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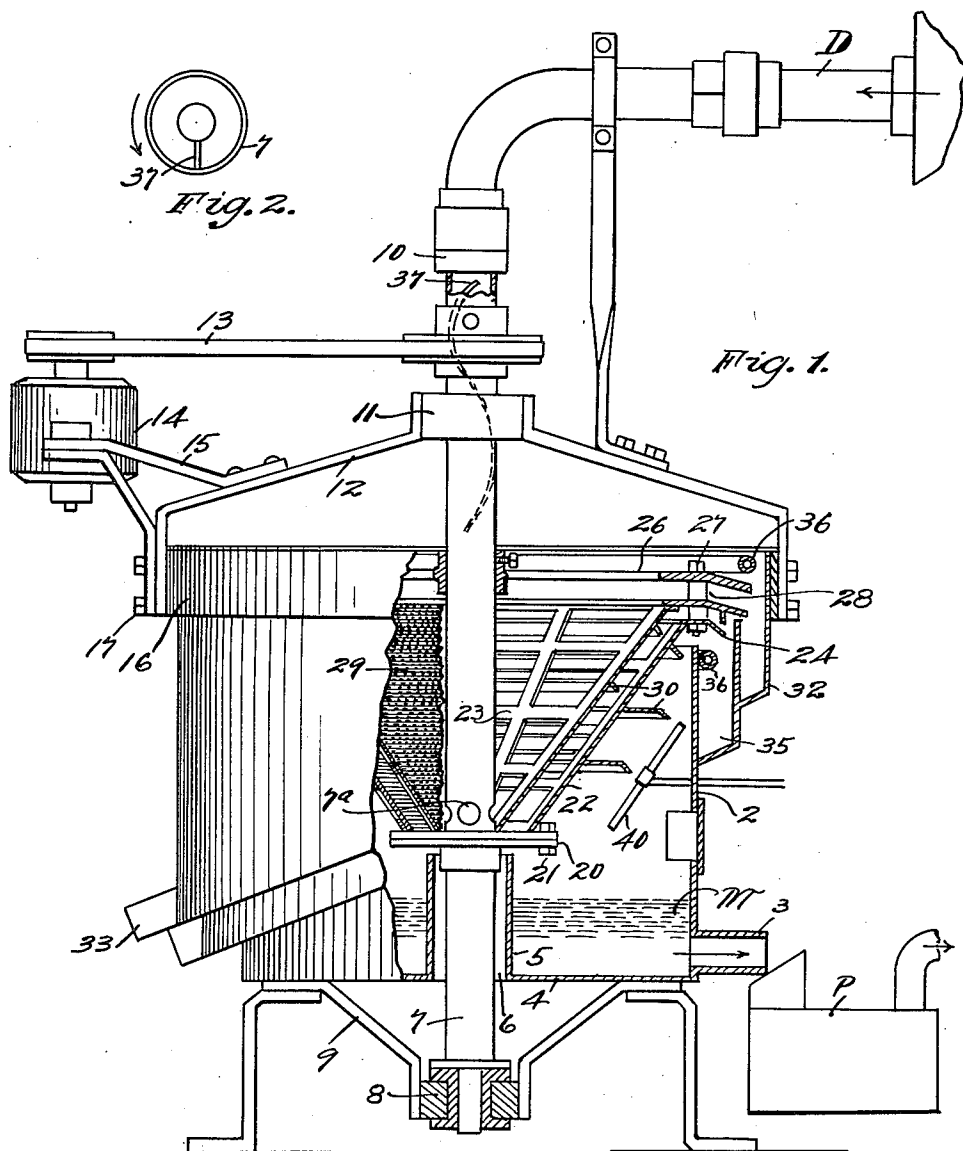
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CENTRIFUGAL SEPARATOR

Filed June 18, 1930

2 Sheets-Sheet 1



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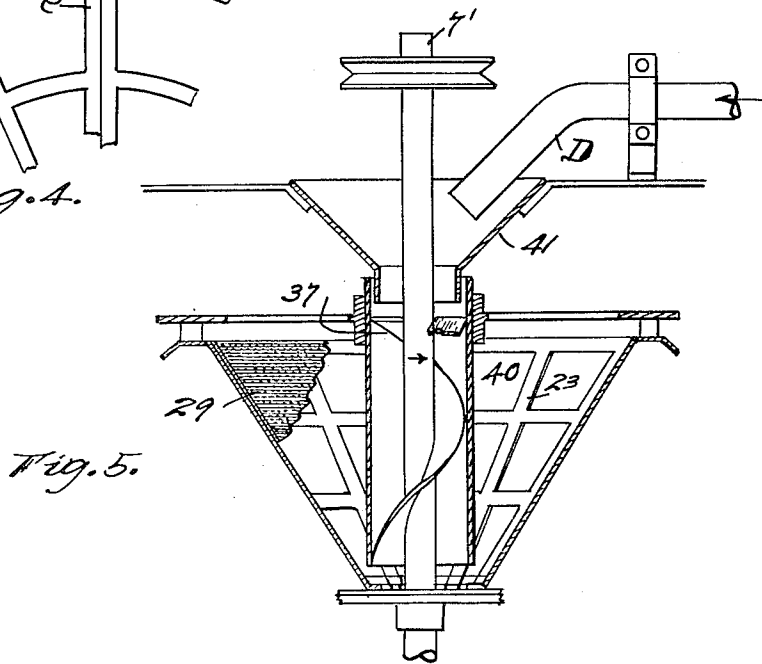
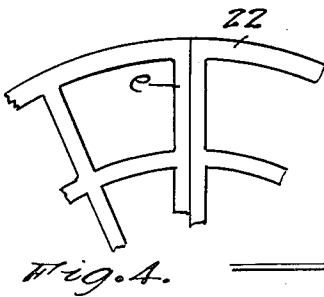
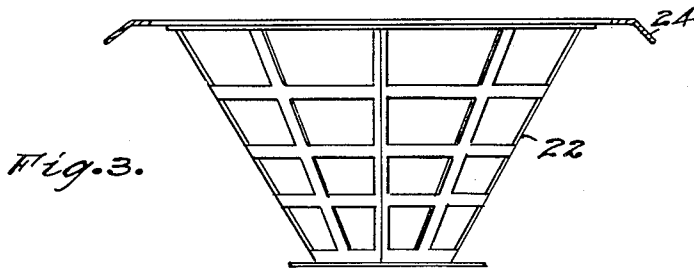
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UNITED STATES PATENT OFFICE

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CENTRIFUGAL SEPARATOR

Application filed June 18, 1930. Serial No. 462,116.

This invention relates to apparatus for screening or separating fluid material and especially to a rotary-action screen means.

The present invention aims to provide means whereby rapidity and efficiency of screening of a desired material may be maintained, and more particularly to provide a simple, practicable and substantial machine wherein the material to be screened is delivered directly to the bottom of a rotary sifter which is operative to reverse the flow of the material and to discharge its reject portion over its top rim and to pass the residue outwardly through sifters and into launders.

Further, an object is to provide means for the quick cleaning of the outer face of the sifter by means of an air or steam blast which is effective to dislodge adherent material.

Other objects, advantages and features will be made manifest in the ensuing description of the herewith illustrative embodiment; it being understood that modifications, variations and adaptations may be resorted to within the spirit, scope and principle of the invention as it is more directly claimed hereinafter, and which consists of the apparatus, or its substantial equivalent.

Figure 1 is an axial section of the apparatus; parts being in section.

Figure 2 is a plan of the intake end of the feed column and showing the feed fin therein.

Figure 3 is an exterior elevation of a screen basket.

Figure 4 is a plan of abutted sections of the basket.

Figure 5 is an axial section of a modified form of feed column.

In the present disclosure mud M is drawn by a pump line L from a pit P and is circulated through a drill string (not shown) and is then discharged by a pipe D into the separating apparatus.

This apparatus includes a suitable tank 2 with a bottom outlet for cleaned mud to the pit P.

In the bottom 4 of the tank is a standing tube 5 forming a passageway 6 for a hollow shaft 7 whose lower end is stepped in a

suitable bearing 8 provided with brackets 9 under the elevated tank.

The upper end of the shaft is coupled turnably at 10 to the pipe D and is supported by a bearing 11 on brackets 12 from the tank sides.

The shaft 7 is driven by a transmission device 13 from a motor 14 shown as mounted on bracket 15 carried by a bracket 12. Thus the brackets 12—15 and the motor can be lifted as a unit when unbolted from the tank, which is provided with a heavy rim band 16 for the bolts 17.

On the shaft 7 is secured a base plate 20 to which is bolted at 21 a basket formed of inverted, concentric, conical frames 22—23 having top discharge rims 24—25 in spaced relation below a drive wheel 26 through which pass rim bolts 27 with spacers 28 securing the rims 24—25 in position. The wheel 26 is secured on the shaft 7 and thus supports the top of and helps drive the basket.

Each frame 22—23 is lined with a layer 29 of foraminous material such as perforated sheet metal. The inner screen is of coarser effect than the outer which allows a mud solution of desired size solid particle content to pass into the tank.

The coarse particles are rejected by the inner screen and the material passing this is then sifted by the outer screen; the multi-stage action increasing speed of separation and the efficiency of the outer screen.

The frames 22—23 are built of plane, cut-out sections, Fig. 4, with abutted radial edges *e* to present a smooth surface for applied screen layers 29. The outer faces of the basket frames have annular, mud-flow check flanges 30 intercepting the up-flow of mud adhering to the outside of the basket.

It will be seen that there is a tripartite separation of the material, of whatever nature it may be. The desired solution passes to the tank 2 and thence to the pump pit P. The over-size from the inner screen passes off the rim 25 to a collecting launder 32 with a drain-off 33, while the middlings from the screen flange 24 go to a launder 35. The

launders are provided with wash-out pipes 36.

In operation the fluid passes into the hollow shaft 7, which has outlet holes 7^a at base plate 20, and thence to the screens. In order to accelerate flow in the hollow shaft this is provided with a helical fin 37 to catch and boost the mud along.

In Fig. 5, a modified form of feed means is shown as including a solid shaft 7' having a fixed, hollow column 40 spaced thereabout by a helical fin 37; the column discharging at its open bottom to the basket and receiving mud from a stationary hopper 41 at the top. The pump circulated mud discharges to the hopper.

For quickly cleaning the screens from time to time there is provided an oblique spray nozzle 40 for the discharge of jets of steam or air against the outer parts of the screen while this is rotated.

It is understood that the flanges 30 may be secured to the respective parts of the screen in any desired manner.

What is claimed is:

In a continuous separator of the class described, a tank, a shaft standing vertically in said tank and having a stepped bottom end, a head bearing on the tank, and said shaft having a hollow upper part journaled in said bearing, a drive means engaging the upper part of the shaft, a flange fixed to the shaft above the bottom of said tank, and a flared screening basket stepped on the rim of the flange; said hollow shaft constituting a down-feed means extending to the flange for direct flow of liquid substance to the level of the flange and having thereat outlet ports for free lateral flow onto the flange; the rotating basket operating to screen out a segregate and discharge reject material over its rim.

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