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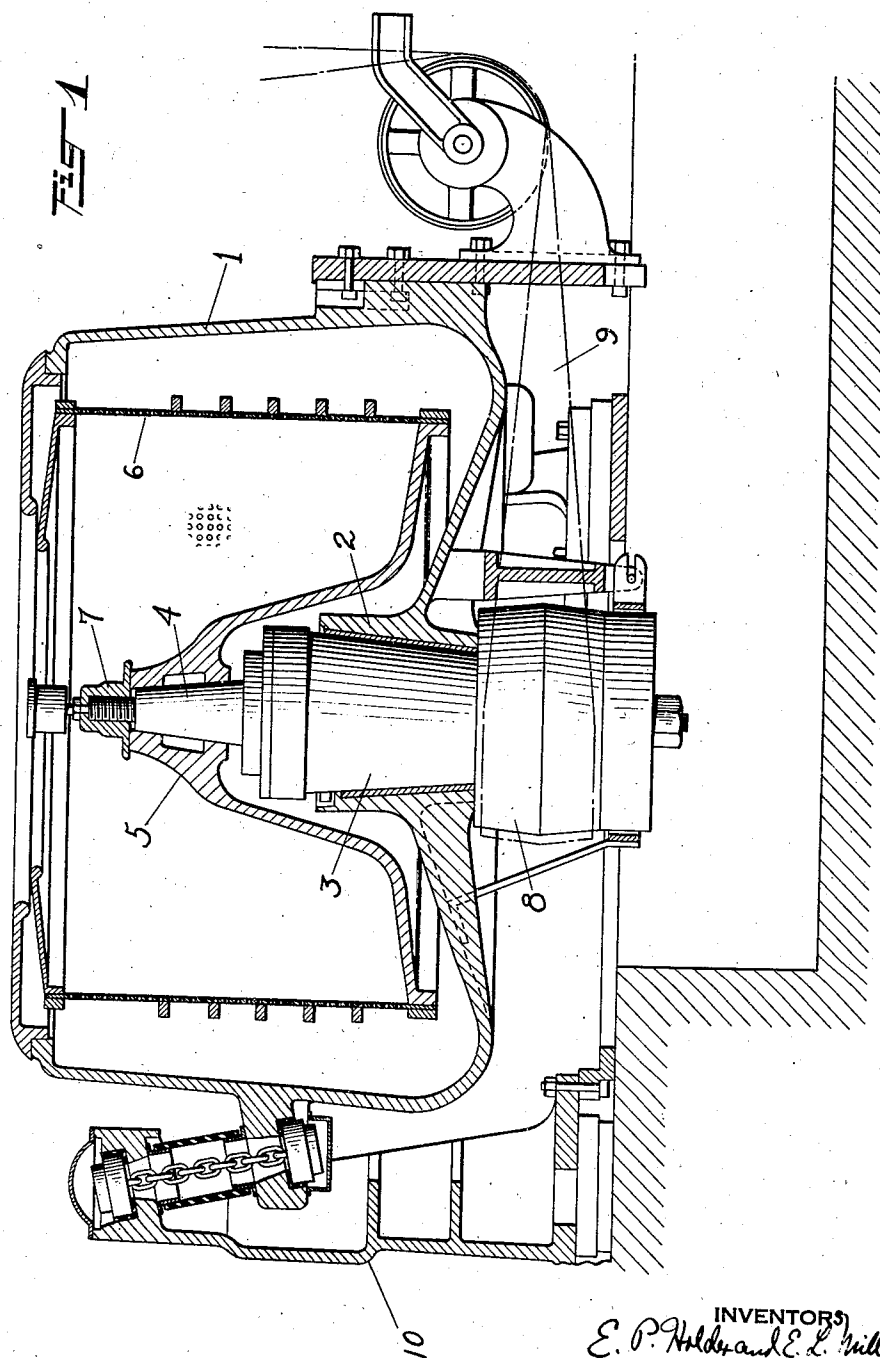
E. P. HOLDER ET AL

2,138,167

CENTRIFUGAL MACHINE

Filed March 16, 1936

3 Sheets-Sheet 1



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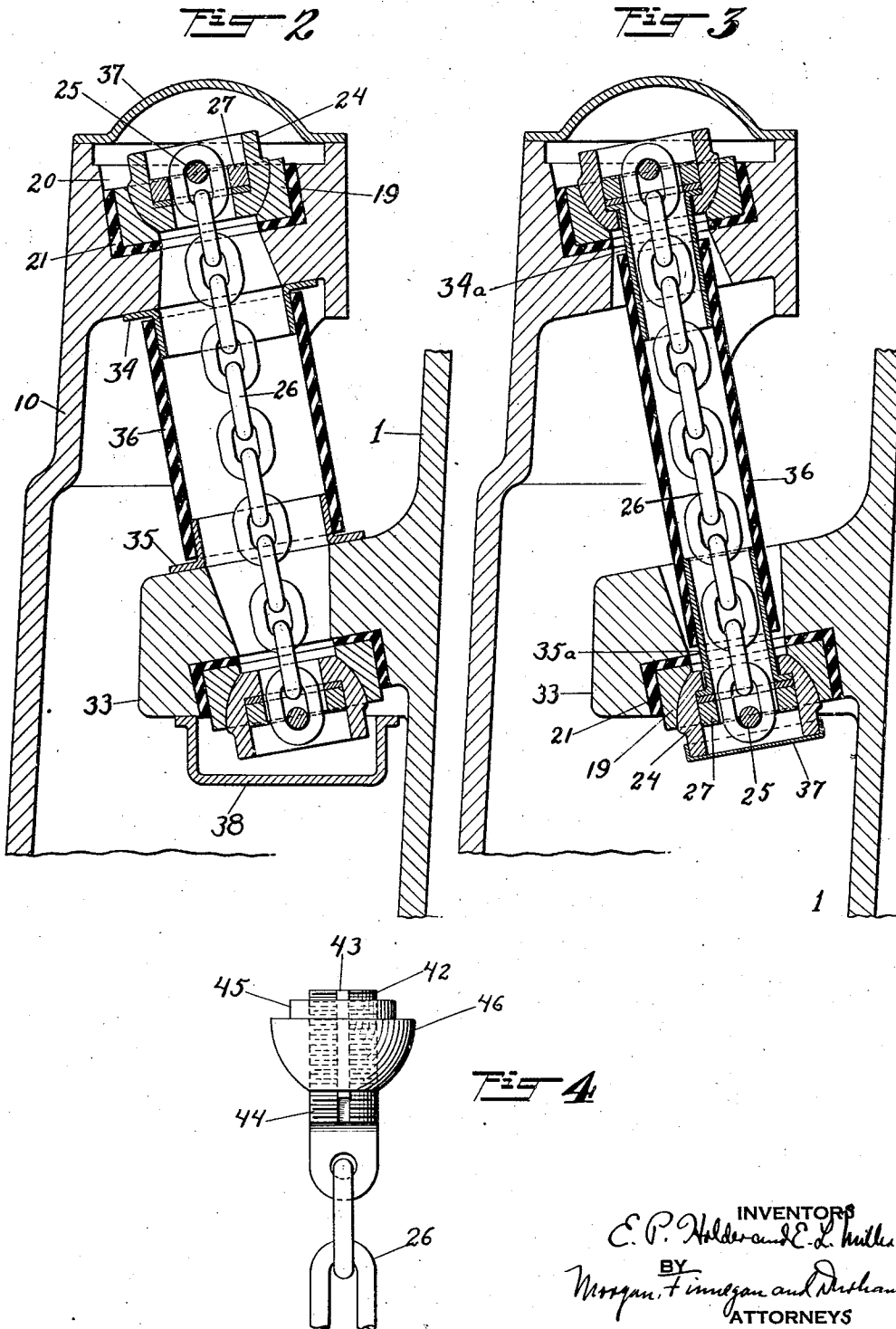
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3 Sheets-Sheet 2



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3 Sheets-Sheet 3

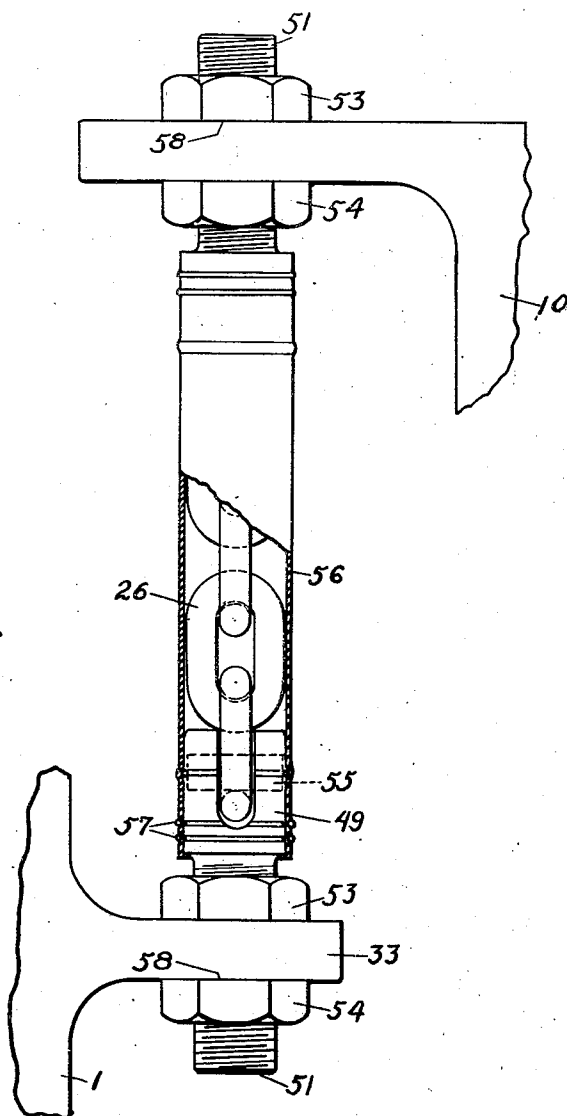
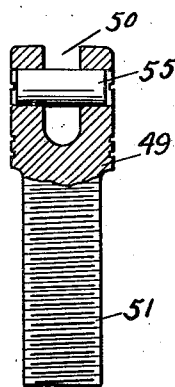


Fig. 5.

Fig. 6.



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UNITED STATES PATENT OFFICE

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CENTRIFUGAL MACHINE

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Application March 16, 1936, Serial No. 69,056

6 Claims. (Cl. 210—71)

The invention relates to new and useful improvements in centrifugal machines and more particularly to such improvements in flexible suspension means for centrifugal extractors.

5 Objects and advantages of the invention will be set forth in part hereinafter and in part will be obvious herefrom, or may be learned by practice with the invention, the same being realized and attained by means of the instrumentalities and combinations pointed out in the appended claims.

The invention consists in the novel parts, constructions, arrangements, combinations and improvements herein shown and described.

15 The accompanying drawings, referred to herein and constituting a part hereof, illustrate one embodiment of the invention, and together with the description, serve to explain the principles of the invention.

20 Of the drawings:—

Fig. 1 is a vertical section showing one form of the suspension applied to an underdriven extractor;

Figs. 2 and 3 are detail vertical sections showing other forms of the suspension;

25 Fig. 4 is a fragmentary detail showing a form of screw-threaded support for the suspension;

Fig. 5 is a side elevation showing another form of the suspension with certain parts broken away; and

30 Fig. 6 is a detailed, fragmentary view partly in section of the suspension shown in Fig. 5.

35 Objects of the invention are to provide an improved flexible suspension for underdriven extractors which is strong, simple and efficient, having few parts, and which may be quickly and easily assembled and disassembled, and to eliminate moving parts in engagement with the pedestals and casing or curb, and to provide for attachment of the flexible suspensions to pedestals and casing which are in fixed relation thereto and are maintained in that relation; to provide for continuous lubrication of all moving parts, having especially in view the rapid and irregular movements of joints of the suspensions under heavy and varying load strains, and by continuous lubrication to minimize the wear which, under the conditions just described, is otherwise very great.

40 Referring now in detail to the accompanying drawings, illustrating by way of example embodiments of the invention, and referring first to Figs. 1 and 2, an underdriven extractor is shown of a well-known type, to which the present invention is applied. As embodied, a casing or curb 1 has a bottom bearing 2 in which is journaled the enlarged, downwardly decreasing conical bearing portion 3 of a shaft 4, the shaft above the part 3 being upwardly tapered. 45 Mounted on the tapered shaft 4 is the corre-

spondingly tapered hub 5 of the basket 6, which is held in place by the nut 7. Fixed on the bottom end of the shaft is a pulley 8 over which runs a belt 9 driven by any suitable driving means.

5 Referring to the form of flexible suspension shown in Figs. 1 and 2, a plurality of pedestals 10, usually three in number, are fixed in spaced relation about the casing, and the casing is suspended therefrom by the flexible suspensions. 10 In the form of suspension shown in Figs. 1 and 2, a cylindrical disc 19 rests in a corresponding cylindrical recess 20 formed in the upper face of the top of the pedestal. If preferred, an elastic member 21 may be interposed between the disc 19 and its supporting recess 20, but good results will usually be secured with the disc fitting within and engaging directly with the recess 20. The flexible suspension may be hung directly from the block 19, but as shown, a hollow spheroidal member 24 rests in a correspondingly shaped opening in the top of the disc 19. Fixed to the walls of the member 24 and extending across its hollow interior is a pin 25 upon which is hung the flexible suspension which supports the extractor casing. The flexible suspension has a link support 25 upon the pin 25, and as shown it is a chain 26. Surrounding the upper link of the chain and within the interior of the member 24 is a spacing ring 27, which likewise can be dispensed with if desired. Extending from the outer face of the casing 1 are lugs 33, to which the lower ends of the flexible suspension are attached. The anchorage for the lower end of the flexible suspension 26 and the bearings in the under side of the lug 33, may be the same as those for the pedestal bearing, are similarly numbered, and need not be again described.

40 Means are provided for maintaining continuous lubrication about the movable weight-carrying joints of the flexible suspension, and as embodied, the lubricant is maintained continually in contact with the entire length of the suspension, and with all the joints of the chain. As embodied in Figs. 1 and 2, flanged collars 34 45 and 35 are located respectively on the under side of the pedestal bearing and on the top side of the lug 33, and the projecting collar parts of these are encircled by a tube 36 which has sliding overlapping connection with both flanges. 50 Closure caps 37 and 38 are provided respectively for the top of the pedestal opening and the bottom of the lug opening. Thus all the movable parts of the flexible suspension whether they be in the suspension itself or in the suspension and bearing are continuously maintained in a bath of grease or other suitable lubricant.

55 In Fig. 3 a somewhat different form of construction is shown, although the main features are the same as those already described and are 60

indicated by the same numerals and need not be described again. In this construction the flanged collars 34a and 35a have their flanges within the member 24, and the entire grease retaining structure is mounted about the suspension separate from the pedestal and the casing lug, and there is consequently less relative movement of the parts.

In Fig. 4 is shown one form of screw-threaded mounting for the flexible suspension 26. The suspension, at either end has link connection with a screw-threaded rod or bar 44, which at one end is supported by suitable means in the pedestal and at the other end in the casing lug. A suitable nut 46 is screw-threaded on to the rod 44, and this nut serves as the supporting abutment on the upper side of the pedestal and on the lower side of the casing lug. In Fig. 4 the nut 46 is shown of spheroidal form and may be mounted similarly to the parts 24 if desired. A locking nut 45 is also screwed onto the rod 44, and a locking key 43 may be used if desired. With this form of device assembly and disassembly may be effected very quickly and easily, and the length of the suspension may be varied or adjusted if desired.

In Figs. 5 and 6 a relatively simple form of screw-threaded supports for the flexible suspension is shown, and this illustrates substantially the present preferred commercial form. As shown, there are fixed anchorages for the flexible suspension to both the pedestal and the casing lugs which are exceedingly simple, sturdy and very quickly and easily assembled and disassembled. As embodied, there are provided slotted cylindrical members 49 having preferably diametrically disposed slots 50. Integral with and projecting rearwardly from the slotted members 49 are rods or stems 51 which fit closely within and project rearwardly from apertures in the pedestal and lug. Nuts 53 and lock nuts 54 are screw-threaded on the rods 51 to hold the supporting devices fixedly in place with their flat rear faces 58 firmly abutting on the pedestal and lug. Mounted within and extending across the members 49 are pins 55 with which the ends of the chain have link connection. The grease-enclosing casings 56 are of flexible material and are cylindrical in form, and at either end fit closely about the members 49, and are held in strong compression thereagainst by suitable means, such as wires 57. There are thus provided seals at either end of the grease-retaining tube 56, beyond the end link mounting of the flexible suspension, and thereby all of the movable joints, including the end ones, are kept constantly lubricated. The flexible tube 56 may be of any suitable material and is preferably of synthetic rubber which has the required strength and flexibility and is grease-resistant, and may be coated with fabric if desired.

The invention in its broader aspects is not limited to the particular constructions and materials shown and described, nor to any particular constructions or materials, as these may be varied within the scope of the accompanying claims; and it will be understood that the various forms illustrated are exemplary of possible embodiments of the invention, but are not to be construed as restrictive as to changes in the details of structure.

What we claim is:

1. A mounting for a centrifugal machine having a casing and a basket rotatable about a vertical axis including in combination a plurality of pedestals, and suspension means between the pedestals and casing comprising supporting devices engaging the pedestals and casing, a non-rotating flexible connection between said supporting devices and a flexible grease-containing, grease-resisting closure about said flexible connection.

2. A mounting for a centrifugal machine having a casing and a basket rotatable about a vertical axis including in combination a plurality of pedestals, and suspension means between the pedestals and casing comprising supporting devices engaging the pedestals and casing, a flexible connection between said supporting devices and a flexible grease-containing closure about said flexible connection having its ends sealed to said supporting devices beyond the ends of the flexible connection.

3. A mounting for a centrifugal machine having a casing and a basket rotatable about a vertical axis including in combination a plurality of pedestals, and suspension means between the pedestals and casing comprising supporting devices engaging the pedestals and casing, a flexible connection between said supporting devices and a flexible, elastic grease container about said flexible member, and having its ends sealed near either end of the flexible connection.

4. A mounting for a centrifugal machine having a casing and a basket rotatable about a vertical axis including in combination a plurality of pedestals, a rigid supporting device mounted in a pedestal and projecting downwardly therefrom, a rigid supporting device mounted in the casing and projecting upwardly therefrom, a flexible connection linked to said projecting portions of said supports, a flexible grease container surrounding said flexible support and its link connections and sealing between said container and said projecting portions of the supports comprising compressing devices at either end of the container.

5. A mounting for a centrifugal machine having a casing and a basket rotatable about a vertical axis including in combination a plurality of pedestals, a rigid support mounted in a pedestal and having a hollow projecting portion, a rigid support mounted in the casing and having a hollow projecting portion, and a flexible connection having link connections within said hollow portions of the support, a tubular grease container enclosing said flexible connection and having its ends sealed about said projecting portions of the supports.

6. A mounting for a centrifugal machine having a casing and a basket rotatable about a vertical axis including in combination a plurality of pedestals, rigid supporting members having screw-threaded shanks adapted to pass through apertures in the pedestals and open hollow portions projecting downwardly from the pedestals, pins mounted in said open hollow portions and flexible casing supporting members linked to said pins and a synthetic rubber tube enclosing said flexible members for retaining lubricant.

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