

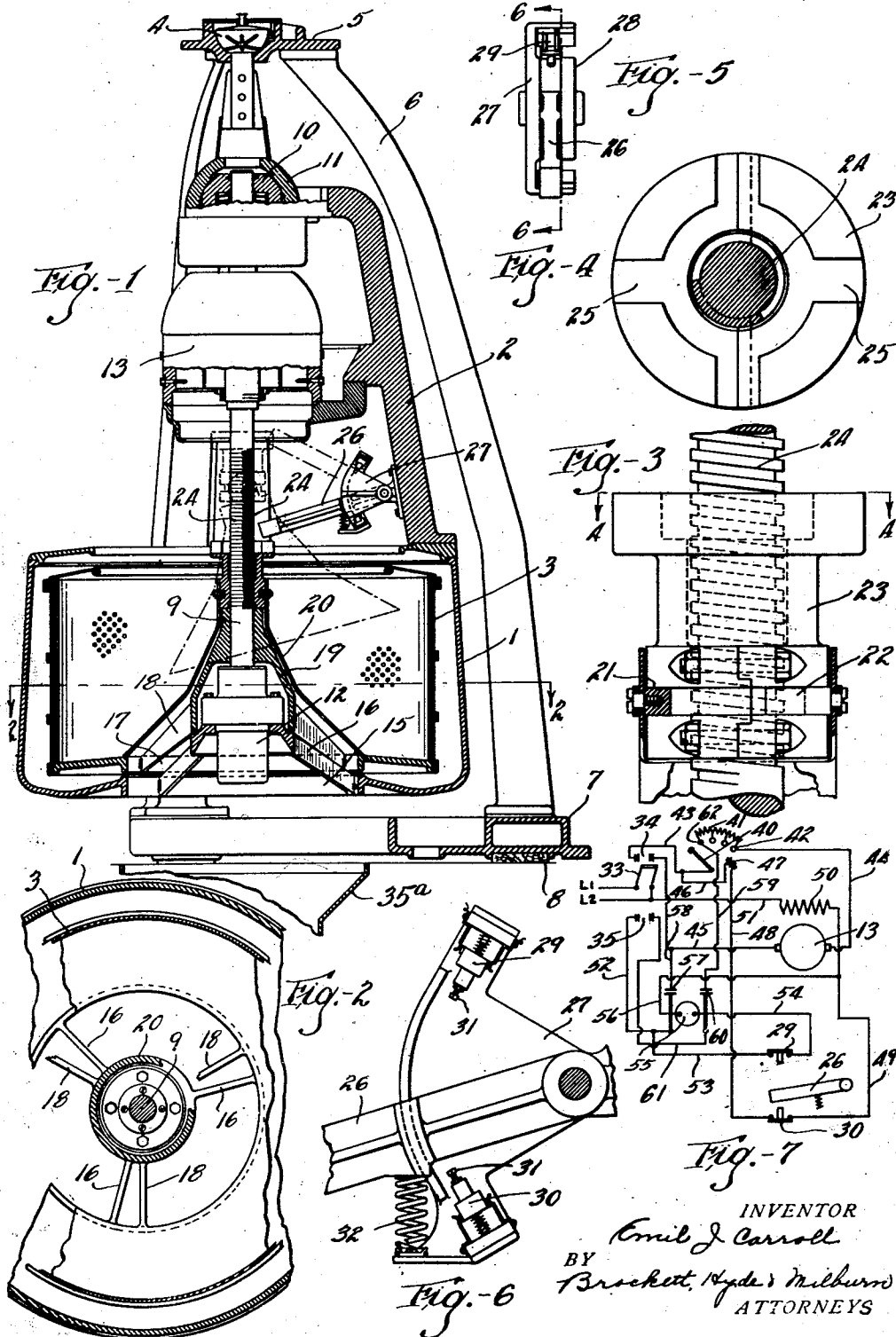
June 28, 1927.

1,633,570

E. J. CARROLL

DUMP BOTTOM EXTRACTOR

Filed Nov. 22, 1924



Patented June 28, 1927.

1,633,570

UNITED STATES PATENT OFFICE.

EMIL J. CARROLL, OF NORWOOD, OHIO, ASSIGNOR TO THE AMERICAN LAUNDRY MACHINERY COMPANY, OF CINCINNATI, OHIO, A CORPORATION OF OHIO.

DUMP-BOTTOM EXTRACTOR.

Application filed November 22, 1924. Serial No. 751,559.

This invention relates to improvements in centrifugal extractors.

The object of the present invention is to provide an improved extractor having a bottom opening through which the extracted materials are discharged into a chute or onto a suitable conveyor and thereby carried to any desired location. The present laborious and time consuming unloading practice of manually lifting the extracted materials through the top loading opening and manually carrying them to a conveyor is, therefore, avoided.

A further object of the invention is to provide improved power means for manipulating the closure for said bottom discharge opening.

Further objects of the invention are in part obvious and in part will appear more in detail hereinafter.

In the drawing, Fig. 1 is a vertical sectional view of an extractor embodying my invention; Fig. 2 is a cross sectional view on the line 2—2, Fig. 1; Fig. 3 is an enlarged detail view of the closure traveling nut; Fig. 4 is a detail cross sectional view thereof on the line 4—4, Fig. 3; Fig. 5 is a detail front elevation of the closure manipulating means; Fig. 6 is a vertical sectional view thereof on the line 6—6, Fig. 5; and Fig. 7 is a diagrammatic view illustrating the electric circuits.

While the present invention may be readily embodied in various types of centrifugal extractors, the drawing illustrates an extractor of the over-driven, swinging curb type. Said extractor comprises a curb or casing 1 attached to a suitable frame 2 and within which curb is the usual foraminous or perforated basket 3. The curb frame 2 is suspended from an over-head point, and to this end is here provided with a rigid semi-spherical head 4 disposed within a semi-spherical socket carried by a bracket 5. This bracket is attached to a suitable frame 6 having a base 7 resting upon the floor or other support 8.

The work containing basket 3 is carried by a shaft or spindle 9 provided at its upper end with a ball member 10 arranged within a suitably formed socket portion 11 of the curb frame 2. The lower end of the spindle is supported within a tubular bearing member 12 carried by the curb 1. The extractor is driven by an electric motor 13

suitably mounted upon the basket spindle 9 which forms the armature of the motor.

Coming now to the distinguishing features of the present invention, the curb 1 is provided with a centrally disposed bottom discharge opening 15 across which extend radially extending webs 16 which connect the curb bottom with the lower spindle bearing 12. The inner foraminous basket 3 is provided with a similar bottom discharge opening 17, across which extend radially extending ribs 18 which connect the basket bottom with the central hub portion 19, the lower portion of which hub encloses the upper portion of the lower spindle bearing member 12.

The basket discharge opening 17 is closed during the extracting operation by a substantially conical shaped closure member 20. The upper cylindrical end portion of this closure member is pivotally secured to a pair of diametrically opposed shoes 21 rotatably confined in an annular groove 22 of a nut 23 mounted upon the basket spindle. Said closure member, therefore, not only has lateral swinging movement relative to the shoes 21 but the entire closure member is rotatable relative to the nut 23.

Nut 23 has screw threaded engagement with the intermediate portion 24 of the basket spindle 9, and when held from rotating with said spindle, as will later appear, will move upwardly or downwardly therealong depending upon the direction of rotation of the spindle. Preferably, nut 23 is in two parts to facilitate its application to the basket spindle, the two parts being bolted or otherwise suitably secured together. To prevent rotation of the nut, the upper surface thereof is here provided with one or more laterally extending grooves 25, four being here shown. Cooperating with these grooves is the inner end portion of an arm 26 having its rear end pivotally secured to a bracket 27 carried by the curb frame 2, said bracket being provided with a side guiding portion 28 for said arm. Mounted in the upper and lower portions of said bracket at the extremities of the range of movement of the pivotally mounted arm 26 are upper and lower limit switches 29 and 30 provided with suitable adjusting screws 31. Bracket 27 adjacent the lower limit switch 30 is also provided with a suitable spring 32 arranged in the path of movement of arm 26

and adapted to engage said arm and force it from seating engagement in one of the grooves 25 when the nut 23 has reached its lowermost position, at which point the basket discharge opening 17 is entirely covered by the conical shaped closure member 20.

The operation of the machine is as follows: Let us assume that the washing or cleaning fluid has been removed from the materials in basket 3 and that the rotation of the basket has stopped. The operator manipulates switch 33 to close the reverse contacts 35 (see Fig. 7) and open the lower limit switch 30, thereby opening the reverse motor circuit and starting the basket spindle to rotating in the reverse direction. Before such switch manipulation, however, arm 26 is forced into engagement in one of the nut grooves 25 so that said nut will not rotate with the spindle but will travel upwardly therealong until said arm 26 engages the adjusting screw 31 of the upper limit switch 29, which opens the motor circuit and stops the rotation of the basket spindle. This operation brings the closure member 20 to its upper uncovering position, and in order to more conveniently discharge the extracted materials through the bottom discharge openings 17 and 15, the closure member may be swung to one side, as shown in dot and dash lines, Fig. 1, and suitably latched or held in this position during the unloading operation. The extracted materials are dropped or dumped onto a suitable conveyor or into a suitable chute 35^a arranged below said openings, and carried by said conveyor or said chute to any desired location. When the machine has been thus unloaded, the operator manipulates switch 33 so as to close the forward contacts 34, thereby effecting forward rotation of the basket spindle. Nut 23 thereupon travels downwardly until arm 26 engages spring 32, which knocks said arm from seating engagement in one of the nut grooves 25. Said nut, therefore, comes to rest upon the top of the central hub portion 19 of the basket, in which position the basket discharge opening is entirely covered by the closure member 20. Switch 33 is then manipulated to open contacts 34 and stop the rotation of the spindle.

Referring to the electrical diagram, Fig. 7, the arm 40 of rheostat 41 is in engagement with contact 42 during the extracting operation, current passing from line L¹ through switch 33 to contacts 34, line 43, arm 40, contact 42, line 44, motor 13, line 45 and switch 33 to line L². The field circuit is from L¹, switch 33, contacts 34, line 43, line 46, magnet coil 47, line 48, limit switch 30, line 49, field 50, and through line 51 to L².

When the extracting operation has been completed and it is desired to raise closure 20 to expose the discharge openings, the basket spindle is started rotating in the reverse

direction. The circuit is now from L¹ through switch 33, contacts 35, line 52, line 53, upper limit switch 29, line 54, coil 55 of the double pole magnetic contactor, line 56, line 49, field 50 and line 51 to L². Current now flows from L¹, switch 33, line 52, contact 57, line 58, line 45, motor 13, line 44, resistance of rheostat 41, line 59, contact 60, line 61, contacts 35, switch 33 to L². When the closure member 20 has been raised to its uppermost position, arm 26 strikes and opens the upper limit switch 29, opening the field circuit, de-energizing coil 55, opening the motor circuit and stopping the rotation of the basket spindle.

When the materials have been discharged from the basket, the operator manipulates switch 33 to close contacts 34. Rheostat arm 40 is moved into contact with contact 62, so that current flows from L¹, switch 33, contacts 34, line 43, arm 40, contact 62, the resistance of rheostat 41, line 44, motor 13, line 45 to contacts 34, switch 33 and to L².

It will of course, be understood that magnet coil 47 is adapted to hold rheostat arm 34 in position on any of the rheostat contacts during the forward rotation of the basket spindle. When this coil is de-energized, arm 40 is automatically moved out of contact with said rheostat contacts so as to break the motor circuit. The resistance of the rheostat is used for the purpose of running the motor at low speed during the raising and lowering of the closure member 20.

What I claim is:

1. An extractor, comprising a work receiving basket rotatable in both forward and reverse directions and provided with a discharge opening, a rotatable closure for said basket opening movable to and from the same to respectively cover and expose said opening, means for preventing rotary movement of said closure so that rotation of said basket provides relative rotary movement therebetween, and means for producing movement of said closure to or from said basket opening during such relative rotary movement of said closure and said basket, the parts being so constructed and arranged that forward rotation of said basket tends to move said closure toward said basket opening and reverse rotation of said basket tends to move said closure away from said basket opening.

2. An extractor, comprising a work receiving basket rotatable in both forward and reverse directions and provided with a discharge opening, a rotatable closure for said basket opening movable to and from the same to respectively cover and expose said opening, means for preventing rotary movement of said closure so that rotation of said basket provides relative rotary movement therebetween, means for producing movement of said closure to or from said basket

opening during such relative rotary movement of said closure and said basket, the parts being so constructed and arranged that forward rotation of said basket tends to move said closure toward said basket opening and reverse rotation of said basket tends to move said closure away from said basket opening, and means for stopping the reverse rotation of said basket when said closure has moved a predetermined distance from said basket opening.

3. An extractor, comprising a work receiving basket rotatable in both forward and reverse directions and provided with a discharge opening, a rotatable closure for said basket opening movable to and from the same to respectively cover and expose said opening, means for preventing rotary movement of said closure so that rotation of said basket provides relative rotary movement therebetween, means for producing movement of said closure to or from said basket opening during such relative rotary movement of said closure and said basket, the parts being so constructed and arranged that forward rotation of said basket tends to move said closure toward said basket opening and reverse rotation of said basket tends to move said closure away from said basket opening, and means for stopping the forward rotation of said basket when said closure has moved to proper covering position relative to said basket opening.

4. An extractor, comprising a work receiving basket rotatable in both forward and reverse directions and provided with a discharge opening, a rotatable closure for said basket opening movable to and from the same to respectively cover and expose said opening, means for preventing rotary movement of said closure so that rotation of said basket provides relative rotary movement therebetween, means for producing movement of said closure to or from said basket opening during such relative rotary movement of said closure and said basket, the parts being so constructed and arranged that forward rotation of said basket tends to move said closure toward said basket opening and reverse rotation of said basket tends to move said closure away from said basket opening, and means for stopping the rotation of said basket when said closure has moved a predetermined distance from said basket opening and when said closure has moved to proper covering position relative to said basket opening.

5. An extractor, comprising a work receiving basket rotatable in both forward and reverse directions and provided with a discharge opening, a rotatable closure for said basket opening movable to and from the same to respectively cover and expose said opening, means for preventing rotary movement of said closure so that rotation of said

basket provides relative rotary movement therebetween, means for producing movement of said closure to or from said basket opening during such relative rotary movement of said closure and said basket, the parts being so constructed and arranged that forward rotation of said basket tends to move said closure toward said basket opening and reverse rotation of said basket tends to move said closure away from said basket opening, and adjustable means for limiting the movement of said closure to and from said basket opening.

6. An extractor, comprising a work receiving basket having a discharge opening, a closure for said opening having both rotary and vertical movements, means for preventing rotary movement of said closure, and means for rendering ineffective said rotary movement preventing means.

7. An extractor, comprising a work receiving basket, having a discharge opening, a closure for said opening having both rotary and vertical movements, means for preventing rotary movement of said closure, and yielding means for rendering ineffective said rotary movement preventing means.

8. An extractor, comprising a work receiving basket having a discharge opening, a closure for said opening having both rotary and vertical movements, means for preventing rotary movement of said closure, and a spring arranged in the path of movement of said rotary movement preventing means for rendering said means ineffective.

9. An extractor, comprising a frame, a work receiving basket mounted therein and having a discharge opening, a driving spindle for said basket, a closure for said discharge opening having both rotary and vertical movements, and means carried by said frame for preventing rotary movement of said closure.

10. An extractor, comprising a frame, a work receiving basket mounted therein and having a discharge opening, a driving spindle for said basket, a closure for said discharge opening having both rotary and vertical movements, and an arm carried by said frame and adapted to engage said closure for preventing rotary movement thereof.

11. An extractor, comprising a frame, a work receiving basket mounted therein and having a discharge opening, a driving spindle for said basket, a closure for said discharge opening having both rotary and vertical movements, and an arm pivotally mounted upon said frame and adapted to engage a recess in said closure for preventing rotary movement thereof.

12. An extractor, comprising a frame, a work receiving basket mounted therein and having a discharge opening, a driving spindle for said basket, a closure for said discharge opening having both rotary and ver-

tical movements, an arm pivotally mounted upon said frame and adapted to engage a recess in said closure for preventing rotary movement thereof, and means for forcing
5 said arm from engagement in said recess.

13. An extractor, comprising a frame, a work receiving basket mounted therein and having a discharge opening, a driving spindle for said basket, a closure for said discharge opening having both rotary and vertical movements, an arm pivotally mounted
10 upon said frame and adapted to engage a recess in said closure for preventing rotary movement thereof, and means for yieldingly
15 forcing said arm from engagement in said recess.

14. An extractor, comprising a frame, a work receiving basket mounted therein and having a discharge opening, a driving spindle for said basket, a closure for said discharge opening having both rotary and vertical movements, an arm pivotally mounted
20 upon said frame and adapted to engage a recess in said closure for preventing rotary movement thereof, and a spring for yieldingly forcing said arm from engagement in
25 said recess.

15. An extractor, comprising a work receiving basket having a discharge opening, a closure for said opening having both rotary and vertical movements, means for
30 preventing rotary movement of said closure, and means for rendering ineffective said

rotary movement preventing means when said closure has reached one of the ends of its range of vertical movement. 35

16. An extractor, comprising a work receiving basket having a discharge opening, a closure for said opening having both rotary and vertical movements, means for preventing rotary movement of said closure, and means for rendering ineffective said rotary movement preventing means when said closure is in closing position relative to said basket discharge opening. 40 45

17. An extractor, comprising a work receiving basket having a discharge opening, a closure for said basket opening adapted for raising and lowering movement to respectively expose and cover said basket opening, motor means for rotating said basket, and means for stopping the rotation of said basket when said closure has reached its uppermost or its lowermost position. 50

18. An extractor, comprising a work receiving basket having a discharge opening, a closure for said basket opening adapted for raising and lowering movement to respectively expose and cover said basket opening, motor means for rotating said basket, and means for stopping said motor means when said closure has reached its uppermost or its lowermost position. 55 60

In testimony whereof I hereby affix my signature.

EMIL J. CARROLL.