G. L. KOLLOCK & R. P. MARTIN.

HAMMER.

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1,190,657. Patented July 11, 1916.

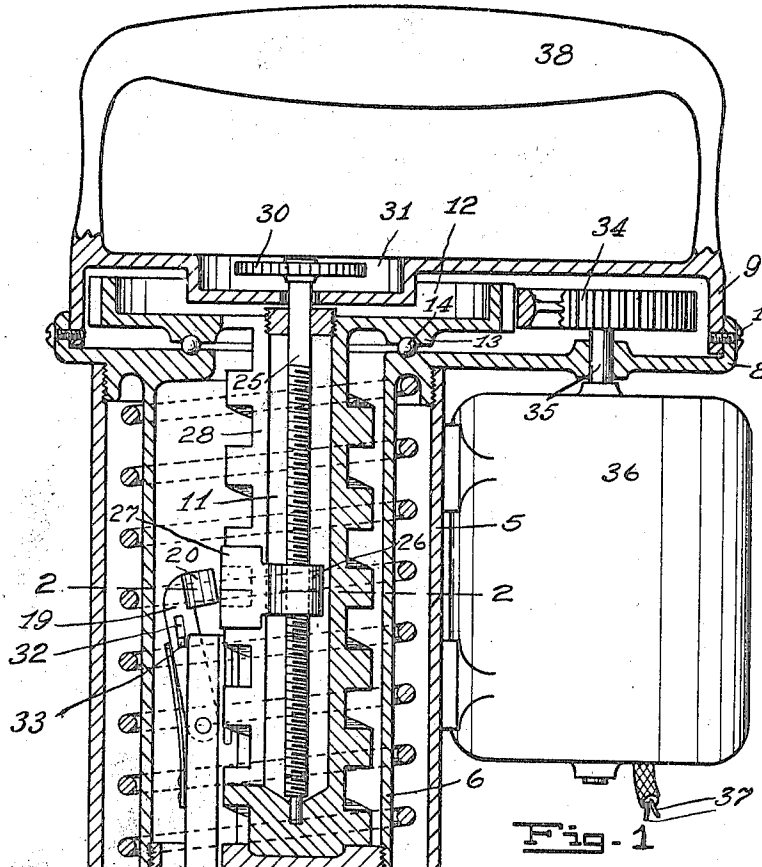


Fig. 1

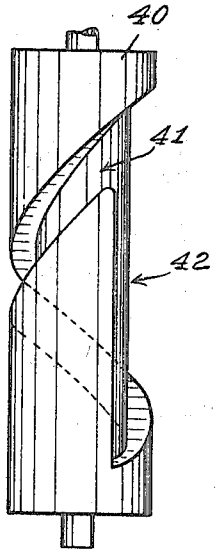


Fig. 3

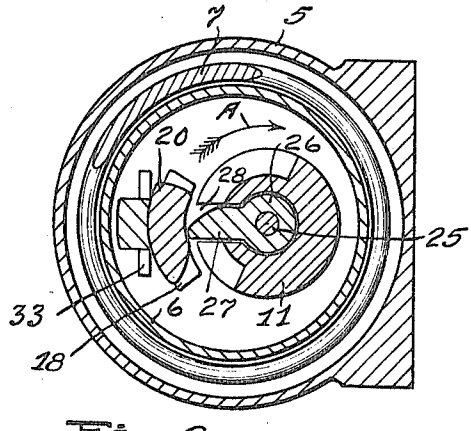


Fig. 2

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GEORGE L. KOLLOCK AND ROBERT P. MARTIN, OF SEATTLE, WASHINGTON, ASSIGNORS TO UNIVERSAL HAMMER COMPANY, OF SEATTLE, WASHINGTON, A CORPORATION OF WASHINGTON.

HAMMER.

1,190,657. Specification of Letters Patent. Patented July 11, 1916.

Application filed September 7, 1915. Serial No. 49,243.

To all whom it may concern:

Be it known that we, GEORGE L. KOLLOCK and ROBERT P. MARTIN, citizens of the United States, residing at Seattle, in the county of King and State of Washington, have invented certain new and useful Improvements in Hammers, of which the following is a specification.

This invention relates to improvements in electrically actuated spring hammers, and the object of the improvement is to provide a tool of this class that is cheap and simple in its form of construction and efficient in its operation.

A further object is to provide a tool of this class having means for quickly and easily adjusting the force and frequency of the blows of the hammer element.

The invention consists in the novel construction, adaptation and combination of parts of a spring hammer and actuating mechanism therefor, as will be more clearly described in the following specification, illustrated in the accompanying drawings, and finally set forth in the appended claims.

In the drawings, Figure 1 is a view in vertical section of a hammer embodying this invention; Fig. 2 is a view in cross section of the same on broken line 2—2 of Fig. 1; and Fig. 3 is a view in side elevation of one form of actuating screw that may be adapted for use in the hammer.

Referring to the accompanying drawings, throughout which like reference numerals indicate like parts, the numeral 5 indicates an outer casing or shell within which is disposed an inner casing 6 of shorter length than the casing 5 and having its walls spaced therefrom to provide an annular chamber for a spring 7. The casing 6 is preferably screwed within the top end of the casing 5 and is provided with an enlarged top portion 8 to which a cover plate 9 may be secured by screws 10.

Within the casing 6 is disposed a hollow screw member 11 that is provided on its top end with an integrally formed gear wheel 12 having an annular boss 13 on its bottom side that coacts with the top of the casing 5 to form a runway for balls 14 that form a ball-bearing on which the screw 11 may rotate. The bottom end of the screw 11 is journaled in plate 15 that is screwed into the lower end of the casing 6.

16 is a hammer element having an integral collar 17 upon which is formed an upwardly projecting shank 18 within the top end of which is pivoted a spring-pressed pawl 19 having a head 20 that normally engages within the groove of the screw 11 and is lifted thereby when the screw is rotated in the direction indicated by the arrow A in Fig. 2.

The collar 17 supports a suitable bearing plate 21 for the spring 7, and the hammer shaft 16 projects outwardly through a tubular guide member 22 provided on a plate 23 that screws into or is otherwise rigidly connected with the end of the casing 5.

Concentrically disposed within the hollow screw 11 is a smaller screw 25 upon which is threaded a nut 26 that terminates in a trip member 27 which projects outwardly through a slot 28 in the screw 11 and is adapted to be moved up or down by rotation of the screw 25. The screw 25 is provided with a hand-wheel 30 that is preferably positioned within a recess 31 in the top of the cover-plate 9.

The pawl 19 is provided with a transverse slot 32 through which extends a cross-pin 33 that serves to hold the pawl in a released position during the outward stroke of the hammer.

The gear wheel 12 meshes with another gear wheel 34 on the shaft 35 of a motor 36 that is secured in any suitable manner to the casing 5, and is connected with a source of electrical current by electric circuit wires 37.

The cover plate 9 is preferably provided with a handle 38 of any desirable form.

In Fig. 3 we have illustrated an alternative form of screw or actuating member 40 that is provided with a spiral groove 41 and has one side cut away, as at 42, for purposes hereinafter explained.

The operation of the device shown in Figs. 1 and 2 may be described as follows: Assuming that the various parts connected with the hammer shaft 16 are at the outermost limit of their stroke and that the head 20 of the pawl 19 is in engagement with the screw 11, then if the screw 11 is rotated in the direction indicated by the arrow A, the head 20 will engage and follow the groove of the screw 11 and the hammer shaft and connected parts will be lifted against the compression of the spring 7.

When the pawl head 20 encounters the trip member 27 it will be deflected out of the groove of the screw 11 into the position shown in Figs. 1 and 2, thus permitting the compressed spring 7 to drive the hammer shaft outwardly and strike a blow. As soon as the hammer has reached the outermost limit of its stroke, the head 20 of the pawl 19 is again picked up by the screw 11 and is withdrawn in a similar manner for another blow. When the pawl 19 is moved outward into the position shown in Figs. 1 and 2, the cross-pin 33 drops behind the top of the shank 18 and holds the pawl in a withdrawn position until the ends of the pin 33 strike on the plate 15 at the end of the stroke and move such pin upwardly in the slot 32 until the pin clears the top of the shank 18 and permits the head 20 of the pawl 19 to again engage the screw 11.

The length and frequency of the hammer stroke may be varied by turning the screw 25 and adjusting the position of the trip member 27, thus if light blows in rapid succession are desired, the trip member is moved downward near the bottom of the screw 11 and if heavy blows in less rapid succession are desired, the trip member 27 is moved upwardly near the top of the screw 11.

A constant length of stroke may be obtained by using the form of screw shown in Fig. 3 and forming a rigid pawl on the top of a shank that corresponds to the shank 18. The pawl in this case will follow the spiral groove 41 until it is released by passing out of such groove and allows the hammer to descend.

Having described our invention, what we claim, is—

1. A device of the class described, comprising a rotatable shaft having a spiral groove, a hammer element provided with a pawl for engaging within said groove, means for rotating said shaft, and means for disengaging said pawl from said groove.

2. A device of the class described, comprising a rotatably mounted screw-threaded member, a hammer element, a compression spring engaging therewith, a pawl associated with said hammer element to engage said screw, and means adjustable lengthwise of said screw for effecting the disengagement of said pawl from said screw.

3. A device of the class described, comprising a hollow screw having a longitudinal slot, a trip member disposed within said screw and adjustable longitudinally in said slot, a hammer element having a spring pressed pawl that engages said screw, a compression spring, and means for rotating said screw to move said hammer element and compress said spring.

4. A device of the class described, comprising an outer casing, a hammer element reciprocable longitudinally therein, a compression spring engaging said hammer element, an inner casing, a screw rotatably mounted within said inner casing, a spring-pressed pawl associated with said hammer element to engage said screw, means for rotating said screw to move said hammer element and compress said spring, and a trip member movable longitudinally of said screw to trip said pawl whereby the length of stroke of said hammer element may be varied.

5. A device of the class described, comprising an outer casing, a hammer element reciprocable longitudinally therein, a compression spring engaging said hammer element, a hollow slotted screw shaft, a pawl on said hammer element to engage with said hollow screw shaft, a smaller screw disposed within said hollow screw, a trip member screwed onto said smaller shaft and movable longitudinally of said slot to trip said pawl, and means for rotating said hollow shaft to move said hammer and compress said spring.

6. A hammer of the class described, comprising an outer casing, an inner casing disposed within said outer casing, a hollow slotted screw shaft rotatably mounted within said inner casing, a roller bearing for said screw shaft, a hammer element in said outer casing, a compression spring, a spring-pressed pawl engaging said screw shaft, means for rotating said screw shaft to move said hammer element and compress said compression spring, and means adjustable lengthwise of said hollow screw for effecting the release of said pawl at predetermined points to vary the force and frequency of the blows of said hammer element.

7. A device of the class described, comprising an outer casing, an inner casing disposed within the upper portion of said outer casing, a hollow screw rotatably mounted within said inner casing, said screw having a longitudinally extending slot, a smaller screw disposed within said hollow screw, a nut on said smaller screw, a trip member on said nut and projecting outwardly through said slot in said hollow screw, means for rotating said hollow screw, a hammer shaft, a collar on said hammer shaft, a compression spring engaging said collar, a shank secured to said hammer shaft, a spring-pressed pawl on said shank to engage said hollow screw, and means for holding said pawl in a disengaged position with respect to said hollow screw during the driving stroke of said hammer.

8. In a device of the class described, a hammer element, an actuating member arranged in substantially axial alinement therewith, a spiral thread provided on said member, means provided on said hammer element and engaged by said thread to effect

the movement of the hammer element in a direction axially of said member when the latter is suitably rotated, and a spring adapted to impel the hammer element in a contrary direction and axially of said member when said means is freed from said thread.

Signed at Seattle, Washington, this 28th day of August, 1915.

GEORGE L. KOLLOCK.
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Witnesses:
E. PETERSON,
HORACE BARNES.