R. C. GRAHAM.

RECEPTACLE AND SEPARATOR FOR PARTICLES OF GOLD AND OTHER PRECIOUS METALS.

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1,374,075. Patented Apr. 5, 1921.

Fig. 1.

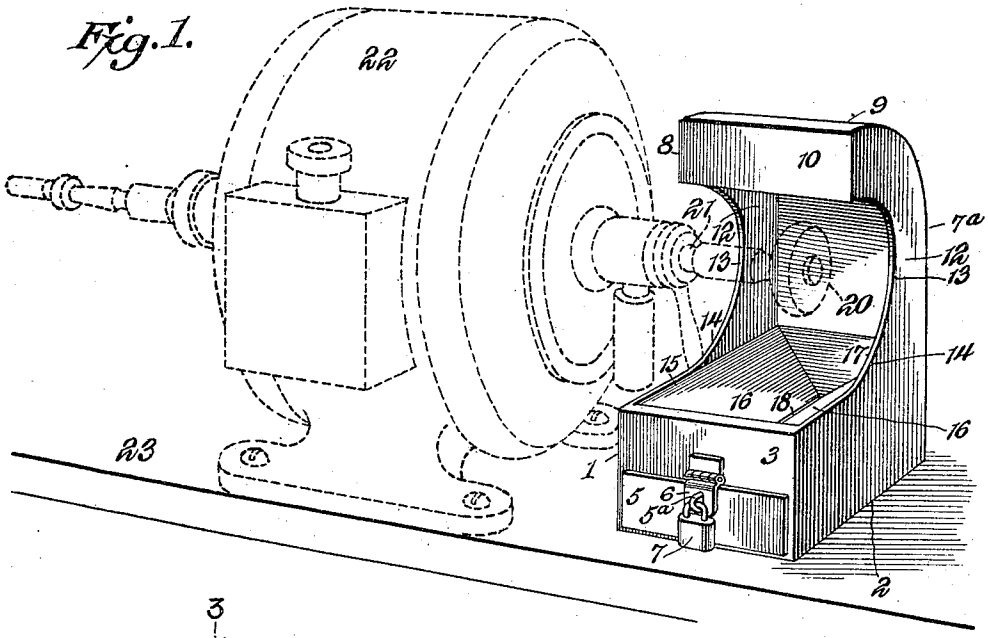


Fig. 2.

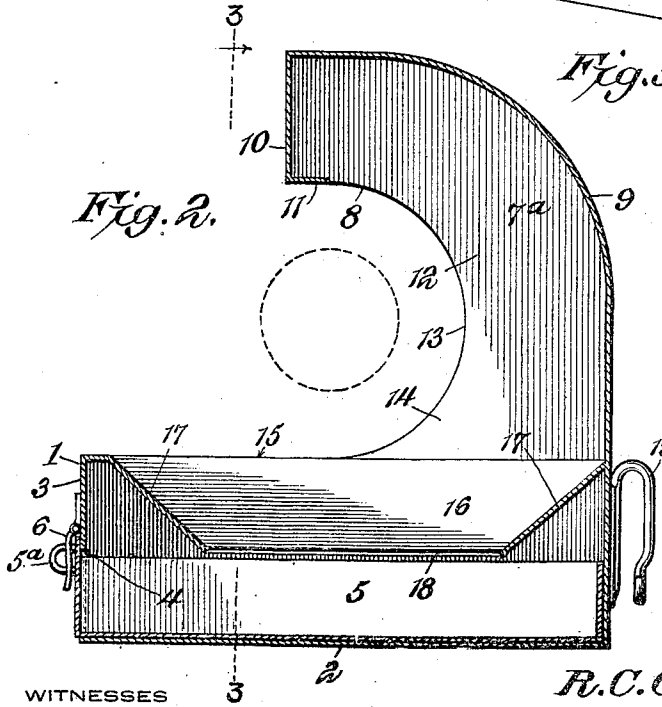
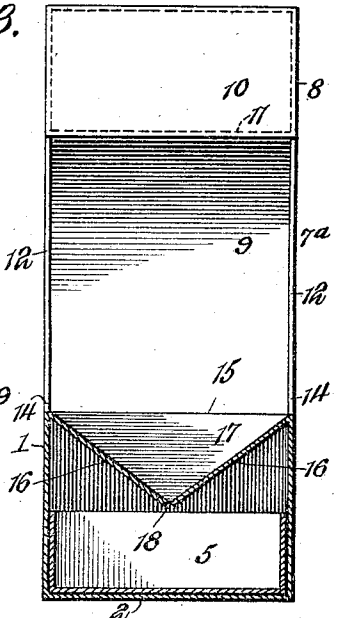


Fig. 3.



WITNESSES

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RECEPTACLE AND SEPARATOR FOR PARTICLES OF GOLD AND OTHER PRECIOUS METALS.

1,374,075. Specification of Letters Patent. Patented Apr. 5, 1921.

Application filed April 18, 1919. Serial No. 291,091.

To all whom it may concern:

Be it known that I, ROBERT C. GRAHAM, a citizen of the United States, residing at Chattanooga, in the county of Hamilton and State of Tennessee, have invented a new and useful Receptacle and Separator for Particles of Gold and other Precious Metals, of which the following is a specification.

This invention has reference to receptacles and separators for particles of gold and other precious metals, and its object is to provide a device of simple and inexpensive construction and of light weight and of relatively small size, especially adapted for use in connection with dentistry. The invention is capable of use either in the laboratory or at the operating chair and in the latter case may be readily carried upon the person of the user so that particles of gold, which may be taken as typical of any precious metal used in dentistry, which are thrown off by a buffing or emery wheel from gold inlays and crowns by a dental engine are saved and accumulated. Such accumulations, in the course of time, represent considerable values.

The invention comprises a hooded receptacle in which a buffing or grinding wheel driven by a source of power, such as an electric motor for laboratory work, or a dental engine for work at the operating chair, may be temporarily located so that particles thrown off by the wheels are caught and directed to a suitable receptacle. The particles of precious metal are usually sufficiently small to be termed dust. There are also other particles of larger size which may include plaster of Paris and the like by which the articles to be ground or polished are carried. The receptacle for the precious metals may be and preferably is in the form of a drawer inclosed in a casing and furnished with a lock. The casing has a hopper over the drawer, which hopper has a narrow opening, at the bottom, of considerable length and only sufficient width to pass the fine particles of metal while preventing the passage of larger particles of worthless material. The hood with which the device is provided is so shaped as to catch practically all particles thrown off by the wheels and direct such particles into the hopper from which the fine particles pass into the closed receptacle while the coarser particles remain in the hopper. Such coarser particles are easily disposed of by simply turning the device on one side or even upside down, since the structure is such that any material passing through the hopper opening will not return therethrough.

The invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawing forming part of this specification, with the understanding, however, that the invention is not confined to any strict conformity with the showing of the drawing, but may be changed and modified so long as such changes and modifications mark no material departure from the salient features of the invention as expressed in the appended claims.

In the drawing:—

Figure 1 is a perspective view of a receptacle embodying the invention and showing it in connection with an electric motor, which latter is indicated in dotted lines.

Fig. 2 is a front to rear vertical central section through the device, drawn on a larger scale than Fig. 1.

Fig. 3 is a section on the line 3—3 of Fig. 2.

Referring to the drawing, there is shown a body member 1 which may, for convenience, be made of generally rectangular shape, although such particular shape is not obligatory. The body member is provided with a bottom 2 and a front portion 3 having an opening 4 of sufficient height to permit the introduction into the body member of a drawer 5 which may be long enough to reach from the front to the rear of the interior of the body portion. The drawer is provided with a staple 5ª and the body portion at the front is provided with a hasp 6 so that when the drawer is within the body portion and the hasp is closed down over the staple a padlock 7 may be applied, thereby holding the drawer in place. The lock arrangement shown is to be taken as indica-

tive of any suitable lock arrangement and as in nowise confining the invention to the particular structure of lock shown in the drawing.

The body 1 is shown in the drawing as somewhat elongated, and rising from that end of the body remote from the lock end is a hood 7ª curved into an overhang 8 at a suitable distance above the body portion and projecting toward the forward or lock end of the body portion for an appropriate distance, somewhat more than half the length of the body having been found, in practice, to be sufficient. The overhang has a curved rear wall 9 with the axis of curvature about coincident with a point about half-way between the front and rear of the body portion and at a suitable distance above the body portion. The forward end of the overhang 8 has a pendent wall 10 forming a closure therefor and terminating in a return flange 11 directed toward the wall 9. Furthermore, the overhang is provided with side walls 12 each having a cutout 13 curved about concentric with the rear wall 9, but these side walls have a forward extension 14 at the lower ends merging into the top edges of the side walls of the body portion.

The top of the body portion is closed by a hopper 15 having slanting side walls 16 and slanting end walls 17 all converging toward a longitudinal upright plane about central to the body portion. The slanting side walls 16 of the hopper closely approach at their lower edges but do not quite meet, thereby providing a narrow longitudinal slot 18 opening into the interior of the body 1 so that the hopper discharges into the drawer 5 when the latter is in place. Because of the convergence of the slanting walls 16 and 17, which approach downwardly, the slot is of less length than the top of the hopper and consequently of less length than the body member 1, while the convergence or approach of the lower ends of the walls 16 and 17 cause all materials falling on these walls to gravitate to the slot 18, which latter passes all particles sufficiently fine but prevents the passage of other particles.

The elongation of the slot 18 is in the direction of the length of the body and is arranged in the longitudinal center thereof. The hood overhangs the slot for the major portion of its length.

At the back of the body member 1 there is secured a hook 19 so shaped and positioned as to readily engage a belt or other holding device on the body of the user, thus permitting the hands of the user to be entirely free so far as the device is concerned.

When the device is to be used in a laboratory the grinding, polishing, or other operations are performed by a suitable tool, indicated in dotted lines at 20 in Figs. 1 and 2, and the tool is attached to the armature shaft 21 of an electric motor 22. Under such circumstances the motor, which is usually made fast to a table 23 or other support, has the device of the invention so situated with respect to it that the armature shaft with the tool thereon will project into the hood 7 through one or the other of the openings 13, so as to be about in the axis of curvature of such openings and of the wall 9. It will be understood, of course, that the device of the invention will then be supported upon the table 23.

While the tool 20 may be made to operate upon any suitable work, it may be considered, for convenience of description, that the purpose of the invention is to save precious metal in dental work. Therefore, in grinding or polishing bridges, or gold plates, or other work in the laboratory, the parts to be treated are held against the tool 20 and the latter may be considered as rotating counter-clockwise in the showing of the drawings. Under these circumstances fine particles of gold or the like are detached from the work and, by the impulse of the rapidly revolving tool 20, are thrown against the rear portion of the hood 7ª and to an extent along the curved inner face thereof toward the end 8 of the hood. Ultimately the impetus imparted to such particles is lost and the particles gravitate into the hopper 15 and then down the walls 16 or 17 as the case may be, to the slot 18. The operation is such that only extremely fine particles of precious metal are dislodged from the work and thrown against the hood, but it also occurs that coarser particles of plaster of Paris or other materials used in dental work are also detached and impelled into the hood. Such coarser particles follow a path similar to that of the fine gold particles, but, on account of their size, the particles of debris are too large to pass through the slot 18 and hence are retained in the hopper.

The hood not only catches particles that are detached from the article being treated, but, on account of the side wings 12 of the hood, spread of such particles beyond the area of the hopper is prevented and so there is practically no loss of precious metal in the operations performed upon the work. The fine particles of precious metal readily find their way into the interior of the body portion or container and the debris which is retained by the hopper is readily discharged by the simple expedient of tipping the hopper to one side when the debris will spill out of the hopper, while the gold, which has passed through the hopper into the drawer, cannot escape. This last feature is present whether the hopper be purposely turned over to discharge the debris or whether it be accidentally knocked over.

In establishments where a considerable amount of polishing or grinding is performed very material values are collected in the body 1, sometimes amounting to hundreds of dollars in the course of a year. The device may be made small enough to be readily attached to a belt about the body of the operator, for which purpose the hook 19 is provided. By this means a dental engine may replace the motor 22 and gold inlays and crowns may be polished at the chair, the removed gold being caught by the device of the invention when carried by the belt of the operator, leaving the hands free for other purposes than holding the device.

The structure not only catches the gold but holds back the debris so that the latter may be discarded without loss of values, this being an important advantage of the invention. The arrangement whereby the device may be attached to the belt of the user or to any part of the clothing capable of supporting the device is also an important advantage. The capability of locking the interior of the device against unauthorized access is of importance since it is not infrequent in large establishments for operators to appropriate the gold which heretofore has been considered as waste. The invention provides for the saving of such gold. The portability of the device and the possibility of using it either in the laboratory or at the chair is a decided advantage since it provides for the saving of values where the inconvenience of the usual arrangements for operating upon the work would preclude any attempt at saving.

Furthermore, the device has the advantage of saving the gold in the dry state and practically free from debris so that the utilization of the saved values is greatly simplified.

The invention while described as especially designed for dentists is well adapted to jewelers' use and others who work in precious metals.

What is claimed is:—

1. A device for the purpose described comprising a closed receptacle provided at its top with a hopper, said hopper comprising four downwardly converging walls of relatively easy descent leading to a narrow elongated opening for the receptacle, said opening being of such width as to allow only particles of dust-like fineness to pass, and a hood rising from the receptacle over the hopper and spaced from and overhanging the opening for a portion of its length, with one side of the hood open to admit a polishing or grinding tool, whereby particles removed in the act of polishing or grinding are caught by the hood and directed into the hopper.

2. A device for the purpose described comprising an elongated body member with a top portion having side and end parts slanting downwardly into the body member toward the longitudinal center line thereof with the sides approaching and there spaced apart to form a narrow slot opening into the interior of the body member, said slot being elongated in the direction of the length of the body, and a hood erected on one end of the body and rising into overhanging relation thereto, said hood comprising a curved rear wall, two side walls, and a front end wall, the latter having an inturned flange, the side walls rising from the sides of the body member and having their front edges curved, whereby a rotary tool may be located within the hood above the slot to catch particles disengaged from the work by said tool and direct them into the hopper.

3. A device for the purpose described comprising an elongated receptacle with a top formed hopper-shaped having downwardly converging sides and downwardly slanting ends which approach but do not touch forming an elongated slot which extends lengthwise of the receptacle, means for obtaining access to said receptacle, and a curved hood rising from one end of the receptacle and having its sides extending partially along the sides of the receptacle, said hood overhanging the slot and spaced from the same, both the rear wall of the hood and the sides being curved, said hood being shaped to receive a grinding or polishing tool in substantially the axis of curvature, whereby particles dislodged from work by said tool will be arrested by the curved hood and directed into the hopper and pass through the slot into the receptacle.

4. A device for the purpose described comprising an elongated receptacle with a hopper structure constituting the top of the receptacle and provided with converging side and end walls, with the side walls separated at the lower end to form a narrow slot elongated in the direction of the length of the receptacle and of a width to pass fine particles only, and a hood rising from one end of the receptacle and curving forwardly toward the other end and thereby forming an overhang above and along the slot, said hood having side walls extending along the sides of the receptacle and cut-out into substantial conformity with the curvature of the hood, whereby a grinding or polishing tool may be located over the slot in substantially the axis of curvature of the hood and fine particles dislodged from the work treated by the grinding or polishing tool may be projected into the hood for final deposition into the receptacle through the slot.

5. A device for the purpose described comprising a receptacle with a curved hood rising from one end and overhanging toward the other end, and a hook at the end

of the receptacle from which the hood rises for attaching the receptacle to the body of the user with the hood directed away from the user, said receptacle having an opening in the top under the hood for directing material into the receptacle, and a drawer in the receptacle at the end remote from the hook.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature.

ROBERT C. GRAHAM.

Witnesses:
Z. McSPADDEN,
EVAN C. HASKELL.