This invention relates to pneumatic tools, but more particularly to a blowing device for pneumatic percussive tools employed for actuating hollow working implements through which a cleansing medium may be introduced into the drill hole.

One object of the invention is to effect a thorough cleansing of the hole being drilled, both during the operating and idle periods of the tool.

Another object is to simplify the construction of tools equipped with blowing devices of the character to which the present invention pertains.

Other objects will be in part obvious and in part pointed out hereinafter.

In the accompanying drawing forming a part of this specification and in which similar reference characters refer to similar parts,

Figure 1 is a sectional elevation of a pneumatic tool equipped with a blowing device constructed in accordance with the practice of the invention, and

Figure 2 is a transverse view taken through Figure 1 on the line 2—2 looking in the direction indicated by the arrows.

Referring more particularly to the drawing, A designates generally a pneumatic tool comprising a cylinder B having a piston chamber C therein to accommodate a reciprocating hammer piston D. The piston chamber C is provided with a free exhaust port E controlled by a head F of the hammer piston D.

The piston D is provided with a forwardly projecting stem G shown, for convenience of illustration, as being guided in a bore H in the cylinder B and terminating at its front end in an enlarged cavity J.

Opening from the front end of the cylinder B and communicating at its rear end with the cavity J is a bore K to accommodate the shank of a working implement L which projects with its rear end into the cavity J to receive the blows of the hammer piston D.

The rear end of the cylinder B is provided in this instance with exterior threads O for cooperation with threads P of a hood Q.

Disposed within a bore R in the hood Q and seated upon the rear end of the cylinder B is a plate S which acts as a closure for the rear end of the piston chamber and the rear end of said plate serves as a seat T for a valve U of the oscillatory plate type.

The opposite ends of wings of the valve U control the admission of pressure fluid to the piston chamber. Such pressure fluid is conveyed from a valve chamber V in the hood Q, and wherein the valve U is arranged, into the rear end of the piston chamber by a rear inlet passage W in the plate S. The plate S is further provided with a front inlet passage X which extends through the wall of the cylinder B and opens into the front end of the piston chamber C.

The tool A illustrated as being of the hand held type is accordingly provided with a handle Y whereby it may be supported, conveyed and held to the work. The handle Y is held in suitably spaced relation with respect to the rear end of the hood Q by standards Z, only one of which is shown and which, as is customary, may form an integral part of the hood Q.

The admission of pressure fluid employed for operating the tool A is controlled by a throttle valve b in the hood Q. The throttle valve b is preferably of the rotary type having a handle or lever c for its manipulation. The throttle valve has a central chamber d which may be in constant communication with a source of pressure fluid. In the wall of the throttle valve b is a port e which is adapted to register with a supply passage f in the hood Q and opening into the valve chamber V.

In accordance with the practice of the invention, means are provided for selectively introducing an uninterrupted supply of pressure fluid through the drill steel into the drill hole to effect the removal of cuttings therefrom and thus assure a clean working surface for the cutting of the drill steel L and to effect such blowing either during the operative or inoperative periods of the tool. To this end the cylinder B is provided with a blower passage q leading from the rear end of the cylinder and opening with its front end into the cavity J. In the plate S is a pas
sage $h$ which communicates at one end with a passage $g$ and at its other end with a passage $j$ in a bushing $k$ which is seated with one end in the plate $S$ and with its other end in the hood $Q$. The bushing $k$ is arranged coaxially of the valve chamber $V$ and extends through the valve $U$ to act as a guide for said valve.

In the rear end of the hood $Q$ and arranged coaxially with the bushing $k$ is a bore which serves as a blower valve chamber $o$ and wherein the rear end of the passage $j$ of the bushing $k$ communicates.

Arranged rotatably within the valve chamber $o$ is a blower valve $p$ having a lever $q$ whereby said valve may be rotated from one position to another. The valve $p$ is preferably of uniform diameter throughout and is retained in the chamber $o$ by a screw $r$, or a similar device, seated in the hood and having a reduced end $s$ extending into a peripheral groove $t$ in the valve $p$. At the terminals of the groove $t$ are depressions $u$ to interlock with the reduced end $s$ of the screw $r$ to assure the retention of the valve $p$ in its limiting positions. In order to thus retain the valve $p$ at all times, and more particularly during the absence of pressure fluid within the chamber $o$, a spring $v$ is disposed within a recess $w$ in the valve $p$ to act with one end thereof and with its other end against the bushing $k$ for holding the valve $p$ immovable in its limiting positions and for holding the bushing $k$ firmly seated in the plate $S$.

In the wall of the valve $p$ and in communication with the recess $w$ is a port $x$ which is adapted to register with a passage $y$ in the hood $Q$ and leading from the valve chamber $o$ to a chamber or bore $z$ wherein the throttle valve $b$ is arranged. The throttle valve is preferably provided with an annular groove $2$ in its periphery to assure constant communication between the passage $x$ and a port $3$ in the wall of the throttle valve $b$.

The operation of the device is as follows: Whenever during the operation of the tool cuttings accumulate in the drill hole to such an extent as to interfere with the efficient cutting of the bit of the working implement the blower valve $p$ may be rotated to its closed position wherein it will be securely held against the effects of vibration, incident to drilling, by the action of the spring $v$ which will then retain the blower valve $p$ in position to assure engagement between the notch $w$ and the reduced end $s$ of the screw $r$.

In practice the present invention has been found to be highly efficient. Owing to the construction described the blower valve $p$ may be conveniently located beneath the handle $Y$ so that it may be readily manipulated without requiring the operator to release his grip on the handle.

A pneumatic tool comprising a casing having a piston chamber, a hammer piston therein, a hollow drill steel guided by the casing, an automatic valve to distribute pressure fluid to the piston chamber, a blower passage in the casing and being in constant communication with the interior of the drill steel, a bushing in the casing communicating with the passage and extending through the automatic valve to act as a guide therefor, a blower valve to connect the bushing with a source to selectively supply pressure fluid through the passage to the drill steel during the operating and idle periods of the piston and being arranged coaxially with the bushing, and a spring interposed between the bushing and the blower valve to hold the blower valve immovable in its limiting positions and to hold the bushing firmly seated in the casing.

In testimony whereof I have signed this specification.

EARL B. LEAR.