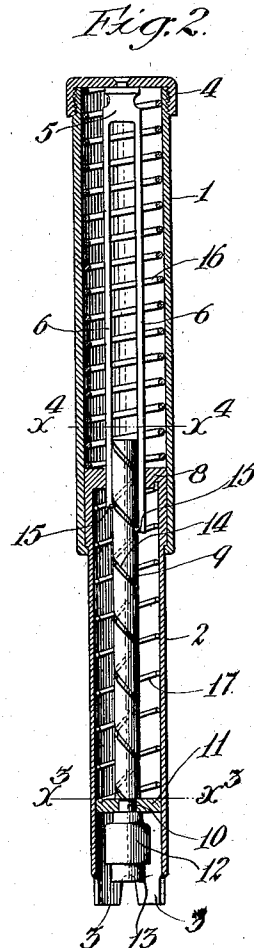
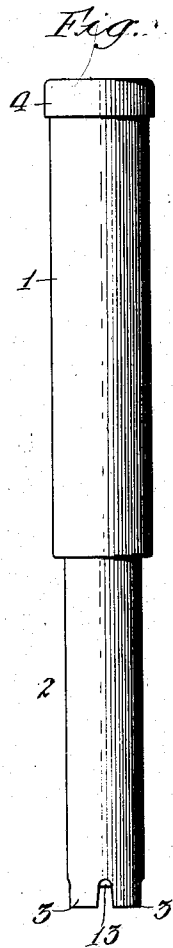


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 ROTARY ERASER.
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933,299.

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UNITED STATES PATENT OFFICE.

WILLIAM R. GARDNER, OF LOS ANGELES, CALIFORNIA.

ROTARY ERASER.

983,299.

Specification of Letters Patent.

Patented Sept. 7, 1909.

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To all whom it may concern:

Be it known that I, WILLIAM R. GARDNER, 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 Rotary Eraser, of which the following is a specification.

This invention relates to rotary erasers, and the object of the invention is to produce a rotary movement of the eraser whereby the operation of erasing may be performed more expeditiously than heretofore.

A further object is to restrict the erasing operation of the exact area to be erased, thereby making it possible to erase a single letter of a word without erasing other letters of the word, and to increase the erasing qualities of the eraser.

A further object is to provide a stable or nonslipping support for contacting with the paper surrounding the area to be erased, and to thus hold the instrument steadily in proper position over the desired area during the process of erasing, the support preventing the instrument from shifting which otherwise might occur owing to the rapid rotation and pressure of the eraser against the paper.

The accompanying drawings illustrate the invention, and referring thereto:—Figure 1 is a side elevation of the device. Fig. 2 is a longitudinal section through the device. Fig. 3 is a cross section on line x^3-x^3 , Fig. 2. Fig. 4 is a cross section on line x^4-x^4 , Fig. 2.

The device comprises an outer barrel 1 and an inner barrel 2 which is slidable in the outer barrel, the lower portion of the barrel 2 being slightly reduced in diameter, as shown in Fig. 2, to avoid friction when the two barrels are telescoped. The lower end of the inner barrel 2 is formed with four segmental feet 3, the edges of which are adapted to be pressed against the paper surrounding the area to be erased and form a nonslipping support for the instrument during the process of erasing.

Screwed to the upper end of the barrel 1 is a cap 4 to which is secured a fork 5, the tines 6 of which extend down through the main barrel 1 and through two notches 7 formed in the head 8 of the barrel 2, the head 8 having a central perforation with which the notches 7 communicate. A shaft 9 is arranged with its upper end rotatably mounted in the perforated head 8, while the lower end of shaft 9 is grooved at 10 and

journaled in a plate 11 slidable within the barrel 2. A chuck or eraser holder 12 is carried on the lower end of the shaft 9, and the eraser 13 is supported by the holder 12. The shaft 9 has a spiral groove 14 which is engaged by two inwardly projecting lugs 15 formed on the lower ends of the fork 5.

A coil compression spring 16 is located in the barrel 1 between the cap 4 and head 8, while a coil tension spring 17 is located in the barrel 2, the upper end of spring 17 being secured to the head 8 and the lower end being secured to the plate 11. It will be observed that the tendency of the spring 17 is to withdraw or lift the shaft 9. Fig. 2 shows the minimum contraction of spring 17, the shaft 9 and eraser 13 being retracted to the farthest point they occupy normally, at which time the eraser 13 lies housed within the lower end of the barrel 2.

In operation the legs 3 of the instrument are placed over the space to be erased, then by pressing down the barrel 1 the lugs 15 of the fork 5 ride down the spirally grooved shaft 9 and thus cause the shaft and eraser to rotate. This downward movement of lugs 15 in the groove 14 exerts a downward pressure on the shaft 9 in addition to the rotary pressure thereon, and this downward pressure is sufficient to overcome the spring 17 and force the shaft 14 downward until the eraser 13 makes contact with the paper and the rotation of the eraser performs the erasing operation. The spring 17 prevents the eraser 13 from being forced against the paper with too great a pressure and thus obviates tearing of the paper or undue abrasion thereof. One of the most important reasons for the employment of the spring 17 is this: The legs 3, in order to prevent the barrel 2 from slipping, must remain in contact with the paper during the erasing operation, and this contact is secured by the downward pressure of the upper spring 16 which is compressed when the barrel 1 is moved down. It is obvious that while the legs 3 are thus stationary on the paper it becomes necessary for the eraser 13 to be capable of a longitudinal movement, even though slight, with respect to the surface of the paper, because the eraser is constructed usually of yielding material and it will necessarily be pressed against the paper with varying degrees of pressure. Thus to provide for this movement of the eraser, the shaft 9 is permitted a longitudinal movement within the barrel 2

from the point shown in Fig. 2 to a point at which the tip of the eraser is substantially flush with the ends of the legs 3, and to retract the eraser and shaft 9 the spring 17 is employed. Thus during the downward movement of barrel 1 spring 16 is contracted, and spring 17 is expanded as the plate 11 slides down in barrel 2, and as soon as pressure of the finger is removed from barrel 1, the spring 16 forces the barrel 1 upward and at the same time spring 17 pulls up the shaft 9, bringing the parts into normal position shown in Fig. 2.

What I claim is:—

1. An outer barrel, an inner barrel slidable therein, a spirally grooved shaft with its upper end rotatably and slidably mounted in the end of the inner barrel, a plate slidable in the inner barrel in which plate the lower end of the shaft is journaled, a holder for an eraser on the lower end of said shaft, a fork connected at its upper end to the head of the inner barrel, said fork having lugs which engage the spirally grooved shaft, a coil compression spring in the outer barrel, and a coil tension spring within the inner barrel, one end of the latter spring being attached to the head of the inner barrel and the other end attached to said slidable plate.

2. An outer barrel, an inner barrel slidable therein, a spirally grooved shaft with its upper end rotatably and slidably mounted in the end of the inner barrel, a plate slidable in the inner barrel in which plate the lower end of the shaft is journaled, a holder for an eraser on the lower end of said shaft, a fork connected at its upper end to the outer barrel and extending through the head of the inner barrel, said fork having lugs which engage the spirally grooved shaft, a coil compression spring in the outer barrel, and a coil tension spring within the inner barrel, one end of the latter spring being attached to the head of the inner barrel and the other end attached to said slidable plate, the lower end of the inner barrel projecting below the eraser holder.

3. A pair of telescopic barrels, a spirally grooved shaft rotatably mounted in one barrel and having a limited longitudinal movement therein, means carried by the other barrel for engaging the spirally grooved shaft to impart rotation thereto when the barrels are telescoped, a holder carried on the lower end of said shaft, a coil compression spring for extending said barrels, and a coil tension spring for retracting said shaft and controlling its longitudinal movement.

4. A pair of telescopic barrels, a cap screwed to the outer barrel, a fork secured

to the cap, the head of the inner barrel being perforated and having two notches at the perforation through which the tines of said fork project, a spirally grooved shaft extending through the perforated head of the inner barrel and engaged by the tines of said fork for the rotation of the shaft, a slidable plate in the inner barrel in which the lower end of the shaft is rotatably mounted, an eraser holder on the lower end of said shaft, a compression spring between said cap and the head of the inner barrel, and a tension spring connected at one end to said plate and at the other end to the head of the inner barrel.

5. A pair of telescopic barrels, a cap screwed to the outer barrel, a fork secured to the cap, the head of the inner barrel being perforated and having two notches at the perforation through which the tines of said fork project, a spirally grooved shaft extending through the perforated head of the inner barrel and engaged by the tines of said fork, for the rotation of the shaft, a slidable plate in the inner barrel in which the lower end of the shaft is rotatably mounted, a compression spring between said cap and the head of the inner barrel, a tension spring connected at one end to said plate and at the other end to the head of the inner barrel, and an eraser holder secured to the lower end of said shaft below said plate, said inner tube having feet which project below said holder.

6. A rotary eraser comprising a pair of telescopic members, the lower end of the lower member being adapted to be pressed against the paper and forming a non-slipping support for the instrument, a spirally grooved shaft within said members mounted to rotate and capable of longitudinal movement therein, an eraser carried on the lower end of said shaft, and means engaging the grooved shaft and operating by the telescopic movement of the two members to operate the eraser.

7. A rotary eraser comprising a tube, the lower end of which is adapted to be pressed against the paper and form a non-slipping support for the instrument, a spirally grooved shaft within said tube mounted to rotate and capable of longitudinal movement therein, an eraser on the lower end of said shaft, and means slidable relatively to said tube and engaging the grooved shaft for operating the same.

In testimony whereof, I have hereunto set my hand at Los Angeles, Cal., this 21st day of September, 1908.

WILLIAM R. GARDNER.

In presence of—

G. T. HACKLEY,

FRANK L. A. GRAHAM.