No. 856,194. PATENTED JUNE 4, 1907.

F. S. GRAHAM.

PNEUMATIC TOOL HANDLE.

APPLICATION FILED NOV. 9, 1906.

Fig. 1.

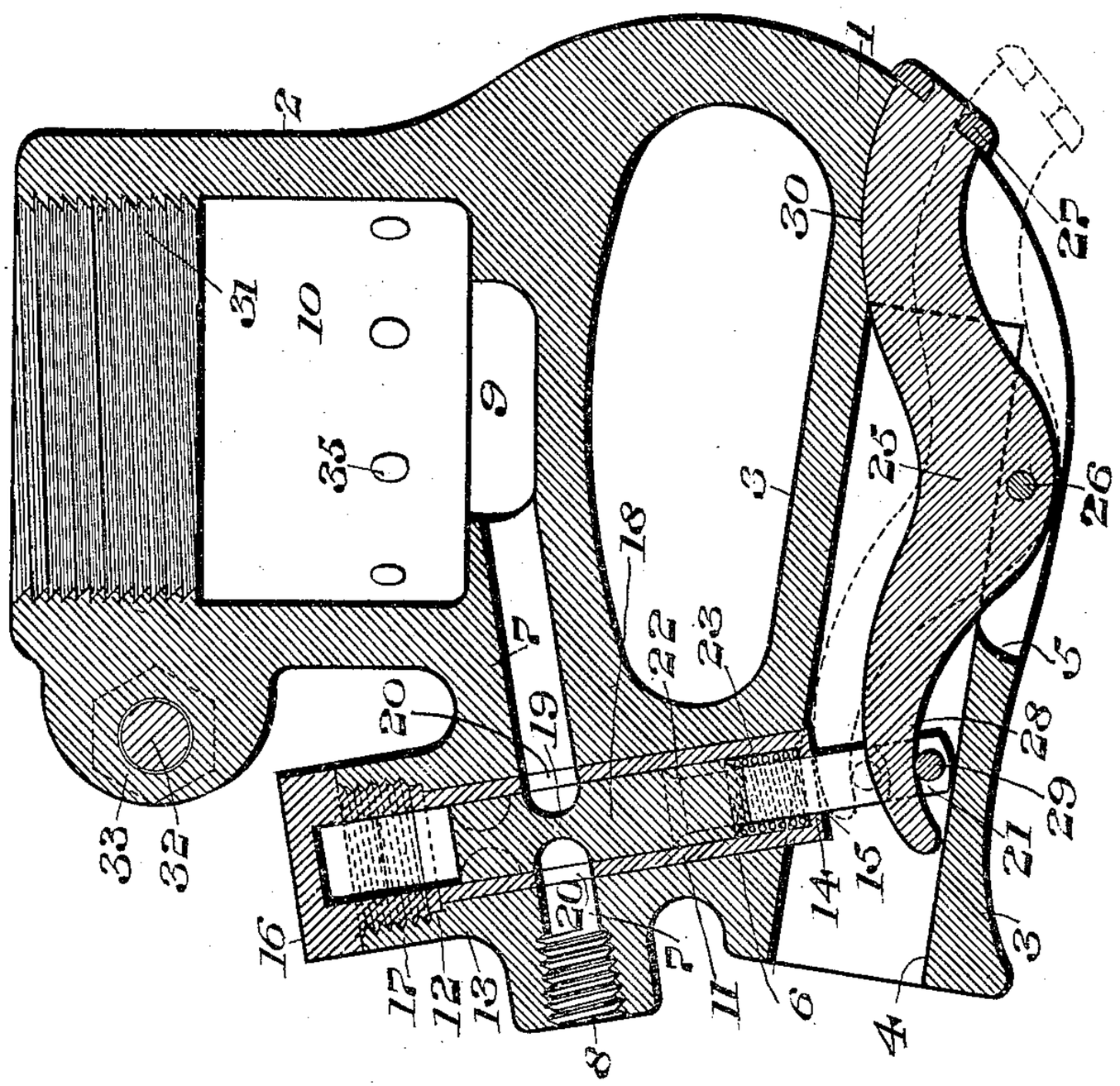
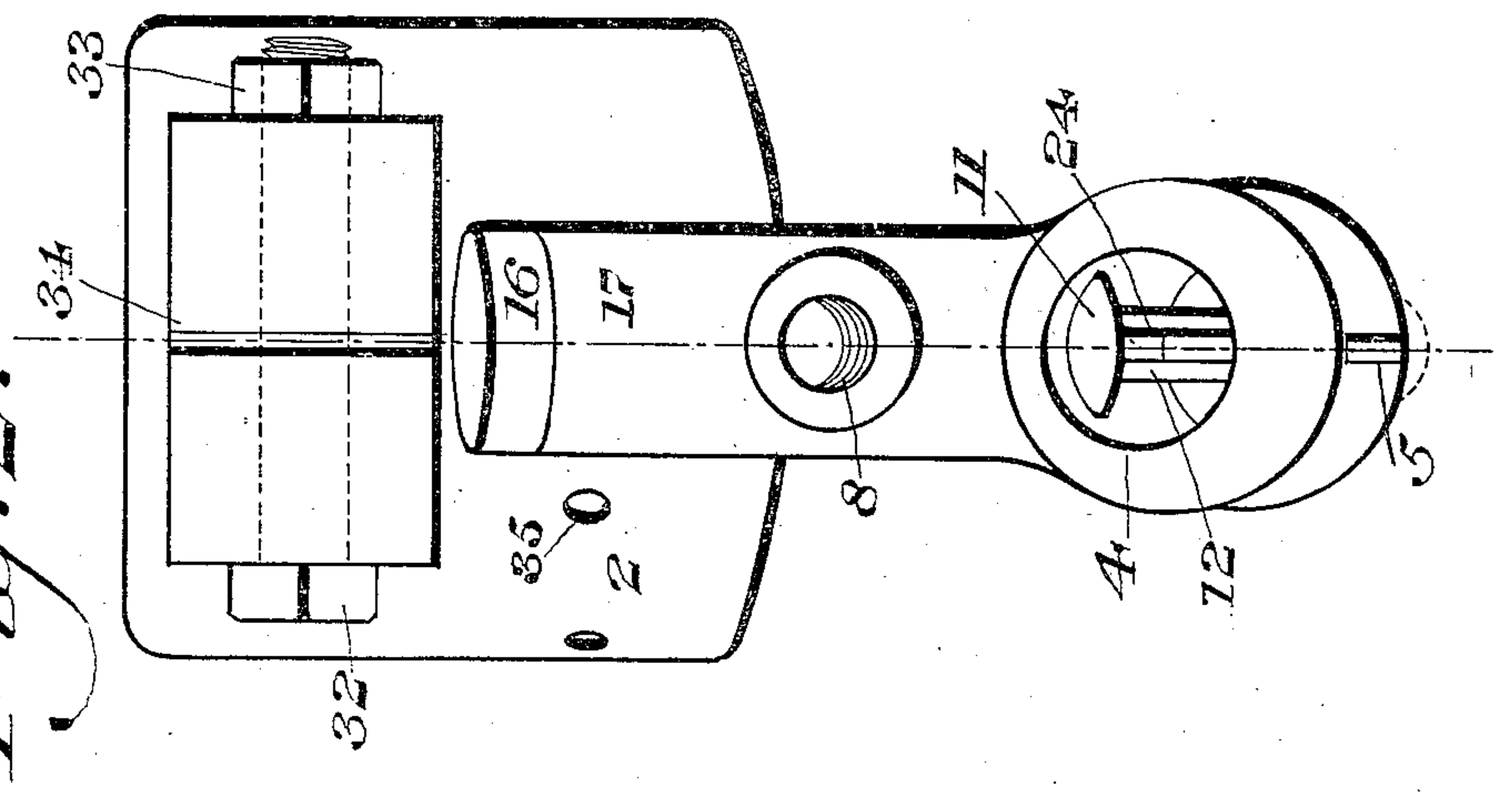


Fig. 2.



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UNITED STATES PATENT OFFICE.

FREDERICK S. GRAHAM, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-THIRD TO RALPH M. SEAMAN AND ONE-THIRD TO CHARLES A. STRUNTZ.

PNEUMATIC-TOOL HANDLE.

No. 856,194. Specification of Letters Patent. Patented June 4, 1907.

Application filed November 9, 1906. Serial No. 342,713.

To all whom it may concern:

Be it known that I, FREDERICK S. GRAHAM, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Pneumatic-Tool Handle, of which the following is a specification.

My present invention relates to handles for fluid actuated tools and consists of a novel and useful construction of a pneumatic tool handle in which the passage of motive fluid therethrough is accurately controlled according to the conditions and requirements.

It further consists of a novel construction of a pneumatic tool handle in which a novel construction of a valve is employed, said valve being moved in one direction by yielding means and being adapted to be actuated in a reverse direction by means of a manually controlled lever coacting therewith.

It further consists of other novel feature of construction, all as will be hereinafter fully set forth.

In order to illustrate my invention, I have shown one embodiment thereof which has been found in practice to give satisfactory and reliable results, although as will be apparent to those skilled in this art, the various instrumentalities of which my invention consists may be variously arranged and organized and my invention is not limited to the precise arrangement and organization of these instrumentalities as herein shown.

Figure 1 represents a sectional view of a pneumatic tool handle embodying my invention. Fig. 2 represents an end elevation of the handle.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings. 1 designates a pneumatic tool comprising a head block 2 having a grasping portion 3 connected therewith.

4 designates a passage extending partly through the grasping portion 3 and communicating with a slot or aperture 5 therein.

6 designates an aperture through the handle and angularly inclined to the aperture 4 and also angularly inclined to an inlet passage 7 which is suitably threaded at its outer end as at 8, in order to adapt the same to be suitably connected with the motive fluid supply, said passage 7 also communicating with a chamber 9, which opens into an internal chamber 10 in the head block 2.

11 designates a bushing which closely fits the aperture 6 and which is provided with a flange 12 which engages a shoulder 13, it being noted that the bushing 11 passes into the aperture 4 and is provided with an inwardly extending flange 14 surrounding the aperture 15 therethrough.

16 designates a plug or closure which has threaded engagement with the lug or projection 17 and abuts against the flange 12 of the throttle valve bushing 11, in order to prevent any improper movement thereof.

18 designates a valve having a sliding fit in the bushing 11 and provided with an annular groove 19 which registers at certain times with the ports 20 in the throttle valve bushing 11. The throttle valve 19 is provided with a reduced stem 21, forming a shoulder 22 between which latter and the flange 14 is interposed a spring 23, it being noted that the stem 21 extends through the aperture 15 in the throttle valve bushing 11 and as seen in Fig. 2, this stem is slotted at 24.

25 designates a throttle valve lever which is pivoted at 26 in the aperture or the slot 5. The lever 25 is provided with a thumb or pressure piece 27. The end on the opposite side of the fulcrum 26 is adapted to pass through the aperture or slot 24 and is provided with a cam face 28 which coacts with a pin 29 passing through the valve stem 21.

In Fig. 1, I have shown in dotted lines the position the parts assume when the valve is closed and in full lines the position the parts assume when the throttle valve is open.

The grasping portion 3 of the handle is recessed as indicated at 30, so that when the parts are in the position indicated in full lines in Fig. 1, the portion of the throttle valve 25 contiguous the thumb or pressure piece 27 closely engages with the wall of said recess which forms an abutment therefor. The head block 2 is in the present instance internally threaded as indicated at 31, whereby the same may be rigidly secured to the tool cylinder in conjunction with which the handle is employed and owing to the provision of the bolt 32 and nut 33 therefor and the slotted lug 34, said head block may be securely and rigidly fastened to the tool casing. The

head block 2 is provided with exhaust ports 35 therethrough through which the exhaust motive fluid from the tool cylinder may pass.

The operation of the throttle valve mechanism may now be readily understood.

The parts normally appear as indicated in dotted lines in Fig. 1. As the operator depresses the thumb piece 27, the throttle valve lever 25 will turn on its fulcrum 26 and owing to the provision of the cam face 28, which coacts with the pin 29, said pin together with the valve stem 21 and valve 18 will be raised, so that the annular groove 19 in the valve 18 will register with the ports 20 in the valve bushing 11 and the motive fluid may pass through the inlet passage 7 into the internal chamber 9 and thence to the working tool. As soon as the operator releases his pressure from the thumb piece 27, the spring 23 interposed between the head 22 and the flange 14 will cause the valve 18 to move forwardly and the groove 19 will not register with the ports 20. The valve and valve lever will now assume their normal position, as indicated in dotted line in Fig. 1, so that no motive fluid may pass through the inlet passage 7.

Owing to the manner in which the throttle valve bushing is retained in the handle there is no liability of the same becoming loose so that motive fluid may leak therearound.

It is further to be noted that owing to the contour given to the grasping portion of the handle there is less liability of the hand of the operator slipping thereover than any device of this character heretofore employed. A handle constructed as herein described may be cheaply and economically manufactured and is not liable to be broken or get out of order, as will be apparent to those skilled in this art.

It will now be apparent from the foregoing that I have produced a novel and useful construction of a pneumatic tool handle which embodies the features of advantage enumerated as desirable in the statement of invention and the above description and while I have in the present instance shown and described the preferred embodiment thereof, it is to be understood that it is susceptible of modification in various particulars without departing from the spirit and scope of the invention or sacrificing any of its advantages.

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

1. In a pneumatic tool handle, the combination of a grasping portion and a chambered head block integral therewith, an inlet passage communicating with the chamber of said head block, a valve angularly inclined thereto and having a slotted stem, a passage through said grasping portion into which said stem extends, yielding means for normally maintaining said valve in closed position, a lever pivoted in the aperture of said grasping portion, one end of which extends through the slot in said stem and is provided with a cam face, the other end of which is adapted to be manually actuated, and means carried by said slotted stem adapted to coact with the cam face of said lever.

2. In a pneumatic tool handle, the combination of a grasping portion, and a chambered head block secured thereto, an inlet passage communicating with said chamber, a valve angularly inclined thereto adapted to control said passage, said valve having a slotted stem, a pin carried by said stem, resilient means for maintaining said valve normally closed, and a manually actuated lever passing through said slot and having a cam face adapted to coact with said pin to open said valve.

3. In a pneumatic tool handle, the combination of a grasping portion, a head block secured thereto, an inlet passage extending into said head block, a passage angularly inclined thereto, a bushing having a flange at its outer end, engaging said passage and extending into the passage in said grasping portion, a valve having a slotted stem within said bushing and provided with a shoulder, said stem extending through said bushing, a spring interposed between said shoulder and the flange of said bushing to maintain said valve normally closed, a pin carried by said stem, and manually actuated means coacting with said pin to open said valve.

4. In a pneumatic tool handle, the combination of a grasping portion and a head block secured thereto, a passage extending through said grasping portion, a differential passage communicating therewith and angularly inclined thereto and extending through a projection from said head block and said grasping portion, an inlet passage traversing said last mentioned passage and angularly inclined thereto, a bushing having differential diameters adapted to be seated in said differential passage and having ports communicating with said inlet passage, the upper end of said bushing being apertured and having an inwardly projecting flange, a valve having a slotted stem within said bushing and provided with a shoulder, a spring interposed between said shoulder and said flange, a pin carried by said stem and a lever pivoted in the passage of said grasping portion, one end of which extends through said slot and is provided with a cam face coacting with said pin, and the opposite end of said lever being provided with a presser piece whereby the same may be manually actuated.

5. In a pneumatic tool handle, the combination of a grasping portion and a chambered head block with an inlet passage communicating with the chamber of the head block, a valve angularly inclined to said inlet passage, there being a passage through the grasping

portion into which the stem of the valve extends, yielding means for normally holding the valve in closed position, and means pivoted in the passage of the grasping portion and having one end formed with a cam face for actuating said valve in opposition to said yielding means.

6. In a pneumatic tool handle, the combination of a grasping portion and a chambered head block with an inlet passage communicating with the chamber of the head block, a valve angularly inclined to said inlet passage, there being a passage through the grasping portion into which the stem of the valve extends, yielding means for normally holding the valve in closed position, means pivoted in the passage of the grasping portion and having one end formed with a cam face for actuating said valve in opposition to said yielding means, and a bushing for said valve having ports in alinement with said inlet passage.

7. In a pneumatic tool handle, the combination of a grasping portion and a chambered head block with an inlet passage communicating with the chamber of the head block, a valve angularly inclined to said inlet passage, there being a passage through the grasping portion into which the stem of the valve extends, yielding means for normally holding the valve in closed position, means pivoted in the passage of the grasping portion and having one end formed with a cam face for actuating said valve in opposition to said yielding means, a bushing for said valve having ports in alinement with said inlet passage, and a closure engaging said bushing to prevent improper movement thereof.

8. In a pneumatic tool handle, a grasping portion formed with a passage, a head block on said grasping portion and having a chamber and a supplemental chamber, an inlet opening communicating with said supplemental chamber, a valve disposed angularly to the inlet opening and means in the said passage of the grasping portion having cam means for actuating the valve.

9. In a pneumatic tool handle, a grasping portion formed with a passage, a head block on said grasping portion and having a chamber and a supplemental chamber, an inlet opening communicating with said supplemental chamber, a valve disposed angularly to the inlet opening and means in the said passage of the grasping portion having cam means for actuating the valve, said head block being threaded and provided with lugs as and for the purpose specified.

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