

F. G. FEELEY.
PULP SCREEN.

APPLICATION FILED JUNE 22, 1908.

1,014,288.

Patented Jan. 9, 1912.

2 SHEETS—SHEET 1.

Fig. 1.

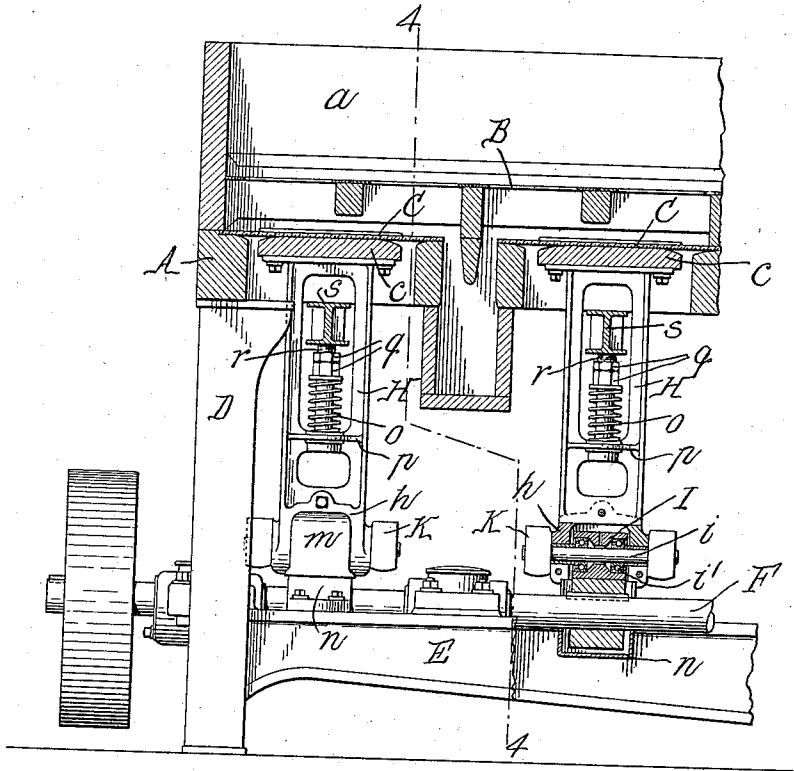


Fig. 2.

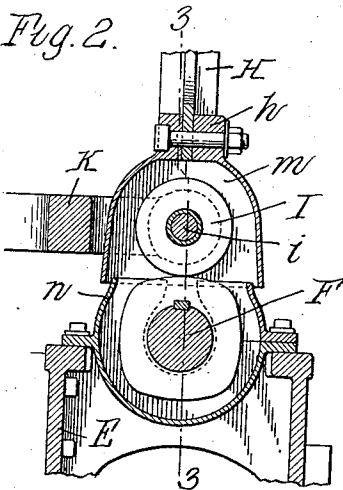
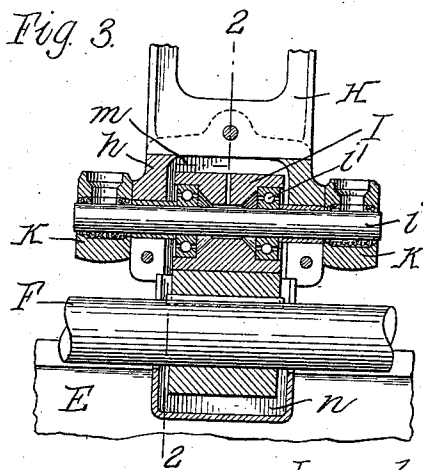


Fig. 3.



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2 SHEETS—SHEET 2.

This technical drawing illustrates a mechanical assembly, possibly a valve gear or a similar component from a steam engine. The upper portion shows a cross-sectional view of a housing or frame, with internal components like a horizontal bar (B) and a piston rod (C). The lower portion shows a side view of the mechanism, featuring a central vertical shaft (H) connected to a lever arm (S). This lever arm is pivoted on a support (D) and has a curved end (O) that interacts with a circular component (P). Various other parts are labeled with letters: A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z.

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UNITED STATES PATENT OFFICE.

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PULP-SCREEN.

1,014,288.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FRANK G. FEELEY, a citizen of the United States, residing at Watertown, in the county of Jefferson and State of New York, have invented a new and useful Improvement in Pulp-Screens, of which the following is a specification.

This invention relates to that class of pulp strainers in which a movable diaphragm or bellows plate is arranged below the screen plate and moved up and down by a cam mechanism. In machines of this kind motion is transmitted from the cam to the diaphragm in most cases by an upright plunger rod or member which is connected at its upper end with the diaphragm and carries at its lower end a shoe which rides on the rotary cam, the plunger rod being pressed downwardly by a spring which holds the shoe against the cam. In machines of this construction considerable friction is developed between the shoe and the cam, which results in various difficulties, among them that the shoes, which are usually of wood, require to be frequently renewed, that the cams are often worn out of shape, that an excessive amount of power is required for operating the machine, that the efficiency of the diaphragm becomes impaired as the shoe becomes worn by the lowering of the position of the diaphragm, that the tension of the spring becomes reduced as the shoe wears down, and that the diaphragm may be raised too high and in some cases be broken by inserting a shoe which is too high.

The object of my invention is to produce a mechanism for connecting the actuating cam with the diaphragm by which these difficulties are avoided.

In the accompanying drawings, consisting of two sheets: Figure 1 is a longitudinal sectional elevation of one end of a pulp strainer provided with my improvements. Fig. 2 is a sectional elevation of the cam and connecting parts, on an enlarged scale, in line 2-2, Fig. 3. Fig. 3 is a longitudinal sectional elevation in line 3-3, Fig. 2. Fig. 4 is a transverse vertical section in line 4-4, Fig. 1. Fig. 5 is a horizontal section in line 5-5, Fig. 4, on an enlarged scale. Fig. 6 is a sectional elevation of the spring and connecting parts, on an enlarged scale.

Like reference characters refer to like parts in the several figures.

A represents the stationary horizontal bellows frame supporting the vat *a*. B the stationary screen plates, C the movable diaphragms, *c* the plungers or plates secured to the under sides of the diaphragms, D one of the upright end frames, E the longitudinal girder secured thereto, F the horizontal driving shaft supported by bearings on the end frames and girder, and G the actuating cams on the driving shaft. All of these parts may be of any suitable or well known construction.

H represents an upright strut or plunger frame which is secured at its upper end to the movable plunger or plate *c* and extends downwardly to the actuating cam on which it bears by means of a roller I. The latter turns upon a horizontal arbor *i*, preferably, as shown, by means of ball bearings *i'* arranged within the end portions of the roller. The arbor *i* is secured in the lower portion *h* of the strut H which is bifurcated to straddle the roller.

K represents an oscillating guide link which controls the lower end of the strut in its up and down movement and which is pivoted at its outer end to a fixed support of any suitable construction. As shown, the link is bifurcated both at its outer and inner ends and straddles at its outer end a bracket L which is secured to the girder E and carries a horizontal arbor *l* which forms the fulcrum of the link. The inner bifurcated end of the link straddles the lower end of the strut and is connected with both ends of the arbor *i* of the roller. The lower end of the strut is provided with a housing *m* for the roller and the girder is provided with a housing *n* for the cam. The strut is pressed downwardly so as to hold the roller closely in contact with the cam by a spring O which is seated at its lower end against a cross piece *p* or other suitable portion of the strut, and which rests with its upper end against an adjustable abutment, for instance, nuts *q* applied to an upright threaded stem or stud *r*. The latter is fastened at its upper end to a bridge tree *s* which is secured to the stationary frame A and extends through an opening in the strut. The adjustable abutment or nut of the spring being applied to a stationary part, the stem or stud *r*, it is not liable to jar loose, and any tendency to jar the nuts loose is counteracted by the pressure of

the spring which would be increased if the nuts should work down on the stud. This arrangement of the parts also permits of the ready removal of the spring.

5 The roller I makes contact with the cam with a minimum amount of friction and the roller and strut are controlled and guided in their up and down movement by the oscillating link also with a minimum
10 amount of friction, so that the mechanism requires a comparatively small amount of power for its operation and is not liable to frequent derangements by wear. The link resists the side thrust of the cam and pre-
15 vents the diaphragm from being pulled away from the stationary frame.

I claim as my invention:

1. The combination with a movable diaphragm and its rotary actuating cam, of an
20 upright actuating member connected at its upper end with the diaphragm, a guide link pivotally connected with the lower end of said member, and a roller arranged at the junction of the link and upright member
25 and making contact with the cam, substantially as set forth.

2. The combination with a movable diaphragm and its rotary actuating cam, of an
30 upright actuating member connected at its upper end with said diaphragm and provided at its lower end with means for engaging said cam, and a guide link pivoted at its outer end to a fixed support and connected at its inner end by a horizontal pivot
35 with the lower end of said upright member, substantially as set forth.

3. The combination with a movable diaphragm and its rotary actuating cam, of an

upright actuating member connected at its upper end with said diaphragm and having a
40 forked lower end, a horizontal arbor secured in said forked end, a roller mounted on said arbor within said fork, and a forked guide link connected with said arbor, substantially as set forth.

4. The combination with a movable diaphragm and its rotary actuating cam, of an
45 upright actuating member connected at its upper end with said diaphragm and having a forked lower end, a horizontal arbor secured in said forked end, a roller mounted
50 on said arbor within said fork, ball bearings arranged within said roller and interposed between said roller and arbor, and a forked guide link connected with said arbor, substantially as set forth.

5. The combination with a stationary support, a movable diaphragm arranged therein and a rotary actuating cam, of an
60 upright actuating member connected at its upper end with said diaphragm, a spring pressing said actuating member against said cam, a screw-threaded stud secured at its upper end to said support and extending
65 downwardly therefrom, and a nut which is applied to said stud and against which the upper end of said spring bears, while the lower end of said spring bears against said upright member, substantially as set
70 forth.

Witness my hand in the presence of two subscribing witnesses.

FRANK G. FEELEY.

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."