

No. 692,185.

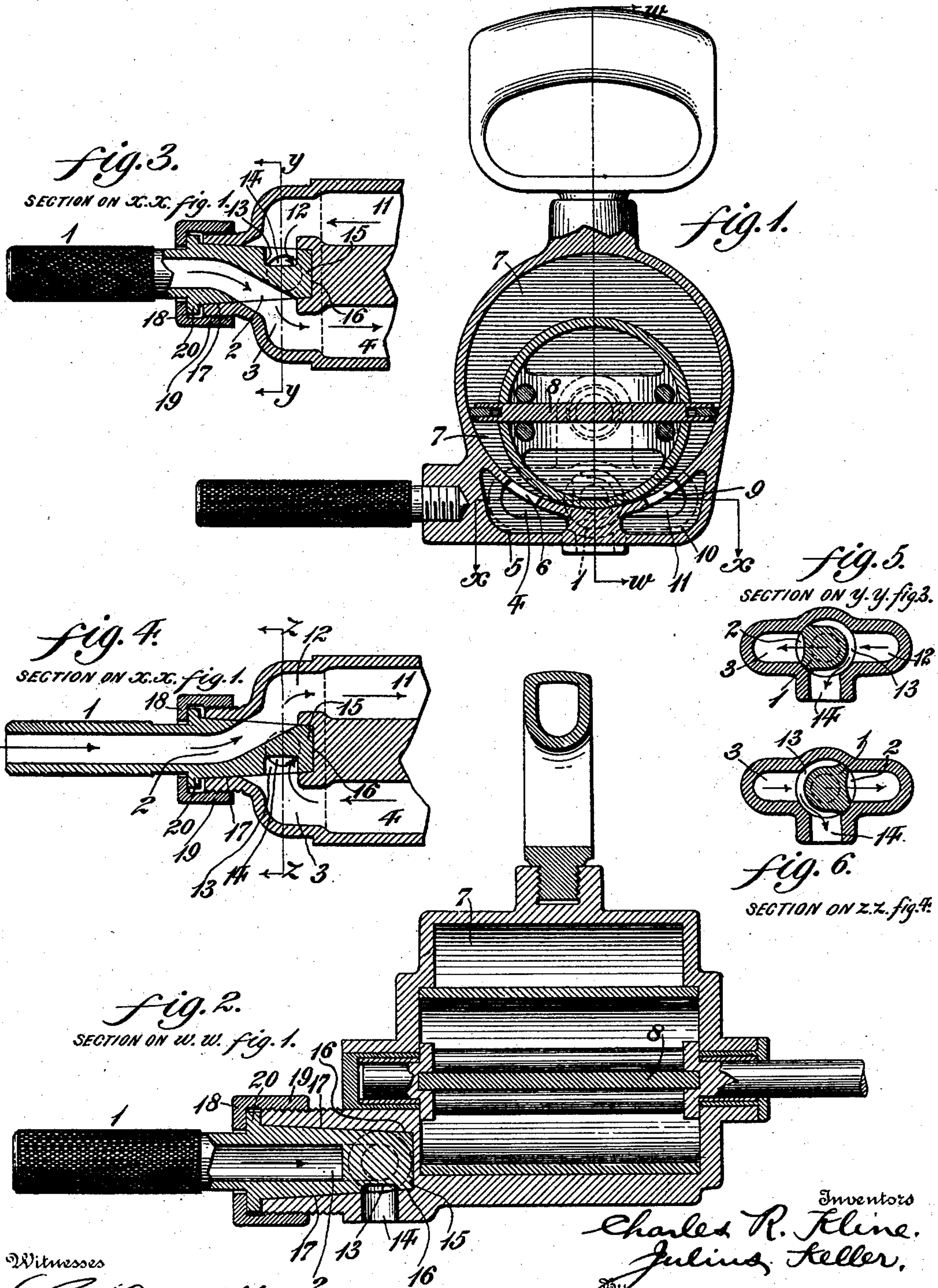
Patented Jan. 28, 1902.

C. R. KLINE & J. KELLER.

REVERSING VALVE.

(Application filed Oct. 18, 1901.)

(No Model.)



Witnesses  
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# UNITED STATES PATENT OFFICE.

CHARLES R. KLINE, OF BEECHWOOD, AND JULIUS KELLER, OF PHILADELPHIA, PENNSYLVANIA; SAID KELLER ASSIGNOR, BY MESNE ASSIGNMENTS, TO SAID KLINE.

## REVERSING-VALVE.

SPECIFICATION forming part of Letters Patent No. 692,185, dated January 28, 1902.

Original application filed April 29, 1901, Serial No. 57,882. Divided and this application filed October 18, 1901. Serial No. 79,075. (No model.)

*To all whom it may concern:*

Be it known that we, CHARLES R. KLINE, residing at Beechwood, in the county of Cameron, and JULIUS KELLER, residing in the city and county of Philadelphia, State of Pennsylvania, citizens of the United States, have invented a new and useful Improvement in Reversing-Valves for Pneumatic Motors, of which the following is a specification.

Our invention consists of a novel construction of a reversing-valve, especially adapted for rotary engines, which can be cheaply manufactured, is effective and economical in operation, and will not readily get out of order, the present case being a division of an application filed by us April 29, 1901, Serial No. 57,882, and entitled "Pneumatic barker."

Figure 1 represents an end elevation of a portion of a reversing-valve embodying our invention, showing also a rotary engine to which the same is applicable. Fig. 2 represents a section on line *ww*, Fig. 1. Fig. 3 represents a section on line *xx*, Fig. 1. Fig. 4 represents a section on line *xx*, Fig. 1, showing the reversing-valve in a different position. Fig. 5 represents a section on line *yy*, Fig. 3. Fig. 6 represents a section on line *zz*, Fig. 4.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings, the motive fluid enters through the rotatable handle or pipe 1, which serves the double function of an inlet-pipe and a reversing-valve for the motive fluid, and when the parts are in the position seen in Figs. 3 and 5 the motive fluid passes through the port 2 and port 3 into the passage 4, which leads to the chamber 5, and thence through the port 6 to the piston-chamber 7 below the plate 8, whereupon the piston is caused to rotate in the manner known to those skilled in this art, the exhaust taking place through the port 9, chamber 10, and passages 11 and 12, the exhaust passing around the groove 13 and escaping to the atmosphere through the exhaust-port 14.

When it is desired to reverse the direction of rotation of the piston, the valve 1 is turned into the position seen in Figs. 4 and 6, whereupon the function of the various ports and passages becomes reversed, the port 9 now being the inlet-port and 6 the exhaust-port, as is evident. The extremity 15 of the valve 1 rests in a suitable seat 16, the walls 17 of which are preferably tapered, as will be understood from Figs. 2, 3, and 4, said valve being held in position by the contact of the flange 18 of the nut 19 with the flange 20 of said valve or pipe 1. It will thus be seen that the reversing devices are very simple in construction and operation and not likely to get out of order.

It will be apparent that slight changes may be made by those skilled in the art which may come within the scope of our invention, and we do not therefore desire to be limited in every instance to the exact construction herein described.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A reversing-valve for a rotary engine, consisting of a pipe, a suitable seat for the extremity of said pipe, an exhaust-groove in said pipe, a plurality of passages leading from said pipe to a piston-chamber, and means co-acting with said pipe for enabling either of said passages to serve as inlet or exhaust.

2. A reversing-valve consisting of a pipe, having a discharge-port at a side thereof, the extremity of said pipe being closed and solid, an exhaust-groove located in said pipe near an extremity thereof, a seat for the reception of the end of said pipe, and means for holding said pipe or valve to its seat.

3. A hollow reversing-valve, having a closed end, a seat for the latter, tapered walls extending to said seat, a flange on said valve, a flanged nut for holding said valve in position, an outlet-port at one side of said valve, and an exhaust-groove near the extremity of said valve.

4. A hollow reversing-valve, having a closed  
end, a seat for the latter, tapered walls ex-  
tending to said seat, a flange on said valve, a  
flanged nut for holding said valve in position,  
5 an outlet-port at one side of said valve, and  
an exhaust-groove near the extremity of said  
valve, in combination with a plurality of pas-  
sages leading to a piston-chamber, either of

said passages being adapted to register with  
said port and groove.

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