No. 851,878. PATENTED APR. 30, 1907.

G. H. GILMAN.

FLUID PRESSURE CONTROLLING DEVICE.

APPLICATION FILED MAR. 2, 1906.

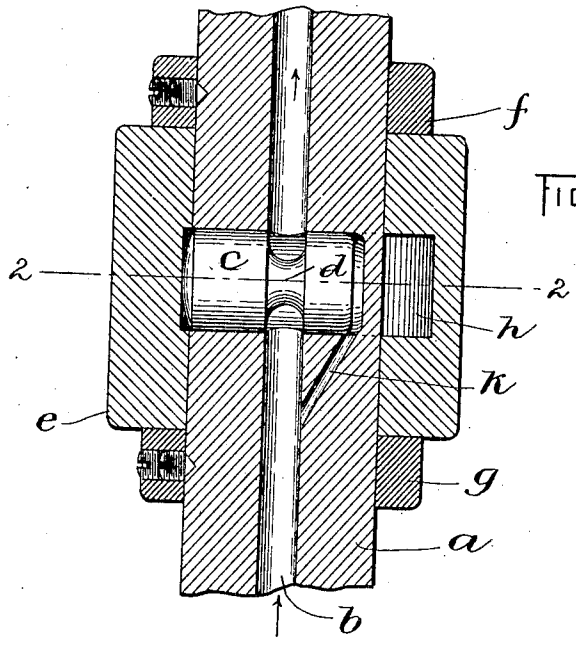



FIG. 1.

FIG. 2.

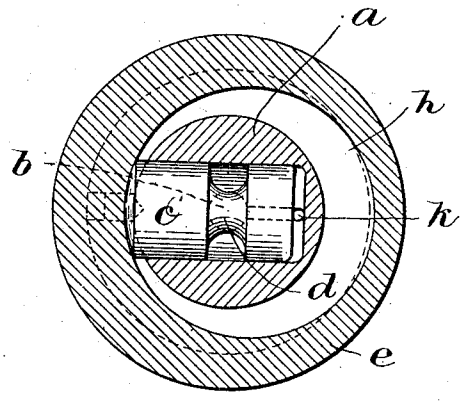
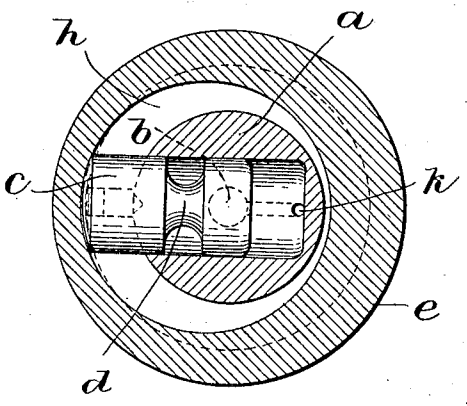



FIG. 3




WITNESSES:

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# UNITED STATES PATENT OFFICE.

GEORGE H. GILMAN, OF CLAREMONT, NEW HAMPSHIRE, ASSIGNOR TO SULLIVAN MACHINERY COMPANY, OF CLAREMONT, NEW HAMPSHIRE, A CORPORATION OF MAINE.

## FLUID-PRESSURE-CONTROLLING DEVICE.

No. 851,878. Specification of Letters Patent. Patented April 30, 1907.

Application filed March 2, 1906. Serial No. 303,758.

*To all whom it may concern:*

Be it known that I, GEORGE H. GILMAN, a citizen of the United States, residing at Claremont, in the county of Sullivan and State of New Hampshire, have invented an Improvement in Fluid-Pressure-Controlling Devices, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention relates to controlling devices for fluid pressure and more particularly, though by no means exclusively, to throttle valves which are intended and adapted for use in connection with pneumatic tools, such as hammers, drills or the like.

My invention will be best understood by reference to the following description, when taken in connection with the accompanying illustration of one specific embodiment thereof, while its scope will be more particularly pointed out in the appended claims.

In the drawings,—Figure 1 is a longitudinal, central sectional view taken lengthwise the conduit or other member to be controlled and showing a valve constructed according to one form of my invention; Fig. 2 is a transverse section taken on the line 2—2 in Fig. 1 showing the valve in its open position, and Fig. 3 is a similar view showing the closed position of the valve.

Referring to the drawings and to the specific embodiment of my invention which I have here selected for illustration, there is shown a tubular member or conduit *a*, having the longitudinal straight-away pressure supply passage *b* for supplying pressure to the tool or instrument to be controlled. While the identity and form or construction of the member *a*, or the shape and form of the pressure passage *b* is of little consequence as regards the essential features of my invention, the tubluar member has the general proportions of the coupling which is customarily employed between the feeding cylinder of a pneumatically fed drill and the drill tool itself, the throttle valve being employed for controlling the passage of the pressure from the feeding cylinder to the drill tool.

For the throttle control of the fluid pressure supplied through the passage *b* there is provided a throttle valve *c* of any suitable construction, but which is here shown as of the plug or piston type having a reduced neck portion *d* and arranged for sliding movement in a suitably formed cylindrical pocket transversely to the tubular member *a* and the supply passage. This valve is controlled by an exterior turning member which is here shown in the form of a sleeve *e* revolubly mounted on the tubular member *a* for turning movement thereon and suitably positioned, as by the collars *f* and *g*. This sleeve is of such shape and proportions that it can be readily grasped by the hand of the operator and by slight wrist movement turned in either direction for the control of the throttle valve. For this purpose the sleeve is provided interiorly with an annular groove or recess *h* of a width equal to or greater than the diameter of the throttle valve, the said groove or recess, however, being eccentrically formed in the sleeve so as to provide at its inner or bottom face a cam surface which frictionally engages the outer projecting end of the throttle valve.

When turned to the position represented in Figs. 1 and 2, the sleeve forces the valve inwardly to cause the contracted portion thereof to register with the supply passage, permitting the free passage therethrough of fluid pressure. When, however, the sleeve is moved either side of the position represented in Fig. 2, the valve is free to be moved outwardly more or less to obstruct the supply passage, and when the sleeve is given a half turn and a position as shown in Fig. 3, the valve may be moved outwardly to entirely close the supply passage and completely shut off the passage of fluid pressure therethrough. To effect closing movement of the valve and cause the same to move outwardly as the turning of the sleeve permits of the movement, there is provided means for maintaining a constant outward pressure on the valve. While this might be effected by mechanical means, such as a spring, for simplicity of construction as well as greater effectiveness, I preferably provide a pressure duct *k* leading from the pressure side of the supply passage to a suitable pressure area upon the valve. In the present instance the duct leads to the bottom of the cylindrical pocket and acts against the enlarged inner end of the valve, pressing it constantly outward against the cam surface of the sleeve groove.

The described form of valve possesses the

utmost simplicity of construction and at the same time an effectiveness in operation and convenience of manipulation which is requisite for certain classes of apparatus, particularly pneumatic tools. In its operation it is merely required to turn the sleeve in one direction directly to force the valve to its closed position against the constantly acting pressure in the bottom of the pocket or to turn it in the reverse direction to permit the said pressure itself to force the valve to its open position.

While no stop or positioning device for the sleeve is shown, it will be obvious to those skilled in the art that any suitable means may be employed for that purpose, such as a fixed pin engaging a segmental groove in the sleeve, to permit the latter to be reciprocally turned to a full open or closed position, preferably co-operating with a spring-pressed pin to engage with separated depressions in the sleeve to position the latter at any one of several intermediate points.

While I have shown and described in detail one form of my invention, it is to be understood that the same is not to be limited to the particular details or form or relative arrangement of parts shown, but that extensive modifications may be made therein without departing from the spirit of the invention.

Claim—

1. A controlling device for fluid pressure comprising a tubular member having a pressure supply passage, a sleeve mounted for turning movement on said tubular member and having an eccentric annular groove, a piston valve arranged for sliding movement transversely the tubular member to control the supply passage therein and having a head projecting into the annular groove of the sleeve and a pressure duct leading from the pressure side of the supply passage to the opposite end of the valve whereby the turning of the sleeve to one position presses the valve inwardly to close the passage and to another position permits the pressure to force the valve outwardly to open the passage.

2. A controlling device for fluid pressure comprising a rotary sleeve provided with an eccentric groove, a piston controlling valve engaging the walls of said groove whereby the valve may be pressed in one direction by turning the sleeve, and means for supplying pressure to an area of the valve for moving it in the opposite direction.

3. A controlling device for fluid pressure comprising a tubular member having a pressure supply passage, a sleeve mounted for turning movement on said tubular member, and a valve arranged transversely the tubular member to control the pressure supply passage and actuated by movement of the sleeve.

4. A controlling device for fluid pressure comprising a tubular member having a pressure supply passage, a sleeve mounted for turning movement on said tubular member, a valve controlling the pressure supply passage therein, means for constantly pressing the valve in one direction, and means for pressing the valve in the opposite direction by movement of the sleeve.

5. A controlling device for fluid pressure having a fluid pressure supply passage, a valve controlling the same, and a rotary member having an eccentric cam surface engaging said valve for the actuation thereof.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

GEO. H. GILMAN.

Witnesses:

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JAMES A. BRUCE.