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MACHINE FOR SHARPENING PENCILS

Filed Nov. 14, 1931

Fig. 1

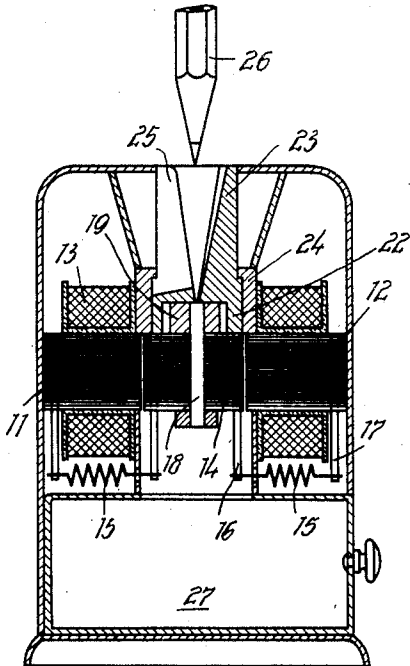


Fig. 4

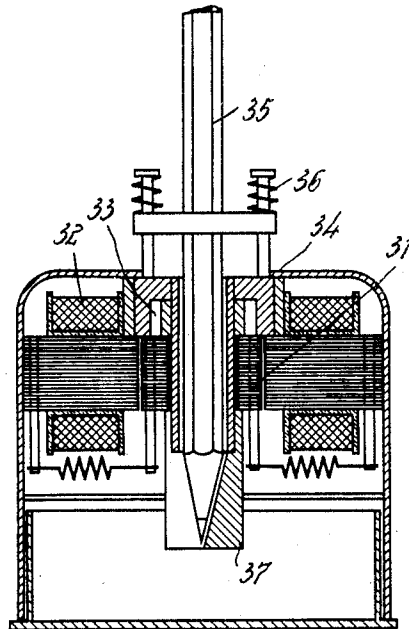


Fig. 2

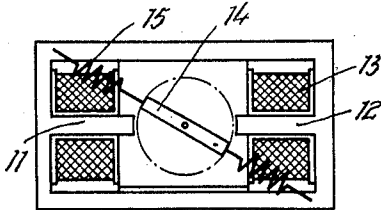
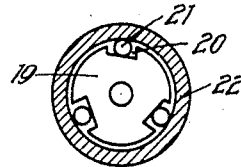


Fig. 3



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UNITED STATES PATENT OFFICE

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MACHINE FOR SHARPENING PENCILS

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My invention relates to machines for sharpening pencils and more particularly to an electrically driven machine for sharpening pencils which is of a simple and inexpensive construction. The invention consists in that an electro-magnet with an oscillating armature is used for the operation of the pencil sharpening machine, said armature being provided with means, for example a free-wheel coupling, for converting its backward and forward movement into a rotary movement of the cutting part. The oscillating armature of the electromagnet is provided with return springs, or is itself elastic, and may be made to turn either the cutter or the pencil. The cutter may consist of a knife, a milling cutter or the like, and engage the pencil concentrically, excentrically or tangentially.

Examples for carrying out my invention are illustrated in the accompanying drawing, in which
Fig. 1 shows a longitudinal section through a pencil-sharpening machine,

Fig. 2 is a plan of same

Fig. 3 is a sectional view of a free wheel coupling, and

Fig. 4 shows a modification of the machine in Figs. 1, 2 and 3.

In Figs. 1 and 2 two electromagnets 11 and 12 are provided, the coils 13 of which are energized by an alternating current or an interrupted direct current. The two electromagnets have a common armature 14 rotatable about a vertical axis and held by springs 15 in the position of rest shown in Fig. 2. The springs 15 act upon pins, or bolts, 16 let into the armature and are fastened at their other ends to pins, or bolts, 17 let into the iron cores of the magnets 11 and 12. To the armature 14 is fastened, by means of the screws 18, the one half 19 of a free-wheel coupling, constructed in a well known manner, and consisting for example, of a drum 19, the circumference of which is, as shown in Fig. 3, provided with several slanting slots 20, in which a shifting roller 21 is placed. When the drum 19 turns in one direction, for example counterclockwise, the rollers 21 will occupy the deepest parts of the slanting slots 20, so that the drum 19 can move freely relatively to the outer part 22 of the free-wheel coupling. In the contrary direction, the rollers 21 are pressed against the inner wall of the part 22 of the free-wheel coupling, so that the latter is forced to take part in the movement of the drum 19. The drum 19 is encircled by the said part 22 which is formed in one piece with the cutter 23 and is rotatably mounted in the casing 24.

If an alternating current is sent through the coils 13 of the magnets, the armature moves backwards and forwards, and this movement is converted into a rotary movement of the cutter 23 by means of the free-wheel coupling 19, 20, 21. If a pencil 26 is inserted in the aperture 25 of the casing it is sharpened to a point corresponding to the inclination of the cutter. The parts of the pencil cut away when it is being sharpened drop past the magnet armature 18 into a receptacle 27 at the bottom of the casing, from which they may be easily removed.

With the construction of the pencil sharpener illustrated in Fig. 1, the pencil is pressed in by hand. The device may however be so designed that the pressing action on the pencil is performed automatically. An example of a pencil sharpening machine in which that is the case is illustrated in Fig. 4. Here the armature 31 of the two electromagnets 32 rotatably mounted in the same manner as shown in Fig. 1, is provided above the free-wheel coupling 33 with a clamping device 34, by which the pencil 35 is tightly held. By means of the springs 36, the point of the pencil is forced against the cutter 37 arranged in the machine casing. When the magnets are energized, the oscillations of the armature 31 are converted through the coupling 33 into a rotary motion of the clamping device 34, and therewith of the pencil, so that the latter under the pressure of the springs 36 is moved relatively to the cutter 37. The construction of the other parts of the machine corresponds essentially to that shown in Fig. 1.

I claim as my invention:

1. In a machine for sharpening pencils, in combination a magnet core, magnet coils ar-

ranged on said core, an armature so supported as to be able to oscillate between the poles of said magnet core, elastic means fastened to the magnet armature and the stationary
5 part of the magnet, a free wheel coupling fastened to said armature, a clamping device for the pencil fastened to one of the parts of said free wheel coupling, a knife suitable for sharpening the pencil, said knife being fastened to the stationary part of the magnet,
10 elastic means fastened to said clamping device, said elastic means being suitable for acting upon said pencil and pressing same against the stationary knife, a casing surrounding the magnet iron, a support for said
15 magnet iron and fastened to said casing.

2. In a machine for sharpening pencils, in combination a magnet core, magnet coils arranged on said core, an armature so supported as to be able to oscillate between the
20 poles of said magnet core, elastic means fastened to the magnet armature and the stationary part of the magnet, a free wheel coupling fastened to said armature, a clamping device for the pencil fastened to one of the parts of
25 said free wheel coupling, a knife suitable for sharpening the pencil, said knife being fastened to the stationary part of the magnet, elastic means fastened to said clamping device, said elastic means being suitable for acting upon said pencil and pressing same
30 against the stationary knife.

3. In a machine for sharpening pencils, in combination a magnet core, magnet coils arranged on said core, an armature so supported as to be able to oscillate between the poles
35 of said magnet core, elastic means fastened to the magnet armature and the stationary part of the magnet, a free wheel coupling fastened to said armature, a knife suitable for sharpening the pencil, said knife being integral with one member of said free wheel
40 coupling, the other member of said coupling being fastened to said armature.

4. In a machine for sharpening pencils, in combination a magnet core, magnet coils arranged on said core, an armature so supported as to be able to oscillate between the poles
45 of said magnet core, elastic means fastened to the magnet armature and the stationary part of the magnet, a free wheel coupling fastened to said armature, a knife suitable for sharpening the pencil, said knife being integral with one member of said free wheel
50 coupling, the other member of said coupling being fastened to said armature, a casing surrounding said core and coils, a support for said core and fastened to said casing.

In testimony whereof I affix my signature.

FRITZ LUDWIG.