(No Model.)

J. F. STANDIFORD.

MAGNETIC TOOL.

No. 492,245. Patented Feb. 21, 1893.

Fig: 1.

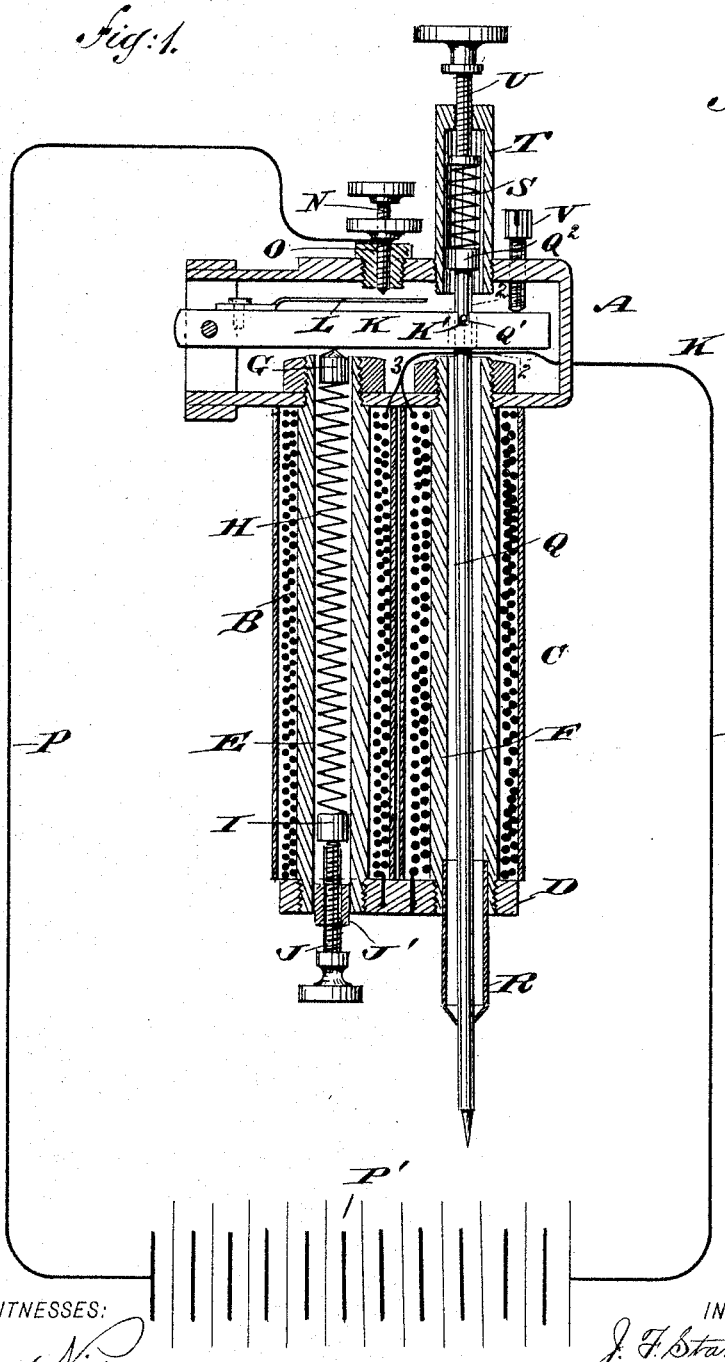
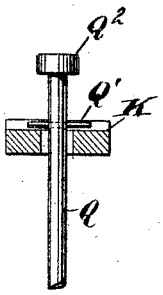


Fig: 2.



WITNESSES:

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MAGNETIC TOOL.

SPECIFICATION forming part of Letters Patent No. 492,245, dated February 21, 1893.

Application filed July 14, 1892. Serial No. 440,056. (No model.)

To all whom it may concern:

Be it known that I, JACOB F. STANDIFORD, of Muscogee, Creek Nation, Indian Territory, have invented a new and Improved Magnetic Tool, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved tool, which is simple and durable in construction, and very effective in operation.

The invention consists of certain parts and details, and combinations of the same, as will be hereinafter described and then pointed out in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar letters and numerals of reference indicate corresponding parts in both the figures.

Figure 1 is a sectional side elevation of the improvement; and Fig. 2 is a transverse section of part of the same on the line 2—2 of Fig. 1.

The improved magnetic tool is provided with a frame A, supporting the magnets B, C, connected with each other at their lower ends by a cross piece D, carrying the hollow soft iron cores E and F, of the magnets B and C respectively. In the hollow core E of the magnet B is fitted to slide a plug or pin G, pressed on at its under side by one end of a spring H, coiled within the hollow core E and supported at its lower end on a plug I, held adjustably in the said hollow core E by means of a set screw J, screwing in a nut J′ fastened to the lower end of the hollow core E. The top plug G is pointed and engages the under side of the armature lever K, extending over the upper ends of the cores E, F, and fulcrumed at one end in the frame A. On the top of this lever K is secured a contact plate L, adapted to make contact with a contact screw N, screwing in an insulated nut O, secured in the frame A. The contact screw N is connected by a wire P, with one pole of a battery P′, the other pole of which is connected by a wire P^2 with the upper ends of the coils of the wire of the magnets B and C, the lower ends of the coils being attached to the soft iron base. A current from the battery P′ passing over the wire P^2 would divide at (3) the junction with magnet coils, part passing to the right around the coil C, and part to the left around the coil B, uniting at connections on soft iron base, pass up iron cores to metallic frame (A) thence to armature K and plate L. When the contact plate L is in contact with the screw N, a circuit is established, whereby the lever K is attached by the magnets B and C, and as soon as the lever swings downward toward the cores E and F, of the said magnets, then the plate L is disconnected from the screw N and the circuit is broken. The magnetic power of the cores then ceases and the lever K is again swung upward by the action of the spring H pressing the plug G upward to return the lever K to its normal position, that is until the plate L of the said lever is again in contact with the screw N. The above described operation is then repeated and a constant vibrating motion is given to the armature lever K. Through the hollow core F of the electro magnet C passes the tool holder Q, guided at its lower end in a casing R, attached to the said core F, as plainly shown in Fig. 1.

In the tool holder Q is arranged a transversely extending pin Q′, engaging a transversely-extending notch K′, formed in the top of the armature lever K, which latter is also provided with an aperture for the passage of the tool holder Q. On the extreme upper end of the tool holder Q is formed a head Q^2, on which presses a spring S, held in a casing T, secured to the frame A. The tension of the spring S is regulated by means of a set screw U, screwing in the upper end of the casing T and engaging the upper end of the spring S. This spring S serves to move the tool holder Q outward so as to engage the point of the pencil with the article to be treated. The armature lever K when swinging upwardly after the current ceases, returns the tool holder Q inwardly by the lever engaging the transversely-extending pin Q′ of the said holder. It will be seen that the outward movement of the tool holder Q is thus regulated according to the tension of the spring S which causes this outward movement, and the return movement of the tool holder is likewise regulated by the spring H returning the armature lever K as before stated and after the current ceases. A set screw V, held in the casing A regulates the return movement of the arma-

ture lever K, as will be readily understood by reference to Fig. 1. It will further be seen that by this device the force of the stroke of the tool is controlled independent of the speed of the armature.

It will be seen that by adjusting the set screws J and U, the tension of the actuating springs H and S can be regulated as desired, so that perfect control of the stroke of the tool is had. The magnets B and C are so arranged, as to connect with each other at opposite poles on the cross piece or base D, so that a current passing into the coils of B and C, divides at their junction (3) and passes part to the right around C and part to the left around B, uniting at connections on base, passing up iron cores to metallic frame, thence to K and L as illustrated in Fig. 1. It will be seen that this method of mounting the magnets offers but half of the electrical resistance of the ordinary horse-shoe form, thereby securing quicker action and a stronger pull on the armature.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination with the magnets and the casing, of the vibrating armature extending across the upper ends of the magnets and having a vertical transverse aperture through it in line with the hollow core of one magnet, a spring throwing the armature away from the magnets, a tool holder extending loosely through the aperture in the armature and hollow core and provided with a transverse pin or projection crossing the upper end of the armature, a spring against the action of which the armature raises the tool-holder, the battery circuit, and means for closing the circuit when the armature lever rises, substantially as set forth.

2. A magnetic tool, comprising the frame A, connected magnets B C, mounted on said frame and having hollow cores, the soft iron piece connecting the lower ends of the magnets, the vibrating lever pivoted in the frame and having a transverse aperture in line with one hollow core, a spring L on the upper side of the armature lever, a spring in the other hollow core pressing the armature lever upwardly, a tool holder extending loosely down through the said aperture and hollow core and having a pin crossing the upper end of the aperture, a spring pressing on the upper end of the tool holder to project it when released by the armature lever, a binding post having a contact point in the path of the spring L and the battery circuit connected with said post and with the two magnet coils, substantially as set forth.

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Witnesses:
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