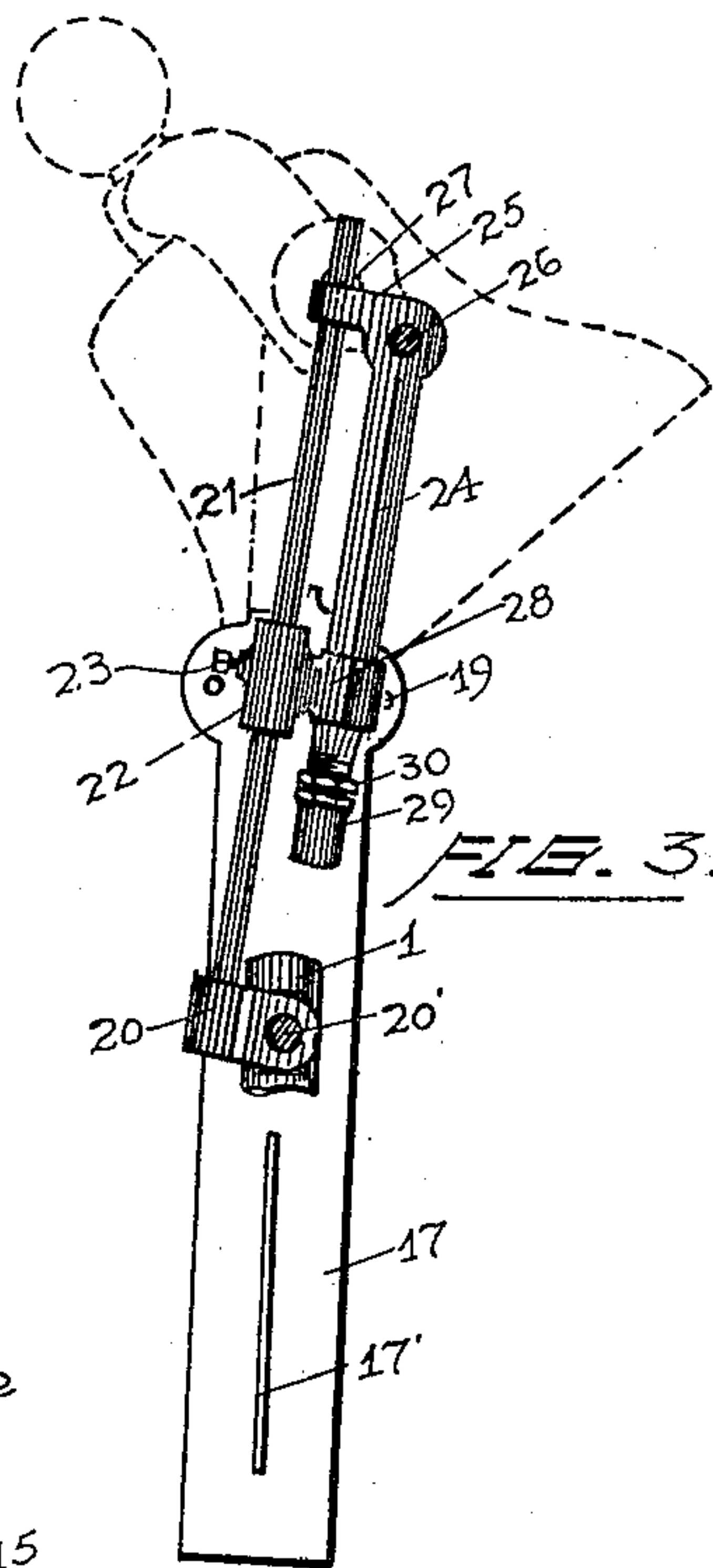
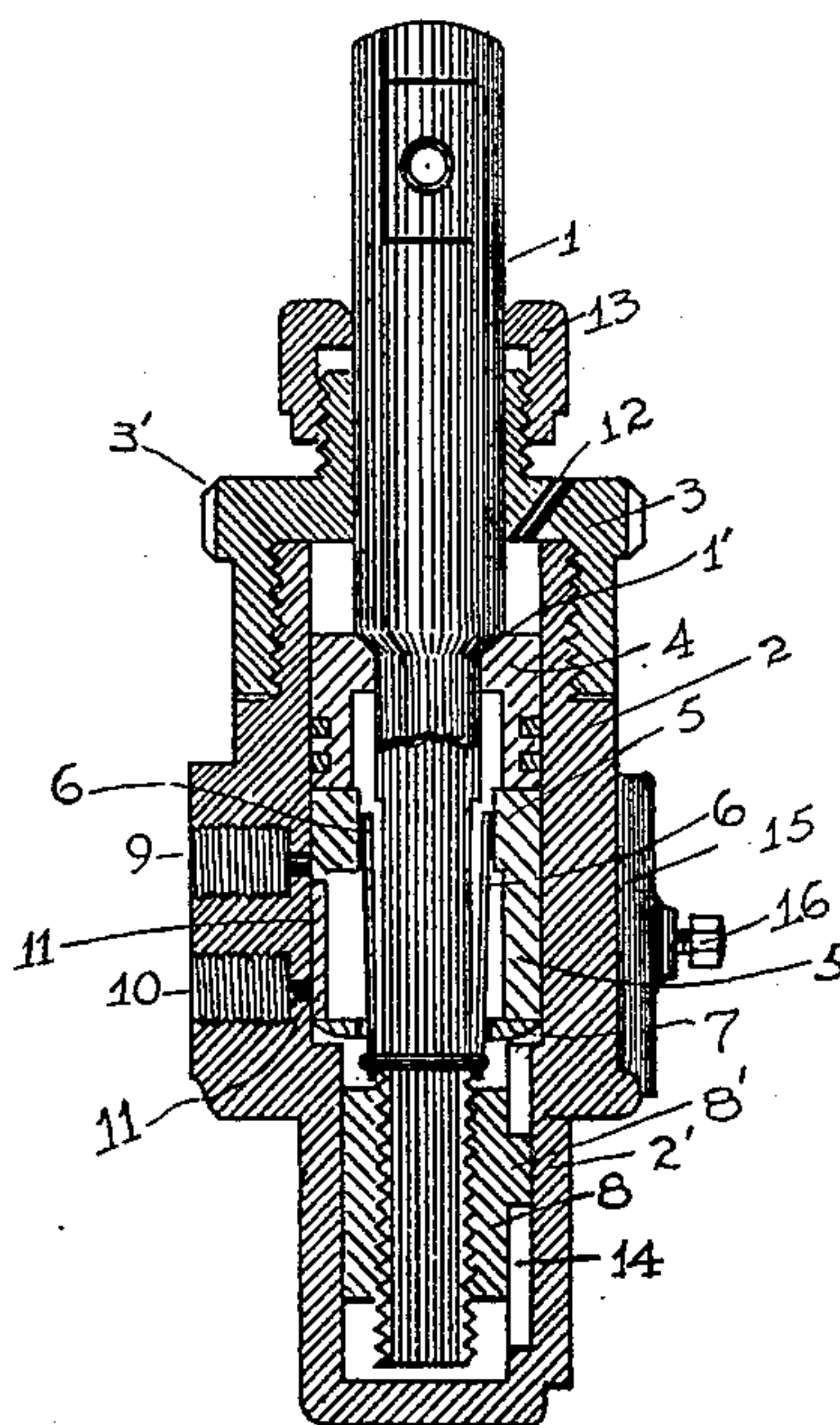
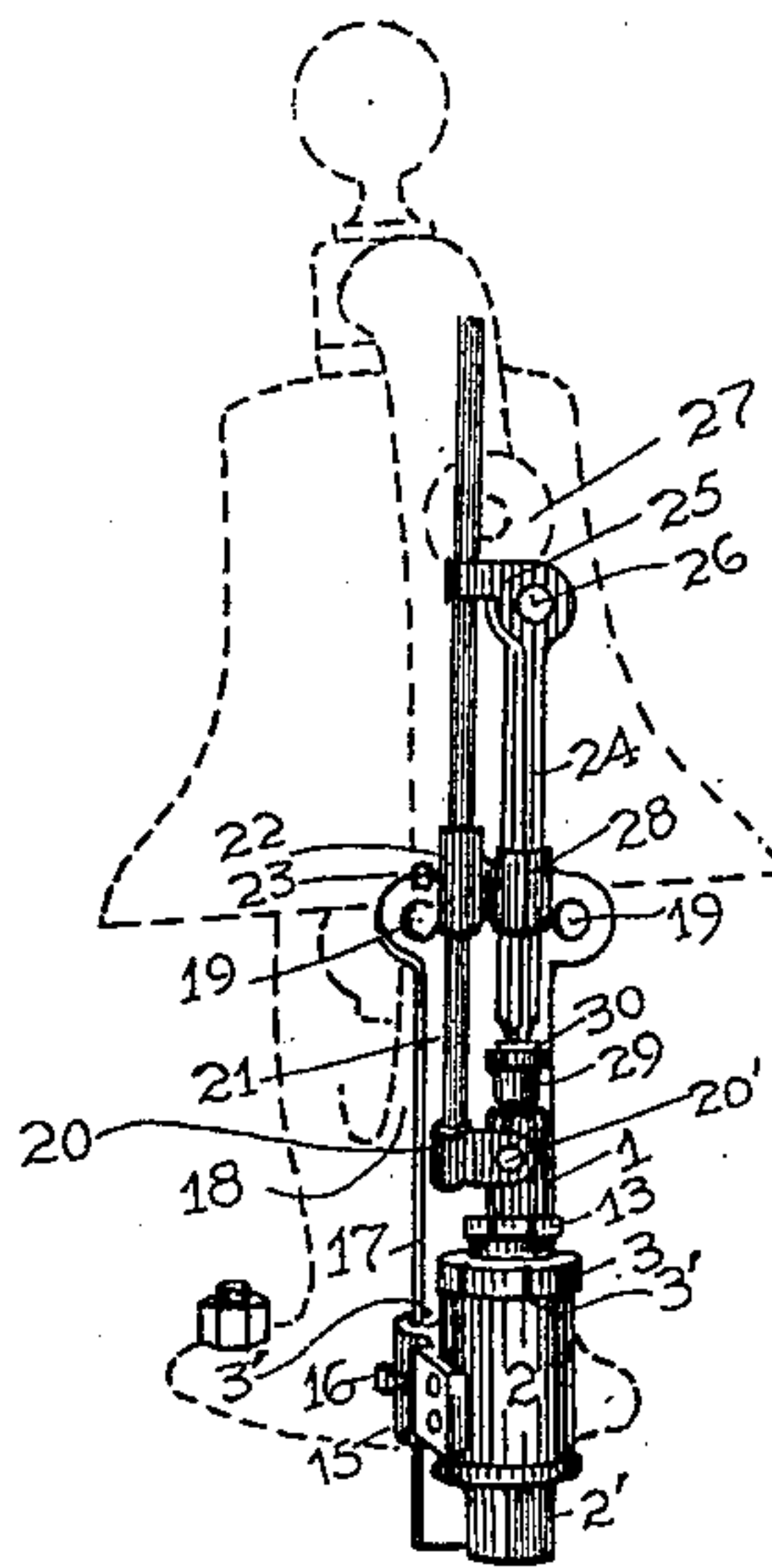
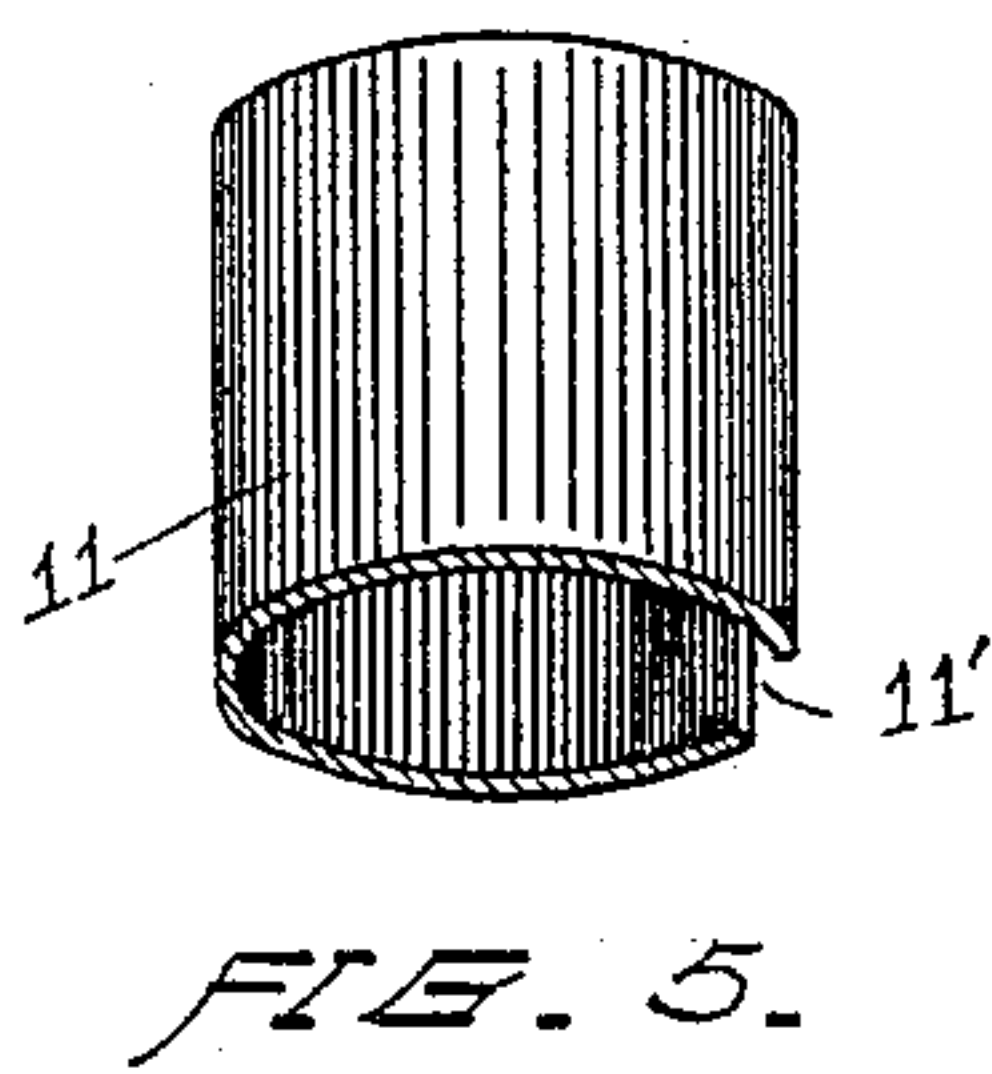
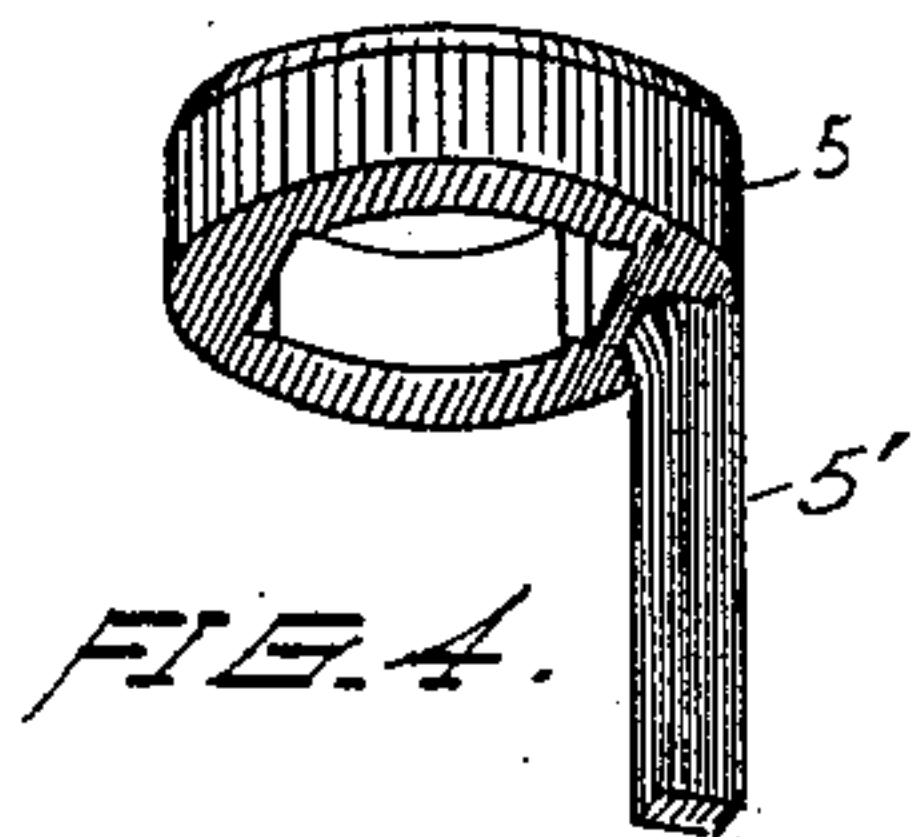
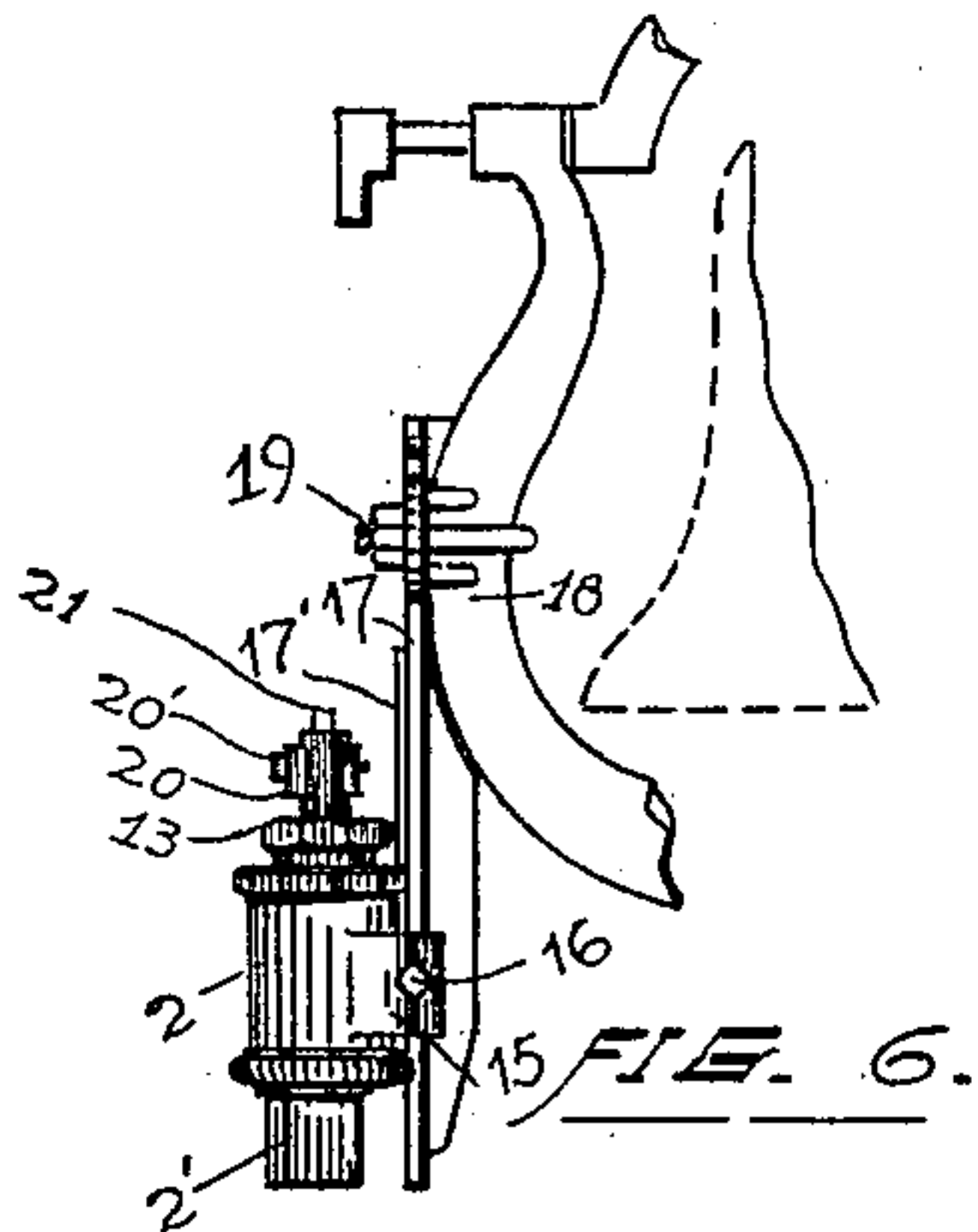


(No Model.)

S. H. HEGINBOTTOM.
LOCOMOTIVE BELL RINGER.

No. 583,473.

Patented June 1, 1897.



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SAMUEL H. HEGINBOTTOM, OF SAGINAW, MICHIGAN.

LOCOMOTIVE-BELL RINGER.

SPECIFICATION forming part of Letters Patent No. 583,473, dated June 1, 1897.

Application filed September 25, 1896. Serial No. 607,008. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL H. HEGINBOTTOM, a citizen of the United States, residing at Saginaw, in the county of Saginaw and State of Michigan, have invented certain new and useful Improvements in Locomotive-Bell Ringers; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to devices for ringing locomotive-bells, and is an improvement upon Letters Patent granted to me November 11, 1890, No. 440,264, and has the objects therein mentioned and the further objects of, first, providing adjustable means for connecting the ringing device to the bell-frame; second, the improved connecting-rod in which there is less wear upon the parts, and third, the construction and arrangement of the valve devices within the cylinder so as to be automatically adjusted to take up the wear of the parts, as will hereinafter appear; and it consists, further, in the arrangement, combination, and construction of the several elements hereinafter described, and specifically set forth in the claims.

Figure 1 is a side elevation; Fig. 2, a vertical section of the cylinder with the piston and parts in the position when the bell is at rest. Fig. 3 is a detail in elevation of the parts broken away. Fig. 4 is a detail of the compensating piece 5. Fig. 5 is a detail of the ring-valve. Fig. 6 is a side elevation of the device, showing the attachment to the bell-frame.

In the drawings, 1 is a piston-rod passing into the cylinder 2 and having within the cylinder upon its inner end the nut 8, fitting the chamber 2' in the end of the cylinder and held from turning upon the piston by the square shoulder 8', fitting a socket 14 in the wall of the chamber 2'.

3 is the cylinder-cap nut, having the port 12 entering into the cylinder-chamber, as will hereinafter appear.

4 is the piston-head and is loose upon the

piston-rod, the rod having a beveled shoulder 1' fitting the seat in the piston-head.

9 is an inlet-port which may be connected to the air-brake reservoir, and 10 an exhaust-port.

11 is a ring-valve similar to that described in my Letters Patent referred to, and it fits snugly against the wall of the chamber and has a transverse opening 11' upon one side, which is filled by the depending projection 5' of the regulating or compensating piece 5 within the cylinder and just above the ring 11. This piece 5' takes the place of the pin s' of the above-mentioned Letters Patent, the compensating piece 5 answering the same purpose as the regulating-piece T' of the said patent, and differs in construction in that it (5) is of the size of the cylinder-chamber with a central opening instead of being smaller than the chamber with an opening surrounding it.

Between the bottom nut 8 and the ring-valve is the washer 7, of the size of the cylinder, being loose upon the piston-rod. Its use will hereinafter appear.

6 6 are flat springs near the inner end of the piston-rod which extend along the piston-rod to engage the compensating piece 5, their function being to hold the piece 5 in position.

13 is a packing-nut at the top of the cylinder, but requires no packing until the valve and piston ring becomes so loose as to allow the piston to fall by its own weight and make unnecessary strokes during the swinging of the bell.

24 is the connecting-rod, and is connected to the crank 27 of the bell by the pin 26, and has a guideway 25, through which passes loosely the upper end of the supplemental connecting-rod 21. The connecting-rod 24 is not connected at its lower end to the piston-rod, but is just long enough to engage the upper end of the piston-rod when the bell is at rest or passing its lower stroke, as shown in Fig. 1, its lower end being provided with a nut-cap 29 and lock-nut 30, the lower end of the cap-nut being rounded to engage the rounded end of the piston-rod. It is obvious that by loosening the nut-lock the length of this connecting-rod may be adjusted by means of the cap-nut.

The supplemental connecting-rod 21 is connected by the yoke 20 to the piston-rod 1 by the pivot 20'.

22 is the connecting-rod guide, adapted to be rigidly secured to the supplemental rod 21 by the set-screw 23 at the desired height, the connecting-rod 24 passing loosely through the guideway 28, whereby it is held in alignment with the supplemental rod 21 as it passes to engage the top of the piston-rod as the bell-crank descends to its shortest stroke.

17 is a hanger secured to a yoke 18 of the bell-frame by the staple-nut 19 passing around the yoke and through the eyes at the upper end of the hanger, whereby the hanger may be rigidly secured in a vertical position to the bell-frame, and to this hanger I secure the cylinder 2. It is obvious that this hanger may be secured to any make of a bell-frame, and the means for securing the cylinder to the hanger are such that the cylinder may be adjusted up and down in the hanger and regulated at the height desired. This means consists of guideways 15 upon the back of the cylinder, which slide upon the hanger and are secured thereto by set-screws 16, which pass through guideways and engage the edge of the hanger 17. In order to prevent the cylinder-cap 3 from unscrewing, as it is liable to do, I provide upon the circumference of the cap several grooves, as 3', and upon the hanger a central rib 17', adapted to engage one of these grooves as the cylinder is placed in position upon the hanger, and this means prevents the cap from turning or being turned until the cylinder is detached from the hanger.

The operation of the ringer is as follows: When air or steam is admitted into the inlet-port 9, it causes the piston to rise to the top of the cylinder, and as the piston nears the end of its stroke the nut 8 comes in contact with the washer 7, which lifts the ring-valve 11, closing the inlet-port 9 and opening the exhaust-port 10, which, it will be observed, is just above the lower edge of the ring-valve 11, and the moving of the ring-valve upward to fill the inlet-port 9 opens the exhaust-port 10. The piston remains in this position—viz., at the top of the cylinder—until the return of the bell-crank, whereby the piston is pushed down to the position shown in Figs. 1 and 2. As the piston-rod is raised by the air entering the cylinder, as described, it pushes the connecting-rod 24 upward, and thereby rings the bell. This action gives the bell a momentum which carries it upward after the piston has reached its upper throw, and thereby draws the connecting-rod 24 away from the end of the piston-rod. As the air-pressure increases in the cylinder the piston is given a greater impetus, and the bell consequently receives a greater momentum and is drawn farther upward, drawing the connecting-piece through the guide 28 until the nut 30 may reach the guide, in which position the strain will be thrown upon the supplemental rod 21,

which will draw the piston-rod farther up, and also check the movement of the bell.

The regulating and compensating piece 5, which is held by the two flat springs 6 to the rod, automatically prevents the bell from revolving—viz., when the supplemental rod 21 pulls on the piston-rod it draws the piston-rod through the chamber and thereby shoves the springs 6 6 farther on the compensating piece 5. These springs being very strong, the movement creates a great deal of friction, which checks the momentum of the bell. As the bell descends from its upper stroke the end of the connecting-rod 24 will engage the end of the piston-rod, pushing the piston down until the ring 11 has dropped below the inlet-port 9, when the air will be admitted to the chamber. The exhaust-port being closed, the air will form a cushion in the chamber to resist the downward movement of the bell until it has passed its center, when the air will immediately raise the piston and send the bell upon its upward stroke to be again checked, as described. As the bell in the former instance descends to its lower stroke it is obvious that the piston-rod 1 must be pushed down into the cylinder to its original position. This action also serves to check the descending momentum of the bell, as the force required to push the spring 6 6 downward on the compensating piece 5 will be as great as that required to pull them upward. It will be observed, however, that the springs 6 are not pushed down on the regulating-piece 5 until after the port is open and the air-cushion formed. Consequently this part 5 regulates automatically the swinging of the valve and prevents it from revolving. It also compensates for the wear of the parts, both the wear on the crank-pin 26 and the wear on the end of the connecting-rod 24 on the end of the piston 1, for it is obvious that if the length of the connecting-rod is diminished the piece 5 will not move a great distance on the spring 6, as before, and therefore the port-opening does not diminish through wear of the parts.

It is obvious that by the arrangement of the connecting-rod and supplemental rod as described there is less strain and consequent wear upon the connecting-pin 21. The port 12 is for the passage of air from the upper end of the cylinder, as the piston-head is forced upward by the inlet of the air into the piston-chamber.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a bell-ringer, the connection between the bell-crank and piston-rod, comprising a connecting-rod secured to the wrist-pin of the bell-crank and having a laterally-extending part having a guideway, a supplemental rod pivoted to the piston-rod and extending through the guideway on the connecting-rod, and a movable guideway on the supplemental

rod through which the lower part of the connecting-rod passes, whereby when the parts are arranged as described the connecting-rod will bear against the piston-rod when passing its lower center and be drawn away from it while on its upper stroke.

2. In a bell-ringer, the combination with the bell-crank, a connecting-rod pivoted to the crank, a guideway on the upper end of the connecting-rod, an adjustable cap-nut on the lower end of the connecting-rod and adapted to bear on the end of the piston-rod while the crank is passing its lowest center, of the piston-rod and a supplemental rod pivoted to the piston-rod and passing through the guideway on the connecting-rod, and a guideway for the lower end of the connecting-rod adjustably secured to the supplemental rod, whereby the strain of ringing the bell will be taken from the crank-pin and distributed, as specified.

3. A device for ringing a locomotive-bell, comprising a connecting-rod pivoted to the bell-crank and having a guideway upon one side thereof, a supplemental rod pivoted to the piston-rod and extending through the said guideway, a guideway for the connecting-rod adjustably secured to the supplemental rod, whereby each may move independently of the other a certain distance, a cap-nut on the end of the connecting-rod adapted to be engaged by the end of the piston-rod, a cylinder carrying the piston and the piston-rod and having inlet and outlet ports and a valve for covering one of the ports at a time, means for moving the valve as the piston passes to its upper stroke and close the inlet-port, and means for checking the momentum of the bell imparted by the piston passing to its upper stroke, comprising the piston-rod adapted to be drawn by the momentum of the bell a certain distance through the piston, and means within the cylinder below the piston-head for resisting this movement of the piston-rod, as specified.

4. In a device for ringing bells, means for checking the momentum imparted to the bell by the piston on its upper stroke, comprising a piston-rod adapted to be drawn through the piston a limited distance, springs upon the

piston-rod within the piston, a piece within the chamber and abutting the piston-head when on its upper stroke, and against which piece the said springs bear as the piston-rod is drawn outward, thereby checking the bell and preventing its revolving, as specified.

5. In a locomotive-bell ringer, means for adjustably attaching the cylinder to the bell-frame, comprising a hanger adapted to be clamped to the yoke of the bell-frame in a vertical position, guideways on the cylinder fitting and traveling on the hanger, and adapted to be secured thereto by a set-screw.

6. In a locomotive-bell ringer, means for adjusting the ringer comprising a hanger adapted to be clamped to a yoke of the bell-frame, the cylinder having means for adjustably engaging the hanger, whereby as the connecting-rod is shortened by wear the cylinder may be raised on the hanger, a cap-nut on the end of the connecting-rod whereby the length of the connecting-rod may be varied, and the compensating piece 5 in the piston, and the springs 6 on the piston-rod, all adjusted and operated substantially as specified.

7. In a locomotive-bell ringer, means for attaching the cylinder to the bell-frame comprising a hanger adapted to be secured to a yoke of the bell-frame, and means for adjustably securing the cylinder to the hanger, and means for preventing the cylinder-cap from unscrewing comprising a vertical rib on the hanger fitting in a groove in the cylinder-cap, as specified.

8. In a device for ringing bells, means for checking the momentum imparted to the bell by the piston passing to its upper stroke comprising a friction-regulating piece within the cylinder below the piston-head and through which the piston-rod passes, and resisting to a limited degree by causing friction, the movement of the piston-rod through the regulating-piece, as set forth.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

SAMUEL H. HEGINBOTTOM.

Witnesses:

A. H. SWARTHOUT,
FANNIE ROBBINS.