

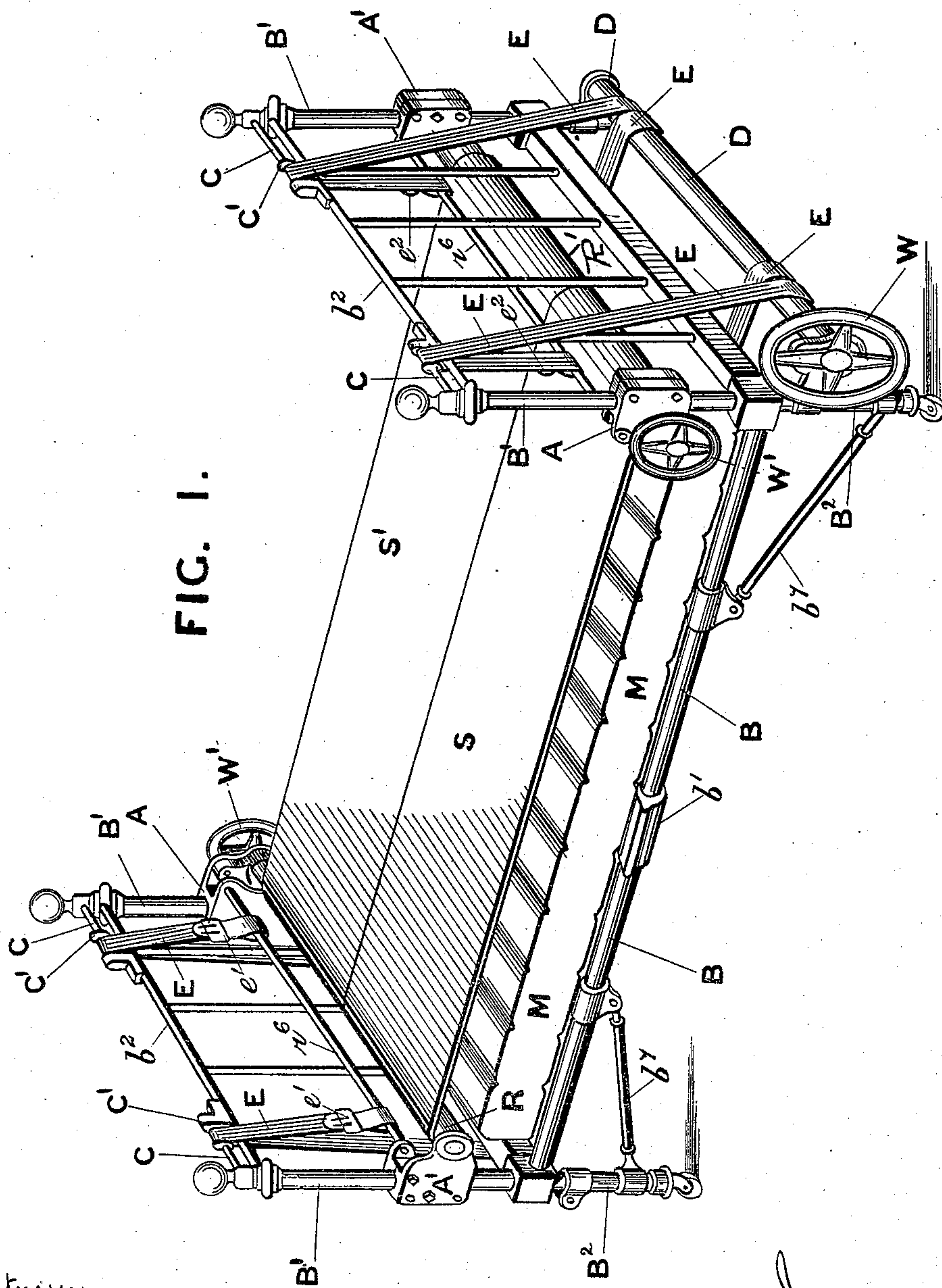
(No Model.)

4 Sheets—Sheet 1.

A. M. DOUGLAS.  
BEDSTEAD FOR INVALIDS.

No. 572,529.

Patented Dec. 8, 1896.



Witnesses  
H. van Oldenmeel  
E. A. Scott

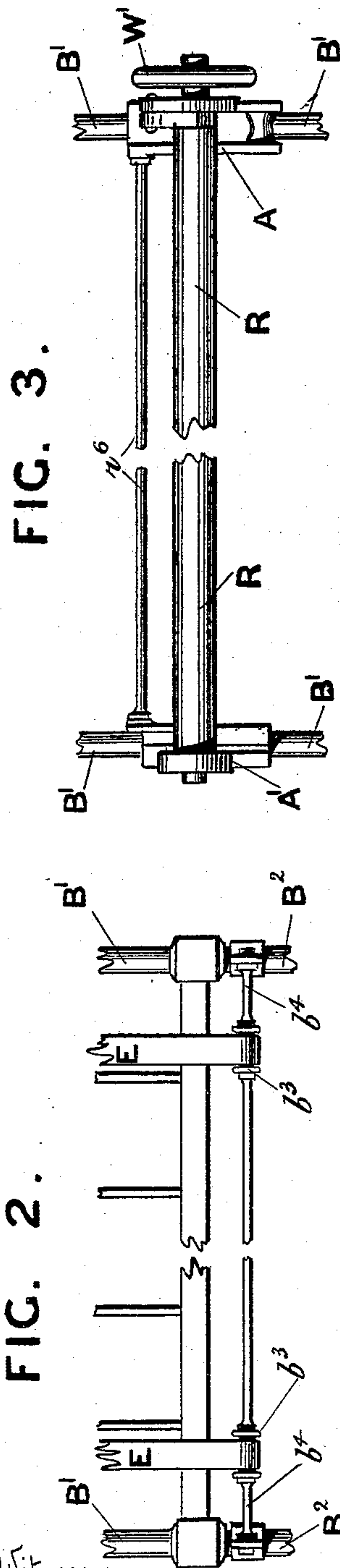
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Anna Marie Douglas  
by Richard R.

Attorneys

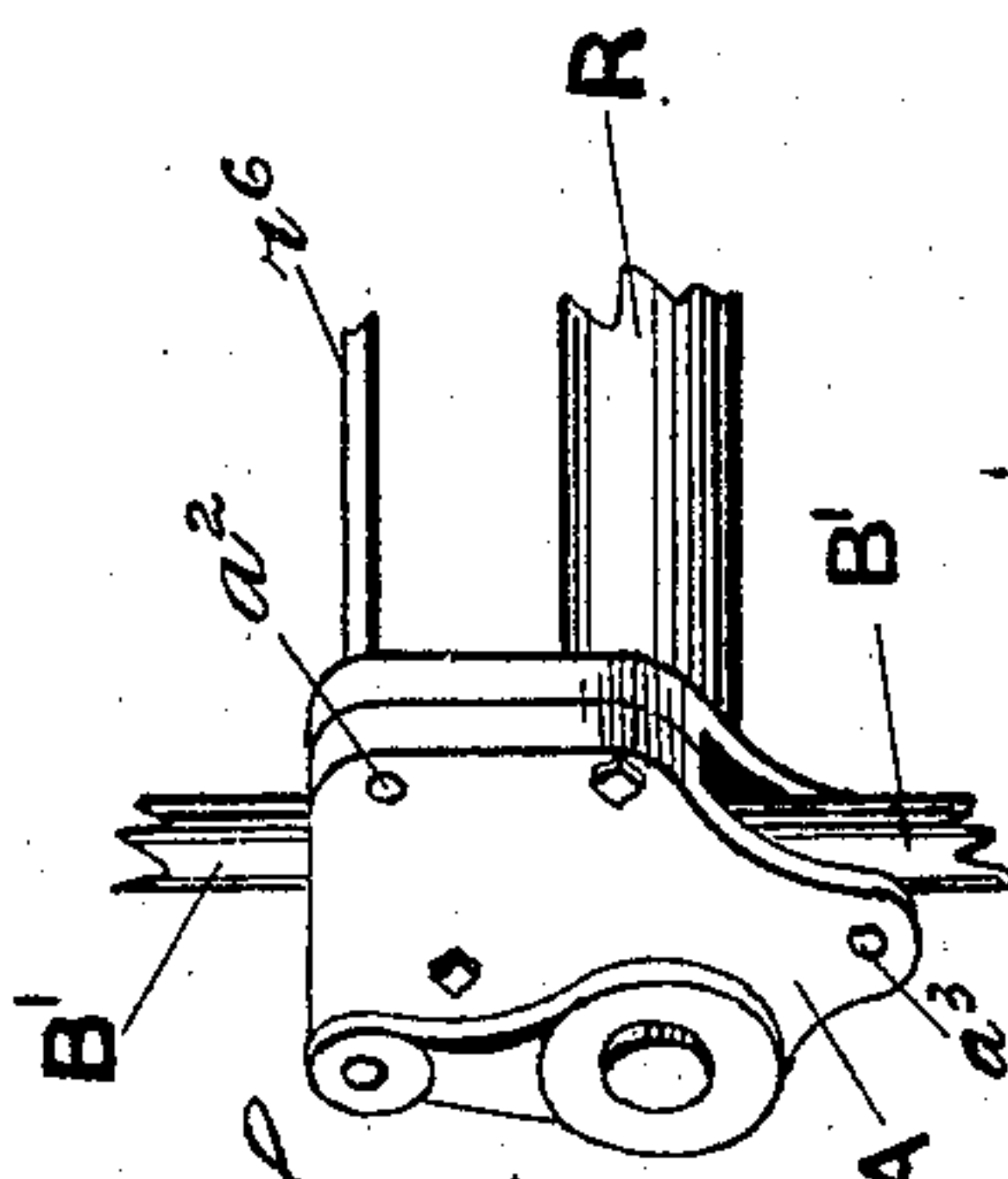
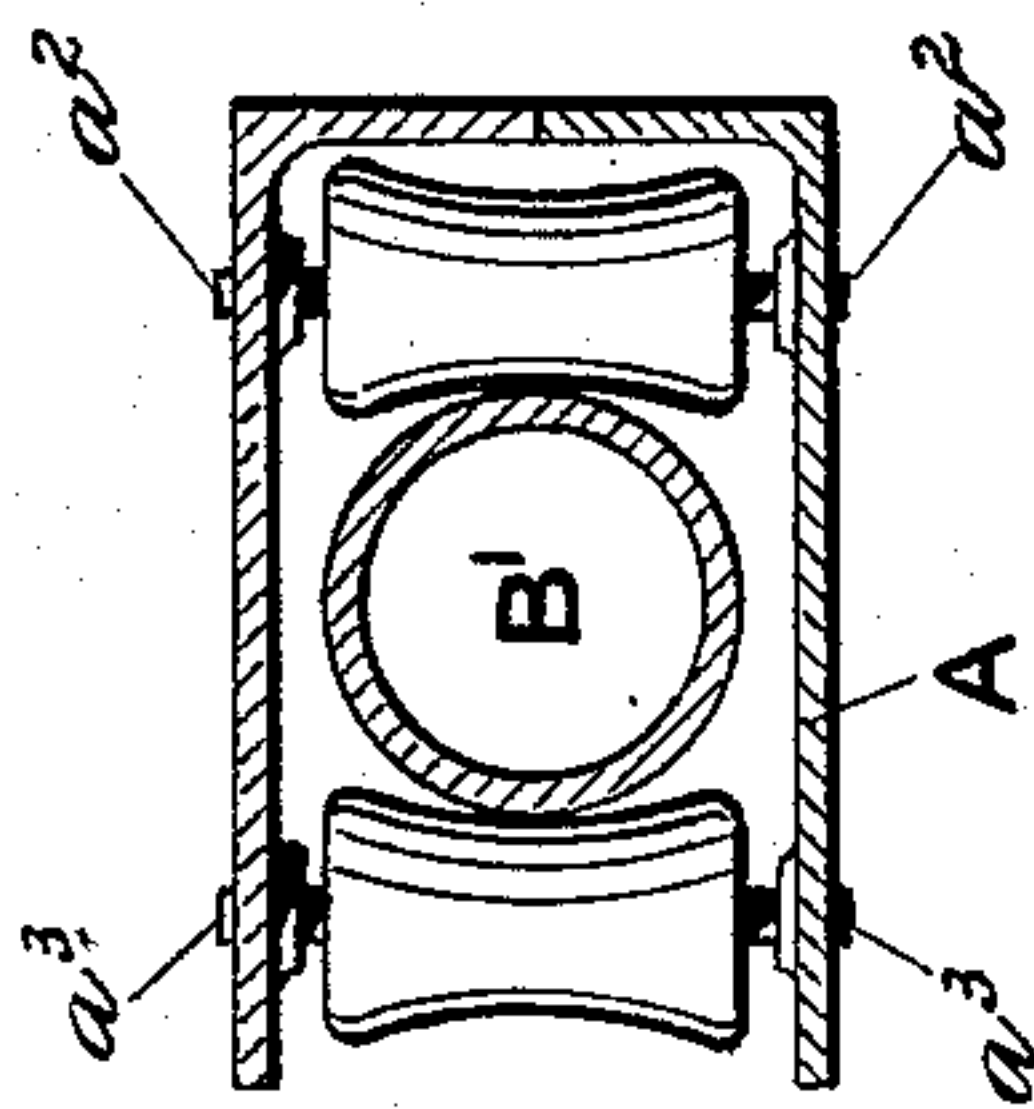
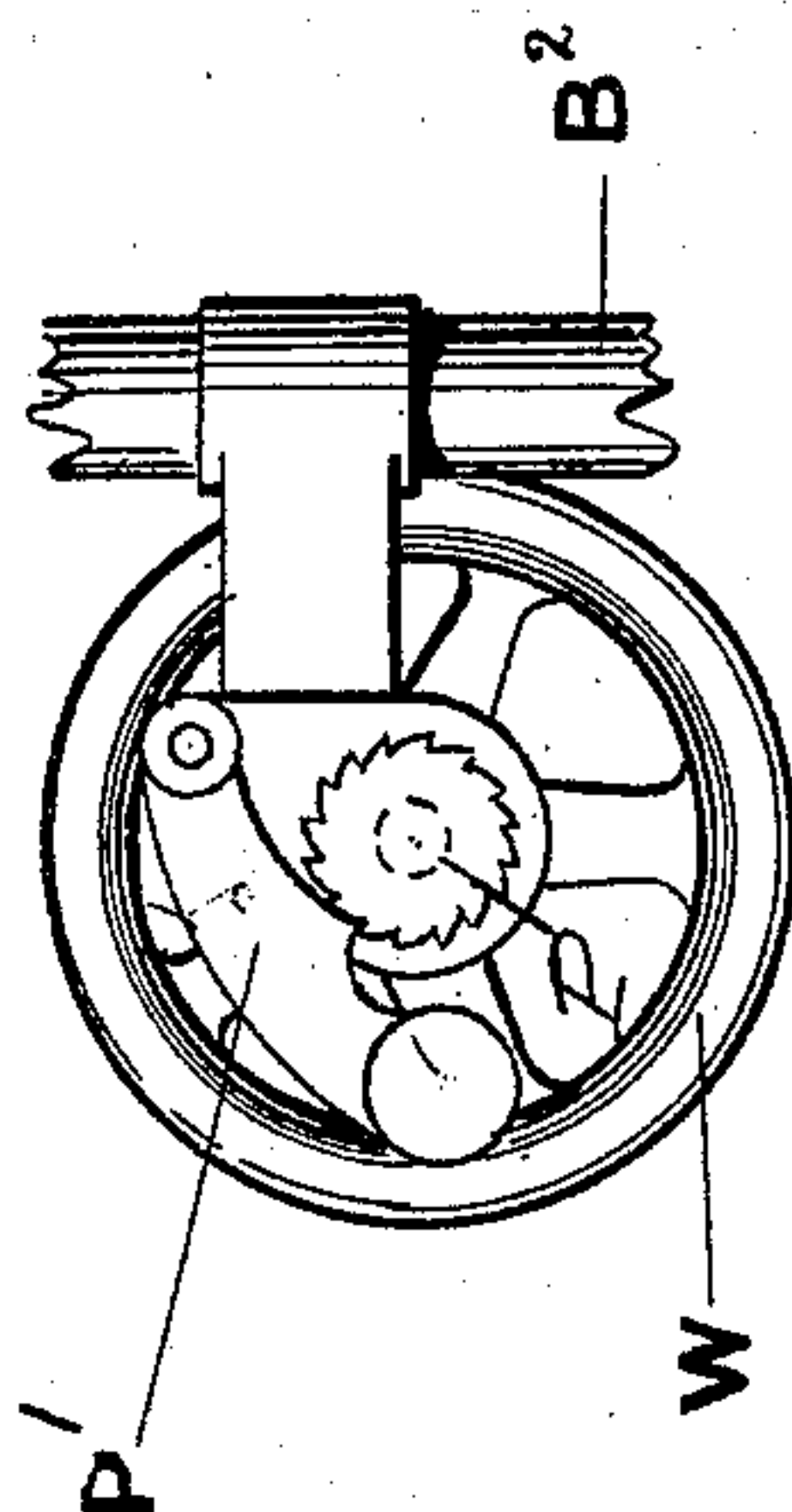
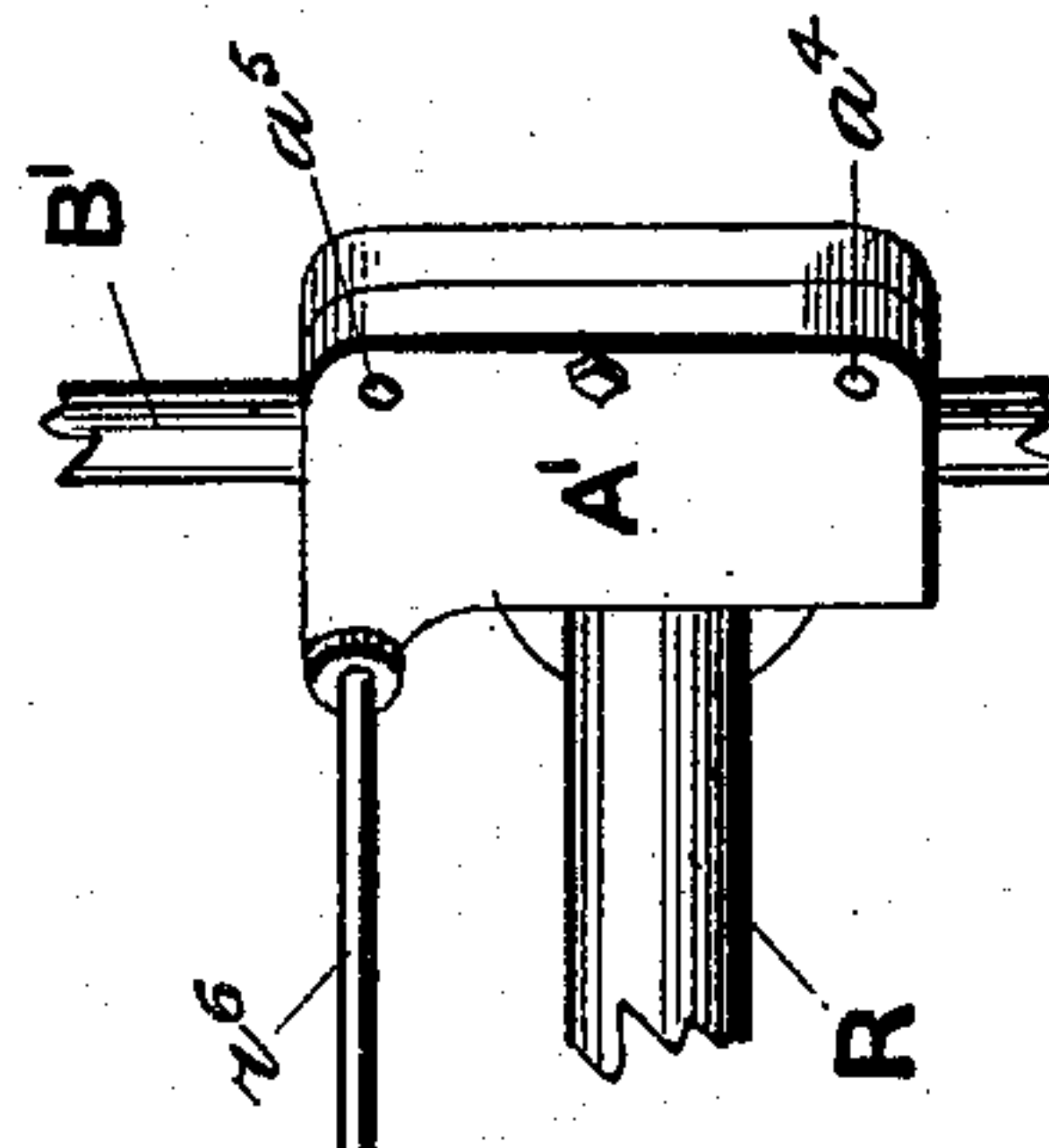
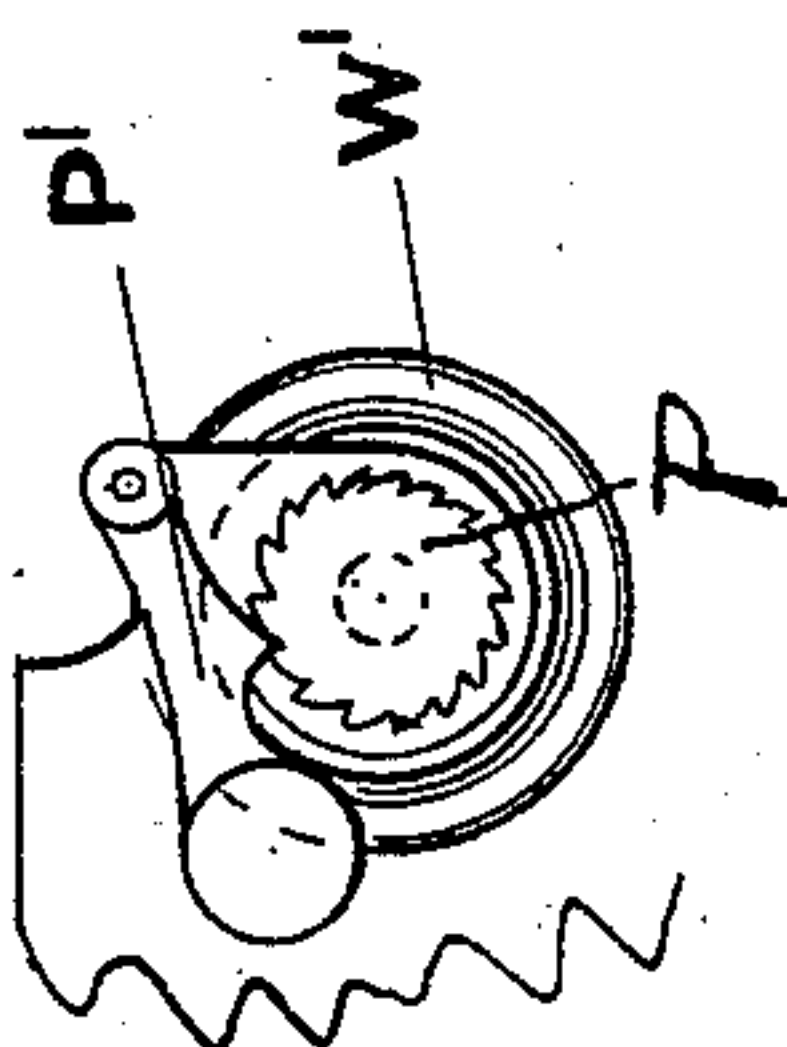
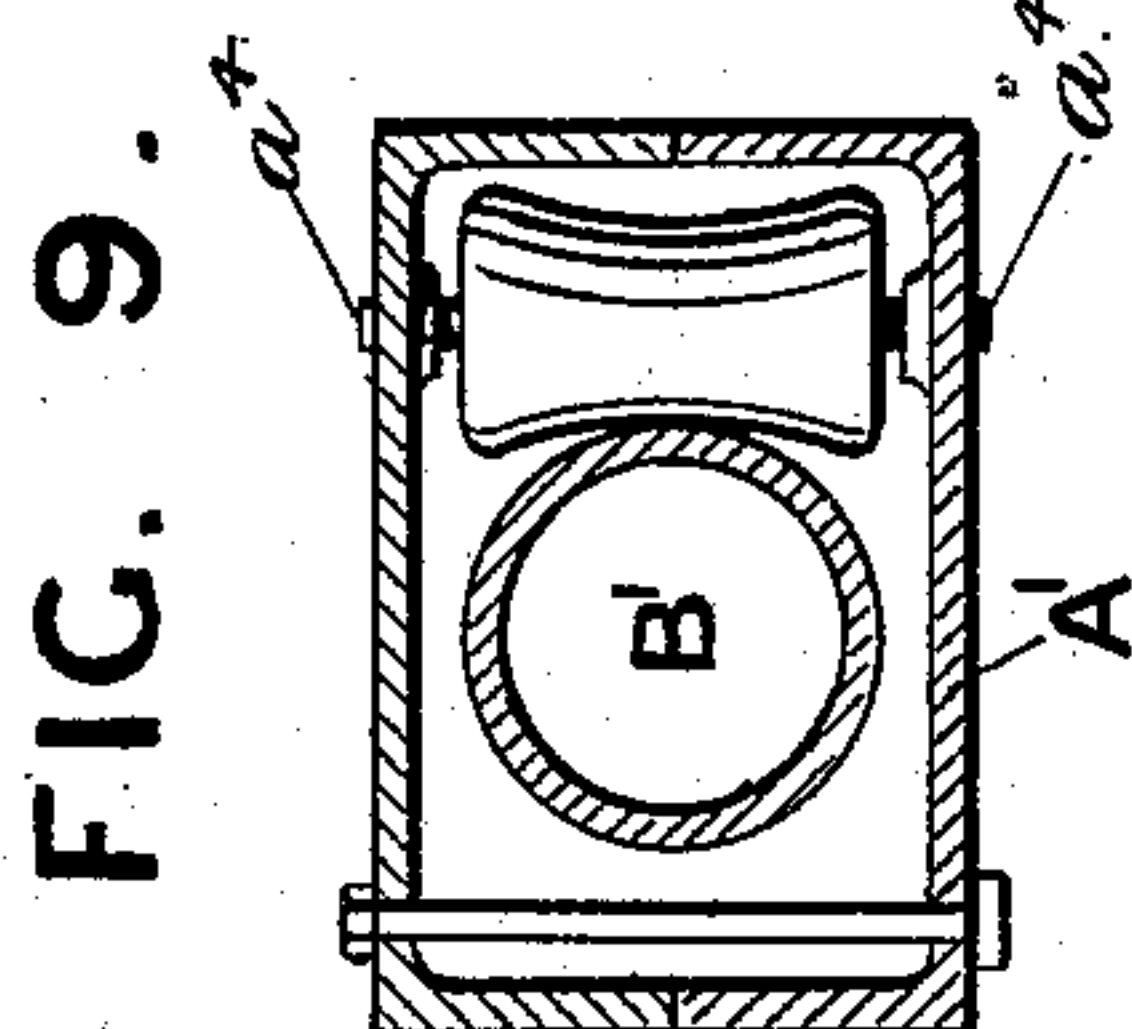
4 Sheets—Sheet 2.

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(No Model.)

4 Sheets—Sheet 3.

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FIG. II.

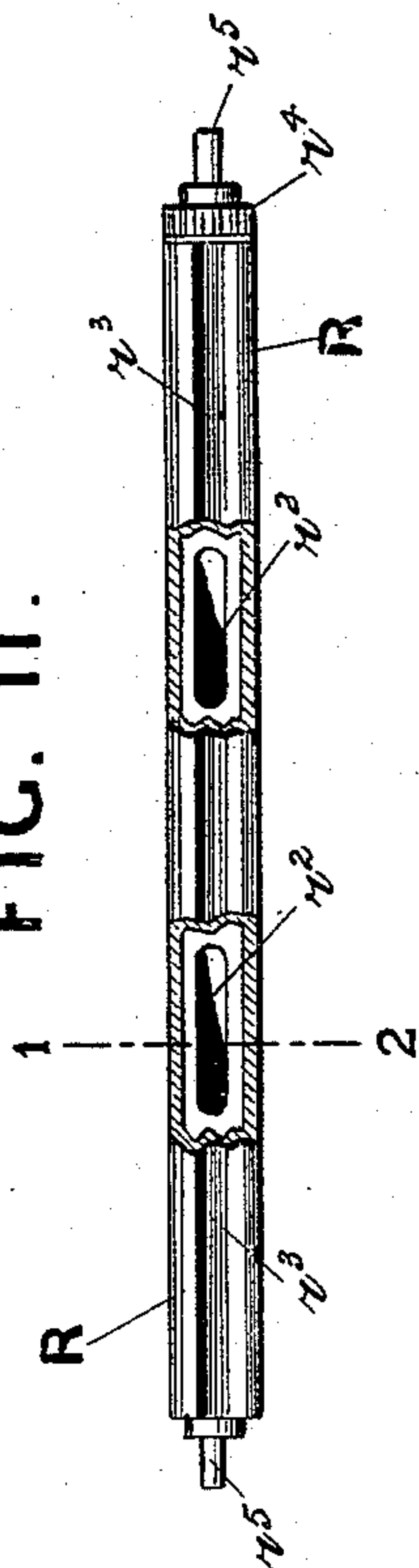


FIG. 10.

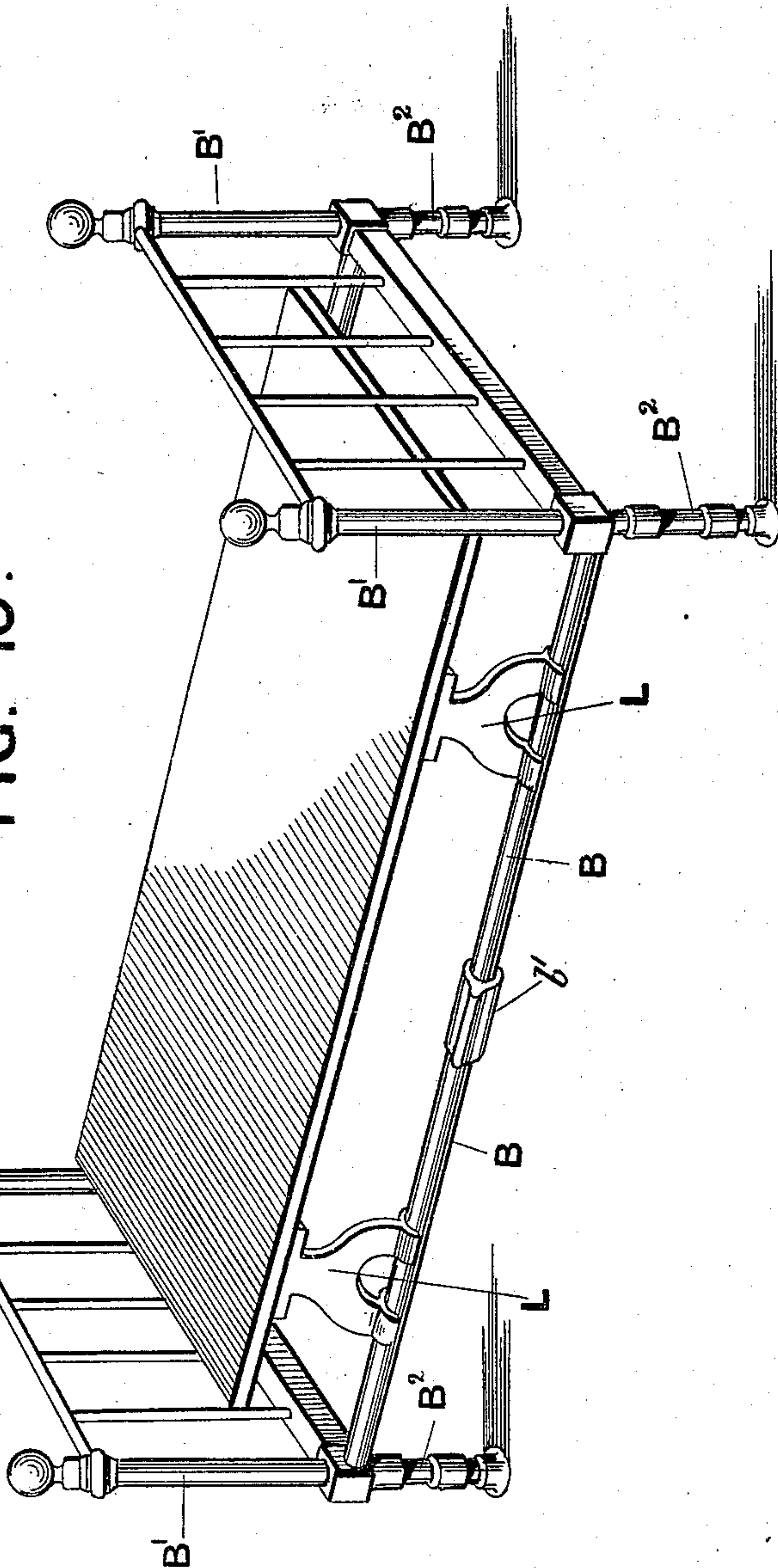
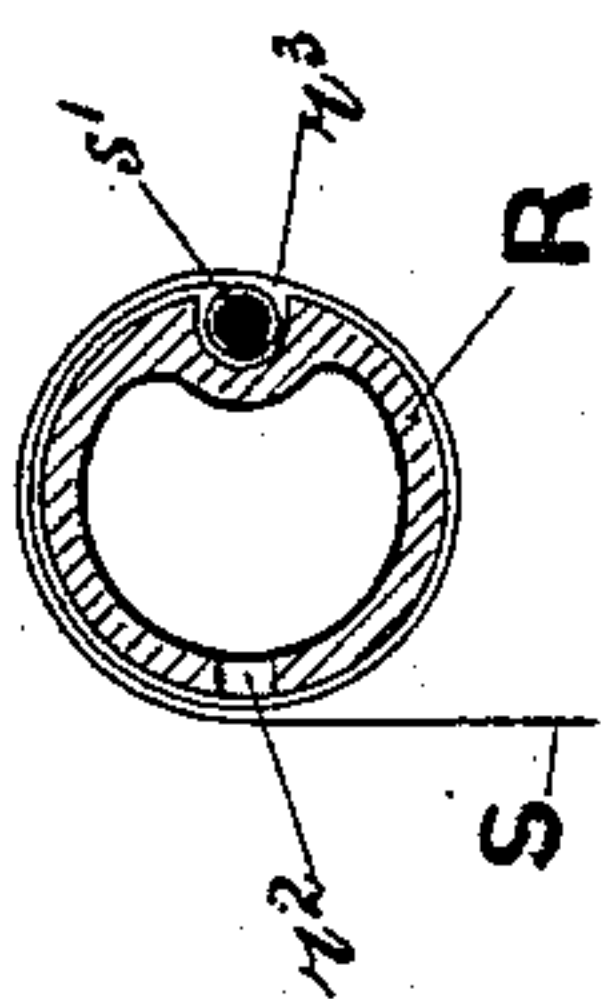


FIG. 12.



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A. M. DOUGLAS.  
BEDSTEAD FOR INVALIDS.

4 Sheets—Sheet 4.

No. 572,529.

Patented Dec. 8, 1896.

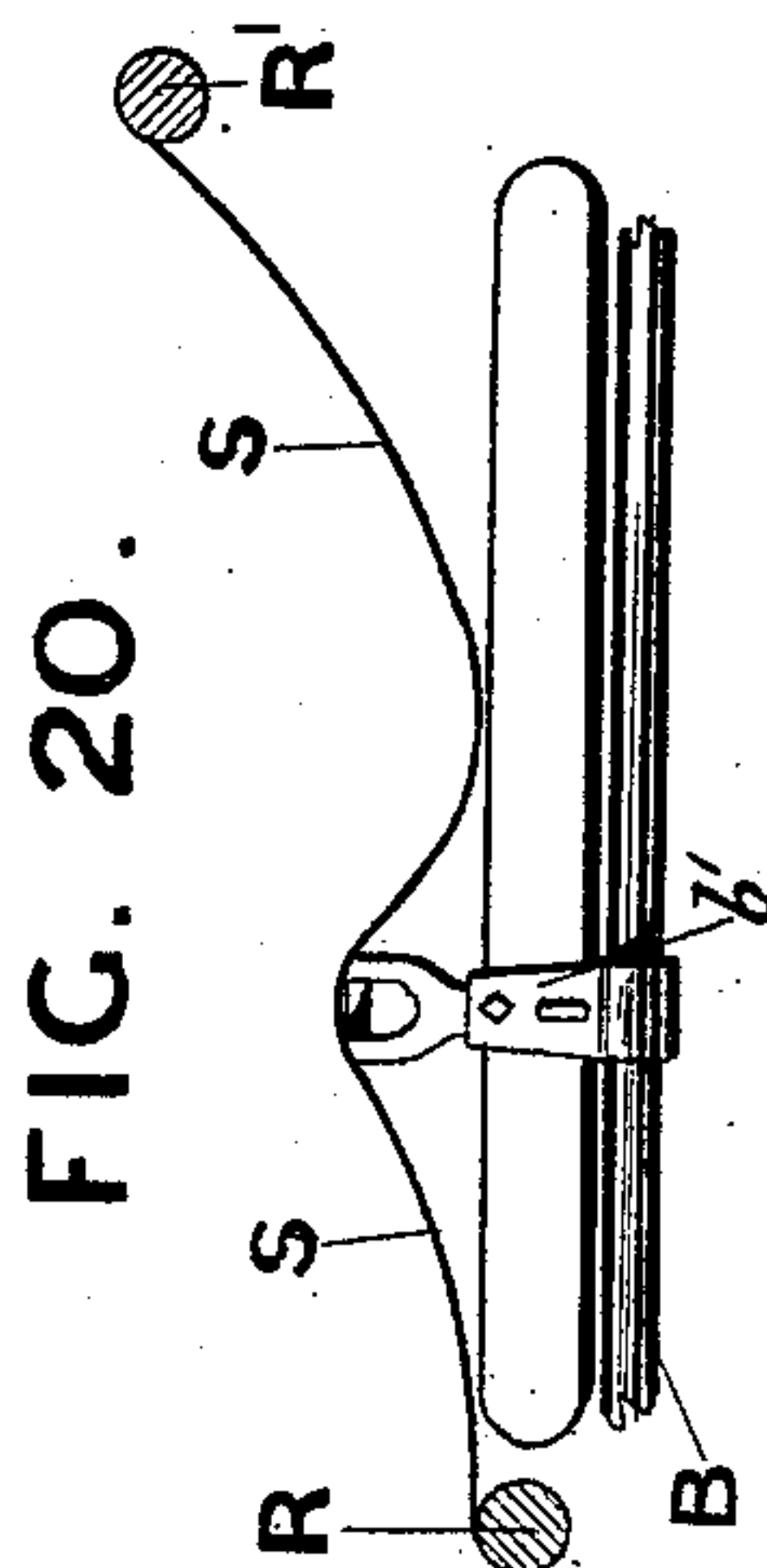
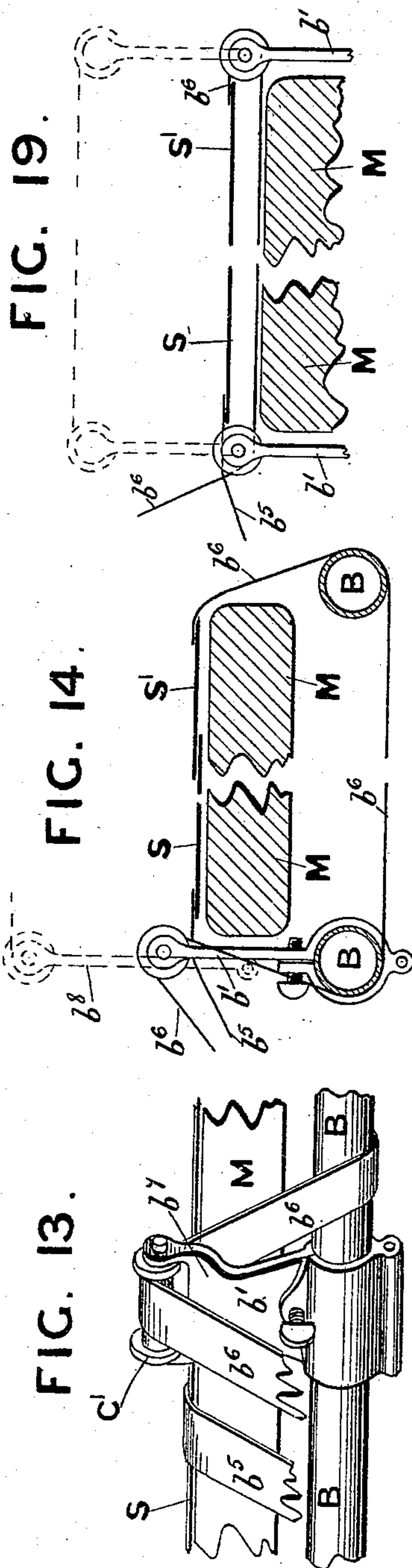


FIG. 17.

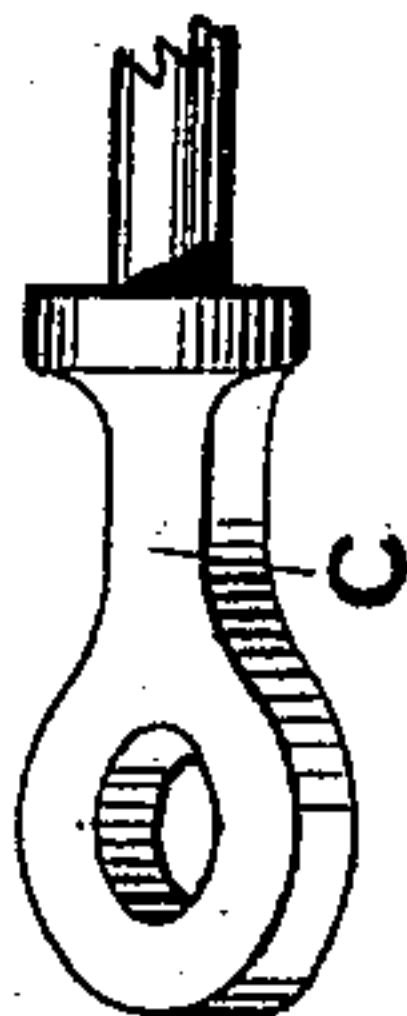


FIG. 21.

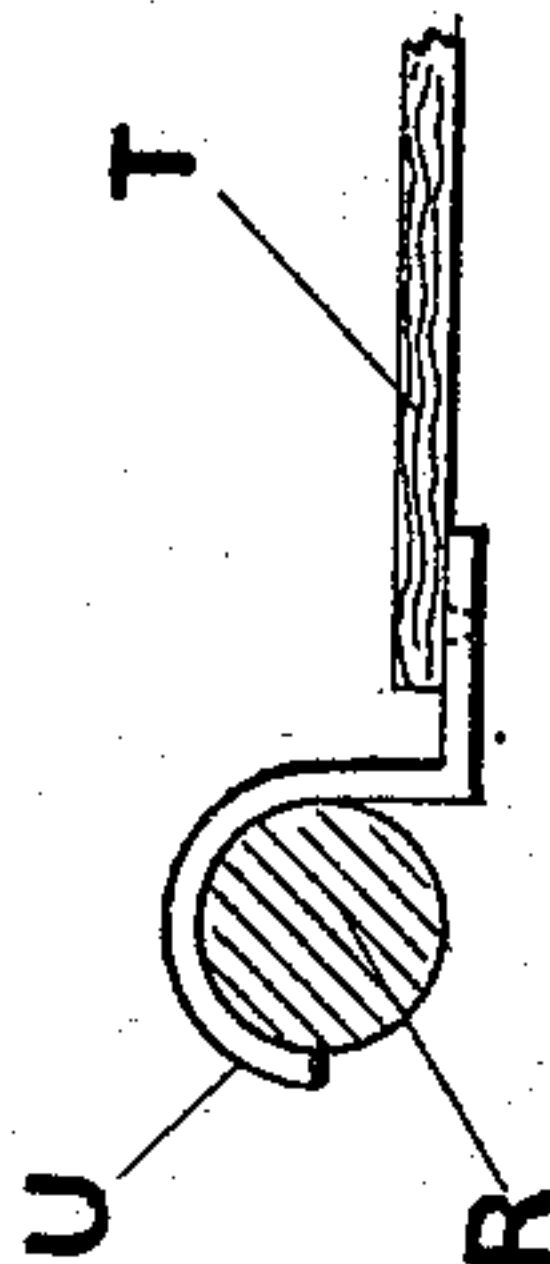


FIG. 15.

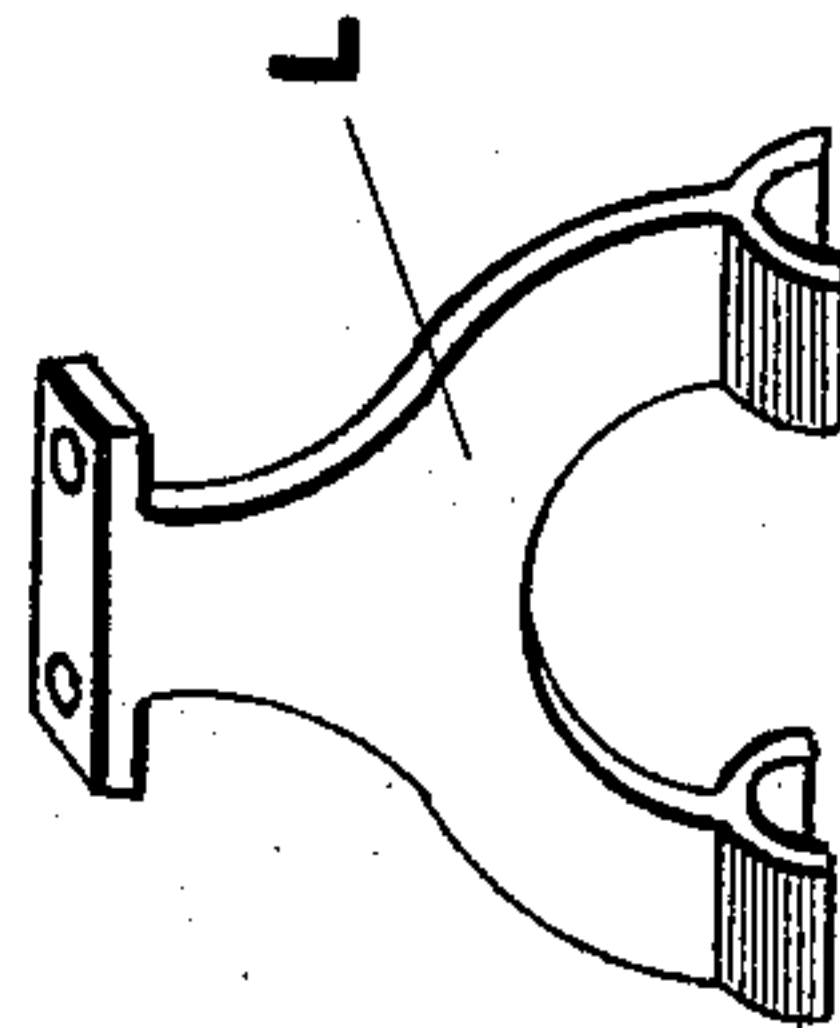


FIG. 16.

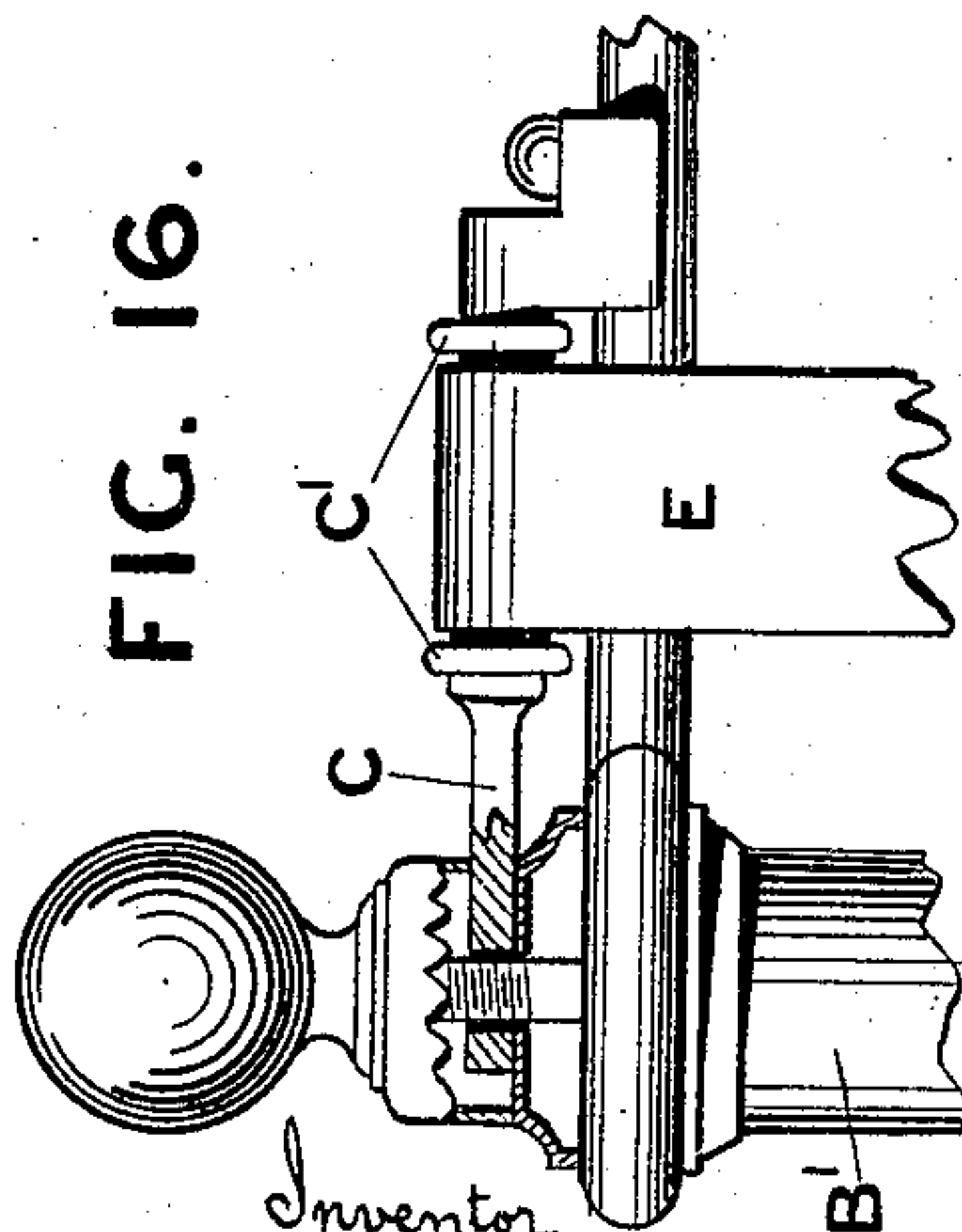
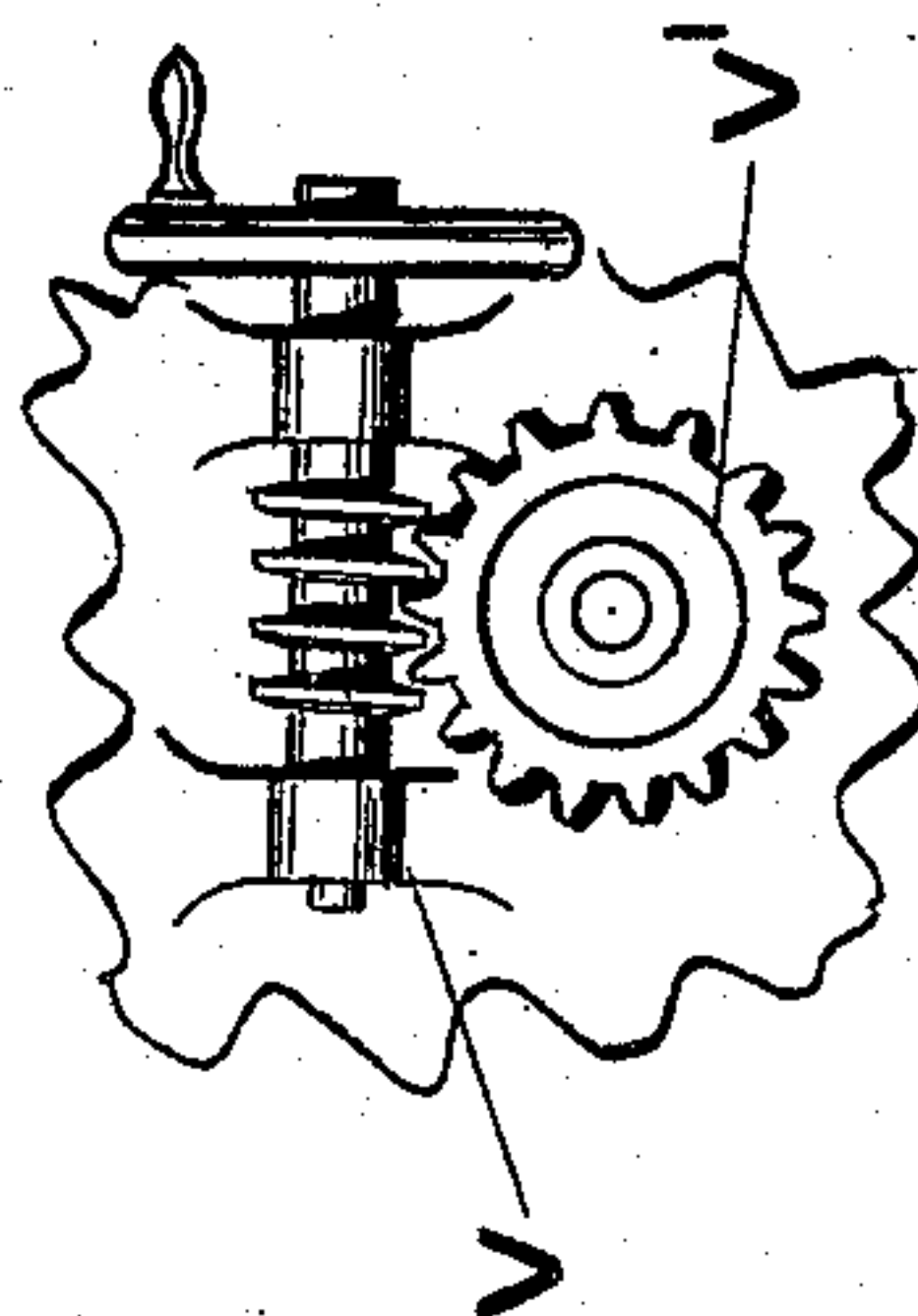


FIG. 18.



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# UNITED STATES PATENT OFFICE.

ANNA MARIE DOUGLAS, OF LEAMINGTON, ENGLAND.

## BEDSTEAD FOR INVALIDS.

SPECIFICATION forming part of Letters Patent No. 572,529, dated December 8, 1896.

Application filed January 29, 1896. Serial No. 577,322. (No model.) Patented in England April 19, 1895, No. 7,842.

*To all whom it may concern:*

Be it known that I, ANNA MARIE DOUGLAS, a subject of the Queen of Great Britain, residing at Dalkeith House, Leamington, in the county of Warwick, England, have invented certain new and useful Improvements in Bedsteads for Invalids and in the Appliances Connected Therewith, of which the following is a specification.

The invention has been patented in England, No. 7,842, April 19, 1895.

My invention has for its object improvements in bedsteads for invalids and in the appliances connected therewith, by which means the moving of invalids is facilitated during the changing or removal of the mattresses, linen, or other parts and in lifting and attending to the patient.

My invention further consists in the facilities for its conversion into an operating-table for the time being, thus avoiding the necessity and consequent risk in removing the patient from the bed to a separate operating-table, and which is effected in a convenient and expeditious manner by the bedstead mechanism.

In order that my invention may be clearly understood and more easily carried into practical effect, I have appended hereunto four sheets of drawings upon which both the bedstead and the operating-table are illustrated along with the various parts and necessary mechanism for operating the same. It will, however, be understood that the designs of the details, such, for instance, as the rollers, the ratchets, pawls, &c., may be made without departing from the general principle of the invention.

Figure 1 is a general view of the bedstead with the various parts in position and the divided sheet  $S S'$  raised somewhat above the mattress  $M$ . Fig. 2 is a broken-off elevation of the outside of the left-hand end of the bedstead. Fig. 3 is a broken-off elevation of the inside of the right-hand end of the bedstead. Fig. 4 is a broken-off inside view of the winding arrangement of the rollers  $R$  upon which the sheet  $S$  is tightened and held. Fig. 5 is a broken-off inside view of the winding-drum gear for lifting the sheet  $S$ . Figs. 6 and 7 are views of the right and left hand sliding sockets for carrying the rollers  $R$  and rod  $r^6$ . Fig. 8 is a sectional plan of the slid-

ing socket Fig. 6. Fig. 9 is a sectional plan of the sliding socket Fig. 7. Fig. 10 is a general view of the bedstead with the operating-table  $T$  mounted on the bedstead. Fig. 11 is a side elevation of the roller  $R$  broken out in two places to show the slot-holes  $r^2$ , which are made for convenience of manufacture. Fig. 12 is a cross-section of the roller  $R$  through the line 1 2, with the sheet  $S$  fastened upon the same. Fig. 13 shows the arm  $b'$ , which is hung upon the bedstead side  $B$  in its turned-up position for operating the sheets  $S S'$ . Fig. 14 is an end diagram of the arm  $b'$  as used to operate both the sheets  $S$  and  $S'$  from one side. Fig. 15 is a view of the removable leg  $L$  for supporting the operating-table  $T$ . Fig. 16 shows one mode of mounting the friction-rollers  $c'$  on the device  $C$ . Fig. 17 is a broken-off plan of the device  $C$ . Fig. 18 shows another method for revolving the drum  $D$  and rollers  $R$  and  $R'$ . Fig. 19 is a modification of the arrangement shown in Figs. 13 and 14 for operating the sheets  $S$  and  $S'$ . Fig. 20 shows the sheets  $S$  and  $S'$  so adjusted as to enable the patient to maintain a half-sitting posture. Fig. 21 shows another method for supporting the table  $T$ .

In carrying my invention into effect I form the bedstead with preferably four substantial posts and in such manner or proportions that either end may be used as the head or foot. Upon each of the posts or pillars I mount attachments or sliding sockets  $A A'$ , which differ from each other, each socket  $A$  carrying rollers  $R R'$ , provided with hand-wheels  $W'$  for tightening the sheets upon the rollers. These rollers  $R$  and  $R'$  are shown clearly by Figs. 11 and 12 and are cast complete and hollow, as there seen, the openings  $r^2$  serving as core-holes in the casting, but when in work they are covered by the sheets. The groove  $r^3$  runs along the opposite side and the ratchet-wheel  $r^4$  is placed in the mold and is one with the rollers as well as the spindles  $r^5$ , though it will be evident that these rollers may be made from wrought tubes, timber, or other material. Each of these rollers is provided with a ratchet-wheel  $P$ , which is engaged by a pawl, as shown at Fig. 4, which secures the roller against turning back when the sheets  $S S'$  are tightened, which tightening may be effected at either end when



the sockets A are mounted. I may, however, use in place of the wheels W and W' other mechanical means for revolving the rollers R R' and drum D, hereinafter described, such, 5 for instance, as the worm V and wheel V', as shown in Fig. 18. The sockets A also carry friction-rolls on the spindles  $a^2$  and  $a^3$ , and the sockets A' also carry friction-rolls  $a^4$  and  $a^5$ , which allow the sockets to move upon 10 the bedposts B' B' B' B' with great ease, but I may use sockets without friction-rollers, the sockets embracing and sliding loosely on the bedposts B'. It will be evident that one roller R at one end will answer the same pur- 15 pose with simply a bar to take the place of roller R', but I prefer the double arrangement shown. The ends of the straps or webbing or other equivalents E are fastened to the rods  $r^6$ , which are secured at their ends 20 to sockets A and A', and these form the medium for lifting the sockets and sheets S. These straps E pass upward and over friction-rollers C', which are hung upon the device C. (Shown in greater detail at Figs. 16 25 and 17.) The strap E then passes down the outside of one end, as seen at Fig. 2, and over the rollers  $b^3 b^3$ , which are carried by the cross-bar  $b^4$ , carried by the legs B<sup>2</sup>. The straps E then pass under the bedstead and 30 are secured to the winding-drum D. At the end of the bedstead, and preferably the foot end where the drum D is mounted, the straps E merely pass downward from the friction-rolls C' and are also fastened to the drum D. 35 This drum D is mounted in brackets secured to the legs B<sup>2</sup> of the bedstead, and at one or both ends of the drum a hand winding-wheel W is mounted with ratchet and pawl P, as clearly seen at Fig. 5. The legs B<sup>2</sup> are stiff- 40 ened by struts  $b^7$ , running to the bedstead sides B, as considerable strain is brought upon that portion of the bedstead.

The action is as follows: The double or divided sheet S S' is made to receive a rod  $s'$ , 45 Fig. 12, at one or both ends. This rod secures the sheet when dropped into the recess  $r^3$  of the roller R. The roller is then turned about one lap and the sheet is tightened by the hand-wheel W' or by the arrangement shown in Fig. 18. This having 50 been done the sheet with the patient thereon may be easily lifted or lowered by means of the larger wheel W and drum D.

The sheet is preferably formed in two parts 55 S and S', as shown upon the drawings. In either case the sheet or the sheets may be divided by two tapes  $b^5 b^6$ , attached to the edges, as shown at the diagrams, Figs. 13 and 14. One end may pass over the swivel- 60 bracket  $b'$ , which when not in use turns under the bedstead, as seen at Fig. 1. In Fig. 19 one tape-bracket  $b'$  is shown on each side of the mattress M, the tape  $b^6$  passing between the sheet S S' and mattress M. By 65 making the part  $b^7$  of  $b'$  telescopic, so as to get a certain amount of vertical adjustment, the sheet S S' may be so adjusted as to allow

the patient to recline in a half-sitting or other convenient posture, as shown at Fig. 20, the webbing carried by the brackets  $b' b'$  on each 70 side of the mattress passing under the knees of the patient. Instead of making  $b'$  telescopic I may hinge a flap or bracket  $b^8$  onto  $b'$ , as shown by dotted lines in Fig. 14. The slit sheet or sheet S S' in two widths is very 75 important in conjunction with the lifting arrangement described, as it enables the nurse to apply any appliance or utensil to the patient between the sheet and the mattress by simply drawing the tapes  $b^5$  and  $b^6$ . 80

When it is desired to operate upon the bedstead, the patient is raised to a sufficient elevation by means of the large hand-wheel W and the mattress M is withdrawn, when 85 four legs L are mounted upon the sides B, upon which the table T is supported, when the patient is lowered thereupon; or the table T may be supported by clips or brackets U, hung upon the rollers R and R', as seen at 90 Fig. 21, one at each corner of the bedstead. This being done the sheets S and S' may be loosened and removed during the operation, or they may remain with a supplemental waterproof sheet between the sheets S and 95 the patient.

The operating-table is shown at Fig. 10 with the winding mechanism left off. By having buckles on the straps E at  $e'$  and  $e^2$  the drum D may be made to elevate either the foot or 100 head only when one or the other two buckles are unloosed, or the elevation of each end may be by this means varied, so that the patient lies on an inclined plane. In this case a foot-rest may be formed for the patient by moving the brackets  $b'$  with the stretched 105 webbing-tape or such like material to the desired end of the rails B to suit the position of the patient. To remove or change the sheets S S', it is only necessary to unwind the rollers R and R', taking out the rods  $s'$ , and then 110 folding them under, as is well understood by nurses. In case of the divided sheets S S' one of them may be removed while the patient is on the other. The rollers R and R' may be fixed outside the posts B' instead of inside, 115 as shown. The bedstead itself may be of any convenient form and design.

What I claim, then, is—

1. In combination, the bedstead, the vertically-movable bearing-boxes, the rollers 120 journaled therein, the sheet connected to said rollers, a winding-drum, and connections between said drum and the bearing-boxes of the rollers for raising and lowering the same, substantially as described. 125

2. In combination with the posts of a bedstead, the sockets sliding on said posts, rollers carried by said sockets, a sheet connected to said rollers, cross-rods connecting the sockets, a winding-drum and tapes running from 130 the drum to said cross-rods, substantially as described.

3. In combination, the bedstead, the sliding bearing-boxes at each end thereof, the



rollers journaled in said bearing-boxes, the  
sheet connected to said bearing-rollers at the  
top of each end of the bedstead, a drum be-  
neath one end, bearing-rollers beneath the  
5 opposite end and tapes connected to said  
drum and extending over said bearing-rollers  
and connected with the bearing-boxes, sub-  
stantially as described.

In testimony that I claim the foregoing as  
my own I affix my name in the presence of two 10  
witnesses.

ANNA MARIE DOUGLAS.

Witnesses:

GEORGE LESTER,  
GEORGE BARKER.