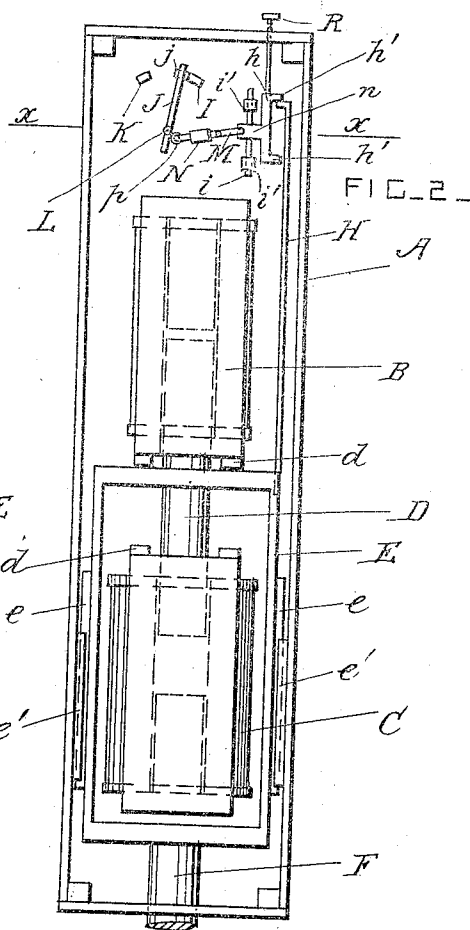
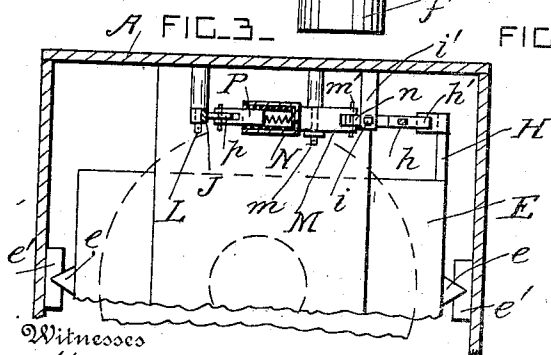


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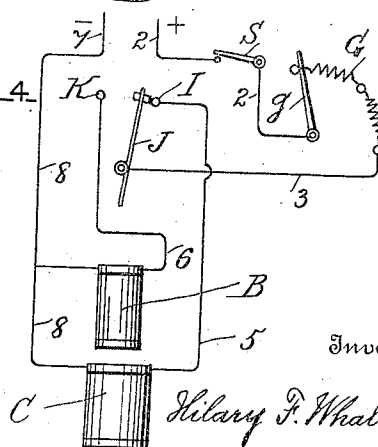
FIG. 1.



F1C.2.



A, FIG. 3.



FIC 4.

Witnesses

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UNITED STATES PATENT OFFICE.

HILARY F. WHALTON, OF KEY WEST, FLORIDA.

ELECTRIC HAMMER.

996,440.

Specification of Letters Patent. Patented June 27, 1911.

Application filed November 22, 1910. Serial No. 593,709.

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 worked by solenoids; and it consists in the novel construction and combination of the parts hereinafter fully described and claimed.

In the drawings, Figure 1 is a front view of the electric hammer with the front of the case removed. Fig. 2 is a side view of the operating mechanism of the hammer. Fig. 3 is a cross-section taken on the line $x-x$ in Fig. 2. Fig. 4 is a diagram of the electrical connections.

A is the inclosing case.

B and C are two stationary solenoids arranged one above the other in the case A.

D is a core which is slidable in the two solenoids, and which has a frame E secured to its middle part. Buffers d are provided for the frame to strike against to limit the movements of the core D. The frame is provided with V-shaped guides e which are slidable in guide-bars e' on the case A. The frame E extends around the lower solenoid C which strikes the blow, and which is larger and more powerful than the solenoid B which retracts the hammer head after the blow has been struck.

F is the hammer shaft which is secured to the frame E, and which slides in a hole f in the bottom of the case; and f' is the hammer head secured on the projecting end portion of the shaft F.

G is an adjustable resistance of any approved kind arranged in circuit with the solenoids and provided with a lever or finger-piece g .

H is a tappet secured to the slidable frame E, and h is a slidable tappet-bar provided with projections h' at its ends for the tappet 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 and K are two insulated contact-pieces secured opposite to each other in the case

A; and J is an insulated contact-lever pivoted to the case by a pin L and provided with a contact-piece j . The contact-pieces are all preferably formed of carbon, and the contact-piece j works between the contact-pieces I and K.

M is a switch-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 M is provided with a cylinder N.

P is an insulated piston slidable in the cylinder N, and p is a wheel journaled in the projecting end portion of the piston P and bearing against the contact-lever J, so as to rock the contact-lever on its pivot when the switch-lever M is oscillated on its pivot by means of the tappet mechanism.

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 tappet mechanism.

S is a switch for starting and stopping the hammer.

The current passes from the line wire 2 through the switch to the resistance G, and thence by wire 3 to the contact-lever J. The contact-piece I is connected with the solenoid C by a wire 5; and the contact-piece K is connected with the solenoid B by a wire 6. Both solenoids are connected with the other line wire 7 by wires 8 in parallel with each other.

The tappet H makes and breaks the circuit automatically as long as current is supplied, and the hammer shaft is reciprocated by the slidable core of the solenoids. When the parts are in the positions indicated in Fig. 4, the contact-lever J is in connection with the contact-piece I so that the solenoid C is energized and a blow is struck. When the hammer descends the tappet mechanism operates the switch-lever M and places the contact-lever in connection with the contact-piece K so that the solenoid B is energized and the hammer shaft is retracted, and these operations are repeated as long as current is supplied.

What I claim is:

1. In an electric hammer, the combination, with a case provided with guide-bars, and two solenoids secured in the case and arranged axially in line with each other; of a slidable core common to both solenoids, a frame secured to the said core and slidable in the said guide-bars and inclosing

one of the solenoids, a hammer shaft secured to the said frame and projecting from the said case, electric connections for energizing the said solenoids, switch mechanism for switching the current between the said solenoids, and tappet mechanism connected with the said core and operating the switch mechanism automatically.

2. In an electric hammer, the combination, with a case provided with guide-bars, and two solenoids of unequal strength secured in the case; of a slidable core common to both solenoids, a frame having one end portion secured to the said core between the solenoids and inclosing the

stronger solenoid, a hammer shaft secured to the other end portion of the said frame and projecting from the case, electric connections for energizing the said solenoids, switch mechanism for switching the current from one solenoid to the other, and tappet mechanism connected with the said core and operating the switch mechanism automatically.

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

HILARY F. WHALTON.

Witnesses:

ED VAN DELDEN,
S. M. LESTER.