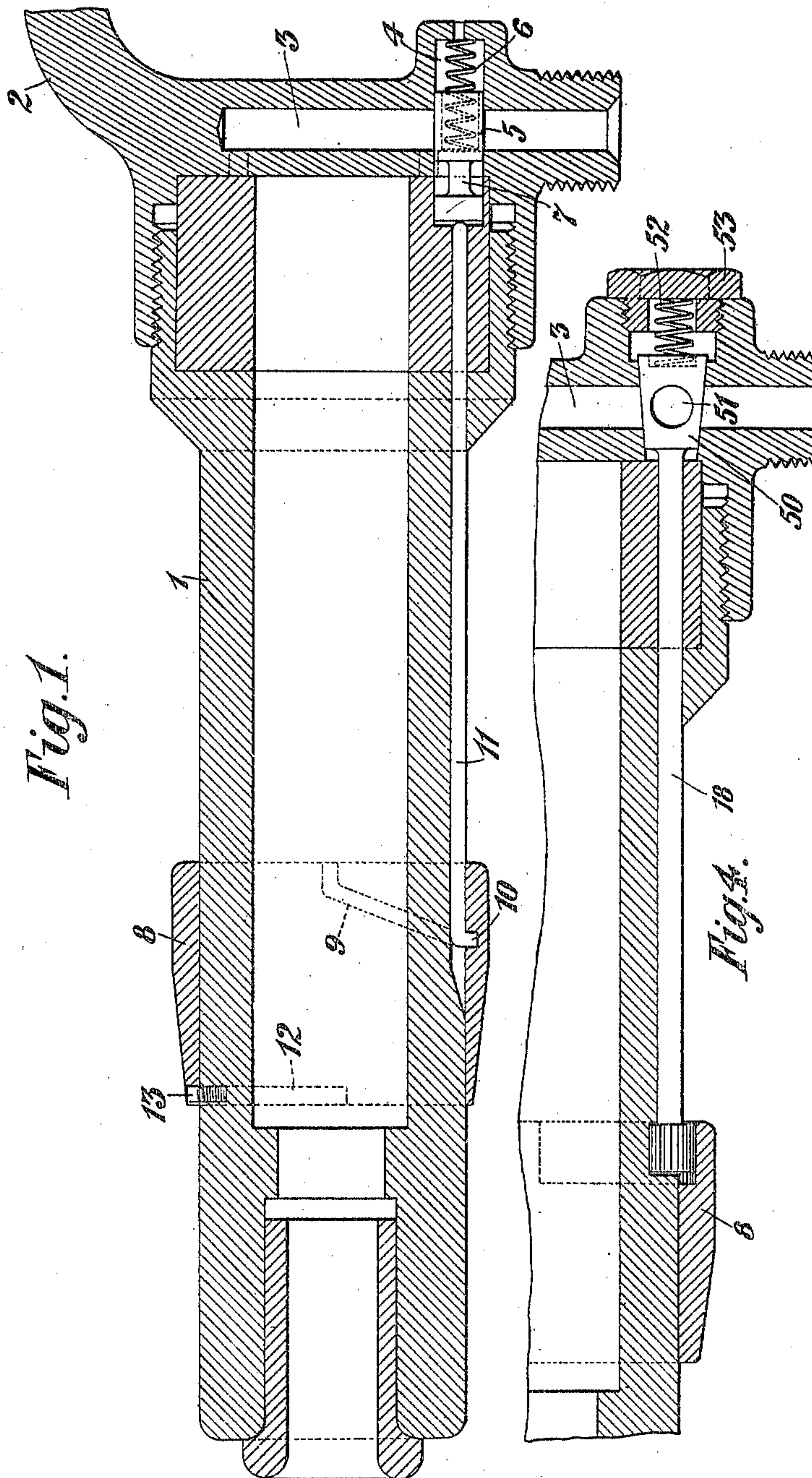


No. 816,998.

PATENTED APR. 3, 1906.

H. S. POTTER.
THROTTLE VALVE FOR PNEUMATIC HAMMERS.
APPLICATION FILED JAN. 4, 1905.

2 SHEETS—SHEET 1.



Witnesses:
[Signature]
H. P. Scott

Inventor: *Henry Samuel Potter.*
per: *John W. O'Donnell*
Attorney

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2 SHEETS—SHEET 2.

Fig. 3.

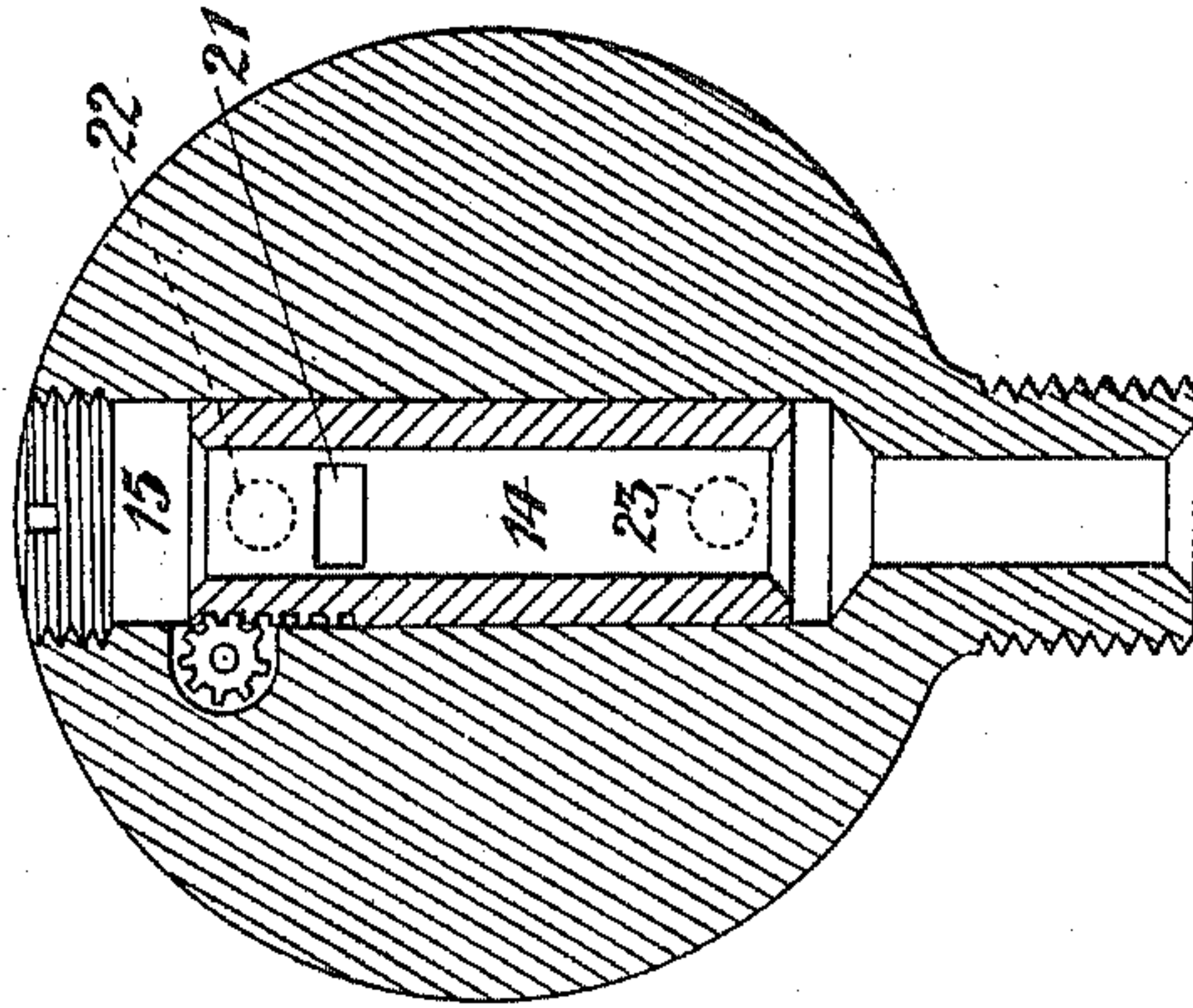
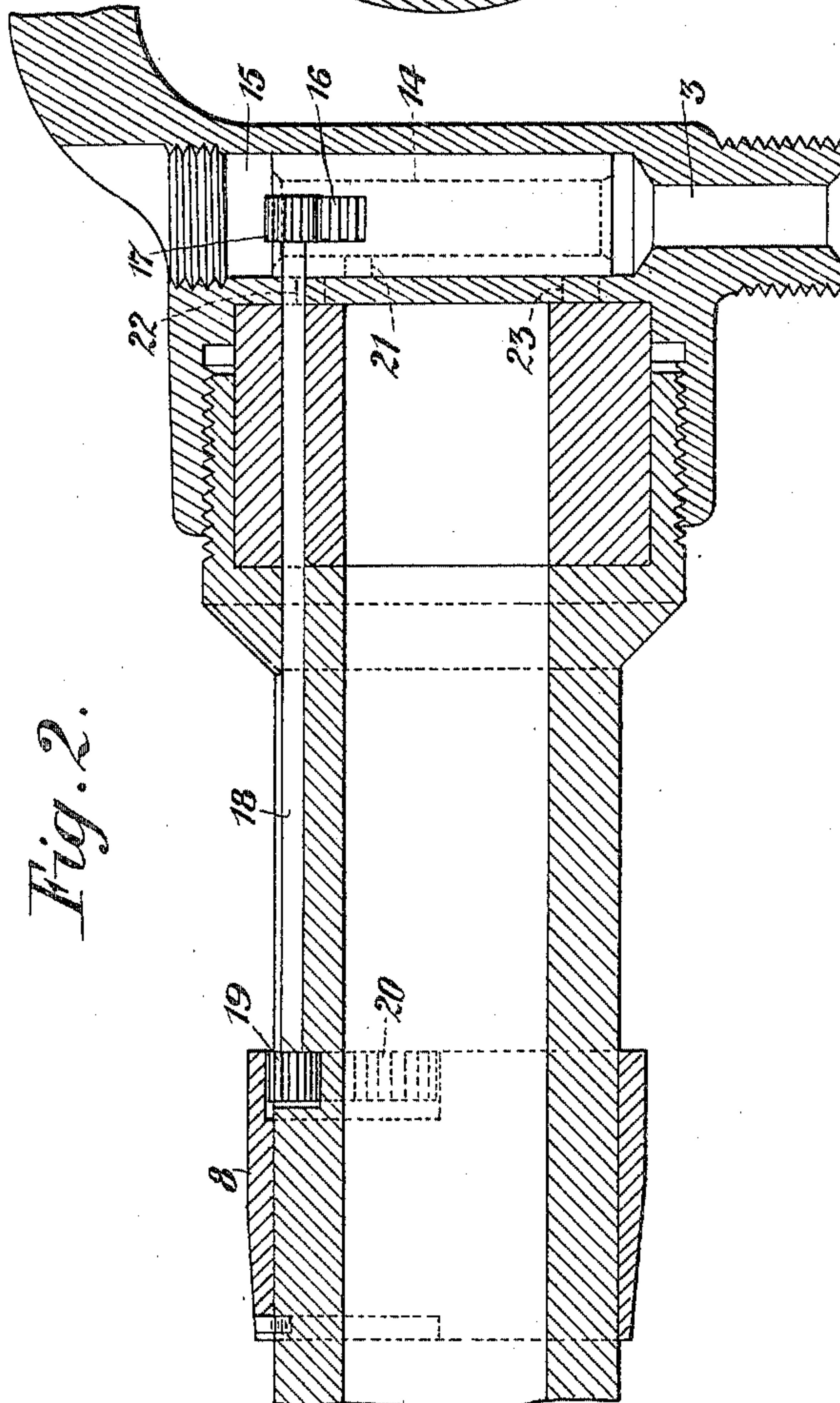


Fig. 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

HENRY SAMUEL POTTER, OF BROMLEY, ENGLAND.

THROTTLE-VALVE FOR PNEUMATIC HAMMERS.

No. 816,998.

Specification of Letters Patent.

Patented April 3, 1906.

Application filed January 4, 1905. Serial No. 239,661.

To all whom it may concern:

Be it known that I, HENRY SAMUEL POTTER, a subject of the King of Great Britain and Ireland, residing at Bromley, in the county of Kent, England, (whose post-office address is 3 Scotts Villas, Heathfield Road, Bromley, in the county of Kent, England,) have invented certain new and useful Improvements in Throttle-Valves for Pneumatic Hammers; and I do hereby 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.

This invention consists in improvements in or connected with pneumatic hammers.

The invention relates principally to throttle-valve mechanism or means for controlling the inlet of compressed air from the source of supply to the hammer cylinder or barrel for actuating the hammer-piston.

This invention consists in the novel construction and combination of the parts hereinafter fully described and claimed.

The accompanying drawings illustrate the invention.

Figure 1 is a sectional elevation of part of a pneumatic hammer, showing the hammer-cylinder and the throttle-valve mechanism according to one method of carrying out this invention. Figs. 2 to 4, inclusive, are similar views of modified arrangements as hereinafter fully described.

The same numbers refer to the same or corresponding parts in the several figures of the drawings.

Referring to Fig. 1, 1 is the hammer barrel or cylinder, which may be of any known or convenient form, 2 being the handle, which may be of the usual pistol-grip type and which is attached to the hammer-handle in any known or convenient manner. 3 is the compressed-air-inlet passage, to which the usual supply-pipe is connected, said passage being formed in the handle-base, as shown. 4 is a chamber in the handle-base in which works the throttle-valve 5, which is normally held in position to close the inlet-passage 3 by means of a spring 6. The valve 5 may be of any known or convenient form; but as shown it is provided with a reduced diameter or necking 7. In the construction shown the left-hand head or end of the valve 5 works in a recess in the rear end of the usual distributing-valve bushing; but this recess might be in the rear end of the hammer-cylinder. 8 is a

rotatable sleeve mounted on the hammer-cylinder and provided with a sloping groove or cam-track 9, with which the forward end 10 of a rod 11 engages, the rear end of said rod extending back, so as to contact with the throttle-valve 5, as shown. 12 is a recess or slot in the sleeve 8, which controls or limits the turning movement of said sleeve, 13 being a stop-pin in the hammer barrel or cylinder engaging said groove, so as to limit the movement of the sleeve. In order to operate the throttle-valve 5 so as to open the inlet-passage 3 and admit motive fluid from the source of supply to the hammer barrel or cylinder, the sleeve 8 would be turned so as to cause the groove or cam-track 9 to slide on the end 10 of rod 11, which latter will thus be pressed rearwardly, causing it to move the valve 5 to the right against the action of spring 6, thus causing the necking 7 of the valve to register with the inlet-passage 3, and so admit the compressed air from the source of supply.

Referring to Figs. 2 and 3, 14 is the tubular throttle-valve hereinbefore referred to, which, as shown, is arranged to work vertically in a chamber 15 in the handle-base. The upper end of the valve 14 is provided with serrations or teeth 16 in the form of a rack, with which a pinion 17 on the rear end of the shaft or rod 18 engages. 19 is another pinion on the forward end of shaft 18, which latter pinion engages an internal rack or teeth 20, formed in the sleeve 8. The same arrangement of slot and stop-pin for limiting the turning movement of sleeve 8 is provided, as in Fig. 1. 21 (see Fig. 3) is a port through the wall of valve 14, and 22 23 are ports leading through the handle-base into the hammer-cylinder or into the distributing-valve chamber, as the case may be. On turning the sleeve 8 the shaft or rod 18 will also be turned through the rack 20 and pinion 19, and the throttle-valve 14 will consequently be raised through the pinion 17 engaging the teeth 16 on the valve. This will cause the port 21 in the valve to register with port 22 and the lower end of the valve to pass across port 23, so that the compressed air, which is constantly in the valve 14 and in its chamber 15, will be admitted to ports 22 and 23 into the hammer-cylinder. It is obvious that instead of moving the valve 14, Fig. 3, vertically, as above described, it may be rotated in its chamber 15, for instance, by substituting bevel-wheels for the pinion 17 and rack-teeth 16, respectively, or by a small

bell-crank connecting the end of rod 18 with the valve 14. In this case of course the port 21 in the valve 14 would be so situated in relation to port 22 that when the valve is
 5 turned for the purpose of admitting compressed air to the hammer-cylinder said port 21 will register with port 22. Another port would be provided in the lower end of the valve 14 (similar to port 21) and so situated
 10 that when the valve is turned as above mentioned (by the operator turning sleeve 8) said additional port will register with port 23, leading into the cylinder.

In the modification shown in Fig. 4 a simple conical plug-valve 50 with an inlet-port 51 is employed in place of the valve shown in the other figures. Said valve is backed up by an adjustable spring 52, whose force may be varied by turning the adjusting-nut 53.
 20 The valve 51 may be formed in one with the rod or spindle 18; but preferably it is operatively connected to said spindle by means of a square, polygonal, or other suitably-shaped end on the spindle engaging a correspondingly-shaped recess in the end of valve 50,
 25 which recess may be sufficiently deep to allow adjustment of the valve in its seat or chamber by means of spring 52 and without effecting any longitudinal movement of rod or spindle 18. With this arrangement the
 30 operation of sleeve 8, as previously described, turns the valve 50 so as to cause its port 51 to register with the inlet-opening from the supply-pipe and with the live-air chamber 3, so
 35 as to admit compressed air through port 51 to said chamber 3 and thence to the hammer-cylinder. For cutting off the compressed air to the cylinder by turning the

sleeve 8 in the opposite direction the valve 50 is turned to the position shown in which
 40 the body of the valve closes communication between the inlet-opening from the supply-pipe and the chamber 3.

Various modifications may be made in the details as above set forth without departing from the main features of the invention. 45

The valve arrangements hereinbefore described, and illustrated in the accompanying drawings, are such as to allow the operator his maximum grasping power for holding the
 50 tool to its work.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with a power-cylinder having a closed rear end, of an oscillatory
 55 hand-operated sleeve encircling the front end portion of the said cylinder, means for preventing the said sleeve from moving longitudinally, a supply-valve arranged at the rear end of the said cylinder, and a rod connection
 60 between the said sleeve and supply-valve.

2. The combination, with a power-cylinder having a closed rear end, of an oscillatory
 hand-operated sleeve encircling the front end portion of the said cylinder and provided
 65 with a toothed rack, a plug-valve at the rear end of the cylinder for controlling the supply of pressure fluid, a toothed pinion gearing into the said rack, and a rod connection between the said plug-valve and pinion. 70

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

HENRY SAMUEL POTTER.

Witnesses:

WALTER E. ROCHE,
 GEO. D. S. KELSEY.