

No. 771,949.

PATENTED OCT. 11, 1904.

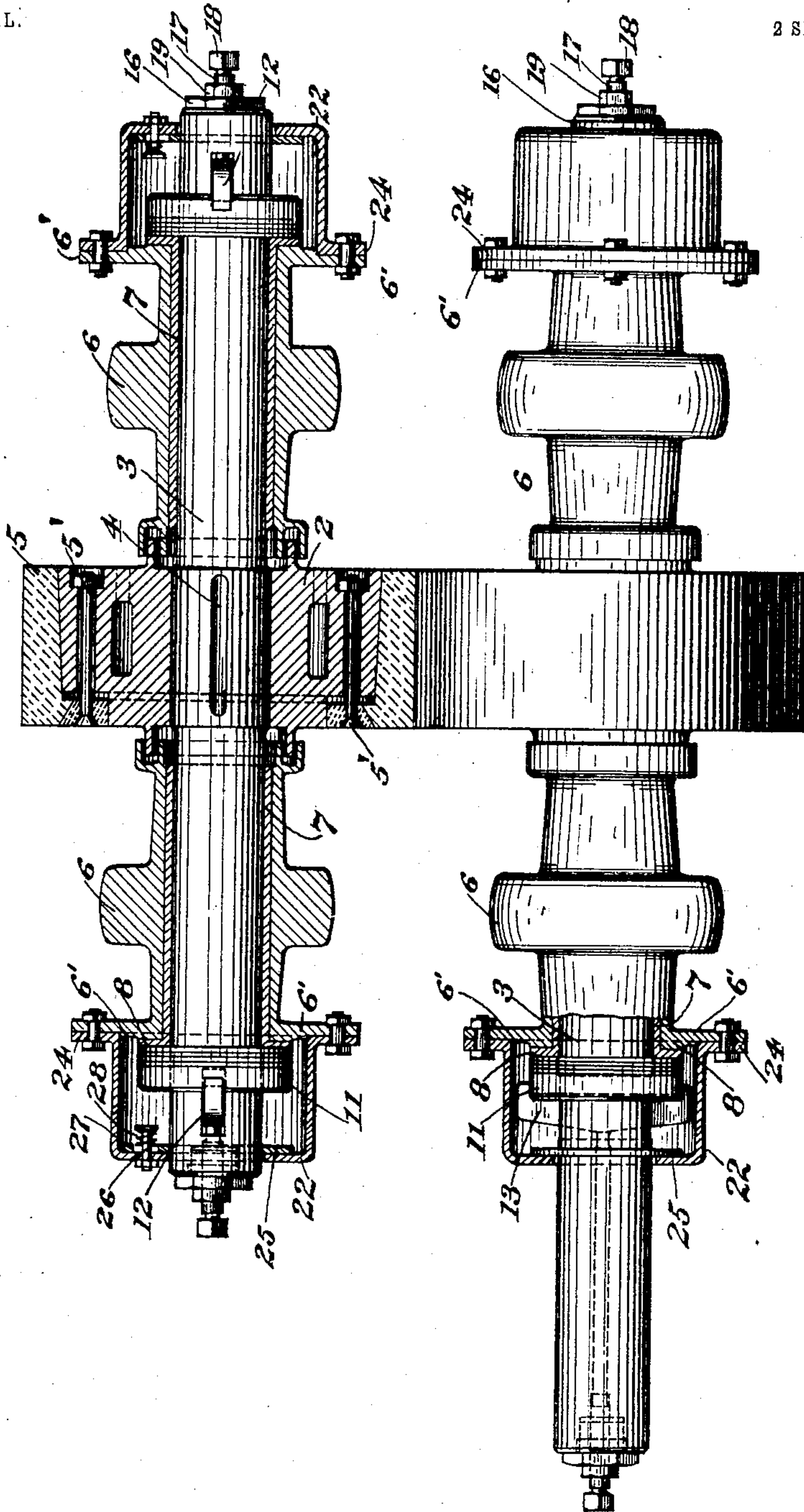
J. A. THOMAS.
CRUSHING ROLLS.

APPLICATION FILED JAN. 27, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1



Witnesses

Geo. L. Gatz

Fredrick J. Hyon

Inventor

James A. Thomas

by Townsend Bros
his attys

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2 SHEETS—SHEET 2.

Fig. II

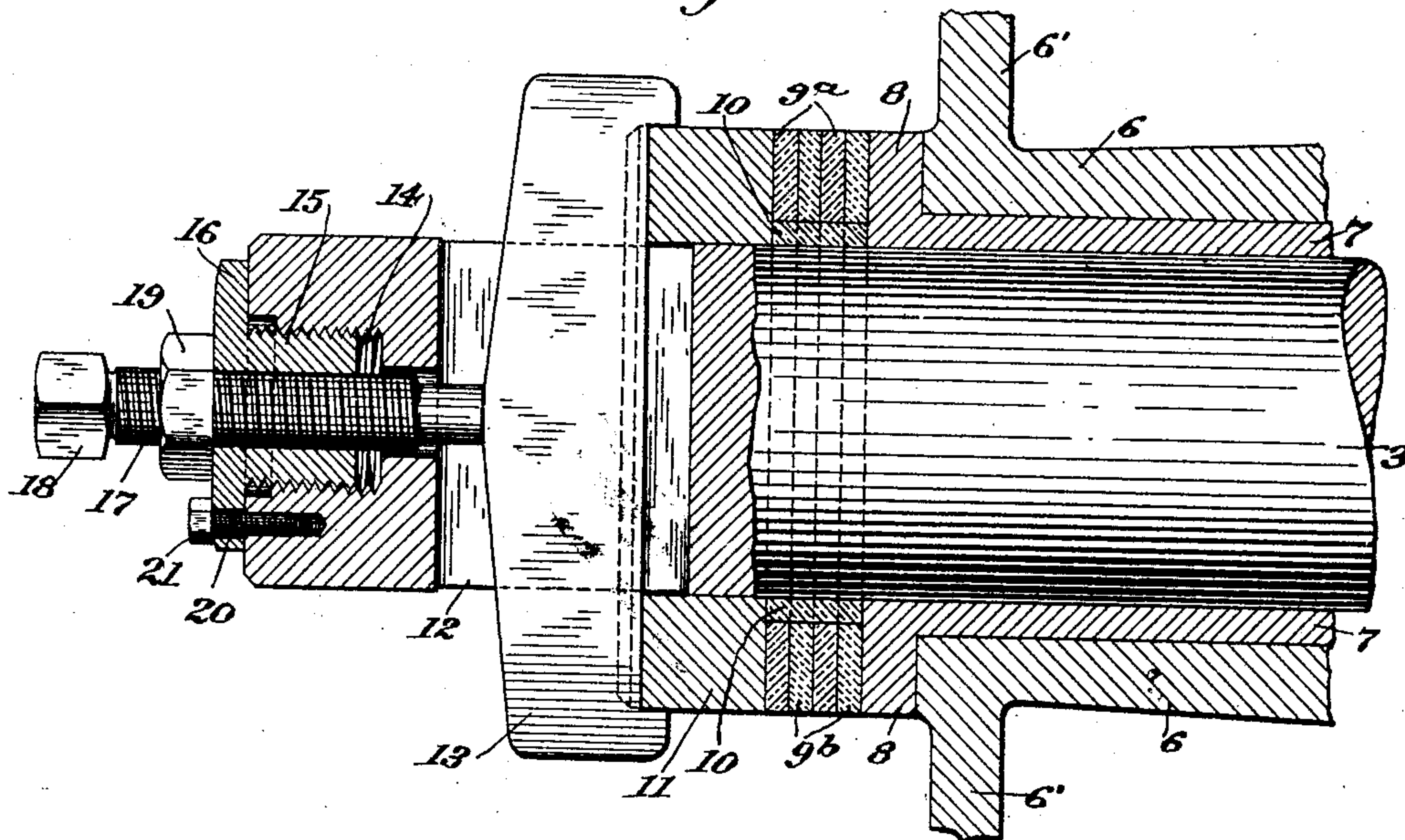
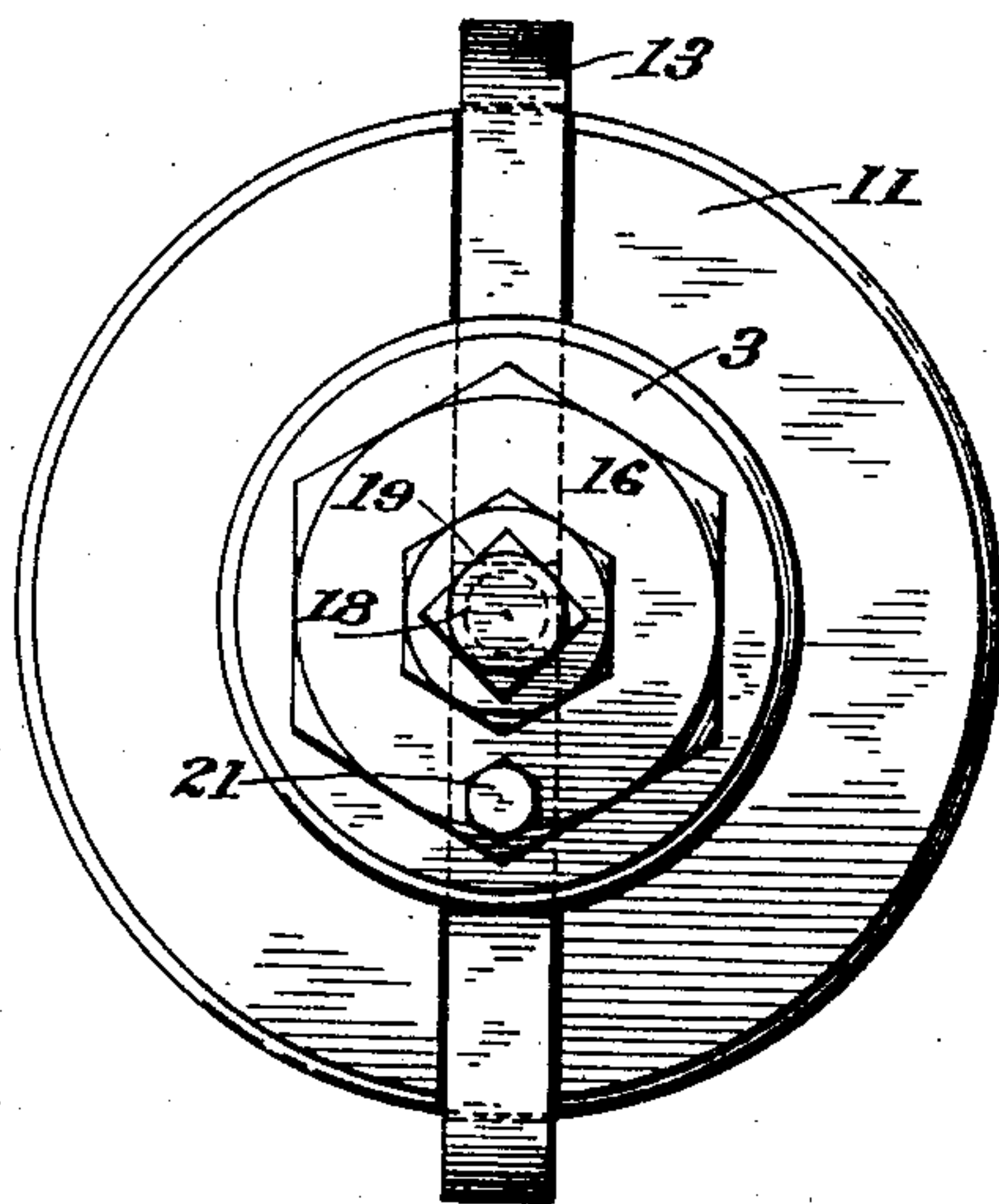


Fig. III



Witnesses
Geo. L. Goetz
Frederick Shyon

Inventor
James A Thomas
Messrs Bro
his attys

UNITED STATES PATENT OFFICE.

JAMES A. THOMAS, OF LOS ANGELES, CALIFORNIA.

CRUSHING-ROLLS.

SPECIFICATION forming part of Letters Patent No. 771,949, dated October 11, 1904.

Application filed January 27, 1903. Serial No. 140,806. (No model.)

To all whom it may concern:

Be it known that I, JAMES A. THOMAS, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented certain Improvements in Crushing-Rolls, of which the following is a specification.

This invention relates to crushing-rolls designed for crushing ore, and more particularly to crushing-rolls of the style commonly known as the "Cornish" rolls.

The general object of the invention is to provide means for effecting and controlling the longitudinal adjustment of the rolls to insure the even wear of the crushing-surfaces thereof and to prevent the shells from becoming corrugated or grooved, thus forming flanges on the crushing-faces of the shells or in order that if small flanges appear they can be worn down by end adjustment of the rolls.

A further object is to provide such means in simple, cheap, and durable form and which shall be positive and efficient in operation and readily accessible and easily operated.

Other and further objects and ends will hereinafter appear from the detail description of construction and operation.

In general, the invention consists in providing, in connection with the shafts of the rolls, adjusting means adapted to rotate therewith, said means comprising positively-operating devices controlling and effecting the longitudinal adjustment of said crushing-rolls with respect to each other and positively locking the rolls in the adjusted positions.

The invention consists, further, in novel constructions and arrangements of parts and in general and specific combinations of parts, all as hereinafter fully described, and particularly pointed out in the claims, and will be more readily understood by reference to the accompanying drawings, forming part of this specification, in which—

Figure I is a plan view of crushing-rolls embodying my invention. Fig. II is a longitudinal sectional view of the shaft of one of the crushing-rolls proper equipped with my longitudinal adjusting means. Fig. III is an end view thereof.

As shown in the drawings, 6 represents

suitable journal-boxes of the ordinary or any preferred construction, in which the shafts 3 are mounted. The shafts 3 are longitudinally movable in their bearings.

2 represents the crushing-rolls, preferably having hardened faces or shells 5 bolted thereto by bolts 5'. The rolls 2 are preferably fixed to the shafts 3 by suitable keys 4 in the ordinary or any preferred manner.

7 represents bushings having flanges 8, adapted to bear against the flanges 6' of the journal-boxes.

A sleeve or bushing 10 surrounds each shaft, one of its ends bearing against the flanges 8 of the bushing 7, the other bearing against the collar or sleeve 11. Thrust-rings 9^a 9^b surround the bushing 10, as shown in Fig. II. Preferably the thrust-rings 9^a are of brass and the thrust-rings 9^b of steel, so that the alternate rings are steel and brass to form good wearing-surfaces.

Each shaft 3 is provided at each end with a diametrical or transverse slot 12, through which a gib 13 is inserted, the slot 12 being of sufficient width to permit the desired longitudinal adjustment of the shafts and therefore with the rolls. A portion of the gib 13 is preferably cut away so that each end thereof projects over the sleeve or collar 11, so that the gib embraces the collar. The ends of each shaft are provided with threaded bearings or seats 14, into which wear-plugs 15 are adapted to be screwed, the wear-plugs 15 being preferably provided with hexagonal heads 16, by means of which they may be turned into place. Adjusting-screws 17 are adapted to screw through threaded bearings in the wear-plugs 15 and are provided with suitable heads by which they may be operated.

19 represents lock-nuts on the adjusting and set screws 17, by which the screws may be locked against movement after having been adjusted.

The heads 16 of the wear-plugs 15 are provided with threaded holes near their peripheries, and through these holes lock-bolts pass into bearings in the ends of the shafts 3. By these removable wear-plugs 15 all wear is taken up by the plugs 15, and the threads in the seats of the shafts are not subject to wear

from the adjustment of the shafts, as has heretofore been the case. This is highly desirable, as the shafts are expensive and when the threads become worn new shafts are required.

5 By using the removable wear-plugs great economy is gained.

22 represents suitable dust-caps having flanges 24 and adapted to slip over the ends of the shafts 3 and be bolted to the flanges 6' of the journal-boxes, thereby preventing dust and dirt accumulating on the thrust-rings 9^a, 9^b, and collar or sleeve 11 and from passing into the slots 12 of the shafts.

When it is desired to adjust the rolls 2 longitudinally with respect to each other in order to prevent the formation of flanges or corrugations thereon, or in case small flanges or corrugations have been formed to grind the same off, by loosening the lock-nuts 19 the adjusting-screws may be operated to effect the desired longitudinal movement of adjustment. This may be readily understood by reference to Fig. II, where it will be seen that by loosening the adjusting-screw at the other end of the shaft the turning up of the adjusting-screw 17 against the gib 13 will push the shaft 3 out toward the operator. The end of the adjusting-screw 17 pushing against the gib 13 forces the roll endwise toward the operator as the gib 13 bears against the collar 11, which in turn bears against the thrust-rings, which in turn bear against the flange 8 of the bushing 7, this in turn bearing against the flange 6' of the stationary journal-boxes 6.

35 In use the bushing 10 is of brass and the surrounding thrust-rings 9^a 9^b brass and steel, respectively. The bushing 10 prevents the steel thrust-rings 9^b from wearing into the shafts faster than the brass rings 9^a, which would be the case were no bushing so used. Supplying the bushing prevents any of the rings wearing into the shafts and making ridges thereon. As shown, the gib 13 is set into the face of the collar 11 to drive the collar so that all the wear due to friction is taken up by the rings 9^a 9^b.

25 represents a dust collar or washer, preferably of wood fiber, which surrounds the shaft inside the dust-cap 22. A bolt 26 passes through the dust-cap and through a slot 27 in the collar. A spring 28 is mounted on the bolt 26, between the inner end thereof and the face of the dust-collar 25, as shown, one of its ends bearing against the head of the bolt, its other end bearing against the dust-collar. The dust-collar prevents dust or dirt working through between the cap and shafts.

Having described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. The combination, with journal-boxes, of movable shafts rotatably mounted therein, rolls fixed on said shafts, said shafts provided with slots, means operating through said slots upon said boxes, said shafts provided at their

ends with seats, wear-plugs within said seats provided with threaded bearings, adjusting-screws threaded into said bearings, and adapted to operate upon said means, means locking said wear-plugs in said seats, and lock-nuts upon said adjusting-screws.

2. The combination, with journal-boxes, of longitudinally - movable shafts rotatably mounted therein, rolls fixed on said shafts, said shafts provided with slots, means operating through said slots upon said boxes, said shafts provided with threaded seats at their ends, wear-plugs in said seats and having threaded central bearings, adjusting-screws passing through said bearings in said wear-plugs and adapted to engage said means, lock-nuts for said adjusting-screws, and lock-bolts normally holding said wear-plugs from turning.

3. The combination, with journal-boxes, of longitudinally - movable shafts rotatably mounted therein, rolls fixed on said shafts, said shafts provided with slots, gibs mounted in said slots and bearing upon said journal-boxes, said shafts provided with threaded seats at their ends, wear-plugs in said threaded seats, said wear-plugs having threaded central bearings, adjusting-screws passing through said bearings in said wear-plugs and adapted to engage said gibs, lock-nuts for said adjusting-screws, and lock-bolts normally holding said wear-plugs from turning.

4. The combination, with journal-boxes, with bushings in the bearings thereof, of shafts rotatably and longitudinally movable therein, said bushings having flanges adapted to rest against said boxes, sleeves on said shafts beyond said flanges, thrust-rings thereon, collars on said shafts, said shafts provided with slots, gibs in said slots and embracing said collars, and regulable means operating on said gibs to move said shafts longitudinally.

5. The combination, with journal-boxes, with bushings in the bearings thereof, of shafts rotatably and longitudinally movable in said bushings, said bushings having flanges adapted to rest against said boxes, sleeves on said shafts beyond said flanges, thrust-rings thereon, collars on said shafts, said shafts provided with slots, gibs in said slots and embracing said collars, and regulable means operating longitudinally of said shafts upon said gibs to move said shafts.

6. The combination, with journal-boxes, with bushings in the bearings thereof, of shafts rotatably and longitudinally movable in said bushings, said bushings having flanges adapted to rest against said boxes, sleeves on said shafts beyond said flanges, thrust-rings thereon, collars on said shafts, said shafts provided with slots, gibs in said slots and embracing said collars, and said shafts provided at their ends with adjusting-screws adapted to be moved against said gibs thereby moving said shafts longitudinally.

7. The combination, with journal-boxes,

with bushings in the bearings thereof, of shafts rotatably and longitudinally movable in said bushings, said bushings having flanges adapted to rest against said boxes, sleeves on said shafts, said shafts provided with slots, gibs in said slots and embracing said collars, said shafts provided with threaded seats, wear-plugs therein provided with threaded means holding said wear-plugs from revolution in their bearings, and adjusting-screws operating through said wear-plugs upon said gibs.

8. The combination, with journal-boxes with bushings in the bearings thereof, of shafts rotatably and longitudinally movable therein, said bushings having flanges adapted to rest against said boxes, sleeves on said shafts beyond said flanges, thrust-rings thereon, collars on said shafts, said shafts provided with slots, gibs in said slots and embracing said collars, regulable means operating on said gibs to move said shafts longitudinally, and dust-caps secured on said journal-boxes and through which said shafts extend, said dust-caps surrounding said thrust-rings, collars and gibs.

9. The combination, with journal-boxes with bushings in the bearings thereof, of shafts rotatably and longitudinally movable therein, said bushings having flanges adapted to rest against said boxes, sleeves on said shafts beyond said flanges, thrust-rings thereon, collars on said shafts, said shafts provided with slots, gibs in said slots and embracing said collars, regulable means operating on said gibs to move said shafts longitudinally, dust-caps secured on said journal-boxes and through which said shafts extend, said dust-caps surrounding said thrust-rings, collars and gibs, and dust-collars about said shafts preventing the ingress of dust between said dust-caps and the shafts projecting therethrough.

10. The combination, with journal-boxes with bushings in the bearings thereof, of shafts

rotatably and longitudinally movable therein, said bushings having flanges adapted to rest against said boxes, sleeves on said shafts beyond said flanges, thrust-rings thereon, collars on said shafts, said shafts provided with slots, gibs in said slots and embracing said collars, regulable means operating on said gibs to move said shafts longitudinally, dust-caps secured on said journal-boxes and through which said shafts extend, said dust-caps surrounding said thrust-rings, collars and gibs, and dust-collars about said shafts preventing the ingress of dust between said dust-caps and the shafts projecting therethrough, said dust-collars being yieldingly mounted on said dust-caps.

11. The combination, with journal-boxes, of a shaft rotatably and longitudinally movable therein, a roll thereon, sleeves about said shaft, thrust-rings upon said sleeves, alternate thrust-rings being of brass and steel, and regulable means operating against said thrust-rings for adjusting said shaft longitudinally.

12. The combination, with journal-boxes, of a shaft rotatably and longitudinally movable therein, sleeves upon said shaft, alternate steel and brass thrust-rings about said sleeves, and regulable thrust means carried at the ends of said shafts and revoluble therewith, operating against said thrust-rings to longitudinally adjust said shafts, and means for keeping dust from said thrust-rings.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, at Los Angeles, in the county of Los Angeles and State of California, this 10th day of January, 1903.

JAMES A. THOMAS.

Witnesses:

FREDERICK S. LYON,
WALLER TAYLOR.