

No. 694,606.

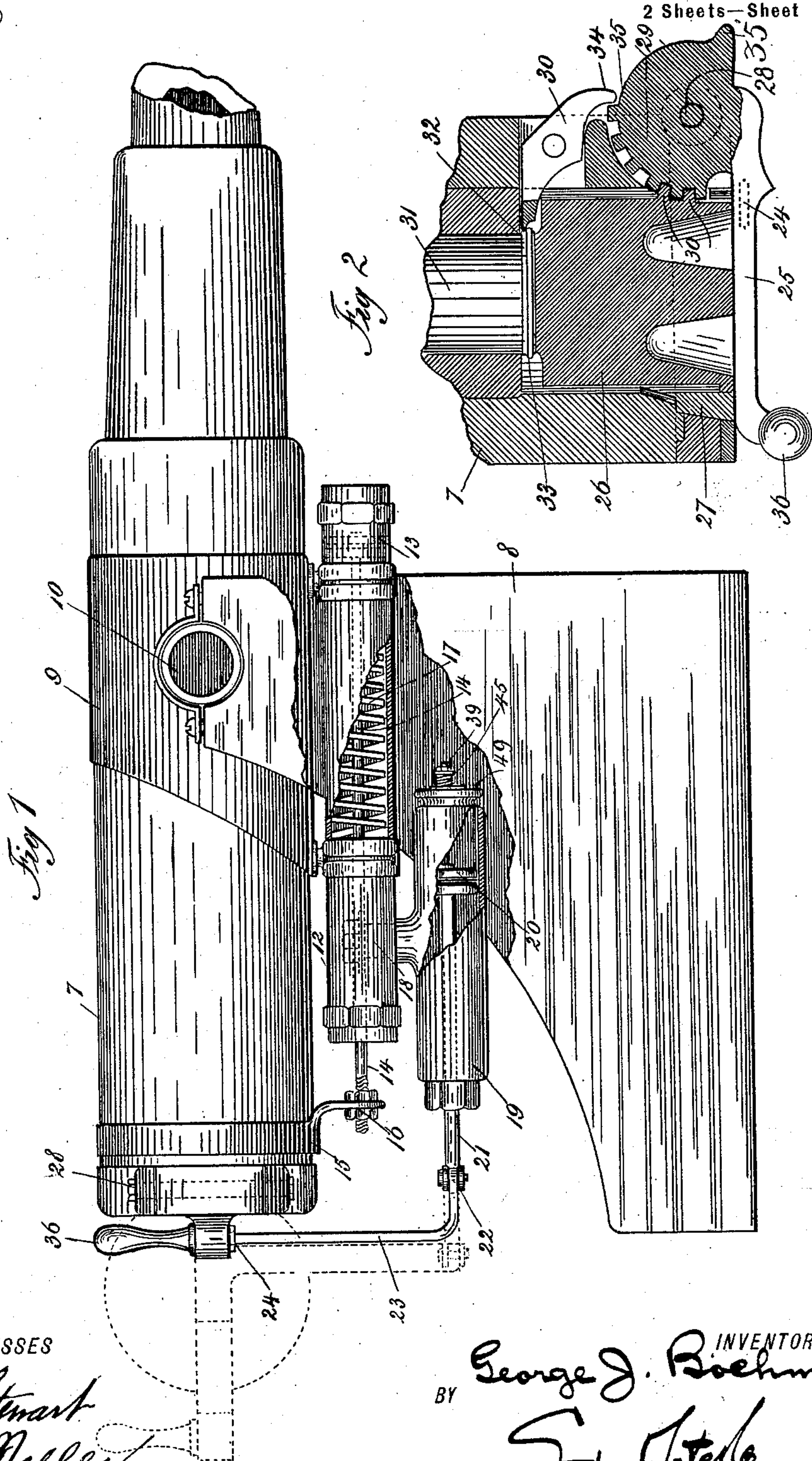
Patented Mar. 4, 1902.

G. J. BOEHM.
RAPID FIRE GUN.

(Application filed Apr. 18, 1901.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES

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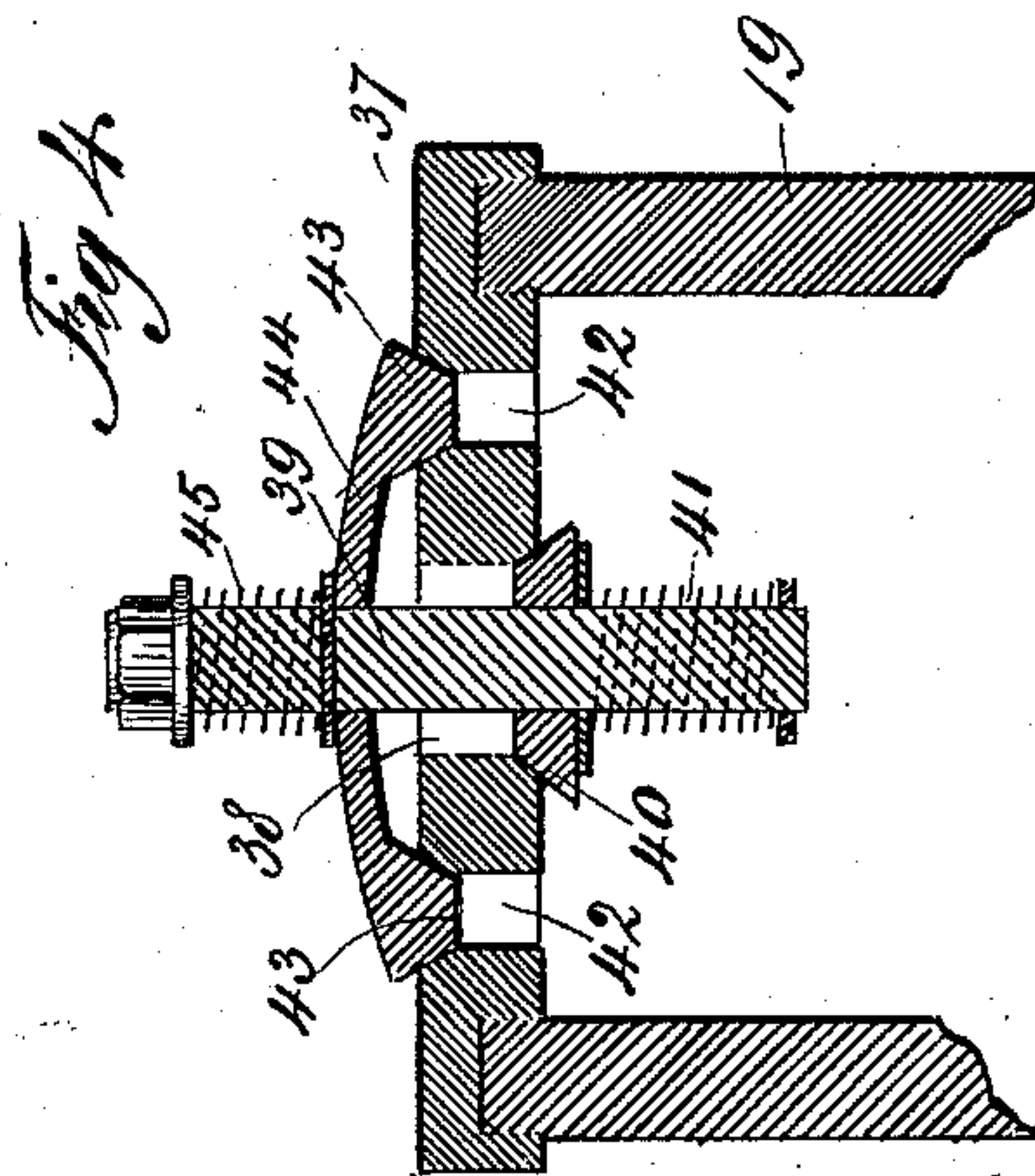
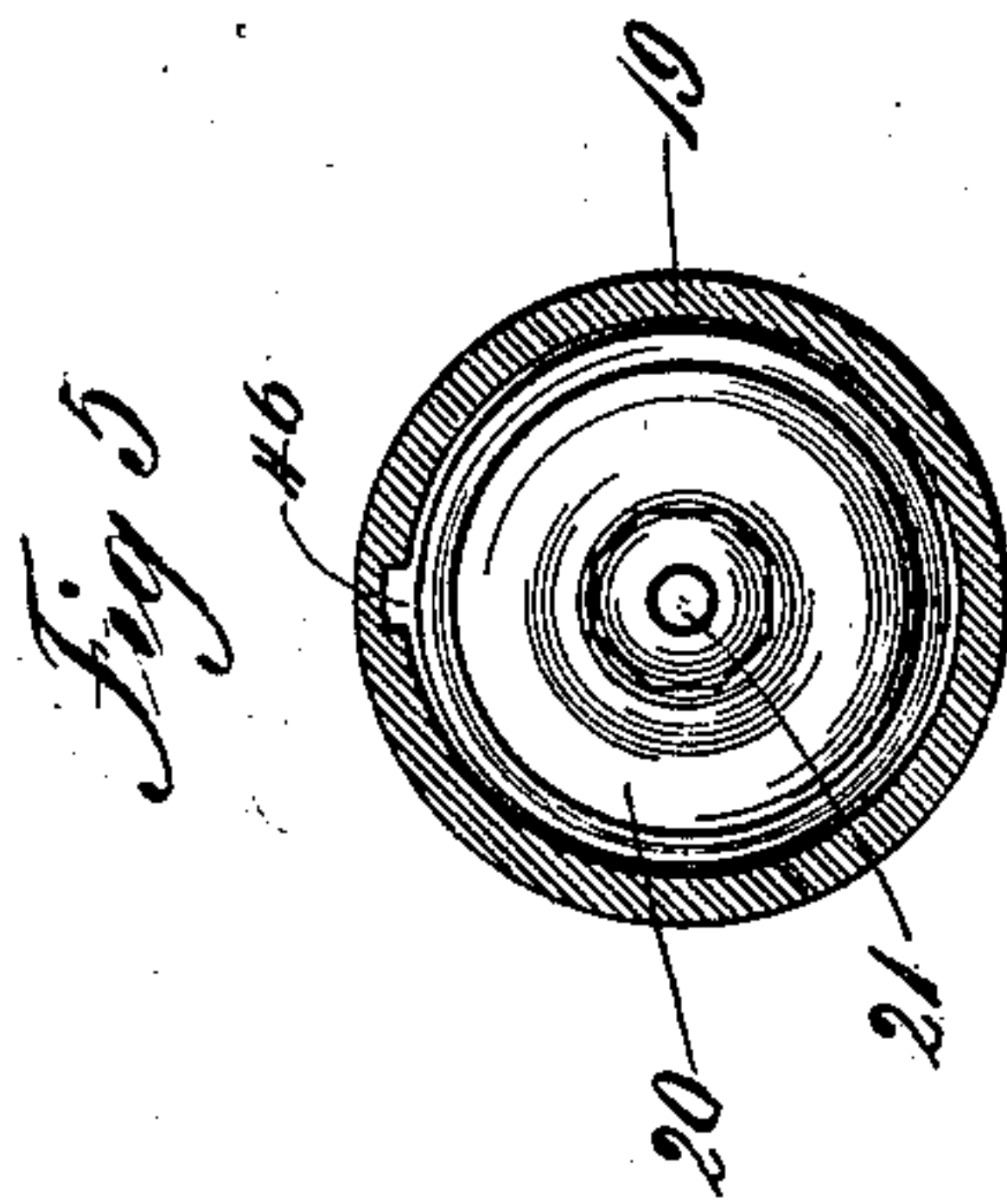
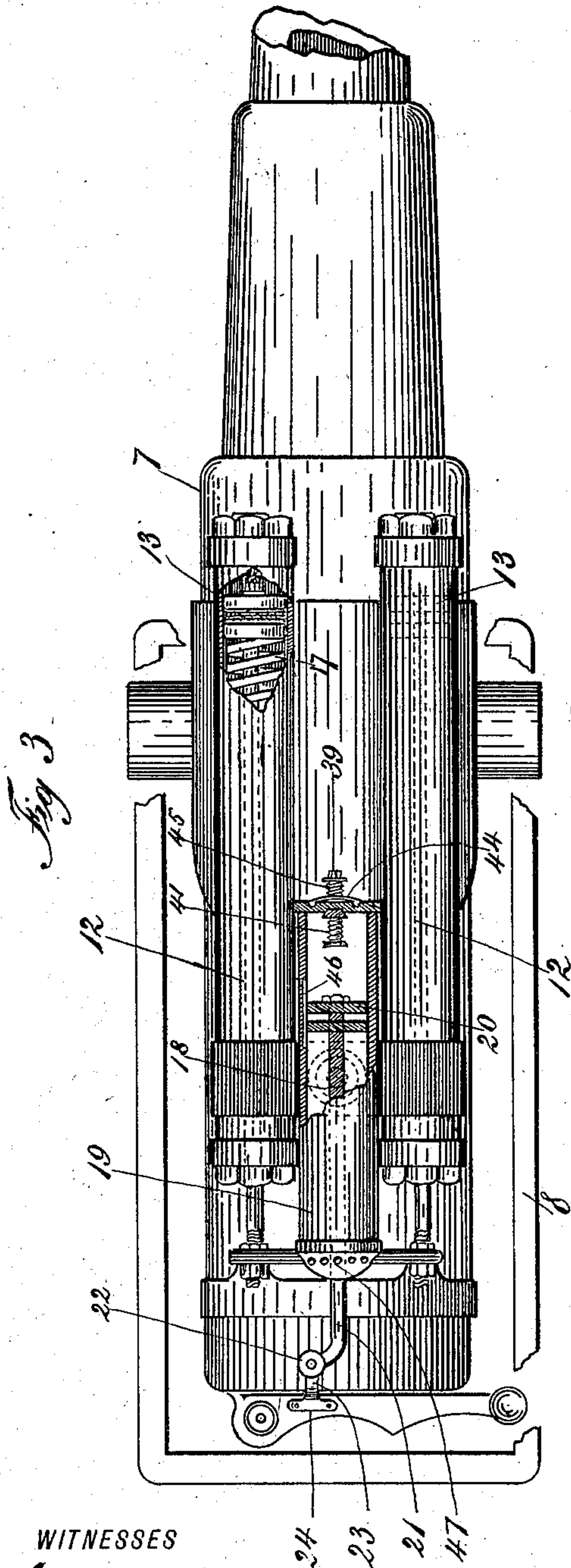
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UNITED STATES PATENT OFFICE.

GEORGE JOSEPH BOEHM, OF ELIZABETH, NEW JERSEY.

RAPID-FIRE GUN.

SPECIFICATION forming part of Letters Patent No. 694,606, dated March 4, 1902.

Application filed April 18, 1901. Serial No. 56,357. (No model.)

To all whom it may concern:

Be it known that I, GEORGE JOSEPH BOEHM, a citizen of the United States, residing at Elizabeth, in the county of Union and State of New Jersey, have invented certain new and useful Improvements in Rapid-Fire Guns, of which the following is a full and complete specification, such as will enable those skilled in the art to which it appertains to make and use the same.

This invention relates to rapid-fire guns; and the object thereof is to provide a gun of this class with means for automatically opening the breech-block as the gun returns to its normal position after the recoil thereof which follows the discharge.

The invention is fully disclosed in the following specification, of which the accompanying drawing forms a part, in which I have shown my improvement applied to what is known as a "Fletcher" rapid-fire gun, and in which—

Figure 1 is a partial side view of a gun of the class specified provided with my improvement, part of the construction being broken away; Fig. 2, a horizontal section of the breech of the gun, showing the breech-block and a part of the breech-block mechanism; Fig. 3, a bottom plan view of the gun as shown in Fig. 1, part of the construction being broken away; Fig. 4, a transverse section of one end of a piston-cylinder which I employ, and Fig. 5 a transverse section of said cylinder.

In the accompanying drawing, Figs. 2, 4, and 5 are on an enlarged scale, the enlargement of Fig. 5 being much less than that of Fig. 4, and in the said drawing I have shown at 7 the gun-barrel provided with a support 8, which may be of any desired construction and with which is connected a sleeve 9, through which the barrel of the gun passes and in which said barrel is free to slide, said sleeve being provided with trunnions which are provided with suitable bearings in the support 8.

Rigidly connected with the bottom portion of the sleeve 9 and arranged in the same horizontal plane are two cylinders 12, in each of which is placed a piston 13, with which is connected a piston-rod 14, and said piston-rods pass backwardly through the ends of the cylinders 12 and are rigidly connected with the breech end of the gun-barrel 7 by means of a

band 15 secured thereto or in any desired manner, as shown at 16. Within each of the cylinders 12 is a strong spiral spring 17, and these springs operate on the pistons 13 and on the rear ends of said cylinders, and this construction operates to return the gun to its normal position after the recoil occasioned by the discharge thereof, and this construction forms no part of this invention.

Suspended beneath the cylinders 12 and pivoted thereto at 18 in any suitable manner, so as to swing in a horizontal plane, is a cylinder 19, provided with a piston 20, having a piston-rod 21, which passes backwardly through the end of the cylinder 19 and is pivotally connected at 22 with a curved or angular arm 23, which is connected at 24, as shown in Fig. 3, with the usual arm 25, which operates to turn the breech-block and also to open the same in the usual manner.

The breech-block is shown at 26 in Fig. 2, and this breech-block is carried by the usual ring 27, which is adapted to swing on a vertically-arranged pivot-pin 28 at the right-hand side of the breech of the gun, as shown in Figs. 1 and 2, and the arm 25 also turns on the pivot-pin 28 and is provided with a segmental gear-head 29, the teeth of which operate in connection with teeth 30, formed on the breech-block 26, all these parts being of the same form and construction as are employed in the Fletcher rapid-fire gun hereinbefore referred to.

In the drawing forming part of this specification the transverse ribs or teeth which hold the breech-block in position are not shown; neither are the form of the teeth 30, which in practice are arranged diagonally of the side of the breech-block and by means of which the breech-block is turned so that it will come out. The firing mechanism and means for holding the breech-block to the carrier-ring 27 are also not shown; but it will be understood that all these are of the same form and construction as are employed in the Fletcher gun referred to. I have, however, shown at 30 the shell-extracting dog or lever which operates in practice to remove the shell 31, and this dog or lever is provided with a nose 32, which fits behind the crown 33 of the shell, and the outer end thereof is provided with a projecting finger 34, which strikes on

a beveled shoulder 35, formed on the head 29 of the arm 25, and when said arm is drawn or thrown backwardly or outwardly in the operation of swinging out the breech-block the outer end of the dog or lever 30 is thrown forwardly and the shell is extracted, all this construction being also of the same form as that employed in the Fletcher gun.

The arm 25 is provided with a handle 36, by means of which it has heretofore been operated, and after the recoil of the gun or after the gun had returned to its normal position it was customary to grasp the handle 36 of the lever 25 and turn said lever outwardly to the right, and this operation swung out the ring 27 and breech-block 26; but by means of my improvement this operation is performed automatically as the gun returns to its normal position after the recoil. When the gun moves backwardly after the discharge, the piston 20 moves outwardly or backwardly, and as the gun returns to its normal position it moves quicker than the piston 20, and the piston-rod 21, operating in connection with the arm 23, which is secured to the arm 25, automatically throws open the breech-block, as shown in dotted lines in Fig. 1, and the gun is ready to be recharged at the moment of its return to its normal position after the recoil thereof.

It will be understood that the pistons and springs 13 and 17 in the cylinders 12 operate to return the gun to its normal position after the recoil; but, as hereinbefore stated, these parts of the construction herein shown and described form no part of this invention.

In Fig. 4 I have shown a longitudinal section of one end of the cylinder 19, and in the center portion of the end piece 37 of this cylinder is a port or passage 38, through which passes a valve-stem 39, on the inner end of which is mounted a valve 40, which is operated by a spring 41 and adapted to close the port or passage 38, and the end 37 of the cylinder 19 is provided with ports or passages 42, adapted to be closed by valves 43, formed on or secured to a valve-plate 44, through which the valve-stem 39 also passes, and between the outer end of said valve-stem and the valve-plate 43 is a spring 45. The cylinder 19 is also provided at a short distance from the front end thereof and on the inner side thereof with a longitudinal groove 46, (shown in Figs. 3 and 5,) and in the operation of the device, as hereinbefore described, when the piston 20 moves backwardly during the recoil of the gun air enters the cylinder 19 through the port or passage 38, and when said piston moves forwardly as the gun returns to its normal position after the recoil air leaves the cylinder 19 through the ports or passages 42. The spring 45 is so adjusted that it requires considerable pressure to open the valves 43, the object of this being to retard the forward movement of the piston 20 during the return of the gun to its normal position after the recoil thereof, so as to facilitate the opera-

tion of the arm 23, in connection with the arm 25, in releasing and throwing out the breech-block, and the object of the groove 46 in the cylinder 12 is also to facilitate this operation by allowing the compressed air in the front end of said cylinder to move around the piston as the piston moves forwardly, and the rear end of said cylinder is also provided with air ports or passages 47 to allow the air to escape therefrom as the said piston moves backwardly at the recoil of the gun. As the recoiling movement of the gun is much greater than that required to operate the breech-block by the movement of the piston 20, by reason of the air compression in the cylinder containing such piston on recoil, when the gun comes to rest in its forward position after firing the piston 20 will have passed by the rear end of the groove 46, whereby the air having free access by way of said groove to the rear portion of the cylinder 19 the air in the forward portion will offer no resistance to the further forward movements of the piston 20 in the operation of closing the breech by means of the hand-lever 36.

The object of pivoting the cylinder 19 at 18 so that it will swing in a horizontal plane is to facilitate the operation thereof and the operation of the piston-rod 21; but this construction may be varied, as will be readily understood.

Although I have shown and described my invention as applied to a Fletcher rapid-fire gun, it will be apparent that the same may be applied to any of the rapid-fire guns now in use, and my invention is not limited to the exact construction, combination, and arrangement of parts herein shown and described, as many changes therein and modifications thereof may be made without departing from the spirit of my invention or sacrificing its advantages.

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

1. A rapid-fire gun, provided with means for returning it to its normal position after the recoil thereof, a suitably-supported cylinder, a piston mounted therein, a rod connected with said piston and projecting backwardly in line with the gun and in operative connection with the operating-arm of the breech-block of the gun, said cylinder being also provided at its front end with spring-operated valves which open in opposite directions and at its front end with air ports or passages, substantially as shown and described.

2. A rapid-fire gun, provided with means for returning it to its normal position after the recoil thereof, a cylinder supported thereunder, a piston mounted therein, a rod connected therewith, and projecting backwardly and in line with the gun and in operative connection with the operating-arm of the breech-block of the gun, means for passing air to and from the front end of said cylinder according to the movement of the piston, and means for

discharging air from the rear end of said cylinder, substantially as shown and described.

3. A rapid-fire gun, provided with means for returning it to its normal position after the recoil thereof, a cylinder supported thereunder, a piston mounted therein, a rod connected therewith, and projecting backwardly and in line with the gun and in operative connection with the operating-arm of the breech-block of the gun, means for passing air to and from the front end of said cylinder according to the movement of the piston, and means for discharging air from the rear end of said cyl-

inder, said cylinder being also provided in the inner wall thereof adjacent to the front end with a longitudinal groove, substantially as shown and described. 15

In testimony that I claim the foregoing as my invention I have signed my name, in presence of the subscribing witnesses, this 16th day of April, 1901. 20

GEORGE JOSEPH BOEHM.

Witnesses:

T. A. STEWART,
L. R. BAYER.