Feb. 16, 1932. L. C. McNAMARA 1,845,676

JOURNAL BOX WASTE OIL EXTRACTOR

Filed May 15, 1931 2 Sheets-Sheet 1

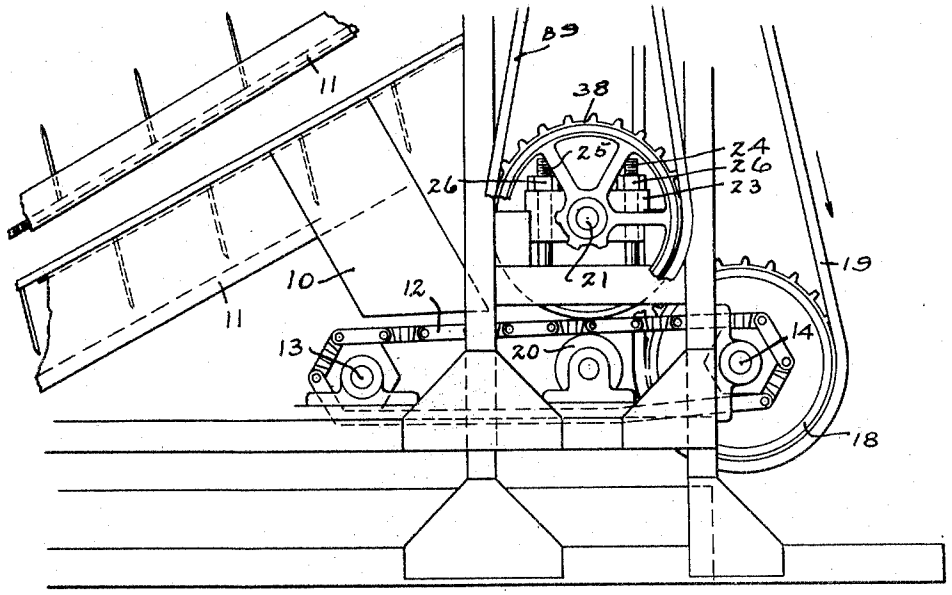


Fig. 1.

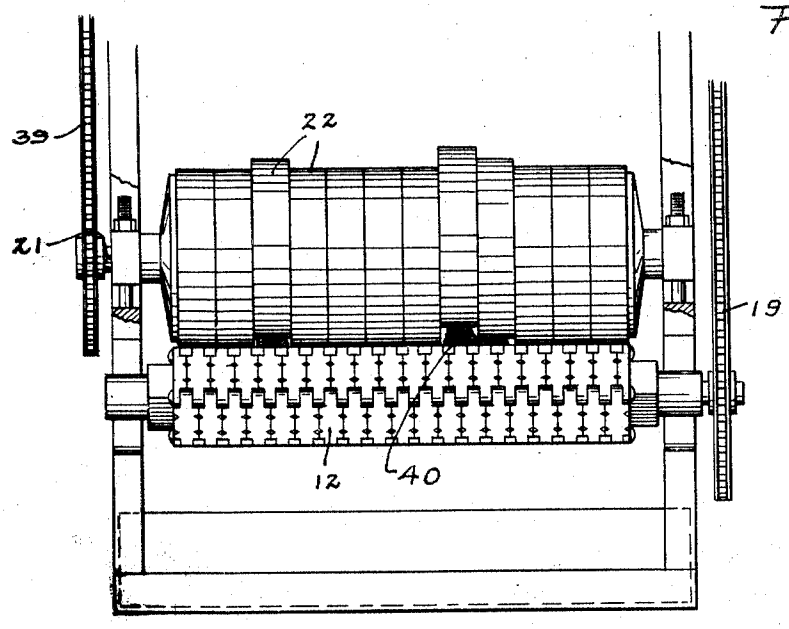


Fig. 2.

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Fig. 3.

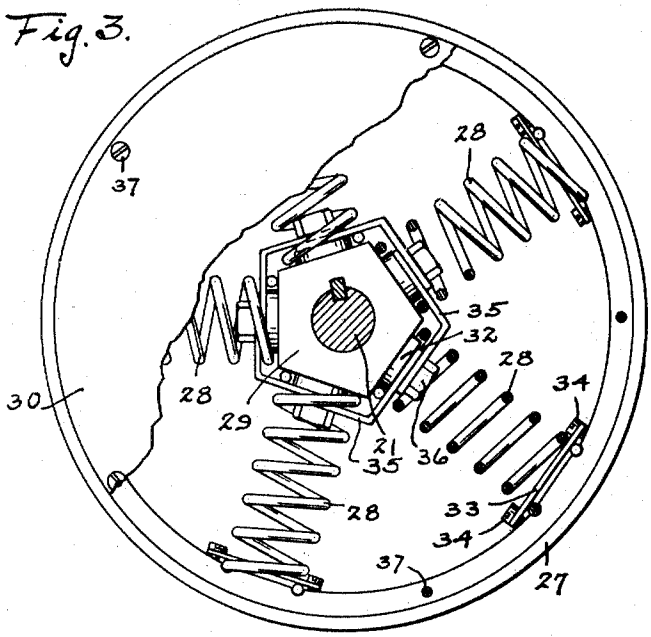


Fig. 4.

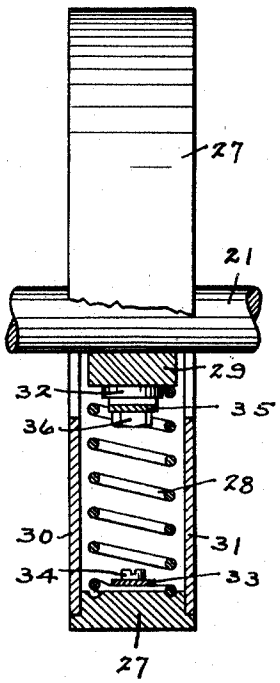
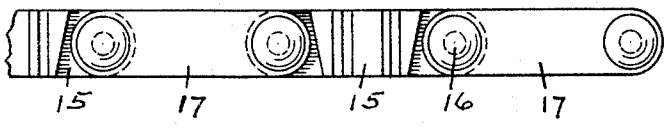


Fig. 5.



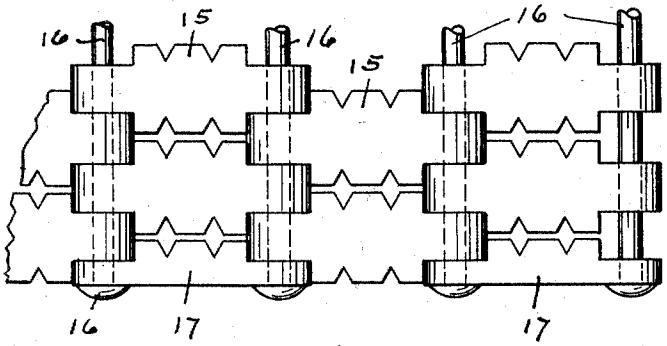


Fig. 6.

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Patented Feb. 16, 1932 1,845,676

UNITED STATES PATENT OFFICE

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JOURNAL BOX WASTE OIL EXTRACTOR

Application filed May 15, 1931. Serial No. 537,696.

This invention relates to means for removing wash oil from used journal box waste and has for one of its primary objects the provision of such means that may be employed in a continuous operation rather than intermittently as has heretofore been the case when centrifugal extractors have been used.

An important object of the invention resides in the positive feed means whereby the oil bearing waste is carried directly through the mechanism.

A further important object of the invention resides in the provision of means for automatically increasing the pressure over a layer of the waste as applied to the higher or projecting masses of waste that may be presented so that a uniform extraction of the oil may be secured.

These and other important objects such as the particular combination of the various elements as will be specifically set out in the claims below will become apparent in the following description of the invention as illustrated by the accompanying drawings, in which

Fig. 1 is a fragmentary side elevation of a mechanism embodying my invention;

Fig. 2, an end elevation of the mechanism;

Fig. 3, a fragmentary side elevation of a unit roller;

Fig. 4, a fragmentary front elevation of the roller;

Fig. 5, a detail in side elevation of a length of waste conveying chain belt; and

Fig. 6, a detail in top plan elevation of the belt.

Like characters of reference indicate like parts throughout the several views in the drawings.

Under the discharge chute 10 leading from a washing waste conveyor 11 of a washing machine (not shown) I mount an endless chain belt 12 about the horizontally disposed shafts 13 and 14, the shaft 14 being the drive shaft and the shaft 13 being an idler shaft. The belt 12, Figs. 5 and 6, is built up from a plurality of individual metal links 15, staggered and each having narrowed laterally contacting eyes at their front and rear ends through which the transverse rods 16 slidingly pass. Each of the links 15 has a central wide area with V-like notches formed on each side to form openings through which oil may flow downwardly through the belt, and side plates 17 are provided to fill out the belt to form straight belt edges, each plate being in reality a link 15 cut in two longitudinally. The rods 16 are of such cross-section area as to resist bending between the links 15. The shafts 12 and 13 are provided with a plurality of plane surfaces corresponding in width to the distance between the spacing of the rods 16, the shafts here being shown as having six of such spaces. The shafts are so formed to serve as sprockets to prevent the belt 12 from slipping therearound and to provide drive connections between the belt and the shafts, particularly the shaft 14.

A sprocket wheel 18 around which is passed a drive chain 19 is fixed on one end of the shaft 14. A cylindrical roller 20 is transversely positioned under the upper part of the belt 12 to revolvably be mounted between the shafts 13 and 14 and parallel thereto. The roller 20 is mounted to have its upper side in rolling contact with the underside of the belt 12. In the same vertical plane including the axis of the roller 20 I revolvably mount a roller shaft 21 above the belt 12 and fix thereon side by side a plurality of symmetrical rollers 22. The ends of the shaft 21 are carried in blocks 23 which may be raised and lowered about bolts 24 and 25. Each of the bolts 24 and 25 is provided with an adjusting nut 26 as means for pressing the block 23 downwardly by running the nuts down along the bolt.

Each of the rollers 22 consists essentially of a cylindrical band 27, Figs. 3 and 4, springs 28 between the band and a hub 29 keyed to the shaft 21, and enclosing side plates 30 and 31. As here shown, five springs 28 are employed, each of which has its outer end positioned within a circular groove formed on the inner side of the band 27 and its inner end positioned around a boss 32 which projects radially from the hub 29. The outer ends of the springs 28 are secured against the band 27 by the plates 33 inserted through and

over the last turn of the spring and held in place by screws 34. Angle plates 35 are employed to secure the inner ends of the springs 28 to the hub 29 by having a cap screw 36 passed through the angle into the boss 32, the angle 35 in each case having one end over one boss 32 and the other end over the next succeeding angle so that the cap screw 36 in each case has the ends of two angles drawn thereby against the hub 29. The angles 35 pass through the springs 28 to have a turn thereof between the angles and the hub.

The side plates 30 and 31 are attached to the band 27 by the screws 37 to enclose the outer ends of the springs 28 so as to prevent waste from working around to within the enclosure defined by the band 27. The central portions of the plates 30 and 31 are cut away to provide clearance around the shaft 21 so as to permit relative movement between the shaft 21 and the band 27.

The rollers 22, Fig. 2, here shown as twelve in number are fixed to the shaft 21 in such a manner through their hubs 29 that the individual rollers will be revolved in unison upon rotation of the shaft 21 and yet each individual roller may upon sufficient pressure being applied be moved to an eccentric position of the shaft 21 with a sliding action between the next adjacent rollers. A sprocket 38 is fixed to one of the outer ends of the shaft 21 and has a chain 39 passed thereabout as a means of revolving the shaft.

In operation, waste is dumped from the chute 10 onto the upper side of the belt 12 which is being revolved in a direction to carry the waste under the rollers 22. At the same time the shaft 21 is being revolved to have the undersides of the rollers 22 travelling in the same direction as that of the belt 12, both the belt and the rollers being power driven. By suitably drawing down the nuts 26 the rollers 22 are carried toward the belt 12 to bear against the waste thereon with sufficient pressure to press out the desired quantity of oil from the waste. Now as it often happens the waste will be disposed upon the belt 12 in more or less irregular masses, some of the waste being spread out and some of the waste being in bunches, with the result that an irregular elevation of the upper surface of the mass of waste is presented to pass under the rollers 22. Where the waste is uniformly distributed in even thickness across the belt 12, the rollers 22 will be raised uniformly upwardly from the belt 12, but where the lump 40 of waste of additional height is encountered, the roller 22 under which that lump happens to pass will be forced upwardly a greater distance than that of the adjacent rollers to permit the waste to travel thereunder. While this particular roller 22 is being forced upwardly, the springs 28 back of the band 27 therein are being compressed with the result that the particular lump 40 is thus subjected to an additional pressure and the other waste of the lower elevation is subjected only to the normal pressure of the adjacent rollers which have not been raised to that higher elevation.

Since each of the individual links 15 of the belt 12 presents an upper flat surface and are closely spaced one against the other, there is nothing to cause the waste to catch or hang onto the belt 12 and as it comes out from under the rollers 22 it may be dumped off the forward end of the belt 12 freely as the belt returns around under the drive shaft 14. The oil pressed out of the waste under the rollers 22 drains downwardly through the V notches on the sides of the links 15 away from the waste. The belt 12 is held rigidly against the rollers 22 by the roller 20 immediately thereunder.

Particular attention is directed to the employment of the side plates 30 and 31 on the sides of the individual roller sections 22. These plates are machined to cause the adjacent sections to slide vertically one plate against the other with a fit sufficiently close to prevent oil from escaping upwardly therebetween as it is pressed out of the waste below. Referring to Fig. 2, when an extra high portion 40 of the waste is encountered, the roller section 22 pressing thereon presses out the oil downwardly. Such pressed out oil is prevented from escaping laterally by reason of the presence of the side plates on the adjacent sections, and since the adjacent roller is pressing down on the lower waste portion, the oil from the higher waste portion can not enter into that lower portion but escapes downwardly only through the belt 12. Were the sides of the sections 22 open, such oil escaping from the higher waste portion would flow to within the ring 27 and thence back on the waste after it left the roller sections thereby preventing the drying of the waste.

While I have here shown and described my invention in the form as now best known to me, it is obvious that structural variations may be made without departing from the spirit of the invention, and I, therefore, do not desire to be limited to that precise form nor any more than may be required by the following claims.

I claim:

1. In means for extracting oil from used journal box waste, a presser unit comprising a plurality of rollers adapted to be carried side by side on a common actuating shaft, each of said rollers embodying an outer circumferential band, a hub adapted to be fixed to the said shaft, springs secured to and between the band and the hub holding the band about the hub and resisting relative movement therebetween, and a plate on each side of the band enclosing the outer sides of the bands.

2. For extracting oil from used journal box waste, a chain belt, means for driving the belt, a plurality of rollers yieldingly directed toward the belt, and means for driving the rollers in unison, each of said rollers having a side enclosure fitted to slide closely over the adjacent roller side.

3. For extracting oil from used journal box waste, a chain belt, means for driving the belt, a plurality of rollers yieldingly directed toward the belt, and means for driving the rollers in unison, said belt being comprised of a plurality of links having flat areas on top and bottom sides, and a non-yielding roller receiving the belt thereagainst below said rollers, a side plate on each side of each of said rollers, and said rollers being spaced closely together to have a sliding fit between plates of adjacent rollers.

4. In means for extracting oil from used journal box waste, a presser unit comprising a plurality of rollers adapted to be carried side by side on a common actuating shaft, each of said rollers embodying an outer circumferential band, a hub adapted to be fixed to the said shaft, springs secured to and between the band and the hub holding the band about the hub and resisting relative movement therebetween, and a plate on each side of the band enclosing the outer ends of the springs, said rollers being spaced along said shaft to have a plate on one roller in sliding contact with the plate on the next adjacent roller.

In testimony whereof I affix my signature.

LEO C. McNAMARA.