

(No Model.)

J. G. CARLINET.
PNEUMATIC TOOL.

No. 526,342.

Patented Sept. 18, 1894.

Fig. 1.

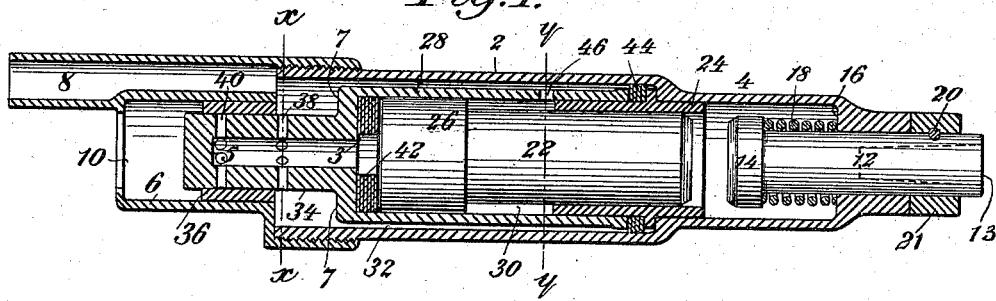


Fig. 2.

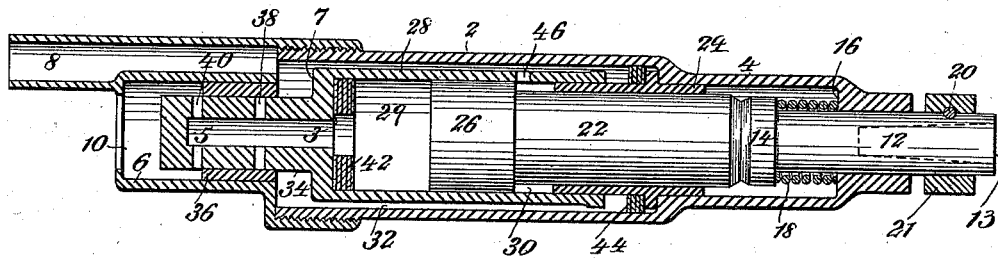


Fig. 3.

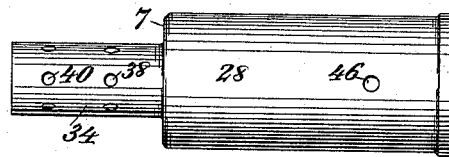


Fig. 4.

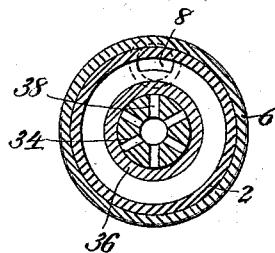
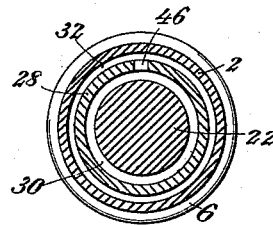


Fig. 5.



Witnesses
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JOHN G. CARLINET, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF SEVENTENTHS TO JAMES WOLSTENCROFT, WILLIAM O'NEILL, AND WILLIAM H. SOLEY, OF SAME PLACE.

PNEUMATIC TOOL.

SPECIFICATION forming part of Letters Patent No. 526,342, dated September 18, 1894.

Application filed May 20, 1893. Renewed July 9, 1894. Serial No. 517,019. (No model.)

To all whom it may concern:

Be it known that I, JOHN G. CARLINET, of Frankford, Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented certain new and useful Improvements in Pneumatic Tools, of which the following is a specification.

This invention relates to devices wherein atmospheric air or other fluid pressure is employed to operate a reciprocating tool employed for stone dressing, calking, riveting, dental use, rock drilling, &c., and it consists in the construction and novel arrangement of parts as hereinafter set forth.

I will describe a pneumatic tool embodying my invention and then point out the novel features in the appended claims.

In the accompanying drawings: Figure 1, is a longitudinal section of a tool embodying the invention showing the parts in one extreme position. Fig. 2, is a longitudinal section showing the parts in the other extreme position. Fig. 3, is a side elevation of the distributing valve employed. Fig. 4, is a cross section of the tool on the line *x, x*, of Fig. 1, and Fig. 5, is a cross section on the line *y, y*, of Fig. 1.

The pressure case 2, incloses the distributing valve 28, and striker 26, while the case 4, incloses the tool holding spindle 12, and is free from pressure. The case 2, is supplied with constant working pressure from a flexible pipe connected to the induction tube 8. The distributing valve 28, comprises a cylinder for the head 26, of the striker 22, to operate in, and said valve 28, is reduced in diameter at 34, at its part which performs the valvular function. The valve 28, moves with minimum friction and no fitting thereof to the case 2, is required in the workmanship of the tool, inasmuch as the said valve has its bearings on the fixed guide sleeve 24, interior thereto, fitting the same bore in which the striker operates, and in the fixed bushing 36, surrounding the reduced part of said valve comprising the valve seat.

The valvular extension 34, has an induction port or ports 38, which at the position in Fig. 1, admit air from case 2 to chamber 29, and an exhaust port or ports 40, which at the

position in Fig. 2, exhaust air from chambers 29, to atmosphere through opening 10.

The striker 22, comprising a plunger has different diameters at its part 22, which has a sliding fit within the fixed sleeve 24, and its part 26, which fits the valve 28, and the supplemental area is exposed to constant working pressure at 30, through port 46, from the case 2. Pressure at 30, serves to return the striker, and pressure at the shoulder 7 of the valve serves to return the latter—the one moving toward the other when pressure is exhausted from chamber 29 through port 40, as in Fig. 2.

The inward stroke of the valve 28, is limited by its abutment in a cushion 44, and the retiring stroke of the striker 22, is limited by its abutment on the valve at cushion 42. The abutment of the striker in its retiring movement is thereby elastic; the valve striking its cushion 44, first. Moreover, the elastic rebound of the valve caused by the retracting abutment of the striker assists the play of the valve by starting it on its outward movement while air is entering ports 38 to the same purpose.

The tool spindle 12, adapted for the insertion of a tool at the socket 13, slides in the extremity 16, of the case, is returned by a spring 18 in the manner usual to pneumatic tools, and its return movement is limited by a stop collar 21, secured by pin 20.

In the operation of the device the reciprocations of the piston or plunger and the annular valve, in opposite directions, are practically simultaneous. Air admitted through the port 8, under constant pressure, enters through the port 38, and acting on the enlarged surface area of the striker drives the same with force against the tool holder as shown in Fig. 2. The pressure then acting on the valve 28, reciprocates it until the exhaust port 40, extends beyond the end of the bushing or valve seat 36, where the prevailing body of air is exhausted. The pressure in the chamber 30, acting on the shoulder formed by the enlarged portion of the striker returns the same to its inner position as shown in Fig. 1. The air pressure then acting on the shoulder 7, of the valve moves the

valve until the port 38, is again open for the induction of pressure, and the same movements are repeated.

Having described my invention, what I claim is—

1. In a pneumatic tool, the combination with a suitable casing, of a reciprocating striker, a sleeve fixed within the casing and forming a bearing for the striker, a reciprocating valve surrounding the piston or plunger and having a reduced portion provided with induction ports, substantially as described.

2. In a pneumatic tool, the combination of a suitable casing supplied with constant working pressure, a striker having differential diameters, a distributing valve also having differential diameters, comprising a cylinder for the striker mounted in bearings at the extremities of the casing; the supplemental areas of said striker and said distributing valve being continuously exposed to the working pressure within said casing, and means

for admitting and exhausting pressure between the striker and the valve.

3. In a pneumatic tool, the combination of a suitable casing having a constant pressure chamber and a chamber containing a tool holder, a reciprocating striker having differential diameters, a sleeve fixed in the casing and forming a division between the said constant pressure chamber and the tool holder chamber of the casing and a reciprocating valve forming a cylinder for the striker at its greater diameter, and fitting around said sleeve.

4. In a pneumatic tool, the combination of a casing, a striker, and an annular reciprocating valve having the reduced tubular extension provided with ports, and a bushing serving as a closure for said ports, substantially as described.

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Witnesses:

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