Dec. 4, 1945. J. P. SMITH 2,390,226

MOTOR ACTUATED ERASER

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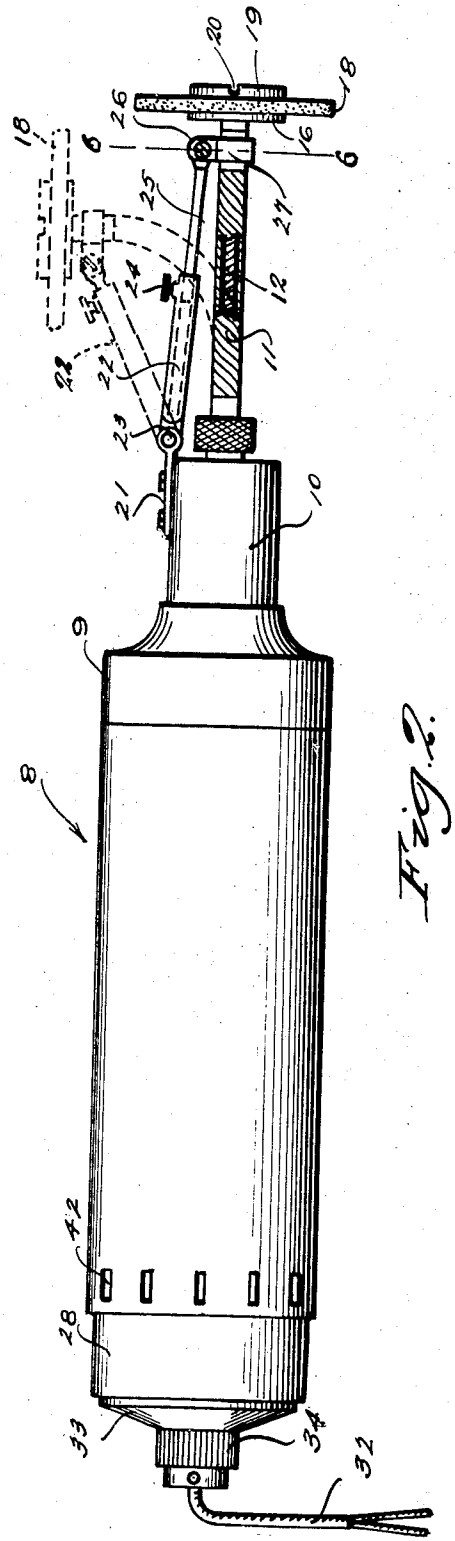


Fig. 1.

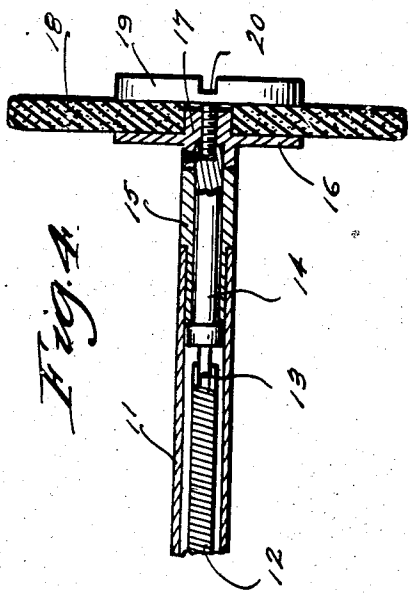


Fig. 4.

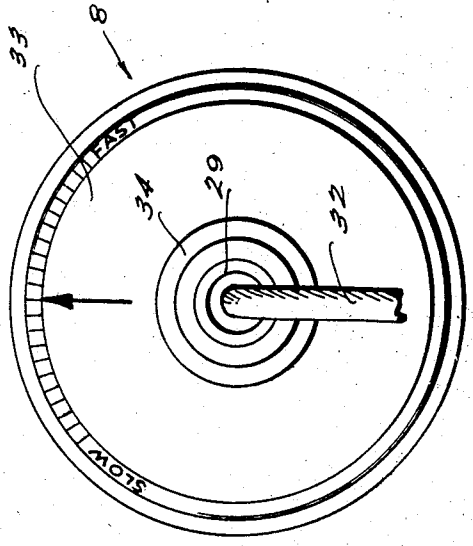


Fig. 2.

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Fig. 1.

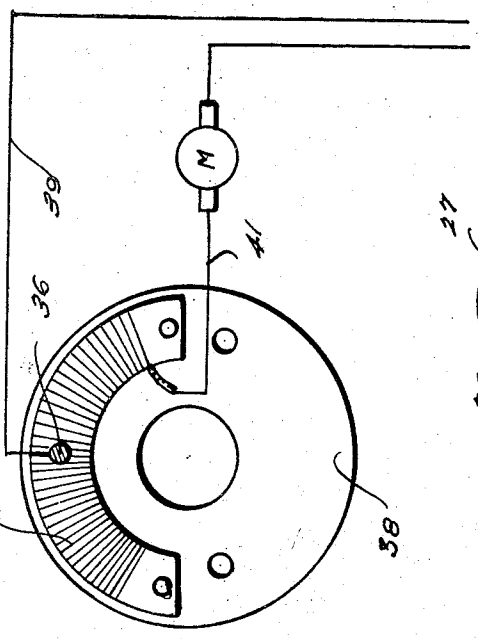


Fig. 3.

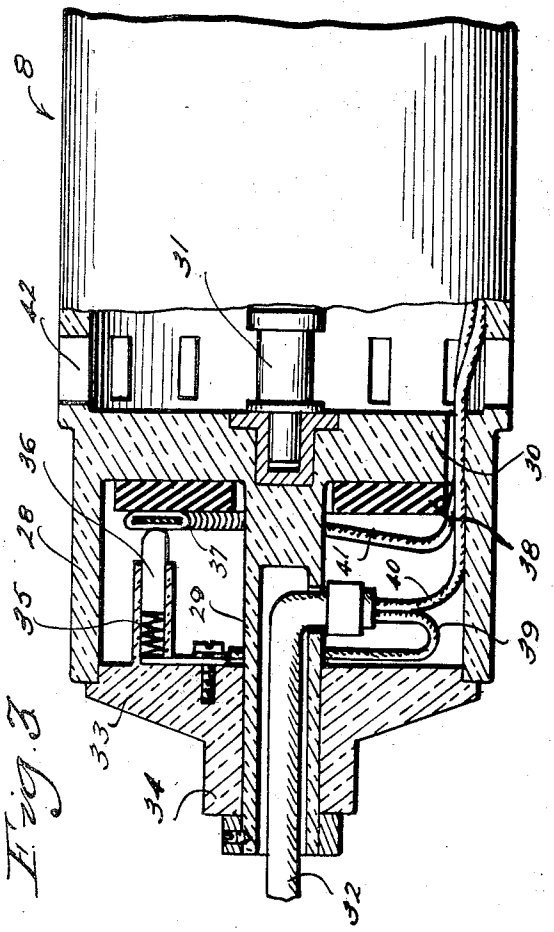


Fig. 6.

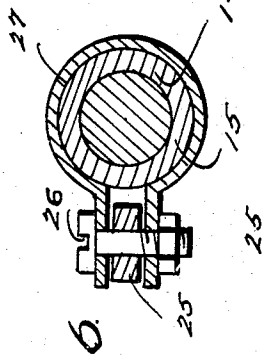
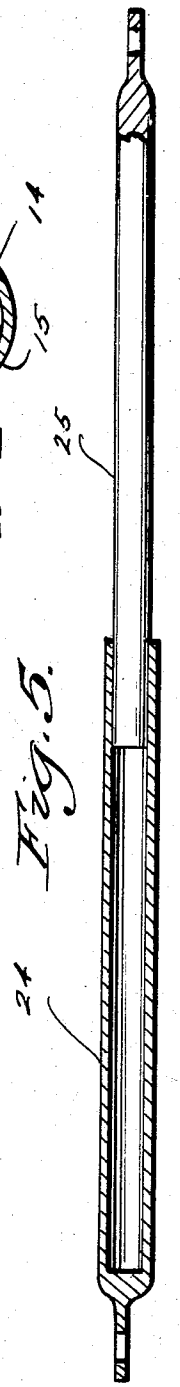


Fig. 5.



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UNITED STATES PATENT OFFICE

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MOTOR ACTUATED ERASER

John P. Smith, Reidsville, N. C.

Application January 10, 1944, Serial No. 517,714

3 Claims. (Cl. 120—36)

This invention relates to so-called power driven pencil and ink erasers and has reference in particular to a structure in which the source of power is in the form of an electric motor, the motor being mounted in an elongated tubular housing and said housing constituting a handle for conveniently directing and holding the eraser against the surface acted on. More specifically, the preferred embodiment of the invention comprises an elongated motor housing provided at its outer end with the desired detachable eraser and associated rotating and adjusting means, said housing being provided at its opposite inner end with a conveniently built-in rheostat and control such as make it possible to expeditiously regulate the speed of the motor and consequent speed of rotation of the eraser element.

Novelty is thought to reside in the adoption and use of expedient and practicable means for flexibly supporting a disk eraser at a point spaced outwardly of the outer end of the handle forming housing, whereby to permit the eraser to assume different angular positions with respect to the longitudinal axis of said housing and to thus insure convenient "spotting" of the eraser against the desired surface, whereby to permit said eraser to function in a feasible manner and to simultaneously maintain yieldable contact with the surface to compensate for variable situations in which a rigidly mounted eraser would not do.

Further, the provision of a flexible drive shaft for the eraser allows for the association therewith of adjustable retention means in which it is possible to flex the drive shaft laterally to one side and to position the eraser so that its axis of rotation is at approximate right angles to the axis of the motor and motor housing.

Then too, and as previously implied, additional novelty is thought to reside in the self-contained feature, that is, an arrangement in which the desired type of rheostat is made, conveniently, a part of the motor housing to thus consolidate and simplify the various coordinated features and to insure more easily and readily controllable results.

Other features and advantages will become more readily apparent from the following description and the accompanying illustrative drawings.

In the drawings, wherein the same numerals are employed to designate the same parts throughout the same:

Figure 1 is a side elevational view, with parts in section and dotted lines illustrating a complete motor powered eraser as constructed in accordance with the principles of the present invention.

Figure 2 is an end view of Figure 1, said view being on an enlarged scale and picturing the structure as it appears in a direction from left to right.

Figure 3 is an enlarged fragmentary detail sectional and elevational view covering, in particular, the construction and arrangement of the regulator, that is, the rheostat type regulator for the motor (not shown).

Figure 4 is a longitudinal sectional view, on an enlarged scale, through the outer end portion of the flexible drive shaft and eraser mounting means.

Figure 5 is an enlarged view of the bracket or fixture which serves as the adjustable retainer for the laterally positioning and holding the eraser in the dotted line position seen in Figure 1.

Figure 6 is a section, enlarged, on the plane of the line 6—6 of Figure 1.

Figure 7 is an elevational view showing the rheostat and electrical wiring arrangement.

Referring now to the drawings by distinguishing reference numerals it will be observed that the cylindrical elongated motor housing, in which the motor (not shown) is encased, is denoted by the numeral 8. At the right hand end is a suitable cap 9 with an adapter neck 10 provided with suitable bearing means for the protruding flexible shaft 11. As brought out in Figure 4, the flexible shaft includes a suitable wound casing or jacket 11 with a conventional flexible core 12 therein, the core being suitably coupled as at 13 to an appropriately shouldered spindle 14. The spindle rotates in the bearing sleeve 15, part of which telescopes into the outer end of the jacket or casing 11. The spindle is provided on its outer end with a backing head or disk 16 and a socketed hub 17 which serves to accommodate the detachable eraser 18. This eraser is clamped against the backing element 16 by a clamping head 19 having a screw-threaded stem threaded into the socket 17. The head is provided with a kerf 20 to accommodate a screw-driver or the like to facilitate application and removal and interchange or exchange of erasers. It is permissible to use either ink erasers or pencil erasers, and erasers of different diameters, obviously.

I next call attention to the adapter fixture arrangement. This comprises a bracket 21 detachably mounted on the neck 10 and serving as a foundation for a sleeve 22 which is hingedly mounted thereon as indicated at 23. The sleeve is provided with a set-screw 24 to accommodate

the telescoping rod 25, this rod being pivotally and detachably mounted between ears, as at 26, on a split clip 27 embracing the bearing 15. This adapter bracket means allows the shaft part 11 to flex in more or less universal directions with respect to the longitudinal axis of the motor housing and to thus permit the eraser to take different angular positions such as are necessary to serve variable eradication tasks. The bracket arrangement also serves to permit the shaft, that is the parts 11 and 12, to be adjusted laterally to the dotted line position seen in Figure 1 and to hold the parts here, whereby to thus position the eraser 18 parallel to the motor housing 8, in which position its axis of rotation is at approximate right angles to the motor shaft.

Referring now to the control and regulator means at the left hand end of the handle forming housing it will be seen that this comprises an extension 28 (see Figure 3) which has a concentric stem 29 carried by the central portion of the divider or partitioning element 30. The element 30 is provided with bearing means to accommodate the motor armature 31. The stem 29 is socketed to permit entrance of the conductor cord or cable 32. The extension also serves as a mounting for the dial 33 and its finger gripping hub 34. The dial is rotatably mounted in the left hand end portion of the shell or extension 28. It is provided with a socket 35 to accommodate a coil spring in which the contact finger 36 is mounted. The finger is engageable with the convolutions of the rheostat coil 37, a part carried by the insulator annulus or ring 38. One wire 39 is electrically connected with the brush or contact finger arrangement and another wire 40 leads into and is connected with the motor in the motor housing (not shown). The wire 41 from the rheostat coil leads into the motor housing where it is connected with the motor. Incidentally, the motor housing is provided with ventilating apertures or holes 42 as is customary in devices in this category.

The simplicity of the construction and arrangement of parts is such as to obviate the necessity of reviewing at length the objects and features and advantages already briefly covered in the introductory portion of the specification and the detailed description of the overall structure. The method of use and operation of parts is virtually self-evident from the views of the drawings considered singly and collectively. What is more, no effort will here be made to emphasize what would be manufacturing and commercial aspects of the invention.

It is thought that persons skilled in the art to which the invention relates will be able to obtain a clear understanding of the invention after considering the description in connection with the drawings. Therefore, a more lengthy description is regarded as unnecessary.

Minor changes in the shape, size and arrangement of details coming within the field of invention claimed may be resorted to in actual practice, if desired.

What is claimed as new is:

1. An electric motor driven eraser of the class described comprising motor equipped handle, a flexible motor driven shaft mounted on one end of said handle, a bearing on the outer end of the shaft, a spindle journaled for rotation in said bearing, said spindle being provided with a hub and a backing head, an eraser having a central apertured portion removably mounted on said hub and resting against said backing head, and a clamping screw and head for holding the eraser detachably and operatively in position, and an adjustable adapter device having a part mounted on the adjacent end portion of said motor housing and provided with a clip embracing said bearing in the manner and for the purposes described.

2. In a structure of the class described, a motor housing, a bracket thereon, a sleeve hingedly mounted on said bracket, a rod telescopically mounted in said sleeve, a set-screw carried by the sleeve and adapted for binding engagement with said rod, a clip having parallel ears, the outer end of said rod being detachably and hingedly mounted between said ears, a flexible shaft, a bearing on the outer end of the shaft, said bearing mounted for rotation in said clip, a spindle in said bearing, and clamping means for an eraser carried by said spindle.

3. An electric motor-driven eraser of the class described comprising a motor equipped handle, a flexible motor-driven shaft mounted on one end of said handle, a bearing on the outer end of said shaft, a spindle journaled for rotation in said bearing, said spindle being provided with a hub and a backing head, an eraser having a central apertured portion removably mounted on said hub and resting against said backing head, a clamping screw and head for holding the eraser detachably and operatively in position, and a longitudinally extensible and retractable adapter device having a part mounted on the adjacent end portion of said motor handle, said adapter device having means embracing said bearing.

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