J. R. AND E. W. KUGLER.

ELECTRIC RETOUCHING PENCIL.

APPLICATION FILED DEC. 26, 1917.

1,352,976.

Patented Sept. 14, 1920.

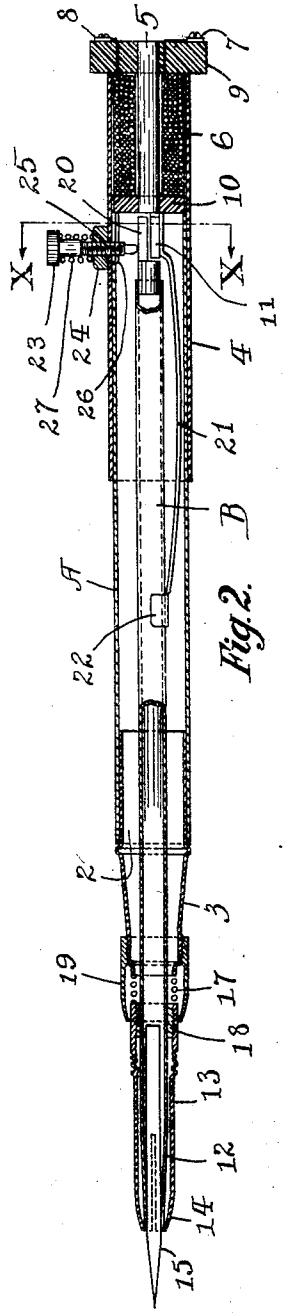

Fig. 2.

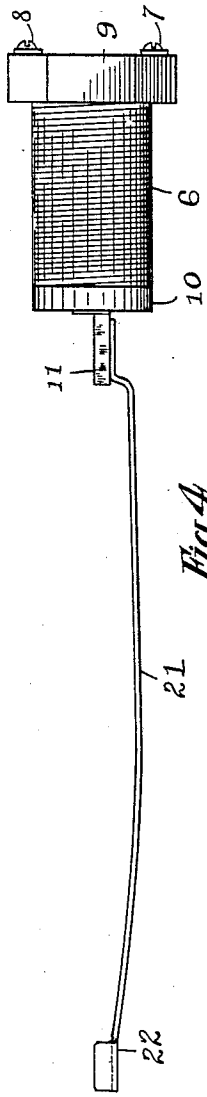

Fig. 4.

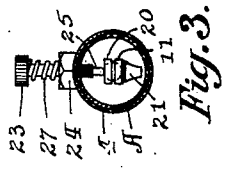

Fig. 3.

Fig. 1.

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ELECTRIC RETOUCHING-PENCIL.

1,352,976. Specification of Letters Patent. **Patented Sept. 14, 1920.**

Application filed December 26, 1917. Serial No. 208,790.

To all whom it may concern:

Be it known that we, JAMES R. KUGLER and EARL W. KUGLER, citizens of the United States, residing at Clear Lake, in the county of Cerro Gordo and State of Iowa, have invented a new and useful Improvement in Electric Retouching-Pencils, of which the following is a specification.

This invention relates to improvements in retouching pencils, the primary object being to provide a simple pencil for the rapid and efficient retouching of photograph negatives, photographs and other purposes. Retouching pencils heretofore used have been bulky and unevenly balanced. Our invention overcomes this objection by simplification of construction and the arrangement of parts wherein the retouching point vibrates laterally and is resiliently mounted, so that the pencil can be poised in the hand of the user to apply the point accurately and more skillfully to the negative or photograph than heretofore. The weight of our improved structure is also less and the structure is entirely inclosed within a substantially smooth barrel of small diameter and regular form, which is an advantage. The parts of our invention are also so constructed as to reduce wear and prolong the life of the pencil.

With these and other objects and advantages in view, our invention comprises the features of construction and combination of parts hereinafter more particularly described and claimed.

In the accompanying drawing forming part of this specification, Figure 1 is a side elevation of our invention; Fig. 2 is a longitudinal section; Fig. 3 is a section taken on the line X—X of Fig. 2, and Fig. 4 is a side elevation of a detail showing the magnetizing coil and the spring which it carries removed from the barrel.

In the drawing A indicates a cylindrical barrel made of thin metal or other suitable material of even diameter throughout its entire length. To one end of this barrel is telescopically secured a barrel tip 2 which is formed with a reduced end 3. On the opposite end of the barrel is telescopically fitted a cylindrical end 4 carrying within its outer end a longitudinally disposed electromagnet core 5. Around this core is wound a magnetizing coil 6, the ends of which are secured to binding posts 7 and 8, said binding posts being mounted upon an insulating head piece 9 secured to the core 5. The inner end of the core 5 is also provided with an insulating end piece 10, which with the coil slips closely within the cylindrical end 4 of the casing. The inner end of the core 5 has a flat pole piece 11 extending into the pencil barrel.

Arranged longitudinally in the barrel is a lead holding tube B having a split outer end portion 12 around which the tip 13 is placed having a contracted end 14, which is adapted to clasp the split end 12 of the tube around the stick of lead 15 to hold the same with its point in selected position outwardly. The inner end of the tip is threaded at 16 on the tube and the portion of the lead holding tube adjacent to the threaded end of the pencil tip 13 is fastened by soldering or any other suitable means to one end of a coil spring 17, which surrounds the lead holding tube freely. The opposite end of the coil spring 17 is soldered or secured by any other suitable means to the outer extremity of the reduced end 3 of the barrel tip 2. Thus a resilient hinge joint is produced between the outer extremity of the barrel tip and the lead holding tube which allows said tube to swing laterally on the resilient support 17 as a fulcrum between its ends. Secured by threaded connection 18 upon the reduced extremity 3 of the barrel tip is a protecting cylindrical cap piece 19 which has larger internal diameter than the outer diameter of the tip 13 so that said tip may vibrate freely laterally therein. The opposite extremity of the lead holding tube B is provided with an armature 20 made of soft iron or other suitable magnetic material, which overlies the inner end 11 of the electromagnet core 5, so as to be attracted by the core when the latter is magnetized by energizing the coil 6. Secured to the side of the pole piece 11 of the electromagnet is a long thin spring 21 made of brass or other suitable material, which has an end 22 pressing laterally against the pencil barrel to urge the latter away from the pole piece 11 of the electromagnet, but permitting the electromagnet when energized to move the pencil barrel against the tension of said spring. Thus a lateral vi-

brating motion is imparted to the lead or other retouching point by the lateral reciprocation of the lead holding tube through the energizing and deënergizing of the electromagnet. The length of these vibrations is regulated by a thumb screw 23 threaded in a lug 24 mounted on the side of the barrel piece 4. The shank 25 of this screw projects freely through an opening 26 in the barrel A, thus locking the barrel end 4 on the main portion of the barrel and serving to define the length of lateral vibratory movement of the marking point. A coil spring 27 placed around the shank 25 of said screw below its head and against the lug 24 tends to prevent the screw from turning and loosening unintentionally.

In use the binding posts 7 and 8 are connected with a suitable source of electric current, which is adapted to energize and deenergize the electromagnet. These magnetic impulses cause the tube B to vibrate laterally on its fulcrum 17, thus imparting a series of rapid lateral vibrations to the marking point 15 of the pencil. These vibrations are most effective for retouching negatives, photographs and other work of a similar nature.

The retouching pencil described is very simple in construction and compact in form, it being most suitably shaped for efficient use. The resilient fulcrum upon which the tube B is hinged is subject to very little wear and the resulting structure produces an evenly balanced instrument in the hand of the retoucher. By adjusting the screw 23, the length of vibrations of the marking point can be easily and quickly adjusted, from a short to a long stroke or vice versa. The vibrations are also confined to the structure in the barrel and the end portion of the barrel and thus do not vibrate the hand holding the device which is obviously a very material advantage. The invention is equally applicable for use with direct current by modifying its construction in a manner familiar to those who are skilled in electrical arts.

In accordance with the patent statutes, we have described the principles of operation of our invention, together with the apparatus which we now consider to represent the best embodiment thereof, but we desire to have it understood that the construction shown is only illustrative, and that the invention can be carried out by other means and applied to uses other than those set forth within the scope of the following claims.

Having described our invention, what we claim as new and desire to protect by Letters Patent is:

1. A photographic retoucher, comprising, in combination, a pencil barrel, a lead holding tube movably supported on a resilient fulcrum between its end near an end of said barrel to permit tilting of the tube on the barrel and means for vibrating said tube laterally on its movable support.

2. A photographic retoucher, comprising, in combination, a pencil barrel, an electromagnet carried by one end of said barrel having a coil by which the magnet is energized, a lead holding tube hinged on a resilient fulcrum between its ends in an end portion of the barrel having an armature on its inner end arranged to be attracted laterally by said electromagnet when the latter is energized to transmit lateral vibrations to the marking point of the lead, and resilient means for urging said tube away from said electromagnet when the latter is demagnetized.

3. A photographic retoucher, comprising, in combination, a pencil barrel, an electromagnet carried by one end of said barrel having a coil by which the magnet is energized, a lead holding tube hinged on a resilient fulcrum between its ends in an end portion of the barrel having an armature on its inner end arranged to be attracted laterally by said electromagnet when the latter is energized to transmit lateral vibrations to the marking point of the lead, resilient means for urging said tube away from said electromagnet when the latter is demagnetized, and means projecting through the side of said barrel and in the path of movement of the inner end of said tube for regulating the length of the lateral vibrations of the point of the lead.

4. A photographic retoucher, comprising, in combination, a pencil barrel, an electromagnet carried by one end of said barrel having a coil by which the magnet is energized, a lead holding tube placed longitudinally in said barrel having an armature on its inner end arranged to be attracted laterally by said magnet when the latter is energized and having its opposite end projecting from the barrel to expose the marking point of the lead, a coil spring secured by one end to said tube and by its other end to the barrel to produce a resilient hinge connection between said tube and barrel, and a spring carried by said armature and pressing against the side of the tube to urge the tube away from the electromagnet when the latter is demagnetized.

5. A photographic retoucher, comprising, in combination, a pencil barrel, an electromagnet carried by one end of said barrel having a coil by which the magnet is energized, a lead holding tube placed longitudinally in said barrel having an armature on its inner end arranged to be attracted laterally by said magnet when the latter is energized and having its opposite end projecting from the barrel to expose the marking point of the lead, a coil spring secured by one end

to said tube and by its other end to the barrel to produce a resilient hinge connection between said tube and barrel, a spring carried by said armature and pressing against the side of the tube to urge the tube away from the electromagnet when the latter is demagnetized and means projecting through the side of said barrel and in the path of movement of the inner end of said tube for regulating the length of the lateral vibrations of the point of the lead.

In testimony whereof, we have signed our names to this specification.

JAMES R. KUGLER.
EARL W. KUGLER.