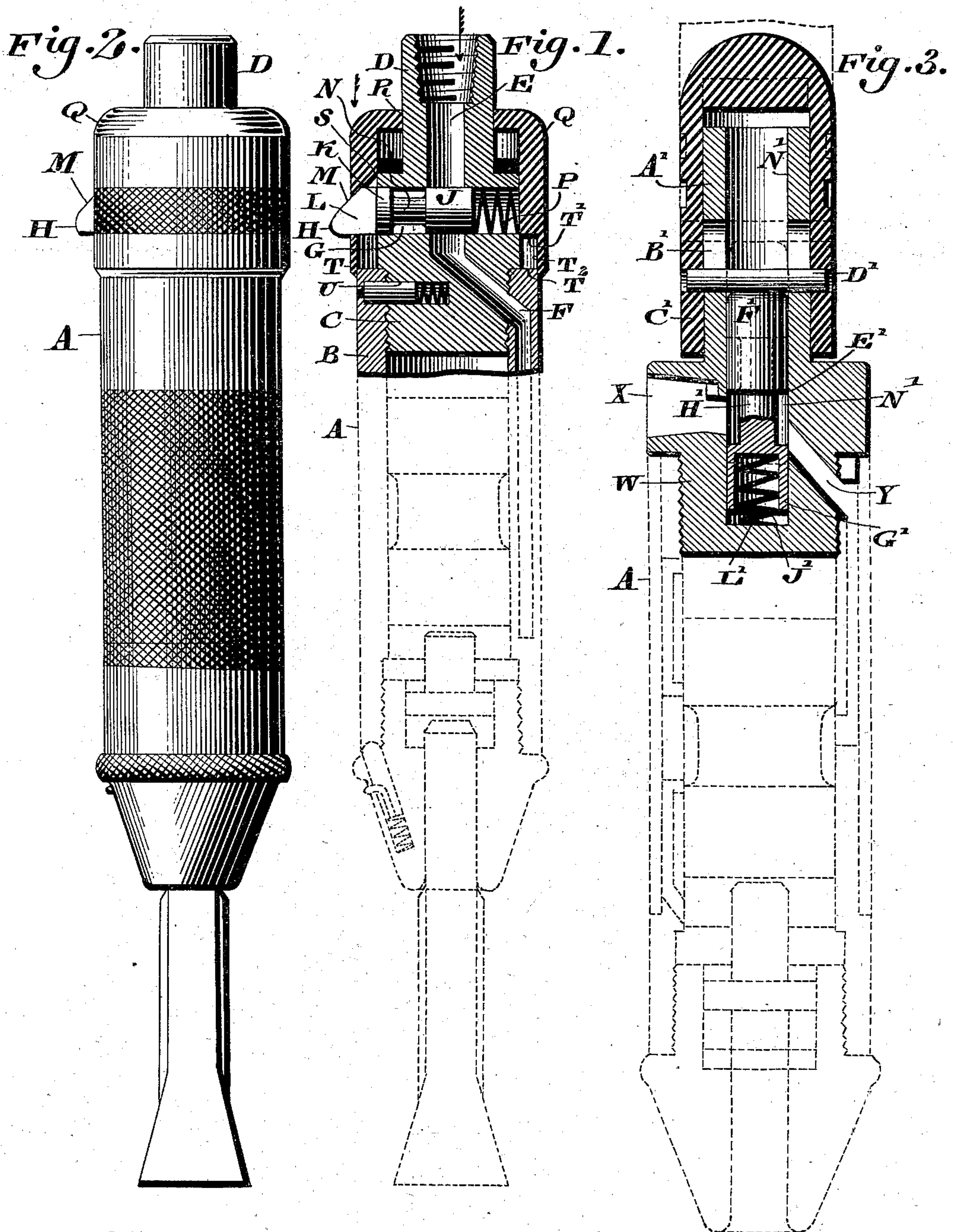


(No Model.)

J. KELLER.
THROTTLE VALVE FOR PNEUMATIC TOOLS.

No. 560,802.

Patented May 26, 1896.



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JULIUS KELLER, OF PHILADELPHIA, PENNSYLVANIA.

THROTTLE-VALVE FOR PNEUMATIC TOOLS.

SPECIFICATION forming part of Letters Patent No. 560,802, dated May 26, 1896.

Application filed August 28, 1895. Serial No. 560,771. (No model.)

To all whom it may concern:

Be it known that I, JULIUS KELLER, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Throttle-Valves for Pneumatic Tools, &c., which improvement is fully set forth in the following specification and accompanying drawings.

My invention consists of a novel construction of a throttle-valve for pneumatic tools, &c., in which the movement of a suitable collar or handle causes the throttle-valve to open or close the port by which the motive fluid is conducted to the proper portions of the cylinder, means being provided for causing said valve to automatically assume the proper position when the pressure is removed from said collar or handle.

It further consists of novel details of construction, all as will be hereinafter set forth.

Figure 1 represents a longitudinal section of a throttle-valve embodying my invention and a portion of a pneumatic tool to which the same is applicable. Fig. 2 represents an exterior elevation of the same. Fig. 3 represents a perspective view of a modified form of throttle.

Similar letters of reference indicate corresponding parts in the several figures.

In the drawings, referring first to Figs. 1 and 2, A designates a pneumatic tool, which may be of any suitable construction. B designates the cylinder therefor, into an end of which is screwed or otherwise connected the plug C, the same having attached thereto the extension D, within which is a longitudinally-extending passage E, into which the motive fluid is introduced, said passage communicating by means of the conduit F with the interior of the tool, it being noted that the supply-pipe for the motive fluid and the extension D to which the same is connected are immovable with respect to the tool proper. G designates a transversely-extending passage in said plug C, within which is located the throttle-valve H, the same consisting of the cylindrical plug portions K and J, which are connected by means of the neck N, the portion L of said valve above the cylindrical plug portion K being preferably flat in the present instance and extending through a slot in the throttle-

collar Q, whereby said throttle-collar is prevented from rotation. M designates an inclined or beveled top face of said valve, which is adapted to be in contact with and actuated by the inclined face S of said collar Q, said valve H being held normally in the position seen in Fig. 1 by means of the spring P, one end of the latter abutting against the bottom of said throttle-valve, while the other end is in contact with an inner portion of said collar Q. R designates a hole in the end of said collar, through which the extension D projects, said collar Q having a bearing upon the latter and a suitable portion of said plug C and having at its extremity a counterbore I of increased diameter, thereby providing a shoulder T', which is adapted to abut against the end T² of the cylinder B thereof, which thus forms a stop, as will be readily understood from Fig. 1. U designates a stud or pin which is movable in a suitable cavity in the plug C, said stud resting upon a suitable spring, whereby it is forced into a seat in the cylinder B when the parts are in the position seen in Fig. 1, the plug and cylinder being thus locked with respect to each other, a suitable hole being located in the cylinder B over said stud for pushing in the latter when it is desired to remove the plug C for any purpose.

Referring now to Fig. 3, A designates a pneumatic tool, as before, the same having screwed or otherwise secured thereto the plug W, which has therein the inwardly-extending passage X, from which the motive fluid is conducted by means of the passage Y to the interior of the tool. N' designates a passage in the said plug W, the extent of said passage being understood from Fig. 3, the same extending through the extension or shell A', which is provided with the slot B', in which works a pin D', which is secured to the handle C', which has in the present instance the form of a movable cap and has its bearing upon said extension A'. E' designates a throttle-valve, which is movable longitudinally in said passage N', said valve consisting of the plug portions F' and G', which are connected by the neck H', said portion G' being cored or otherwise hollowed out, so as to provide a seat or cavity J' for the spring L', which latter tends to move the valve normally toward the pin D', and thereby to move the cap C' out-

wardly and so cause the plug portion G' to close the passages X and Y to each other, as is evident.

The operation is as follows: Referring first to Fig. 1, it will be seen that when the parts are in the position shown therein the passage E is throttled. When it is desired to start the tool, the operator presses the throttle-collar Q toward the tool in the direction of the arrow, and by the contact of the inclined faces M and S the valve H is moved inwardly, the neck N being then opposite the passage E, whereby the motive fluid is permitted to freely pass through the passage F to the interior of the tool. When the operator removes the pressure from the collar Q, the tension of the spring P will cause the valve H to move outwardly, and the contact of the said faces M and S will move the collar Q outwardly, the parts now assuming the position seen in Fig. 1, the valve being prevented from moving out of the contact of the inclined faces, as will be evident, while the contact of the portions T' and T² will properly limit the inward movement of the collar Q, the parts being assembled in position by first inserting the valve H in place and then pressing the same inwardly, so that the collar Q can be pushed over the same, the spring P afterward causing said valve to assume the position seen in Fig. 1, the flattened portion L of which, extending through a suitable slot in the collar Q, prevents the latter and the valve from rotating.

In the construction shown in Fig. 3 the valve E' is shown having its neck H' opposite the passages X and Y, communication thus being established between the same and the tool being now ready to operate, it being understood that the handle C' has been pressed in the direction of the tool, the contact of the pin D' with the portion F' of the throttle-valve causing the latter to assume the position seen. When the pressure is removed from said handle C', the tension of the spring L' will cause the valve E' to move outwardly, the plug G' then throttling the passages X and Y, the portion F' being caused to contact with the pin D', and thereby causing the cap C' to move into the position seen in dotted lines, the movement of said cap being limited by the contact of the pin D' with the walls of the slot B', as is evident.

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

1. A pneumatic tool having a throttle-valve therein, a throttle-collar disconnected from

said valve and adapted to open the latter, in combination with means for closing said valve and moving the collar, substantially as described.

2. In a pneumatic tool, a plug on the cylinder, a passage therein, an extension on said plug, a throttle-valve for said passage, a collar mounted on said extension, and disconnected from said valve, a spring intermediate said valve and plug for closing said valve and returning the collar, substantially as described.

3. In a pneumatic tool, a plug, a passage therein for the admission of the motive fluid, a throttle-valve located in said passage, a spring for actuating said valve, a throttle-collar, a beveled portion common to said valve and collar, and means for limiting the movement of the latter, substantially as described.

4. In a pneumatic tool, a plug, a hollow extension thereon, an element movable on said extension, means for limiting the movement of said element, a throttle-valve, and a spring or other device for actuating the latter, substantially as described.

5. In a pneumatic tool, a throttle-collar and a throttle-valve therefor, disconnected from said collar, the latter and said valve having beveled edges in juxtaposition, in combination with means for holding said valve normally in the desired position, substantially as described.

6. In a pneumatic tool, a throttle-valve, a throttle-collar disconnected therefrom and adapted to actuate the same, in combination with a spring bearing on a suitable portion of said valve, substantially as described.

7. In a pneumatic tool, a throttle-valve, a throttle-collar therefor, each having a beveled edge in juxtaposition, means for limiting the movement of said throttle-collar, in combination with means for holding said collar in position, substantially as described.

8. In a pneumatic tool, a throttle-collar and a valve, each having a beveled edge in juxtaposition with each other, and means for actuating said valve, substantially as described.

9. A pneumatic tool having a throttle-valve therein, and a throttle-collar disconnected from said valve, and adapted to actuate the latter in one direction, in combination with means for moving said valve in the opposite direction, substantially as described.

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Witnesses:

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