Jan. 26, 1926. 1,570,897

C. G. KNOBLAUCH

SCREENING DEVICE

Filed Nov. 26, 1923 2 Sheets-Sheet 1

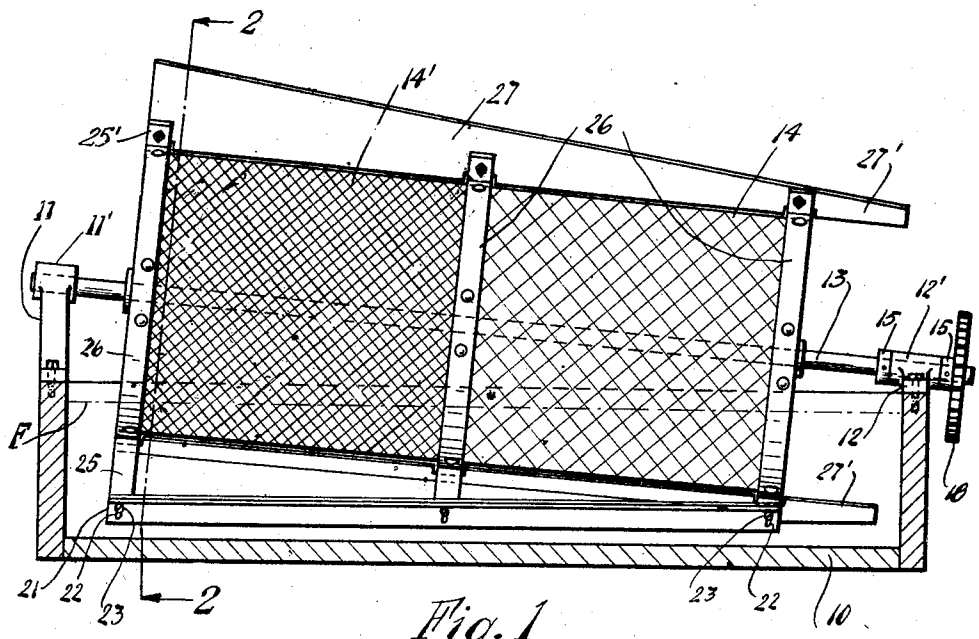


Fig. 1

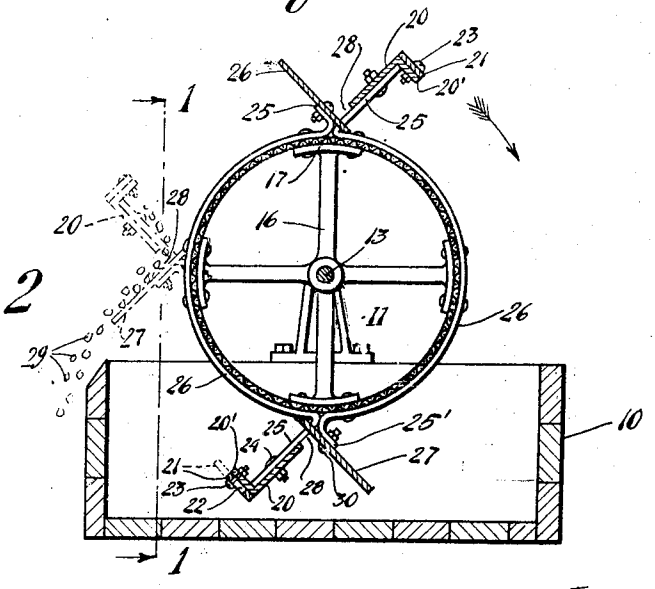


Fig. 2

Witnesses:
W. Schnellbacher
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Inventor:
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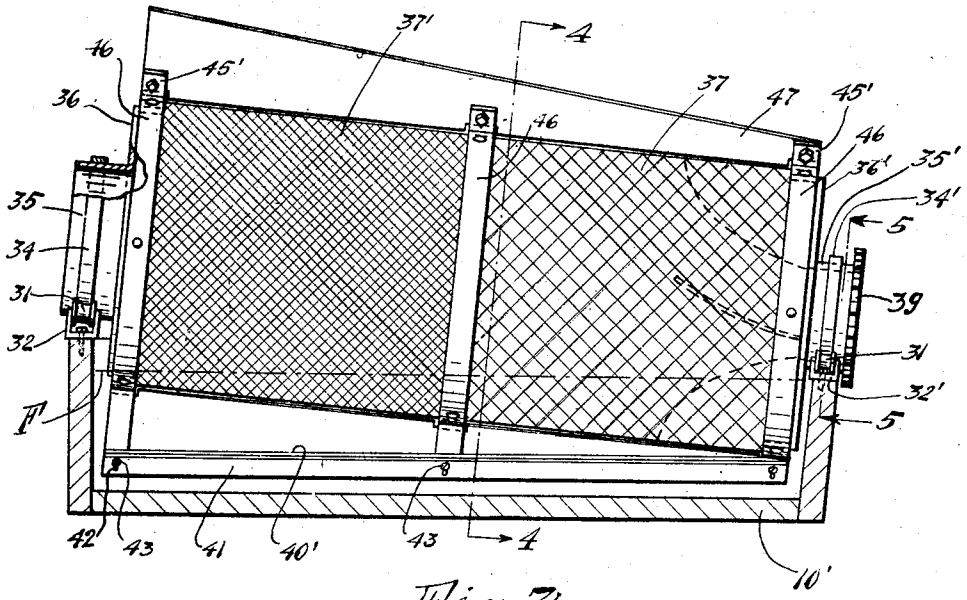


Fig. 3

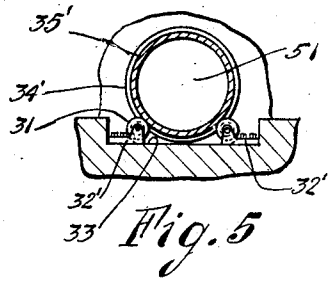


Fig. 5

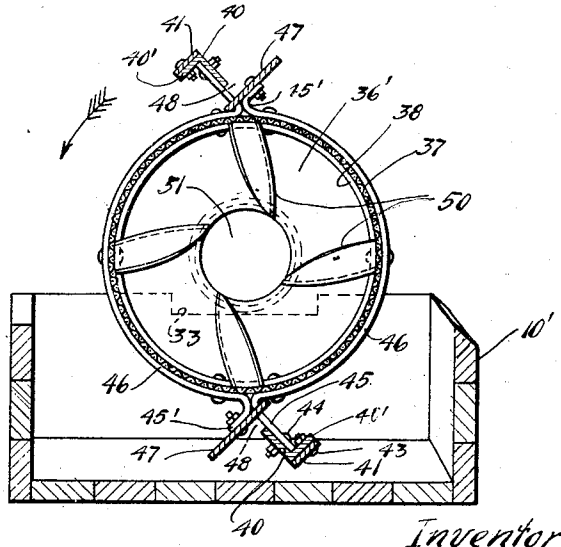


Fig. 4

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Patented Jan. 26, 1926. 1,570,897

UNITED STATES PATENT OFFICE.

CURT G. KNOBLAUCH, OF PARK RIDGE, ILLINOIS, ASSIGNOR TO LESLIE P. GREEN, OF CHICAGO, ILLINOIS.

SCREENING DEVICE.

Application filed November 26, 1923. Serial No. 677,132.

To all whom it may concern:

Be it known that I, CURT G. KNOBLAUCH, a citizen of the United States, and a resident of Park Ridge, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Screening Devices, of which the following is a specification.

My invention relates to new and useful improvements in screening devices, and more particularly to rotary screens, such as are used for screening and washing particles of material, such as sand and the like.

An object is to provide such a device with means for screening the material while said material is submerged in the cleaning liquid, for thoroughly cleansing the material.

Another object is to provide such a device with means on the screening mechanism and movable therewith for elevating, deflecting and discharging the screened material.

A further object is to provide screening mechanism with means for elevating the screened material and means to adjust the capacity of said elevating means.

And another object is to provide such a device having a rotary screen mounted to operate in a liquid container, for simultaneously screening and washing the material in said liquid, and having means on its periphery for elevating and deflecting the screened and washed material out of the container.

Fig. 1 shows my invention in side elevation, partly in section on line 1—1 of Fig. 2;

Fig. 2 is a cross section on line 2—2 of Fig. 1;

Fig. 3 is a side view, partly in section of a modified form of my invention;

Fig. 4 is substantially a cross section on line 4—4 of Fig. 3, and

Fig. 5 is a cross section on line 5—5 of Fig. 3.

The preferred form of my invention, illustrated in Figs. 1 and 2, comprises a receptacle or container 10 for receiving water or any suitable liquid for washing the material which is being screened. A high supporting and bearing member 11 with a bearing sleeve 11′, and a short supporting and bearing member 12 with a bearing sleeve 12′ are mounted on the opposite ends of said container and support the shaft 13 with its screen 14 at the desired inclination or slant and to operate in the liquid in said container 10, suitable retaining collars 15 being provided on said shaft. The shaft is fastened to the screen by means of two or more spiders 16 provided on their arms with shoes 17 which are fastened to the screen. A suitable sprocket gear 18 or suitable driving element is fastened on the end of said shaft.

The screen is constructed of a strong material with a mesh of suitable fineness, one or more gauge of screen being used. Where more than one gauge or mesh of screen is used, the parts or screens are arranged in axial or longitudinal alignment and according to fineness of mesh, the finest mesh 14′ being placed at the receiving end, as shown.

Means is provided on the device for elevating the material out of the container and for deflecting and discharging it beyond the same, said means preferably consisting of one or more members or bars 20 extending outward and longitudinally along the periphery of the screen, and having the outer portion made adjustable to vary the carrying capacity thereof, which is preferably done, as shown, by mounting a plate 21 replaceably and adjustably with a slot 22 and bolt 23 on the upturned outer flange 20′ of said bar. The bar 20 is also detachably mounted on the screen, preferably by fastening it with bolts 24 on outwardly turned ends 25 of two or more re-enforcing bands 26 which extend circumferentially of said screen.

The deflecting and discharge means include a deflecting member or bar 27 which is mounted longitudinally along the periphery of the screen and rearward of each elevating member 20, said members 20 and 27 being spaced apart providing a discharge opening or slot 28 for discharging the material 29 from the member 20 over the member 27, and outward beyond the container, as shown in dotted lines in Fig. 2. The deflecting members 27 are preferably fastened replaceably with bolts 30, on the outwardly turned ends 25′ of bands 26.

The construction is so arranged that each re-enforcing band has an out-turned end 25′ for attachment of the deflecting member 27 and a longer out-turned end 25 for attachment of the spaced elevating member 20, whether only one set of such co-operating, elevating and deflecting members are used along with one continuous band 26, or whether two sets with two semi-circular bands 26, or whether more than two sets of members and bands are used.

In this form of construction the members or bars 27 are extended beyond the end bands 26 and the screen and provide end portions 27′ which act as means for removing from the container 10 unscreened and oversized material which is issued from the open discharge end of the rotary screen.

The modified form illustrated in Figs. 3 to 5, inclusive, comprises a liquid container 10′, as in the preceding form, for receiving water or any suitable cleaning fluid, and rollers 31 are mounted in bearings 32 on one end of the container and in similar bearings 32′ fastened in a notch 33 at the other end of said container. The rollers are preferably flanged to engage bearing bands 34 and 34′ on the necks or trunnions 35 and 35′ fastened on the end members 36 and 36′ which are suitably fastened on the cylindrical screen 37, as with flanges 38, the device thus rotating on such rollers at the desired slant or inclination. A sprocket gear 39 or similar means is mounted on the outer end of trunnion 35′ for application of the driving power.

Several screens of various mesh may also be used in this form and aligned axially, the screen 37′ of the finest mesh being placed in the receiving end. The elevating members or bars 40 have plates 41 adjustably and replaceably mounted with suitable slots 42 and bolts 43 on their outer flanges 40′, said bars being removably fastened, as with bolts 44, to the outwardly-turned ends 45 of the re-enforcing bands 46, and deflecting members 47 are fastened with suitable bolts on the outwardly-turned ends 45′ of said bands 46, said member 40 being spaced from member 47 to provide a discharge opening 48, as in the preceding form.

In this form of construction curved plates 50 are mounted in the discharge end of the screen for moving the oversized and unscreened material out through the central discharge opening 51 formed in trunnion 35′.

In both forms of the invention the bearings are arranged on the fluid container to mount the cylindrical screen at a suitable angle or inclination, and water or the desired cleaning fluid is placed in the container to substantially the line F indicated in the drawings. The material to be screened and washed, such as sand or the like, is then entered through the open upper end or through the receiving trunnion and the cylindrical screen is rotated, with the lower part thereof operating in the fluid, and the contained sand or material being also mainly submerged under the level of said fluid and being thus simultaneously screened and cleaned. The elevating members thereupon carry the screened and cleaned sand or material upwardly and finally drop it through the provided discharge slot or space on to the deflecting members which deflect such material and discharge it beyond the container 10, as clearly indicated in Fig. 2. And where screens of various mesh or gauge are used, the material is graded according to fineness, simultaneously and automatically discharged and deposited outside of the container in the respective positions opposite the screens of the various mesh, while the oversized and unscreened material is discharged and deposited beyond the discharge end of the screen.

While I have illustrated and described the preferred form of construction for carrying my invention into effect, this is capable of variation and modification without departing from the spirit of the invention. I, therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail myself of such variations and modifications as come within the scope of the appended claims.

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

1. A screening device comprising a rotary cylindrical screen having means mounted longitudinally on the outside of said screen to elevate material, means adjustably mounted on the outer edge of said elevating means to vary the capacity thereof, and deflecting means mounted rearward of said elevating means to discharge the elevated material.

2. A screening device comprising a cylindrical screen, bars detachably mounted longitudinally along the outside of said screen to rotate therewith, and an adjustable and replaceable portion provided at the outer edge of each bar for varying the carrying capacity thereof.

3. A screening device comprising a cylindrical screen, re-enforcing means including sectional members mounted around the periphery of said screen, an elevating member mounted on the outwardly turned end of each sectional member, and a deflecting member mounted on an out-turned flange at the other end of each sectional member, adjacent to the elevating member which is mounted on the preceding sectional member.

4. A screening device comprising a cylindrical screen, re-enforcing means including sectional bands mounted circumferentially on said screen, an elevating bar mounted on one end of each sectional band, means adjustably mounted on the outer part of said bar for adjusting its capacity, and a deflecting bar mounted on the other end of each sectional band opposite to the elevating band, there being a deflecting bar adjacent and rearward of each elevating bar.

5. A screening device comprising a rotary mechanism containing a plurality of cylindrical screens of varying mesh aligned axially, a plurality of re-enforcing bands mount-

ed circumferentially of said screen, elevating means with adjustable outer portions mounted on said bands, and deflecting means mounted on said bands to co-operate with said elevating means.

6. A screening device comprising in combination, a liquid container, a rotary screen operating in said liquid and having a shaft journalled on said container, means mounted longitudinally on said screen for elevating and deflecting material from said container, and integral means extending from the last said means for removing unscreened oversized material from said container.

7. A screening device comprising in combination, a liquid container, a rotary screen operating in said liquid and having a shaft journalled on said container, bars mounted longitudinally on said screen for elevating screened and washed material from said container, bars on said screen for deflecting said material beyond said container, and means extending beyond said screen for removing the unscreened oversized material from said container.

8. A screening device comprising a rotary cylindrical screen, bars extending laterally from the periphery of said screen and spaced therefrom, laterally extending bars mounted rearward of said spaces to co-operate with the first bars and deflect material, said second bars extending beyond the screen, and means for rotatably mounting said screen in an inclined position.

In testimony whereof I have signed my name to this specification.

CURT G. KNOBLAUCH.