviso, that I, the said
James Coles, shall cause a particular description of the nature of my said

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Invention, and in what manner the same is to be performed, by an instrument in writing under my hand and seal, to be inrolled in Her said Majesty's High Court of Chancery within six calendar months next and immediately after the date of the said in part recited Letters Patent, as in and by the same, reference being thereunto had, will more fully and at large appear. 5

NOW KNOW YE, that in compliance with the said proviso, I, the said James Coles, do hereby declare that the nature of my said Invention, and the manner in which the same is to be performed, are fully described and ascertained in and by the following statement thereof, reference being had to the Drawings hereunto annexed, and to the figures and letters marked thereon 10 that is to say :—

The apparatus in which I claim the Invention of certain improvements consisted of a machine known as the Prone Couch, employed for the purpose of maintaining the recumbent position on the stomach and chest, either by day or by night, and of various machinery for the accomplishment of certain 15 exercises for strengthening and otherwise benefitting the muscles of the back, chest, and extremities of the human body. The prone couch is represented in the Diagram Figure 1 of the accompanying Drawing. It consists of a horizontal frame (*a*) supporting a flap (*b*), which is hinged at (*x*) to a sloping board (*c*), in which is a moveable foot-board (*f*). It is supported on the end 20 of this sloping board and upon two legs (*d*), which are united by a connecting bar (*e*). In reclining upon this couch the body of the patient rests upon the horizontal flap from the point of the shoulder as far as the bend of the hips, from whence the lower extremities hang downwards upon the sloping board towards the foot-board. It is important to the perfect adaptation of this 25 couch to the case requiring its use that the horizontal flap should be of an exact length corresponding to that of the patient, measured from the bend of the hips to the point of the shoulder; and my improvements for facilitating this object consists in the substitution of a sliding framework in place of the simple board which forms the old flap, by means of which I am able to make 30 that portion of the prone couch longer or shorter, as circumstances may require. I thus render the same couch available for patients of different sizes, or to the increasing size of the patient using it. This sliding framework is constructed in two parts (see Figure 2, *a* and *b*), and the following will be found a convenient size. Upon two pieces of half-inch board, *a* and *b*, 35 Figure 3, prepared the width of the sloping board of the prone couch, and seven inches in length (being half the length of the frame) when put together, are screwed or glued lengthways a number of rails of the same thickness, and fourteen inches long, *c, c*, Figure 2; their width must be proportioned to the

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number employed, so that the projecting ends of the rails on one board (*d*, Figure 2,) shall slide into the spaces between the rails of the other (*e*) when the two parts are put together, as in Figure 3. Two similar pieces of half-inch board are then fixed in the same manner on the top of the rails, and
 5 the two parts of the frame thus constructed are put together by inserting the projecting ends of the rails of the one part *d* into the spaces thus formed between the rails of the other *e*, and the two parts being closed the rails are entirely concealed, and a level surface presented on both sides (*a*, Figure 6). This frame is adjusted by means of a screw which is represented in Figure 3, or it
 10 may be drawn out and in by the hand. When this framework is drawn out, its upper surface presents a depression across its surface half an inch deep, and the width to which the parts are separated (see Figure 3), which would allow the mattress that lies upon the couch to sink into it and destroy the equality of the surface, if not remedied. This is done by means of a thin brass
 15 plate the width of the frame, and a sufficient length, which being screwed upon the surface of one division of the frame lies flat upon that of the other, and allows the latter to slide under it (when the frame is drawn out), and thus covering the depression underneath it. Upon the prone couch a thin mattress is used. To fix the foot-board at any height on the sloping
 20 portion of the couch, and in such a manner so that the mattress might lie under it, I construct it as follows:—Two brass or iron brackets are attached to the sides of the foot-board (*b*, Figure 5), and project below it to the thickness of the mattress, generally about two inches; they then expand and form a foot, and at the same time turn inwards and under the mattress.
 25 From the under surface of this part of the foot two button-headed pins project downwards. Attached to the sloping board of the couch, close to and parallel with its outer edges, are two plates of brass or iron, extending from the bottom to as high as it is necessary to raise the foot-board (*b*, Figure 6). In these plates keyholes are made at regular intervals, into which the two button-
 30 headed pins on the foot of the brackets slide, and the foot-board is thus secured in its place.

Figure 5 shews the foot-board thus constructed. The only parts of the prone couch, as a separate apparatus, which I claim are, the expanding frame and the foot-board as above constructed, and I disclaim any other
 35 part.

Figure 7 is a Drawing of the Orthopædic Sofa, which is a combination of the prone couch, and of the means of performing various exercises in one machine, which, when not employed as a remedial agent, represents a common

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sofa. It is not necessary that it should be so arranged, and when economy is an object all those parts which are only appliances of an ordinary sofa, as well as all ornamental work about it, may be omitted without affecting its remedial arrangements. A strong horizontal frame of wood is constructed in the ordinary manner of a sofa frame, Figure 4 (*a*). Its dimensions are not 5 arbitrary, but a convenient size is about seven feet long by twenty-two inches wide, the wood three inches deep by two wide. The upper surface of the side pieces are grooved on their inner edges half an inch deep and an inch wide (Figure 4, *b*). This frame rests upon four legs, either permanently fixed or attached by common bed screws for the convenience of carriage; the legs 10 must not project on their inner sides beyond the plane of the sofa frame. Within this frame, and forming its bed, lie those parts of the prone couch which compose its horizontal expanding flap and its sloping board *a*, Figure 6. The latter is divided into two parts, and the three parts are hinged together. They are not attached to the sofa frame, but the 15 middle flap is hinged to a square frame of wood (*c*, Figure 4), which traverses in a groove on each side of the frame *d*, the latter being at this part prevented from spreading and allowing the sliding frame to fall out of the grooves by an iron cross stay *e*, Figures 4 and 6. These three flaps when lying horizontally within the sofa frame, are supported in the middle by the 20 sliding frame in front by brackets to be described, and the bottom flap being hinged to the middle portion is retained in its place at the other extremity by two bolts, which are received into the grooves in the frame of the sofa (*f*, Figure 4), which allows them to traverse when the sliding frame is moved backwards and forwards. This movement is effected by means of a screw, 25 which is attached to the under surface of the sliding frame, and works in a nut fixed to the cross stay, which binds the sofa frame.

Figure 6 shows the couch and its sliding frame removed from the sofa and elevated upon its brackets for use. This is done by drawing the bolts in the bottom flap, which is allowed to drop to the floor; the middle flap is then 30 raised to complete the slope, and this and the horizontal flap is supported in their places by the brackets. These brackets are represented in Figure 8; they are also shewn at (*g*), Figures 4 and 6, the first shewing one when unemployed and packed away under the expanding flaps of the couch, which it then supports as part of the sofa bed, and the other representing its posi- 35 tion and mode of action when supporting the flaps in forming the prone couch. They are best constructed of iron or brass. The standard (*a*, Figure 8,) must be of a length proportioned to the height to which the horizontal portion of

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the prone couch is to be raised; it is jointed to a flat foot (*b*), which is bolted to the under surface of the front cross bar of the sliding frame (*i*, Fig. 6).

This joint allows the bracket to lie horizontally close to the inner side of the sofa frame, or to be raised perpendicularly and at right angles with its foot.

- 5 The head of the standard (*c*) expands, and its upper surface is formed into a deep groove (*d*), to the posterior extremity of which a tongue is hinged (*e*), which is of a length proportioned to the horizontal flap of the prone couch, and which, when the bracket is unemployed, lies in a straight line with the standard on the inside of the sofa frame, where it is supported by a pin *g*,
- 10 Figure 4. When the standard is raised perpendicularly the tongue drops into the groove in its head, which it exactly fills, and thus forms a horizontal rest for the horizontal flap of the prone couch. The angle thus formed comes in immediate contact with the joint of the prone couch, and a loop which projects from the tongue of the bracket backwards (*f*), and to which it is jointed,
- 15 passes over the head of a thumb screw attached to the sloping board of the couch, and is secured there by turn of the screw, which firmly fixes the couch and bracket in their places. A strong screw passes upwards through the head of the standard into the bottom of the groove and under the tongue of the bracket when lying in it. By turning this screw the tongue is raised more or
- 20 less in the grove, and thus the horizontal flap of the couch is more or less sloped and the angle of the couch altered. Upon the couch lies a thin mattress similar to that in use on the ordinary prone couch, and a foot-board is also attached to and used in the same manner as previously described. To the foot of the sofa a hollow cushion is attached (*b*, Figure 7); it is composed of a
- 25 framing with two ornamental side pieces, which framing is stuffed and covered externally so as to form a scroll to the sofa, and lined with baize or otherwise inside. It is strongly hinged to the cross rail of the sofa, so as to turn back level with the sofa frame (Figure 11). This foot scroll contains an apparatus represented in Figure 13, and which is exposed to view when the scroll is
- 30 turned back, as in Figure 11. It is used as represented by the Figure in the sawing and stretching exercises, and consists of a strong spiral spring coiled round a spindle, and covered by a cylinder of brass, tin, or other suitable material *a*, Figure 13. The spindle *b* revolves when required, and is fixed at other times by means of a rack and lever (*c*). Upon this spindle at each
- 35 extremity of the cylinder is fixed a sheave of metal or wood (*d*), which has wound upon it a strap of web or leather about five feet long, with a spring loop at the end of it. Upon the outside of the left-hand sheave is fixed the rack which works in a box (*e*), to which the lever is attached (*f*), the tooth

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of the latter taking the notch of the rack and the other end projecting externally; the spindle on this side then terminates in a brass (*b*) bearing fixed in the ornamental side piece. From the sheave on the right hand the spindle passes through the ornamental side piece of the foot scroll where it is squared for the reception of a window (*g*). The spindle is covered when not 5 in use by a moveable pattré or ornament (*c*, Figure 7). Round the middle of the cylinder a strap is coiled, about six feet long, which terminates in a wooden handle (*h*). This handle, when not in use, is supported on two hooks fixed on the inner side of the cross bar of the scroll, and when in this position it prevents the cylinder from moving whilst the spindle is in action in the 10 stretching exercise, as the rack secures the spindle when it is required to use the cylinder in the sawing exercise. At the head of the sofa is a scroll, similarly constructed and covered to that at the foot, but which surmounts a square box to which it is hinged (*d*, Figure 7). In this situation it furnishes a convenient pillow for the patient whilst reclining on the couch. It is not 15 open at its under part like the foot scroll, but is closed by a flat board corresponding with the top of the box upon which it lies. When this scroll is turned back at the joint it forms a table at a convenient height in front of the couch. See a Drawing of the couch with a patient upon it (Figure 15). It is to alter the distance between this table or the pillow and the couch that the 20 frame upon which the latter rests is made to traverse. An iron spindle passes through this head scroll, its squared extremities projecting through the ornamental sides, and being covered by their moveable pattries (*c*). To these the winders, (Figure 9), two of which accompany each sofa, can be attached, and the grinding exercise with one or both hands performed by the patient 25 whilst reclining upon the couch. The square box upon which the head scroll rests when closed is hinged to the cross rail of the sofa frame like the foot scroll, and the box and scroll thus turn back and out of the way when required to form a level surface with the sofa frame *d*, Figure 11. The box when thus turned back exposes a hand rail projecting out of it, which is grasped by the 30 patient whilst stretching (see Figure 18). During that process it is necessary to fix the box in its open position; this is done by means of a brass loop, which is attached to the box and passes under the cross rail of the sofa frame, there being fixed, by means of a thumb screw, to the rail; a similar loop is attached for the same purpose to the foot scroll. On various parts of the sofa, as shewn 35 in the Drawings, small ornamental pattries or medallions are attached; five of them are removeable, the others permanently fixed. The situation of three of these moveable pattries have been already described as covering the ends of

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the spindles; the remaining two will be found one on each side of the sofa frame nearest the head; they also cover spindles, which however, do not revolve but pass through the rails of the sofa, and are rivetted into iron plates (*h*, Figure 4,) screwed upon their inner sides. These fixed spindles are for the purpose of attaching the winders one on each side of the sofa frame, to be used in the sawing exercise. The heads of all the spindles and screw pins of the apparatus are made of the same size, which the sockets of either of the winders will accurately fit, so as to remove all difficulty in attaching them; and the moveable pattries are retained in their places by means of a collar which fits into the space left round the spindle for the reception of the socket of the winders. To perform the swimming exercise a traversing cushion is also required (Figure 10), which works in the grooves on the upper face of the sofa frame. It is constructed upon a frame of wood the width of the sofa, and about square. It is French stuffed, and rests upon two longitudinal bars, which are attached to the under surface of its frame *a* in such a manner as to fit into the grooves upon the upper surface of the side rails of the sofa frame. Into these bars are inserted four friction rollers (*c*), which enables the cushion to traverse easily the whole length of the sofa frame backwards and forwards. Two cushions similarly constructed, but without the rollers, and of a size to fill the remaining space between the head and foot scrolls of the sofa, assist to form a complete sofa squab, which covers the whole of the apparatus underneath. These two cushions, with the larger roller and pillow *e, e*, Figure 7, are the only parts not applicable to the remedial purposes of the sofa, and may be put by when the apparatus is required for use.

The only remaining part of the apparatus to be described are the spring and levers by which the rowing exercise is performed. This is represented in Figure 12, and consists of a strong plate of steel (*a*) wound as a spring round an iron spindle (*b*), to which it is rivetted. The other extremity of the spring is screwed to the under surface of the cross bar of the moveable frame to which the couch is attached (*c*). The spring being thus fixed, the spindle is made to revolve, by which the spring is acted upon. This spindle at each extremity passes through a brass bearing (*e*), and then gives off a lever (*f*) at right angles with it. These levers are about two feet long, and terminate in handles (*g*). They are bent after passing from under the bar to which the spring is attached so as to rise to a level with the inner edge of the grooves in the sofa frame (*m*, Figure 4), along which they lie close and out of the way when not in use. When the rowing exercise (17) is performed the end flap of the couch is lowered to the ground, and the patient, seated upon a cushion

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with her feet against the foot-board, grasps the handles of the levers, and, bending herself backwards, draws them with her until her head touches the sofa behind her; she then rises herself, and bending forwards to the extent of her reach, repeats the stroke backwards as in rowing. The sawing exercise is performed as represented in the Drawing 14. In the swimming exercise (16) the winders being fixed on the spindles in the sides of the sofa frame, the patient lies at length upon the traversing cushion (10), and grasping the winders, draws herself backwards and forwards to the extent of her arms. In the stretching exercise (18) a leather belt is fixed round the waist, from which a strap descends on each side, terminating with a ring; the patient, lying upon the traversing cushion, as in the last exercise, grasps the hand rail in front of her; a winder is then applied to the spindle of the cylinder in the foot scroll and held in the right hand whilst the lever of the rack is depressed with the left; the two straps upon the sheaves will be thus unwound to the length required to attach them to the rings of the belt round the waist. Removing the finger from the lever of the rack will arrest this motion, and enable the operator to quit the winders and attach the straps; then, by reversing the action of the winder, the straps will be tightened to the required degree of tension which the rack will maintain; the patient then, pulling at the hand rail, can stretch the body to the extent required.

I claim all those parts of the apparatus herein described as the Orthopædic Sofa which are necessary to the accomplishment of the various objects enumerated, both as regards position and exercise, in combination; and I disclaim all those parts of the sofa which are not necessary for these purposes. I claim the prone couch as herein described as part of the Orthopædic Sofa, both separate and in combination. I claim the brackets which support the couch also, both separate and in combination. I claim the apparatus for performing the rowing exercise, and numbered 12 in the Drawings, both separate and in combination. I claim the apparatus by which the sawing and stretching exercises are performed, numbered 13 in the Drawings, both separate and in combination. I disclaim the invention of any of the exercises herein described except as used in combination upon the Orthopædic Sofa.

In witness whereof, I, the said James Coles, have hereunto set my hand and seal, this Third day of March, One thousand eight hundred and forty-seven.

JAMES (L.S.) COLES.

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AND BE IT REMEMBERED, that on the Third day of March, in the Tenth year of the reign of Her Majesty Queen Victoria, the said James Coles came before our said Lady the Queen in Her Chancery, and acknowledged the Instrument aforesaid, and all and every thing therein contained and 5 specified, in form above written. And also the Instrument aforesaid was stamped according to the tenor of the Statute made in the fifty-fifth year of the reign of His late Majesty King George the Third.

FARRER.

Inrolled the Third day of March, One thousand eight hundred and forty-seven.

LONDON:

Printed by GEORGE EDWARD EYRE and WILLIAM SPOTTISWOODE,
Printers to the Queen's most Excellent Majesty. 1857.

AND HE IS REMEMBERED, that on the Third day of March, in the
 fifth year of the reign of Her Majesty Queen Victoria, the said James (who
 the before our said Lady the Queen in Her Chamber, and acknowledged
 a lastment address, and all and every thing therein contained and
 added, is here above written. And also the lastment address was
 signed according to the tenor of the Statute made in the fifth year of
 the reign of His late Majesty King George the Third.

Witnessed the Third day of March, One thousand eight hundred and
 thirty-seven.

LONDON:

Printed by GEORGE THOMAS and JOHN BARNARD, Stationers,
 in Strand to the Queen's most Excellent Majesty. 1837.



FIG. 1.



FIG. 2.

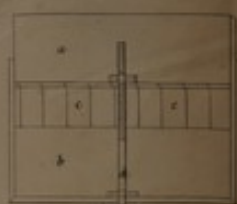


FIG. 3.



FIG. 4.



FIG. 5.



FIG. 6.



FIG. 7.

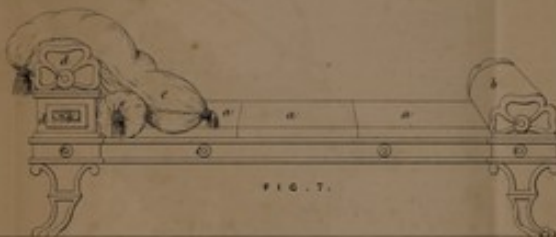


FIG. 8.



FIG. 9.

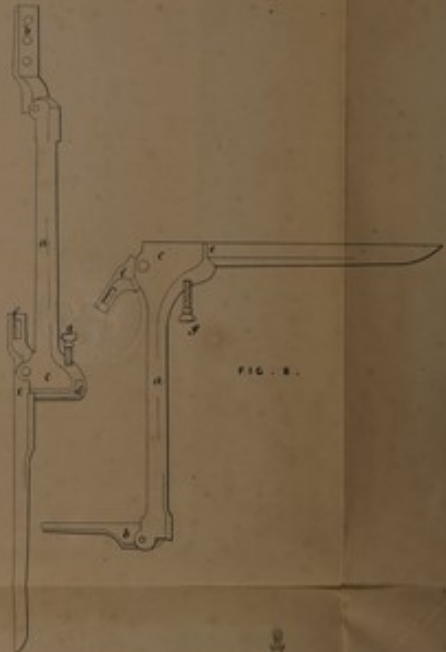


FIG. 10.



FIG. 11.

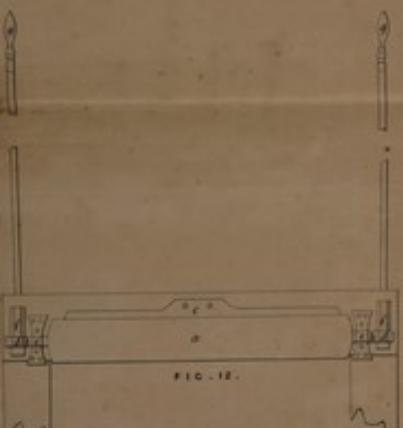


FIG. 12.



The Sawing Exercise

13.



FIG. 14.



The Prone Couch

15.



The Swimming Exercise

16.



The Rowing Exercise

17.



The Stretching Exercise

18.

