L. E. SUMMERS.

POWER HAMMER.

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1,161,907. Patented Nov. 30, 1915.

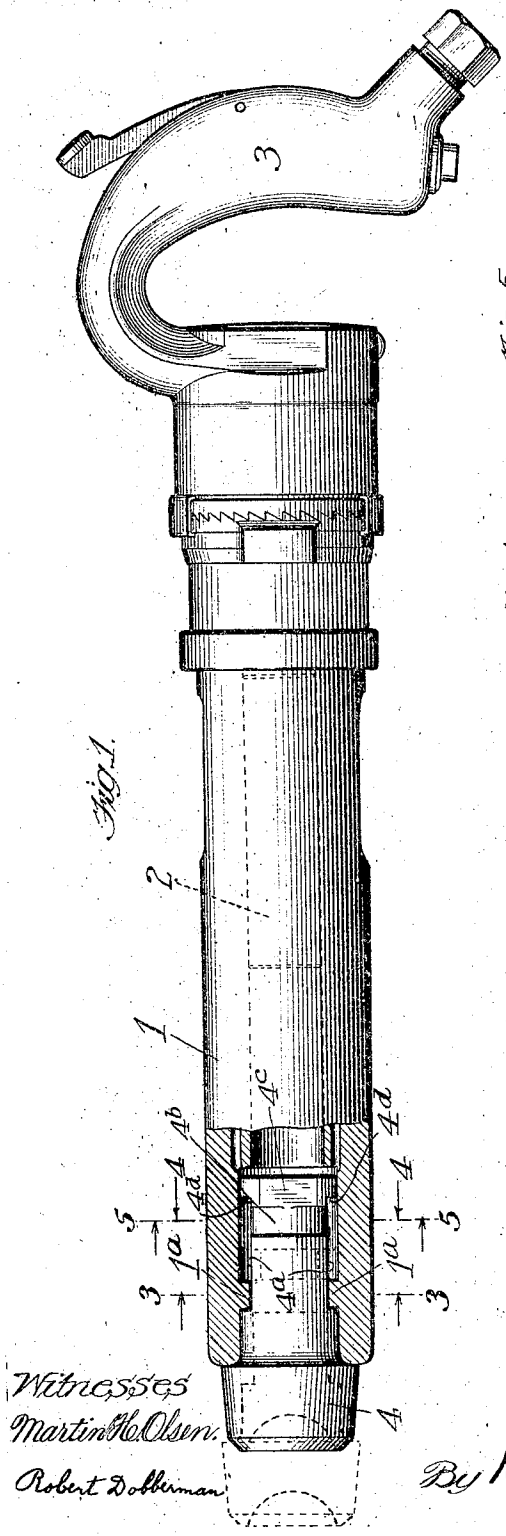


Fig. 1.

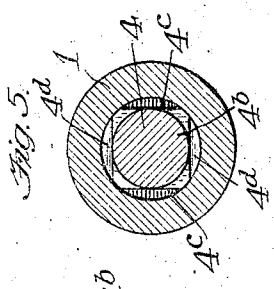


Fig. 5.

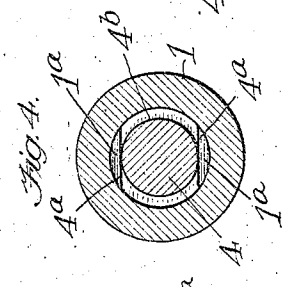


Fig. 4.

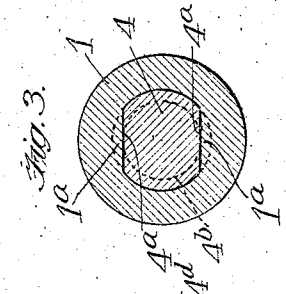


Fig. 3.

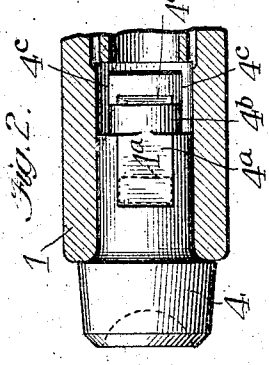


Fig. 2.

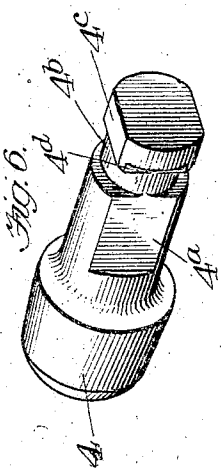


Fig. 6.

Witnesses
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UNITED STATES PATENT OFFICE.

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POWER-HAMMER.

1,161,907. Specification of Letters Patent. Patented Nov. 30, 1915.

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To all whom it may concern:

Be it known that I, LEWIS E. SUMMERS, a citizen of the United States, residing at Detroit, Wayne county, Michigan, have invented certain new and useful Improvements in Power-Hammers, of which the following is a specification.

My invention pertains to so-called power hammers such as, but not necessarily, pneumatic hammers, and the object thereof is to provide such hammer with "safety first" features as respects the working tool. As is well known, the laws of many States now compel the use of safety devices or means for preventing the "shooting" out of the working tool from the hammer which would be liable to cause injury to the workmen or others in the vicinity.

My invention comprises a working tool of special formation adapted to coöperate with a power hammer of usual construction with the exception of a slight change to accommodate it to said form of tool. The tool is so constructed that in use it is locked to the hammer, that is prevented from being shot out from the hammer during the operation and yet at the same time the construction and arrangement are such that it may be readily withdrawn from the hammer when desired.

In the drawing Figure 1 is an elevation of a pneumatic hammer showing a portion thereof broken away to illustrate my invention; Fig. 2 a section at right angles to that illustrated by the broken away portion of Fig. 1; Fig. 3 a section on the line 3—3 of Fig. 1; Figs. 4 and 5 sections on the same line but looking in the direction of the arrows 4—4 and 5—5 respectively; and Fig. 6 a perspective of the working tool.

My invention is applicable to power hammers of different types and operated by any desired power and also applicable to working tools of different types, such as a rivet set of a riveting hammer, a chisel of a chipping hammer, a drill of a rock drill, and so on. While for the purpose of a clear and definite description of my invention, I have shown the same embodied in a pneumatic riveting hammer, yet it will be understood that my invention is not to be limited to that type or construction of hammer or to the employment of compressed air as the motive fluid, or the use of a rivet set.

In the present instance I have shown my invention as applied to the well-known Boyer construction and type of riveting hammer, which comprises essentially a cylinder or barrel 1, a piston 2 reciprocating therein, and a grasping handle 3 secured to the rearward end of the cylinder. The forward end of the cylinder receives a rivet set 4 which is of the peculiar formation as to the shank portion received within the bore of the cylinder. As shown the shank has, as to its intermediate portion, opposite flattened sides 4^a, a circular groove 4^b and an inner end having opposite flattened portions or sides 4^c. The flattened sides 4^a are parallel to each other and likewise the two flattened sides 4^c are parallel to each other. However, the two sets of flattened sides 4^a and 4^c are in planes at an angle to each other, in the present instance at right angles.

The front end of the cylinder bore is of the usual construction with the exception that it is provided on opposite sides with the crescent-shaped lugs 1^a, which are adapted to coöperate with the shank of the working tool. In the present instance these lugs correspond to such portions that would have to be applied to the inner end of the shank to make the same circular. Consequently the provision of the flattened sides 4^c of the shank permit the shank to be inserted in the bore of the cylinder, notwithstanding the presence of the lugs 1^a. The shank is inserted until the lugs 1^a are in register with the groove 4^b at which time such lugs will strike the left-hand shoulder of the groove. The shank is thereupon turned a quarter turn so as to bring the flattened sides 4^a into register with the lugs 1^a whereupon the shank can be inserted the full distance.

As is well known the working tools of power hammers generally require a limited lost motion, that is, a relative movement between the tool itself and the end of the cylinder and in the present instance this is provided by the length of the flattened sides 4^a plus the width of the groove 4^b. It will be noted that the rivet set can move outwardly until the lugs 1^a strike the right-hand shoulder of the groove 4^b whereupon it will be stopped. It is therefore impossible to withdraw the tool without giving it a quarter turn. In an actual operation the lost motion is not as great as that stated so that only the flattened sides 4^a are presented to the lugs 1^a and consequently during opera-

tion it is impossible for the working tool to be turned at all, owing to the interference presented by the lugs 1^a. Even during the operation of the hammer when the tool is not presented to the work, the tool cannot be shot out from the hammer because the same is locked within the hammer barrel and cannot be released therefrom without the quarter rotation thereof.

By preference and as herein shown the cylindrical or curved portions of the end of the shank are provided with recesses 4^d which are in communication with the circumferential groove and in line with the flat sides 4^a. This object of these recesses is to engage the lugs 1^a whenever the hammer is carried hanging downwardly, at which time the tool will occupy its full outward position and be prevented from turning with relation to the hammer cylinder, with the result that when the hammer is carried in this position and given a twist, there is no possibility of the tool dropping out.

While I have shown segmental lugs 1^a integral with the inner wall of the hammer cylinder and prefer to so make them in new hammers, yet it will be understood that they may be made separate therefrom and attached thereto or otherwise formed.

By the use of my invention I provide a very simple, compact and self-contained arrangement for working tools of power hammers.

I claim:

1. A working tool for power hammers characterized by a shank having its intermediate portion provided with opposite flat sides and its end portion likewise provided with opposite flat sides in a plane at an angle to the first-named flat sides, and also having a circumferential groove between said two sets of flat sides, in combination with the cylinder of a power hammer having a bore provided in its tool-receiving-end with lugs adapted to coöperate with said flattened sides and groove of the shank.

2. A working tool for power hammers characterized by a shank provided with two opposite flat sides 4^a, a circumferential groove 4^b, two opposite flat sides 4^c which are in planes at right angles to the planes of the sides 4^a, and two opposite recesses 4^d in line with said sides 4^c, in combination with the cylinder of a power hammer having a bore provided near one end with opposite lugs with which said flat sides and groove and recesses coöperate.

3. In combination with the cylinder of a power hammer having a bore in its tool-receiving end provided with a lug, a working tool equipped with a shank having its intermediate portion formed complementary to said bore and lug and permitting longitudinal movement of the tool, the end portion of the shank being likewise formed complementary to said bore and lug and offset angularly with respect to said first mentioned portion and the two complementary portions being separated by a circumferential groove permitting rotation of the shank within the end of the tool when the lug is in registration with the groove.

4. In combination with the cylinder of a power hammer having a bore in its tool-receiving end provided with a lug, a working tool equipped with a shank having its intermediate portion formed complementary to said bore and lug and permitting longitudinal movement of the tool, the end portion of the shank being likewise formed with a surface complementary to said bore and lug extending to the end of the shank and offset at substantially right angles with respect to said first mentioned portion, said end portion being also formed with a second surface complementary to said bore and lug and in line with the complementary surface of said intermediate portion and not extending to the end of the shank, and the intermediate and end portions of the shank being separated by a circumferential groove permitting rotation of the shank within the end of the tool when the lug is in registration with the groove.

LEWIS E. SUMMERS.

Witnesses:
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