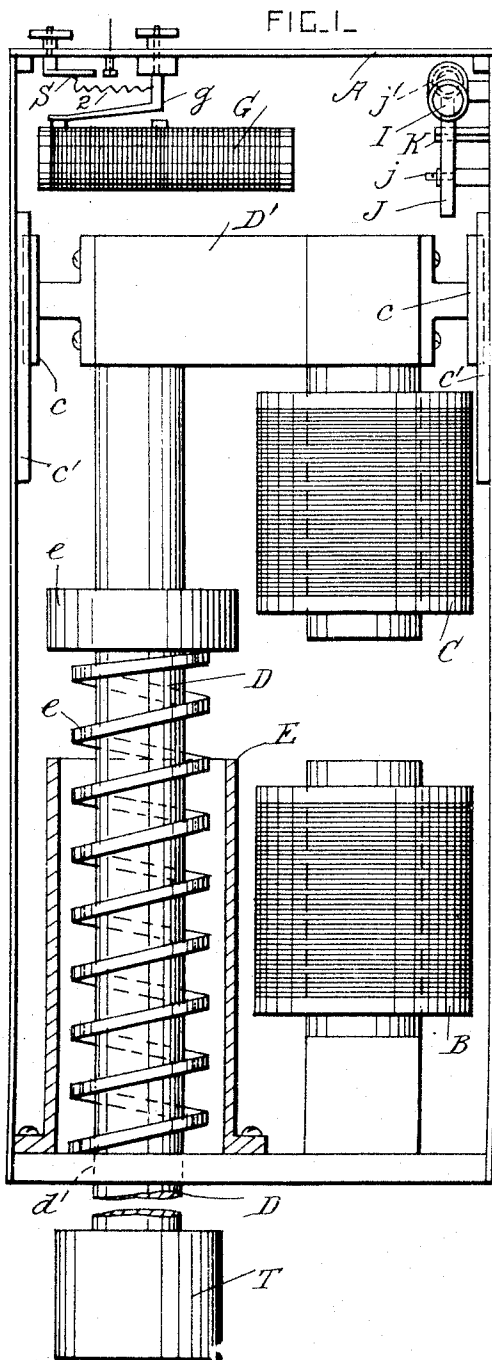


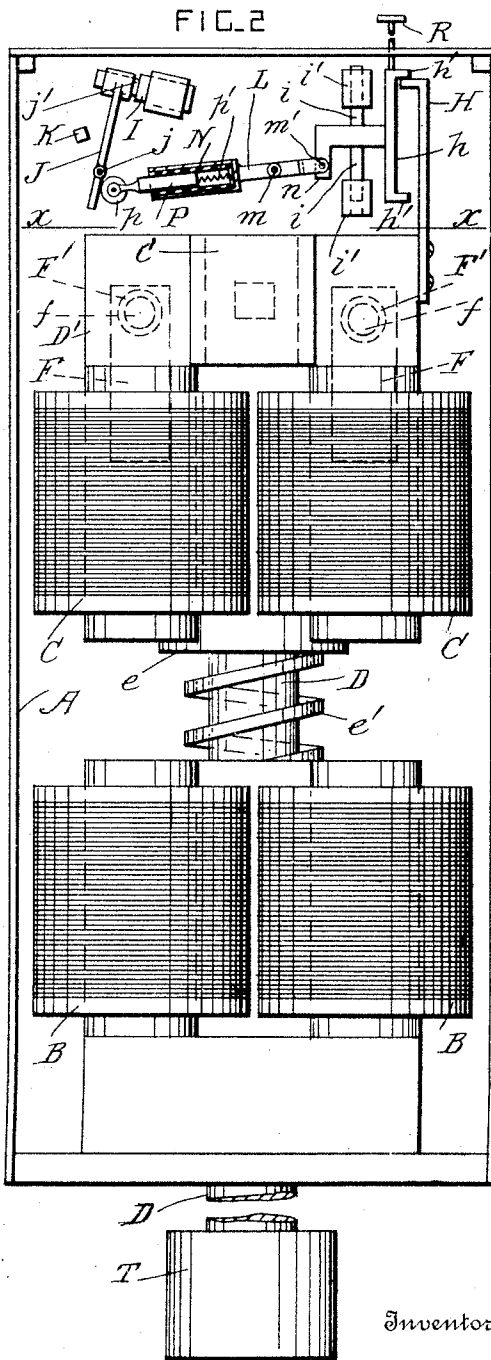
984,984.

Patented Feb. 21, 1911.

2 SHEETS—SHEET 1.



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ELECTRIC HAMMER.
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2 SHEETS—SHEET 2.

FIG. 3.

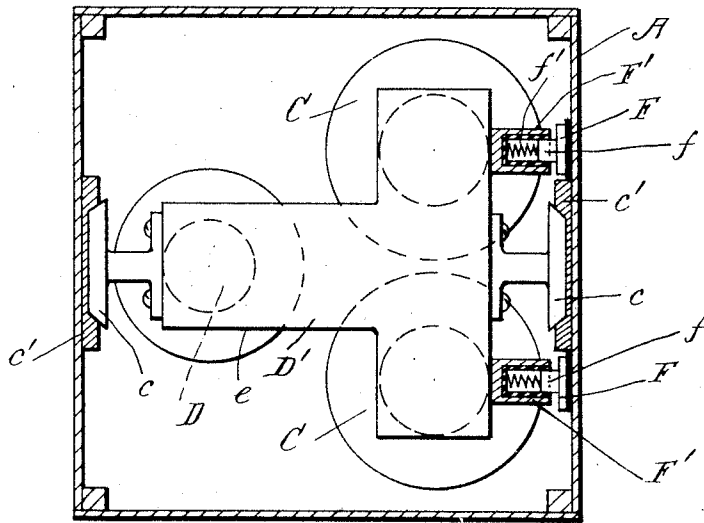
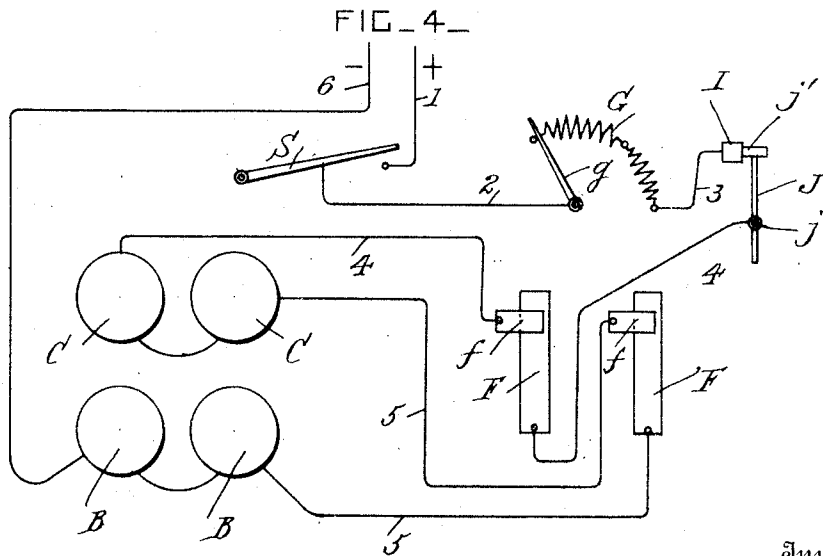


FIG. 4.



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UNITED STATES PATENT OFFICE.

HILARY F. WHALTON, OF KEY WEST, FLORIDA.

ELECTRIC HAMMER.

984,984.

Specification of Letters Patent.

Patented Feb. 21, 1911.

Application filed May 26, 1910. Serial No. 563,625.

To all whom it may concern:

Be it known that I, HILARY F. WHALTON, a citizen of the United States, residing at Key West, in the county of Monroe and State of Florida, have invented certain new and useful Improvements in Electric Hammers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to electric hammers; and it consists in the novel construction and combination of the parts herein after fully described and claimed.

In the drawings, Figure 1 is a side view of the hammer with the front of the casing removed. Fig. 2 is a front view of the electromagnets showing the reversing devices. Fig. 3 is a plan view taken in section on the line *x-x* in Fig. 2. Fig. 4 is a diagram of the electrical connections.

A is an inclosing case of any convenient size and material.

B are two stationary electromagnets secured to the bottom of the case.

C are two slidable electromagnets secured together and arranged over the electromagnets B. The electromagnets C have guide-bars *c* secured to them which are slidable vertically in guides *c'* secured to the sides of the case.

D is the hammer shaft which is secured to the slidable electromagnets C and which projects through a guide-hole *d* in the bottom of the case. A cylinder E is secured in the case around the hammer shaft, and *e* is a collar on the said hammer shaft which strikes the upper end of the cylinder E and thereby prevents the opposed faces of the cores of the electromagnets from striking each other. The electromagnets C, the hammer-shaft D, and the guide-bars *c*, are all secured to a T-shaped crosshead D'. The electromagnets of each pair are secured close adjacent to each other to the arms of the crosshead, and the hammer-shaft D is secured to the stem of the crosshead, to one side of and between the centers of the electromagnets. In this manner the whole device can be inclosed in a small case which is square in cross-section. The guide-bars *c* are secured at the opposite ends of the stem of the T-shaped crosshead. A spring *e'* is arranged within the cylinder E between the

collar and the bottom of the case, and this spring normally holds the slidable electromagnets and the hammer shaft in their raised positions.

F are insulated contact-pieces secured to the case, and *f* are insulated contact-pieces carried by the electromagnets C and bearing against the contact-pieces F. The contact-pieces are preferably formed of carbon, and are held in contact with each other by springs *f'*. The contact-pieces *f* and their springs are preferably carried by cylinders *f''* secured to the slidable electromagnets.

G is an adjustable resistance of any approved make inclosed within the casing and arranged in circuit with the electromagnets. A lever or finger-piece *g* is provided for varying the resistance.

The automatic reversing devices are shown in Fig. 2. H is a tappet secured to the slidable electromagnets, and *h* is a slidable tappet-bar provided with projections *h'* at its ends for the tappet H to engage with. The tappet-bar *h* is provided with guide-bars *i* which are slidable vertically in guides *i'* secured to the case A. I is an insulated contact-piece secured to the case, and J is an insulated contact-lever pivoted to the case by a pin *j* and provided with a contact-piece *j'* arranged to bear against the contact-piece I. These contact-pieces are preferably formed of carbon. A stop K is provided on the case to prevent the contact-piece *j'* from being moved too far away from the contact-piece I.

L is a lever pivoted to the case by a pin *m*. One end of this lever is pivotally connected by a pin *m'* to an arm *n* on the tappet-bar *h*, and the other end of the lever L is provided with a cylinder N.

P is an insulated piston which is slidable in the cylinder N, and *p* is a wheel journaled in a projecting end portion of the piston P, and bearing against the contact-lever J. A spring *p'* is arranged inside the cylinder N and presses the piston P outwardly.

R is a finger-piece connected to the tappet-bar *h* and projecting from the case, so as to afford a means for starting the reversing mechanism by hand.

S is a switch for starting and stopping the hammer by turning the current on and off.

T is the hammer-head which is secured to the projecting lower end portion of the hammer shaft in any approved manner.

Heads of various weight and size may be secured to the hammer shaft according to the use to which the hammer is to be put.

The current passes from the line wire 1, through the switch and the wire 2 to the resistance G, and thence by wire 3 through the contact-pieces I and j' to the lever J. The lever J is connected with the slidable electromagnets C by a wire 4, one pair of contact-pieces F and f being included in the wire 4. The current passes from the slidable electromagnets C to the stationary electromagnets B by a wire 5, the other pair of contact-pieces F and f being included in the wire 5. The stationary electromagnets B are connected with the other line wire 6 so that the circuit is complete when the switch S is closed and the contact-pieces I and j' touch each other.

The tappet H secured to the slidable electromagnets makes and breaks the circuit automatically as long as current is supplied, and the hammer shaft is reciprocated by the slidable electromagnets.

The pairs of contact-pieces F and f may be connected in circuit in any other approved manner in carrying out this invention.

This hammer is used for all uses to which hammers of this sort are put, and is found to be simple in construction, and efficient in action.

What I claim is:

1. In an electric hammer, the combination, with a case, and a pair of stationary electromagnets secured therein close adjacent to each other; of guides secured to the case, a T-shaped crosshead, guide-bars secured to the ends of the stem of the crosshead and slidable in the said guides, a pair of electromagnets secured to the arms of the crosshead over the stationary electromagnets, a hammer-shaft secured to the stem of the crosshead to one side of the electromagnets, a spring which normally holds the pairs of electromagnets apart, and electric connections for energizing the electromagnets.

2. In an electric hammer, the combination, with a case, and a pair of electromagnets secured at one end portion of the case; of guides secured to the case, a pair of electromagnets slidable in the said guides at the

other end portion of the case, a hammer shaft secured to the slidable electromagnets and projecting from the case past the stationary electromagnets and provided with a collar, a cylinder for said collar to strike against secured to the case around the hammer shaft, a spring arranged in the said cylinder between the case and the collar and normally holding the electromagnets apart, and electric connections for energizing the said electromagnets.

3. In an electric hammer, the combination, with a case, and an electromagnet secured to the case; of an electromagnet slidable in the case and provided with a hammer shaft, a tappet secured to the slidable electromagnet, a slidable tappet-bar carried by the case and operated by the said tappet, a lever pivoted to the case and pivotally connected at one end with the said tappet-bar, a contact-lever pivoted to the case and provided with a contact-piece and operatively connected with the other end portion of the said lever, a stationary contact-piece secured to the case, and electric connections between the line wires including the said contact-pieces and electromagnets in the circuit.

4. In an electric hammer, the combination, with a case, and an electromagnet secured in the case; of an electromagnet slidable in the case and provided with a hammer shaft, a tappet secured to the slidable electromagnet, a slidable tappet-bar carried by the case and operated by the said tappet, a lever pivoted to the case and pivotally connected at one end to the said tappet-bar and provided at its other end with a cylinder, a spring-pressed piston slidable in the said cylinder and provided with a wheel at its free end, a contact-lever pivoted to the case and provided with a contact-piece and arranged in operative engagement with the said wheel, a stationary contact-piece secured to the case, and electric connections between the line wires including the said contact-pieces and electromagnets in the circuit.

In testimony whereof I have affixed my signature in the presence of two witnesses.

HILARY F. WHALTON.

Witnesses:

WEBSTER B. RUSSELL,
E. F. PAGE.