Dec. 9, 1924. 1,518,549

A. T. PRESCOTT

SPRING HAMMER

Filed July 30, 1920

Fig. 1.

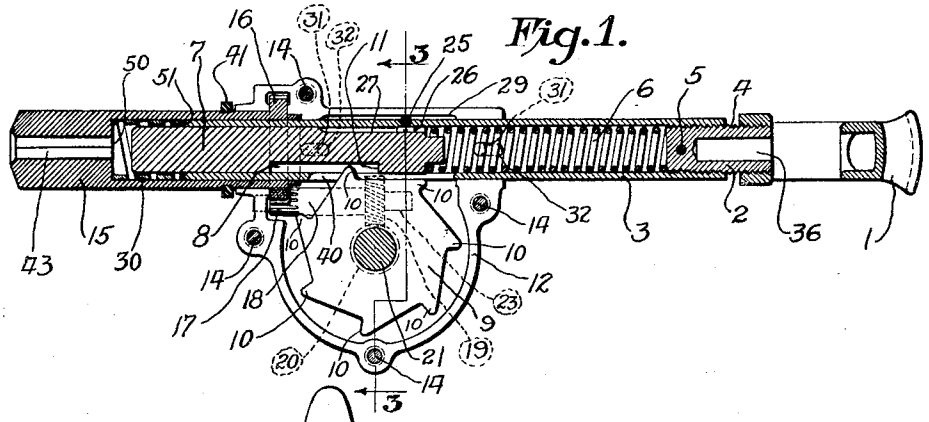


Fig. 2.

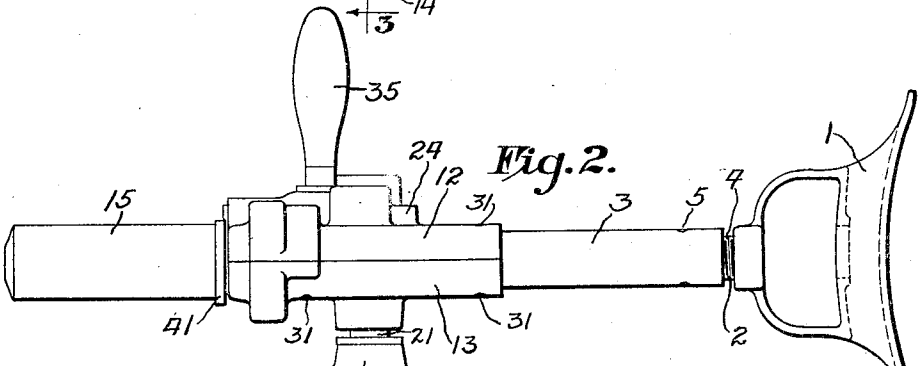


Fig. 4.

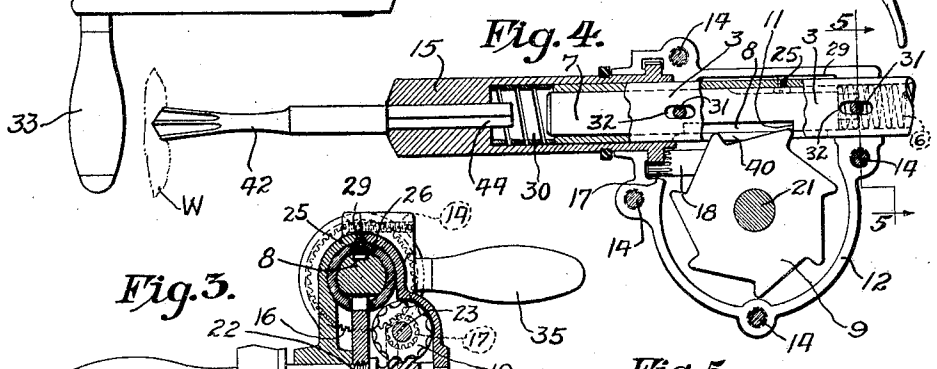


Fig. 3.

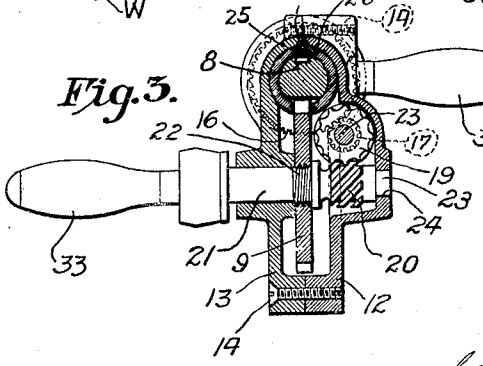
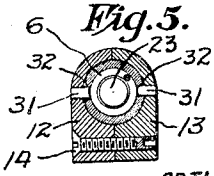


Fig. 5.



Inventor
ARTHUR T. PRESCOTT

By his Attorney
E. W. Marshall

Patented Dec. 9, 1924.

1,518,549

UNITED STATES PATENT OFFICE.

ARTHUR T. PRESCOTT, OF EAST ORANGE, NEW JERSEY, ASSIGNOR TO J. EDWARD OGDEN, OF MOUNTAINVILLE, NEW YORK.

SPRING HAMMER.

Application filed July 30, 1920. Serial No. 400,035.

To all whom it may concern:

Be it known that I, ARTHUR T. PRESCOTT, a citizen of the United States, and a resident of East Orange, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Spring Hammers, of which the following is a specification, reference being had to the accompanying drawing, forming a part thereof.

My invention relates to spring hammers of the type particularly used in drilling stone, brick and concrete, and the main object is to provide means whereby a more forcible power blow may be applied upon the drill simultaneously during the drilling process.

I accomplish this in the combination of a main spring under a light compression with an auxiliary spring which may be compressed by the operator, the main spring being for the purpose of delivering a normal striking blow upon the drill during its drilling process, and the auxiliary spring is to provide a compressive but yielding action under pressure when the operator bears upon the breast plate, compressing the main spring and increasing the effect of the power blow upon the drill.

My invention comprises various features of construction as hereinafter described in the following specification and pointed out in the appended claims, and illustrated by the accompanying drawing, in which:

Figure 1 is a longitudinal section of a hammer which is made according to and embodies this invention.

Figure 2 is a plan view of the same.

Figure 3 is a cross-section of the hammer on line 3—3, Fig. 1.

Figure 4 is a fragmentary sectional view. illustrating the parts ready to deliver a striking blow upon the drill.

Figure 5 is a cross-section of the hammer on line 5—5, Fig. 4.

Like characters of reference designate corresponding parts.

1 indicates a breast plate secured upon a bushing 2 which is adjustably mounted on a tubular barrel 3 as by a threaded portion 4 and secured thereon by a pin 5. A main compression spring 6 is between the bushing 2 and a striker 7 which is loosely set and slidable within the barrel 3. The striker 7 is provided with a slotted or grooved portion 8 into which rotates a cam wheel 9 having teeth 10 contacting with a shoulder 11 of the striker. The cam wheel 9 is mounted within a split housing having a right casing 12 and a left casing 13, both of which are clamped together by screws 14, which have holes in their ends for spreading and locking them. The barrel 3 is slidable through the split housing and also slidable within a socket member 15 provided with a gear 16, which meshes with a pinion 17 on a shaft 18.

A spiral gear 19 on the shaft 18 meshes with a similar gear 20 on the shaft 21 onto which is secured the cam wheel 9, as by a left hand threaded portion 22. The shaft 18 is provided with a reduced end portion 23 which is mounted in a bearing portion 24 of the casing 12. A crank handle 33 is affixed to the other end of this shaft.

The striker 7 is held in alinement with the cam wheel 9 by a screw 25 with its head 26 within a slot 27 of the striker 7. The screw extends also into a slot 29 formed by the casings 12 and 13. The barrel is held in tension by an auxiliary spring 30 and stop pins 31 secured to the casings 12 and 13 and engaging slots 32 in the barrel 3, two slots on each side. These pins 31 act also as guides to the slidable barrel 3 in order to keep it from rotating, so as to have the cranking of handle 33 in a plane approximately at a right angle to the breast plate 1.

A grip or holding handle 35 is secured to the casing 12 for the operator to hold the hammer and a hole 36 in the bushing 2 is for inserting a bar instead of the breast plate, when desired.

The compression of the main spring 6 may be adjusted by rotating the bushing 2 after first removing the pin 5. The barrel 3 is provided with a slot 40 through which the cam wheel 9 rotates, and a rubber washer or ring 41 is inserted onto the chuck 15 for preventing the spray of dust from the

drilling getting into the housing. The drill bit 42 may be of any desired size, shape and material and is held in the socket member 15 by a square hole 43.

In operation: The breast plate 1 is placed upon the breast of the operator and the drill bit upon the work W which is to be drilled, (Figure 4). The operator then turns the crank handle 33 which through the gears 16, 17, 19 and 20 rotates the chuck 15 and the drill bit 42, and at the same time the cam wheel 9 rotates, so that its teeth 10 successively engage the shoulder 11 at one end of the slot 8, thereby compressing the main spring 6 to produce a desired power stroke.

As the teeth 10 pass the shoulder 11, the compression of the spring 6 shoots the striker 7 so it strikes the chuck stem 44 of the drill bit 42. This produces a very rapid tappet action upon the drill bit and the gearing heretofore described rotates the drill bit. The auxiliary spring 30 bears between the end 50 of the bore of the socket member 15 and upon the end 51 of the barrel 3.

In light drilling with small bits, the action of the main spring 6 is sufficient. But where hard and heavier drilling is done, a more forcible power stroke is required. In this case, the operator bears upon the breast plate 1, and compresses the auxiliary spring 30, and this increases the compression of the main spring 6. The spring 6 thus delivers a variable power stroke upon the drill bit, depending upon the pressure the operator may bear upon the breast plate 1.

It is to be understood that I may use other means than those shown to accomplish the same operative results, without departing from the spirit and scope of this invention and I intend no limitations other than those imposed by the appended claims.

What I claim is:

1. A spring hammer comprising a breast plate, a bit holding device, spring actuated mechanism for imparting blows to a bit, said mechanism including a spring and spring compressing and releasing means, and resilient means intermediate the breast plate and bit for transmitting to the bit pressure on the breast plate.

2. A spring hammer comprising a breast plate, a bit holding device, a spring propelled plunger for delivering blows upon a bit and means including a spring and spring compressing and releasing means for actuating the plunger, and an auxiliary spring intermediate the breast plate and bit and arranged to increase the pressure of the bit on the work as pressure on the breast plate is increased.

3. A spring hammer comprising a pressure plate, a bit holding device, a plunger, a spring arranged to force the plunger against a bit, actuating mechanism cooperating with said spring to compress and release the spring and reciprocate the plunger, and an auxiliary spring intermediate the pressure plate and bit arranged to increase the pressure of the bit on the work as pressure is increased on the pressure plate.

4. A spring hammer, comprising a split housing, a tubular barrel slidable therethrough, a cam wheel within said housing, a reciprocatory plunger and a main compression spring within one end of said tubular barrel, an auxiliary spring at the other end of said barrel, a bit holding device adjacent said auxiliary spring, means for actuating said cam wheel to compress and release said main spring to impart blows upon a bit, and means for compressing said auxiliary spring to increase the blows upon the bit.

5. A spring hammer, comprising a split casing, a tubular barrel slidable therethrough, a cam wheel within said housing, a reciprocatory plunger and a main compression spring within one end of said tubular barrel, an auxiliary spring at the other end of said barrel, said auxiliary spring bearing upon a bit holding device and upon the end of said barrel, means for actuating said cam wheel to compress and release the main spring to impart blows upon a bit, and means for compressing said auxiliary spring to increase the compression of the main spring whereby the effect of said blows is increased.

6. A spring hammer, comprising a split housing, a tubular barrel slidable therethrough, a breast plate adjustably secured to one end of said barrel, a reciprocating plunger within said barrel, a main spring interposing between the breast plate and plunger, a bit holding device upon the other end of the barrel slidable within said housing, an auxiliary spring interposing between the bit holding device and the adjacent end of the barrel, a cam wheel in said casing, means for actuating the cam wheel to compress and release the main spring to cause the plunger to impart intermittent striking blows upon a bit, and means controllable at the will of the operator for forcing the barrel into the bit holding device to compress said auxiliary spring to force the bit against the work and to increase the compression of the main spring.

7. A spring hammer, comprising a split housing, a tubular barrel slidable therethrough, a breast plate adjustably secured to one end of said barrel, a reciprocating plunger within said barrel, a main spring interposing between the breast plate and plunger, a bit holding device upon the other end of the barrel slidable and rotatable within said housing, an auxiliary spring interposing between the bit holding device and the adjacent end of the barrel, a cam

wheel in said casing, means for actuating the cam wheel to compress and release the main spring to cause the plunger to impart intermittent striking blows upon a bit, means controlled by the rotation of said cam for rotating the bit holding device, and means controllable at the will of the operator for forcing the barrel into the bit holding device to compress said auxiliary spring to force the bit against the work and to increase the compression of the main spring.

In witness whereof, I have hereunto set my hand this 22nd day of July, 1920.

ARTHUR T. PRESCOTT.