Sept. 16, 1924. 1,509,024

J. PARAMOR

MACHINE FOR STRAINING PAPER PULP AND THE LIKE

Filed Feb. 15, 1923

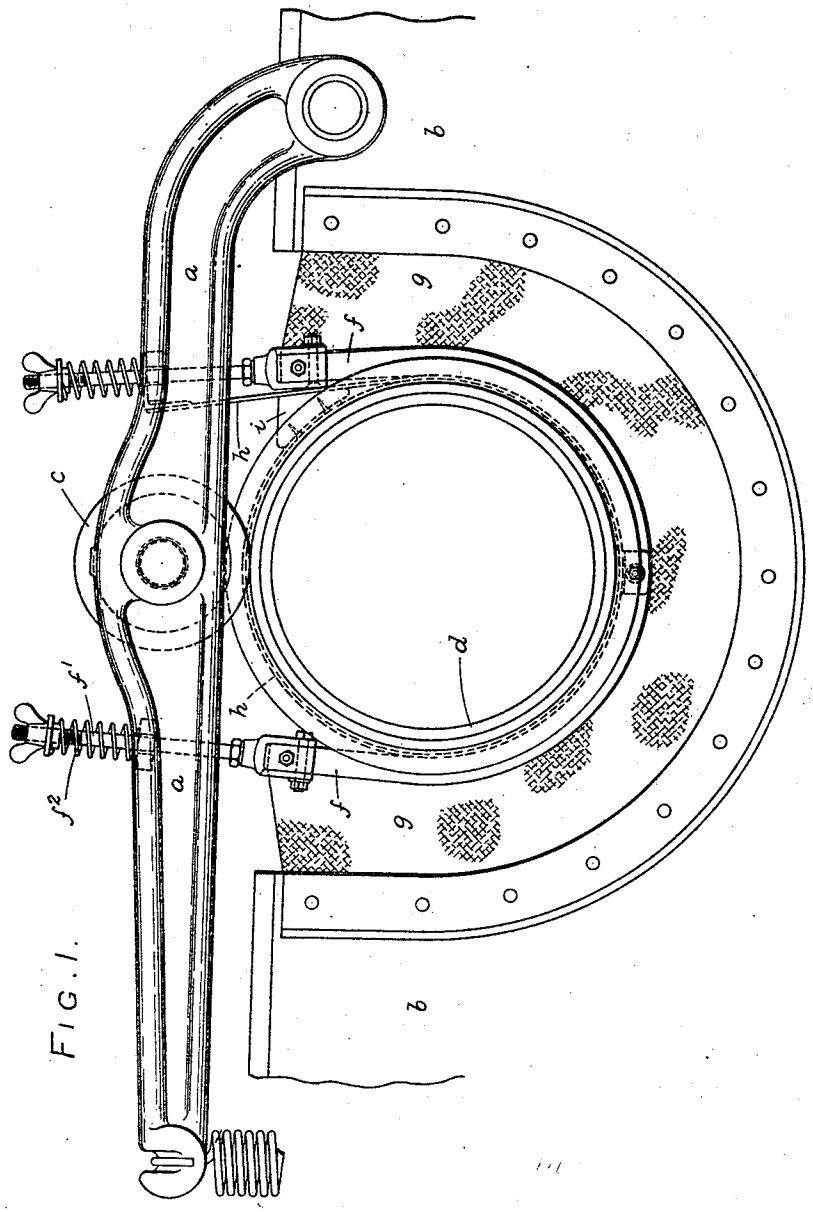


FIG. 1.

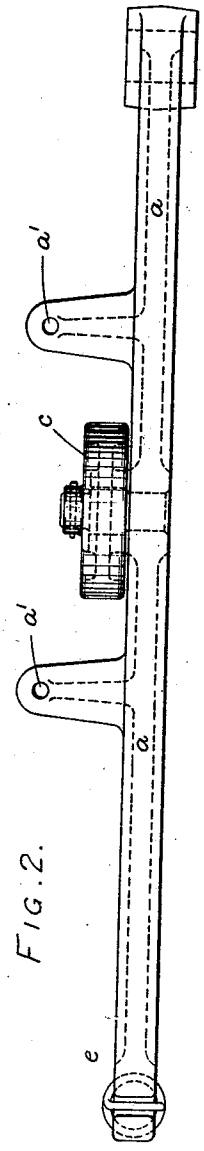


FIG. 2.

INVENTOR.

John Paramor.

Patented Sept. 16, 1924.

1,509,024

UNITED STATES PATENT OFFICE.

JOHN PARAMOR, OF WATFORD, ENGLAND, ASSIGNOR OF ONE-HALF TO THE WATFORD ENGINEERING WORKS, LIMITED, OF WATFORD, ENGLAND.

MACHINE FOR STRAINING PAPER PULP AND THE LIKE.

Application filed February 15, 1923. Serial No. 619,280.

To all whom it may concern:

Be it known that I, JOHN PARAMOR, a subject of the King of Great Britain and Ireland, residing at 6 Kingsfield Road, Watford, in the county of Herts, England, have invented new and useful Improvements in or Applicable to Machines for Straining Paper Pulp and the like, of which the following is a specification.

This invention relates to paper-pulp straining machines of the rotating drum type, wherein the drum is partially immersed in the pulp-vat, and wherein the pulp, in its passage through the straining medium, flows inwardly. My present improvements, although primarily designed for use with inward-flow drum-strainers, are not however confined thereto, but may be applied to drum strainers of the outward-flow type.

In inward-flow machines, it is necessary to provide means for closing the opposite ends of the pulp-vat against the escape of the pulp otherwise than by way of the drum-trunk outlets. For this purpose, it has been proposed to employ diaphragms formed of flexible material whereof one edge is secured to the pulp-vat, whilst the other edge is attached to a semi-circular ring arranged beneath the drum-outlet; this ring being furnished with a face-packing which bears laterally against a flange depending from the drum, or depending from a ring in which each end of the drum rests in the vibrating cradle-arm. Upon a vibratory movement being imparted to the drum, the face packings slide upon the flange surfaces, whilst the flexibility of the diaphragms provides for any slight longitudinal movements to which the drum may be subject. It is also usual with inward-flow strainers to hold the drum down in its cradle-arms by providing each of such arms with a saddle-bar; these saddle-bars passing over the respective drum-trunks and counteracting the tendency of the drum, owing to its buoyancy, to rise in the pulp-vat. The drum is slowly rotated and is subject to rapid vibrations; but the means for supporting, rotating and vibrating, the drum form no part of my present invention.

According to my improved method of construction, I employ saddle-bars, such as above referred to, for holding the drum down in the pulp-vat, and I utilize these for the purpose of supporting the upper edges of pulp-vat closure aprons or diaphragms, the side and lower edges thereof being secured to the pulp-vat; rubbing packings of the face-joint type, for the purpose of preventing leakage due to the vibratory movement of the drum, being dispensed with.

The accompanying drawings illustrate the application of my invention to a paper-pulp straining machine of the rotating and vibrating drum type; Fig. 1 being a face view and Fig. 2 a plan. The means for slowly rotating the drum and at the same time imparting a rapid dither thereto are not however shown, as they form no part of my present invention. Means adapted for such purposes, as also the manner in which the drum is or may be supported, are however described in the specification to my co-pending application Ser. No. 521,520.

Over each of the trunks which subtend the opposite extremities of the straining drum is mounted a saddle-arm *a* pivoted at one end to the pulp-vat *b* and resting by means of a roller *c* upon the drum-trunnion or trunk *d*; the saddle-arm being held down thereon by means of a spring *e* applied at its opposite end. From two points a^1 a^1 in the saddle-bar *a*, on opposite sides of the drum-trunk *d*, is suspended a rubber strap *f* which surrounds the lower side of the drum-trunk; such strap forming a water-tight joint upon the latter, but permitting the drum-trunk to rotate therein. The rubber strap suspending rods f^1 f^1 are supported upon the saddle-bar by means of adjustable springs f^2 f^2. From the outer sides of the strap *f* extends radially an elastic rubber apron *g*, the outer edge of which is secured water-tight to the pulp-vat *b*.

Between the drum-trunk *d* and the rubber strap *f*, I insert a liner *h* composed of raw hide, rubber-canvas or the like, which completely surrounds the drum-trunk but is held against rotation therewith; the extremity thereof towards which the drum-trunk is rotating being secured to the saddle-bar *a* as shown. Where the drum-trunk surface, in the course of its rotation, meets a stationary surface, there is a tendency for small particles of "stuff" or "knots" to be drawn in between the two surfaces, leakage resulting; but according to my improved

construction, the relative movement is between the outer surface of the drum-trunk *d* and the inner surface of the liner *h*, and not between the outer surface of the latter and the rubber strap *f*. As already stated, the liner is in close contact with the drum-trunk throughout the periphery of the latter, and leaves no V-shaped pocket for the entry of "knots" between their contacting surfaces. For further protection against the intrusion of "knots" between the drum-trunk surface and the liner *h*, I provide the trailing end of the latter with a block *i* which occupies the V-space between that end of the liner and the upwardly extending portion thereof.

I prefer to form the liners *h* of rubber with canvas insertion, but raw hide, felt, canvas or the like, may be substituted therefor. Similarly, the straps *f*, to which the inner edges of the aprons or diaphragms *g* are attached, may, if desired, be composed of material other than rubber.

I claim:—

1. A paper-pulp straining machine of the rotating and vibrating drum type wherein the drum-trunks are partially enclosed in loops of flexible straps suspended from pivoted saddle-arms, the looped portions of the straps which embrace the lower portions of the drum-trunks being attached to the inner edges of aprons formed of elastic material, whilst the outer edges of the said aprons are secured water-tight to the pulp-vat.

2. In a paper-pulp straining machine of the rotating and vibrating drum type, the combination, with the respective drum-trunks, of a pivoted saddle-arm, a looped strap of flexible material suspended from the said saddle-arm and embracing the lower portion of the drum-trunks, and an apron composed of elastic material; the inner edge of the elastic apron being attached to the looped portion of the strap, whilst the outer edge thereof is secured water-tight to the pulp-vat.

3. In a paper-pulp straining machine of the rotating and vibrating drum type, the combination, with the respective drum-trunks, of a pivoted saddle-arm and a looped strap of flexible material suspended therefrom; the said saddle-arm serving, in the case of an inward-flow strainer, to hold the drum down in the pulp contained in the pulp-vat.

4. In a paper-pulp straining machine of the rotating and vibrating drum type, the combination, with the respective drum-trunks and a looped strap of flexible material which surrounds the lower portion thereof, of a liner, composed of rubber-canvas, raw hide or other suitable material, interposed between the drum-trunk and the looped strap.

JOHN PARAMOR.