

No. 730,253.

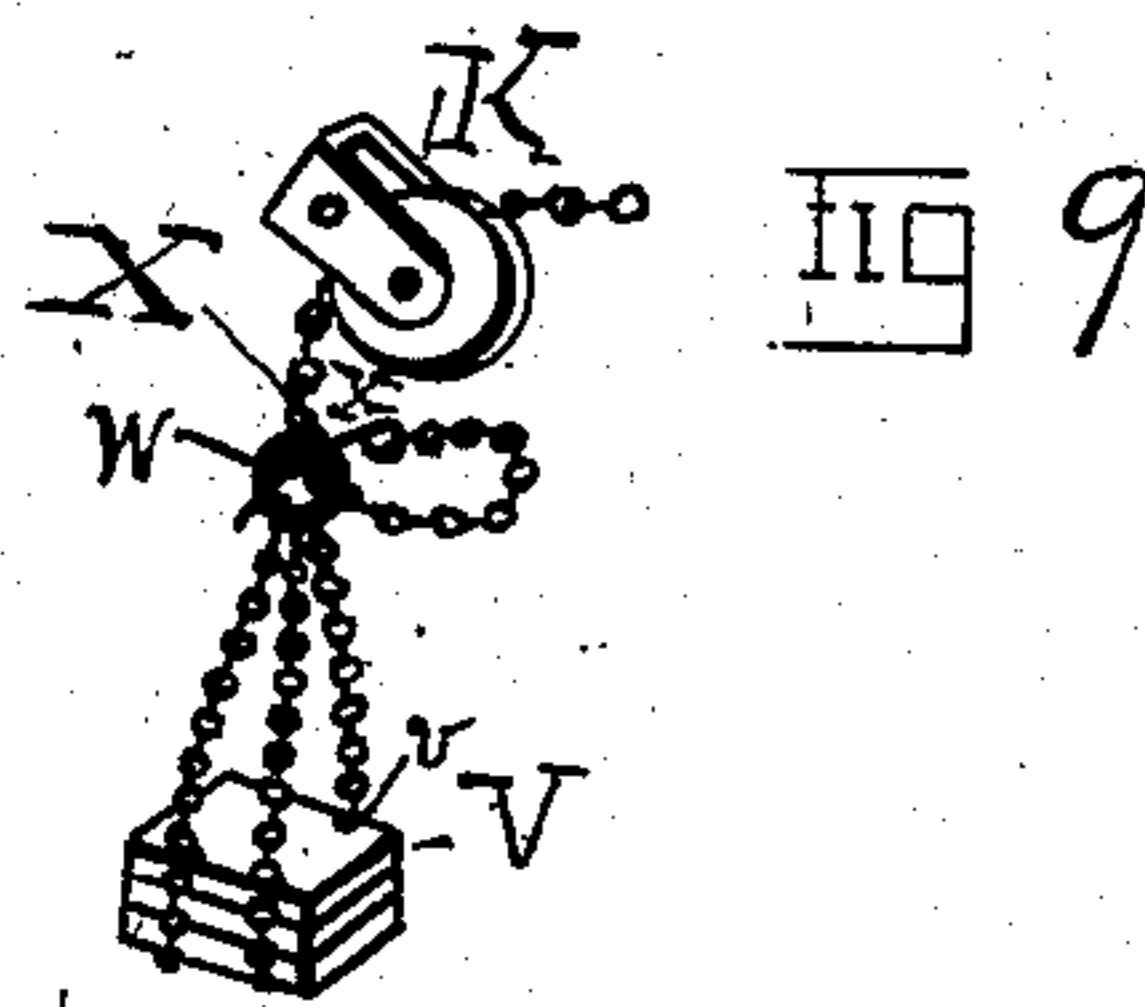
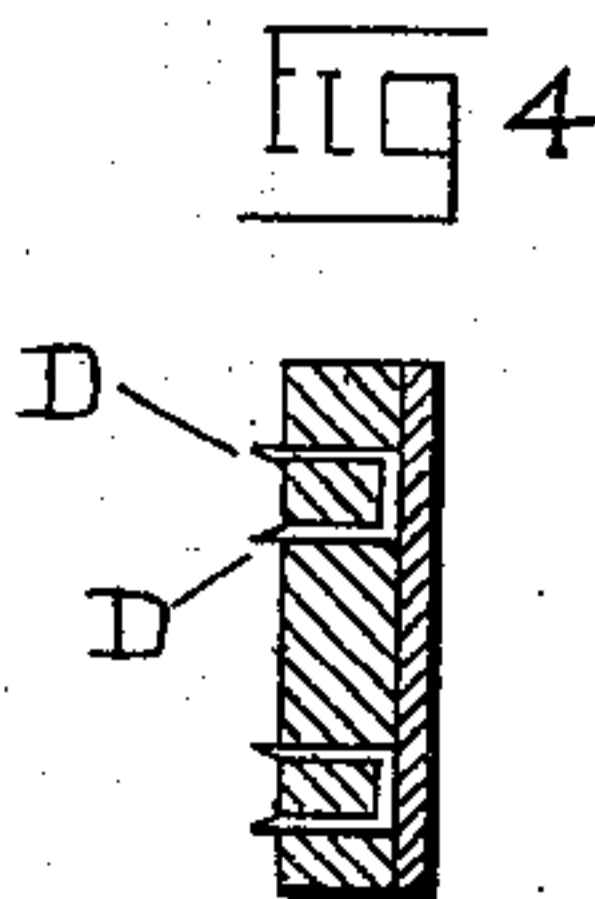
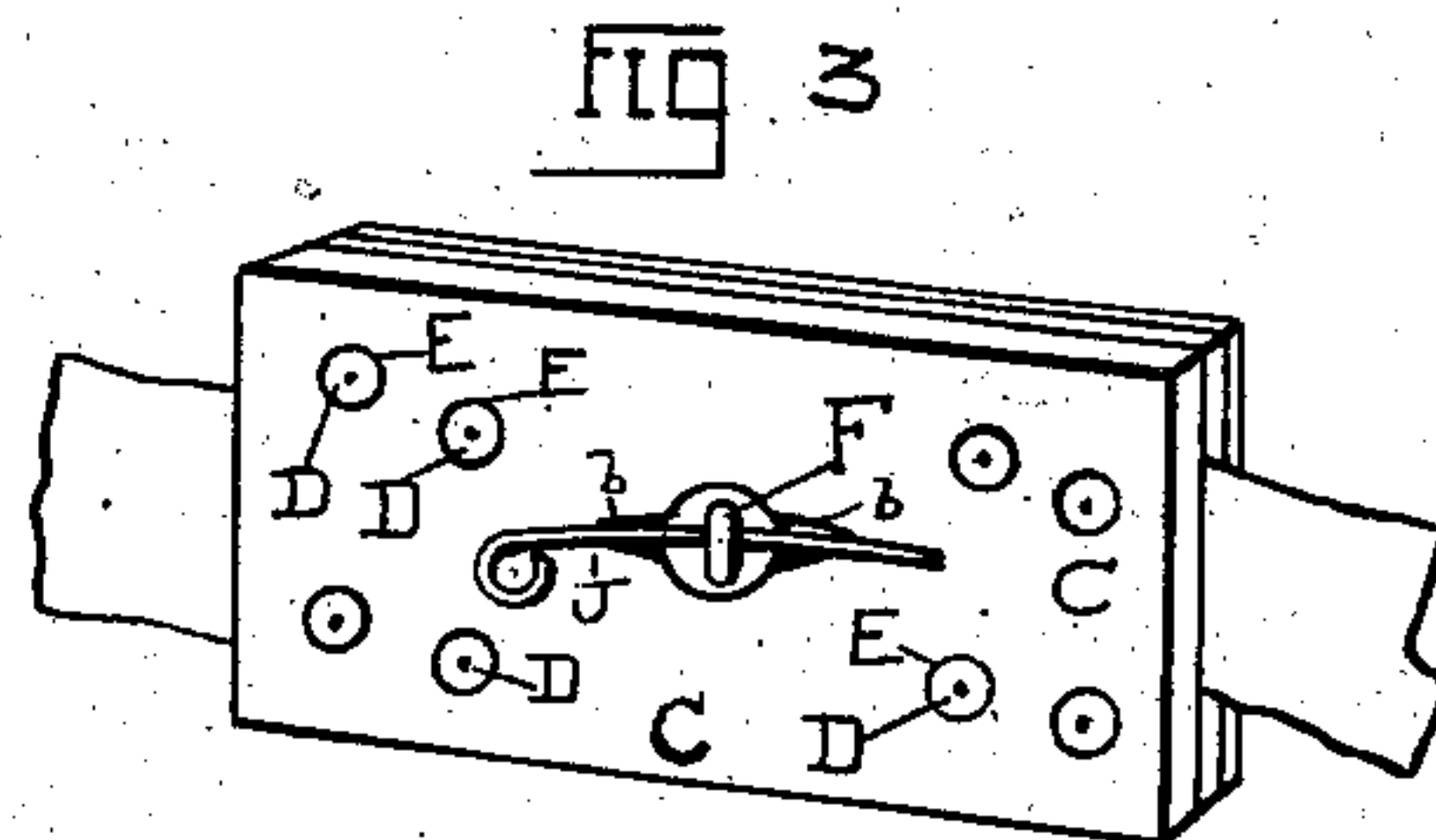
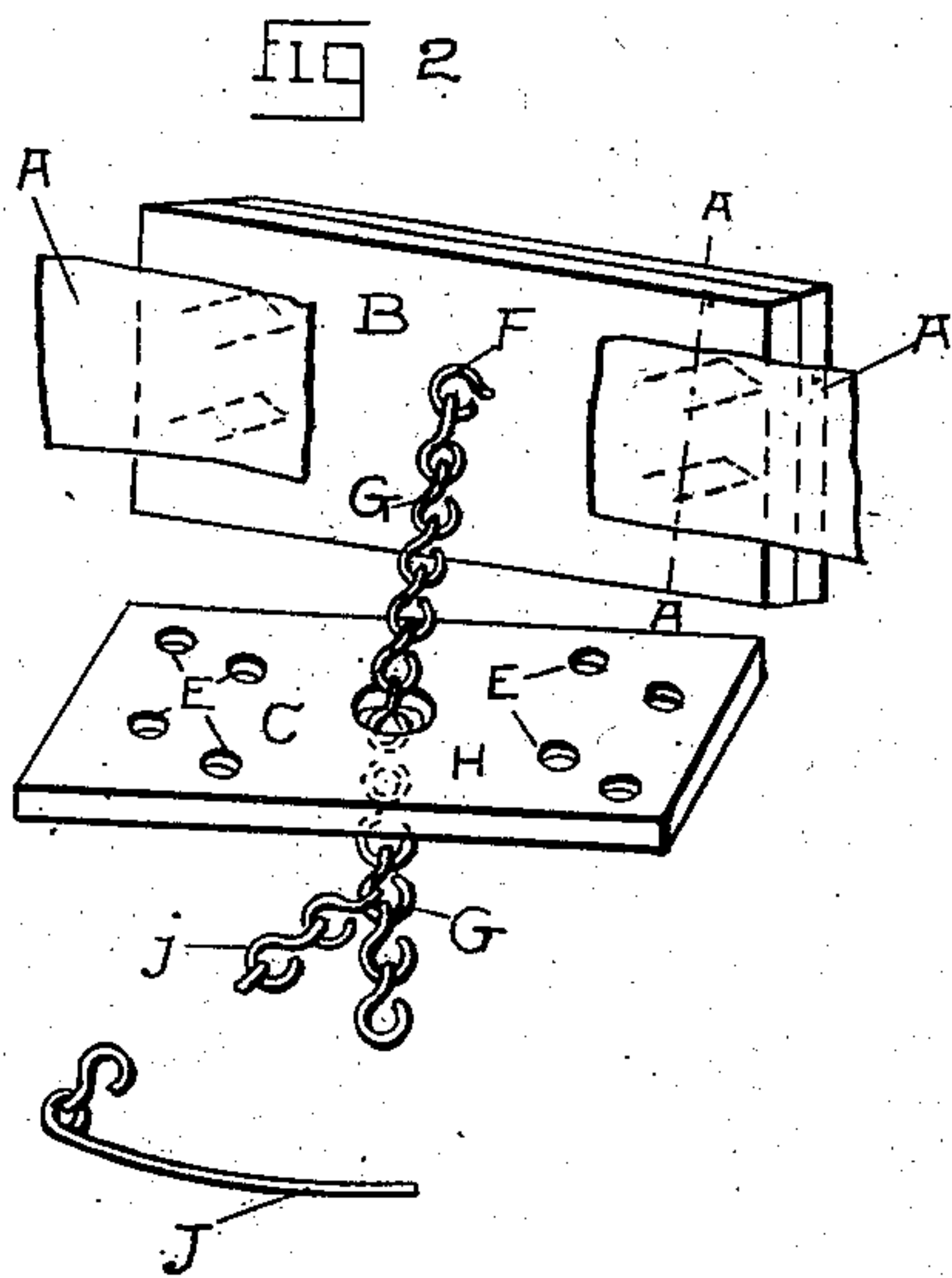
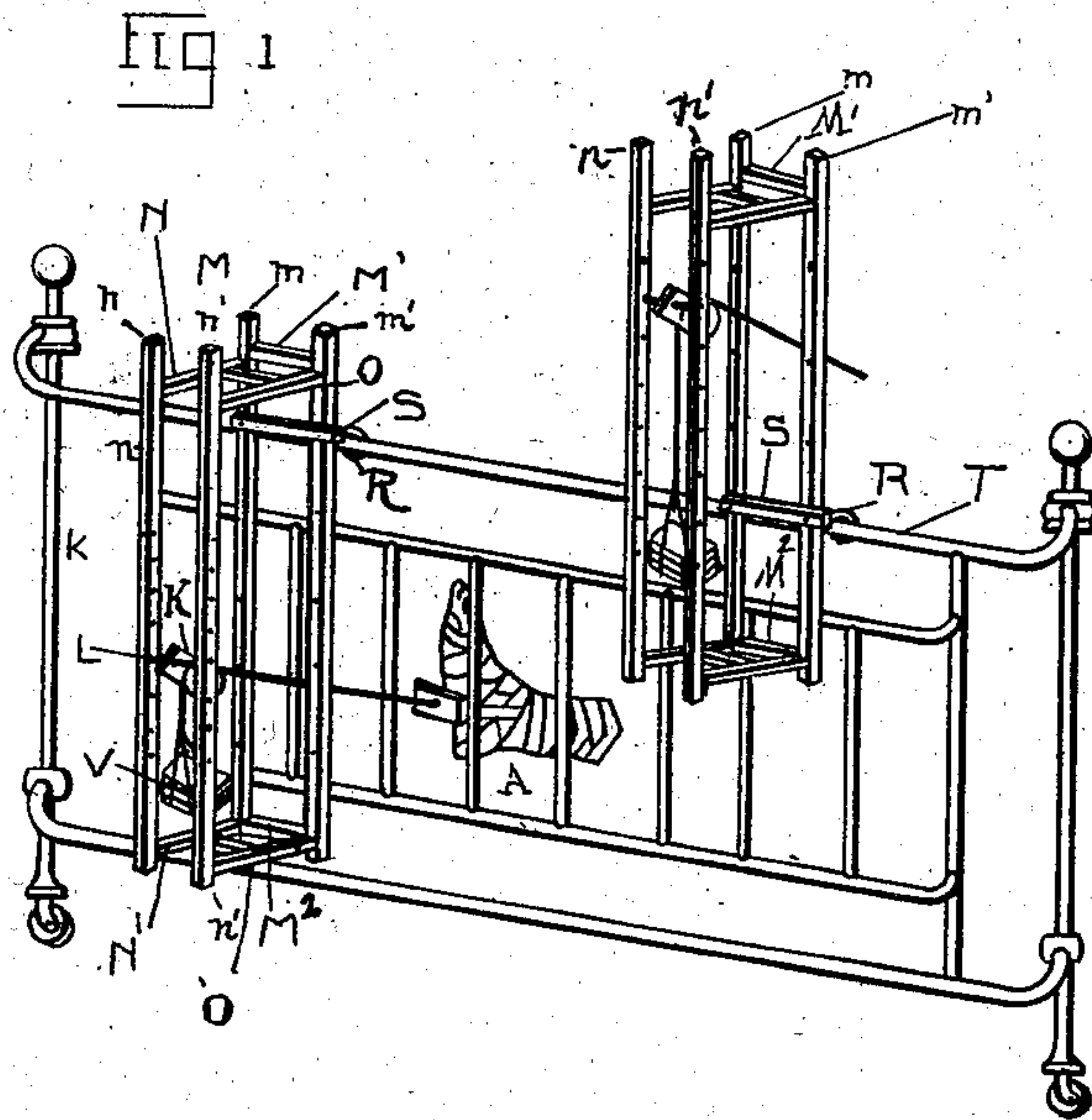
PATENTED JUNE 9, 1903.

G. E. GORHAM.
SURGICAL FRACTURE APPARATUS.

APPLICATION FILED FEB. 13, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES

Dudley B. Ward
Lottie Prior

INVENTOR

George Elmer Gorham

BY

Ward & Cameron
Attorneys

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2 SHEETS—SHEET 2.

FIG 5

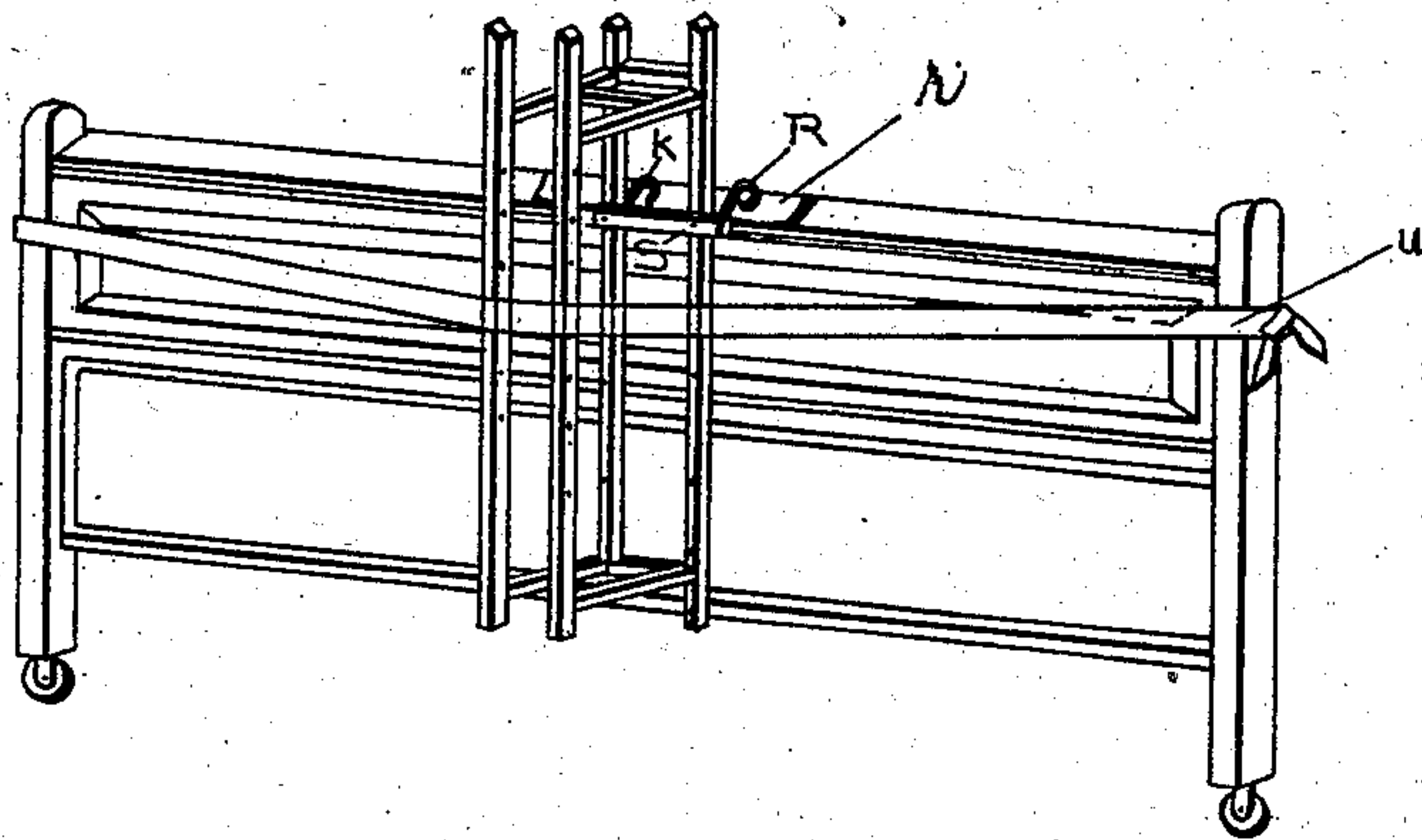


FIG 6

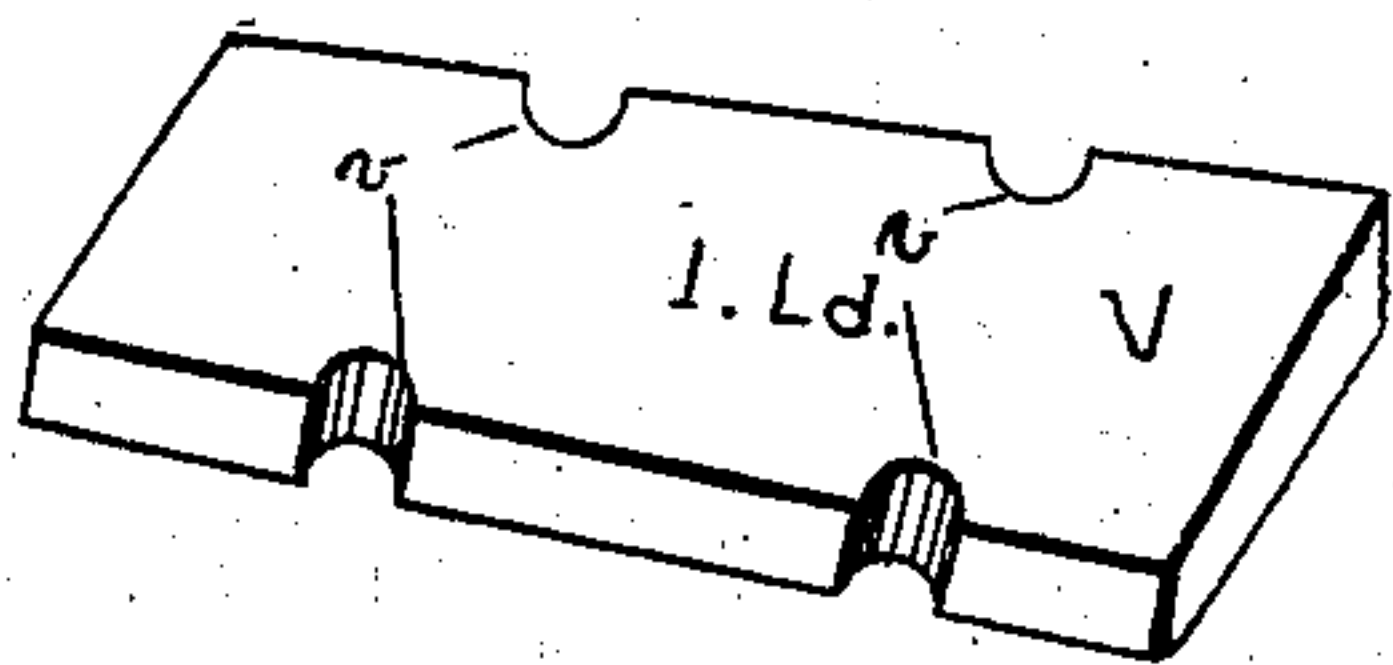


FIG 7

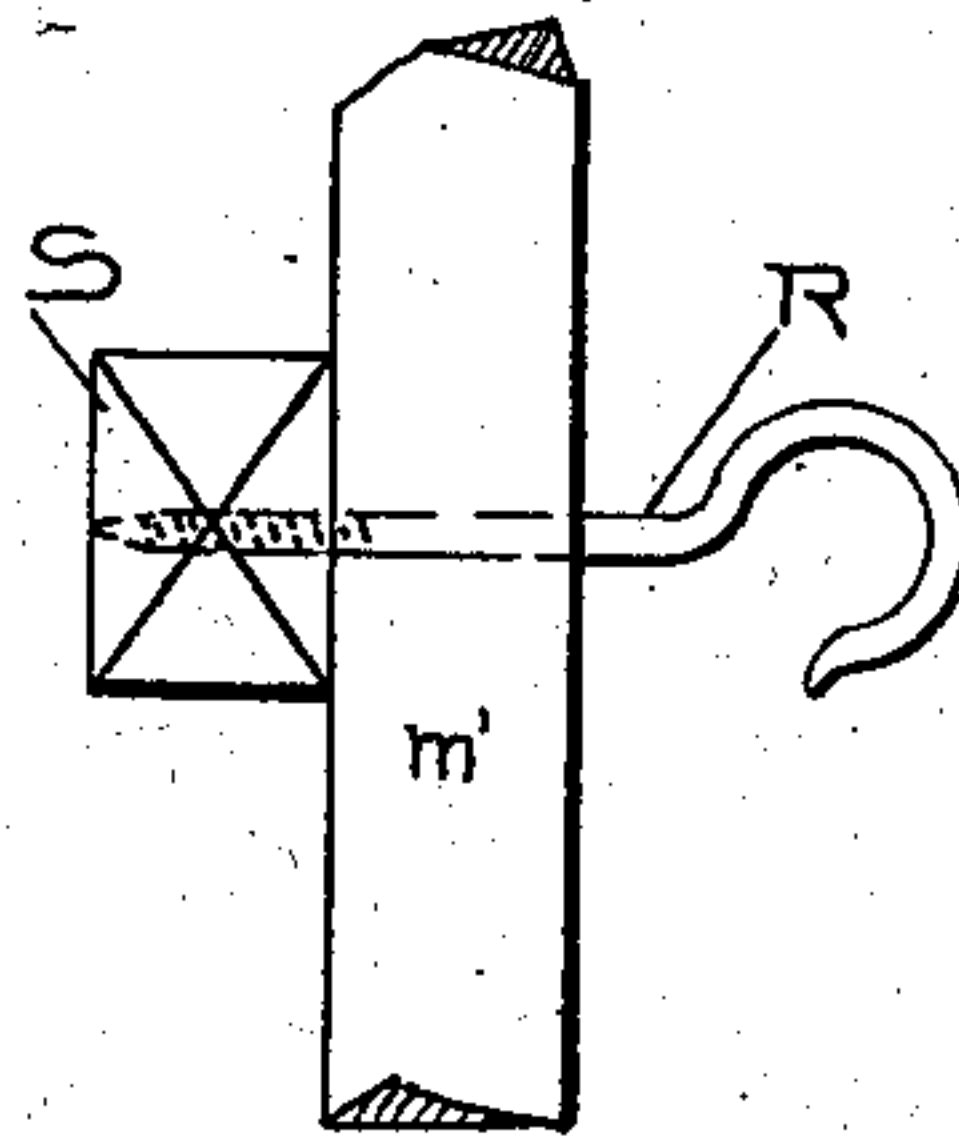
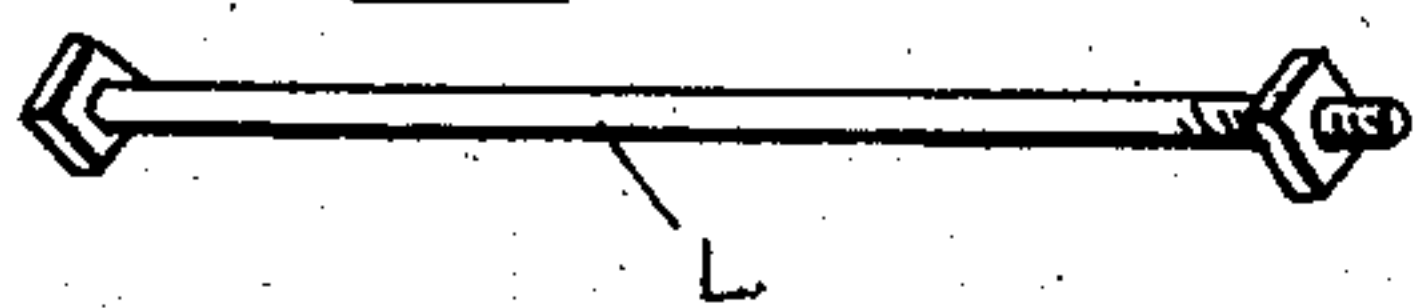


FIG 8



WITNESSES

Dudley B. Wood
Lottie Prior

INVENTOR

George Edwin Gorham
Ward Barnard
Attorneys

BY

UNITED STATES PATENT OFFICE.

GEORGE ELMER GORHAM, OF ALBANY, NEW YORK.

SURGICAL FRACTURE APPARATUS.

SPECIFICATION forming part of Letters Patent No. 730,253, dated June 9, 1903.

Application filed February 13, 1903. Serial No. 143,215. (No model.)

To all whom it may concern:

Be it known that I, GEORGE ELMER GORHAM, a citizen of the United States of America, and a resident of the city and county of Albany and State of New York, have invented certain new and useful Improvements in Surgical Apparatus, of which the following is a specification.

My invention relates to surgical apparatus; and the object of my invention is to provide an apparatus which may be easily and readily attached for applying traction, by means of upright and pulley, to a patient's leg whenever the treatment calls for extension, and for the elements and combinations hereinafter more particularly described and claimed. I attain this object by means of the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of my apparatus attached to a bed. Fig. 2 is a perspective view of the bandage-clamping device opened. Fig. 3 is a perspective view of the bandage-clamping device closed. Fig. 4 is a section along the line A A on Fig. 2. Fig. 5 is a perspective view of my invention, showing a modified form of attachment to a bed. Fig. 6 is a perspective view of one of the weights. Fig. 7 is a detail view of the retaining-hook. Fig. 8 is an enlarged view of the pulley-bolt. Fig. 9 is a view showing the manner of attaching the weights.

Similar letters refer to similar parts throughout the several views.

By my invention I disclose new and improved methods for applying extension to the leg for the treatment of fractures and diseased joints, and especially to the method of securing a pulley in a fixed manner at any desired point of the foot of the bed without marring or defacing it and without the use of set-screws or other such like devices now in use; also, to the simple and ready means for securing the adhesive straps to the spreader or foot-piece, which makes the use of buckles, tapes, buttons, and other cumbersome and unsanitary devices now in use unnecessary. Another point of advantage is the fact that my device is secured to the pulley about eight inches beyond the foot end of the bedstead, which will allow the spreader to pass eight or ten inches beyond the foot end of a bed be-

fore it reaches the pulley and interrupts the traction. When the pulley is secured to the bed-frame proper, as is usually done, the spreader being several inches from the patient's foot, it will reach and rest against the pulley, interrupting the traction when the patient's foot is six or eight inches from the foot of the bed.

By the use of my device the whole length of the bed can be utilized for a tall patient, as the spreader can pass on beyond the foot of the bed and carry the leg down to the full length of the bed—a point of the greatest convenience in the treatment of long legs.

In the treatment of fractures traction is usually made on a line with the mattress; but in the treatment of diseased joints with flexion of the thigh it is necessary to apply traction at an oblique angle, in which case it is often desirable to place the pulley high above the foot end of the bedstead.

My device allows me to secure a pulley at any desired point ranging horizontally the whole width of the bedstead and perpendicularly a range of five feet. This full range is secured by simply hanging the rack on the bedstead either to one side or the other and by changing the position of the hangers or hooks so as to raise or lower the rack and by raising or lowering the bolt. It is very desirable that the apparatus for performing this result shall be capable of ready and positive attachment to the foot and that it shall be readily attached also to any bed upon which the patient may be placed. It is also desirable that the apparatus shall be so simple in its construction and adjustment that it may be readily understood by nurses and attendants and the weights so protected that it will not be detached or in any manner interfered with, whereby the continuity of the pull on the patient will be interrupted or the pain of the patient increased.

It is customary to place about the foot and ankle adhesive straps. The ends A of said straps I securely clasp and hold in position between the spreader or foot-piece, composed, preferably, of two blocks B C, one of which blocks, B, is provided with a series of sharp projecting points D D, Fig. 4, which will engage the ends of the adhesive straps A, as shown in Fig. 2, said points preferably

projecting through the adhesive straps, making a positive connection therewith and preventing any possibility of the slipping of the straps. Within the corresponding block C, I preferably place a series of holes E, within which the ends of the projecting points D D pass, respectively, in such a manner that when the two blocks B and C are brought together with the ends of the straps secured to the block B, as above described, the ends of the points D D will not be broken or bent, but protected within the openings E in the block C. At about midway between the ends of the block B and on the side of said block to which the end of the straps are attached I preferably arrange a screw-eye F, to which I preferably attach one end of the chain G, which chain G passes through an opening H in the block C, as does also a portion of the screw-eye F when the blocks are brought together.

To hold the parts of the spreader or foot-piece securely in position when they are brought together, I preferably arrange a pin J, which may be attached to a chain *j*, linked to the chain G, and which pin I pass through the screw-eye F after said screw-eye is partially projected through the block C. I preferably groove the block C at *b* on each side of the opening through which the screw-eye projects and bevel said groove toward said opening, enabling me to force a pin J, which is curved slightly at the end, through the screw-eye F and in contact with said grooved surface, which forms a wedge and will allow for the blocks to be held tightly together regardless of the thickness of the adhesive straps. Thus the two blocks are held securely together and there is no possibility of the slipping of the adhesive strap attached thereto.

The chain G passes over the pulley K, which is mounted upon a bolt L within a suitable frame M, preferably constructed as follows: I arrange four uprights *m m' n n'*, two of said uprights, *n* and *n'*, being preferably connected by means of suitable bars *M'* and *M''* near the top and bottom of said uprights, respectively. The uprights *m* and *n* are connected by means of suitable bars *N* and *N'* near the top and bottom of said uprights, respectively, and the uprights *m'* and *n'* are connected by suitable bars *O* and *O'* near the top and bottom of said uprights, respectively. Between the uprights *n* and *n'* I mount the pulley K by inserting the bolt L, upon which the pulley is mounted, in suitable bolt-holes in said uprights, securing said bolt by a nut or other convenient means. For the purpose of adjusting the position of the bolt I make a series of bolt-holes through the uprights *n* and *n'*, capable of receiving the ends of the bolt L, carrying the pulley K. For the purpose of securing the frame M to the bed upon which the patient is placed I mount the hooks R in connection with the cleat S, in any suitable manner, but preferably adjust

the hooks by inserting them through bolt-holes in the uprights *n* and *n'*, respectively, then screwing them into the cleat S, which extends from one upright, *m*, to the other, *m'*. The hooks may grasp the top rail T of a brass or iron bedstead, as shown in Fig. 1. The rail may be protected by placing a cloth or other intervening soft substance between the rail and the hooks. The lower part of the frame M will rest against the foot of the bedstead. Thus the frame may be securely mounted in position. When it is necessary to raise the leg of the patient and hold it in a raised position, the frame may be raised to the position shown at the right of Fig. 1, in which case the hook R passes through bolt-holes in the uprights *m* and *m'*, which are nearer the lower ends of said uprights than when the frame is placed as shown at the left of Fig. 1. When a wooden bedstead is occupied in which there is no suitable rail that may be engaged by the hooks, the hooks may be turned so that they will lie upon the top of the bedstead, which may be protected by means of a suitable cloth *r*, as shown in Fig. 5. The frame may then be secured to the bedstead by means of a suitable rope or cord U, passing about the foot of the bedstead and said frame.

To adjust the weights placed in a loop at the end of the chain G, I preferably arrange a series of weights V, which may be provided with suitable grooves *v v* along their sides, through which will pass the chain when it is looped in the manner shown in Figs. 1 and 9. The weights are then held securely in position and may be taken off or added to as desired. The weights will be protected by the uprights of the rack, since they will swing toward the bed from the pulley, as shown in Fig. 1. In this way there is no danger of their being brushed against by the dress of the nurse or other person in the room.

I have thus provided a rack adapted to be quickly and positively secured to a bedstead, connected with which there is a pulley so mounted that it may be adjusted to the needs of the patient, and providing a protection for the weights within the said rack. I also have produced a spreader, which may be constructed of hard wood, which may be easily kept clean and may at any time be sterilized by boiling. My spreader is so constructed that the ends of the adhesive straps are clamped and held securely without using buttons or buckles or other similar contrivance. I have provided an arrangement for attaching weights to the traction-chain, consisting of two loops of the chain hanging in a ring W, the ring being slipped up to the desired point on the traction-chain and held there by passing a pin X through a link of the chain, after which the weights are placed within the loop. (See Fig. 9.)

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In an apparatus for applying traction in the treatment of a patient's leg, a rack; a

bedstead; a means for detachably securing said rack to the foot of said bedstead; a pulley mounted in said rack; a means for connecting the foot of the patient with a traction-chain passing over said pulley, a ring; two loops of said chain hung in said ring; said ring arranged to be slipped up to the desired position on the chain; a pin to hold the ring in position; weights arranged to be placed in said loop, substantially as described.

2. In a means for applying traction for the extension of a patient's leg; a rack; a bedstead; a means for securing detachably said rack to said bedstead; a pulley mounted in said rack; a foot-piece consisting of two parts; a means for engaging the ends of the adhesive straps within said foot-piece; a means for clamping and holding said parts together, adhesive straps secured to the leg of the patient; a chain connected with said foot-piece and passing over said pulley; weights arranged to be placed on said chain, substantially as described.

3. In a device for applying traction to a patient's leg; a foot-piece consisting of two parts; a means for engaging the ends of the adhesive straps attached to the leg of a patient between said parts of the foot-piece; a means for clamping and holding said parts together, substantially as described.

4. In a device for applying traction in the

extension of a leg; a rack composed of uprights separated from each other; two or more hooks adapted to engage said rack with the rail of a bedstead; a means for adjusting said hooks in connection with said rack to the position desired.

5. In an apparatus for applying traction to the leg of a patient; a rack; a bedstead; one or more hooks adapted to engage with a bedstead; a means for adjusting the position of said hooks in connection with said rack; a pulley; a means for adjustably mounting said pulley in said rack, substantially as described.

6. In an apparatus for applying traction to the leg of a patient; a foot-piece arranged to engage the ends of adhesive straps, respectively, consisting of two parts; a series of sharp projections arranged in one of said parts; a series of openings registering with said projections in the other of said parts; a chain attached to one of said parts and passing through an opening in the other of said parts; a pin arranged to secure the two parts together; substantially as described.

Signed at Albany, New York, this 4th day of February, 1903.

GEORGE ELMER GORHAM.

Witnesses:

FREDERICK W. CAMERON,
LOTTIE PRIOR.