(No Model.) 2 Sheets—Sheet 1.

J. WHITE.

APPARATUS FOR STRAINING PAPER PULP.

No. 498,041. Patented May 23, 1893.

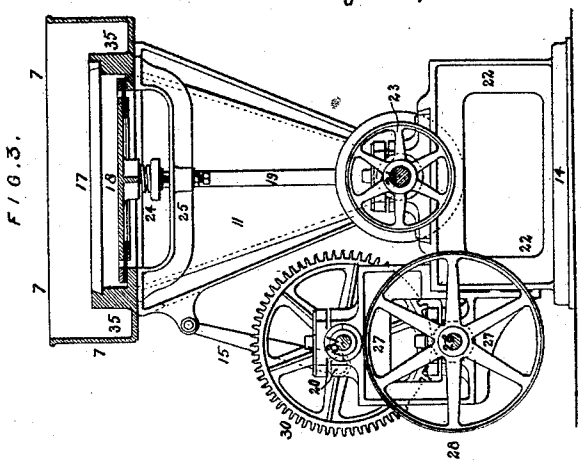

FIG. 3.

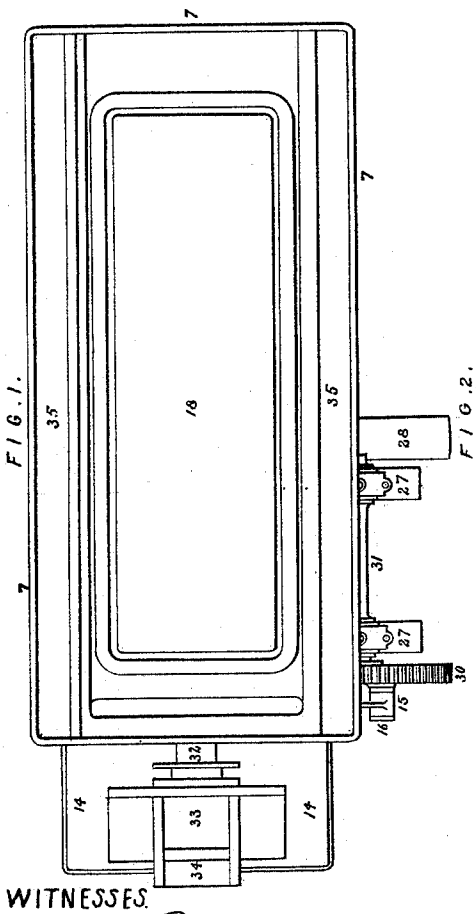

FIG. 1.

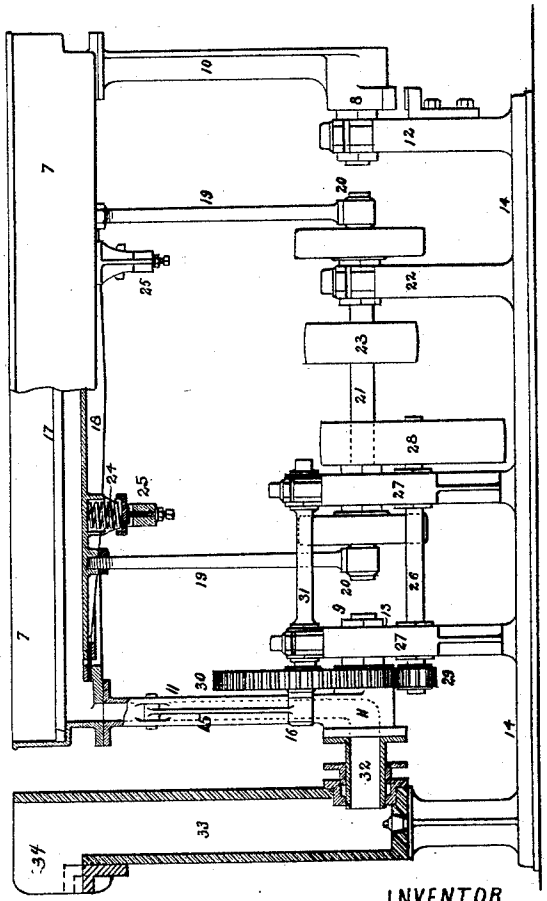

FIG. 2.

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(No Model.) 2 Sheets—Sheet 2.

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FIG. 6.

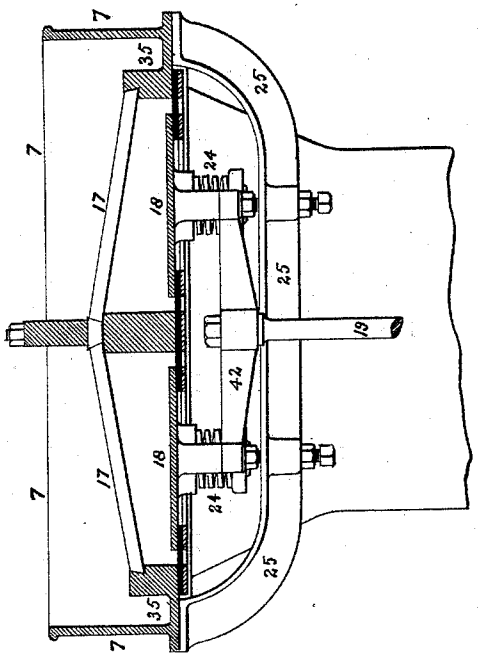


FIG. 4.

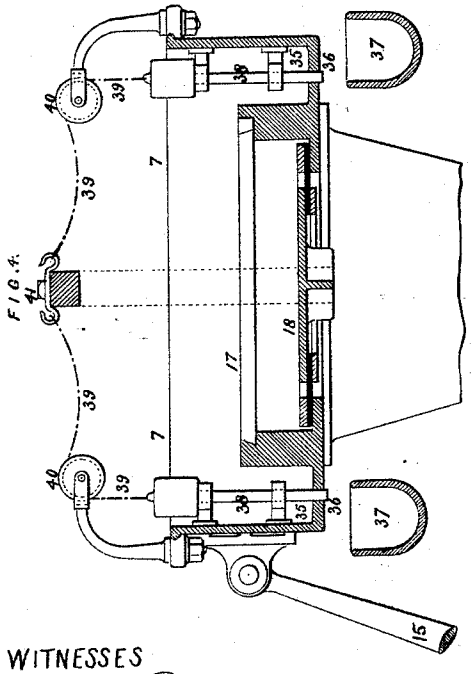
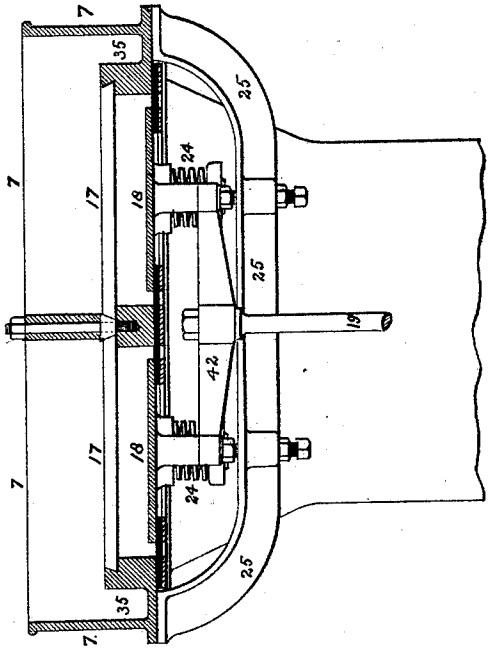


FIG. 5.



WITNESSES

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James Gracie

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UNITED STATES PATENT OFFICE.

JOHN WHITE, OF EDINBURGH, SCOTLAND.

APPARATUS FOR STRAINING PAPER-PULP.

SPECIFICATION forming part of Letters Patent No. 498,041, dated May 23, 1893.

Application filed July 8, 1892. Serial No. 439,314. (No model.)

To all whom it may concern:

Be it known that I, JOHN WHITE, a subject of the Queen of Great Britain and Ireland, and a resident of Edinburgh, in the county of Mid-Lothian, Scotland, have invented certain Improvements in Apparatus for Straining Paper-Pulp, of which the following is a specification.

This invention relates to the class of pulp-straining apparatus in which flat plates ordinarily fixed in a horizontal position are employed; and it consists in imparting an oscillating or rocking motion to the vat or vessel in which the straining operation is effected, and in constructions connected therewith, whereby the action is improved and various practical advantages are obtained.

Figure 1, of the drawings is a plan, and Figs. 2, and 3, are sectional side and end elevations of one example of my improved pulp strainers; and Figs. 4, 5, and 6, are transverse vertical sections of other examples of the upper part of the apparatus.

In these drawings the same reference numerals are used to mark the same or like parts wherever they are repeated.

In carrying out my invention the strainer vat, 7, is supported by journals, 8, 9, fixed in downward end extensions, 10, 11, fixed to the vat, these journals resting in bearings, 12, 13, on a fixed bedframe, 14. The vat, 7, is made to oscillate or rock by means of a connecting rod, 15, jointed to it and to a slowly rotating crank pin, 16; or the motion might be derived from an eccentric or from a cam which last can be shaped to give whatever particular motion may be found best in practice.

Beneath the strainer plates, 17, (which are not shown in Fig. 1,) in the vat, 7, a pulsating diaphragm, 18, is arranged in the usual manner, and is made to reciprocate by means of rods, 19, fixed to them and jointed upon small-throw cranks, 20, on a rotating shaft, 21, situated directly below the vat and in line with the axis on which the vat rocks. The shaft, 21, is carried in bearings, 22, on the bedframe, 14, and has on it a pulley, 23, for a driving belt. The diaphragms are borne up by adjustable springs, 24, resting on cross bars, 25, fixed to the vat, 7. For giving rocking motion to the vat, a separate shaft, 26, is provided, in bearings, 27, and having on it a pulley, 28, for a driving belt. The shaft, 26, by a pinion, 29, and spurwheel, 30, drives a second-motion shaft, 31, the crank pin, 16, for giving the rocking motion being on the spurwheel, 30. The strained pulp passes from the space below the strainer plates, 17, in the vat, 7, down one, 11, of the end parts which is made hollow, and through a hollow trunnion, 32, which is concentric with the axis on which the vat rocks, and which extends through a stuffing box into a box, 33, having an overflow outlet, 34, the bottom of which is adjustable so as to maintain the desired head of pulp in the strainer vat, 7.

The strainer vat, 7, is made with channels, 35, along each side (or, it might be, a single channel along one side) of the strainer plates, 17; and when the pulp contains fibers which refuse to go through the strainer plates, such fibers accumulate in the channels, 35, from which they may be removed from time to time. Or, as shown in Fig. 4, each channel, 35, may be provided with one or more valve outlets, 36, through which the refuse fibers pass out in small quantities at a time into stationary gutters, 37. The valve outlets, 36, are closed by weighted plungers, 38, fitted to work in guides fixed to the vat, and connected by chains, 39, passing over pulleys, 40, to hooks, 41, fixed to a bracket or arm secured to the stationary part of the machine. As each side of the vat descends with the rocking motion the chain, 39, on that side tightens, and draws the plunger, 38, up out of the valve outlet, 36, so as to let some pulp escape from the channel. The duration of opening may be adjusted by lengthening or shortening the chains, 39; and the chains may be unhooked, whenever it is considered undesirable to allow any pulp to escape from the channels, 35.

The strainer vat, 7, may be fitted with a single strainer plate, 17, and with a single pulsating diaphragm, 18, as in the modification shown in Figs. 1, to 4, or it may be fitted with two strainer plates, 17, and two pulsating diaphragms, 18, as shown in Figs. 5, and 6, the two strainer plates, 17, being either level with each other as shown in Fig. 5, or slightly inclined to each other as shown in Fig. 6. The two pulsating diaphragms, 18, may be worked by means of crossheads, 42, to which the connecting rods, 19, are fixed. The oscillating or rocking motion of the strainer vat, 7, causes

the pulp to wash across the strainer plates, 17, and the wash removes fibers or materials which will not go through the strainer plates, taking them into the side channels, 35, whence they may pass off through the valve outlets, 36.

My improvements may be applied to pulp-straining apparatus of various existing kinds and differing in the precise arrangements of the gearing and in other respects from what is shown in the accompanying drawings and hereinbefore described.

My oscillating motion may be applied to what is known as an ordinary "jigger" strainer, as well as to other forms.

What I claim is—

1. In an apparatus for straining paper pulp, a vat in which the pulp is strained, the said vat having a rocking motion and means substantially as described for giving such motion to the vat.

2. In a pulp strainer, the combination of a vat mounted on trunnions with a connecting rod jointed at one end to the vat, and a rotating crank pin to actuate the said rod, substantially as and for the purpose set forth.

3. In a pulp strainer, the combination of a vat provided with channels 35 each channel having one or more outlets, and valves for said outlets with means for oscillating the said vat and devices substantially as described for automatically opening and closing the said outlet valves by the rocking motion of the vat, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN WHITE.

Witnesses:

EDMUND HUNT,

DAVID FERGUSON.