R. S. CLARKE.

ROTARY PULP SCREEN.

APPLICATION FILED JULY 6, 1914.

1,131,599.

Patented Mar. 9, 1915.

2 SHEETS—SHEET 1.

Fig. 1.

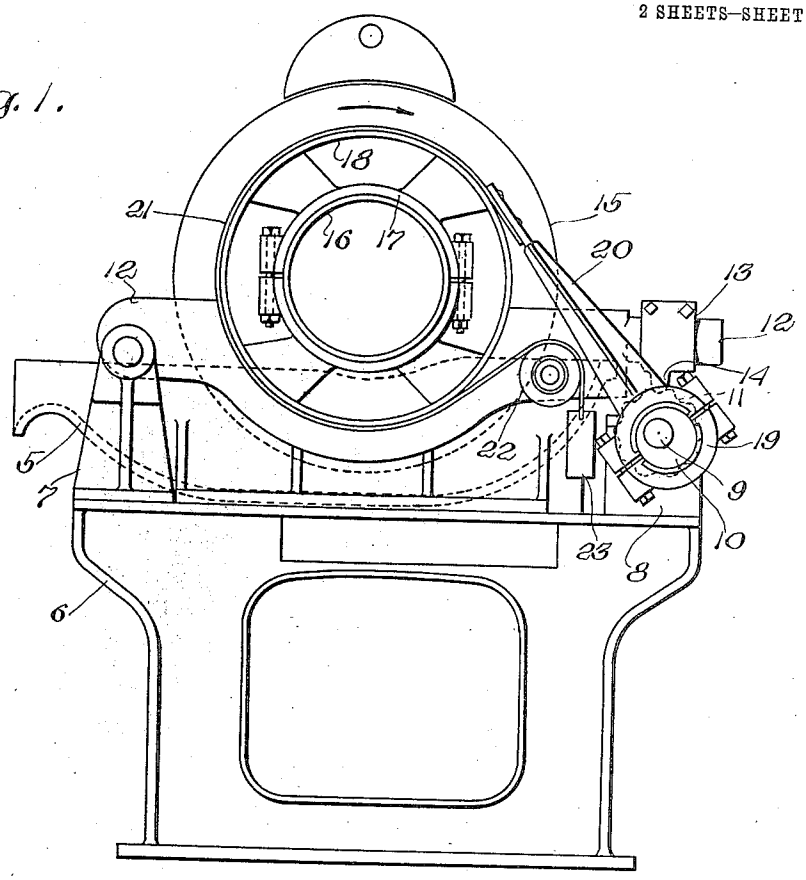
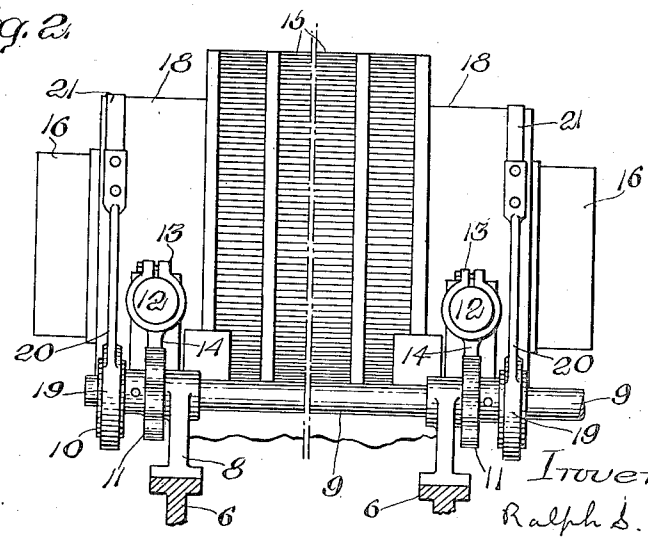



Fig. 2.




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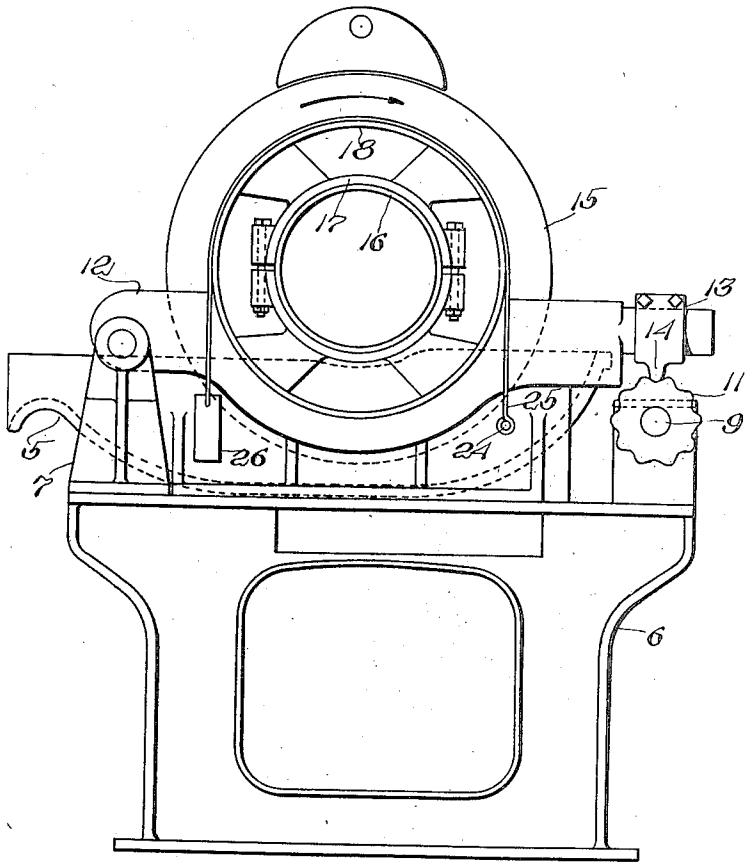



Fig. 3.

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# UNITED STATES PATENT OFFICE.

RALPH S. CLARKE, OF WALPOLE, MASSACHUSETTS, ASSIGNOR TO WANDEL SCREEN MANUFACTURING COMPANY, A CORPORATION OF MASSACHUSETTS.

## ROTARY PULP-SCREEN.

1,131,599. Specification of Letters Patent. Patented Mar. 9, 1915.

Application filed July 6, 1914. Serial No. 849,160.

*To all whom it may concern:*

Be it known that I, RALPH S. CLARKE, a citizen of the United States, residing at Walpole, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Rotary Pulp-Screens, of which the following is a specification, reference being had to the accompanying drawings, forming part thereof.

This invention has reference to improvements in rotary pulp screens in which the rotary screen is caused to oscillate to assist the operation of screening the pulp and to intermittently rotate to progressively carry the pulp gathered by said screen to a position to be acted upon by the water spray.

One object of the invention is to so construct a rotary pulp screen that the screen may be caused to oscillate to assist the screening of the pulp without the use of buffers to yieldingly resist the reaction of the screen, and to avoid the undue chattering caused by the reaction of the pulp screen with the resultant undue wear on the machine.

Another object of the invention is to so construct a rotary pulp screen that intermittent rotation of the screen may be effected by frictional engaging means whereby the expense and the wear of the usual worm gear driving means is eliminated.

Other objects of the invention will appear from the following description.

The invention consists in the novel means for effecting the vibration or oscillation of the screen carrying member or frame so that the rebound blow of said member or frame is dispensed with and that the wear of the parts by which the oscillation or vibration of said frame or member is such that undue oscillation of the screen and consequent racking action on the machine as a whole is avoided.

The invention also consists in the means for frictionally driving the pulp screen to effect its intermittent rotation.

The invention also consists in such other novel features of construction and combination of parts as shall hereinafter be more fully described and pointed out in the claims.

Figure 1, represents an end elevation of a rotary pulp screen illustrating the new invention. Fig. 2, represents a side view of portions of the same. Fig. 3 represents an end view of the machine illustrating a modified construction of the friction driving device.

Similar characters of reference designate corresponding parts throughout.

As heretofore constructed rotary pulp screens of this nature have been supplied with frames or members pivotally mounted and having projecting or striking members adapted to be acted upon by rotary ratchets to effect the movement, in one direction, of said pivoted members and the screens carried thereby to assist the screening of the pulp taken up by said screens. The reaction or rebound of said pivoted members has been limited by the use of buffers with the view that after each reaction of said pivoted members said striking members would be positioned to be acted upon by the next succeeding tooth of the ratchet and moved thereby always the same distance. In practice it is found that the buffers soon become worn and permit the movement of the striking members beyond the predetermined point at which the teeth of the ratchet should act thereon, after such wearing of the buffers, the teeth of the ratchet would strike such striker members with constantly increasing force thus causing undue movement of said pivoted members and also a racking or shaking of the whole machine.

In such machines, as heretofore constructed, the means for effecting the rotation of the pulp screen comprised an annular worm gear driven by a worm which driving means was expensive in construction and, largely on account of the oscillation of the screen and its gear relative to the worm, would soon become worn and, ultimately, useless.

In carrying this invention into practice it has been my object to simplify the construction of rotary pulp screens as to their driving means by eliminating the usual buffers and the usual worm and worm gear drive and thereby reduce the original cost of the machine and to prolong its life. I have also had in mind the avoidance of considerable of the noise caused by the continual striking of the ratchet against the striker member or members.

In the drawings I have shown this invention as applied to a machine having but one pulp pan and a single screen but it is obvious that the new improvement may be applied,

by mere duplication of parts to a machine having two pulp screens of the general nature of that herein shown.

As shown in the drawings in its preferred form the pulp pan 5 is sustained by the usual end frames 6, 6 which constitute part of any suitable base or support for the machine. On said frames 6, 6 at one side of the machine is mounted a pair of brackets as 7, and at the other side of the machine is mounted a pair of brackets 8, 8. In these latter brackets 8, 8 is journaled the drive shaft 9 adapted to be driven in any ordinary manner and having the eccentric disks 10, 10 and the cams 11, 11 which latter have peripheries defining a succession of regular rises and falls of comparatively sharp pitch. Pivotally sustained by pivots of the brackets as 7 are the screen sustaining arms 12, 12 having at their free ends the slidably adjustable blocks 13, 13 having the follower members 14, 14 shaped to follow the peripheries of their related cams 11, 11.

Journaled in bearings of the arms 12, 12 is the pulp screen 15 having the cylindrical extensions 16, 16 on which are clamped the split collars as 17 of the friction drums 18, 18. Mounted on the eccentric disks 10, 10 are the straps or frames 19, 19, in which said disks are free to rotate, and having the arms 20, 20 to which are attached the friction straps or belts 21, 21 which latter extend partially around the peripheries of the drums 18, 18 and then over the pulleys as 22 rotatable on studs extending from the arms 12, 12, and said belts 21, 21 are held under tension in frictional contact with the drums 18, 18 by their weights 23, 23.

The operation of the device, thus described, is as follows. When shaft 9 is rotated its cams 11, 11 will act on the followers 14, 14 to effect the rise and fall of the free ends of the arms 12, 12. While the relative shape of these cams and their follower is such that the rise and fall of the followers 14, 14 may be regular the irregular action to effect chattering of the pulp screen to loosen the pulp thereon may be effected by the number of rises on the peripheries of said cams 11, 11 or by the speed at which shaft 9 is driven but, in actual practice, it is found that with the followers 14, 14 in practically constant contact with the peripheries of cams 11, 11 the shaking action effected on the screen is sufficient. Attention is called to the fact that the wear of the followers 14, 14, on their cams 11, 11 will be regular and that any reaction of said followers will be directly on the face of the cams. During such rotation of shaft 9 eccentric disks 10, 10 operate to effect reciprocating movement of their arms 20, 20 with the result that at each forward movement, toward belt 21, of said arms 20, 20 said belts are slackened and the weights as 23 are permitted to take up the slack of such belts, while on the retractive movements of said arms 20, 20 the belts 21, 21, are pulled to frictionally engage said drums 18, 18, and to effect the partial rotation thereof and of screen 15 and such operation is continued whereby said screen is intermittently rotated.

The modification shown in Fig. 3 of the drawing relates wholly to the means for effecting intermittent rotation of the screen. This modification consists in providing a part of the machine which is fixed relatively to the vibration of arms 12 with the pin 24 from which the friction belt 25 extends over the drum 18 and is furnished at its free end with the tension weight 26. In this modified form when the screen 15 is raised by the actions of the cams 11 on their followers 14, 14 the frictional contact of the belts as 25 on the drums 18 will effect the drawing around of said drums in the direction indicated by the arrow of said screen, and the weights as 26 will rise. On the downward movement of the screen said weights as 26 will take up the slack of the belts as 25.

While I have herein shown a specific construction of my improved pulp screen it is not my intention to limit my invention except as herein claimed.

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

1. A rotary pulp screen having a cylindrical friction drum, and a friction belt partially embracing said drum and having a slack take up, in combination with means for effecting relative movement between said drum and said belt whereby the frictional engagement between said belt and said drum causes intermittent rotation of said drum in one direction.

2. A rotary pulp screen having a friction drum, and a friction belt partially embracing said drum and having a slack take up, in combination with means for moving said screen and its drum intermittently vertically a limited degree against the frictional resistance of said belt on said drum.

3. A cylindrical pulp screen rotatably mounted and having a friction drum, and a friction belt partially embracing said drum and having a slack take up, in combination with a frame, a pivoted arm carried by said frame, and means for effecting vibration of said arm.

4. A pulp screen comprising a frame, arms mounted on said frame to swing, means for vibrating said arms, and a cylindrical pulp screen rotatably mounted on said arms and having a friction drum, in combination with a friction belt mounted in the machine and in contact with said drum and having a free end provided with a weight.

5. A pulp screen comprising a frame,

arms mounted on said frame to swing a rotatable cylindrical pulp screen carried by said arms and having a friction drum, in combination with a rotatable shaft having cams for effecting vibration of said arms, a belt in frictional contact with said drum, and means carried by said shaft for intermittently actuating said belt in one direction.

6. A pulp screen comprising a frame having a pair of pivoted arms, followers adjustably mounted at the free ends of said arms, a cylindrical pulp screen rotatably carried by said arms and having a friction drum, a rotatable shaft extending approximately parallel to said screen and having cams coöperating with said followers, an eccentric on said shaft, a bearing frame on said eccentric, and a friction belt attached to said bearing frame and partially embracing said drum, said belt having a slack taking up means.

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