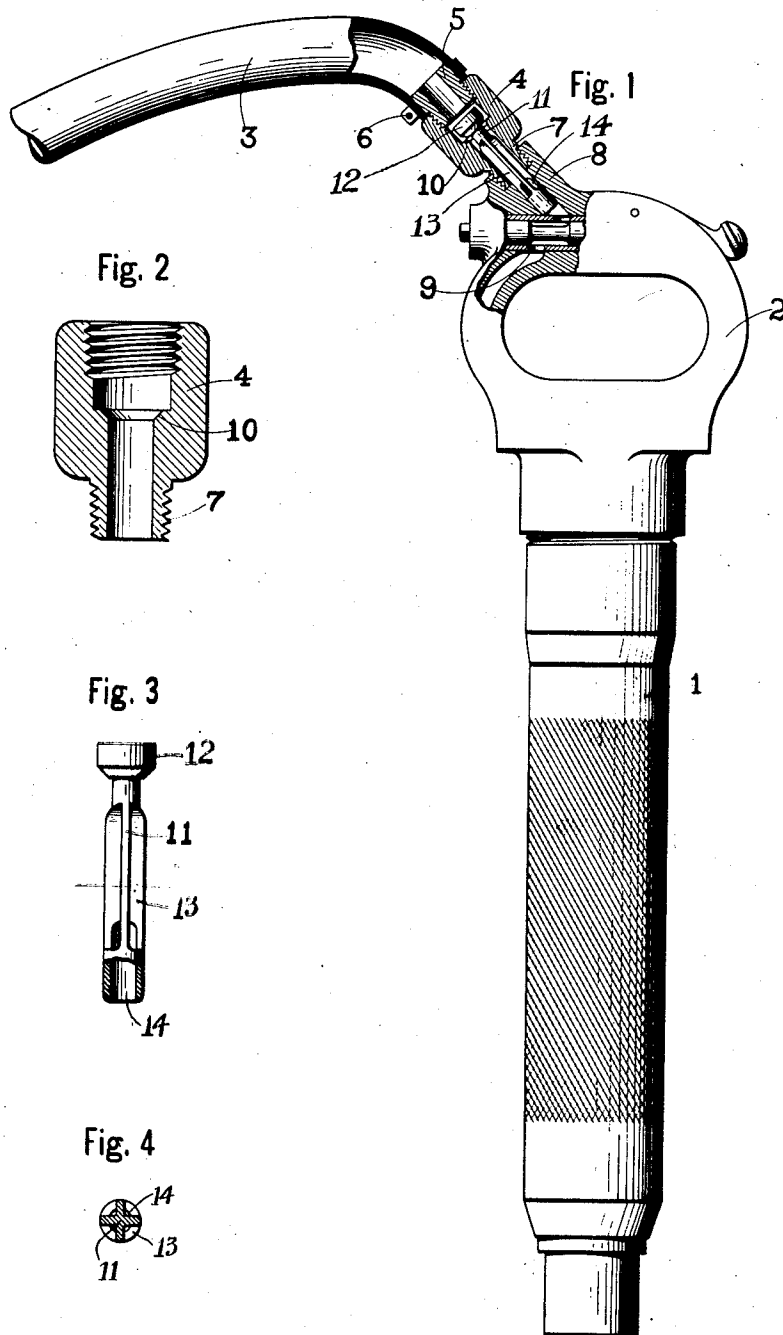


M. MAXIMILIAN.
CHECK VALVE.
APPLICATION FILED DEC. 16, 1911.

1,063,131.

Patented May 27, 1913.



Witnesses.
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UNITED STATES PATENT OFFICE.

MAX MAXIMILIAN, OF BUFFALO, NEW YORK, ASSIGNOR TO JOHN BUTLER PORTER,
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CHECK-VALVE.

1,063,131.

Specification of Letters Patent.

Patented May 27, 1913.

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To all whom it may concern:

Be it known that I, MAX MAXIMILIAN, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Check-Valves.

This invention relates to improvements in check valves and primarily to valves of this character which are employed in connection with pneumatic hammers and other air operated tools, machines and apparatus.

This application is a division of Letters Patent, No. 952,707, granted to me March 22, 1910.

In hammers of this character as heretofore constructed it has been necessary to first shut the valve in the main air supply tube or hose before the hammer could be detached from this air supply tube, otherwise the air would be wasted and the tube would be violently whipped by the action of the escaping air and endanger the workman.

The principal object of this invention is to provide means for automatically cutting off the escape of air from the supply tube the instant that the same is disconnected from the pneumatic hammer, thereby avoiding the necessity of turning off the air in the main air supply tube and also avoiding the possibility of being injured.

The invention also relates to certain details of construction of the improved check valve.

In the accompanying drawings,—Figure 1 represents a fragmentary longitudinal section through a pneumatic hammer and an air supply tube showing the improved check valve in operating position. Figs. 2, 3 and 4 are details of the improved check valve.

In referring to the drawings in detail, like numerals designate like parts.

The pneumatic hammer shown briefly consists of a cylinder, 1, a head, 2, and the essential operating elements. The compressed air or other medium by which the hammer is operated is conducted to the tool by a supply tube 3.

The automatic check valve whereby the escape of air from the main supply tube, 3, is cut off upon detaching this tube from the handle of the hammer is preferably combined with and forms part of the means whereby this tube is detachably connected

with the hammer, the means for this purpose shown in the drawings being preferred and constructed as follows: 4 represents the tubular casing or housing of the check valve which is provided at its rear end with a nipple, 5, inserted in the front end of the main air supply tube and permanently secured thereto by means of a clamp, 6, or otherwise. The front end of the check valve casing is provided with an externally screw threaded nozzle, 7, which is adapted to be screwed into the internally-threaded nipple, 8 arranged on the upper part of the handle and forming the inlet of the air delivery conduit, 9. Within the check valve casing the same is provided around the passage therein with a rearwardly-facing valve seat, 10, which latter is adapted to be engaged by a check valve casing and having a valve stem, 12, which extends forwardly through the delivery nozzle beyond the front end of the same. Upon screwing the nozzle, 7, into the nipple, 8, the front end 14 of the valve stem, 12, engages with the periphery of the tubular valve seat of the throttle valve or other stationary abutment, whereby the check valve is moved rearwardly away from its seat and air is permitted to pass from the supply tube or hose into the delivery conduit of the pneumatic hammer. The intermediate portion of the valve stem is provided with four equidistant longitudinal grooves, 13, which provide a series of air passages, and the rear or lower end of the stem is of cylindrical form and has a central longitudinal recess, 14, which is sufficiently deep and wide to cut through the lower portions of the walls of the grooves, 13, as shown in Fig. 3, thus providing a passageway around and through the valve and its stem for air. Upon unscrewing the nozzle of the check valve casing from the nipple of the delivery conduit, 9, the pressure of the air in the supply tube against the back of the check valve forces the latter against its seat in the casing, thereby automatically cutting off the escape of air from the tube. By this means it is unnecessary to first turn off the air in the main supply tube near the air compressor or the main supply tube as has been customary heretofore, thereby not only saving time but also preventing injury to the workman as frequently occurs when

the air supply tube is detached from the pneumatic hammer without first cutting off the air supply to the tube.

The check valve together with its stem which is preferably formed integral with the valve is so constructed and arranged that it can be easily slipped out of the casing after the nipple 5 attached to the air tube has been unscrewed.

10 In this improvement, no springs are employed for moving the valve in one direction, the device consisting simply of two pieces, a casing and a valve, one removably fitted within the other, the valve being opened automatically by the pressure of an intersecting inner portion of the pneumatic tool as the valve casing is screwed therein and closed automatically by the air pressure as the casing is unscrewed from the tool.

20 It should be understood that this improved check valve may be employed in connection with numerous air operated tools, machines and apparatus beside pneumatic hammers for the purposes set forth.

25 The principal advantages of this improvement aside from its great simplicity of construction and the non-employment of springs, are that the valve automatically closes to prevent the escape of air when the valve casing is unscrewed from the nipple of the pneumatic tool and that the valve consisting as it does of two parts only, an outer casing and an inner valve part, can be completely disassembled when the valve casing is unscrewed from the nipple of the air tube by simply inverting the casing and permitting the valve part to drop therefrom by gravity.

I claim:—

40 In a device of the class described, a pneumatic tool having an internally screw-threaded nipple, an air supply tube having an externally screw threaded nipple, and a check valve consisting of two parts only and being constructed without a spring; one of said parts being tubular and constituting a valve casing and having a reduced exter-

nally screw threaded portion at its inner end on which the internally screw-threaded nipple of the pneumatic tool is adapted to screw 50 and an enlarged outer portion which is internally screw threaded and in which the externally screw-threaded nipple of the air supply tube is adapted to screw, the opening through said valve casing having its outer 55 portion considerably larger in diameter than the remainder and having an intermediate annular shoulder forming a valve seat located at the merging point of the large outer and small inner portions of said opening and a valve member slidably mounted 60 within the valve casing and having an enlarged outer portion or head arranged within the enlarged outer portion of the casing and an inner stem of reduced diameter 65 located within the reduced inner portion of the said opening, said valve being adapted to be automatically opened when the casing is screwed in to the nipple of the pneumatic tool by contact of an intersecting portion 70 of the tool with the inner end of the valve stem, to be closed automatically by air pressure when the casing is unscrewed from the nipple of the pneumatic tool and to be completely disassembled by dropping the valve 75 from the casing when the casing is unscrewed from the air supply tube, the annular inner end surface of the enlarged outer portion or head constituting a valve part adapted to co-act with the valve seat of the 80 casing and the outer end of the said enlarged outer portion or head being adapted to strike against the inner end of the externally screw-threaded nipple of the air supply tube when said nipple is screwed in 85 place in the valve casing to limit the outer range of movement of the valve member within the casing.

Buffalo, N. Y., Apr. 21, 1911.

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Witnesses:

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