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G. N. COLLINS

RIDDLE

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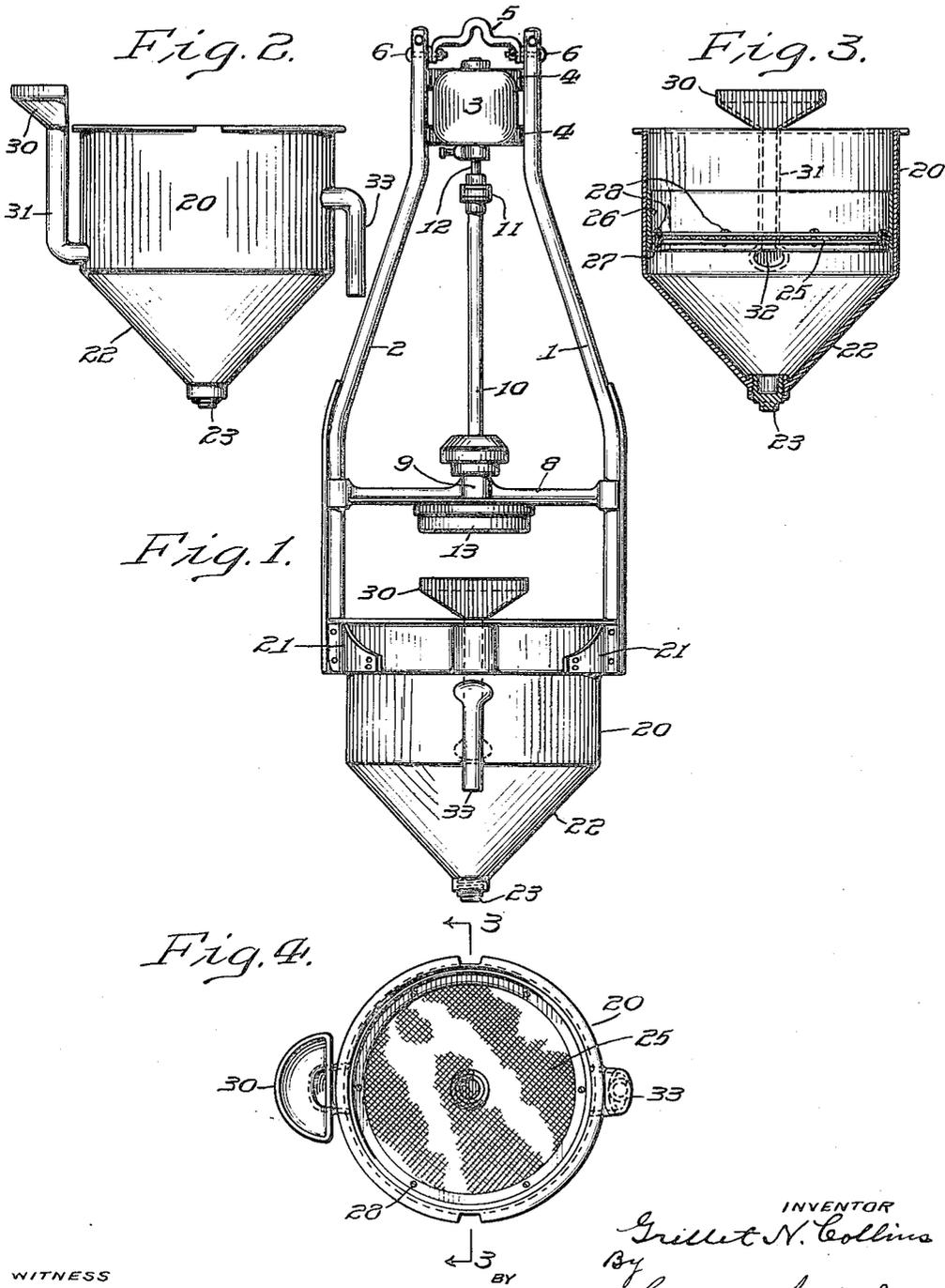


Fig. 2.

Fig. 3.

Fig. 1.

Fig. 4.

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RIDDLE.

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To all whom it may concern:

Be it known that I, GRELLET N. COLLINS, a citizen of the United States, and a resident of Narberth, in the county of Montgomery and State of Pennsylvania, have invented an Improvement in Riddles, of which the following is a specification.

My invention relates to riddles and has for its general object to provide a simple but novel and improved construction of riddle which is adapted for the screening of clay, color, casein, pulp, glue or other viscous or semi-liquid materials which are more or less difficult to handle.

A further and more specific object of the invention is to provide a riddle which is adapted to effect screening of semi-liquid or viscous materials, such as pulp employed in the manufacture of paper, for the purpose of removing therefrom lumps and particles of various kinds during an upward flow of the material, whereby the said lumps or other particles are caught upon the lower side of the screen and are therefore apt to descend therefrom and thus prevent clogging of the screen.

A still further object of the invention is to provide a novel construction of riddle wherein the semi-liquid or viscous material to be screened is delivered to a chamber underneath a screen extending across the said chamber and is caused to flow upwardly through the said screen, whereby gravity acting upon lumps or particles which are too large to pass through the screen causes the same to descend from the said screen to thereby prevent clogging of the same.

A further object of the invention is to provide a riddle with a novel construction of screening apparatus having means whereby such lumps and particles as may be separated from the material being screened may be removed readily without the necessity of dismantling the structure.

To these and other ends my invention comprehends the construction and arrangement of parts as hereinafter described in the specification, particularly pointed out in the claims and as illustrated in the accompanying drawing forming a part of this specification and in which is illustrated one form of embodiment of the invention. However, it will be understood that the invention is susceptible of embodiment in other forms of construction than that shown and that changes in the details of construc-

tion may be made within the scope of the claims without departing from the said invention.

In the drawing:

Fig. 1 is a view in side elevation of a riddle embodying my invention;

Fig. 2 is a view in side elevation of the screening portion of the structure, which is taken at right angles to the view shown in Fig. 1;

Fig. 3 is a vertical longitudinal sectional view taken on the line 3—3 of Fig. 4; and

Fig. 4 is a view in top plan of the portion of the structure shown in Figs. 2 and 3.

Referring to the drawing: 1 and 2 designate the opposite side members of the frame of a riddle structure to the upper ends of which is secured an electric motor 3 by means of brackets 4 which project laterally from said motor and the outer ends of which are secured to the said side frame members 1 and 2 at points adjacent the upper ends of the latter. A bail-like member 5 is pivotally secured to the upper end portions of the said side members 1 and 2 by means of bolts 6. The said side members are also connected at a point intermediate their ends by means of a bar 8 having a bearing 9 at its center in which is journaled the lower end portion of a shaft 10 coupled at 11 to the motor shaft 12. An unbalanced disk 13 is secured to the lower end of the shaft 10 and rotates therewith.

The foregoing construction as described is similar to that disclosed in Fig. 1 of Letters Patent of the United States, No. 1,152,396, dated September 7, 1915,—the unbalanced disk 13 corresponding with the unbalancing member 22 of the said patent.

The lower ends of the side frame members 1 and 2 are connected at diametrically opposed points, as indicated, to the upper edge portion of a screening chamber or receptacle 20. For the purpose of rendering the connection between the lower ends of the said members 1 and 2 and the said chamber or receptacle 20 more rigid, I have provided the bracing members 21 having laterally extending portions which are secured to the chamber at points adjacent the lower ends of the members 1 and 2 and also to the said members.

The screening chamber 20 comprises an upper cylindrical portion, as shown, and a cone-shaped or tapered portion 22, the lower end of which is open and is adapted to be

closed by a removable cap or plug 23, as shown. A screen 25, of any suitable desired construction, is situated within and extends across the cylindrical portion of the chamber or receptacle 20. The said screen is situated in a plane a short distance above the lower end of the cylindrical portion of the said chamber or receptacle as shown, and is connected to the said portion by means of circular or annular angle plates 26 and 27. The outer edge of the screen is situated between the horizontal inwardly extending flanges of the said angle plates and is secured thereto by means of screws 28. The lowermost of the angle plates 27 may be secured to the cylindrical portion of the chamber or receptacle 20 in any suitable manner, as by soldering or spot welding, but the upper one of the said angle plates should not be permanently secured to the said chamber, but is held in position by the screws 28 by means of which the screen is held in place.

The outer edge of the screen may be secured to the said chamber in any other suitable manner desired.

For the purpose of introducing semi-liquid or viscous material into the chamber underneath the screen 25 I have provided a funnel 30 secured to and supported upon the upper end of a pipe 31 which is secured to the said chamber and communicates with the interior thereof through a port 32 as shown. The material entering the chamber underneath the screen 25 is caused to flow upwardly through the said screen and is discharged from the said chamber through the discharge pipe 33 connected to the said chamber at a point a distance above the screen, as shown.

In the use of the riddle it will be understood that it is suspended by means of a hook or otherwise which engages the bail 5 and while so suspended the electric motor 3 is operated to rotate the unbalanced disk 13. The rotation of the latter causes gyratory movement of the structure,—creating a centrifugal force which supplements the force of gravity to cause the material to flow from the funnel or hopper 30 through the pipe 31 into the chamber 20 underneath the screen 25. The level of material within the funnel 30 and pipe 31 must be kept at a height above the plane of the discharge port leading into the discharge pipe 33.

By reason of the fact that the level of the material within the funnel 30 and pipe 31 is higher than the level of a plane through the exhaust port which communicates with the discharge pipe 33 the semi-liquid or viscous material is caused to flow upwardly through the said screen and out through the said dis-

charge pipe 33. Any lumps or hard particles which may be present within the said viscous or semi-liquid material are caught upon the under side of the screen, and it is apparent that both the forces due to centrifugal action and to gravity tend to cause downward movement of the said lumps or particles within the material which may be present in the tapered or inverted cone-shaped portion 22 of the chamber. The said lumps or particles may be removed through the opening at the lower end of the said tapered portion 22 by removal therefrom of the closure 23. It will be apparent, therefore, that the said lumps or hard particles may be removed readily without dismantling the machine.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. In a gyratory riddle, the combination of a receptacle at the lower end of the riddle structure, a screen extending across the said receptacle in a plane intermediate the opposite ends thereof, means for delivering a liquid to be screened to the said receptacle at a point below the said screen, and a discharge conduit having connection with the said receptacle at a point above the said screen.

2. In a riddle, the combination of a frame, a receptacle supported upon the lower end of said frame, means carried by the said frame for effecting gyratory movement thereof and of the said receptacle, a screen extending across the said receptacle in a plane intermediate its ends, and means for causing a liquid to be screened to flow from a lower to a higher level within the said receptacle, the said liquid flowing through the said screen.

3. In a riddle, the combination of a frame, a receptacle secured to the lower end thereof, means carried upon said frame for effecting gyratory motion thereof and of the said receptacle, the said receptacle comprising a cylindrical upper portion and an inverted truncated cone-shaped lower portion, a screen extending across the said receptacle in a plane a distance above the lower end of the cylindrical portion thereof, a funnel situated upon the outside of the said receptacle having connection therewith below the said screen, and a discharge pipe having connection with the said receptacle at a point above the said screen but below the said funnel, substantially as described.

In testimony that I claim the foregoing as my invention, I have hereunto signed my name this 5th day of September, A. D., 1922.

GRELLET N. COLLINS.