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CENTRIFUGAL CLEANING AND DRYING MACHINE

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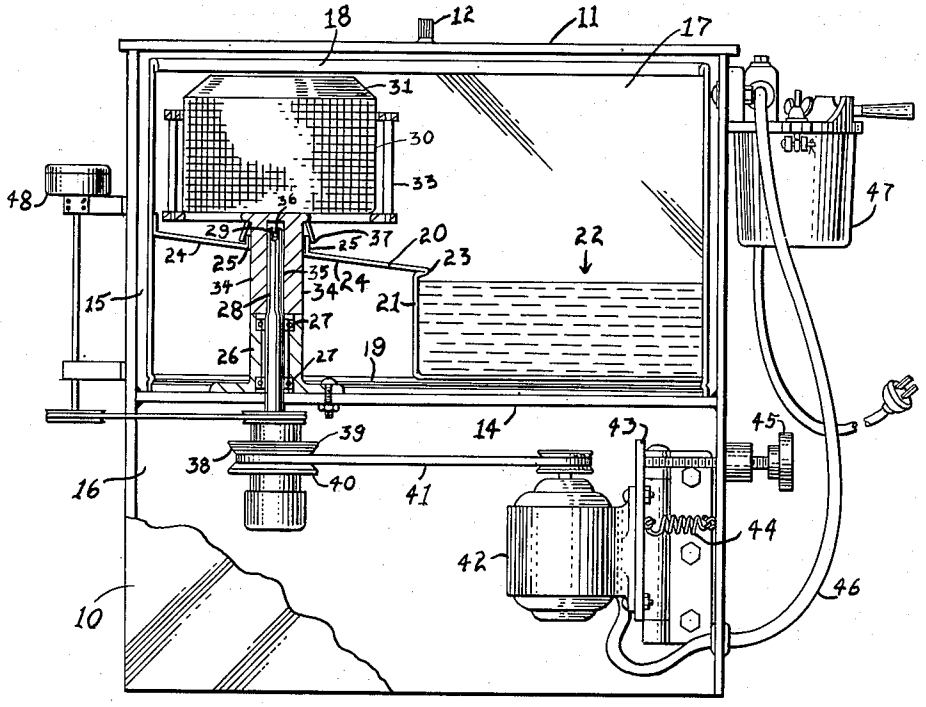


Fig. 1

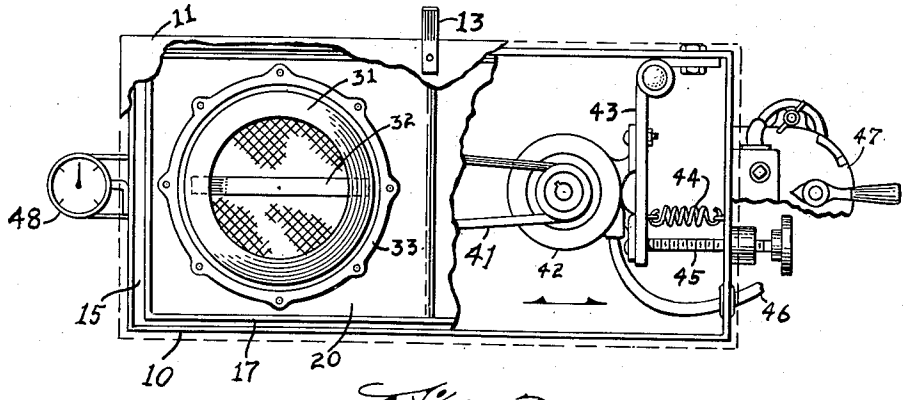


Fig. 2

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CENTRIFUGAL CLEANING AND DRYING MACHINE

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2 Claims. (Cl. 134—85)

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My present invention relates to extracting machines, and more particularly to a novel machine for cleaning and drying stamped objects.

The principal object of the present invention is to provide a means for quickly and efficiently removing dirt, grease, oil or surface film from small stampings.

A further object of the present invention is to provide a means for cleaning large quantities of stampings simultaneously thus reducing excessive handling.

Another object of the present invention is to provide a means for cleaning quantities of stampings which will prevent wasting the cleaning fluids.

Another object of the present invention is to provide a machine, having the above advantages, which is economical in operation and easy and economical to manufacture and assemble.

With the above and other objects and advantageous features in view, my invention consists of a novel arrangement of parts, more fully disclosed in the detailed description following, in conjunction with the accompanying drawings, and more particularly defined in the appended claims.

In the drawings:

Fig. 1 is a side elevation, partly in section, of a machine embodying my invention, the front of the casing being broken away; and

Fig. 2 is a top plan view of the same, parts being broken away.

In the manufacture of many stamped articles such as shoe buckles or ornaments, or screw machine products, the article comes from the press or screw machine with chips, dirt, grease, oil or other surface film. It is necessary to thoroughly clean and dry the item before performing the next operation. This cleaning operation, known as extracting, is performed by washing the pieces with a volatile cleaning compound such as gasoline, carbon tetrachloride, or other chemical compound suitable for the particular work. Small stampings such as shoe buckles can be rapidly turned out on machines in large quantities and frequent handling for cleaning would add prohibitively to the cost.

The present invention is designed to supply a simple machine, easy and economical to manufacture and assemble, for quickly and efficiently cleaning large batches of material at one operation with a minimum of waste.

Referring more in detail to the drawings illustrating my invention, my novel machine comprises a casing 10 of rectangular shape made of

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sheet metal or other suitable material. The casing 10 comprises four sides and a bottom joined by any conventional means such as welding or bolting, and a flat top or cover portion 11 which is hinged to the casing 10 and which may be provided with a conventional handle 12 for lifting, and a stop bar 13 extending from its rear edge to retain the cover 11 in upright position when open. The casing 10 is divided into two compartments by a partition 14, the upper compartment 15 being slightly deeper than the lower compartment 16, Fig. 1.

The upper compartment 15 is provided with a removable lining portion 17 extending around the four side walls and fitting loosely into the casing. The lining 17 may be made of sheet stock turned in at its upper edge, as at 18, and provided with a ridge 19 extending around the lining 17 adjacent the lower edge. A partition 20, also made of sheet stock, is positioned in the lining 17, fitting snugly into the full width of the lining. The partition 20 is so positioned and shaped that its front edge abuts the right side wall of the lining 17, Fig. 1, resting on the ridge 19, and extends along the ridge 19 until the center of the compartment and then turns upwardly, as at 21, to form a tank 22 in the right side of the compartment 15. The partition 20 is then reentrantly bent, as at 23, to form an overhang over the tank portion 22, and then extends to the opposite left wall at an upward angle to form a drainage portion 24 inclined towards the tank 22. The center of the portion 24 is provided with an extruded opening 25, the extruded portion forming a shield to prevent drainage into the opening.

A stand or journal bearing 26 is bolted to the partition 14 and houses spaced bearings 27 which rotatably support a vertical shaft 28. The lower end of the shaft 28 extends downwardly through the partition 14 into the lower compartment 16. The upper end of the shaft 28, which may be narrower than the lower end as shown, extends upwardly through the opening 25 in the partition 20, and has a slot 29 cut into its upper end.

The material to be cleaned is retained in a round wire basket 30 having a conical shield 31 along its upper edge and a handle 32 extending across the top. The basket 30 is loosely positioned in an annular frame 33 which in turn is locked to the top of a shaft 34 of the same diameter as the stand 26. The shaft 34 is provided with a vertical coaxial opening 35 which fits over the upper end of the shaft 28, and has a horizontal pin 36 which extends into the slot

29 to lock the shafts for simultaneous rotation. A splash shield 37 may also be positioned around the top of the shaft 34 overlaying the extruded portion of the opening 25.

The shaft 28 is driven by the variable speed mechanism mounted in the lower compartment 16. This mechanism consists of a conventional variable pulley 38 mounted at the lower end of the shaft 28 and consisting of a fixed portion 39 and spring pressed portion 40. A V-shaped drive belt 41 rides over the pulley 38 and is driven by a reversable motor 42 mounted on a hinged bracket 43 which is bolted to the rear of the casing 10, Fig. 2. A coil spring 44 is hooked to the rear of the bracket 43 to normally pull the bracket and motor away from the shaft 28, and a set screw 45 presses against the rear of the bracket 43 to permit adjustment of the position of the motor. The electrical cable 46 extends from the motor 42 through the casing 10 to a reversing switch 47 which may be mounted on one side of the casing.

In operation, a plurality of parts to be cleaned are placed in the wire basket 30. The basket 30 is manually lifted by its handle 32 and dipped into the cleaning fluid in the tank portion 22 in the upper compartment 15. Small brass parts may be very heavy and this operation may be performed with a chain falls if required. The fluid is allowed to soak into the work, the basket being jiggled to facilitate penetration.

The basket 30 is now lifted into the frame 33 and the cover 11 is closed. The switch 47 is turned on and the motor 42 will drive the shaft 28 through the belt 41 and pulley 38. The shaft 28 is locked to the shaft 34 through the slot 29 and pin 36 and will rotate the shaft 34, frame 33 and basket 30. At the proper speed for a given material, the centrifugal force will extract the cleaning fluid and sediment from the material through the basket 30 and onto the drainage portion 24, from which it drains into the tank 22. Since too high a speed is wearing on the equipment, the set screw 45 is adjusted to so vary the speed of rotation as to provide a maximum of efficiency with a minimum of speed. A speedometer 48 may be attached to the casing 10 and driven from the shaft 28, Fig. 1, so that a rotation may be made of the desired speed for a given work for future reference.

Since small parts may be cup-shaped or closely overlayed, reversing the motor is desirable to insure proper cleaning. The switch 47 accomplished this purpose. The basket 30 can thus be again dipped into the fluid in the tank 22 because none of the fluid is lost, and the action repeated as many times as necessary to complete the cleaning operation.

While the above machine is described as an extractor, it can also be used for coating the parts. For example, enamel paint can be placed in the tank 22 and the above described operation gone through, the material being rotated at just enough speed to spread the paint and shake off the excess.

The machine is simple in construction and easy and economical to manufacture and assemble. The basket 30 can be lifted out and the frame 33 and shaft 34 can be easily pulled out. The entire lining 17 and partition 20 can then be readily lifted from the casing for cleaning, draining the tank, or for repairs.

While I have described a single constructional embodiment of my invention, it is obvious that changes may readily be made in the size, shape, and relative arrangement of the parts, without departing from the spirit and scope of my invention as defined in the appended claims.

I claim:

1. Centrifugal cleaning and drying apparatus comprising a casing, a substantially horizontal partition dividing said casing into upper and lower chambers, a tank for cleaning fluid in said upper chamber, a centrifugal drying frame in said upper chamber laterally displaced from and vertically disposed above said tank for rotation on a vertical axis, means supported in said lower chamber for rotating said frame, a work holding open top basket separably carried by said frame and removable therefrom for introduction into said tank, a shaft penetrating said partition and interconnecting said rotating means and drying frame to rotate said basket, and drain means extending from below said frame to said tank for conducting fluid discharged from said frame to said tank.

2. Centrifugal cleaning and drying apparatus comprising a casing, a substantially horizontal partition dividing said casing into upper and lower chambers, a tank for cleaning fluid in said upper chamber, a centrifugal drying frame in said upper chamber laterally displaced from and vertically disposed above said tank for rotation on a vertical axis, means in said lower chamber supported by said casing for rotating said frame, a work holding open top basket separably carried by said frame and removable therefrom for introduction into said tank, a shaft penetrating said partition and interconnecting said rotating means and drying frame to rotate said basket, and drain means extending from below said frame to said tank and integral with said tank for conducting fluid discharged from said frame to said tank.

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