June 4, 1929. S. METRICK ET AL 1,715,667

AUTOMATIC BURR HOLDER

Filed Feb. 9, 1928

Fig. 1.

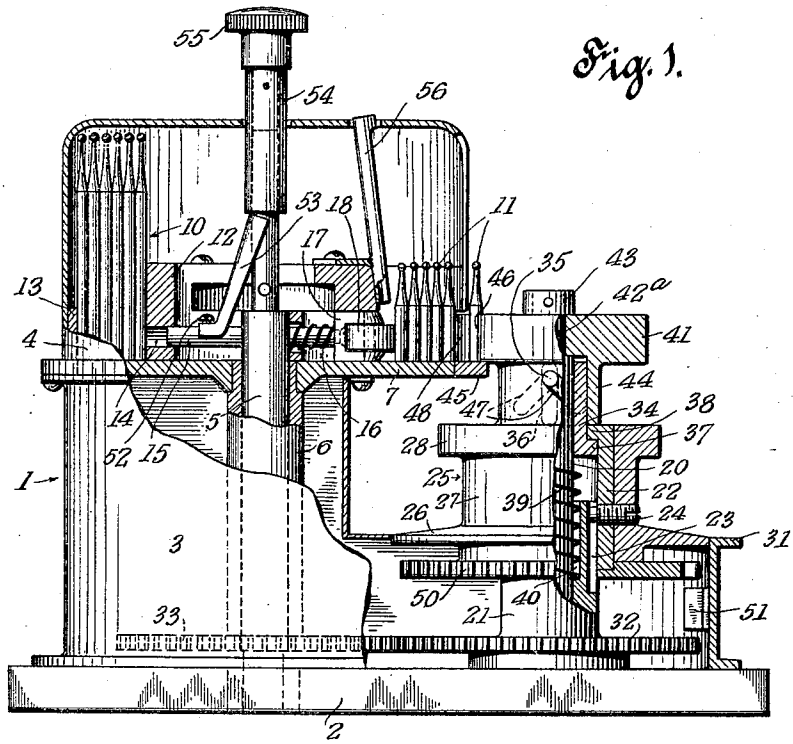
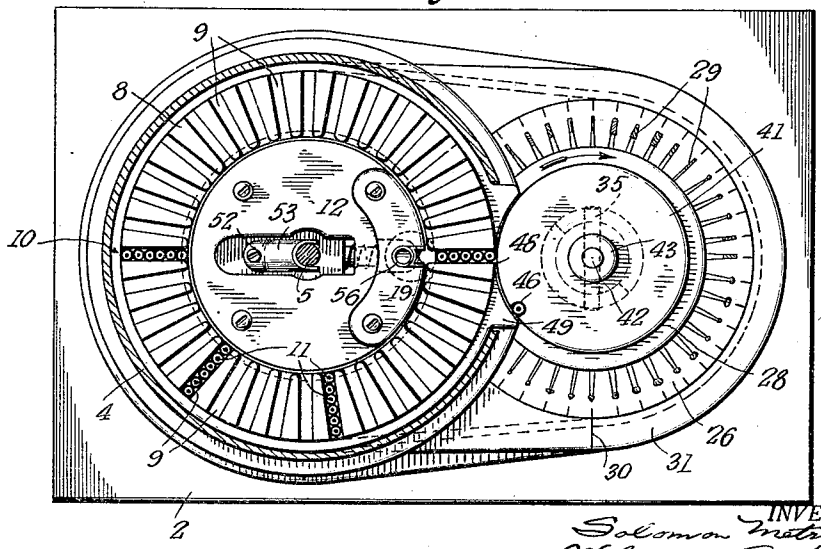


Fig. 2.



INVENTORS
Solomon Metrick,
William Gastreich
BY
Benjamin Pontin.
ATTORNEY

Patented June 4, 1929. 1,715,667

UNITED STATES PATENT OFFICE.

SOLOMON METRICK AND WILLIAM AVSTREIH, OF NEW YORK, N. Y.

AUTOMATIC BURR HOLDER.

Application filed February 9, 1928. Serial No. 253,008.

This invention relates to a machine for the maintenance, selectively dispensing, and selectively filing of dental burrs or similar articles. Heretofore, dental burrs were generally kept in a perforated block, and as the work progressed the operator pulled out the desired burr and reinserted it back upon completion of the work. As the required burrs comprise a large variety and each of the burrs is generally sold in a set of six the burr-block involves a confused mass of heterogeneous burrs, some of which may be too dull for effective use while others of the same set may have ample sharpness, and considerable time and labor is consumed in selecting the desired burr during work. This condition is furthermore productive of eye strain in picking out the desired burr from the confused situation, and causing pain to the patient through the possible choice of a dull burr.

The principal object of the invention, therefore, is to remedy the above mentioned disadvantages, and to provide an efficient and improved machine which will maintain the sets of burrs in definite location, which will automatically select the desired burr by dialing, which will automatically separate the individual burr from its set and deliver it, and which will permit, cause, and compel the proper refiling of the used burr into its set, so as to provide for a uniform wear of all the burrs of each set.

Other objects and advantages will hereinafter appear.

In the accompanying drawings,—

Fig. 1 shows a general elevation of the machine.

Fig. 2 is a plan view of the machine shown in Fig. 1.

The machine 1 is provided with a base 2, a casing 3 for the lower part of the machine secured to the base 2, and a removable casing 4 for the upper part of the machine. To the base 1 is secured a vertical shaft 5 upon which is mounted a rotatable sleeve 6 which carries a platform or turn-table 7 upon which is formed a ring 8 provided with a series of radial slots or channels 9, each of which serves as a keeper for a set 10 of burrs 11 comprising six in number, the various keepers 9 serving for the maintenance of the various sets of burrs required for the work. A central core 12, secured to the stationary shaft 5, and a wall 13, forming part of the casing 3, together serve to close the ends of the channels 9 and coact with the latter to constitute the complete keepers for the sets of burrs. In a guide-way 14 of the core 12 is slidably mounted a trigger 15, which passes through the shaft 5 and is surrounded by a spring 16 that bears against said shaft and against a head 17 of the trigger that carries a roller 18. Said roller normally tends to lodge in a slot 19 of the ring 8 and to press the burr 11 in contact therewith, whereby, because of the width of the slot being approximately equal to the thickness of the burr-shank, the roller 18 normally tends to eject the sixth or remotest burr 11 from the particular keeper 9 which at any time may be set in alignment therewith.

To the base 2 is secured another vertical shaft 20 upon which is rotatably mounted a sleeve 21, upon which is in turn splined a cylinder 22, by means of a slot 23 in sleeve 21 and a set-screw 24, and to the cylinder 22 is secured by the same set-screw an operating dialing knob 25 comprising a dialing disk 26, a shank 27, and a knurled head 28. Upon the dialing disk 26 is printed a series of pictures or other designations 29 corresponding to the various sets of burrs carried by the series of keepers 9, and these designations cooperate with a stationary marker 30 located upon a rim 31 forming part of the casing 3. The sleeve 21 carries a gear 32 which meshes with a gear 33 carried by the sleeve 6. Rotation of the knob 25, therefore, rotates the turn-table 7 accordingly, and setting of any selected dial designation 29 in coordination with the marker 30 aligns the corresponding set 10 of burrs 11 with the roller 18, which roller forms part of an ejecting device, as hereinabove referred to and as will be further seen.

Upon the shaft 20 is splined a sleeve 34, by means of a pin 35 passing therethrough and through a vertical slot 36 formed in the shaft, and a head 37 of said sleeve is located within the cylinder 22 and engages an interior annular ledge 38 formed on said cylinder. A spring 39 surrounding the shaft 20 bears constantly against the sleeve 34 and against the bottom of a counterbore 40 formed in the rotatable sleeve 21, and this spring thus normally maintains the latter together with the cylinder 22 and knob 25 in the elevated position shown in Fig. 1 and a vertical stroke may be imparted to these parts in accordance with the limitations of

the slot 36. Depression of the knob 25, therefore, will slide the said parts downwardly to a position limited by the slot 36, and release of the knob will cause the spring 39 to elevate the parts to the position shown and with the dial disk 26 on a level with the rim 31. A turret 41 is rotatably mounted upon the shaft 20, by a bearing 42 thereof running on a reduced portion 42^a of said shaft and a collar 43 being secured to said portion to maintain the turret on the shaft. Said turret is provided with an apron 44 which surrounds the sleeve 34 and permits the latter to slide thereinto and out therefrom, as the knob 25 is depressed and released. The turret 41 is in peripheral contact with the keeper-ring 8, and the bottom surface thereof is in contact with a sill 45 forming part of the frame 4. In the periphery of the turret 41 is formed a vertical pocket 46, Fig. 2, which is adapted to receive the shank of any one of the burrs 11. Both terminals of the guide-pin 35 protrude through oppositely configurated cam-slots 47 formed in the apron 44, whereby upon depression of the dial knob 25 the pin 35 coacting with said cam-slots imparts a partial rotation to the turret 41 from the position shown by the location of the pocket 46 in Fig. 2 to a position wherein said pocket is brought to registration with the peripheral contact-point of turret 41 and keeper-ring 8 and hence with the burr-set 10 which is at the time under pressure by the roller 18. Upon release of the dial-knob 25 an opposite partial rotation is imparted to the turret 41 from the aforesaid registration position to that shown in Fig. 2. Normally the roller 18 presses against the nearest burr 11 of the burr-set which is in registry therewith, and, through the six burrs of the set, presses the final burr against the periphery of the turret 41. When the turret 41 is turned by the depression of the dial-knob 25, to bring the pocket 46 thereof in registry with the burr-set, the final burr 11 of the set is ejected by the pressure-roller 18 from its keeper 9, through a gate-opening 48 in the burr-retaining wall 13, and into the pocket 46; and when the knob 25 is released the turret is returned to its initial position, and in doing so the pocket 46 carries the ejected burr from its set to the position shown by the location of the pocket in Fig. 2, whereat it is delivered to the user. During this passage of the selected burr it is retained in the pocket 46 by the lower terminal thereof resting upon the sill 45 and a block 49, forming part of the casing 3, closing the open side of the pocket. A gear 50, secured to the knob 25 underneath the dial 26, meshes with an elongated tooth 51, secured to the casing 3, during the depression and elevation of the dial-knob 25 and the actuation of the turret 41 for reception and delivery of the selected burr, and by this means the corresponding settings of the selection dial and keeper-ring 8 are effectively preserved during this operation of the machine.

To the trigger 15 is hinged at 52 a link 53 the upper end of which rests against the shaft 5, and upon the upper end of the shaft 5 is telescopically mounted a hollow handle 54 having an operating knob 55, which handle rests against the terminal of said link. Upon depression of the handle 54 its movement is transmitted through link 53 to the trigger 15 and causes the latter to be retracted with its roller 18 contrary to the pressure of spring 16, and when said handle is released the trigger and roller return to normal position. To the core 12 is secured an upright inclined chute 56. When use of the selected burr has been completed it may be refiled and returned to its own set by slipping it into the chute 56, which causes it to land upon the roller 18, and then pressing and releasing the knob 55. As the knob 55 is depressed the roller 18 is retracted and the burr is thereby permitted to drop into its trigger 9 at the rear of the second burr of its set, and as the knob is released the roller 18 restores its pressure against the returned burr and the entire set.

It will be evident that when selecting a burr with this machine it merely requires setting of the dial to the designation corresponding to such burr, and then depressing the dial for delivering the burr. For refiling the burr it requires mere insertion thereof in the chute 56 and depression of the knob 55. It will be also evident that no error in refiling can occur with this machine because, the remaining burr-keepers 9 being completely filled with their sets, it will compel the burr to be refiled only in the set in which it is missing and at the rearmost burr from the turret 41, and as a further consequence of this operation a uniform use and wear of all the burrs of each set is compelled. It will be also noted that failure to properly refile a used burr, as may occur through error, will prevent this machine from further delivering a burr out of the same set, and will thereby apprise the user of the necessity of refiling the formerly used burr back to its own set.

Variations may be resorted to within the scope of the invention, and portions of the improvements may be used without others.

Having thus described our invention, we claim:—

1. The combination of a series of burr keepers, means to discharge any one of the burrs from its keeper, means to actuate said series to align any one of said keepers with said discharging means, and means to deliver the discharged burr.

2. The combination of a series of burr keepers, means to discharge any one of the burrs from its keeper, means to actuate said series to align any one of said keepers with said

discharging means, means to deliver the discharged burr, and means to direct back the discharged burr to its keeper.

3. The combination of a series of burr keepers, each of said keepers being adapted to hold a plurality of burrs, means to discharge one of the plurality of burrs from any one of said keepers, means to actuate said series to align any one of said keepers with said discharging means, and means to deliver the discharged burr.

4. The combination of a series of burr keepers, each of said keepers being adapted to hold a plurality of burrs, means to discharge one of the plurality of burrs from any one of said keepers, means to actuate said series to align any one of said keepers with said discharging means, means to deliver the discharged burr, and means to direct back the discharged burr to its keeper at the rear of the remaining burrs held by said keeper.

5. The combination of a series of burr keepers, each of said keepers being adapted to hold a plurality of burrs, means to discharge one of the plurality of burrs from any one of said keepers, means to actuate said series to align any one of said keepers with said discharging means, means to deliver the discharged burr, and means to direct back the discharged burr to its keeper and against said discharging means.

6. The combination of a series of burr keepers, means to discharge any one of the burrs from its keeper, a dial having designations for the burrs adapted to be set relatively to a fixed point for selection of one of the burrs, means to transmit the motion of said dial to said series to align the corresponding burr and keeper with said discharging means, and means to deliver the discharged burr.

7. The combination of a series of burr keepers, means to discharge any one of the burrs from its keeper, a dial having designations for the burrs adapted to be set relatively to a fixed member for selection of one of the burrs, and means to transmit the motion of said dial to said series to align the corresponding burr and keeper with said discharging means.

8. The combination of a series of burr keepers, means to discharge any one of the burrs from its keeper, a dial having designations for the burrs adapted to be set for selection of one of the burrs, means to transmit the motion of said dial to said series to align the corresponding burr and keeper with said discharging means, means to deliver the discharged burr, and means to direct back the discharged burr to its keeper.

9. The combination of a series of burr keepers, each of said keepers being adapted to hold a plurality of burrs, means to discharge one of the plurality of burrs from any one of said keepers, a dial having designations for the burrs adapted to be set for selection of one of the burrs, means to transmit the motion of said dial to said series to align the corresponding burr and keeper with said discharging means, and means to deliver the discharged burr.

10. The combination of a series of burr keepers, each of said keepers being adapted to hold a plurality of burrs, means to discharge one of the plurality of burrs from any one of said keepers, a dial having designations for the burrs adapted to be set for selection of one of the burrs, and means to transmit the motion of said dial to said series to align the corresponding burr and keeper with said discharging means.

11. The combination of a series of burr keepers, each of said keepers being adapted to hold a plurality of burrs, means to discharge one of the plurality of burrs from any one of said keepers, a dial having designations for the burrs adapted to be set for the selection of one of the burrs, means to transmit the motion of said dial to said series to align the corresponding burr and keeper with said discharging means, means to deliver the discharged burr, and means to direct back the discharged burr to its keeper at the rear of the remaining burrs held by said keeper.

12. The combination of a series of burr keepers, each of said keepers being adapted to hold a plurality of burrs, means to discharge one of the plurality of burrs from any one of said keepers, a dial having designations for the burrs adapted to be set for selection of one of the burrs, means to transmit the motion of said dial to said series to align the corresponding burr and keeper with said discharging means, means to deliver the discharged burr, and means to direct back the discharged burr to its keeper and against said discharging means.

13. The combination of a turn-table having a plurality of burr keepers, means to discharge any one of the burrs from its keeper, a rotatable dial having designations for the burrs adapted to be set for selection of one of the burrs, means to transmit the rotation of said dial to said turn-table to align the selected burr and keeper with said discharging means, and means to deliver the discharged burr.

14. The combination of a turn-table having a plurality of burr keepers, means to discharge any one of the burrs from its keeper, a rotatable dial having designations for the burrs adapted to be set for selection of one of the burrs, means to transmit the rotation of said dial to said turn-table to align the selected burr and keeper with said discharging means, means to deliver the discharged burr, and means to direct back the discharged burr to its keeper.

15. The combination of a turn-table having a plurality of burr keepers, each of said keepers being adapted to hold a plurality of burrs, means to discharge one of the plurality of

burrs from any one of said keepers, a rotatable dial having designations for the burrs adapted to be set for selection of one of the burrs, means to transmit the rotation of said dial to said turn-table to align the selected burrs and keeper with said discharging means, and means to deliver the discharged burr.

16. The combination of a turn-table having a plurality of burr keepers, each of said keepers being adapted to hold a plurality of burrs, means to discharge one of the plurality of burrs from any one of said keepers, a rotatable dial having designations for the burrs adapted to be set for selection of one of the burrs, means to transmit the rotation of said dial to said turn-table to align the selected burrs and keeper with said discharging means, means to deliver the discharged burr, and means to direct back the discharged burr to its keeper at the rear of the remaining burrs held by said keeper.

17. The combination of a series of burr keepers, each of said keepers being adapted to hold a plurality of burrs, means to discharge one of the plurality of burrs from any one of said keepers, a dial having designations for the burrs adapted to be set for selection of one of the burrs, means to transmit the motion of said dial to said series to align the corresponding burr and keeper with said discharging means, said dial being shiftable on its axis, and means to deliver the discharged burr being actuated by said shifting of the dial.

18. The combination of a turn-table having a plurality of burr keepers, each of said keepers being adapted to hold a plurality of burrs, means to discharge one of the plurality of burrs from any one of said keepers, a rotatable dial having designations for the burrs adapted to be set for selection of one of the burrs, means to transmit the rotation of said dial to said turn-table to align the selected burrs and keeper with said discharging means, said dial being shiftable on its axis, and means to deliver the discharged burr being actuated by said shifting of the dial.

19. The combination of a turn-table having a plurality of radially disposed burr keepers, each of said keepers being adapted to hold a set of burrs, ejecting means for said burrs located within said turn-table, a rotatable dial having designations for the burrs adapted to be set for selection of one of the burrs, means to transmit the rotation of said dial to said turn-table to align the selected burrs and keeper with said discharging means, said dial being shiftable on its axis, and means to deliver the discharged burr being actuated by said shifting of the dial.

20. The combination of a series of burr keepers, each of said keepers being adapted to hold a plurality of burrs, means to discharge one of the plurality of burrs from any one of said keepers, a dial having designations for the burrs adapted to be set for selection of one of the burrs, means to transmit the motion of said dial to said series to align the corresponding burr and keeper with said discharging means, said dial being shiftable on its axis, and means actuated by the depression of said dial to permit discharge of the burr from the aligned keeper and being actuated by release of the dial to deliver the released burr.

21. The combination of a series of burr keepers, each of said keepers being adapted to hold a plurality of burrs, means to discharge one of the plurality of burrs from any one of said keepers, a dial having designations for the burrs adapted to be set for selection of one of the burrs, means to transmit the motion of said dial to said series to align the corresponding burr and keeper with said discharging means, said dial being shiftable on its axis, means actuated by the depression of said dial to permit discharge of the burr from the aligned keeper and being actuated by release of the dial to deliver the released burr, and means to direct back the discharged burr to its keeper at the rear of the remaining burrs held by said keeper.

22. The combination of a turn-table having a plurality of radially disposed burr keepers, each of said keepers being adapted to hold a set of burrs, ejecting means for said burrs located within said turn-table, a rotatable dial having designations for the burrs adapted to be set for selection of one of the burrs, means to transmit the rotation of said dial to said turn-table to align the selected burrs and keeper with said discharging means, and means actuated by the depression of said dial to permit ejection of the burr from the aligned keeper and being actuated by the release of the dial to deliver the released burr.

23. The combination of a turn-table having a plurality of radially disposed burr keepers, each of said keepers being adapted to hold a set of burrs, ejecting means for said burrs located within said turn-table, a rotatable dial having designations for the burrs adapted to be set for selection of one of the burrs, means to transmit the rotation of said dial to said turn-table to align the selected burrs and keeper with said discharging means, means actuated by the depression of said dial to permit ejection of the burr from the aligned keeper and being actuated by the release of the dial to deliver the released burr, and means to direct back the discharged burr to its keeper at the rear of the remaining burrs held by said keeper.

24. The combination of a turn-table having a plurality of radially disposed burr keepers, each of said keepers being adapted to hold a set of burrs, ejecting means for said burrs located within said turn-table, a rotatable dial having designations for the burrs adapt-

ed to be set for selection of one of said keepers, means to transmit the rotation of said dial to said turn-table to align the selected keeper with said ejecting means, said dial being shiftable on its axis, a spring normally pressing said dial upwardly, and a device being actuated by the depression of said dial to permit said ejecting means to discharge a burr from the selected keeper and being actuated by the release of the dial to deliver the released burr.

25. The combination of a turn-table having a plurality of radially disposed burr keepers, each of said keepers being adapted to hold a set of burrs, ejecting means for said burrs located within said turn-table, a rotatable dial having designations for the burrs adapted to be set for selection of one of said keepers, means to transmit the rotation of said dial to said turn-table to align the selected keeper with said ejecting means, said dial being shiftable on its axis, a spring normally pressing said dial upwardly, a device being actuated by the depression of said dial to permit said ejecting means to discharge a burr from the selected keeper and being actuated by the release of the dial to deliver the released burr, and means to reinsert the discharged burr into its keeper.

26. The combination of a turn-table having a plurality of burr keepers, each of said keepers being adapted to hold a set of burrs, ejecting means for said burrs, a rotatable dial having designations for the burrs adapted to be set for selection of one of said keepers, means to transmit the rotation of said dial to said turn-table to align the selected keeper with said ejecting means, said dial being shiftable on its axis, a spring normally pressing said dial upwardly, a device being actuated by the depression of said dial to permit said ejecting means to discharge a burr from the selected keeper and being actuated by the release of the dial to deliver the released burr, means to direct back the discharged burr to its keeper, and means to actuate said ejecting means to permit reinsertion of the discharged burr into its keeper.

Signed at the city of New York, in the county of New York, and State of New York, this 6th day of February, A. D. 1928.

SOLOMON METRICK.
WILLIAM AVSTREIH.