

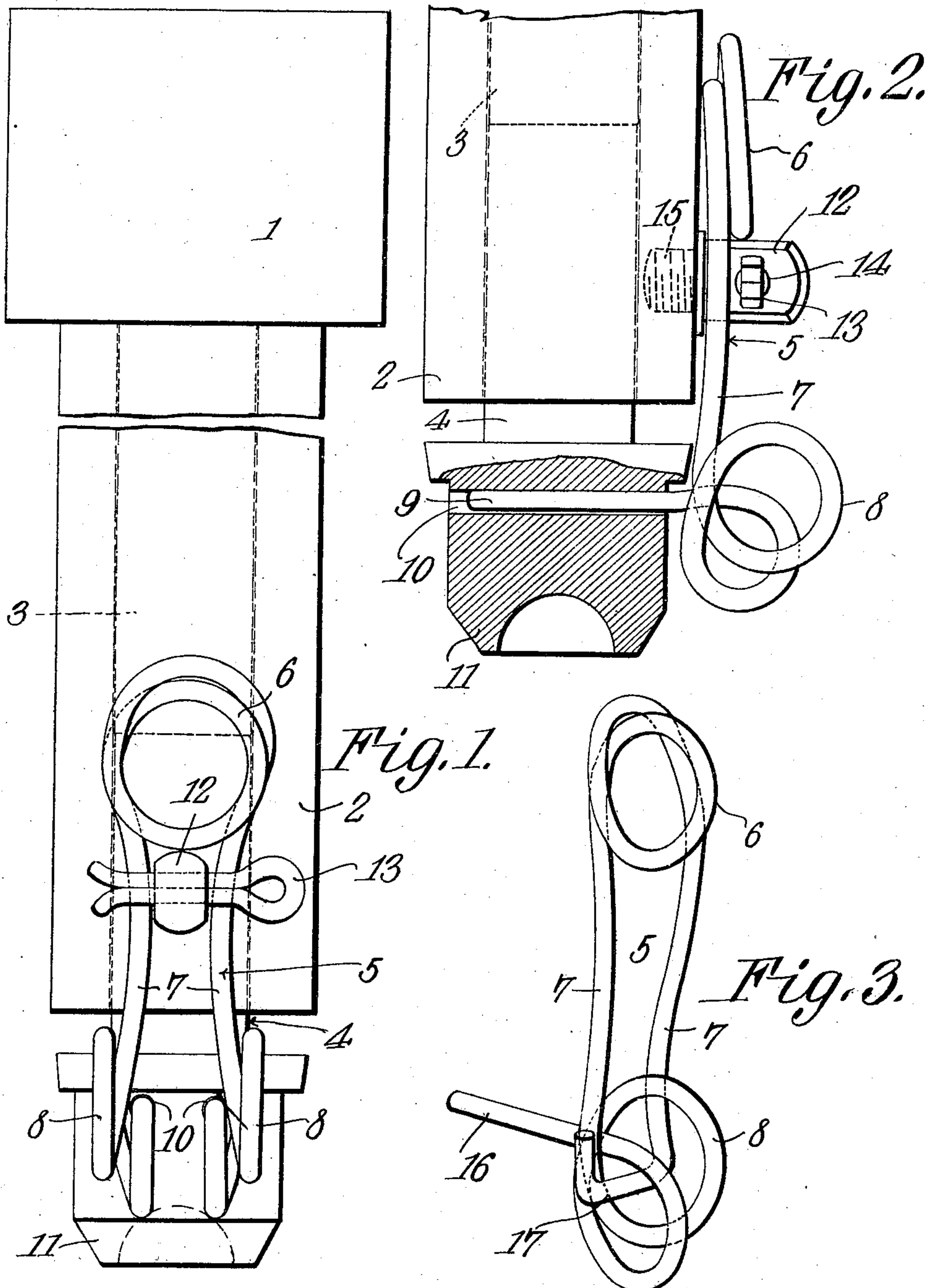
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PATENTED JAN. 21, 1908.

W. F. WALKER.

SAFETY SPRING FOR STEAM AND COMPRESSED AIR HAMMERS.

APPLICATION FILED DEC. 18, 1906.



WITNESSES:

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UNITED STATES PATENT OFFICE.

WILLIS F. WALKER, OF YORK, PENNSYLVANIA.

SAFETY-SPRING FOR STEAM AND COMPRESSED-AIR HAMMERS.

No. 877,387.

Specification of Letters Patent.

Patented Jan. 21, 1908.

Application filed December 18, 1906. Serial No. 348,460.

To all whom it may concern:

Be it known that I, WILLIS F. WALKER, a citizen of the United States, residing at York, in the county of York and State of Pennsylvania, have invented a new and useful Safety-Spring for Steam and Compressed-Air Hammers, of which the following is a specification.

In bridge and other steel construction work, pneumatic and steam operated hand tools are largely employed for riveting the metal parts together, for chipping, and other purposes. One of the main objections attending the use of these tools is the frequent dropping out of the dies and chisels from the tool, as by accidentally opening the valves controlling the motive fluid, or by the breakage of the retaining means, and by reason of the great height and the inaccessible position of the workmen, the dropping of the dies and chisels causes great inconvenience and often total loss, as, for instance, where the work is the construction of a bridge over a body of water, and the dies or chisels fall into the water.

One of the objects of my invention is to overcome the objections above set forth by providing a retaining means for the die or chisel, so that the latter will be positively and permanently held in position on the pneumatic tool or hammer.

A further object of the invention is the provision of a safety appliance of this character which is constructed in the form of a spring to yieldingly hold the tool on the stock or casing of the hammer, so that the tool can be reciprocated with perfect freedom, and at the same time be positively locked in place.

With these objects in view, and others, as will appear as the nature of the invention is better understood, the invention comprises the various novel features of construction and arrangement of parts, which will be more fully described hereinafter and set forth with particularity in the claims appended hereto.

In the accompanying drawing, which illustrates one of the embodiments of the invention, Figure 1 is a front elevation of the device shown in position on the hammer. Fig. 2 is a side elevation thereof showing the die or tool broken away to illustrate the engagement of the device therewith. Fig. 3 is a perspective view of a modified form of the device.

Corresponding parts in the several figures are indicated throughout by similar characters of reference.

Referring to the drawing, 1 designates a steam, pneumatic, or other hammer, which may be of any approved construction and comprising a cylinder 2 in which reciprocates the piston 3. In the open lower end of the cylinder is arranged a tool 4 which, in the present instance is in the form of a die for forming the heads or rivets. Obviously, any other form of tool may be employed.

The device for removably holding the tool in the cylinder 2 in coöperative relation with the piston 3 preferably comprises a single piece of spring wire 5 of suitable gage to provide the desired resiliency and strength. The wire is bent adjacent its center into a coil 6 and then extended downwardly to form the approximately parallel members 7 that are suitably spaced apart and coiled at their ends, as indicated at 8. From the coils 8 are laterally projecting and spaced arms 9 which are designed to engage in transverse passages 10 provided in the die 11. These arms 9 are flexibly connected with the body portion 7 of the device so as to permit the die to freely move back and forth under the operation of the piston. The device is held in place by means of a stud 12 over which the parallel members 7 straddle, and a suitable keeper, such as a cotter pin 13, is inserted in the opening 14 of the stud so as to retain the members 7 between the cylinder and the cotter pin. The stud 12 is threaded at 15 and engages in a tapped opening provided in the cylinder 2.

In order to adapt the device to hammers already in existence, all that is necessary is to provide a tapped opening in the cylinder for the reception of the stud 12.

The construction of the device shown in Fig. 3 differs from that already described in regard to the number of arms adapted to engage the tool, or die or chisel. In certain tools, the stock is insufficient to permit the boring of two holes therein without seriously weakening the tool, and for these tools the device having only one arm 16, as shown in Fig. 3, is employed. This device is assembled on the cylinder in the same manner as the one previously described, and the arm 16 is adapted to enter the single hole of the chisel or die. The member 7, whose extremity is not formed into an arm, is bent to con-

stitute an L-shaped stop 17 for limiting the movement of the arm 16 in a downward direction.

In order to take out the die or chisel, the
 5 cotter pin 13 is first removed and then the retaining device moved bodily in a lateral direction, so as to disengage the arms 9 from the openings 10 and the members 7 from the stud 12. The tool is then free to drop out of
 10 the cylinder 2 in the usual manner. In placing the tool in the cylinder, the steps opposite from this are taken so as to attach the retainer in position. By holding the die or chisel in the cylinder in this manner, the
 15 accidental opening of the controlling valve is incapable of causing the die or chisel to be shot out of the cylinder and thereby possible accident to a fellow workman is avoided. The elasticity or resiliency of the device permits
 20 the die to be moved back and forth without hindrance, and the coils made in the wire prevent the parts from readily crystallizing under the constant vibration and shocks, so that the device will have a comparatively long life.
 25 It will be noted that the retaining device is placed wholly at one side of the cylinder, so that the tool may be readily turned to such position as may be necessary for the purpose of riveting or chipping any corners or other
 30 places that are not readily accessible.

From the foregoing description, taken in connection with the accompanying drawing, the advantages of the construction and of the method of operation will be readily apparent to those skilled in the art to which the invention appertains, and while I have described the principle of operation of the invention, together with the device which I now consider to be the best embodiment
 40 thereof, I desire to have it understood that the device shown is merely illustrative, and that various changes may be made, when desired, as are within the scope of the claims.

What is claimed is:—

45 1. In a device of the class specified, a pneumatic tool including a cylinder, a piston therein, a tool member, and a yieldable retaining device comprising a body portion arranged to be secured to and extending parallel with the side of the cylinder, and an integral arm projecting across the plane of movement of the tool and engaging therewith, the
 50 arm being bendable outward as the tool is

55 moved under the piston blow and serving to restore the tool to initial position as the piston is retracted.

2. In a device of the class described, the combination of a hammer comprising a cylinder and operating piston therein, with a tool removably mounted in the cylinder in cooperative relation with the piston, and a yielding retaining device for holding the tool in the hammer, said device comprising a single length of wire bent into a body portion secured to the hammer and provided with a
 65 laterally extending member adapted to engage the tool and connected with the body portion by a coil.

3. In a device of the class described, the combination of a hammer comprising a cylinder and operating piston therein, with a tool removably mounted in the cylinder in cooperative relation with the piston, a yielding retaining device for holding the tool in the hammer, said device having a body portion composed of connected and spaced members, a stud connected with and extending laterally from the cylinder for engaging between the spaced members of the device, and a cotter pin for holding the device on the
 80 stud.

4. In a device of the class described, the combination of a hammer comprising a cylinder and piston therein, a stud secured to the cylinder, and a removable retaining means
 85 on the stud, with a tool in the cylinder provided with a transverse aperture, and a device for yieldingly holding the tool in the hammer, said device comprising a single length of wire having two parallel body portions engaging on opposite sides of the stud and behind the retaining means on the latter, a coil connecting the said parallel portions and bearing against the stud, an arm connected by a coil to one of the said body
 90 portions and extending at right angles to the latter, and a hook formed on the other body portion engaging under the said arm.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature
 100 in the presence of two witnesses.

WILLIS F. WALKER.

Witnesses:

E. HUME TALBERT,
 C. WARRINER.