

J. JENKINS.
MECHANISM FOR LIFTING ROCK DRILLS.

APPLICATION FILED AUG. 11, 1904.

2 SHEETS—SHEET 1.

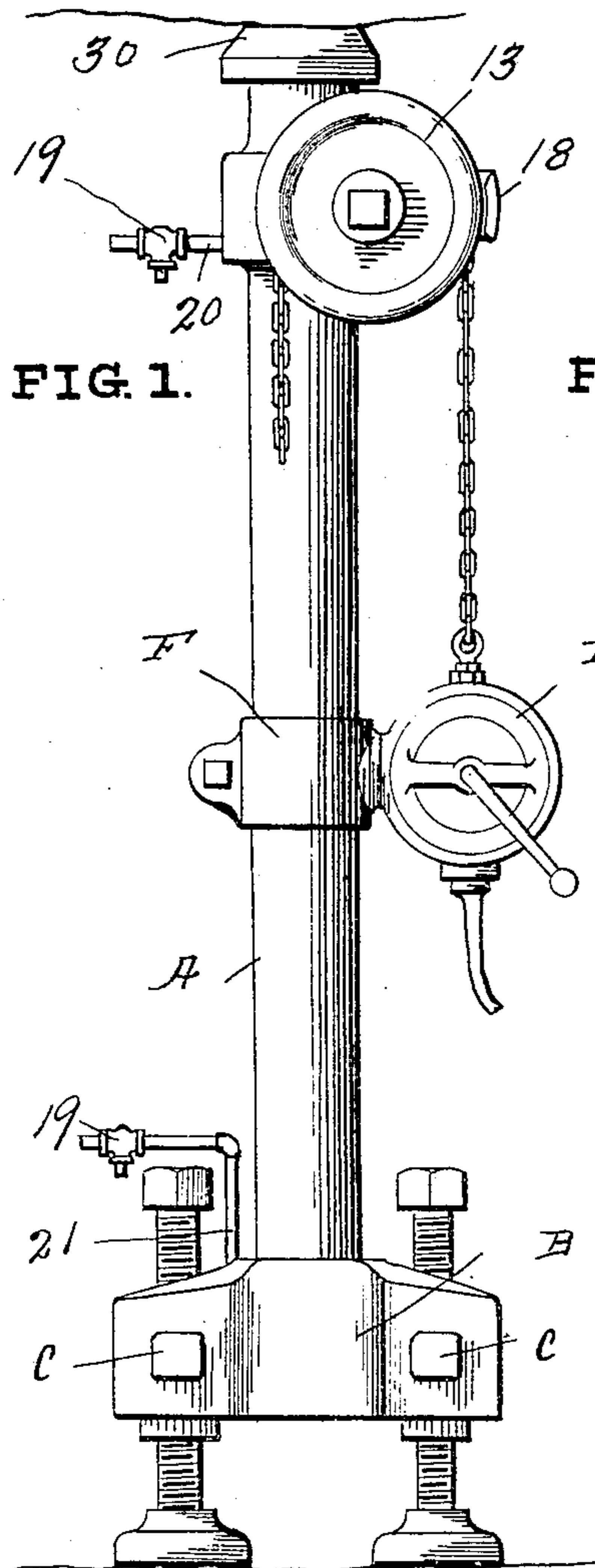


FIG. 1.

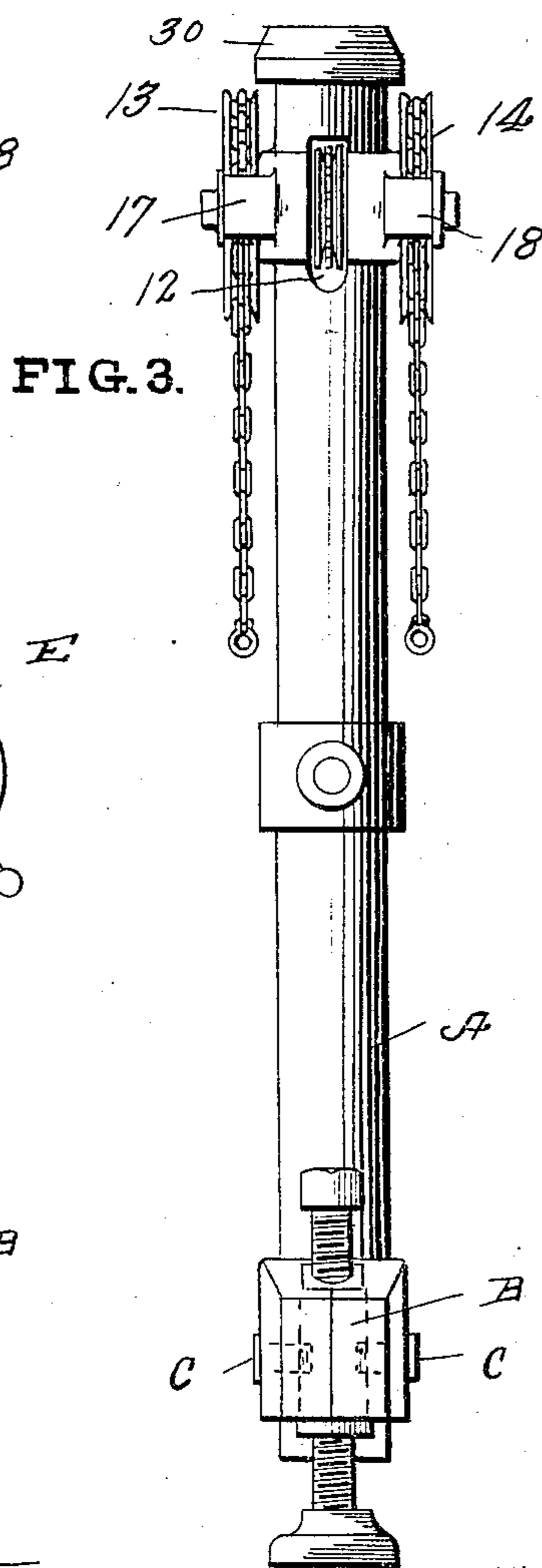


FIG. 3.

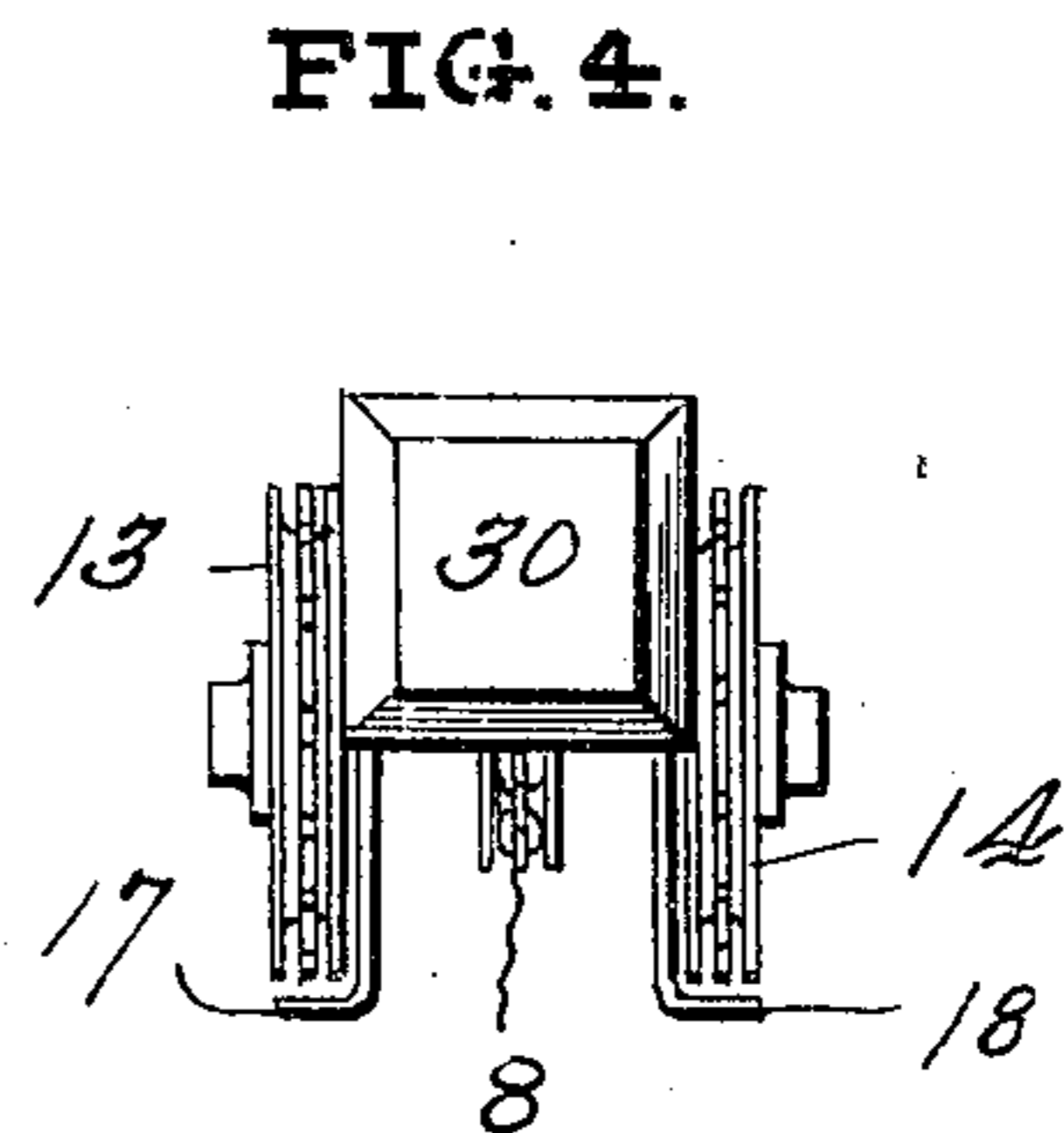


FIG. 4.

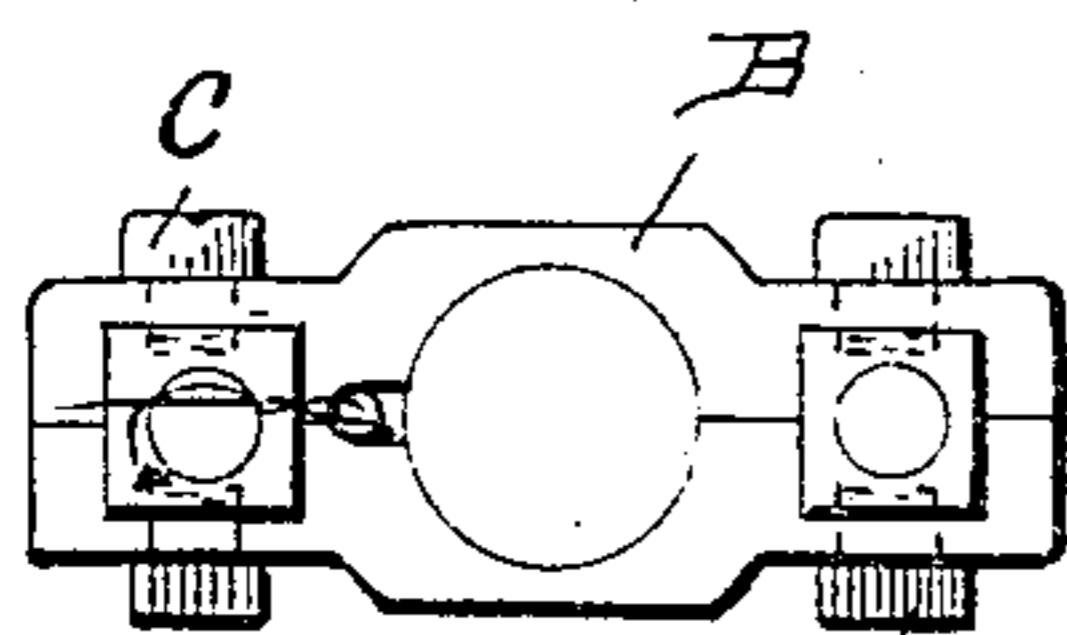


FIG. 2.

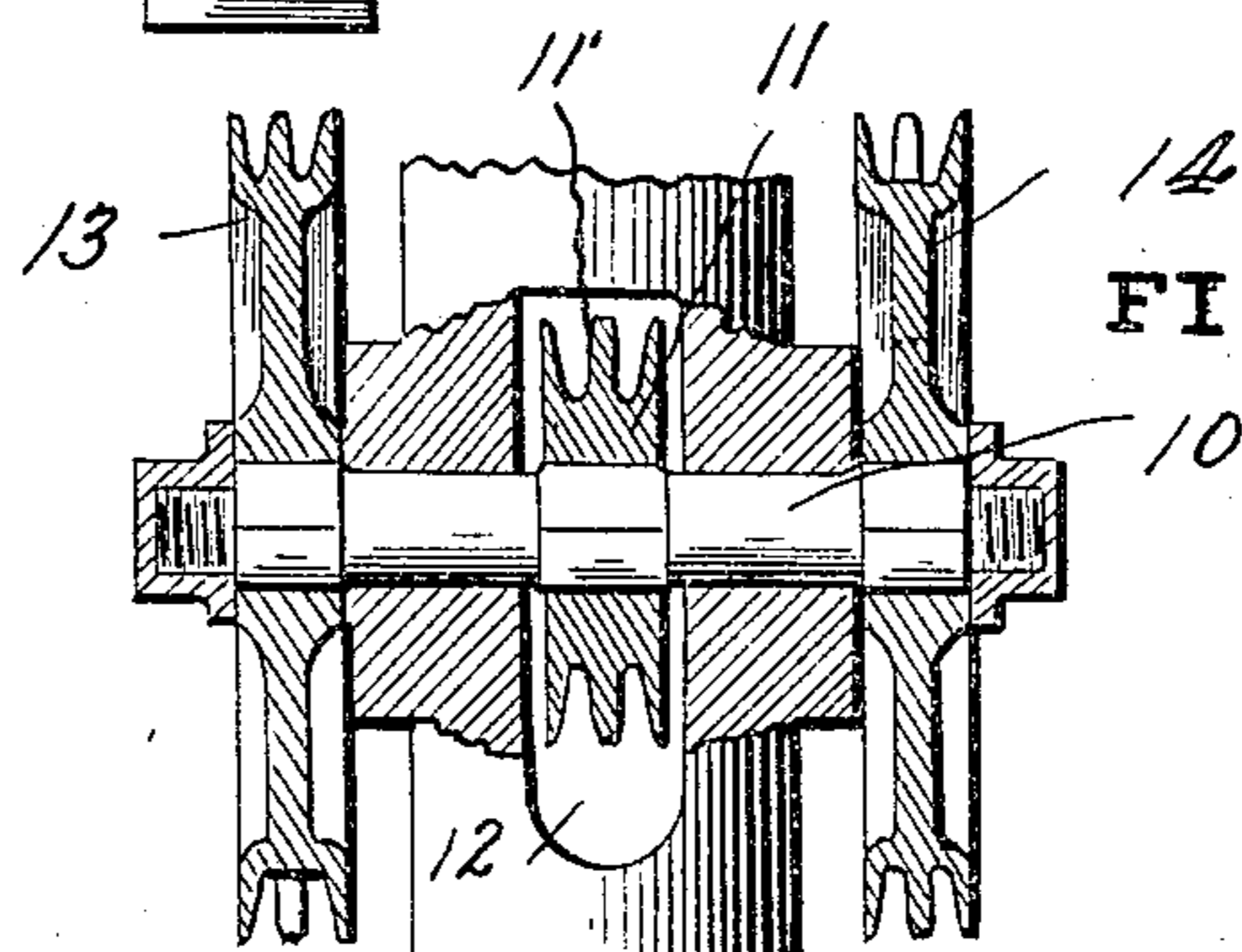


FIG. 5.

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2 SHEETS—SHEET 2.

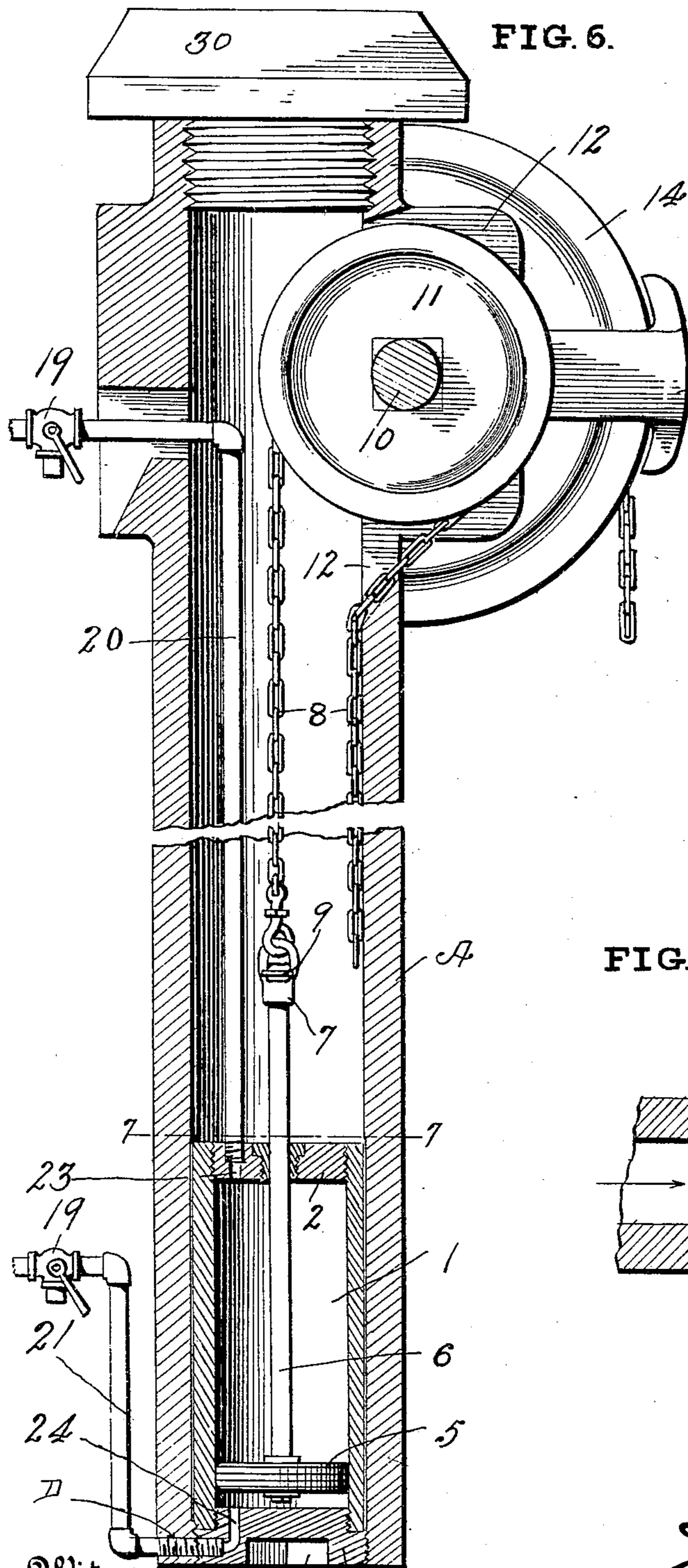


FIG. 7.

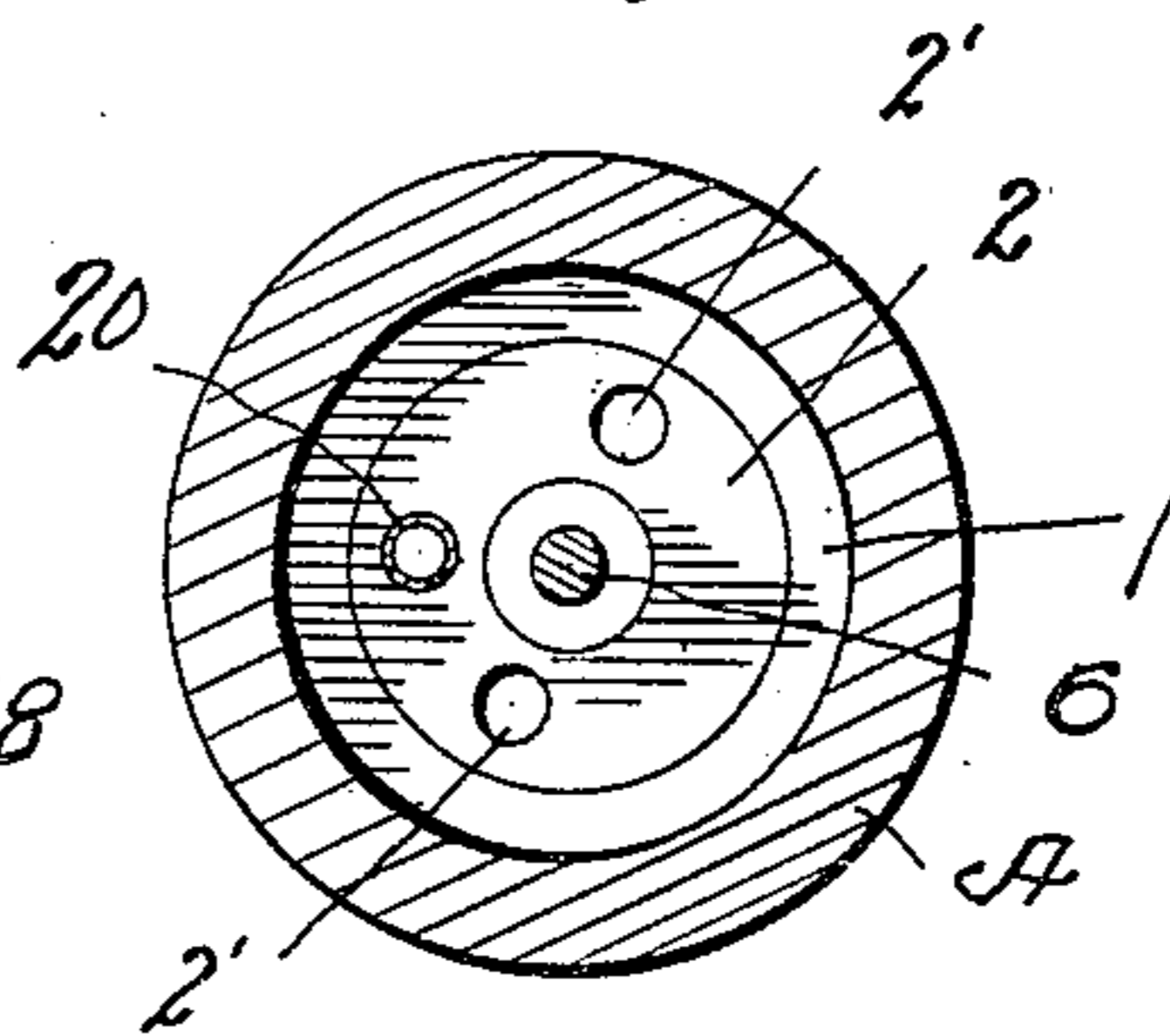


FIG. 8.

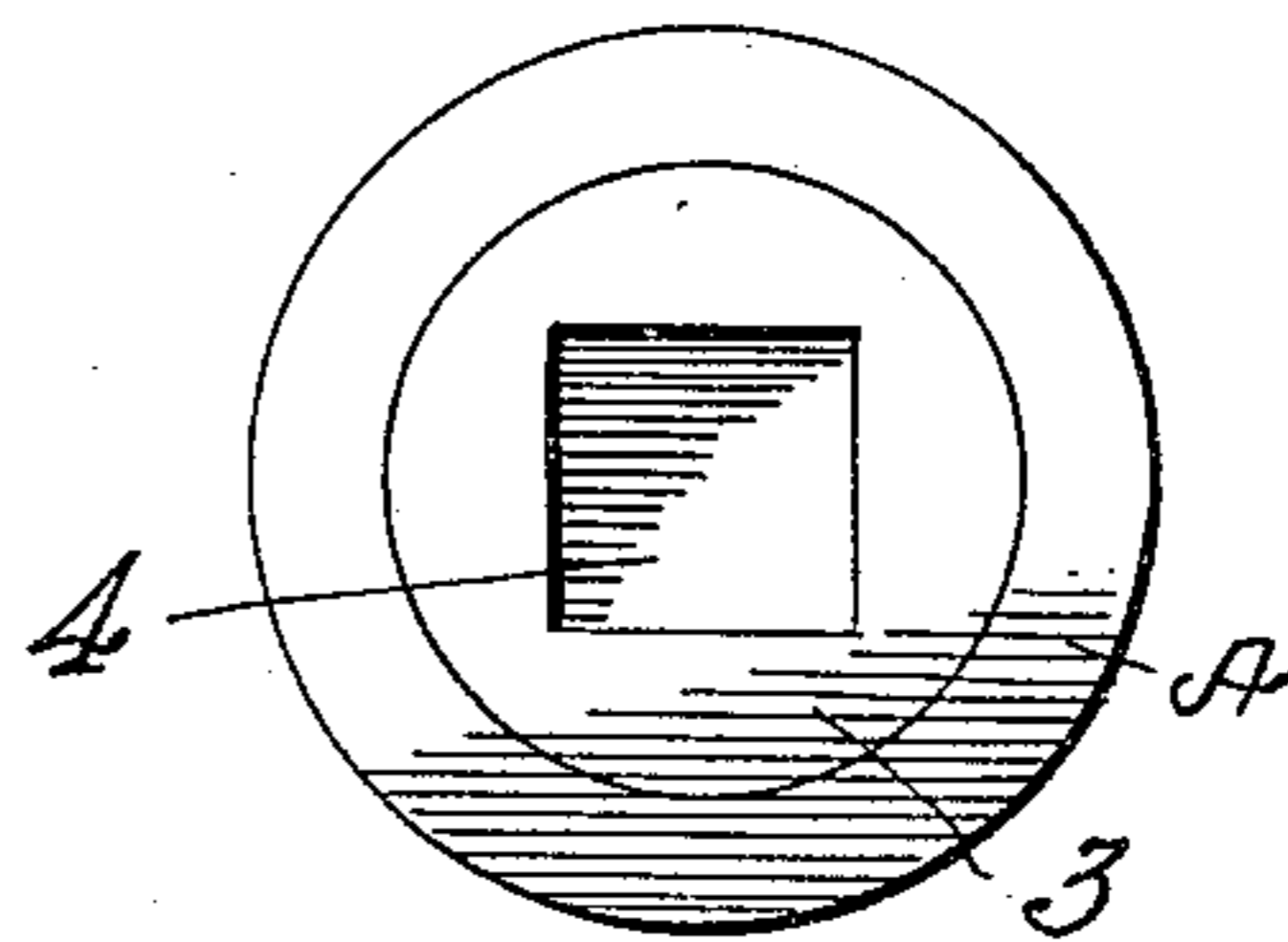
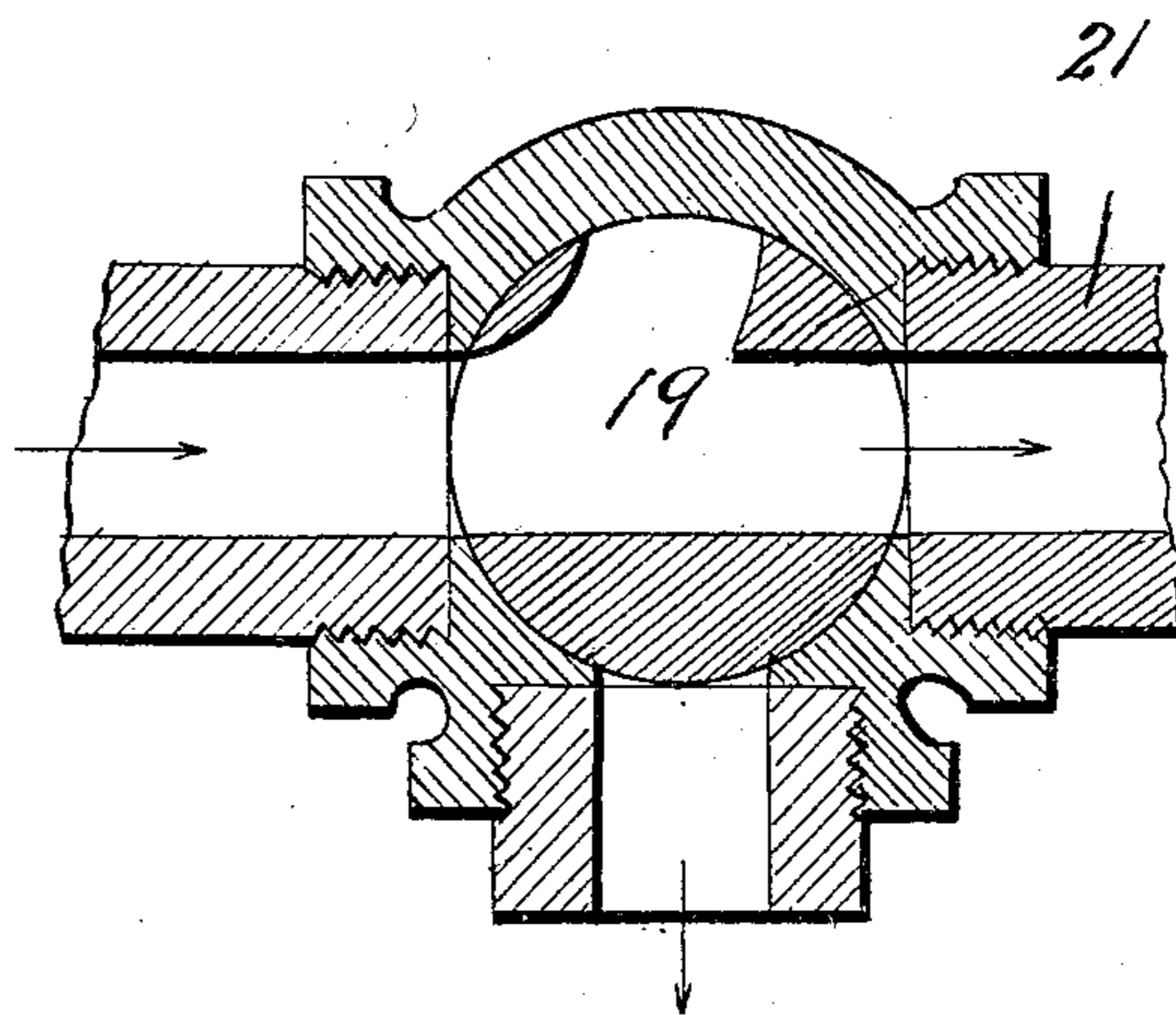


FIG. 9.



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UNITED STATES PATENT OFFICE.

JONATHAN JENKINS, OF LORD, MARYLAND.

MECHANISM FOR LIFTING ROCK-DRILLS.

SPECIFICATION forming part of Letters Patent No. 792,217, dated June 13, 1905.

Application filed August 11, 1904. Serial No. 220,394.

To all whom it may concern:

Be it known that I, JONATHAN JENKINS, a citizen of the United States, residing at Lord, in the county of Allegany and State of Maryland, have invented certain new and useful Improvements in Mechanism for Lifting Rock-Drills, of which the following is a specification.

My invention relates to improvements in mechanism for lifting rock-drills, and has for its object the provision of means for lifting a rock-drill to any position desired on a mining column-bar or post by the application of compressed air or steam to a cylinder and piston located within the column-bar or post.

As the working space for rock-drills where column-bars are necessary is limited, a compact and easily-manipulated lifting device is essential, and with this end in view I have provided a device combined with the post or column-bar which will occupy little space, yet be strong and durable and efficient in operation.

The invention consists in certain novel features of construction and combinations and arrangements of parts, as hereinafter described in the specification, more particularly pointed out in the claims, and as illustrated in one physical embodiment in the accompanying drawings, in which—

Figure 1 is an elevation of a column-bar having my lifting mechanism adapted thereto and a rock-drill suspended therefrom, the inlet and outlet pipes for motive fluid being omitted. Fig. 2 is a plan view of the base of the post or bar. Fig. 3 is a view of the bar, taken at right angles to Fig. 1, with the rock-drill omitted. Fig. 4 is a top plan view of the bar. Fig. 5 is a vertical central sectional view through the gear-wheels and bearings for shaft. Fig. 6 is a vertical central sectional view of the bar and lifting device. Fig. 7 is a section on line 7-7, Fig. 6. Fig. 8 is a bottom view of the bar, showing the lower cylinder-head; and Fig. 9 is a detail sectional view of a valve used in the operation of my invention.

Referring to the drawings, the post or column-bar A is of ordinary construction except as altered and adapted for use with my lifting device. The sectional base B is held to

the post by clamping-bolts C. A hole or opening D is provided in one side of post A for the insertion of a pipe for the motive fluid, which pipe may be either the inlet or outlet pipe, as the case may be. At its lower end the post A is provided for a short distance with an interior screw-thread for securing the cylinder 1 therein. The upper cylinder-head 2, with its cup packing-ring, is screwed into the cylinder by means of a tool inserted in depressions 2' in the head, as is usual. The lower head 3 is also screwed into the cylinder, and said head is provided with a square depression 4 for the reception of a wrench for tightening or extracting the cylinder in the post or bar A. The cylinder is secured in the post A by means of outer screw-threads on the head 3 and is screwed to place by means of a wrench or tool in the hole 4. Thus the head is held in the post; but, as shown, the cylinder does not fit tight or close therein, as a tight fit would cause damage or injury to the cylinder from blows on the post.

The piston 5 and its stem 6 are of ordinary construction, and the stem or rod 6 is provided at its upper end with a lug 7, screwed thereon for connection with the chain 8. A cotter-key 9, passed through the end of the rod which projects through the lug 7, holds said lug from turning off the stem.

Journaled in the bearing-lugs located near the top of the post or bar is the hoisting-gear shaft 10, carrying at its center the small chain-wheel 11. The radius of this wheel is equal to the distance from the outside edge of the post to the center of the post, so that the chain 8, which passes over said wheel, and the piston and rod will work in the same vertical line, and to insure this alinement the shaft 10 is located accordingly. The wheel 11 is provided with teeth or cogs 11', which engage the links of the chain 8, as usual, and after passing over the wheel to the outer rim said chain is taken into the column-bar again through the opening 12, in which the wheel 11 is located, and permitted to hang free. At its ends the shaft 10 carries the two chain-wheels 13 and 14, over which pass the chains 15 and 16, respectively. These wheels are provided with chain-guides 17 and 18 to pre-

vent the chains from slipping when raising a load, the teeth of the wheels engaging with the links of the chains, as is usual, and customary brake to hold the wheels in any position. In this instance the load to be raised or lifted is the rock-drill casing, (indicated at E,) to which the two chains 15 and 16 are fastened in any approved manner. The diameter of the wheels 15 and 16 should bear such relation to the smaller chain-wheel 11 as will allow raising or lifting of the rock-drill casing or machine to the top of the post A or against the wheels.

The motive power, which may be compressed air or steam, is applied to the cylinder and piston by means of pipes 20 and 21. Pipe 20 enters the bar or column through an opening near the top thereof and extends downwardly therethrough and is inserted into the head 2 of the cylinder and communicates with the interior of the cylinder through port 23. The branch pipe 21 passes through the base and is inserted in the hole D at the lower end of the post or bar A, projects into head 3 of the cylinder, and communicates with the cylinder through the port 24. Each of the pipes 20 and 21 is provided with a three-way cock 19 and connected by said cock to a suitable source of supply, and with the two cocks one pipe may feed motive fluid to the cylinder and the other pipe be used as a drain or outlet pipe, and in addition to forming an exhaust or outlet the latter will also prevent the formation of a vacuum in the cylinder.

A cap 30 of usual construction may be screwed into the post at its upper end.

The drill or machine may be guided, if necessary, by the loose sleeve F, which surrounds post A, the drill being suitably connected to the sleeve by any approved means, but allowing free movement of the drill or machine.

In Fig. 6 for convenience of illustration the piston is shown in its lowermost position. In the operation of lifting the drill or machine with the piston raised the motive fluid enters the cylinder at its upper end, as described, and the piston, with its rod, is forced downwardly in the cylinder, carrying with them the chain 8. Chain 8 rotates wheel 11 and shaft 10, which in turn rotate the wheels 13 and 14, the chains 17 and 18 being thus wound upon said wheels, and through the chains the attached drill or machine is lifted.

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

1. In a rock-drill-lifting mechanism, the combination with a column-bar, of a cylinder and piston within said column-bar having motive-fluid inlet and outlet, a drill-casing and means connecting the piston and drill-casing for imparting motion from the piston to the drill-casing.

2. The combination with a column-bar of a

cylinder and piston within said column-bar, motive-fluid inlet and outlet to said cylinder, and means connected to the piston and extending outside the bar for lifting an attached weight.

3. The combination with a tubular support, of a cylinder and piston within said column-bar having motive-fluid inlet and outlet, a machine, and means connecting the piston and machine.

4. In a rock-drill lifter the combination with a column-bar, of a cylinder, piston, and piston-rod, within said column-bar, a chain-wheel journaled in the bar, a chain connecting said wheel and piston-rod, and lifting means operated by said chain-wheel.

5. A lifting mechanism consisting of a tubular support, a cylinder, piston, and piston-rod within said column-bar, a chain-wheel journaled in the support, and a chain connecting said wheel and piston-rod, and lifting mechanism operated by said chain-wheel.

6. In a rock-drill-lifting mechanism the combination with a column-bar, of a cylinder, piston, and piston-rod within said column-bar, a shaft journaled in the bar carrying an intermediate gear-wheel, a chain connecting said wheel and piston-rod and wheels located on the shaft with means for connecting with the rock-drill.

7. The combination with a column-bar, of a cylinder, a piston, and piston-rod within said column-bar, a shaft journaled in the bar and an intermediate chain-wheel on the shaft, a chain connecting said wheel and piston-rod, and a pair of chain-wheels on said shaft having chains attached thereto.

8. The combination with a column-bar, of a cylinder, a piston and piston-rod within said column-bar, a shaft journaled in the bar and a gear-wheel thereon, an operating-chain connecting said wheel and piston-rod, a pair of chain-wheels on said shaft having chains attached thereto, and guides for the chains over said wheels.

9. The combination with a column-bar, of a cylinder, a piston and piston-rod within said column-bar, a shaft and a pair of chain-wheels thereon, and a chain-wheel on said shaft connected to said piston-rod by a chain having a lug at its end, and a cotter-key for securing said lug to the piston-rod.

10. In a lifting mechanism, a tubular support having a slot therein, a shaft journaled transversely of said slot and carrying a chain-wheel located in the slot, an operating means within the support connected to said chain-wheel, and a plurality of wheels on said shaft provided with attaching means for lifting a weight.

11. The combination with a column-bar having a slot in its wall, a shaft journaled transversely of said slot and carrying a chain-wheel an operating means located within the column-bar and connected to said chain-wheel, and a

plurality of wheels on said shaft having chains for attachment to a rock-drill.

12. The combination with a tubular support of a cylinder and piston in said support having motive-fluid inlet and outlet, a machine operatively connected to the piston, and means communicating with the inlet and outlet sources for reversing the movement of the piston.

13. In a rock-drill lifter the combination with a column-bar, of a cylinder, piston and piston-rod in said bar, a chain-wheel journaled in

the bar and connected with the piston-rod, and motive - pressure lifting means operated by said chain-wheel having a valve therein adapted to reverse the movement of the motive fluid to and from the cylinder.

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

JONATHAN JENKINS.

Witnesses:

B. T. BRADLEY,

W. H. R. THOMAS.