No. 648,832. Patented May 1, 1900.

T. BELL.

ROTARY OIL CLEANER.

(Application filed July 20, 1899.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 2.

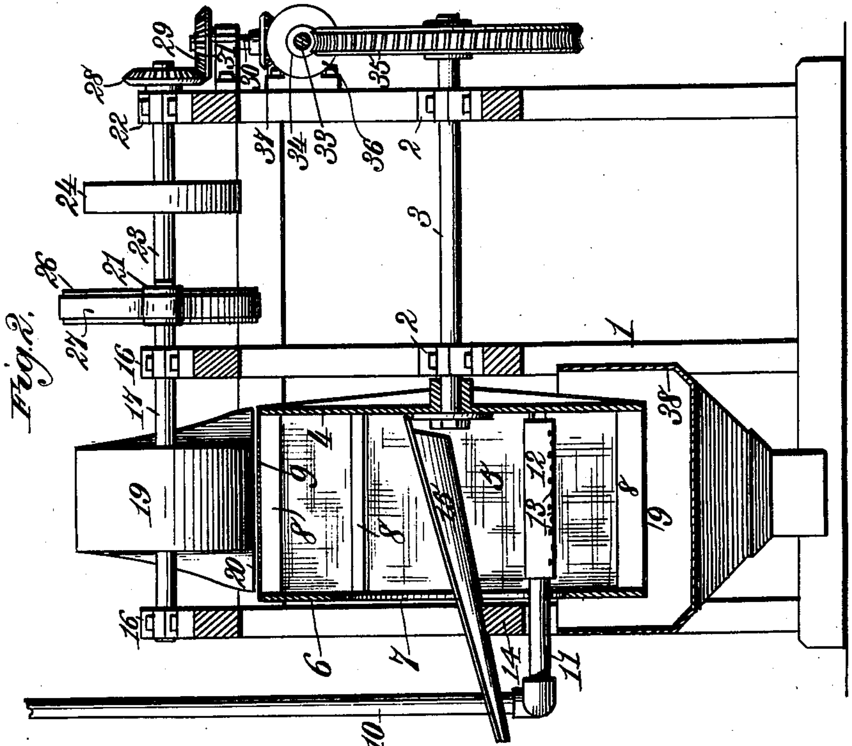
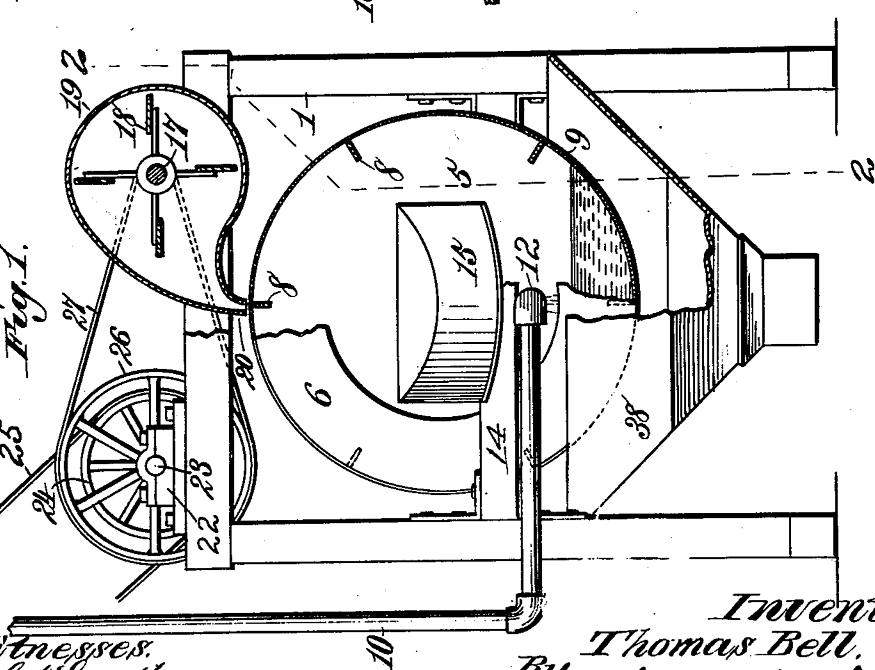


Fig. 1.



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Inventor.
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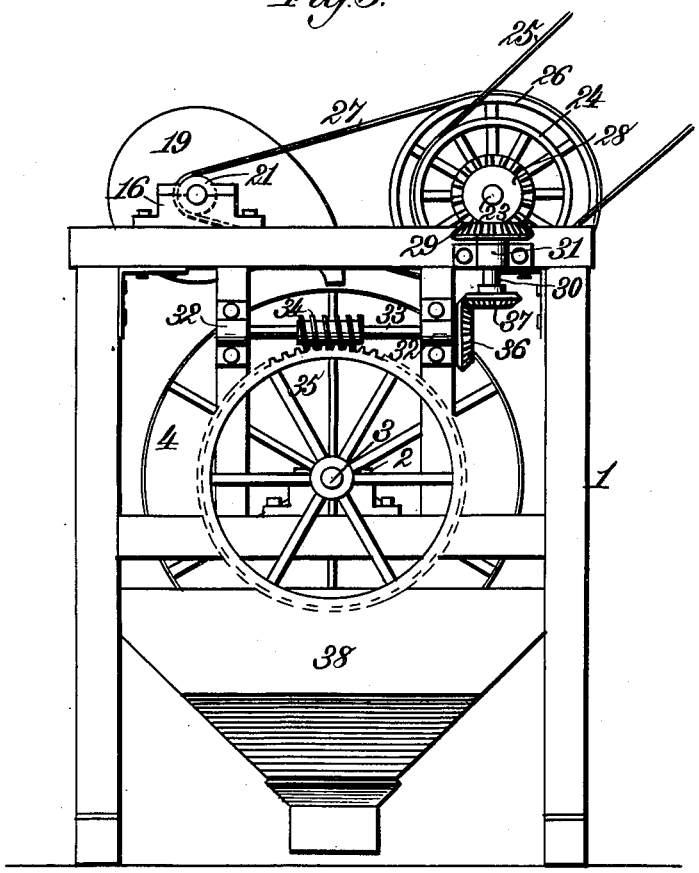
Fig. 3.



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UNITED STATES PATENT OFFICE.

THOMAS BELL, OF NEW ORLEANS, LOUISIANA.

ROTARY OIL-CLEANER.

SPECIFICATION forming part of Letters Patent No. 648,832, dated May 1, 1900.

Application filed July 20, 1899. Serial No. 724,544. (No model.)

To all whom it may concern:

Be it known that I, THOMAS BELL, a citizen of the United States, residing at New Orleans, in the parish of Orleans and State of Louisiana, have invented new and useful Improvements in Rotary Oil-Cleaners, of which the following is a specification.

This invention relates to an improved rotary oil-cleaner.

My invention has relation to that class of machines for cleaning or filtering oil in which a rotary filter-drum is employed; and one of the objects of the invention is to provide improved means for continuously removing the sediment from the oil and discharging or delivering it outside of the drum, while the oil passes through the silk or cloth of which the wall of the drum is composed.

A further object of the invention relates to the provision of an air-blast directed against the wall of the drum for continuously freeing the cloth or silk of adhering material without liability of tearing or rupturing said cloth or silk.

Other objects of the invention relate to certain details of construction and operations of parts, which will more readily appear from the description hereinafter given.

I have illustrated my invention in the accompanying drawings, in which—

Figure 1 is a sectional elevation. Fig. 2 is a cross-sectional view on the line 2 2 of Fig. 1, and Fig. 3 is a rear elevation of the device.

Cotton-seed oil as it comes from the press in a crude state usually runs directly into receiving-tanks and in so doing carries with it a certain per cent. of meal, fine sediment, lint, small particles of the press-cloth, and the like. The tanks in which the oil is stored are usually about ten feet in diameter and from about ten to fourteen feet in height, and often the foreign substances (which I will term generally "sediment") will collect in the bottoms of these tanks to the depth of eight or ten inches. This sediment is of such a nature that it readily ferments, and frequently the entire contents of a tank will be spoiled or injuriously affected by such fermentation. My improved cleaner is designed to be located between the press and the storage-tanks, and its purpose is to thoroughly and expeditiously remove all such sediment from the oil, so that it will be in a proper condition for storage.

Referring now to the drawings for a more detailed description of the invention, the reference-numeral 1 indicates a suitable rectangular or other frame, which may be made of wood or metal and in and upon which are supported the various parts of the machine. Journaled in suitable bearings 2 on two vertical uprights of the frame is a work-shaft 3, one end of which is firmly secured in any preferred manner in or to the center of a solid head 4 of the filter-drum 5. The opposite head of the drum is formed by a circular plate 6, having an enlarged circular opening 7. The heads 4 and 6 are connected at suitable intervals by a number of cross-pieces 8, the outer edges of which are flush with the peripheries of said heads. These cross-pieces extend inward a sufficient distance to form a series of radial paddles, as more clearly shown in Fig. 1. The wall of drum 5 is formed by securing around the periphery of the frame formed by the heads 4 and 6 and the cross-pieces or paddles 8 cloth, silk, or the like 9. I will hereinafter refer to this covering by the use of the general term "cloth;" but it will be understood that any material suitable for straining or filtering the oil may be employed. The numeral 10 indicates a pipe leading from the press for conveying oil to the drum. To this end a horizontal extension 11 of said pipe enters the drum near the bottom of the opening 7 and is provided with an enlargement or head 12, which extends across the drum nearly to the head 4 and on its under side is provided with a series of perforations 13 for the escape of the oil. Extending between the two front uprights of the frame is a cross-bar 14, and to this bar is secured a spout or chute 15, which is nearly as wide as the opening 7 and extends back through said opening to a point in close proximity to the head 4. Mounted in bearings 16 on the upper part of the frame is a shaft 17, carrying a fan 18, working in a casing 19. The outlet of this casing is contracted, as shown at 20, Fig. 1, so that the air shall issue from the casing with considerable force, and is flared transversely, as illustrated in Fig. 2, to extend entirely across the drum. On one end of shaft 17 is a pulley 21. Mounted on

the opposite side of the frame from the shaft 17 in bearings 22 is a shaft 23, having a driven pulley 24, operated by a belt 25, and a driving-pulley 26. From the pulley 26 a belt 27 extends around the pulley 21, whereby the fan 18 is rotated. On the end of shaft 23 is a bevel-gear 28, which meshes with a bevel-gear 29, fast on the upper end of a stub-shaft 30, journaled in a bearing 31 on the rear side of the frame. At the rear side of the frame are two uprights which support in suitable bearings 32 a horizontal shaft 33, having intermediate its ends a worm-gear 34, which meshes with a large worm-wheel 35, fast on the outer end of shaft 3. On the outer end of shaft 33 is a bevel-gear 36, which meshes with a smaller bevel-gear 37, fast on the lower end of stub-shaft 30. By the arrangement of gearing shown the fan 18 is supposed to be revolved about fifteen hundred times a minute, while the drum 5 revolves three times a minute. The gearing, however, is not drawn to a scale.

The numeral 38 indicates a funnel located beneath the drum 5 for receiving the oil passing through the cloth thereof.

The operation is as follows: The apparatus being set in motion, oil is permitted to flow from the press through pipe 10 11 and head 12 into the interior of the drum 5, whence it seeps or filters through the cloth 9 and flows into the funnel 38. As the drum revolves the sediment is caught up by the paddles 8, and as each paddle in turn reaches the proper inclination the sediment will be discharged into the trough 15. The air-blast issuing from the outlet 20 of the fan-casing has sufficient force to penetrate between the interstices of the cloth of the drum, and as the drum revolves any sediment adhering to the cloth will be blown by the air-blast into trough 15. Thus the cloth of the drum is continuously freed from adhering material without resultant wear or liability of injury. In such devices of this character now employed of which I am aware the operation is unsatisfactory and costly by reason of the fact that brushes or other frictional devices are employed for cleaning the cloth, and as a result the cloth soon ruptures and permits sediment to run through with the oil and must be replaced with new cloth. It will be seen that by my invention this objection is entirely overcome.

The refuse collected is thrown back into the heaters from time to time, and thus practically the entire product is saved.

I do not wish to be limited to the employment of paddles for raising the sediment, as obviously other devices—such, for instance, as "buckets"—could be employed without departing from the spirit of the invention.

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

1. A device for cleaning oil comprising, in combination with the frame, a rotary drum having its wall formed of filtering material, such as cloth, and provided with a head having a circular opening, means for delivering oil to the interior of the drum, a trough secured to the frame of the machine and extending backward in said opening, a series of radial paddles arranged about the interior of said drum for continuously removing the sediment from the oil and discharging it into said trough, and means for continuously delivering a blast of air upon the periphery of said drum whereby to free the wall from adhering material, substantially as described.

2. A device for cleaning oil comprising, in combination with the frame, a rotary drum having its wall formed of filtering material, such as cloth, and provided with a head having a circular opening, means for delivering oil to the interior of the drum through said opening, a trough secured to the frame of the machine and extending backward in said opening, a series of radial paddles arranged about the interior of said drum for continuously removing the sediment from the oil and discharging it into said trough, a fan and means for revolving the same, and a fan-casing having a discharge-outlet located above and extending approximately the entire width of said drum, whereby to continuously deliver a blast of air upon the periphery of said drum to free the wall from adhering material and cause the same to fall into said trough, substantially as described.

3. In a device of the class described, the combination with the rotary filter-drum, of means for continuously delivering a blast of air upon the periphery of said drum, and a trough extended into the drum to receive sediment removed from said drum by the air-blast, for the purpose described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

THOMAS BELL.

Witnesses:
L. REM. VULAIS,
A. A. SCHENEK.