June 1, 1937. A. F. CARDENAS 2,082,682

DEVICE FOR FILTERING AND COOLING OIL

Filed July 22, 1935 2 Sheets-Sheet 1

Fig. 3.

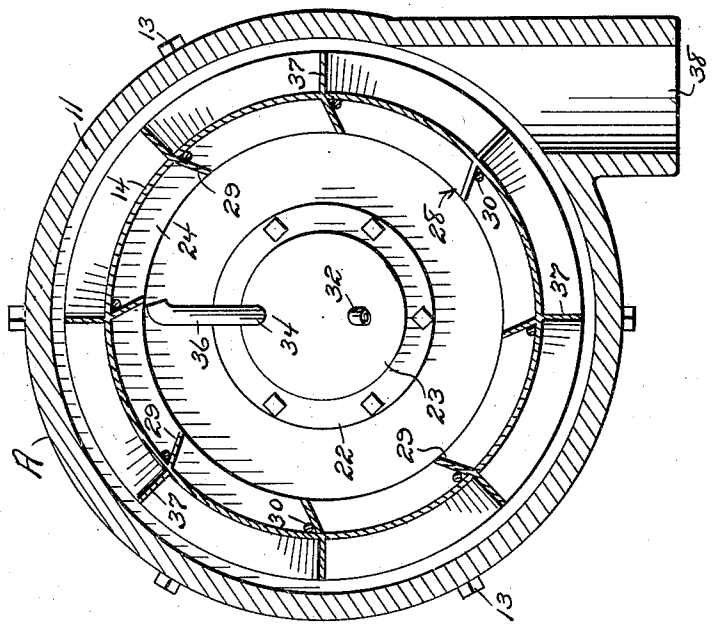
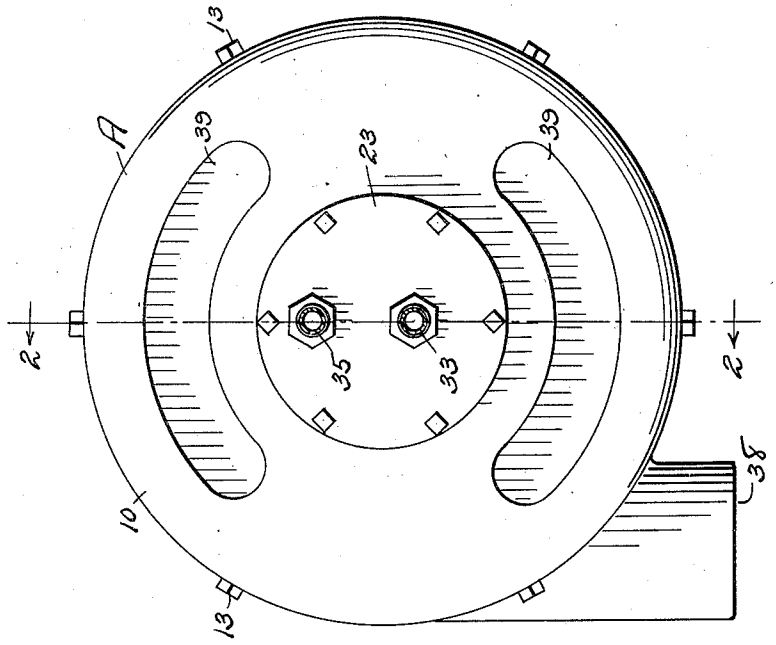


Fig. 1.



Alexander F. Cardenas
INVENTOR

BY Victor J. Evans & Co.

ATTORNEY

June 1, 1937. A. F. CARDENAS 2,082,682

DEVICE FOR FILTERING AND COOLING OIL

Filed July 22, 1935 2 Sheets-Sheet 2

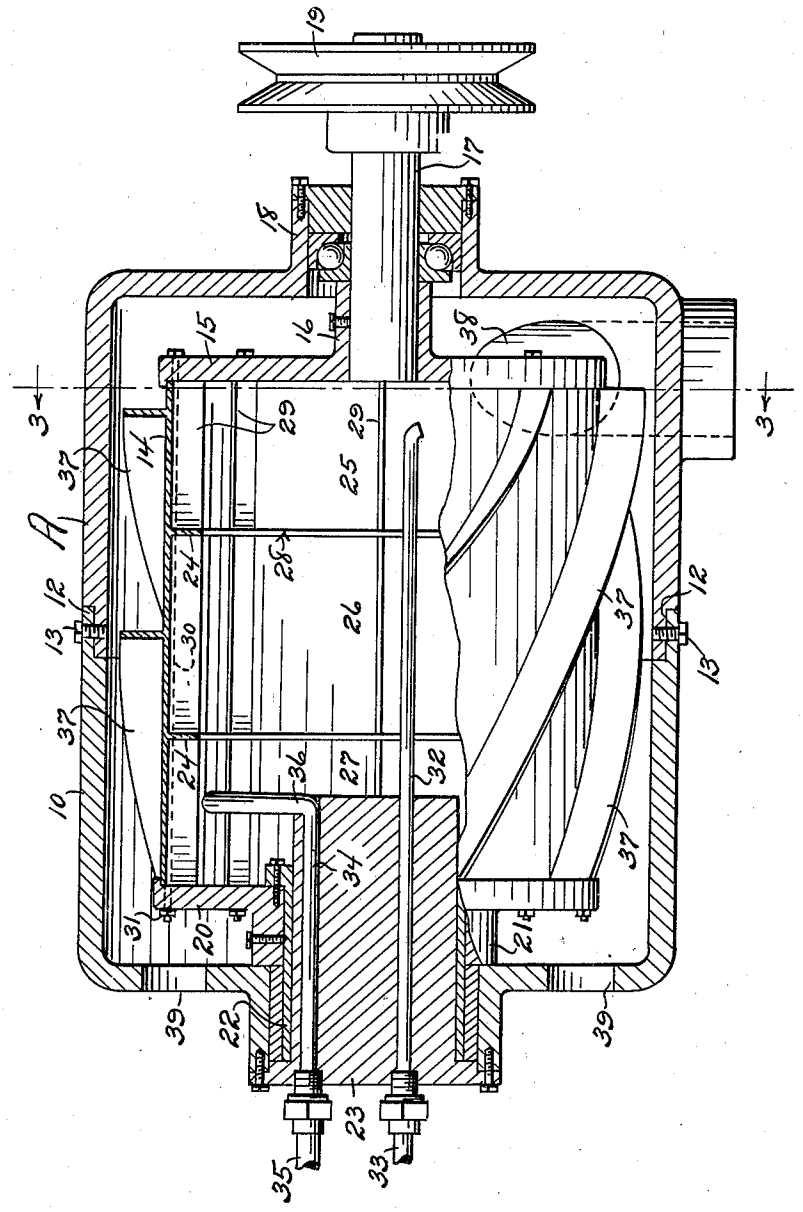


Fig. 2.

Alexander F. Cardenas
INVENTOR

BY Victor J. Evans & Co.
ATTORNEY

Patented June 1, 1937

2,082,682

UNITED STATES PATENT OFFICE

2,082,682

DEVICE FOR FILTERING AND COOLING OIL

Alexander F. Cardenas, Chicago, Ill.

Application July 22, 1935, Serial No. 32,620

1 Claim. (Cl. 233—28)

The invention relates to a centrifugal apparatus for oil and more especially to a device for filtering and cooling oil by centrifugal force.

The primary object of the invention is the provision of an apparatus or device of this character, wherein a charge of oil from a pump or a gravity feeding device through centrifugal force will be filtered and cleaned and in which the working assures oil passage at all times and is devoid of wire mesh or rag filtering mediums which have a tendency to clog up and which cleans the oil of all impurities and at the same time cools the said oil during the cleaning thereof.

Another object of the invention is the provision of an apparatus or device of this character, wherein through the use thereof the oil maintains its efficiency for a greater period of time than would be the case in the use of ordinary filters and enables maximum life to machinery by furnishing clean and cool oil at all times.

A further object of the invention is the provision of an apparatus or device of this character, wherein the construction thereof is novel in form and through centrifugal action oil delivered into the same will be thoroughly cleaned of impurities and cooled with dispatch, the filtering and cooling actions being automatic during the working of the apparatus or device.

A still further object of the invention is the provision of an apparatus or device of this character, which is comparatively simple in consrtuction, thoroughly reliable and efficacious in its operation, strong, durable, assuring a thorough filtering and cooling action through centrifugal force and is inexpensive to manufacture.

With these and other objects in view, the invention consists in the features of construction, combination and arrangement of parts as will be hereinafter more fully described, illustrated in the accompanying drawings, which disclose the preferred embodiment of the invention and pointed out in the claim hereunto appended.

In the accompanying drawings:

Figure 1 is an end elevation of the apparatus or device constructed in accordance with the invention showing the oil feed and delivery conduits in section.

Figure 2 is a sectional view on the line 2—2 of Figure 1 looking in the direction of the arrows.

Figure 3 is a sectional view on the line 3—3 of Figure 2 looking in the direction of the arrows.

Similar reference characters indicate corresponding parts throughout the several views in the drawings.

Referring to the drawings in detail, the apparatus or device comprises an outer cylindrical housing or casing A, it preferably being made in sections 10 and 11, respectively, which are interfitted at the joint 12 where the same are separably secured together by fasteners 13. Within this housing or casing A is a rotatable drum 14, one end head 15 thereof at its hub 16 being fitted with a solid driving shaft 17 which extends through a center bearing 18 at one end of the housing or casing A and carries outside of the latter a belt or pulley wheel 19 for connection with a source of driving power. The other end head 20 of the drum 14 has fitted in its hub 21 a hollow shaft 22 surrounding and rotatable upon a bearing stud 23 centrally secured in the other end of the housing or casing A.

The drum has formed interiorly thereof spaced annular dividing ribs 24 effecting intercommunicating chambers 25, 26 and 27 internally of the said tank, the intercommunication being had through the open centers 28 while between the ribs 24 and longitudinally disposed within said drum in spaced relation to each other are angularly set baffles 29. The ends 15 and 20 are separably fixed to the cylindrical body of the drum 14 by longitudinal tie rods 30, these being passed through the ends 15 and 20, respectively, and carry the securing nuts 31. Passed through the stud 23 into the drum 14 to extend into the chamber or compartment 25 is an oil feed nozzle 32, it having connection outside of the housing or casing A with an oil conduit 33 so that oil from the latter will first be delivered into the compartment or chamber 25 whence under centrifugal action by the rotation of the drum 14 will be subjected to the first stage of cleaning thence when the oil overflows the rib 24 next to the compartment or chamber 25 it will pass into the second compartment or chamber 26 for the second stage of cleaning action and finally overflowing the rib 24 into the compartment or chamber 27 for the final stage of cleaning action so that in this manner the oil will be relieved of all impurities and thoroughly filtered or cleaned by centrifugal force. The cleaned oil is let out from the drum 14 through the discharge nozzle 34 connected exteriorly of the housing or casing A with a discharge conduit 35 and this nozzle 34 extends only into the compartment or chamber 27 at the elbow 36 formed in said nozzle 34.

Formed exteriorly on the drum 14 are spirally arranged spaced fins 37 operating on rotation of the drum as suction blades and opening into

the housing or casing A. Tangentially thereof at one end is an air inlet 38 while the other end of this housing or casing A has formed therein the curved or arcuate shaped air outlet slots 39 so that the oil worked upon within the drum 14 will be subjected to a cooling operation through the activity of the blades 37 within the housing or casing A, the air being admitted through the inlet 38 into the said housing or casing and discharged therefrom through the outlet slot 39 as will be clearly apparent from Figure 2 of the drawings.

In the working of the apparatus or device the oil fed into the drum 14 through centrifugal force will be continuously and expeditiously cleaned of impurities, they being caused to cling to the side wall of the drum 14 during rotation thereof and at the same time during the cleaning stages of operation of the apparatus or device the oil acted upon will be cooled by air currents set up in the housing or casing A through the action of the fins 37 therein and thus the oil purified or cleaned when delivered to the discharge conduit 35 will be cooled, the apparatus or device being entirely devoid of wire mesh or rag filtering mediums.

The apparatus or device can be readily cleaned to remove foreign matter therefrom, particularly the drum and the cleaning and cooling operations in the working of the apparatus or device are carried forth expeditiously.

What is claimed is:

An apparatus of the kind described comprising a housing having an air inlet at one end and an air exhaust at the other end, bearings formed with said housing at its longitudinal center, a power shaft journaled in one bearing, a stud fixed in the other bearing, a rotatable sleeve on said stud and extended within the bearing having the latter fitted therein, a drum within the housing and having end heads provided with hubs about the sleeve and power shaft, respectively, means fixing the hubs in place, baffles interiorly of the drum and arranged longitudinally and annularly thereof, the longitudinally arranged baffles being disposed at an angle to the axis of rotation of the drum, spirally arranged blades externally on the drum and constituting suction vanes, an oil feed nozzle fitting said stud and extending longitudinally into the drum and having a delivery downwardly of said drum, and a discharge nozzle fitting said stud and elbowed upwardly within the drum and having lateral communication therewith.

ALEXANDER F. CARDENAS.