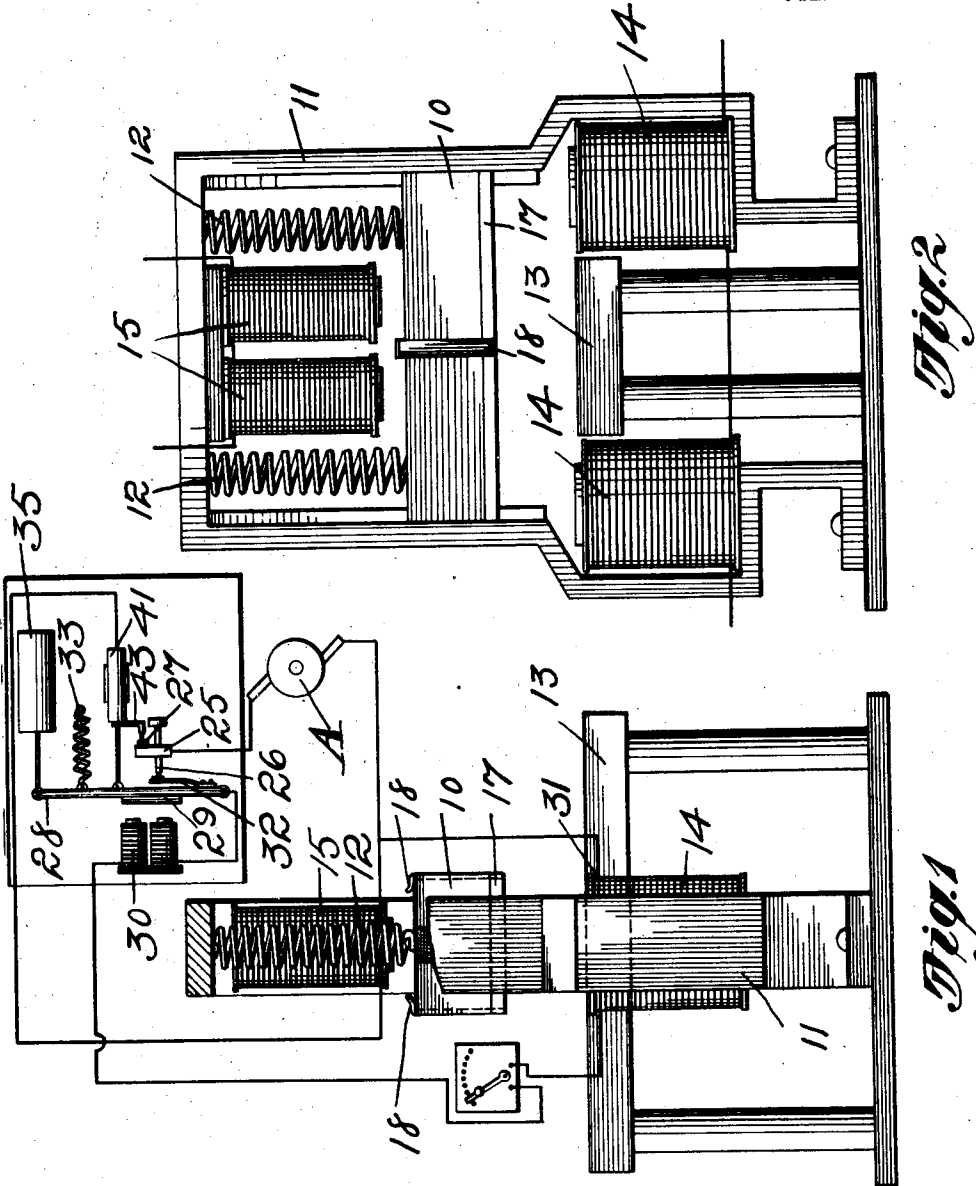


C. C. LUTES.
ELECTRIC HAMMER.
APPLICATION FILED NOV. 5, 1909.

955,522.

Patented Apr. 19, 1910.

3 SHEETS—SHEET 1.



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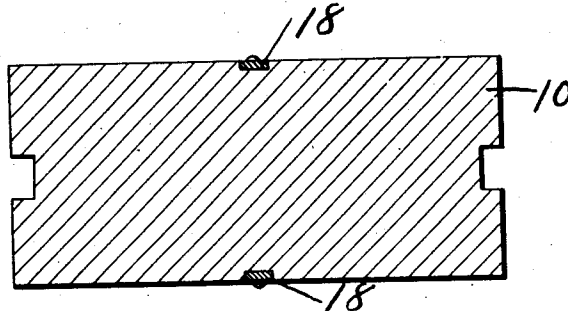


Fig. 3

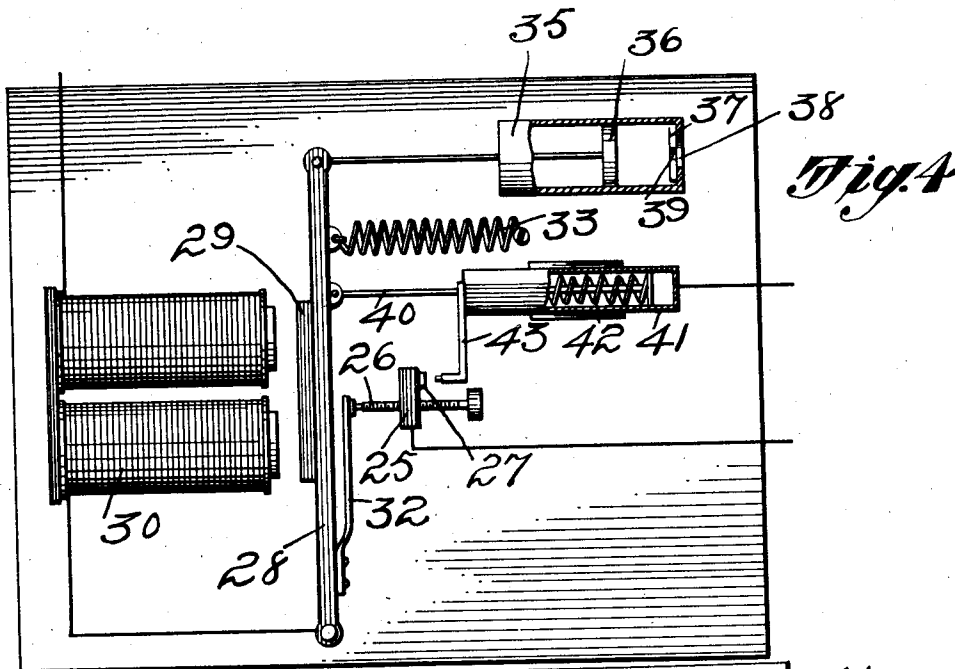


Fig. 4

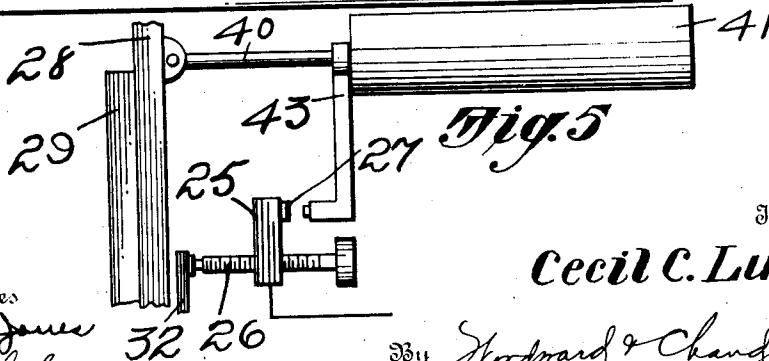


Fig. 5

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Fig. 7

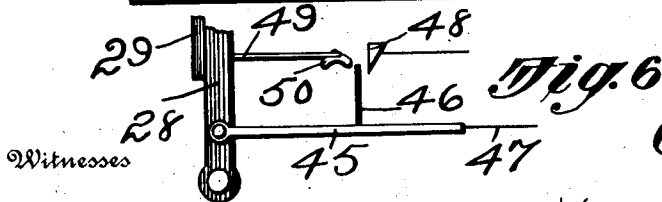
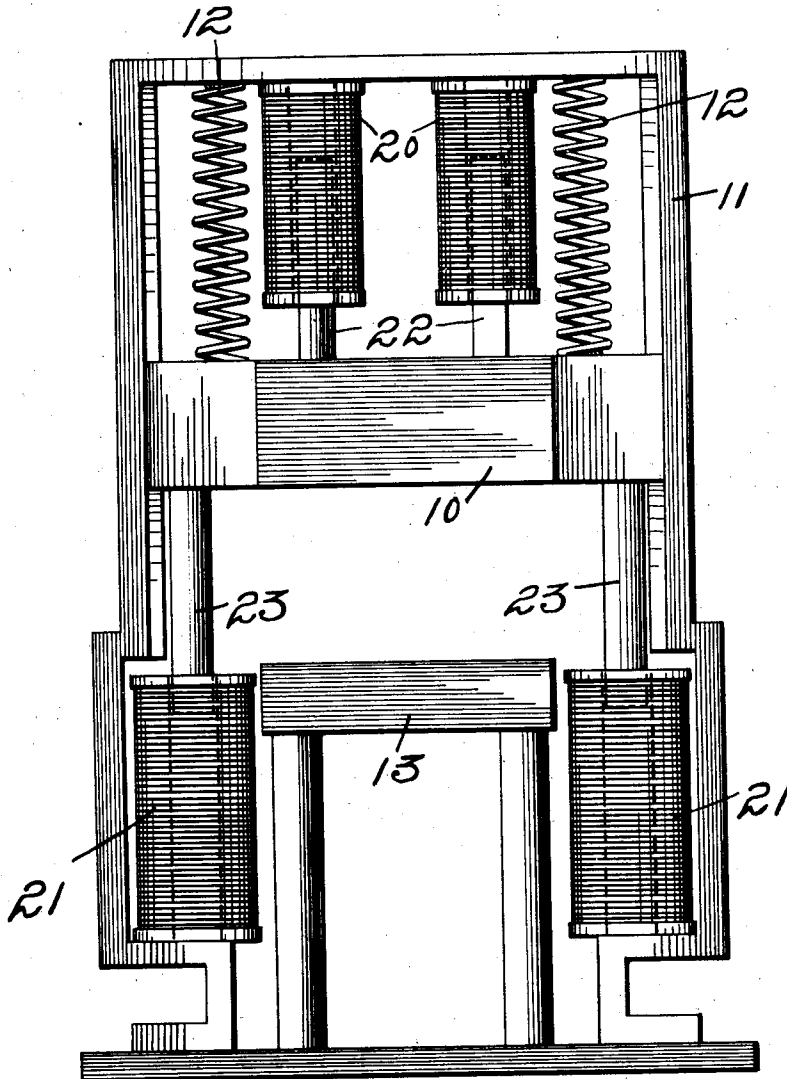


Fig. 6

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ELECTRIC HAMMER.

955,522.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CECIL C. LUTES, a citizen of the United States, residing at Noxen, in the county of Wyoming and State of Pennsylvania, have invented certain new and useful Improvements in Electric Hammers, of which the following is a specification.

This invention relates to electrically reciprocated tools, and has for its object to provide a novel means for reciprocating a hammer.

An important object is to provide a novel form of current control, for opposed magnets controlling the hammer.

Other objects and advantages will be apparent from the following description, and it will be understood that changes in the specific structure shown and described may be made within the scope of the claim without departing from the spirit of the invention.

In the drawings forming a portion of this specification, and in which like characters of reference indicate similar parts in the several views, Figure 1 is a side view of the device, Fig. 2 is an end view, Fig. 3 is a cross section of the hammer, Fig. 4 is a detail of the switch control, Fig. 5 is a detail of the contact members, Fig. 6 is a similar view of a modified form of contact mechanism. Fig. 7 is a side view of a modified form of the device.

Referring to the drawings, there is shown a supporting frame 11 having suitable guideways in which the hammer 10 is reciprocable.

The hammer comprises simply a rectangular block of soft iron suspended by two springs 12, which are barely sufficient to support its weight out of contact with the anvil 13, therebelow.

The form of the hammer illustrated in the first views, is of an extremely simple nature, and adapted for use in small work where a light blow is to be delivered, and is arranged to be drawn downwardly by means of the heavy magnet 14, the poles of which are arranged at opposite sides of the anvil.

Lifting movement of the hammer is accomplished by means of the spring 12 and the lifting magnet 15 carried by the frame 11 above the hammer. Suitable electric connections are made with the magnets, and means provided for throwing the two magnets alternately into circuit so that the ham-

mer may be reciprocated, by the mechanism to be subsequently described.

The hammer is provided with a detachable operating base 17 which may be of any form on its under side, for various kinds of work. The member 17 is secured to the hammer by means of spring clips 18 which lie in suitable recesses on opposite sides of the hammer and have inward extensions engaging upon the upper surface of the hammer to retain the member 17 securely thereon.

For heavy work it will probably be found desirable to use solenoid magnets as illustrated at 20 and 21 in Fig. 7, the hammer carrying upwardly extending cores 22 disposed in the magnets 20 and having laterally disposed pendent cores 23 disposed in the solenoid 21 as shown.

In the drawings there is shown an electrical source A from one pole of which direct connection is made respectively to one terminal of each of the magnets of the hammer, the other pole of the electrical source being connected to a suitable terminal 25 of the controlling switch mechanism. The terminal member 25 is provided with two contact points 26 and 27. Pivoted adjacent the contact 26, there is a lever 28 carrying an armature 29 arranged to be attracted by a magnet 30 connected in series with the terminal 31 of the magnet 14 and a contact plate 32 carried upon the lever 28. Adjacent the free end of the lever 28, there is a retractile spring 33 arranged to hold the lever with the contact 32 normally engaging the contact 26 to form a circuit through the magnet 14. It will be seen that the moment the contact is made between the plate 32 and member 26, the hammer being drawn immediately downward, the magnet 30 is energized and attracting the armature 29 operates the lever 28 to break the circuit after which under action of the spring 33 the lever is again forced into engagement with the contact 26 and the operation continued.

In order to retard the operation of the device, a dash pot 35 is provided, in which a plunger 36 is longitudinally reciprocable, the plunger being simply connected to the extremity of the lever 28. The dash pot is provided with a valve 37 arranged to close an opening 38 in the extremity of the pot. The valve is arranged to open inwardly to open the passage 38 which it will be noted is

of a large size, and the valve is provided with a reduced opening 39, whereby the movement of the plunger under action of the magnet 30 may be made very rapidly, but its return under action of the spring 33 will be retarded by the slow escape of air through the opening 39.

For the operation of the upper magnet 15, the lever 28 is provided with an insulated rod 40, upon which there is slidably engaged a cylinder 41, and engaged between the inner extremity of the rod 40 and the cylinder 41, there is a spring 42, the purpose of which will be subsequently described. The member 41 is provided with a projecting lip 43 arranged to engage the contact 27 of the terminal member 25, when the magnet 30 is energized. The lip 43 is arranged to engage the contact 27 immediately upon the making of contact between the plate 32 and point 26, and by reason of the resilient support of the member 41, this contact will be maintained throughout the movement of the lever 28 into engagement with the magnet 30 during its return under action of the spring 33, so that the hammer will be securely held above the anvil by means of the magnets 15 during the interval of operation of the dash pot, and by this means quick blows of the hammer are delivered with long intervals between them.

In Fig. 6 there is shown a modification of the controlling switch mechanism which comprises the dash pot, magnet 30, and lever 28, the armature 29 and spring 33 all arranged as above described. The lever 28 carries an arm 45 provided with the contact arm 46 extending laterally therefrom and connected suitably to a wire 47 extending through one pole of the electrical source not shown. The arm 46 is resilient, and at the outer limit of the movement of the lever 28 from the magnet 30 engages against a contact block 48 connected in series with the magnets 30 and 14, by which the hammer is drawn downward. Spaced adjacent the terminal 48, and extending transversely

with reference to the arm 46, there is a resilient arm 49, carrying a centrally notched block 50 arranged to be engaged by the arm 46, upon inward movement thereof toward the magnet 30. It will be seen that after slight movement of the arm 46 thereagainst, the end of the arm 46 will engage in the notched portion of the block 50 where it will be retained until at the proper point in the outward movement of the lever 28 the arm 46 will snap out of engagement with the block 50 into contact with the block 48. The block 50 is connected in series with the magnets 15, by which the hammer is lifted. By this construction, it will be seen that the magnet 15 is constantly energized except during the short moments during which the arm 46 snaps out of engagement with the block 50 and against the block 48 and is returned into engagement with the block 50 by the magnet 30.

The parts of this device as described are extremely simple and adapted to be manufactured at a low cost, and are liable in a minimum degree to damage during use. Its operation is also extremely efficient.

What is claimed is:

A device of the class described comprising opposed operating magnets, a hammer armature reciprocable therebetween, a contact breaker connected in circuit with one of said magnets and operable upon energization thereof, a contact in circuit with another of the magnets, a resilient contact making member adapted to engage the said contact when the circuit through the first magnet is broken, resilient means engaged with the circuit breaker for forcing the circuit breaker into closed position and retarding means engaged therewith to delay closing of the circuit as and for the purpose described.

In testimony whereof I affix my signature, in presence of two witnesses.

CECIL C. LUTES.

Witnesses:

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