

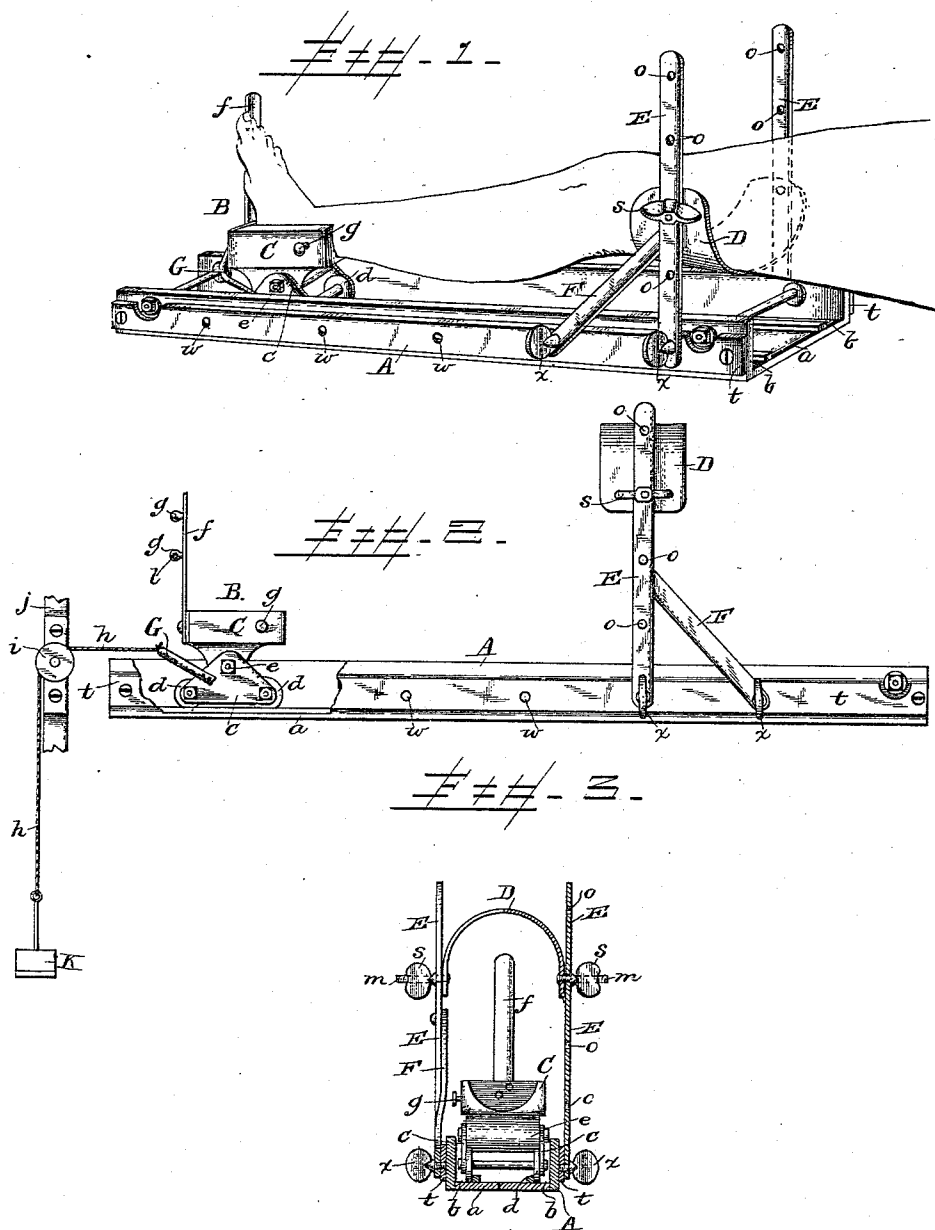
(No Model.)

J. E. RUEBSAM.

APPARATUS FOR TREATMENT OF ANKYLOSIS.

No. 439,255.

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APPARATUS FOR THE TREATMENT OF ANKYLOSIS.

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To all whom it may concern:

Be it known that I, JOHN E. RUEBSAM, of the city of Washington, in the District of Columbia, have invented a new and Improved
5 Apparatus for the Treatment of Ankylosis of the Joints of the Legs and for other Purposes, of which the following is a specification.

In the treatment of anchylosis and neurosis of the joints of the legs it is necessary that the
10 patient should exercise his legs in order to give motion to the joints. This exercise must be taken while the patient is in bed or in an equivalent position. In many cases also it is extremely necessary that only a limited motion
15 should be permitted, in order that the treatment may be most effectual. Sometimes it is necessary that the motion should be limited in one direction and sometimes in the opposite direction.

Now, the primary object of the present invention is to provide an apparatus which shall enable the patient to exercise the hip, knee, and ankle joints while in a recumbent position, and, when necessary or desirable, to
25 enable the extent of movement, either up or down, to be limited in accordance with the exigencies of the case or the discretion of the physician.

Secondarily, the apparatus is designed to
30 be used in the extension of the leg in case of a fracture of the same and as a leg-rest for holding the leg in a more or less elevated position, either temporarily during an examination or operation upon the same or for an extended period, as is frequently desirable in
35 the treatment of elephantiasis or hydrophic affections.

The improved apparatus is illustrated in the accompanying drawings, in which—

40 Figure 1 is a perspective view of the apparatus, showing the manner of use when the leg is being exercised with a limited downward movement. Fig. 2 is a side view of the same, showing the parts in a different position
45 from Fig. 1, a part of the supporting frame or box being broken away to show the foot-trolley more clearly, and Fig. 3 is a cross-section of the apparatus.

The various movable parts of the apparatus
50 are supported upon a base, consisting, preferably, of a trough-shaped box A, the bottom of

which is adapted to be placed directly upon the bed or couch on which the patient is lying. This box may be of any suitable length to offer the necessary or desired extent of
55 movement, and may be of any desired width consistent with its stability when in use. The bottom *a* of the box is provided on its upper surface with suitable longitudinally-extending parallel ways or tracks *b b*, in or on which
60 the foot carriage or trolley B travels. This foot-trolley is composed of a suitable frame *c*, having a proper number of wheels *d d*, which run in the ways *b b*.

On the trolley-frame *c* is pivotally mounted
65 the foot-support C, the axis *e* of which extends horizontally and at right angles to the path of the trolley, so that when the foot of the patient is bandaged to the support C the ankle may be moved and the ankle-joint ex-
70 exercised. The pivotal mounting of the foot-support also permits the trolley to run easily at all times on the track during the exercise of the knee or hip joints.

The foot-support C is furnished with a rigid
75 sole-plate *f*, against which the sole of the foot rests.

The trolley is properly connected to the foot of the patient by bandaging, the band-
80 ages being maintained in position by fixed projections *g* on the support C and sole-plate *f*. The foot of the patient having been bandaged to the foot-trolley, the patient bends the leg-joints and the trolley travels back and forth on its ways, supporting the weight of
85 the leg, and thus rendering the exercise easy for the patient.

In some instances it is desirable that the patient should be given additional exercise, and for such cases the foot-trolley is provided
90 with a bail G, to which may be attached a cord *h*, which extends over a pulley *i*, mounted on any convenient fixed support *j*, said cord supporting a weight *k*, as shown in Fig. 2. In exercising under these circumstances the
95 patient has to raise his leg in opposition to the weight *k*. If desired for exercising the ankle alone, the cord *h* may be attached to an eye *l* on the sole-plate *f*. The foot-support C is properly recessed, as shown in Figs.
100 1 and 3, to receive and support the heel of the patient.

In order to limit the movement of the leg in one direction or the other, as may be desirable or necessary, a movable and adjustable shield D is provided. This shield is adjustably supported on and between two vertical posts E E, secured on opposite sides of the base A. This shield is provided with exteriorly-projecting screw-threaded pintles *m* on opposite sides, which are adapted to be passed through any pair of a series of vertically-arranged adjusting-apertures *o o* in the vertical posts E E, whereby the shield may be vertically adjusted.

The shield is held in any desired position by means of thumb-nuts *s*, which screw on the pintles *m*, and which enable (when desired) the shield to be clamped tightly and immovably in any given position. The shield is properly curved or arched between its supporting-posts so as to be adapted to the leg. When it is desired to limit the downward movement of the leg, the shield is placed, as shown in Fig. 1, with its curve or arch extending downwardly, so that when the leg reaches its downward limit of motion it rests in the shield. When, however, the shield is to be used to limit the upward movement of the leg, it is turned around, as shown in Figs. 2 and 3, so that it arches upwardly. If then the leg is moved up, the knee strikes the shield, and thus the upward movement of the leg is limited.

When the shield occupies its position shown in Figs. 2 and 3, it is necessary that it should be clamped tightly by the thumb-nuts to the supporting-posts E E in order that it may maintain its position. When, however, it occupies the position shown in Fig. 1, the thumb-nuts may be left loose, so that the shield may swing on the pintles *m*, which constitute pivots therefor.

To accommodate the shield to different persons and to enable it to be placed under the calf or thigh, over the knee, or otherwise, as desired, the posts E E are adjustably secured to the sides of the box A, so that they may occupy different positions along the sides of the box. To this end, each side of the box (or rather the metal strap *t*, which is preferably secured to each side) is provided with a series of properly-distanced female-threaded apertures *w*, in which enters a thumb-screw *x*, which passes through apertures in the lower ends of each post E. Each post is also properly braced by a brace-bar F, which is secured to the strap *t* by a thumb-screw *x* at

its lower end, and is also permanently attached at its upper end to its post.

The shield can be used as a leg-rest to hold the leg at any desired height, the shield then occupying a position similar to that shown in Fig. 1, and being preferably suspended freely on its pintles, so as to swing thereon, if desired. When the shield is thus in use as a leg-rest, the trolley may be entirely removed.

The apparatus is used for the extension of the leg in the case of a fracture by bandaging the foot to the foot-trolley and then attaching to the trolley any desired weight by means of the cord *h*. When thus used, the shield and its supports may be entirely removed.

I claim as my invention—

1. The base having suitable parallel ways or tracks, in combination with the wheeled foot-trolley adapted to travel back and forth thereon when the foot of a patient is secured thereto, substantially as set forth.

2. The base having suitable ways or tracks, in combination with the foot-trolley traveling thereon, and the foot-support pivotally connected to said trolley, substantially as set forth.

3. The base having suitable ways or tracks and the foot-trolley traveling thereon, in combination with the shield mounted above said ways or tracks, substantially as set forth.

4. The base having suitable ways or tracks and the foot-trolley traveling thereon, in combination with the shield mounted above said ways or tracks and vertically adjustable, substantially as set forth.

5. The supporting-posts, in combination with the shield pivotally mounted thereon, substantially as set forth.

6. The base and the supporting-posts, one on each side of said base and longitudinally adjustable thereon, in combination with the shield mounted between such posts, substantially as set forth.

7. The base and the foot-trolley traveling thereon, in combination with the weight, a cord connecting said weight and trolley, and an intermediate pulley over which said cord passes, substantially as set forth.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JOHN E. RUEBSAM.

Witnesses:

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