

No. 754,653.

PATENTED MAR. 15, 1904.

C. H. HOWLAND-SHERMAN.  
CONNECTING ROD OR PITMAN.

APPLICATION FILED DEC. 17, 1902.

NO MODEL.

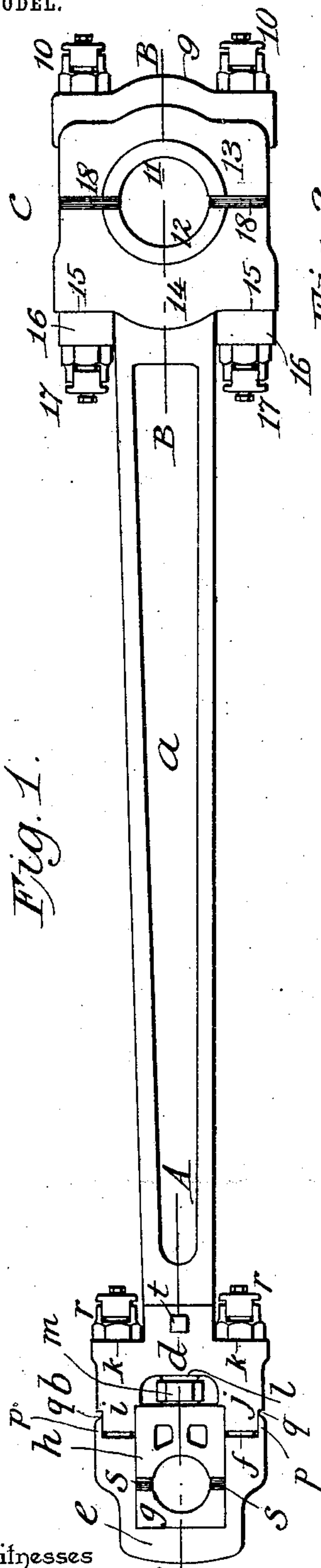


Fig. 1.

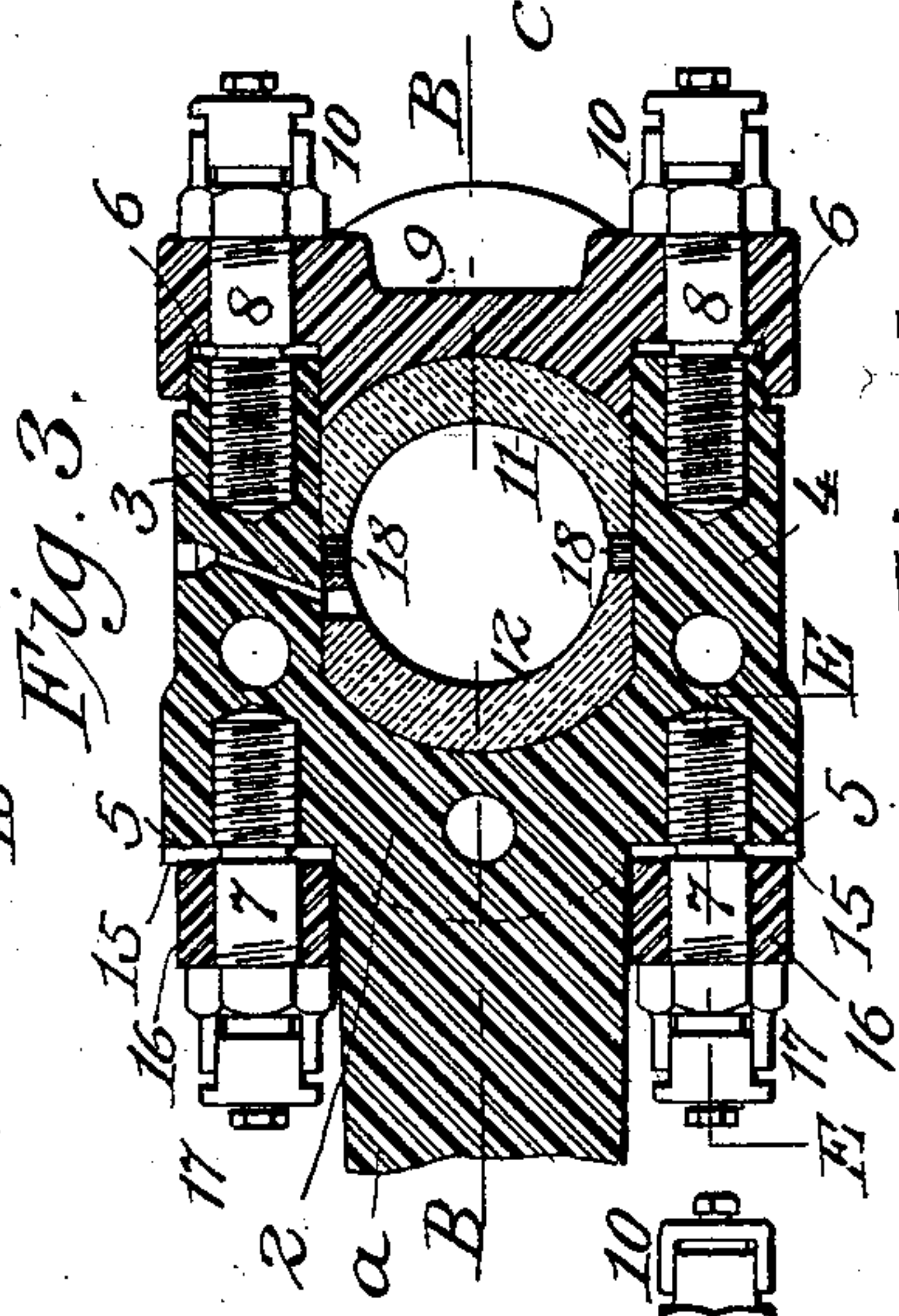


Fig. 3.

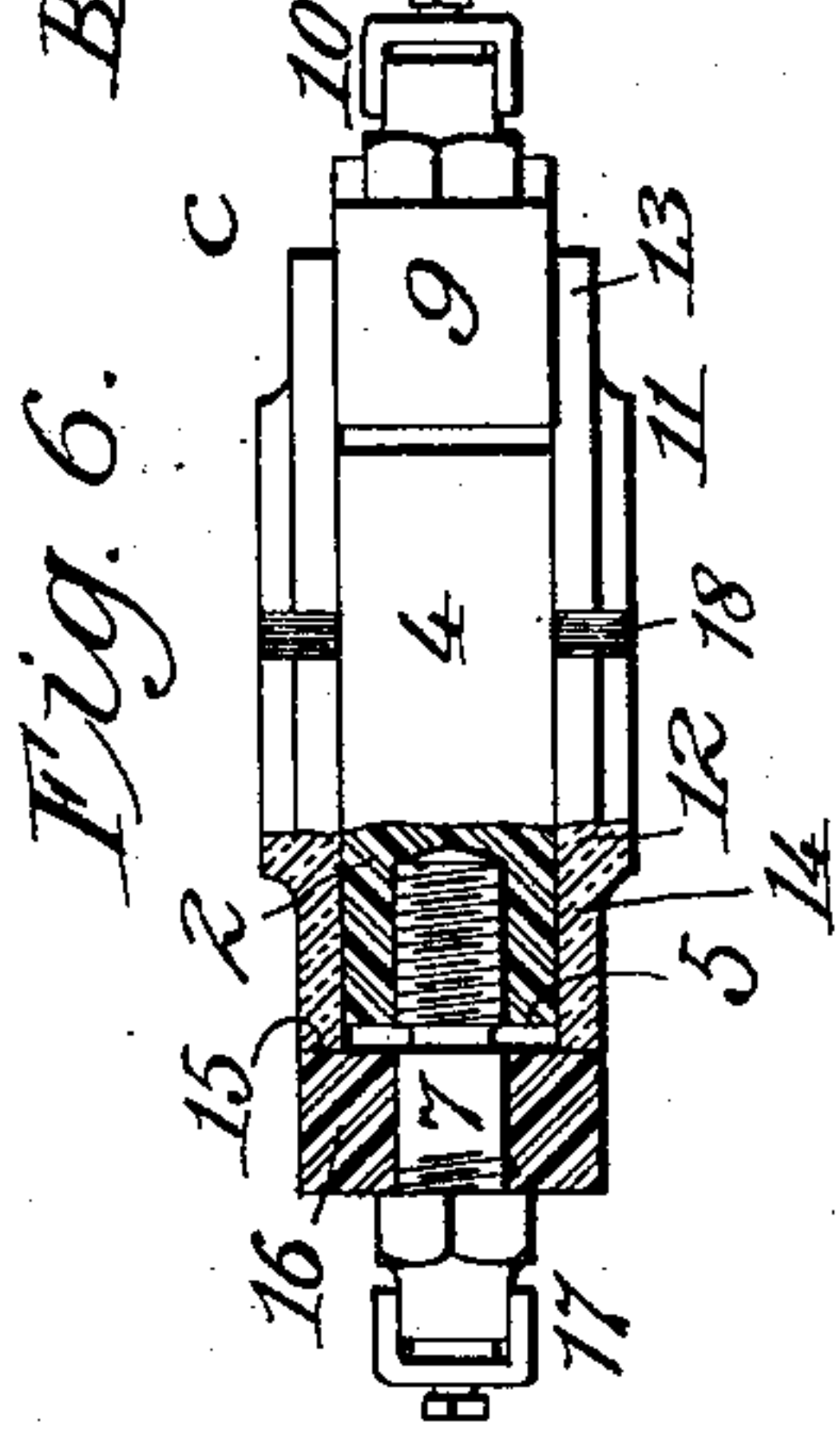


Fig. 6.

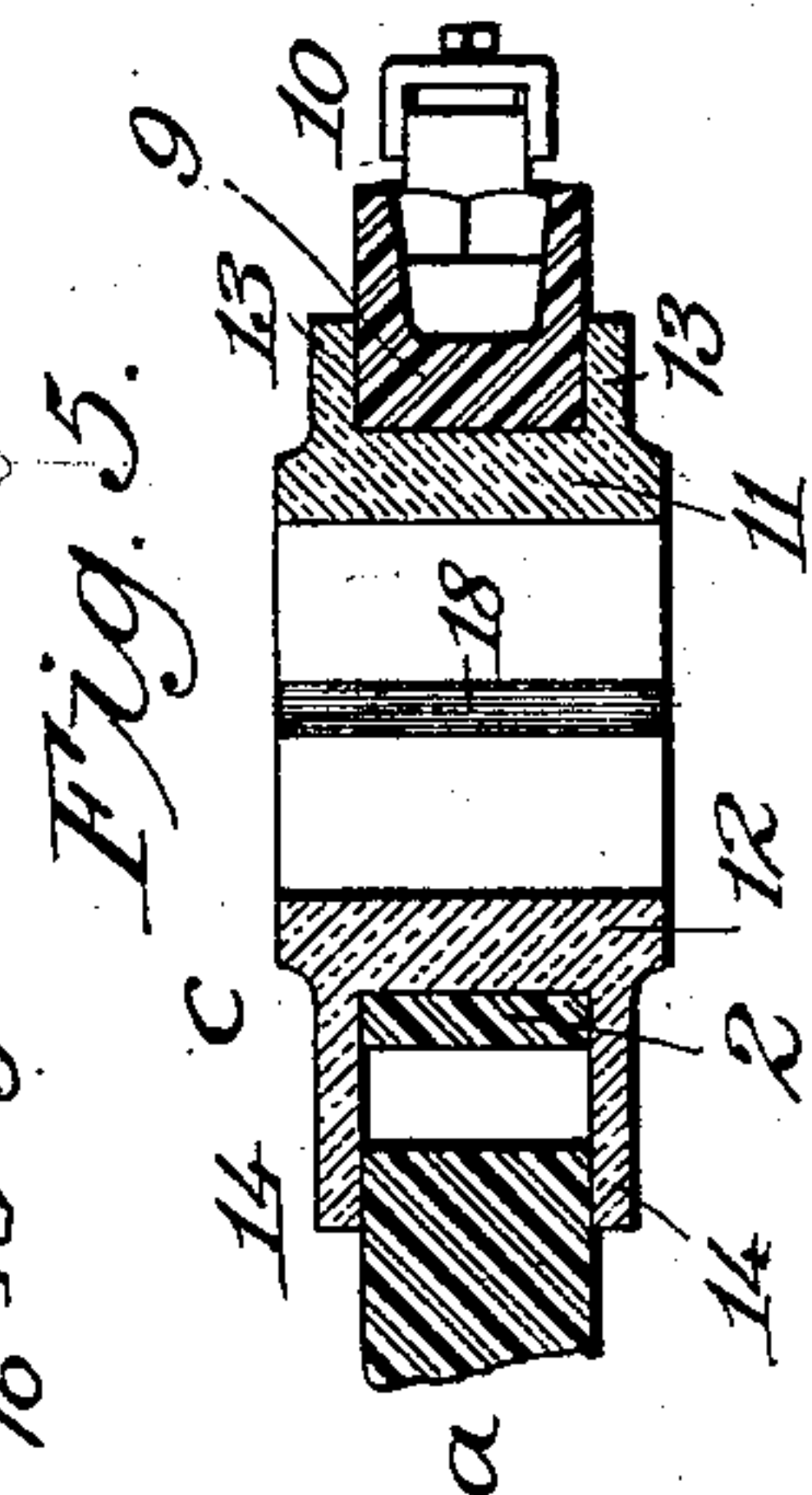


Fig. 5.

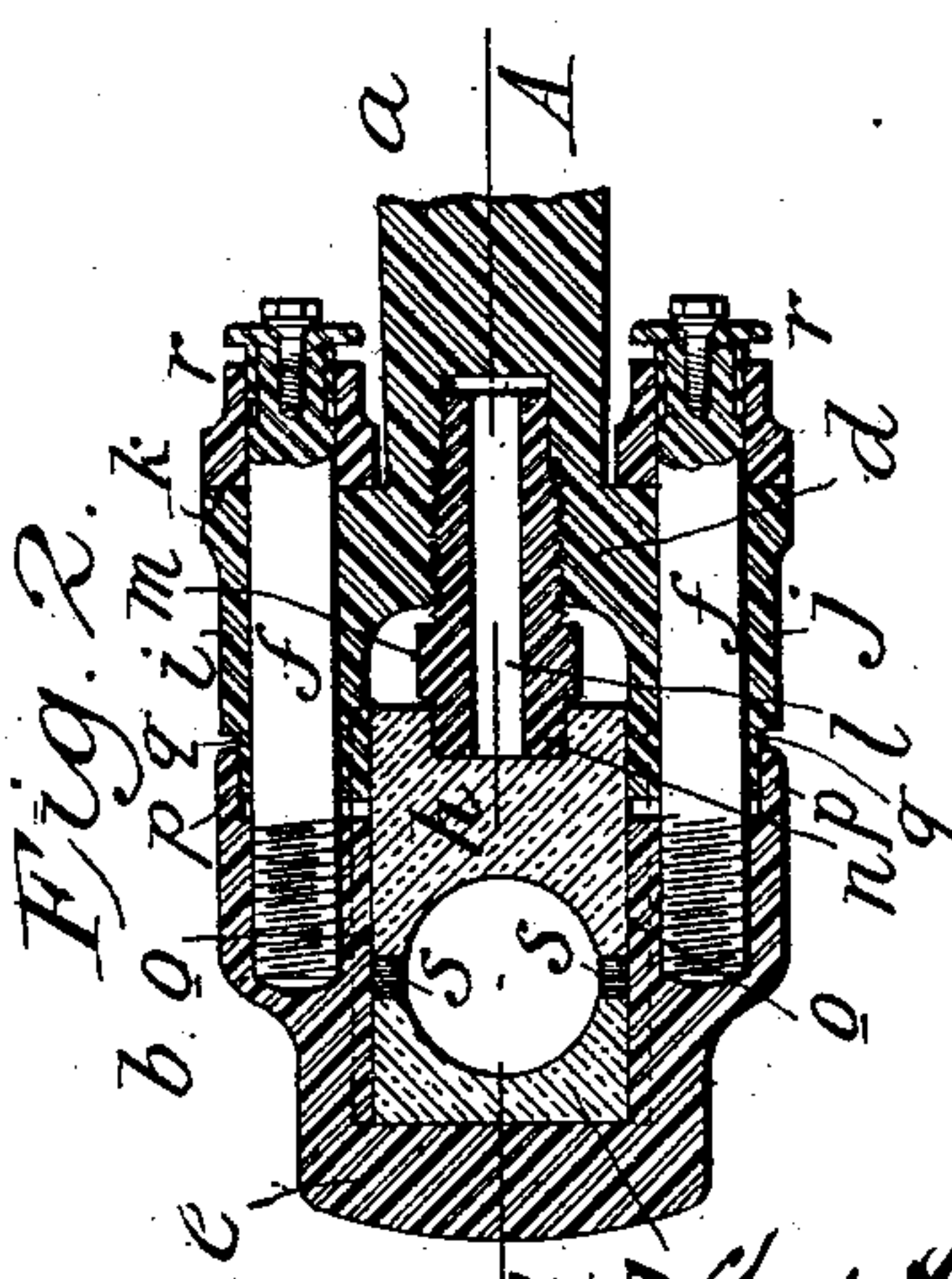


Fig. 2.

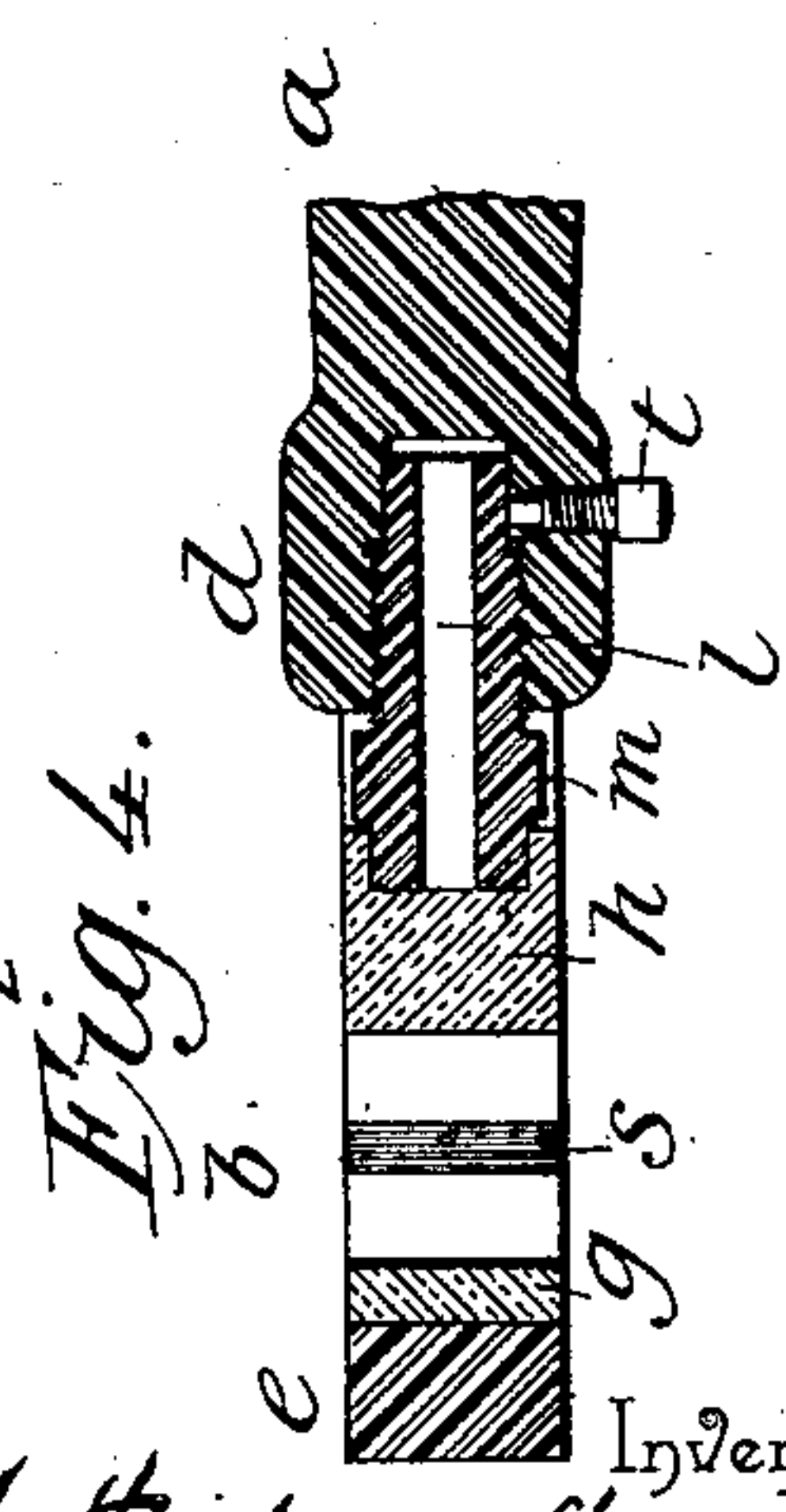


Fig. 4.

Witnesses  
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# UNITED STATES PATENT OFFICE.

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## CONNECTING-ROD OR PITMAN.

SPECIFICATION forming part of Letters Patent No. 754,653, dated March 15, 1904.

Application filed December 17, 1902. Serial No. 135,522. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES H. HOWLAND-SHERMAN, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Connecting-Rods or Pitmen, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

My invention relates to improvements in connecting-rods or pitmen, more particularly in connecting-rods of the type used on locomotive and stationary engines, and has for one of its objects the equal adjustment and wear of their brasses by modifying the structure and adapting the function of bolts commonly employed to the direct actuation of the brasses.

A further object is by the application of thin metal strips between the opposing brasses to receive the compression strain due to the setting up of the bolts or nuts thereon by means of which the brasses are adjusted to take up wear. The general result sought is the maintenance of an isocentric arm length reckoned from center to center of the bores of the rod and to keep the bolts always under tension, so that however much the brasses may wear the cap and the brasses will always remain tightly secured to the stub end of the rod.

The permanence of the isocentric condition is secured by the use of the mechanism illustrated in the accompanying drawings, in which—

Figure 1 represents an elevation of my improved connecting-rod. Figs. 2 and 3 represent longitudinal vertical sections of the piston and the crank-pin ends, respectively; and Figs. 4 and 5, longitudinal cross-sections, respectively, of Figs. 1, 2, and 3 on the lines A A and B B. Fig. 6 is an edge view of Fig. 3, partly in section, on the line E E of said figure.

Similar letters and numerals of reference indicate similar parts in the respective figures.

The connecting-rod *a*—in this instance a locomotive-rod—has at one end a head *b*, which when in use is connected to the piston-rod slide, the rod having at its other end a head *c*

to engage the crank-pin on one of the driving-wheels of the locomotive.

The head *b* (see Figs. 1, 2, and 4) consists in part of a stub end *d* and an adjustable cap *e*, the latter being secured to the stub end by stud-bolts *f f*, between which are placed the adjustable brasses *g h*. The stub end *d* is forked or divided into two members *i j*, each member being longitudinally bored for the reception of one of the bolts *f*, which pass through it and project beyond a squared shoulder *k* on the inner side of the stub end *d*. Between the members *i j* and in the axial line of the connecting-rod is a threaded bore for the reception of a compression-bolt *l*, having formed thereon a polygonal collar *m* and a short cylindrical head *n*.

The cap *e* has preferably a U-shaped contour, with interior parallel sides or cheeks *o* flush with or in the same plane as the inner surfaces of the members *i j* and supplied interiorly with flanges *p p*, engaging depressions *q q*, formed on the exposed edges of the members *i j*. Projecting inwardly from the cap *e* are the two stud-bolts *f f*, which when the parts are assembled pass through the bores in the members *i j* and projecting beyond the shoulders *k* hold the cap *e* in place on the stub end *d*. Lock-nuts *r*, fitted on the ends of the stud-bolts *f*, serve as means for adjusting the cap *e* and its contained brass *g* and locking them in their adjusted positions.

The brasses *g h*, two in number, are contained within the space formed by the stub end *d* and the cap *e*. The brass *g* is wholly within the cap *e* and immovable except as the cap moves. The brass *h* is disposed partly within the cap and partly within the stub end *d*, its edges bearing against the cheeks of the cap and the members *i j* and sliding thereon when the brass is adjusted. The inner or bottom brass *h* has a cylindrical seat bored therein for the head *n* of the compression-bolt *l*, by means of which the brass *h* is adjusted when a proper tool is applied to the polygonal collar *m* of the bolt *l*. The outer edges of the brasses *g h* are separated a short distance from each other, the space thus formed being filled by laminae *s*, of sheet metal, about one hundredth of an inch in thickness, which take the



compression strain of the adjusting-bolts when the brasses are set to a close fit around the bearing-pin. A small bolt *t*, threaded in the side of the stub end *d*, locks the compression-bolt *l* from turning after it has finally adjusted the brass *h* to position.

The head *c* at the crank-pin end of the connecting-rod *a* has, as in the case of the head *b*, a stub end 2 of U-shaped contour and forked or divided into two parallel members 3 4, their respective inner and outer ends 5 5 and 6 6 being bored for the insertion of stud-bolts 7 7 and 8 8, the bolts 7 7 extending inwardly and those 8 8 outwardly. (See Figs. 1, 3, 15 and 6.)

A cap 9, fitted to the outer ends of the members 3 4, is provided with bores through which the stud-bolts 8 8 pass when the cap is positioned on the stub end 2. The projecting ends of the stud-bolts 8 8 are fitted for lock-nuts 10 10 to retain the cap, which is adjustable, in position. The outer and inner brasses 11 12 are each formed with a semicylindrical body having flattened sides and end flanges 13 13 or 14 14. The brass 11 fits neatly within a curved depression in the cap 9, its flanges 13 maintaining an accurate bearing upon the exterior sides of the said cap and the outer ends of the members 3 4. The inner brass 12 fits a curved seat in the stub end 2, its flanges 14 extending inwardly beyond the inner ends of the members 3 4. The inner edges 15 of the flanges 14 serve as bearing-faces for two cross-bars 16, through each of which one of the stud-bolts 7 passes, the cross-bars being held in contact with the flanges 14 by lock-nuts 17. Regulation of the inner brass 12 is accomplished by removing the lock from the nuts 17 and turning the nuts, which movement causes the cross-bar 16, bearing on the flanges 14 of the brass 12, to move outwardly or inwardly, as the nuts are turned to the right or left. Laminæ 18, as heretofore described, are placed between the proximate edges of the brasses 11 12 and their flanges 13 14 to receive the compression strain when the brasses are adjusted to the crank-pin.

After a connecting-rod has been in use for a greater or lesser time the brasses become worn, and there is perceptible longitudinal play or movement which must be taken up without change in the arm length of the rod from center to center of the bearings. To accomplish this, one or both of the caps *e* and 9, with their brasses *g* and 11, are disconnected from the rod and one or more of the laminæ *s*

or 18 removed. The compression-bolt *l* and lock-nuts 17 are then turned until there is no longitudinal movement of the arm. The caps are then replaced and the lock-nuts turned until the brasses bear once more on the laminæ *s* and 18.

I do not restrict myself to the exact details of construction, combination, and arrangement herein set forth, it being obvious that minor variations thereof not involving the exercise of invention may be made by the skilled mechanic, and such departures from what is herein described and claimed not involving invention I consider as within the scope and terms of my claim.

Having thus described my invention, I claim—

1. Combined in a connecting-rod or pitman, a head adapted to embrace brasses, brasses in said head, the inner brass having flanges removable separating laminæ between the brasses, and means in operative connection with said flanges for adjusting said inner brass, substantially as set forth.

2. Combined in a connecting-rod or pitman, a head adapted to embrace brasses, brasses in said head, the inner brass, having flanges, and means in operative connection with said flanges for adjusting the inner brass, substantially as set forth.

3. Combined in a connecting-rod or pitman, a head adapted to receive brasses, brasses in said head, the inner brass having external flanges, and means in operative connection with said flanges for adjusting the inner brass, substantially as set forth.

4. Combined in a connecting-rod or pitman, a head adapted to receive brasses, brasses in said head, the inner brass having external flanges, removable separating laminæ between the brasses, and means in operative connection with said flanges for adjusting the inner brass, substantially as set forth.

5. Combined in a connecting-rod or pitman, a head adapted to embrace brasses, flanged brasses in said head, removable separating laminæ between said brasses, means for adjusting the inner brass through the medium of the external flanges thereon, and separate means for adjusting the outer brass, substantially as set forth.

In testimony whereof I hereunto set my hand and seal.

CHARLES H. HOWLAND-SHERMAN. [L. s.]

Witnesses:

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