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N. C. LANE.

APPARATUS FOR SEPARATING OIL OR GREASE FROM FIBROUS MATERIALS.

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Fig. 1.

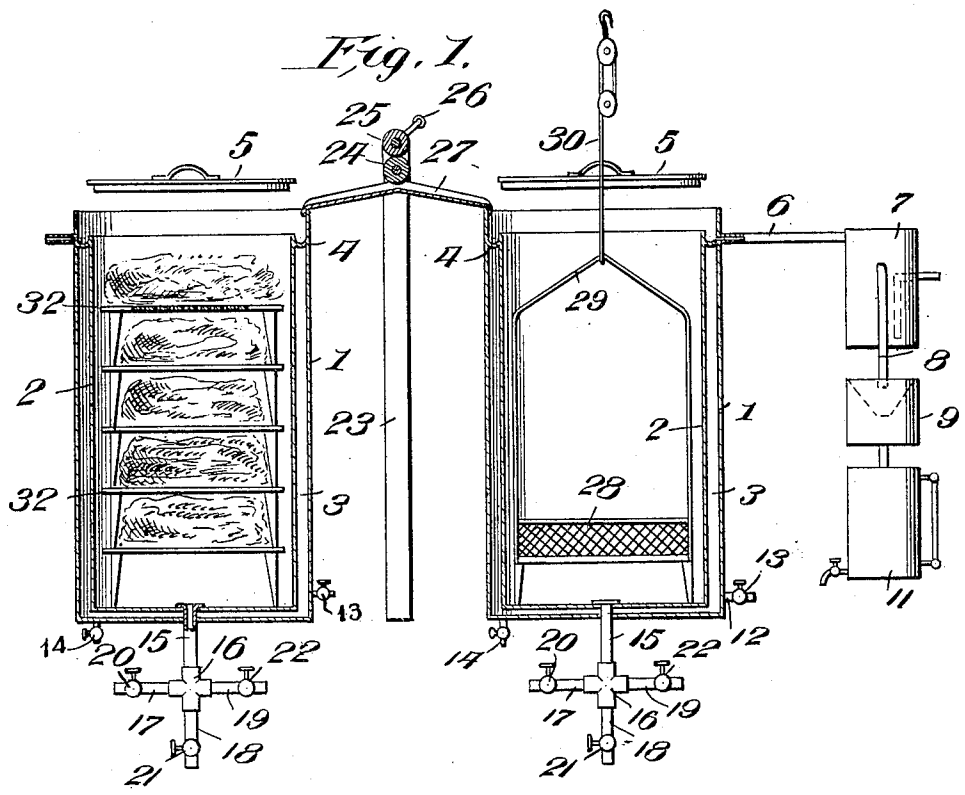
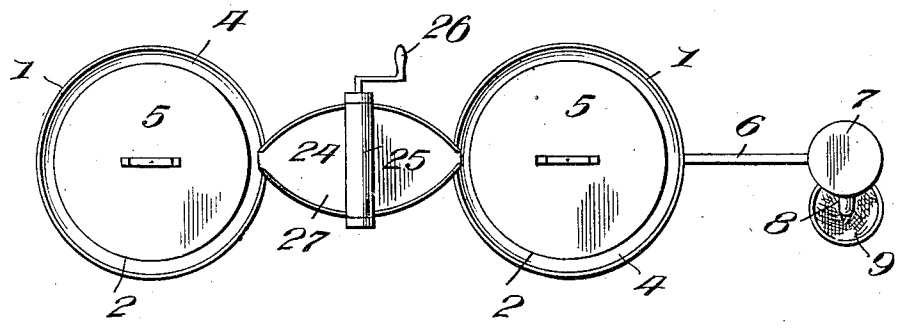


Fig. 2.



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APPARATUS FOR SEPARATING OIL OR GREASE FROM FIBROUS MATERIALS.

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To all whom it may concern:

Be it known that I, NATHAN C. LANE, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Apparatus for Separating Oil or Grease from Fibrous Materials; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improved apparatus for extracting oil, grease, and dirt from cotton-waste or other fibrous material, so that both the oil and the waste will be saved.

The object of the invention is to provide a simple, inexpensive, and efficient apparatus of this character in which oil and grease soaked waste from machine-shops and the like may be cleaned to permit it to be again used and the oil and grease removed therefrom may be refined to permit it to be again used for lubricating purposes.

With the above and other objects in view the invention consists of certain novel features of construction, combination, and arrangement of devices, as will be hereinafter more fully described and claimed.

In the accompanying drawings, Figure 1 is a vertical sectional view through an apparatus constructed in accordance with my invention and by means of which the process of extracting oil, grease, and dirt from cotton-waste may be carried out; and Fig. 2 is a top plan view of the same.

In the practice of my invention I provide one or more sets of tanks or other containers, each set of which consists of an outer tank 1 and an inner tank 2, which is spaced from the bottom and sides of the outer one. The space 3 between these tanks is closed at the top of the inner tank by a surrounding gutter 4, which is disposed slightly below the upper edge of the inner tank, so that a removable cover 5 may be placed upon the latter. Leading from the gutter 4 at a suitable point is a drain-outlet 6, which leads to an oil and water separator 7, which may be of any desired form and construction. An outlet-pipe 8 leads from the separator 7 into an oil-filter 9, which latter may also be of any desired form and construction. Each gutter 4 is provided with a drain-outlet 6, and a separator 7 is employed in connection with each gutter, into which the said outlet-pipe discharges. In the drawings I have shown only one of the separators connected to one of the gutters. After the oil passes through the filter 9 it is conducted through a pipe 10 to a suitable storage-tank 11. Steam may be supplied to the space 3 between the two tanks 1 2 through a suitable supply-pipe 12, in which is provided a controlling-valve 13, and the water of condensation from the steam in said space 3 may be removed from the same through a drip-cock 14, provided in the bottom of the outer tank 1. Extending through the bottoms of the two tanks 1 2 is an inlet-pipe 15, which opens into the inner tank. The pipe 15 is connected to one branch of an X-coupling 16, from the other three branches of which lead pipes 17, 18, and 19, in which are provided controlling-valves 20, 21, and 22. The pipe 17 is provided for the purpose of supplying water to the inner tank 2, and the pipe 19 is for the purpose of supplying steam thereto. The pipe 18 is a drain through which the water in the inner tank 2 may be discharged.

Mounted on a suitable supporting-frame 23 adjacent to the outer tank is a wringer 24, which consists of a pair of rollers 25, suitably journaled and adapted to be actuated by a crank 26. These rollers are disposed over a drain-plate 27, which is inclined and leads into the gutter 4 between the two tanks. As shown in the drawings, the wringer 24 is mounted between two sets of tanks for the sake of convenience; but one set may be dispensed with, as hereinafter explained. Within the inner tank 2 is provided a removable basket 28 of perforated or reticulate material. To the basket 28 is secured a bail handle or frame 29, which is connected to a hoisting rope or cable 30, which may be operated as shown or in any other suitable manner to raise and lower the basket. When the basket 28 is removed from the inner tank, a series of perforated or reticulate trays 32 may be supported above one another, as shown in the left-hand set of tanks in the drawings.

In carrying out my improved process I place the grease and oil soaked cotton-waste or other fibrous material in the basket 28 in the inner tank 2 and place the cover 5 of the latter thereon. I then admit the steam through the pipes 19 and 15 into the tank 2 to steam the waste therein and cause the oil to be melted or thinned, so that the greater part of it may be pressed out of the waste. The cover 5 of the inner tank is then re-

moved, the basket 28 elevated, and the waste passed between the rollers 25 of the wringer, so as to squeeze the oil therefrom. The oil passes down the drip-plate 27 and into the annular gutter 4, from which it passes off through the pipe 6 into the separator 7, and from the latter to the filter 9 and storage-tank 11. The waste or fibrous material is then replaced in the tank 2, and the latter is filled with water through the water-pipe 17 and the pipe 15. The water and waste are then boiled by admitting steam into the space 3 between the tanks through the steam-pipe 12 and also by admitting steam into the water in the tank 2 through steam-pipe 19. The oil, grease, and scum rises to the top of the water in the tank 2 and overflows into the annular gutter 4, from which it is carried off through the pipe 6 to the separator, filter, and storage-tank. This overflowing of the oil, grease, and dirt loosened from the waste by the boiling may be effected by elevating the level of the water in the tank 2 or by maintaining the level sufficiently high so that the bubbling and boiling of the water will cause it to run over into said gutter. After the boiling process is over the basket 28, upon which the waste is supported, is again elevated and the waste again passed between the rollers of the wringer, so that any remaining oil and grease in it will drain from the plate 27 and into the gutter 4. The waste is then spread out upon the perforated trays 32 and the latter are placed in the tank 2. The cover 5 of the tank is then placed thereon, and steam is admitted into the space 3 between the two tanks for the purpose of heating and drying the waste. It will be seen that the process may be carried on by the use of but one set of tanks 1 2; but for the sake of convenience I preferably employ the two sets and mount them, as shown, with the wringer between them. By means of this process and apparatus it will be seen that the oil and grease may be removed from the dirty waste as it comes from the machine-shops and saved, so that it may be again used, and the waste is also cleaned to permit it to be reused.

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

1. An apparatus of the character described, comprising spaced inner and outer tanks or containers, an overflow-gutter arranged between the upper edges thereof, a removable cover for said inner tank, means for supplying steam to the space between said tanks, means for admitting and discharging water and steam to and from said inner tank, a removable support in said inner tank, a pressing device, and a drain leading from said pressing device into said gutter.

2. An apparatus of the character described, comprising spaced inner and outer tanks, an overflow-gutter between the upper edges of said tanks, a wringer, and a drain-plate leading from said wringer to said gutter.

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

NATHAN C. LANE.

Witnesses:
WM. WAGNER, JR.,
WM. J. MCCOLYAN.