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G. W. HINTON.

WHIRLER.

APPLICATION FILED JAN. 7, 1902.

NO MODEL.

Fig. 1.

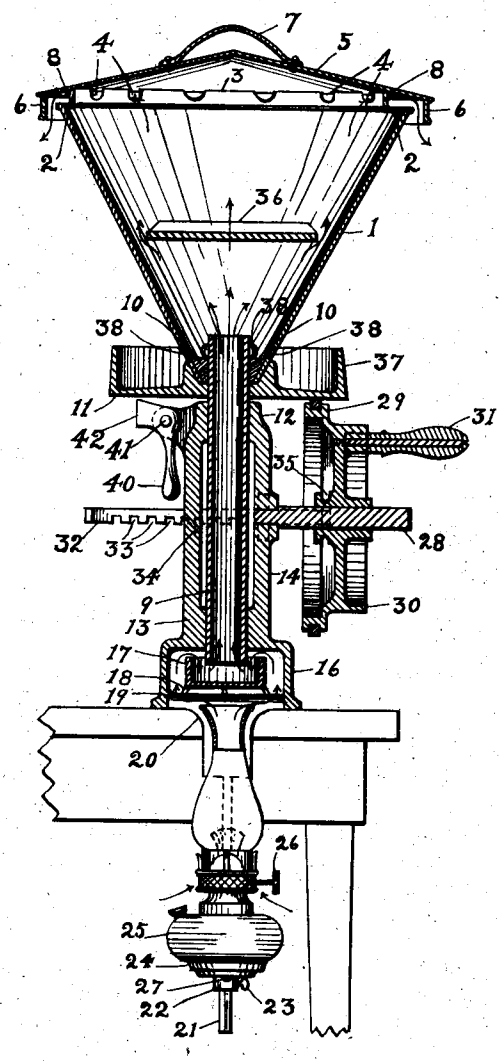
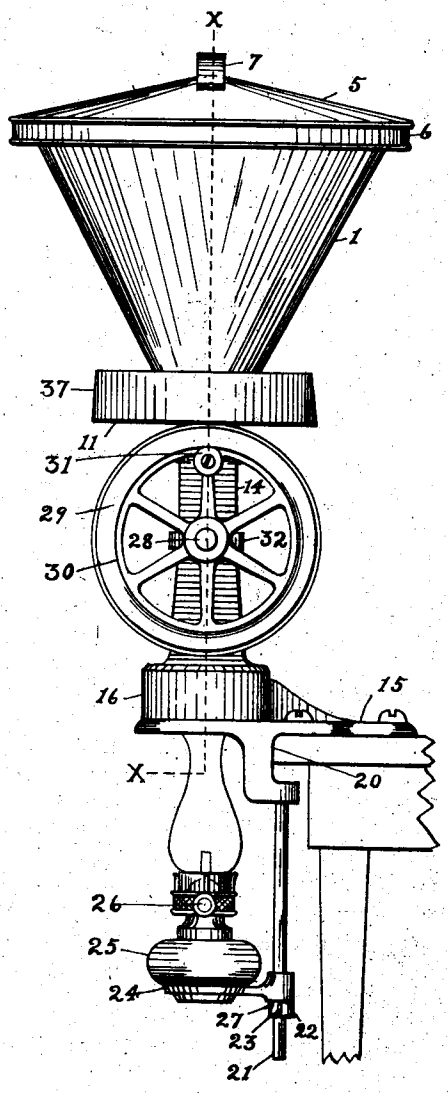


Fig. 2



Witnesses

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UNITED STATES PATENT OFFICE.

GEORGE W. HINTON, OF ST. JOSEPH, MISSOURI.

WHIRLER.

SPECIFICATION forming part of Letters Patent No. 763,487, dated June 28, 1904.

Application filed January 7, 1902. Serial No. 88,752. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. HINTON, a citizen of the United States, residing at St. Joseph, in the county of Buchanan and State of Missouri, have invented a new and useful Whirler; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in that class of centrifugal machines, commonly known as "whirlers," ordinarily used for evenly spreading and drying sensitive films on the metal plates used in photo-etching processes, such as half-tone, zinc-etch, and the like; and the objects of my improvements are, first, to provide a whirler in which gravity alone holds either a glass or a metal plate in place within a gyrating body of such form and parts as will render the plate (being gyrated thereby) absolutely safe from injury arising from accident or from careless handling of said plate; second, to provide convenient means for excluding all actinic light from the interior of said gyrating body and to so arrange the parts of a whirler that heated air will be adjustably and economically directed into and through said gyrating body and to provide means for separating all dust, fiber, and the like from said heated air before it passes through said gyrating body; third, to provide receptacles in which the sensitive matter centrifugally thrown from the gyrated plate will find lodgment and to so arrange the parts of a whirler that they may be easily and quickly separated for cleaning; fourth, to provide a whirler of such form and parts as will afford ready means for starting, stopping, and adjustably speeding the gyrations of said whirler when driven either by power or manually. I obtain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal section cut on the line X X seen in Fig. 2. Fig. 2 is a side elevation.

My invention consists of a cone 1, provided with an inwardly-projecting flange 2, to the inner edge of which is secured the vertical band 3, apertured at 4, covered by a lid 5, having a vertical band 6 at its edge and a handle 7 at its top and an annular bead 8 on its under surface for encircling the vertical band 3, thus holding lid 5 in place.

To the lower end of the cone 1 is communicatively secured the tube 9 by cone-nut 10 and friction-disk 11, screw-threaded upon tube 9, which rotates in bearings 12 and 13, formed with frame 14, formed with base 15 and chamber 16. In chamber 16 is cup 17, supported by a spider 18, the outer ends resting on bead 19, formed with the wall of chamber 16.

From the base 15 depends the bracket-support 20, holding rod 21, to which is adjustably secured the collar 22 by thumb-screw 23. Bracket 24, holding lamp 25, having burner-adjusting wheel 26, is supported upon rod 21 by collar 22, provided with a depression 27, into which a boss projects from bracket 24, preventing bracket 24 from accidental gyration on rod 21.

Upon stud-pin 28, attached to frame 14, rotates a friction-wheel 29, driving friction-disk 11, carrying splash-pan 37. Crank 31 is attached to belt-wheel 30, formed with friction-wheel 29. Shifter-bar 32, (see Fig. 1,) having ratchets 33 adjustably engaging lug 34 on frame 14, shifts wheel 29 by having its end turned into engagement with channel 35 in hub of wheel 29.

In the operation of my invention lid 5 is removed and the plate 36 to be whirled is placed film side downward within cone 1, which by reason of the gravity of said plate and the shape of cone 1 is readily chucked, centered, and held in place. Lid 5 is then placed, as seen in Figs. 1 and 2, and lamp 25 having been previously lighted and adjusted in the usual manner the operator grasps handle 31 and by it rotates wheel 29, gyrating friction-disk 11, gyrating cone 1, gyrating plate 36. Heated air from lamp 25 passes upward through chamber 16 and is deflected downward by the lower extremity of tube 9 into cup 17, depositing dust particles in said cup, thence upward through tube 9 into cone 1, against the lower surface of plate 36, then upward between said plate and the inside of cone 1, and outward through apertures 4 and between band 6 and the cone 1 to the outer air.

While the described operation is a desirable means of quickly drying wet or moist negative-films, it is especially designed to centrifugally spread and to dry sensitive films on copper and zinc plates for photo-etching, and when such is done a previously-polished metal plate 36 (while still wet to prevent oxidizing by the atmosphere) is flowed all over its polished surface with an approximately even film of one of the various sensitive solutions now generally in use by photo-engravers. At the operator's option an extra amount of said solution may or may not be flowed upon the center of the plate, after which said plate is preferably turned film side downward, is placed in cone 1, covered by lid 5, (see Fig. 1,) whirled by rotation of wheel 29, dried by heated air from lamp 25, and protected from light and dust by parts previously described. Where surrounding conditions as to light and dust render use of lid 5 unnecessary, said lid may be dispensed with. During the first stages of whirling plate 36 centrifugal force throws any excess of the sensitive liquid from the edges of said plate and causes an even spreading and proper thickness of film thereon, provided, however, that the speed of the gyrations is in proper accord with the consistency of the sensitive solution used—as, for instance, a solution of thin-liquid consistency would require less speed than a viscous preparation. The excess of sensitive liquid centrifugally thrown from plate 36 is retained within cone 1 by flange 2 until the whirler is stopped, upon which the sensitive matter thus retained gravitates onto cone-nut 10 and is centrifugally thrown from cone 1 through perforations 38 into splash-pan 37 by the repeated operation of whirler.

My invention may be driven by a belt (not shown) upon belt-wheel 30 and its speed be adjusted by moving shifter-bar 32. When so driven, by the upward rotation of handle 40 on pivot 41 brake 42 elevates disk 11 clear of wheel 29 and supports, brakes, and stops disk 11 and cone 1, which are again started by lowering handle 40.

It will be seen by reference to Fig. 1 that lid 5 is readily removable, that cone 1, cone-nut 10, splash-pan 37, friction-disk 11, and tube 9 may be lifted from bearings 12 and 13, and that cup 17 on flexible spider 18 may be readily removed from chamber 16 for cleaning dust, excess sensitive matter, &c., from the parts. It will also be seen that lid 5, splash-pan 37, and cup 17 shield the openings into the interior of cone 1 from entrance of direct actinic light and that should plate 36 be carelessly placed and centrifugally thrown said plate 36 would be retained upon the convexed inner surface of cone 1 by flange 2, thus rendering it impossible to injure the surface of plate 36.

While I have shown and described my invention in the foregoing manner, I do not wish to restrict myself to the particular construction and arrangement of parts as set forth, but reserve the right to modify or change said parts in any manner without departing from the spirit of my invention, such as to gyrate a cone by any suitable mechanism—such as belt, bevel-gear, or motor, &c.—or to locate the splash-pan 37 and perforations 38 at either the top or bottom of cone 1 or to apply a gas-jet or other source of heat instead of lamp 25.

I am aware that various devices or attachments could be applied to a gyratable ventilated cone; but I am not aware that any gyratable ventilated cone (for gyrating a plate) other than mine has ever been known.

Therefore what I claim as new, and desire to secure by Letters Patent, is—

1. A whirler for photo-engraving plates having an inverted interiorly-unobstructed ventilated hollow cone for the reception of the plates, and means whereby a current of hot air may be admitted to said cone, substantially as specified.

2. A whirler for photo-engraving plates, having a rotatable hollow cone having a perforated cover, and provided with an opening in its bottom, by means of which a current of hot air can be admitted, substantially as specified.

3. A whirler for photo-engraving plates, having a hollow cone, a ventilated cover for said cone, a hollow shaft carrying at its upper end portion said cone, and means for introducing heated air through said shaft into the interior of the cone, substantially as specified.

4. A whirler for photo-engraving plates, having a hollow cone, a hollow rotatable shaft, a nut and friction-disk for connecting shaft and cone, and driving means engaging said disk, substantially as specified.

5. A whirler for photo-engraving plates, having a hollow cone, a hollow rotatable shaft communicating with the interior of said cone, a stationary bearing-frame for said shaft, a friction-disk and splash-pan carried by said cone, a bearing-stud carried by said frame, a friction-wheel upon said stud, and means engaging said wheel to adjust the same upon said stud to control the speed of rotation of the cone, substantially as specified.

6. A whirler for photo-engraving plates, having a hollow cone, a hollow rotatable shaft communicating with the interior of said cone, a stationary bearing-frame for said shaft, having lateral lugs, a friction-disk carried by said cone, and having a channel in the hub thereof, a bearing-stud carried by said frame, a friction-wheel upon said stud, a rack device engaging the lugs of said frame, and having inturned ends engaging said channel for adjusting the friction-wheel upon its stud, substantially as specified.

7. A whirler for photo-engraving plates, having a hollow cone, a rotatable shaft there-

for, a bearing-frame for said shaft having a hollow base, a dust cup and deflector in said hollow base, and an adjustable lamp-bracket forming a part of said frame, substantially as specified.

8. A whirler for photo-engraving plates, having a rotatable hollow cone for the reception of the plates, and a cover having marginal perforations for said cone, substantially as specified.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE W. HINTON.

Witnesses:

GEORGE E. CRONIN,

WILLIAM M. MYERS.