H. REICHE.

FOUNTAIN BRUSH.

APPLICATION FILED AUG. 12, 1909.

1,166,482.

Patented Jan. 4, 1916.

4 SHEETS—SHEET 1.

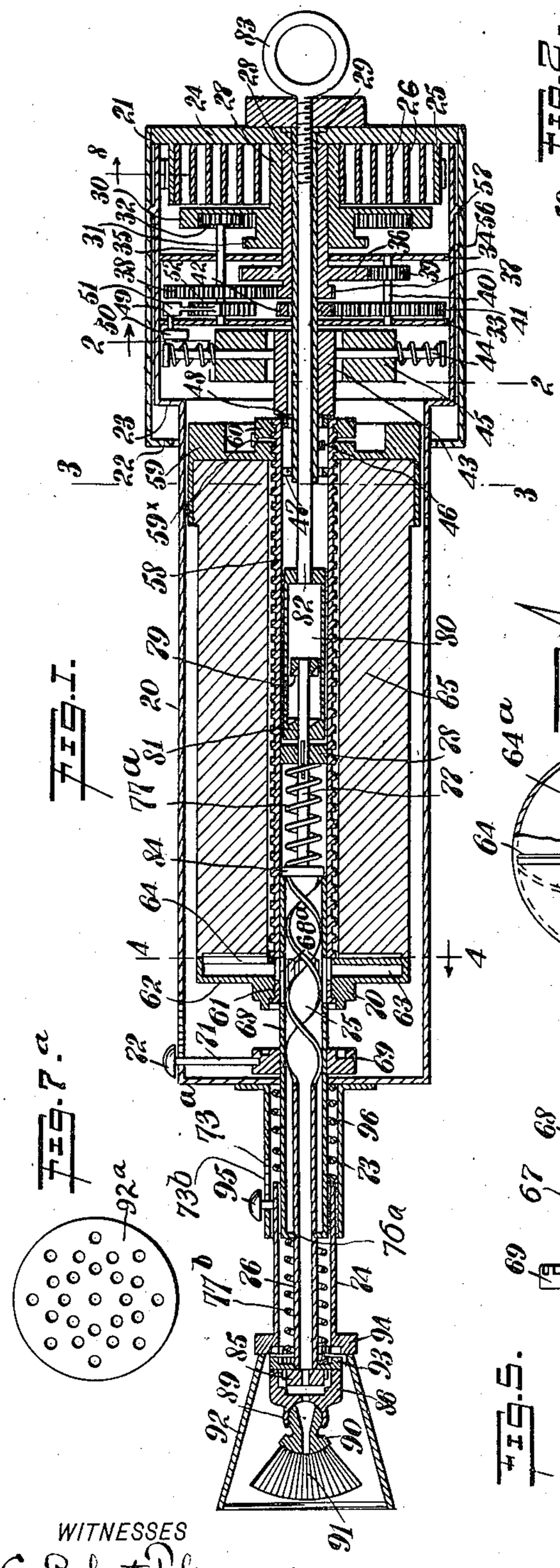

FIG. 1.

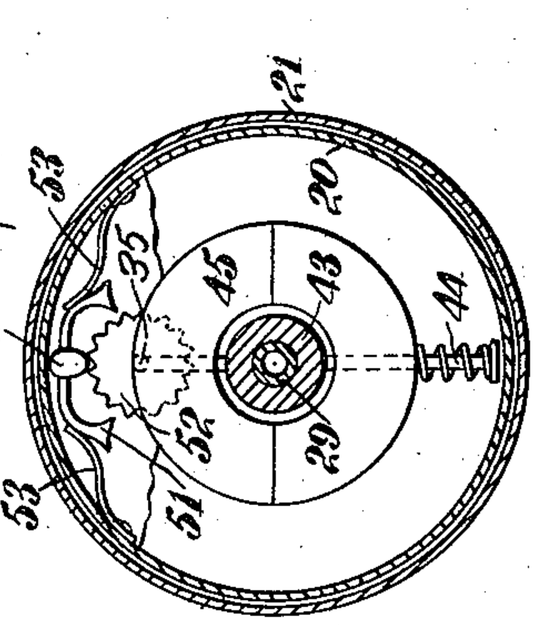

FIG. 2.

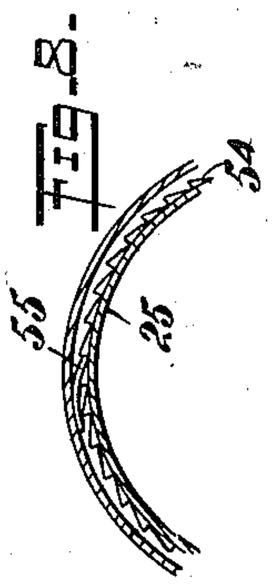

FIG. 3.

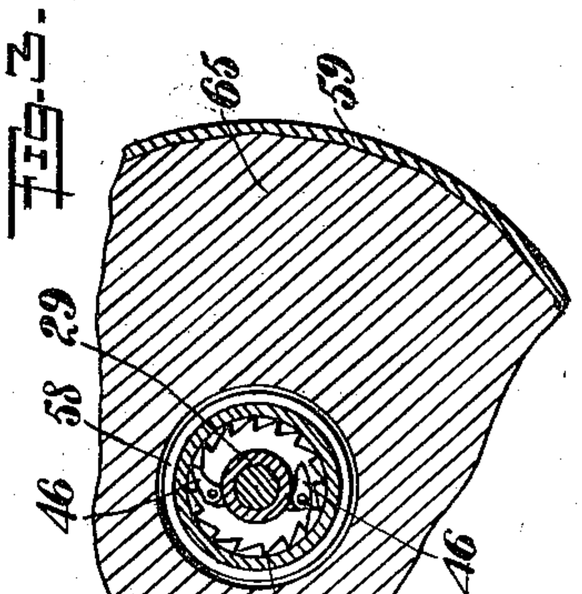

FIG. 4.

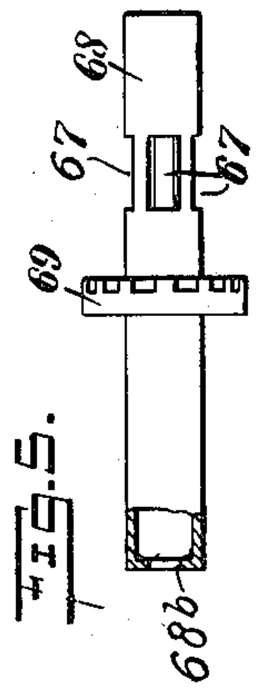

FIG. 5.

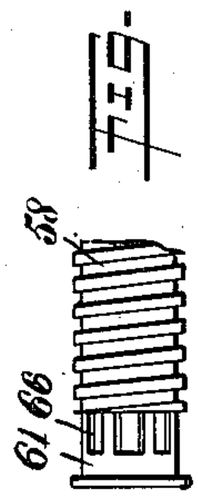

FIG. 6.

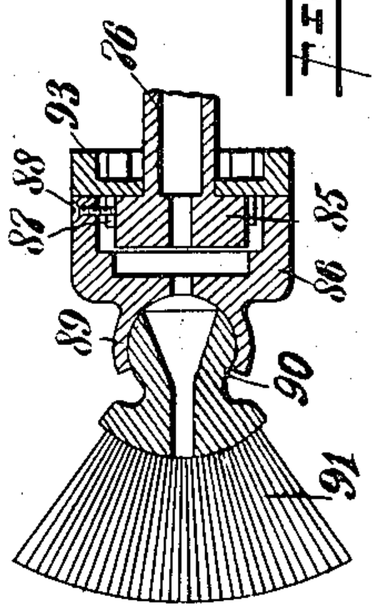

FIG. 7.

FIG. 7a.

WITNESSES

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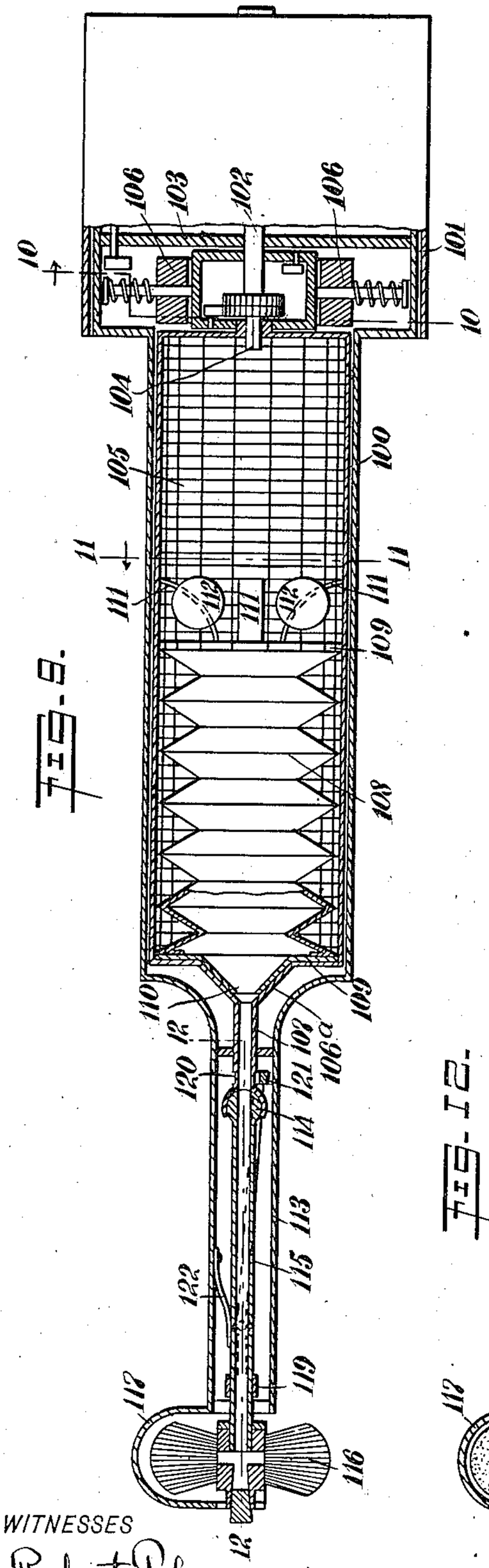

FIG. 9.

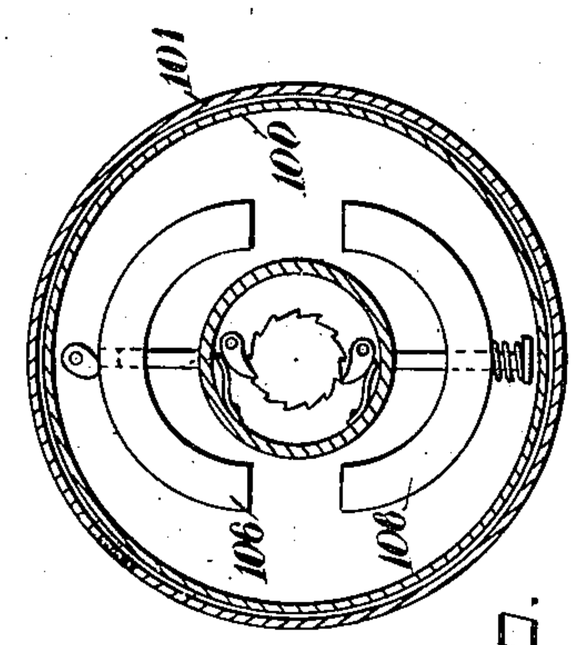

FIG. 10.

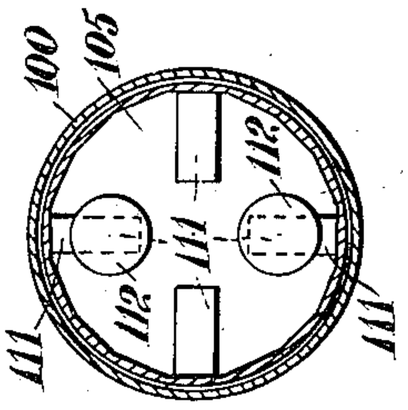

FIG. 11.

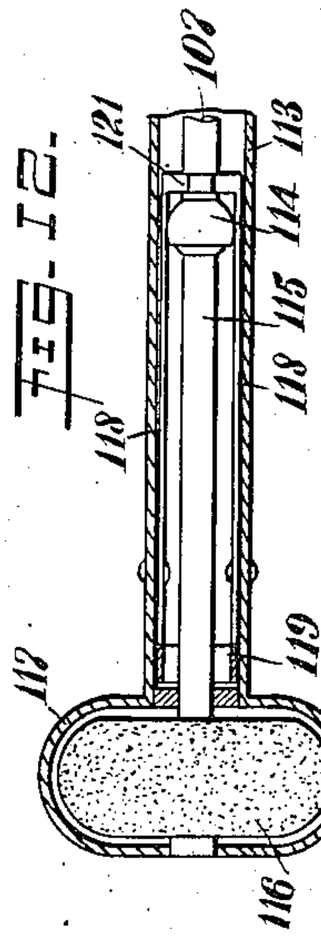

FIG. 12.

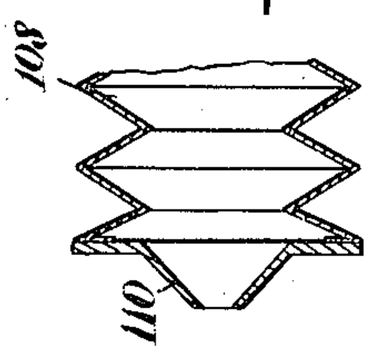

FIG. 14.

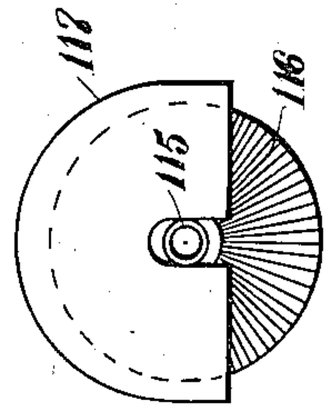

FIG. 13.

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4 SHEETS—SHEET 3.

FIG. 15.

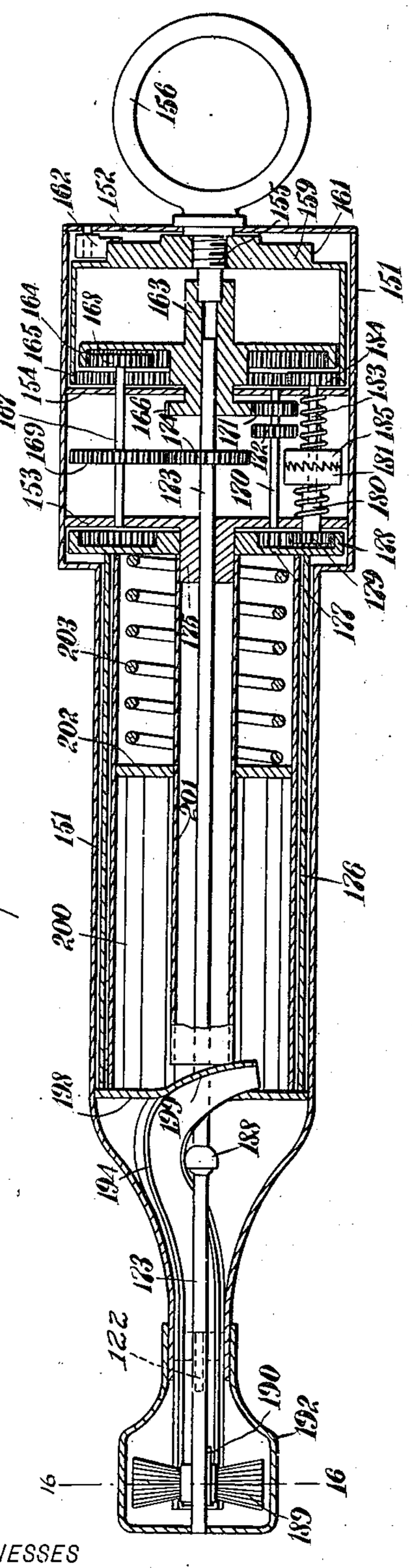

FIG. 17.

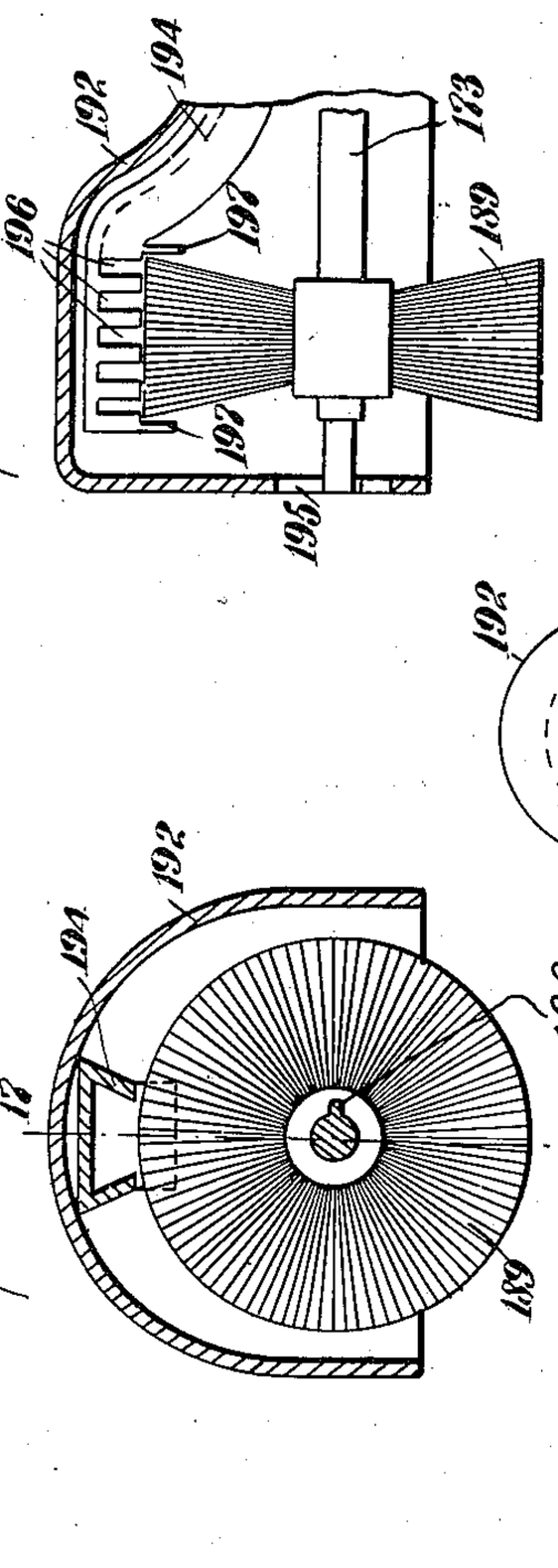

FIG. 18.

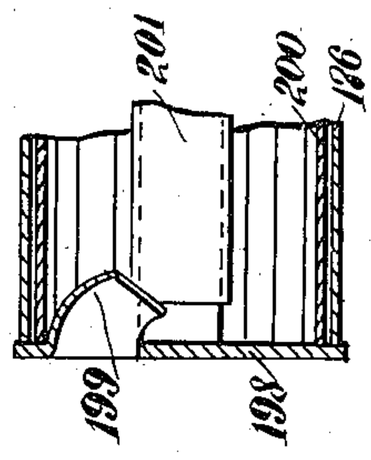

FIG. 19.

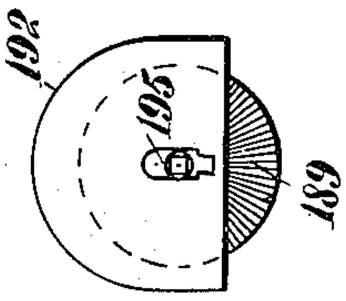

FIG. 16.

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4 SHEETS—SHEET 4.

Fig. 21.

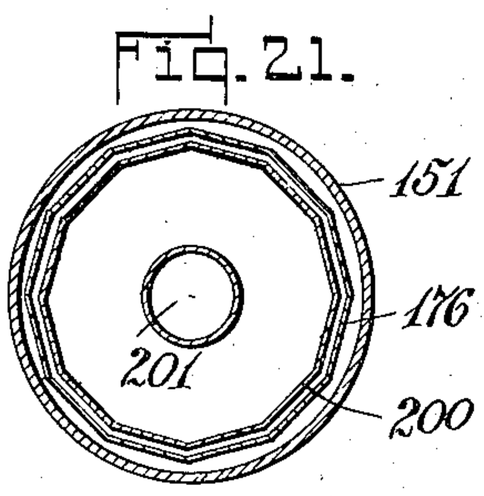


Fig. 20.

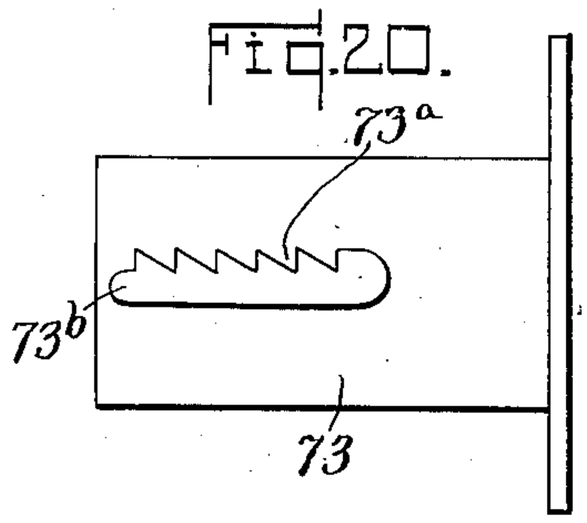


Fig. 22.

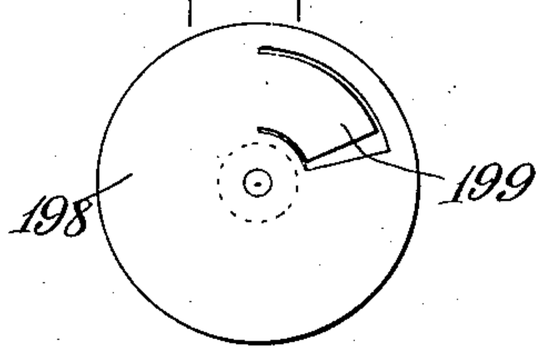
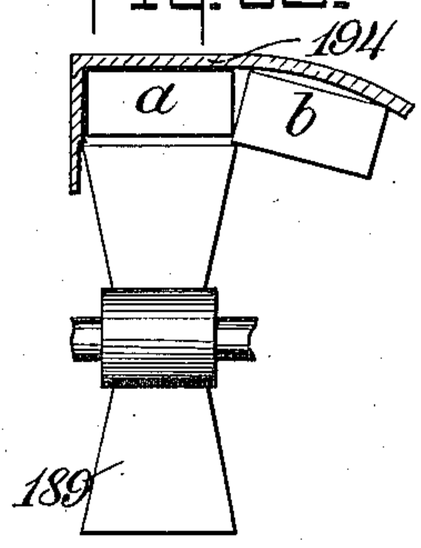


Fig. 23.



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HERMANN REICHE, OF MILLSTONE, NEW JERSEY.

FOUNTAIN-BRUSH.

1,166,482. Specification of Letters Patent. Patented Jan. 4, 1916.

Application filed August 12, 1909. Serial No. 512,543.

To all whom it may concern:

Be it known that I, HERMANN REICHE, a citizen of the United States, and a resident of Millstone, in the county of Somerset and State of New Jersey, have invented a new and Improved Fountain-Brush, of which the following is a full, clear, and exact description.

This invention relates to certain improvements in devices for mechanically treating surfaces, and also for applying thereto a liquid or solid substance.

My improved device consists primarily of a brush which is connected to a handle inclosed means for operating the brush and delivering thereto the treating material. The brush is preferably rotated by the motor within the handle, although if desired, it may be reciprocated or vibrated rather than rotated. The material delivered to the brush may be in the form of a solid and the motor may operate to scrape off small portions of the solid for delivery to the brush, or the solid material may be delivered in tablet form, or the material may be delivered in the form of a liquid, semi-liquid, paste or gas.

Various forms which the invention may assume are illustrated in the accompanying drawings, each of the different forms being adapted to perform a different work and use a different treating substance.

It is understood that all of the features of my invention may be combined and utilized in a single device, or separate features or combinations of features may be utilized independently of others.

The drawings are to be considered in an illustrative sense rather than in a limiting sense, as the scope of the invention is defined in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures, and in which—

Figure 1 is a longitudinal section through one form of my improved device; Figs. 2, 3 and 4 are transverse sections on the lines 2—2, 3—3 and 4—4, respectively, of Fig. 1; Fig. 5 is a side elevation of a portion of the delivery tube with the clutch collar thereon; Fig. 6 is a side elevation of a portion of the tube extending through the cutter; Fig. 7 is a longitudinal section on an enlarged scale through the brush; Fig. 7ª is a plan view of a sifting plate adapted to be secured to the brush guard; Fig. 8 is a sectional detail substantially on the line 8 of Fig. 1; Fig. 9 is a longitudinal section through another form which my invention may assume and which is adapted for the delivery of a liquid or semi-liquid material; Figs. 10 and 11 are transverse sections on the lines 10—10 and 11—11, respectively, of Fig. 9; Fig. 12 is a longitudinal section through the casing substantially on the line 12—12 of Fig. 9; Fig. 13 is an end view of the brush and its protecting casing; Fig. 14 is a longitudinal section through the delivery end of the container; Fig. 15 is a longitudinal section through a third form which my invention may assume, and in which the material delivered to the brush is in tablet form; Fig. 16 is a transverse section on the line 16—16 of Fig. 15; Fig. 17 is a longitudinal section on the line 17—17 of Fig. 16; Fig. 18 is a longitudinal section through the container showing the guiding means for removing the tablets therefrom; Fig. 19 is an end view of the brush and its container. Fig. 20 is a detail view showing the tubular extension of the casing 20 and the regulating slot therefor. Fig. 21 is a sectional view of the casing 176 and the container 200; Fig. 22 is a plan view of the partition 198, showing the guiding tongue 199; Fig. 23, is a view of the brush 189, and the channel 194, and shows one tablet (*a*) adjacent the brush, partly worn away, while a second tablet (*b*) is butting against (*a*), ready to take its position in alinement with the brush, when (*a*) has been consumed.

In the specific form illustrated in Figs. 1 to 8, inclusive, I employ a brush having means for imparting rotary as well as reciprocatory movement to a hollow shaft connected to said brush. The brush is removable from the shaft and may be replaced by any other form of instrument or tool, or by any other form of brush than that shown. The spring motor constituting the driving means for the shaft is so connected to the latter that the shaft may be operated in either direction and the speed of the shaft automatically regulated or manually retarded or stopped. A movable hood or fender partly surrounds the brush and this

fender may be moved independently of the brush. The brush may be given an angular movement, as well as the rotary and reciprocatory movements. Within the handle of the brush is the container for a solid substance, and mechanism is provided for scraping, cutting or detaching particles from said substance and conveying them to the brush. The nature of the substance will depend largely upon the use to which the brush is put. For instance, if the brush is employed for polishing purposes, an abrasive powder may be delivered, and if the brush is employed for cleaning or lathering, a soap or other detergent may be employed.

More in detail, the device includes a casing 20 having an enlarged end inclosed by a cap 21. The cap is rotatable in respect to the casing and is movable longitudinally relatively thereto, said longitudinal movement being limited by the engagement of a flange 22 on the cap with a shoulder 23 on the casing, and by the engagement of the end plate 24 of the cap with the outer end of the casing. The end plate 24 has an annular cylindrical flange 25 upon the inner surface thereof and inclosing a helical spring 26. The outer end of the spring is secured to the inner surface of this flange while the inner end is secured to a sleeve 27 within the casing. This sleeve rotates upon an inner sleeve 28, which latter rotates upon a third sleeve 29. The sleeve 27 has an internal gear 30 and an external gear 31 mounted in parallel planes and of such diameter that a pinion 32 may engage with the internal gear 30 or may engage with the gear 31. The sleeve 27 and its gears 30 and 31 are positively driven by the spring, and thus they rotate the pinion 32 in either direction.

Within the enlarged end of the casing there are two transverse partitions 33 and 34 subdividing the casing into three compartments. The spring and the sleeve 27 and its gears are in the outermost or end compartment, and the arbor 35 upon which the pinion 32 is mounted, extends through the middle compartment and is supported by both partitions. The sleeve 28 extends through the partition 34 and is provided with a gear 36 and a pinion 37, both in the center compartment. The pinion 37 engages with a gear 38 on the arbor 35, while the gear 36 engages with a pinion 39 on an arbor 40 supported by the two partitions. On this arbor there is also a gear wheel 41 engaging with a pinion 42 on the third or innermost sleeve 29. In the third compartment and mounted on the innermost sleeve 29 is a hub 43 having outwardly-extending spokes 44. Loosely mounted on the spokes are semi-circular weights 45 movable radially and normally held against the hub by suitable springs encircling the spokes. Both the hub 43 and the pinion 42 are keyed to the sleeve 29, so as to rotate therewith but to permit the sleeve to be moved longitudinally. The sleeve can rotate in respect to the plate 24 but at its outer end has a flange to prevent relative longitudinal movement. Thus, when the cap is moved in respect to the casing, the sleeve 29 is also moved longitudinally.

Extending through the partition 33 is a short shaft 49 having upon one end thereof a cam 50, which may be engaged by one or both of the weights 45 when the latter are moved outwardly to the limiting extent. On the opposite side of the partition a double pawl 51 is mounted on the shaft 49 and has engagement with an escapement wheel 52 mounted on the shaft or arbor 35. The double pawl 51 is normally held in an intermediate or inoperative position by suitable springs 53, but if the hub 43 and centrifugal weights 45 rotate at too high a speed, they will contact with the cam 50 and turn the shaft 49, so as to bring the double pawl into engagement with the escapement wheel 52.

The outer surface of the cylindrical flange 25 is provided with a peripheral row of teeth 54 shown particularly in Fig. 8, and the inner surface of the end of the casing is provided with an inwardly-directed spring 55 adapted to engage with these teeth. Thus, during the winding of the spring, the cap or casing 21 may be rotated in respect to the casing 20 in one direction, but cannot rotate in the reverse direction.

The parts so far described in detail involve the special motor which I preferably employ for driving the operating parts of my improved device. The spring when wound up tends to rotate the sleeve 27, which latter causes the pinion 32 to rotate. The direction of rotation of the pinion 32 depends upon whether it engages with the gear 30 or with the gear 31. The cap 21, together with the spring and the sleeve 27 are movable longitudinally, so as to bring either gear into mesh with the pinion. As shown, the pinion is in mesh with the gear 30, but by moving the cap toward the right until the flange 22 is adjacent the shoulder 23, the pinion 32 will be brought into engagement with the gear 31. For retaining the cap in its adjusted position, the casing may have two outwardly-extending projections 56 and 57, either of which may engage in an annular groove in the inner surface of the cap to retard the free longitudinal movement of the cap. Motion is transmitted from the pinion 32 to the gear 38 and thence to the sleeve 28, and this sleeve serves to drive the pinion 39, gear wheel 41 and innermost sleeve 29. The speed of rotation of the innermost sleeve 29 is controlled by the centrifugal governor operat-

ing through the weights 45, the double pawl 51 and the escapement wheel 52, which latter rotates with the pinion 32.

The sleeve 29 positively driven in the manner above described, serves to transmit motion directly to the main operating parts of the device. Extending through the body of the casing is a sleeve 58 exteriorly threaded and having a wheel or end plate 59 threaded thereon. This plate is rotatable in respect to the casing 20 and its movement along the sleeve 58 toward the motor is limited by a lock nut 60 carried by the sleeve and movable along the latter. The plate 59 and the lock nut 60 provide a certain amount of lost movement by means of a projection 59^x, which permits one to move through a part of a revolution in respect to the other. The projection, together with its corresponding part on the lock nut 60, constitute a one-tooth clutch. The sleeve 29 extends into the end of the sleeve 58 and is so connected thereto that the motor may rotate the sleeve 58 in either direction, and after the motor stops the sleeve 58 may continue rotating. To accomplish this, the sleeve 29, which is positively rotated by the motor, is provided with two peripheral dogs 46 facing in opposite directions and adapted to swing outwardly into engagement with ratchet teeth upon the inner surface of the sleeve 58. There are two rows of these teeth 47 and 48, spaced apart a greater distance than the distance between the dogs. The two sets of teeth face in opposite directions and the relative arrangement of the teeth and dogs is such that with the parts in the position shown in Fig. 1, one of the dogs will engage with the teeth 48 and the sleeve 58 will be positively rotated by the sleeve 29. Should the sleeve 29 stop rotating, the sleeve 58 may continue rotating, as the dog will slip past the teeth in one direction.

To reverse the motor the cap 21 is moved longitudinally in respect to the casing 20, as previously set forth, and this longitudinal movement moves the sleeve 29 also longitudinally in respect to the casing and brings one dog out of the plane of the teeth 47 and brings the other dog into the plane of the teeth 48. Now, the sleeve 29 rotating in the reverse direction, will rotate the sleeve 58, but should the motor stop the sleeve can continue rotating.

The threads on the sleeve 58 terminate at a short distance from the end of the sleeve remote from the motor, so as to leave a small bearing portion 61. Mounted on this bearing portion is an end plate 62 having an annular chamber 63 and a plurality of radially-disposed knives or cutters 64. Adjacent each cutter there is a passage into the inner chamber for the material shaved off by the cutters, and the cutters are so disposed as to operate on the end of an annular sleeve or tube 65 of the material to be delivered to the brush.

If the device is to be used for cleaning or as a shaving brush, the annular bar or sleeve 65 would be of soap. The particular character of the material will, of course, depend upon the nature of the work to be done by the device. The material 65, which will hereinafter be referred to as "soap", is secured to the end plate 59, so that it cannot rotate with respect to the plate but will be slowly advanced endwise against the cutters 64. The material removed from the bar by the cutters is delivered through openings 66 in the sleeve 58 and thence through openings 67 in the inner and non-rotatable sleeve 68. Rigidly mounted upon the sleeve 68 is a clutch collar 69 having teeth adapted to engage with a clutch collar 70 carried by the cutter plate 62. The clutch collar 69 may be manually operated by an arm or pin 71 extending out through a slot in the wall of the casing and terminating in a button 72, but may be operated automatically by an extra pressure against the end of the brush. By the longitudinal movement of the clutch collar 69 it comes into or out of operative engagement with the clutch collar 70 and the cutters may be locked against rotation or permitted to freely rotate with the material 65.

The end of the casing carries an outwardly-extending sleeve formed of two telescoping sections 73 and 74, the former of which is rigid with the end of the casing. The sleeve 68 extends through the sleeve section 73 and into the sleeve section 74, and has rotatably mounted therein, a screw conveyer 75. This conveyer terminates in a delivery tube 76 extending outwardly through the sleeve section 74 and carrying at its outer end a brush. At its inner end the conveyer is connected to a rod 77, which latter extends through a partition 78 in the sleeve 58. The rod is held against rotation in respect to the partition, but is free to move longitudinally thereof and the partition is rigid in respect to the sleeve, so that the conveyer is rotated with the sleeve 58. The rod terminates in a slip clutch 79 disposed within a sleeve 80. The end of the sleeve 80 constitutes a second slip clutch 81 and the sleeve 80 is held against rotation so that when the two clutch members 79 and 81 are in engagement with each other, the rotation of the conveyer will cause said conveyer and a brush connected thereto to reciprocate. For bringing the collars into or out of operative engagement, the sleeve 80 has a rod 82 extending through the sleeve 29 to the exterior of the cap 21 and terminating in a ring 83. The rod has threaded engagement with the end of the cap, so that by rotating the rod, it may be moved longitudinally into or out of position. The rod 77 has a spring 77^a normally inac-

tive but becoming active when the slip clutches 79 and 81 are in engagement with each other. A flange 84 on the conveyer closes the end of the sleeve 68 and also forms a stop for the spring.

The delivery tube 76 is provided with a head 85 inclosed by a casing 86. The casing has a limited longitudinal movement in respect to the head, and the latter is provided with an annular row of teeth 87, which may be brought into or out of operative engagement with an inwardly-extending stop 88. The casing 86 is caused to rotate with the head 85, but by moving the casing lengthwise toward the right the casing may be liberated and permitted to remain stationary during the rotation of the delivery tube 76 and its head. The casing terminates in a socket 89, within which is disposed a ball 90 carrying the brush 91. The socket and the ball have passages therethrough adapted to register and to convey the material from the delivery tube to the brush. The ball and socket connections are such that the brush although fitting sufficiently friction tight to rotate with the head, yet may oscillate to a limited extent.

Encircling the head and brush is a guard 92 supported by the sleeve section 74. This guard serves not only to protect the brush but also operates for stopping and starting the rotation of the latter. The casing 86 has upon its rear surface, a series of clutch teeth 93, which may engage with a clutch collar 94 constituting the end of the sleeve section 74. The sleeve section 74 is provided with a pin 95 extending out through the slot in the sleeve section 73 and adapted to be held against longitudinal movement in any one of a series of notches 73^a along the side of said slot. A coil spring 96 normally tends to press the sleeve section 74 outwardly so as to bring the clutch members 93 and 94 into engagement with each other. With the clutch members 93 and 94 in engagement with each other, the brush is locked against rotation and the operation of the entire device is stopped. When the guard 92 is pressed upon, the section 74 is retracted, compressing the spring 96 and releasing the teeth on the clutch member 94 from the teeth on the clutch member 93. The clutch member 93 and parts connected therewith are normally held in forward position by the coil spring 77^b (see Fig. 1). By moving the sleeve section 74 to the position indicated in Fig. 1, the brush is liberated and permitted to rotate. The outer end of the guard 92 may be interiorly threaded so as to receive any suitable form of screen or sifting plate 92^a (see Fig. 7^a), to prevent the brush from coming into direct contact with the surface to be treated.

By means of the button 95 the clutch 94 may be brought back to such a position that it will not be engaged by the clutch 93 to stop the brush, unless considerable pressure be applied to the latter. The tensions of the several springs are such that if considerable pressure be applied to the brush, all of the springs will be compressed and the sleeve 68 will be moved longitudinally until the clutch collars 69 and 70 engage with each other to lock the cutters against rotation. The tube or sleeve 65 of the material is non-rotatable in respect to the plate 59, but the latter is rotatable with the sleeve 58. The cutter operates substantially in the following manner: Upon starting the motor, the inertia of the material and heavy plate 59 tends to unscrew the plate in respect to the lock nut 60, until the two engage and the material is compelled to rotate. When the motor is stopped more or less suddenly, the momentum of the material causes it to continue rotating in respect to the cutter which may be locked stationary. This rotation of the material and its advancement along the threads of the sleeve 58, cause particles to be removed by the cutter, which may be locked stationary by the clutch collar 69. During the uniform running of the device, the material, the plate 59 and the cutters, rotate with the sleeve 58 and there is no advancement of the material or any cutting action.

Instead of using a solid material with a cutter for subdividing the same, I may employ a material in a liquid, semi-liquid or pasty form, and avoid a great deal of the complication and details of the form above described.

In Figs. 9 to 14, inclusive, I have illustrated a form in which the material is held in a collapsible container and automatically fed to the brush through the hollow shaft of the latter. Substantially the same motor may be employed as that illustrated in Fig. 1, and the motor may be controlled in the same manner, although a different motor may be employed, if desired. The device includes a casing 100 and a cap 101 rotatable in respect thereto to wind the spring and longitudinally movable to control the direction of rotation. The spring and speed-changing gears are not shown, but motion is transmitted to a centrally disposed shaft 102, which is supported in a partition 103 and having its squared end 104 extending into the end wall of an inner casing 105. The shaft may have a governor including weights 106 and other features of construction similar to those shown in Fig. 1. The inner casing 105 fits within the outer casing 100 but is rotatable in respect thereto by reason of its engagement with the shaft 102.

At the end of the device remote from the motor, the inner casing 105 has a conical end 106^a terminating in a delivery conduit 107.

Within the inner casing 105 is a collapsible container 108 having end walls 109 fitting the interior of the inner casing and held against rotation in respect thereto. The inner surface of the inner casing is preferably polygonal in cross section and is provided with a plurality of circumferential grooves or creases. One end wall of the collapsible container 108 has a conical delivery nozzle 110 within the conical end 106a of the inner casing, so that upon collapsing the container the material will be forced out through the conduit 107. The opposite end of the collapsible container is movable longitudinally of the inner casing and is provided with four outwardly-extending curved arms 111 terminating in engagement with the grooved or creased inner surface of the inner casing. Two of these curved spring arms carry weights 112, which upon the rapid rotation of the casing and container, tend to swing outwardly against the inner surface of the casing. The weights cannot move longitudinally of the arms and therefore upon the rapid rotation of the casing and container the weights tend to straighten the arms. As the outer ends of the weighted arms engage in the roughened or creased inner surface of the casing, the straightening of the arms presses the adjacent ends of the container lengthwise of the casing to partially collapse the latter and eject some of the contents thereof. When the motor is stopped, the weighted arms again become curved and their outer ends enter creases or grooves in the casing more remote from the motor. In the meantime, the other arms prevent the return of the container.

The outer casing 100 terminates in a tubular extension 113 into which the conduit 107 extends. The conduit is connected by a tight fitting ball and socket joint 114 to a conduit 115 which carries a brush 116 at its outer end. Within the hub of the brush there are radially-disposed passages whereby the material delivered through the conduit 115 may pass out through into the brush, and the casing 113 carries a guard 117 inclosing a portion of the brush to protect the latter and to partially support the outer or free end of the conduit 115. The end of the conduit 115 beyond the brush may be closed by a plug or the like.

For automatically stopping and starting the motor, I provide mechanism including two levers 118, each pivoted intermediate its ends to the inner surface of the casing 113 and having at one end a collar 119 encircling the conduit 115 adjacent the brush. The conduit or hollow shaft may freely rotate within this collar, but upon moving about the joint 114 as a center, the levers are caused to move upon their joints. The conduit 107 has a portion 120 adjacent the socket end, square in cross section, and the two arms carry a U-shaped yoke 121, which when in engagement with the square portion prevent the conduit or hollow shaft 107 from rotating. A spring 122 engages with the conduit 115, so as to normally hold the latter with the yoke in engagement with the square portion and to lock the motor and brush against rotation. As soon as the brush is applied to a surface to clean the latter, the pressure lifts the brush into the guard 117 against the action of the spring 122, so as to lower the yoke 121 into inoperative position and permit the starting of the motor.

In case it is desired to deliver the material to the brush in tablet form, I preferably employ details of construction illustrated in Figs. 15 to 19, inclusive. In this form there is employed a tubular casing 151 reduced at its forward end and closed at its rear end by a disk 152. The rear end of the casing is enlarged and the enlarged portion is subdivided by two partitions 153 and 154. Passing through the end disk or plate 152 and having a rotary bearing therein, is a spindle 155, to the outer end of which is attached a ring 156. A shoulder on the spindle limits the inward movement of the latter, and a hollow drum 159 is threaded on to the spindle upon the inside of the casing to limit the outward movement of said spindle. The rear surface of the drum 159 is provided with ratchet teeth 161 having engagement with a pawl 162 pivotally mounted on the disk or end wall 152. Rotatably mounted on the inner end of the spindle 155 is a sleeve 163, which also has a rotary bearing in the partition 154. The sleeve 163 carries an internal gear wheel 164, concentric with and adjacent to an internal gear wheel 165 carried at the outer edge of a flange on the drum 159. The sleeve 163 extends through the partition 154 and is provided with a gear wheel 166. A shaft 167 is mounted in the two partitions and is provided with two pinions 168 and 169, the former of which meshes with the internal gear 164. A second shaft 170 is mounted in the two partitions and has two pinions 171 and 172, the former of which meshes with the gear 166.

Rotatably mounted in the partition 153, and in the sleeve 163 is a shaft 173 having a gear 174 which may mesh either with the pinion 169 or with the pinion 172. The partition 153 has a hub 175, upon which there is rotatably mounted an inner casing 176 polygonal in cross section. This casing has an end plate 177 bearing directly on said hub and provided with an internal gear 178 closely adjacent the partition. A sleeve 180 has bearing in the partition and at one end is provided with a pinion 179 in mesh with the internal gear 178. A slip clutch collar 181 is keyed to the sleeve 180, so as

to move longitudinally thereof but so as to be held against rotation in respect thereto. A suitable coil spring normally presses this collar away from the partition 153. A shaft 183 has one end mounted in the partition 154 and the other end extending into the sleeve 180. The telescoping ends of the shaft and sleeve serve to mutually support each other. Upon this shaft is a pinion 184 in mesh with the internal gear 165 and slidably but not rotatably mounted on the shaft is a slip clutch collar 185 normally pressed toward the other slip collar by a suitable spring.

The shaft 173 is provided intermediate its ends with a universal joint 188, and at the outer end of the outer section is a brush 189. The brush is preferably detachably secured so that it may be replaced by one of a different character and said brush is preferably held against rotation in respect to the shaft by a key 190. A hood 192 incloses a portion of the brush so as to leave only a part of the periphery of the latter exposed, and the hood is preferably slidably connected to the reduced end of the main casing. The outer end of the hood constitutes a bearing for the shaft and is preferably provided with an elongated slot 195 to permit of a limited movement of the shaft upon the joint 188. Within the reduced portion of the casing and extending to the periphery of the brush within the hood, is a curved dove-tailed channel 194, through which the material to be used in connection with the brush is delivered. At the terminal portion of the channel the sides are cut away to form a cage or grating having a series of slots 196, through which the periphery of the brush may pass. The tablets in passing along the channel to the end thereof stop adjacent the brush, where each tablet in succession is slowly worn away by the rubbing action of the brush. Small projections 197 on the channel serve to prevent the brush from unduly spreading beyond the sides of the cage or grating.

It will be seen, by referring to Fig. 19, which shows an end view of the hood 192, that the lower part of the slot 195 is square to receive a quadrangular section formed on one end of the round shaft 173. The shaft 173 is firmly held in engagement with the square part of the slot 195 by the spring 122, so that a longitudinal movement of the hood 192, with respect to the tubular casing 151, must be communicated to the shaft 173.

The shoulders formed on the shaft 173, by the reduction of its squared end, form a positive engagement with the hood 192 during the latter's movement to the right.

Within the casing and adjacent the beginning of the reduced portion, there is provided a partition 198, within which the shaft 173 has a bearing. A slot is cut in this partition and the portion adjacent the slot is bent inwardly to form a guiding tongue 199, which is in alinement with the channel 194 and practically constitutes a portion thereof. Within the inner casing 176 is a container 200, polygonal in cross section and held against rotation in respect to the polygonal inner casing 176. This container has a central tube 201 having rotary bearing on the hub 175, and a hub on the partition 198. Within the container is a follower 202 pressed toward the delivery end by a spring 203. Within the container 200 are placed the tablets, and as the container rotates in respect to the partition 198 and channel 194, the tablets are guided out through into the channel and delivered to the vicinity of the brush.

The operation of the device shown in Figs. 15 to 19, inclusive, is somewhat similar to that of the device illustrated in Fig. 1, save that it is adapted for the delivering of tablets rather than the shaving of a powder from a solid block of material. The motor is operated by a spring, not shown, one end of the spring being secured to the sleeve 163 and the other end of the spring being secured to the inner surface of the drum 161. The spring is wound by turning the ring 156 in respect to the casing. Turning of the drum is permitted by the slipping of the clutch members 185 and 181. The shaft 173 has sliding, as well as rotary movement, in the sleeve 163, the hub 175 and the partition 198. As shown, it is in its forward position with the gears 174 and 169 in mesh. This gives the shaft 173, the casing and the container, a rotation in one direction.

In case it is desired to rotate the brush and its connected parts in the opposite direction, the hood 192 is moved longitudinally in respect to the casing and the shaft 173 is moved inwardly to move the gear 174 into mesh with the gear 172. The lower end of the slot 195 illustrated in Fig. 19, is so constructed as to grip the square end of the shaft and lock it against rotation. Thus, the motor and brush are automatically stopped as soon as the brush is removed from the surface being treated, as the weight of the brush or a small spring 122 presses it away from the tablets and brings the end of the shaft into the lower reduced end of the slot 195.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. In a device of the class described; a brush; a motor; and operative connections for effecting the vibration and rotation of the brush and delivering a material thereto.

2. In a device of the class described; a brush; a handle therefor; a spring motor within said handle at the outer end thereof; a support for material within said handle

and intermediate said motor and said brush; and means operated by said motor for delivering said material to said brush.

3. In a device of the class described; a brush; a hollow shaft connected therewith; a motor for rotating said shaft; a holder for material concentric with said shaft; and means comprising a cutter and a conveyer for delivering said material through said shaft to said brush.

4. In a device of the class described; a motor; a brush; a conduit operatively connected therewith; a threaded shaft; a holder for material engaging the threads on said shaft; and means, comprising a rotary weighted member attached to said holder; a lock nut operatively connected with said holder and engaging the threads on said shaft, for advancing said holder by the momentum of said weighted member during a change in the speed of said motor.

5. In a device of the class described; a casing; a hollow shaft having a threaded section and a smooth section terminating in a flange and having passages through said smooth section; a holder engaging said threaded section; a cutting device comprising a hub, a clutch member, an annular chamber surrounding and communicating with said passages, radially-disposed cutters, and curved conveyer blades, loosely embracing said smooth section; a motor for rotating said shaft; and a clutch member operatively connected with said casing and adapted to engage the clutch member on said cutting device.

6. In a device of the class described, a rotatable brush; a guard surrounding said brush; a reticulated plate attached to said guard; and means for bringing said plate in touch with said brush.

7. In a device of the class described, a casing terminating in a tubular extension; a motor; a brush operatively connected therewith; a guard surrounding said brush; a perforated plate attached to said guard and adapted to produce a lather with said brush, in the presence of a lathering compound; and means comprising a sleeve slidably mounted in said tubular extension and having a handle for bringing said perforated plate into contact with said brush, and stops in said extension for locking said sleeve with said tubular extension.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HERMANN REICHE.

Witnesses:
CLAIR W. FAIRBANK,
JOHN P. DAVIS.