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HYDRO. EXTRACTOR.
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1,362,712.

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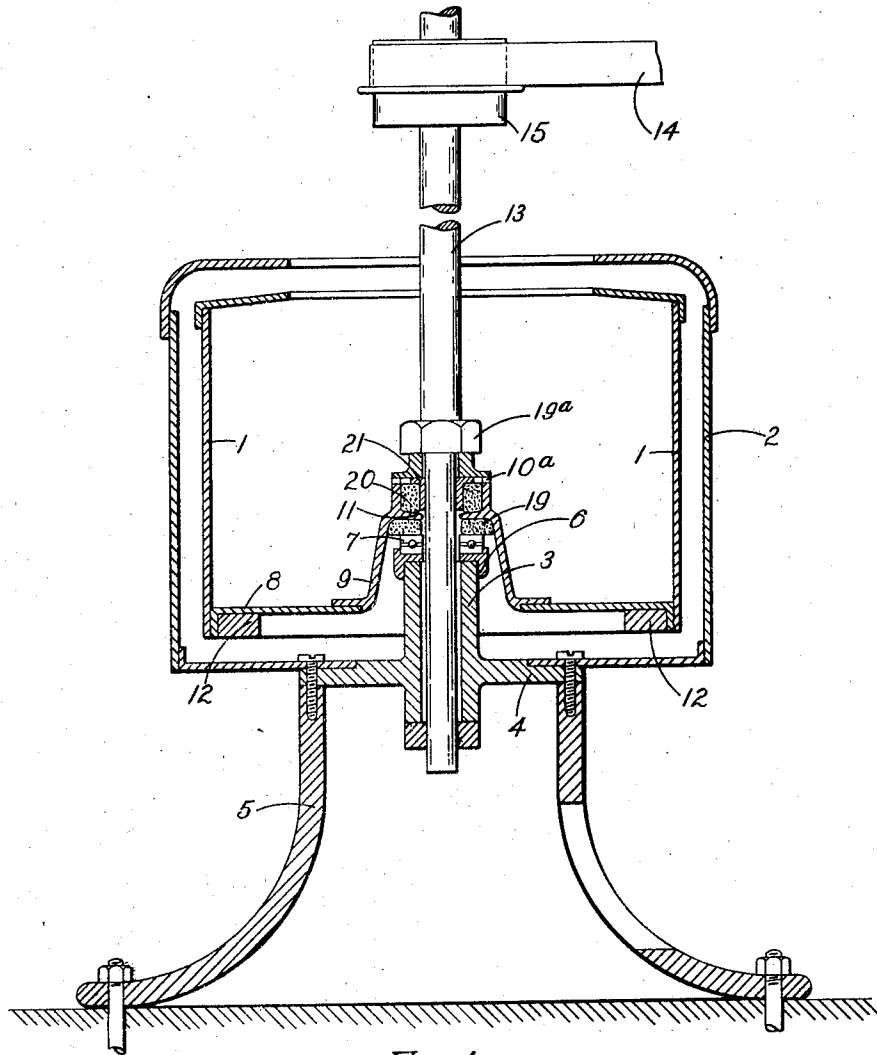


Fig. 1.

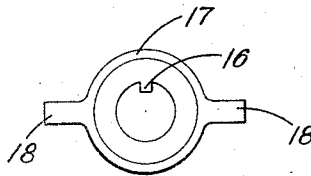


Fig. 2.

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HYDRO-EXTRACTOR.

1,362,712.

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To all whom it may concern:

Be it known that I, WILLIAM McCHESNEY, a British subject, residing at 64 Mill Hill road, Acton, London, W. 3, England, have invented certain new and useful Improvements in Hydro-Extractors, of which the following is a specification.

This invention has for its object to provide a self-balancing mounting for a centrifugal receiver adapted for use in laundries, sugar refineries, creameries and the like.

A further object of the invention is to provide a satisfactory solid support of sufficient strength for the rotary receiver.

The invention is illustrated in the accompanying drawing in which Figure 1 shows a hydro-extractor as used in a laundry, and Fig. 2 a detail.

Referring now to the drawing, the extractor comprises a centrifugal receiver or basket 1 mounted within a protecting cage 2 by means of a mounting forming the subject of this invention. The mounting is supported on a strong stationary pillar 3 which may be made of any suitable strength according to the design and purpose of the extractor. The pillar is formed integral with a plate 4 which is firmly supported on a solidly built pedestal 5. The pillar is surmounted by a flanged cap 6, the lower flange of which receives the head of the pillar, and the upper flange forms a housing for a horizontally arranged ball-race 7 which supports and permits rotation of the receiver 1. The base 8 of the receiver is annular and is firmly attached to a solidly-formed tubular uprising neck 9 provided with a terminal uprising flange 10 and an inwardly directed flange 11 extending from the top of said neck. An annular weighted ring 12 is fitted underneath the outer edge of the base 8 to lower the center of gravity of the receiver. A driving shaft 13 passes centrally within the pillar 3 and neck 9, and is provided with a flanged pulley adapted to receive a driving belt 14, and with a brake-drum 15.

The shaft is reduced at its lower part and is keyed to receive the feather 16 of a driving disk 17 shown separately at Fig. 2. The driving disk is provided with a plurality of ears 18 which in operative position engage

with a loose fit in slots 10^a formed in the vertical flange 10 of the neck 9.

The receiver is mounted on the ball-race 7 by means of an annular rubber buffer 19 seated below the horizontal flange 11, and is centered by means of a second buffer 20 seated above said flange and interposed between the vertical flange 10 and a flanged sleeve 21 which is slidably and loosely fitted on the shaft 13 as shown.

The driving disk 17 is held in place by a nut 19^a adjustably screwed to a screwed portion of the reduced part of the shaft 13.

The slots 10^a are cut so deep and the inwardly directed flanges 11 are terminated at such a point that the receiver 1 is free to tilt and can also move a certain distance radially in the plane of rotation without positively engaging with the disk 17 or shaft 13, the buffers 19, 20 providing an elastic resistance to such tilting and/or movement. The axis of tilting due to uneven load is in the region of the buffers 19, 20, and the design of the receiver is such that the center of gravity of the receiver when loaded is, owing to the provision of the annular weight 12, definitely situated below the said axis of tilting. As the buffers rotate with the receiver and the upper disk of the ball-race 7, the deformation of the buffers due to tilting is constant for a given tilt, so that continual and repeated straining and unstraining of the buffers is not necessitated as is the case when the buffers do not form part of the rotating mechanism. The supporting column 3 enters well within the moving masses so that angle of tilt for a given error in loading is reduced to a minimum.

In operation, assuming the receiver to be unevenly loaded, it will be tilted with the heavier side lower, owing to the unbalanced fraction of the load. As the receiver begins to rotate, centrifugal force acting on the unbalanced fraction of load will operate to restore the tilt, as the center of gravity of the moving mass is, owing to the provision of the weighted ring 12, situated below the tilting axis, but the center of gravity of the loaded receiver will not yet be upon the axis of rotation. As speed increases to the higher values, owing to the well known

tendency of rapidly rotating masses to center themselves, the receiver will gradually move radially inward in the plane of its rotation, and against the resistance of part
5 of the upper buffer 20 so as to bring its center of gravity to a point lying upon the axis of its rotation.

Thereafter, the receiver will remain self-centered and will rotate steadily and horizontally. It is understood that the driving
10 disk 17 is a loose fit throughout so as to permit the movement above described, and that the length of the flange 10 is such as to permit an adequate amount of movement as
15 requisite for normal or desired fractional unevenness in loading.

I claim:—

1. In a hydro-extractor, a receiver, an axial reëntrant neck in the base of said receiver, a rotary shaft passing through said
20 neck, means for transmitting the rotary movement of said shaft to said receiver, a rotary element of a bearing supporting said receiver by means of said neck, a resilient
25 buffer fitted within said neck interposed between the said rotary element and the supporting surface of the said neck, the receiver being capable of tilting by a rolling movement on said buffer, and also of moving
30 radially in the plane of rotation relatively to said rotary element, and means for centralizing said receiver with relation to the shaft.

2. In a hydro-extractor, a rotary receiver,
35 an axial reëntrant neck in the base of said receiver, an inwardly-extending flange at the top of said neck forming a supporting surface for said receiver, a rotary horizontal element of a bearing situated within said
40 neck, and supporting said receiver, a resilient buffer held within the neck and interposed between said rotary element and said flange permitting said receiver to tilt by a rolling movement on said buffer, centralizing
45 means for the receiver arranged above the buffer and means attached to said receiver for bringing the center of gravity of the loaded receiver below the axis of tilt.

3. In a hydro-extractor, a rotary receiver,
50 an axial reëntrant neck in the base of said receiver, a rotary shaft passing through said neck, means for transmitting the motion of said shaft to said receiver, an inwardly directed flange on said neck forming a supporting
55 surface for said receiver, an upwardly extending part of said neck, a horizontal rotary element of a bearing supporting said receiver by means of the said inwardly directed flange, a resilient buffer interposed between said flange and said rotary
60 element, a second resilient buffer situated between the said upward part of said neck and said rotary shaft, a slidable sleeve interposed between said buffer and said shaft,
65 the said receiver being adapted to move ra-

dially in the plane of rotation against the resistance of said buffer, and the buffers permitting the receiver to tilt by means of the parts of said neck executing a rolling
70 movement on said buffers.

4. In a hydro-extractor, a rotary receiver, an axial reëntrant neck in the base of said receiver, a rotary shaft passing through said neck, means for transmitting the motion of
75 said shaft to said receiver, an inwardly directed flange on said neck forming a supporting surface for said receiver, an upwardly extending part of said neck, a horizontal rotary element of a bearing supporting said receiver by means of the said inwardly
80 directed flange, a resilient buffer interposed between said flange and said rotary element, a second resilient buffer situated between the said upward part of said neck and said rotary shaft, a slidable sleeve interposed between said buffer and said shaft, the
85 said receiver being adjusted to move radially in the plane of rotation against the resistance of said buffer, and the buffers permitting the receiver to tilt by means of the
90 parts of said neck executing a rolling movement on said buffers, and means attached to said receiver to bring the center of gravity of the loaded receiver below the axis of tilt.

5. In a hydro-extractor, a pedestal, a hollow strong column supported from said
95 pedestal, an annular horizontal ball-race supported on said column, a receiver having a reëntrant neck centrally situated in its base, said neck terminating in inwardly and upwardly directed flanges, a resilient buffer supported by said ball race, said buffer supporting
100 said receiver by means of the inwardly directed flange on said neck, a rotary shaft passing through said neck and ball-race and column, means for transmitting the motion of said shaft to said receiver, a resilient buffer interposed between said upwardly-directed flange and said shaft, a
105 slidable sleeve situated between said buffer and said shaft, the receiver being adapted to tilt by a rolling movement of said parts upon said buffers about an axis which is higher than the center of gravity of the loaded receiver, and being further capable
110 of a slight radial movement in the plane of rotation relatively to said ball-race.

6. In a hydro-extractor, a pedestal, a hollow strong column supported from said pedestal, an annular horizontal ball-race supported on said column, a receiver having a
120 reëntrant neck centrally situated in its base, said neck being less in height than half the height of said receiver and terminating in inwardly and upwardly directed flanges, a resilient buffer supported by said ball race, said buffer supporting said receiver by means of the inwardly directed flange on
125 said neck, a rotary shaft passing through said neck, and ball-race and column, means
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for transmitting the motion of said shaft to said receiver, a resilient buffer interposed between said upwardly-directed flange and said shaft, a slidable sleeve situated between said buffer and said shaft, the receiver
5 being adapted to tilt by a rolling movement of said parts upon said buffers about an axis which is higher than the center of gravity of the loaded receiver, and being further capable of a slight radial movement in the plane of rotation relatively to said ball-race,
10 and an annular weight carried by the base of said receiver.

In testimony whereof I affix my signature.

WM. McCHESNEY.