No. 617,783. Patented Jan. 17, 1899.

T. R. SMITH.

ELECTROMAGNETIC HONE.

(Application filed Dec. 9, 1897.)

(No Model.)

Fig. 1.

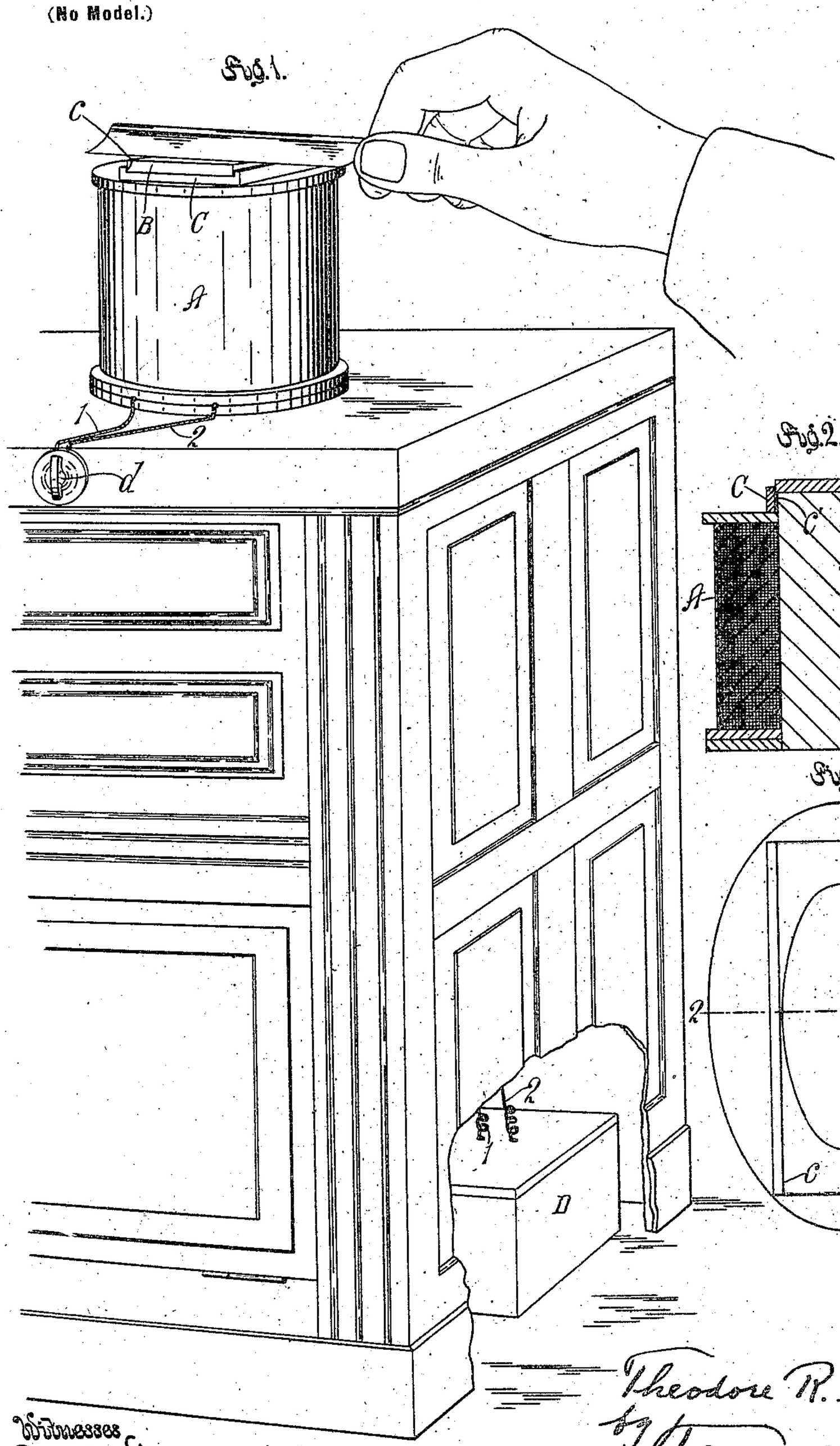

Fig. 2.

Fig. 3.

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UNITED STATES PATENT OFFICE.

THEODORE R. SMITH, OF LOS ANGELES, CALIFORNIA.

ELECTROMAGNETIC HONE.

SPECIFICATION forming part of Letters Patent No. 617,783, dated January 17, 1899.

Application filed December 9, 1897. Serial No. 661,316. (No model.)

To all whom it may concern:

Be it known that I, THEODORE R. SMITH, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Electromagnetic Hone, of which the following is a specification.

The object of my invention is to provide improved means for preventing a wire-edge from being produced on the razor by honing.

Another object of my invention is to so construct it that the hone is removable, so that each barber can use his own hone at pleasure.

A difficulty experienced in honing razors is that the bevel of the blade bends, so that the very edge springs away from the hone, and then the hone, instead of acting directly upon the edge of the razor, cuts more effectively along a line between the edge and where the bevel starts, so that the result of honing is to leave the blade thinner along the line just back of the edge than it is at the edge, so that the edge breaks away under the use and the razor will not cut smooth, but will smart the face. It has been suggested to remedy this difficulty by providing what is known as a "metallic" hone, made of a permanent magnet, the cutting-face of the hone being covered with a pasty preparation of emery or other cutting material; but a difficulty experienced with this form of hone is that the attractive force is at the extremities of the hone and is *nil* at the middle of the hone, so that in honing the edge of the razor is not always drawn toward the hone.

A feature of my invention is that I am able to use a non-metallic hone, and another feature is that with my improvement the edge of the razor is constantly drawn to the hone, the attraction upon the razor being constant as it moves from end to end of the hone and being practically of the same force.

By means of my invention I provide very simple and absolutely effective means for holding the actual edge of the razor in contact with the hone, so that the difficulty above mentioned is avoided and a perfect edge can be easily produced on the razor.

I arrange in combination with a magnet a superposed hone which lies wholly in the field of a single pole of the magnet. The magnet is so arranged with relation to the hone that the lines of effective magnetic force through the hone are toward one pole of the magnet only.

In my invention the hone is independent of the magnet and may be made of any suitable material and does not have to be metallic, as in the magnetic hones heretofore known. I use an electromagnet and place the hone over one end of the magnet, so that the attraction toward the magnet is through the hone at every part of the hone. Even those parts of the hone which are not directly over the magnet will be in the line of attraction toward the magnet—that is to say, the lines of magnetic attraction act through all parts of the hone toward the magnet, although at different angles.

My invention embraces the combination of a hone and an electromagnet, these two elements being so applied to each other that the magnet will act through the hone to draw the edge of the razor against the hone.

A razor-blade from where the bevel starts on the side of the razor to the very edge must be very thin and weak. If there is any weight used in drawing the razor across the hone, as in ordinary honing, the edge will spring from the hone and the honing will make the bevel thinner a little way back from the edge than on the very edge. This will make what we call an "overhoned" razor or "wire-edge," which when put on a hard beard will break away and get rough. The electromagnetic hone will avoid all this, as it will attract the edge strong enough to hold it firmly on the hone, consequently giving a better cutting edge in much less time. In honing any kind of hone may be used; but my experience has been that a Swatta is the best, as it cuts quickly. The hone known to the trade as the "Swatta" hone is made of a composition of emery and paste and is manufactured in Austria; but it is to be understood that my invention is applicable for use with a hone of any kind of grit or of any composition. The hone should never be allowed to get smooth, as it puts on too smooth an edge. To avoid this, use pumice-stone or another piece of hone as a rub-rock.

My invention also includes the various features of construction hereinafter more fully set forth.

The accompanying drawings illustrate my invention.

Figure 1 is a perspective view of my invention in practical use, a razor being shown in position for honing. Fig. 2 is a vertical mid-section of the electromagnetic hone detached from the battery or other source of electrical energy. Line 2 2, Fig. 3, indicates the line of section. Fig. 3 is a plan of the preferred form of the electromagnet with hone-holder in place, the hone being omitted from the view.

A indicates an electromagnet.

B indicates a hone, and C indicates means for holding the hone in place above the electromagnet.

D indicates a suitable source of electrical energy, the same being in this instance a storage battery. The electromagnet preferably has a projecting soft-iron core *a*, around which is wound the wire 1 2, connected with the poles of the battery or other source of electrical energy. The core *a* is preferably oblong in cross-section, as appears by the elliptical form shown in Fig. 3. The hone-holder C is provided with a groove or hone-seat *c* in its upper face to hold the hone in the holder. The holder is also provided with a seat *c'* to seat the projecting core, so that when the holder is placed upon the electromagnet it will fit onto the upper projecting end of the core and thus be held in place.

d indicates the key for connecting and disconnecting the coil and source of electrical energy.

In practical operation for a hone of three-eighths-inch thickness an electromagnet energized by a current of about five volts will be found thoroughly effective; but it is to be understood that the thickness of the superposed hone and the strength of the magnet may be changed, as desired, without departing from my invention. I have successfully used a storage battery of about five volts for energizing the magnet.

Care should be taken that the source of electrical energy shall deliver a direct and not an alternating current, so that the action of the magnet will be constant.

In use the operator will turn the key *d* to electrize the magnet, and will then perform the operation of honing in the ordinary manner. After the honing is completed the current will be turned off until it is again desired to use the hone.

Now, having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of a hone and an electromagnet arranged with such relation to the hone that the lines of effective magnetic force through the hone are toward one pole of the magnet only.

2. The combination of an electromagnet; a hone; and a holder for holding the hone on the electromagnet.

3. The combination of an electromagnet having a projecting core; a hone-holder with seat to seat the projecting core and with a hone-seat in its upper face; and a hone in said hone-seat.

4. An electromagnet with core oblong in cross-section; a hone; and means for holding the hone above the core.

5. The combination of a magnet and a superposed hone which lies wholly in the field of a single pole of the magnet.

THEODORE R. SMITH.

Witnesses:
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