

No. 778,116.

PATENTED DEC. 20, 1904.

D. S. COOK.

MOTOR FOR PNEUMATIC FLUE WELDING MACHINES.

APPLICATION FILED APR. 18, 1904.

NO MODEL.

2 SHEETS—SHEET 1.

FIG. 1.

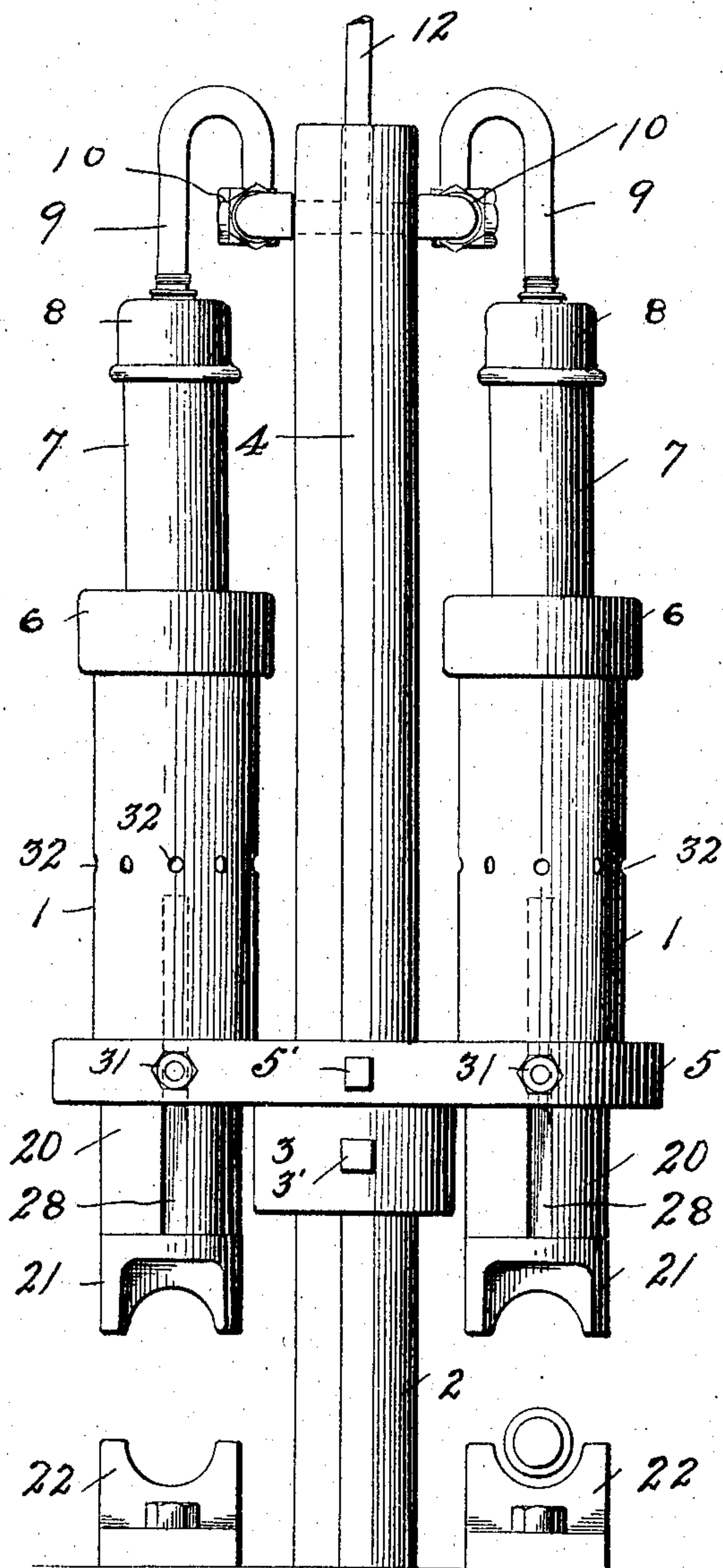
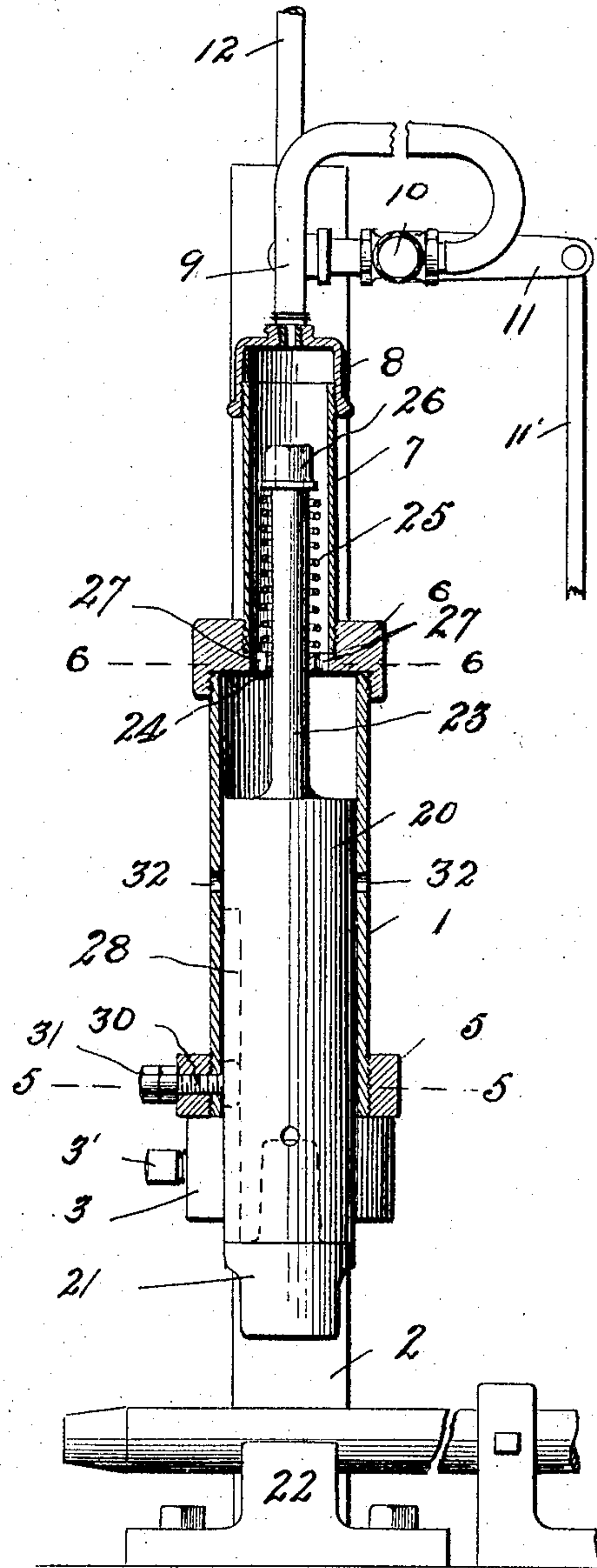


FIG. 2.



Witnesses

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NO MODEL.

2 SHEETS—SHEET 2.

FIG. 3.

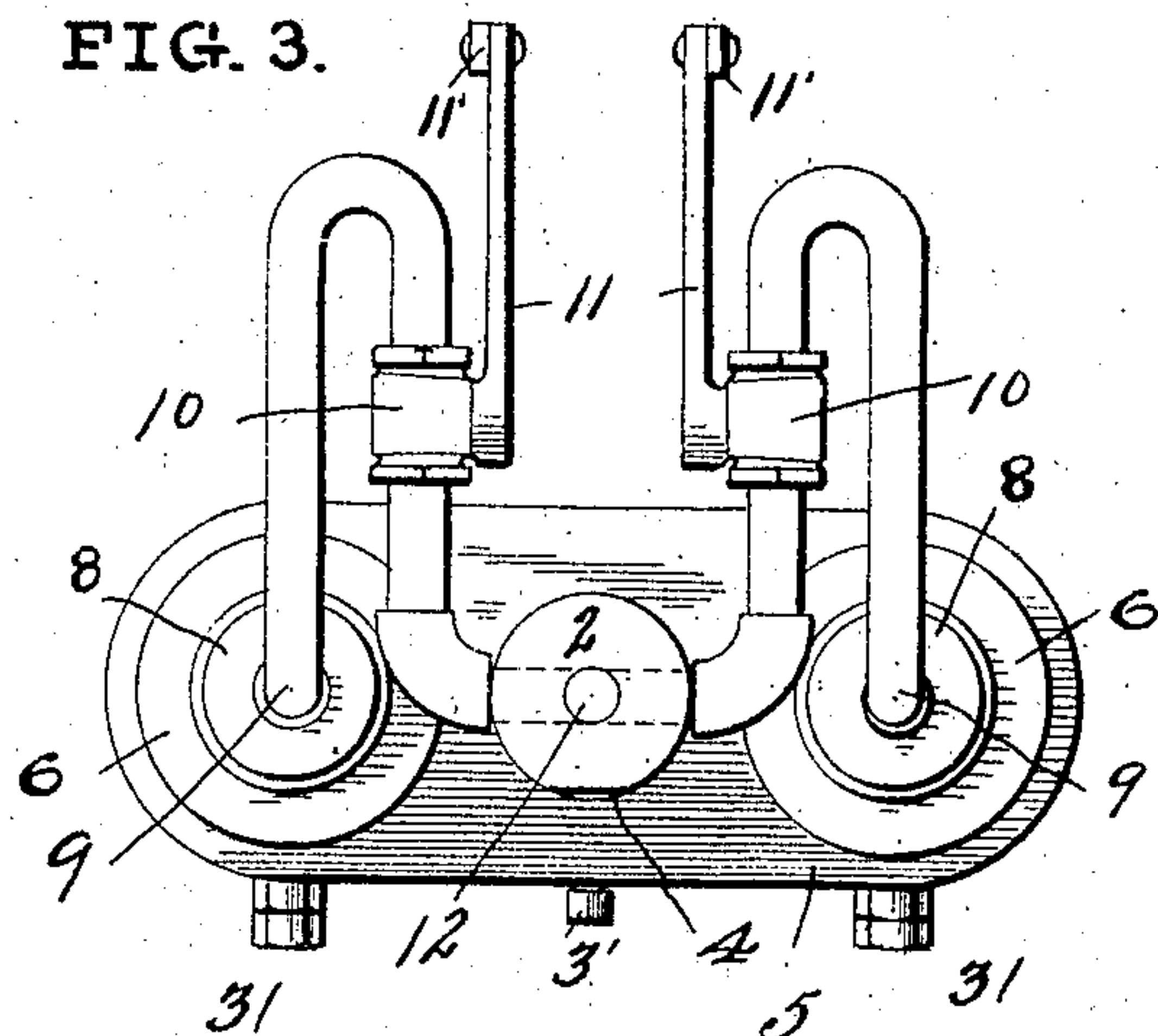


FIG. 4.

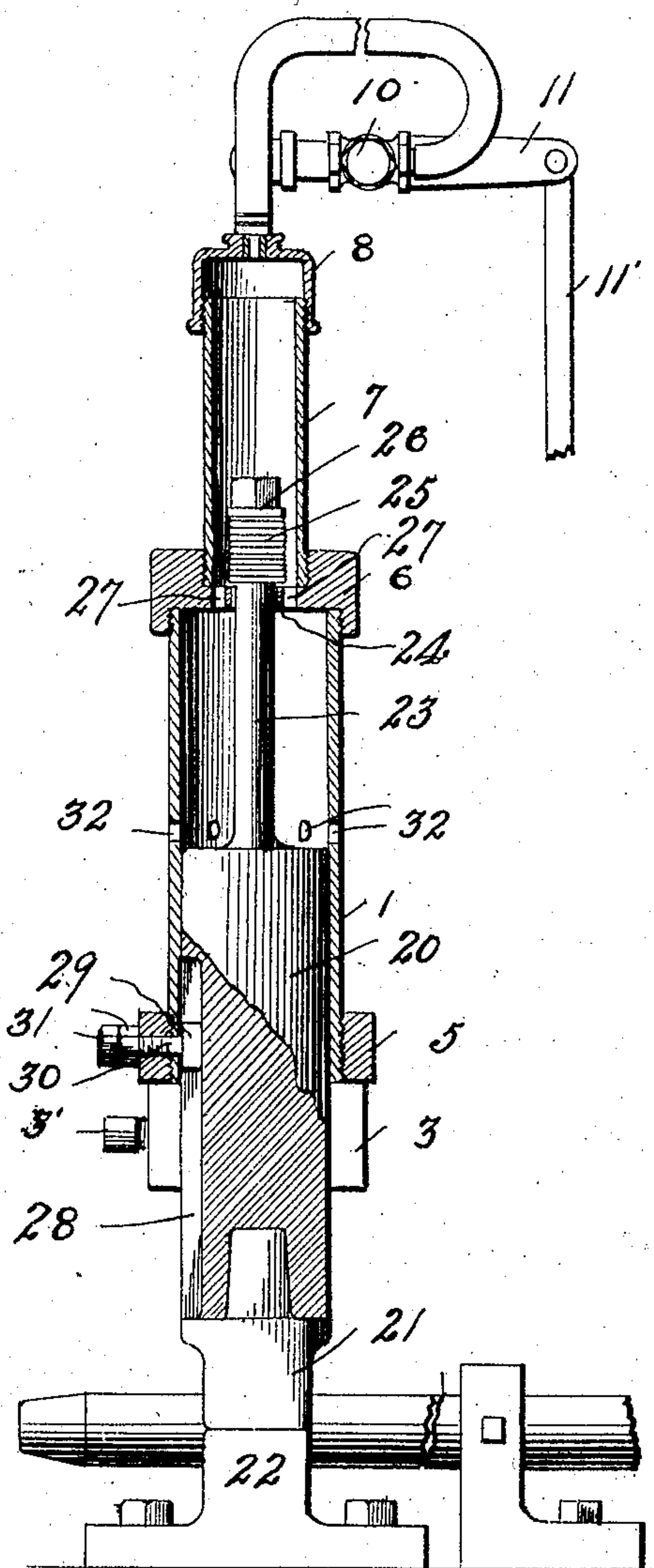


FIG. 5.

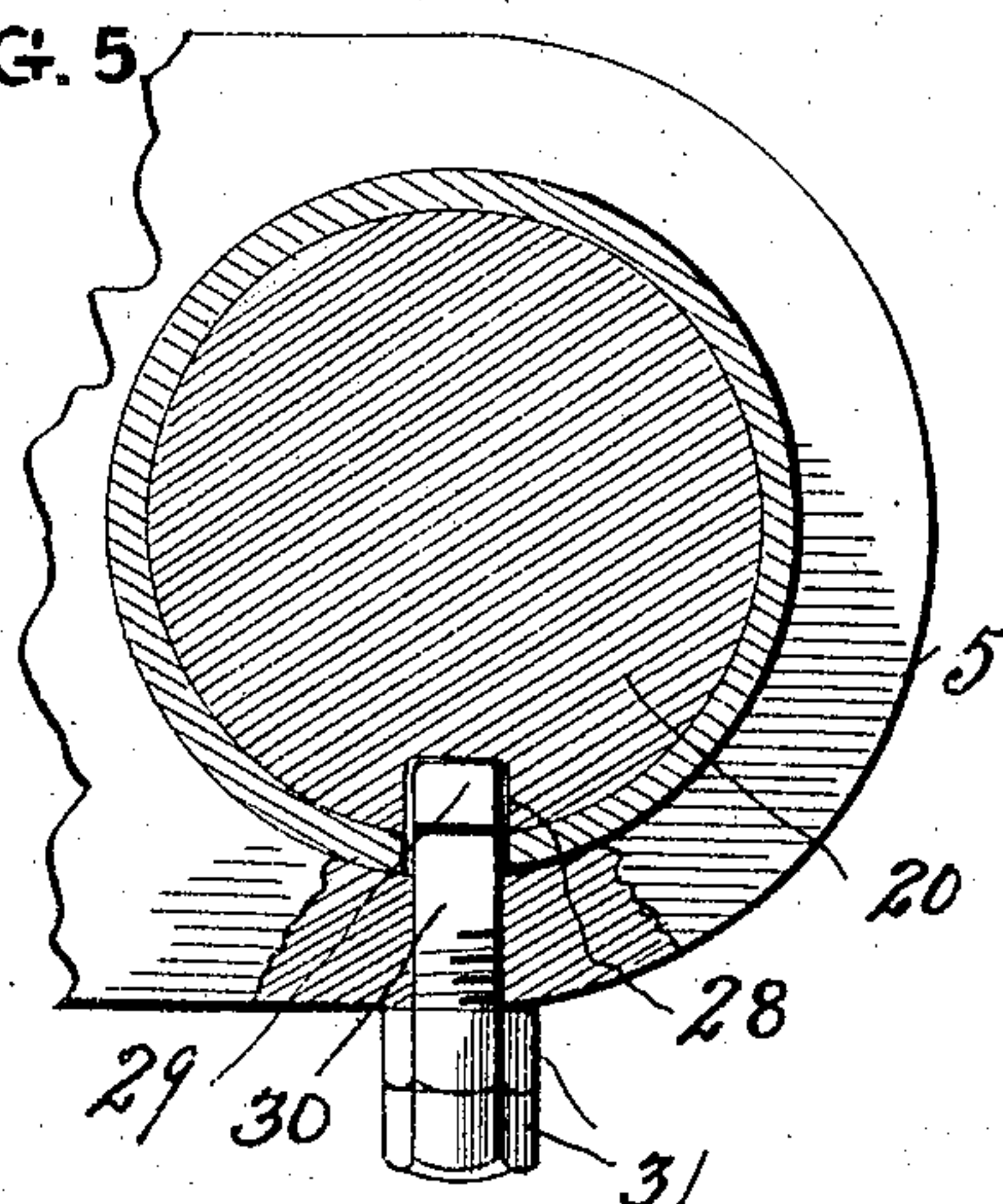
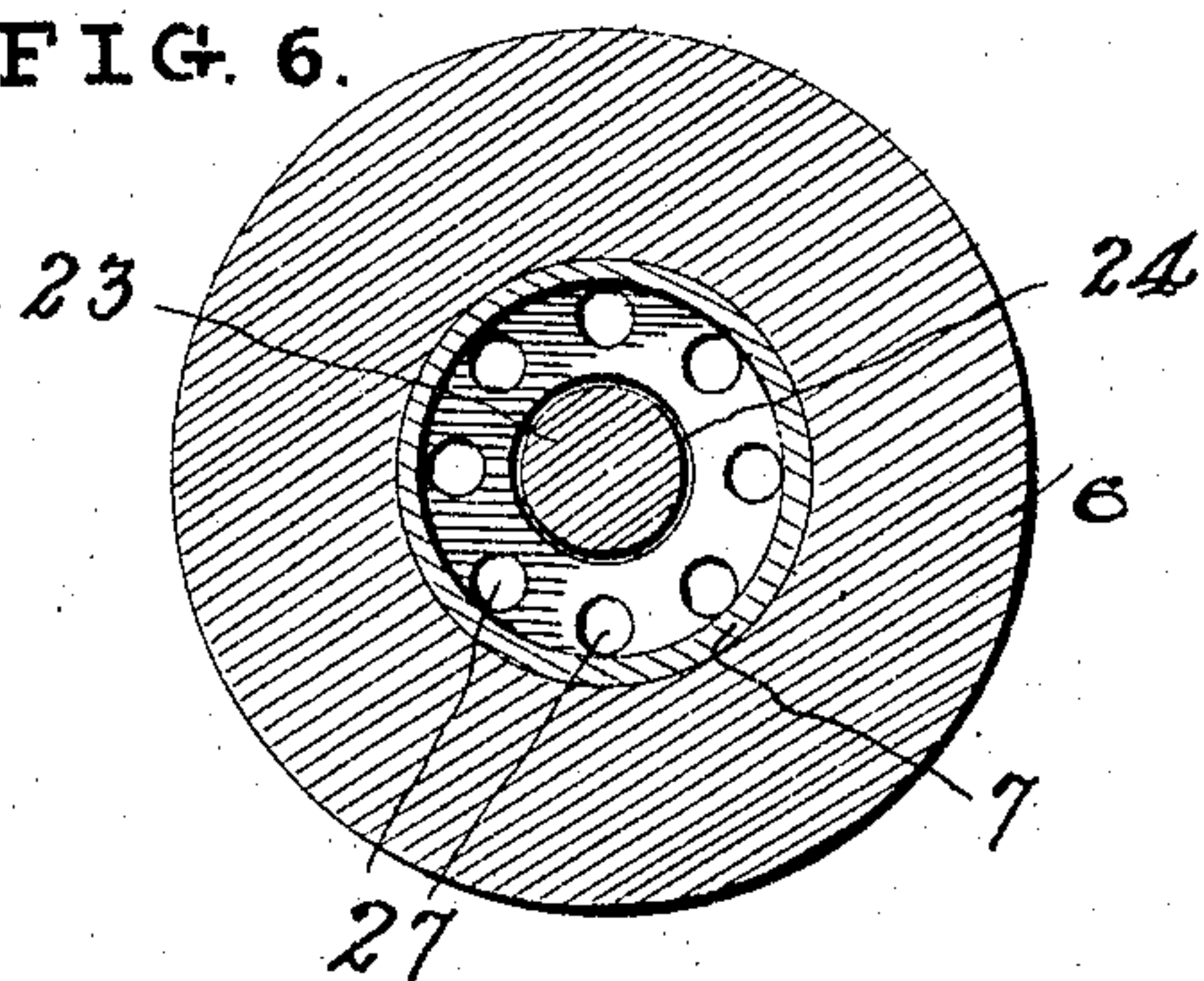


FIG. 6.



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MOTOR FOR PNEUMATIC FLUE-WELDING MACHINES.

SPECIFICATION forming part of Letters Patent No. 778,116, dated December 20, 1904.

Application filed April 18, 1904. Serial No. 203,599.

To all whom it may concern:

Be it known that I, DANIEL S. COOK, a citizen of the United States, residing at Evansville, in the county of Vanderburg and State of Indiana, have invented certain new and useful Improvements in Motors for Pneumatic Flue-Welding Machines, of which the following is a specification.

My invention relates to improvements in pneumatic flue-welding machines, and relates particularly to mechanism for operating the piston in such a machine.

The object of the invention is the provision of means for returning the piston which is located in a suitable cylinder to its normal position after the piston has been operated by power to do the required work. I preferably use compressed air in the operation of the device, and heretofore in many cases valves have been used and required to return the piston after its working stroke.

One of the objects of my invention is to do away with the use of valves in this connection and substitute therefor a spring-pressure for returning the piston after its working stroke.

While I have illustrated the physical embodiment of my invention as applied to a welding-machine, it will of course be understood that the device may be applied to mechanisms—such as hammers, riveting-machines, stamp-mills, rock-drills, &c.—and I do not confine myself to the use of compressed air in the operation of the mechanism, as I may use any other desirable motive power.

The invention consists in certain novelties of construction and combinations of parts, as disclosed hereinafter and particularly pointed out in the claims.

In the drawings which form a part of this specification, Figure 1 is an elevation of a welding-machine embodying the application of my invention. Fig. 2 is a vertical central section through one of the cylinders of such machine. Fig. 3 is a top plan view of Fig. 1. Fig. 4 is a sectional view similar to Fig. 2, but with piston or plunger in lowered position. Fig. 5 is a section taken at line 5 5, Fig.

2; and Fig. 6 is a section taken at line 6 6, Fig. 2.

As before stated, the drawings illustrate my invention adapted to and used with a welding-machine operated by compressed air. I have shown two cylinders 1 1, adjustably mounted upon the standard 2 by the sleeve 3, having the set-screw 3' therein adapted to engage against the flat portion 4 of the standard 2 and the block or head 5 also provided with a set-screw 5', adapted to engage said flattened portion. As shown, the cylinders are screw-threaded at their lower ends and may be entered into holes also screw-threaded in the block 5.

The cylinders are each provided with a head 6, adapted to screw over the upper end of the cylinders and provided at its upper portion with a seat, into which is screwed the extension 7, which forms a gas or compressed-air chamber for the introduction of the motive fluid. A screw-cap 8 is located at the upper end of the extension, to which cap is attached the rubber hose 9, having the valves 10 suitably connected thereto and provided with valve-levers 11, said valve-levers being in turn connected to any suitable operating mechanism. The inlet for the compressed air is through pipe 12, which runs into the standard 2, and is provided with outlets through the valves 10, thus feeding motive fluid through pipes 9 to the chamber or extension 7.

The piston 20 is suitably located in the cylinder 1 and is provided with a suitable die 21, and its counterpart 22 is secured to the base. The stem 23 of the piston is passed through hole 24, located centrally in the head 6, and the piston is held in normally raised position by the spring 25, interposed between the cap 26 on said stem and a portion of the head 6. The head of the cylinder has a reduced bore into which the extension 7 is screwed and is provided with holes disposed in a circle around the opening or passage therein for the stem of the piston, these holes 27 furnishing communication between the extension or air-receiving chamber 7 and the cylinder 1. A slot 28, extending a suitable

distance the length of the piston, is provided and adapted to receive the guide-block 29, located on the end of bolt 30, which bolt is provided with tightening-nuts 31 31, and from
 5 this construction it will be seen that the piston or plunger is guided in its vertical movement and prevented from turning in the cylinder.

Exhaust-holes 32 are located in the cylinder at a point above the upper end of the piston proper when said piston is in its lower position, as in Fig. 4.

The operation of the device will be apparent from the foregoing description. Compressed air being furnished to the supply-pipe 12 and assuming the piston to be in its raised or normal position, as shown in Fig. 2, and there held by spring 25, valves 10 are opened through the connection of lever 11 and operating-rod 11'. The piston is forced down through the cylinder, being guided by the guide-block located in the slot 28 of the piston, and when said piston has reached a point beyond the exhaust-openings 32 the pressure
 25 from the supply is released, and as the charge has passed through the exhaust-ports the tension of the spring lifts the piston to its normal position and the piston is ready to be operated for the next stroke of the mechanism.

It will thus be seen that I have produced a device which is compact, formed of a few essential elements, and one which is efficient in operation, rapid and accurate in its movements, and which withal forms a very satisfactory mechanism for the purpose desired.
 35

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

1. The combination with a cylinder of a motive-fluid-reception chamber, a piston in the cylinder having a stem in the reception-chamber, exhaust-ports in the cylinder, and means for returning the piston to its normal position.
 40

2. The combination with a cylinder of a motive-fluid-reception chamber, a piston in the cylinder having its stem in the reception-chamber, a spring in said chamber acting on the piston to return it to normal position, and exhausts in the cylinder.
 45 50

3. The combination with a cylinder having screw-threads in one head of a motive-fluid chamber communicating therewith, and connected thereto by screw-threads, a piston in the cylinder having its stem projected into said chamber, means under tension in said re-

ception-chamber for returning the piston to normal position, and exhaust-ports in the cylinder.

4. A cylinder provided with exhaust-ports 60 and having screw-threads in one head, a reception-chamber communicating with the cylinder and screwed into said head, a piston in the cylinder with its stem in said chamber, and a spring surrounding the stem and exerting its tension between the stem and chamber to return the piston to normal position, all combined substantially as described. 65

5. A cylinder, an extension thereto forming a reception-chamber for motive fluid and in communication with the cylinder, a piston in the cylinder having its stem located in said reception-chamber, means under tension located in the reception-chamber for returning the piston to its normal position, and exhaust-ports to the cylinder. 70 75

6. The combination of a cylinder with a communicating reception-chamber for motive fluid, a piston in the cylinder having its stem located in said chamber, a spring located in the reception-chamber and surrounding the piston-stem adapted to return the piston after its stroke, and exhaust-ports for said motive fluid. 80

7. The combination of a cylinder with a communicating reception-chamber for motive fluid, a piston in the cylinder having its stem located in the reception-chamber, a spring for returning the piston after its stroke, exhaust-ports for the motive fluid, and means for guiding the piston in its stroke. 85 90

8. The combination of the cylinder and piston of the communicating reception-chamber and piston-stem therein, inlet and exhaust ports for the motive fluid, a spring for returning the piston after its stroke, a slot in the piston and a guide-block located in said slot adapted to guide the piston in its stroke and prevent lateral rotation thereof. 95

9. The combination of a cylinder having a piston therein and a communicating reception-chamber and piston-stem located therein, inlet and exhaust ports for motive fluid, means for returning the piston after its stroke, means for guiding said piston, all combined substantially as described. 100 105

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

DANIEL S. COOK.

Witnesses:

WM. HARTMAN,

GRAHAM F. DENBY.