

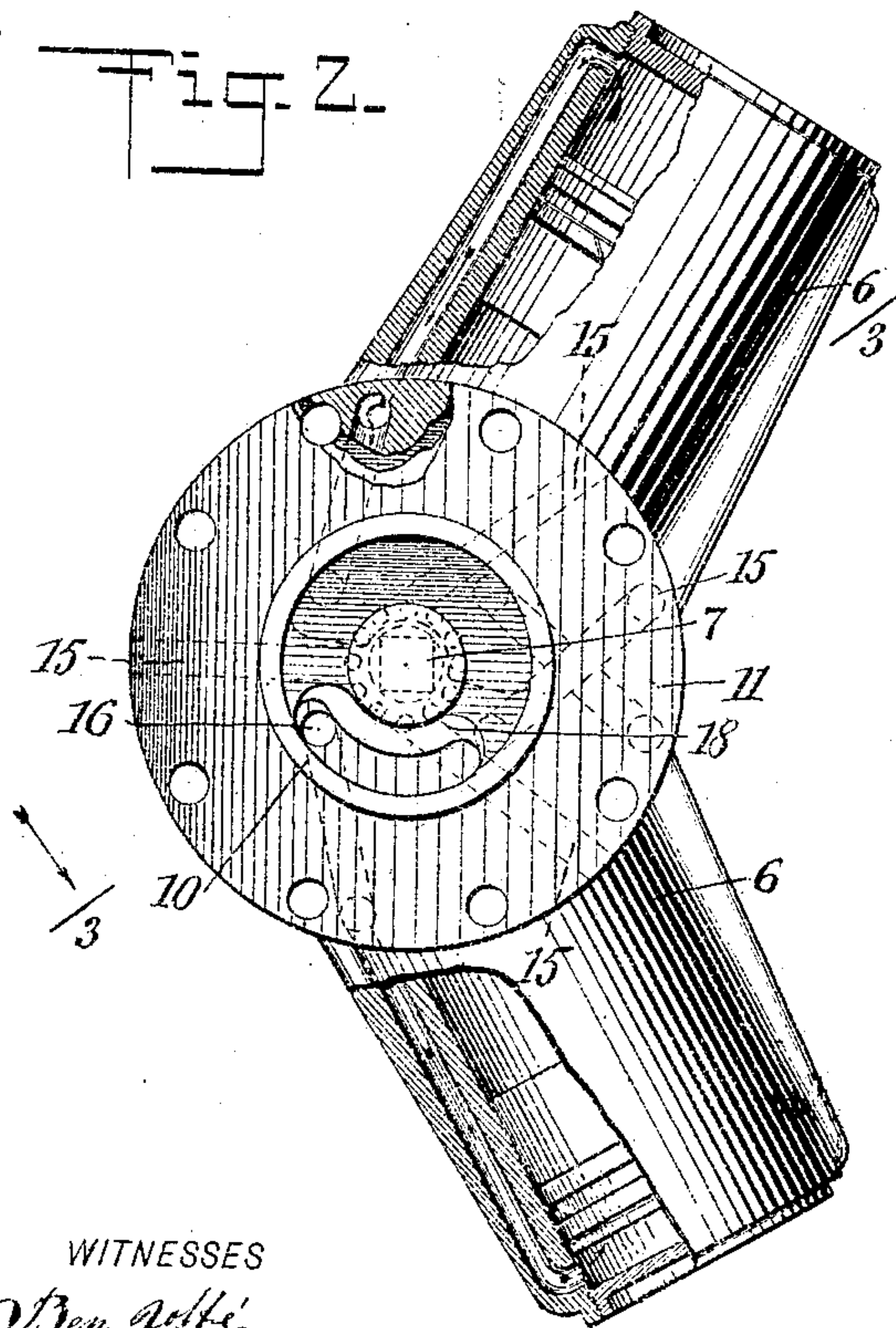
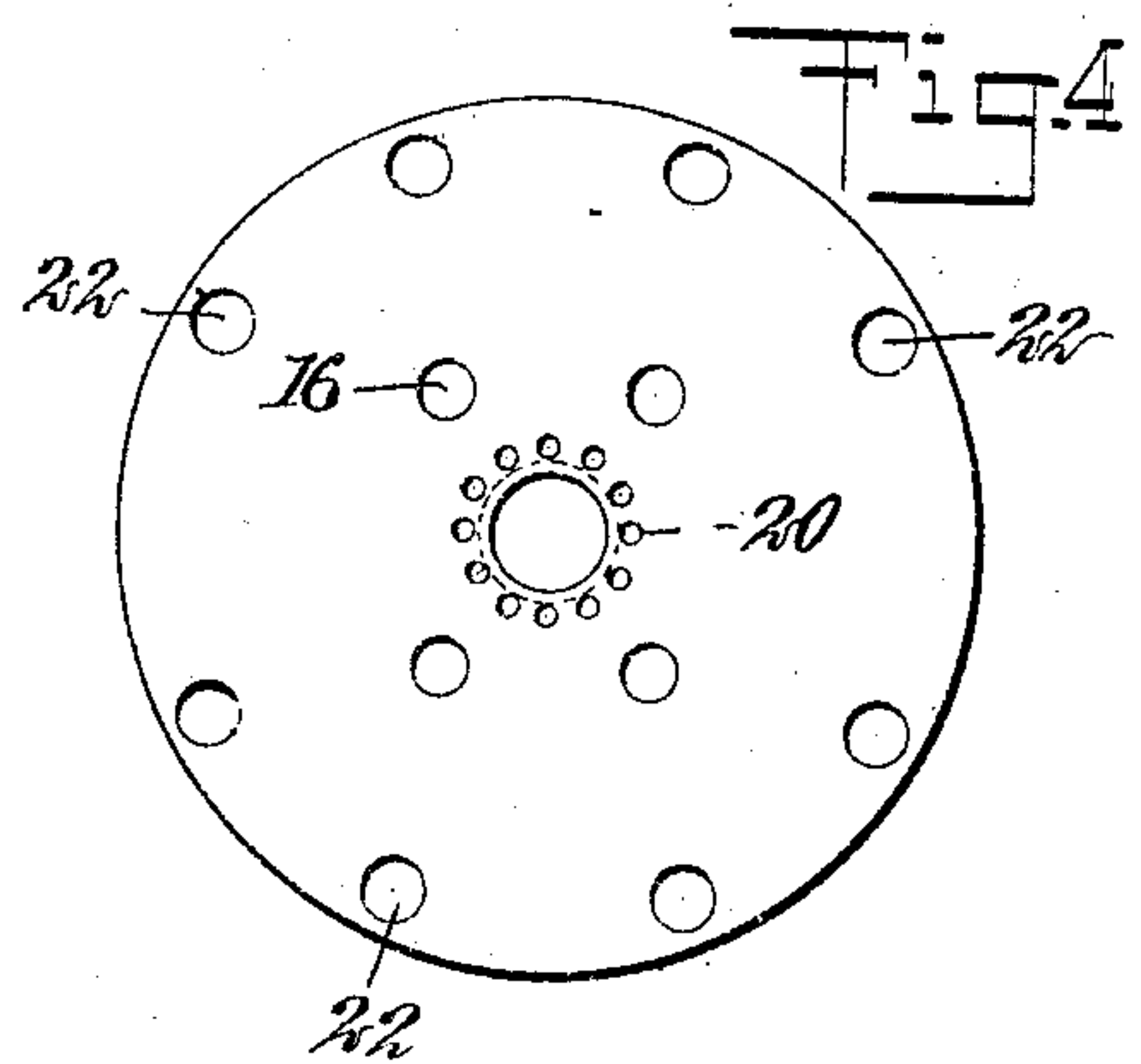
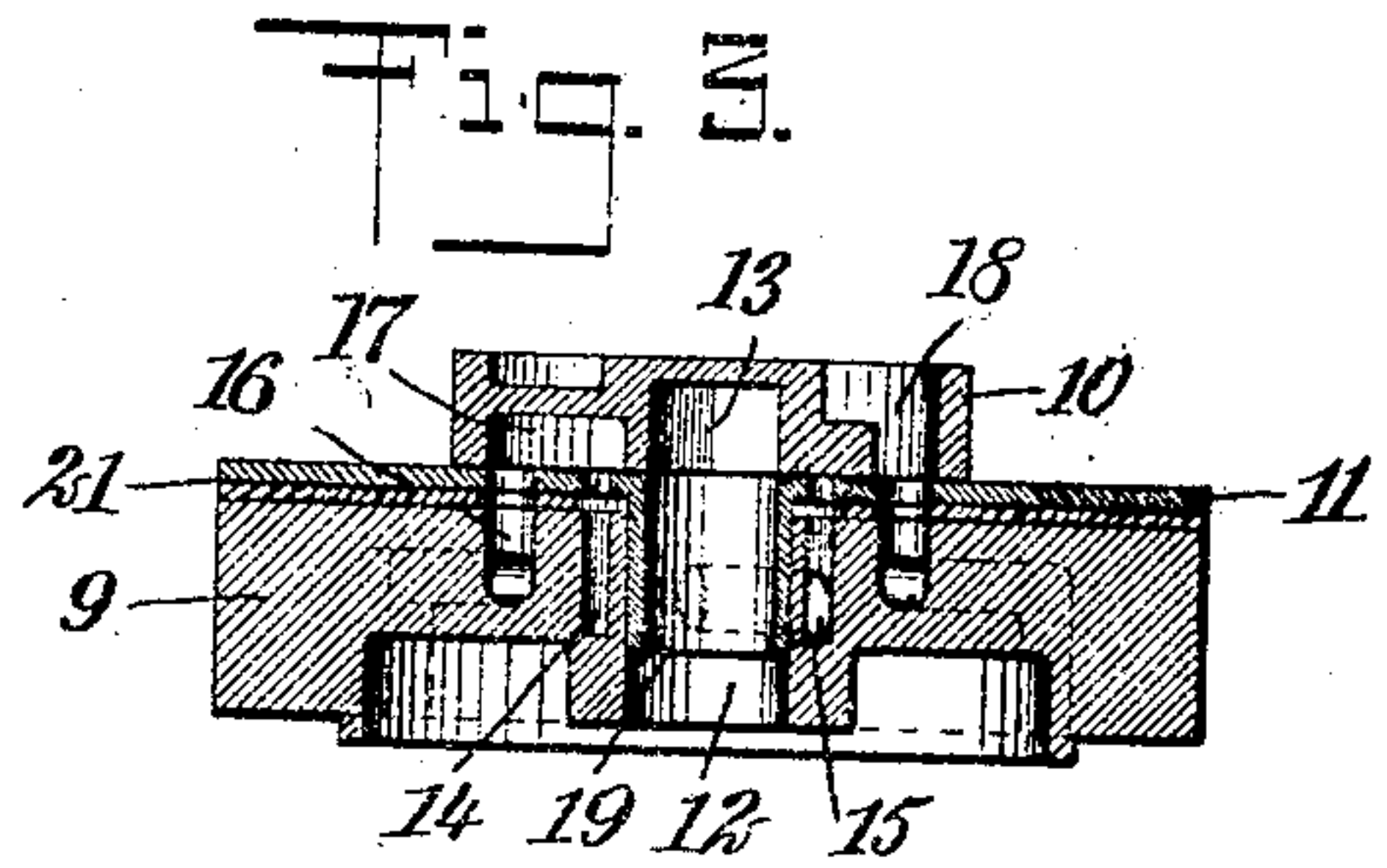
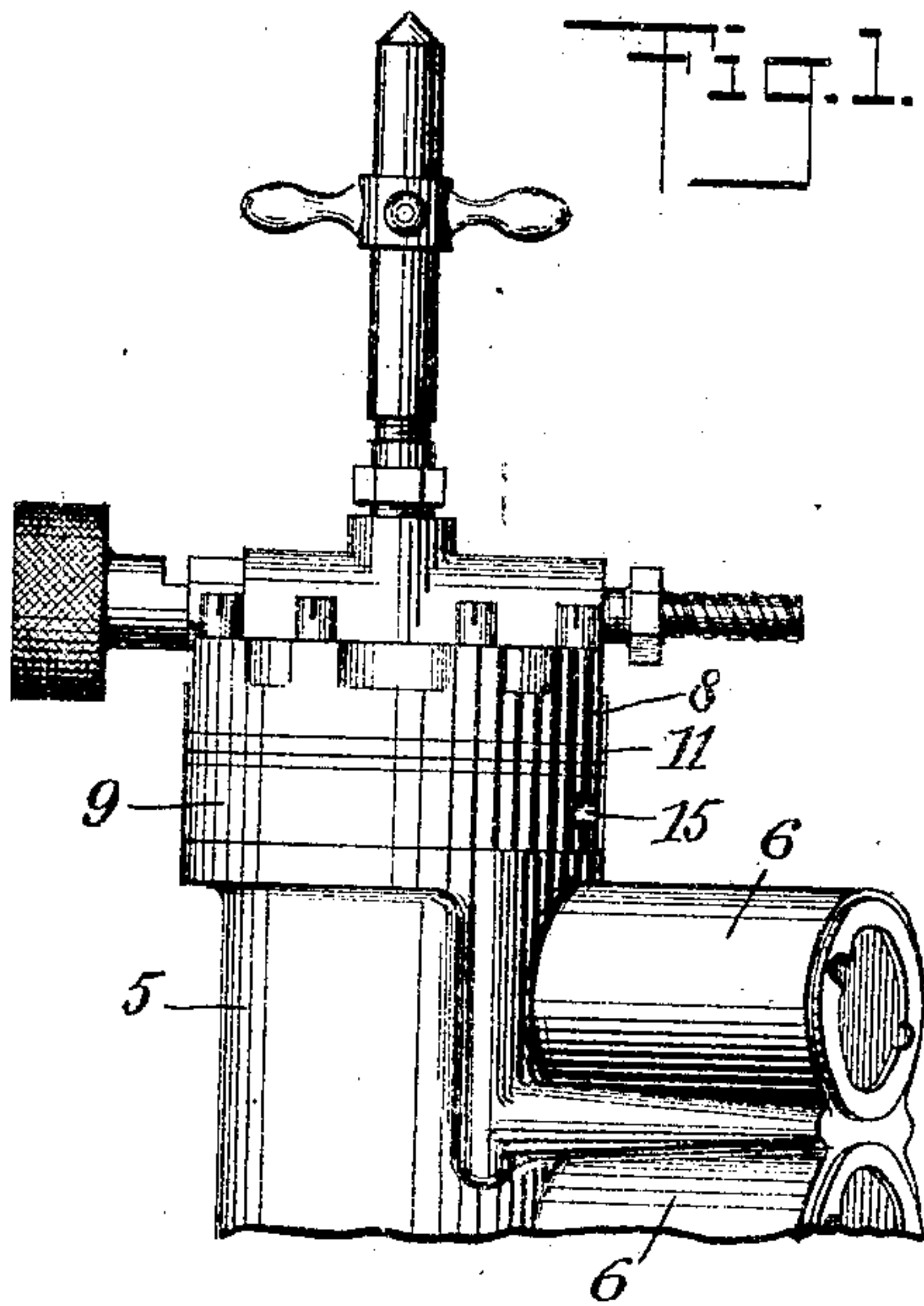
No. 891,633.

PATENTED JUNE 23, 1908.

C. ORENSTEIN & H. I. DERBY.

VALVE.

APPLICATION FILED JAN. 24, 1908.



WITNESSES

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CHARLES ORENSTEIN AND HENRY ISAAC DERBY, OF TOPEKA, KANSAS.

VALVE.

No. 891,833.

Specification of Letters Patent.

Patented June 23, 1903.

Application filed January 24, 1903. Serial No. 412,414.

To all whom it may concern:

Be it known that we, CHARLES ORENSTEIN and HENRY I. DERBY, citizens of the United States, and residents of Topeka, in the county of Shawnee and State of Kansas, have invented a new and Improved Valve, of which the following is a full, clear, and exact description.

This invention is an improvement in valves, relating more especially to valves for controlling the admission and exhaust of the actuating fluid in the motors of pneumatic tools. In these valves, the valve-body which provides a seat for the rotary valve-head quickly wears down to the ports, under the action of the said head, and thereafter fails to perform its proper function, thus necessitating the renewal of the entire valve-body. As these bodies are very expensive to both cast and finish, by reason of the large number of ports, bolt openings, etc. which they contain, it is desirable to relieve them of all wear possible. We accomplish this by providing the seat of the valve-head, afforded by the valve-body, with a detachable wear-plate, the said plate having holes to register with the respective ports and bolt openings of the valve-body, and is made fluid-tight with the body by an intervening gasket.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a fragmentary view of the motor of a pneumatic tool, having our valve applied thereto; Fig. 2 is a plan of the same with the casing-head removed, and the cylinders shown partly in section to better illustrate the construction; Fig. 3 is a central vertical section through the valve, having our improvements, substantially on the line 3—3 in Fig. 2; and Fig. 4 is a plan of the wear-plate of the valve, which forms the principal feature of our invention.

In order that the nature of this particular embodiment of our improved valve may be fully understood, we have shown the same applied to a motor, comprising the casing 5 having the cylinders 6 projecting from the side thereof, these cylinders carrying pistons connected to a crank-shaft 7, arranged within the casing, as shown in dotted outline in Fig. 2.

Interposed between the casing 5 and its head 8 is the valve embodying our improvement, as shown in Fig. 3, this valve consist-

ing of a valve-body 9, the valve-head 10 and the intervening wear-plate 11; this last-named element forming the prime feature of our improvement. The valve-body 9 is constructed with a central opening 12 for the passage of the crank-shaft into the valve-head 10, the latter having an angular recess 13 for fitting the correspondingly-shaped extremity of the crank-shaft, whereby the valve-head revolves therewith.

Concentrically surrounding the opening 12 in the valve-body is an annular exhaust groove 14, discharging through a number of radially-arranged exhaust passages 15, as best shown in dotted outline in Fig. 2. The valve-body is also provided with ports 16, which pass angularly therethrough and connect with ports leading through the walls of the respective cylinders. These ports are alternately placed in communication with the exhaust groove 14 and the fluid pressure supply by the rotary valve-head 10, the latter having a depression 17 on its under face, and a slot 18 arranged diametrically opposite for this purpose.

In the usual construction of this form of valve, the valve-head seats directly on the valve-body instead of the wear-plate 11, and in practice quickly wears away the metal of the valve-body to the angular bends in the ports 16, and thus renders the said body useless and necessitates its renewal. The wear-plate 11, in our invention, forms the seat for the valve-head, and is preferably provided with a boss or thimble 19 at its under side, which projects within and fits the opening 12. The ports in the valve-body are extended through the wear-plate, the latter being perforated above the exhaust groove 14, as indicated at 20, in order that the metal may not be entirely separated. Between the valve-body and the wear-plate is placed a gasket 21, which makes a fluid-tight joint when the casing-head 8 is applied to the casing 5. As will be observed from Figs. 1 and 4, the bolts which secure the casing-head in place also pass through the wear-plate and valve-body, for which purpose the bolt openings 22 are provided at their circumference. When the wear-plate becomes worn sufficiently to require renewal, the same may be readily displaced on removing the casing-head and a new wear-plate applied, thus avoiding the expense entailed in discarding the entire valve-body; the life of the body in this way being extended indefinitely.

Having thus described our invention we claim as new and desire to secure by Letters Patent:

- 5 1. A valve-body having a central opening surrounded by an annular exhaust groove and provided with ports, and a wear-plate having a boss fitting into the opening and provided with openings registering with the ports and exhaust groove.
- 10 2. The combination of a casing, a valve body seated on the casing having an admission port and an exhaust port, a rotary valve head, a wear-plate arranged between the valve head and body having openings in
15 communication with the ports and providing a seat for the head, a casing head covering the valve head, and means securing the casing head in position, operating to force the wear-plate to the valve body.
- 20 3. The combination of a casing, a valve body seated on the end of the casing having an admission port and an exhaust port, a ro-

tary valve head, a wear-plate arranged between the valve head and body having openings in communication with the ports and providing a seat for the head, a gasket interposed between the valve body and wear-plate, a casing head covering the valve head and wear-plate, and means securing the casing head in position, operating to force the wear-plate to the gasket. 25 30

4. As an article of manufacture, a wear-plate having marginal bolt-holes and provided with a central opening, with admission and exhaust ports surrounding said opening. 35

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

CHARLES ORENSTEIN.
HENRY ISAAC DERBY.

Witnesses:

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