

No. 639,882.

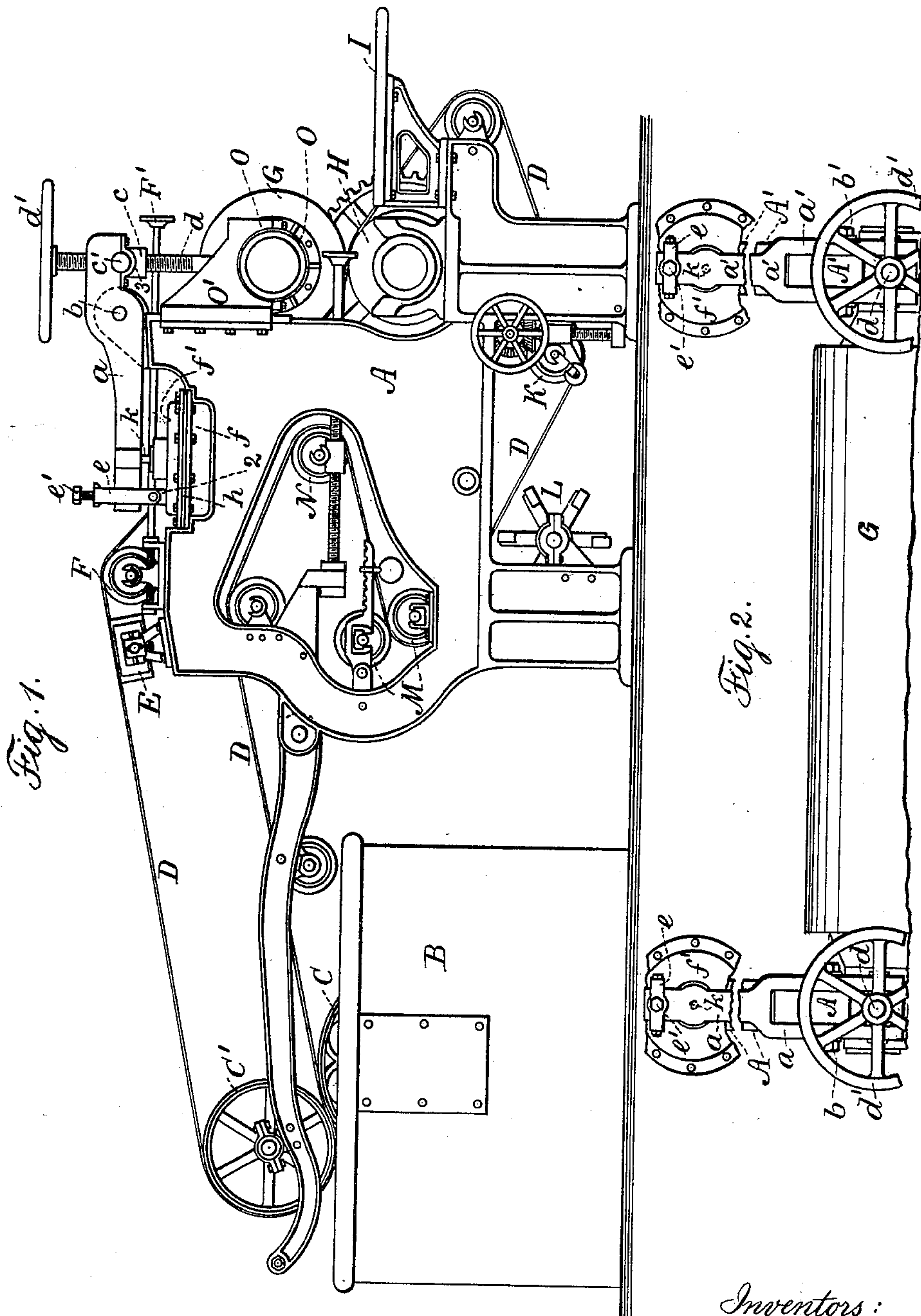
Patented Dec. 26, 1899.

J. H. BAKER, G. F. SHEVLIN & F. H. BAKER.
WET MACHINE FOR WOOD PULP.

(Application filed Feb. 1, 1899.)

(No Model.)

2 Sheets—Sheet 1.



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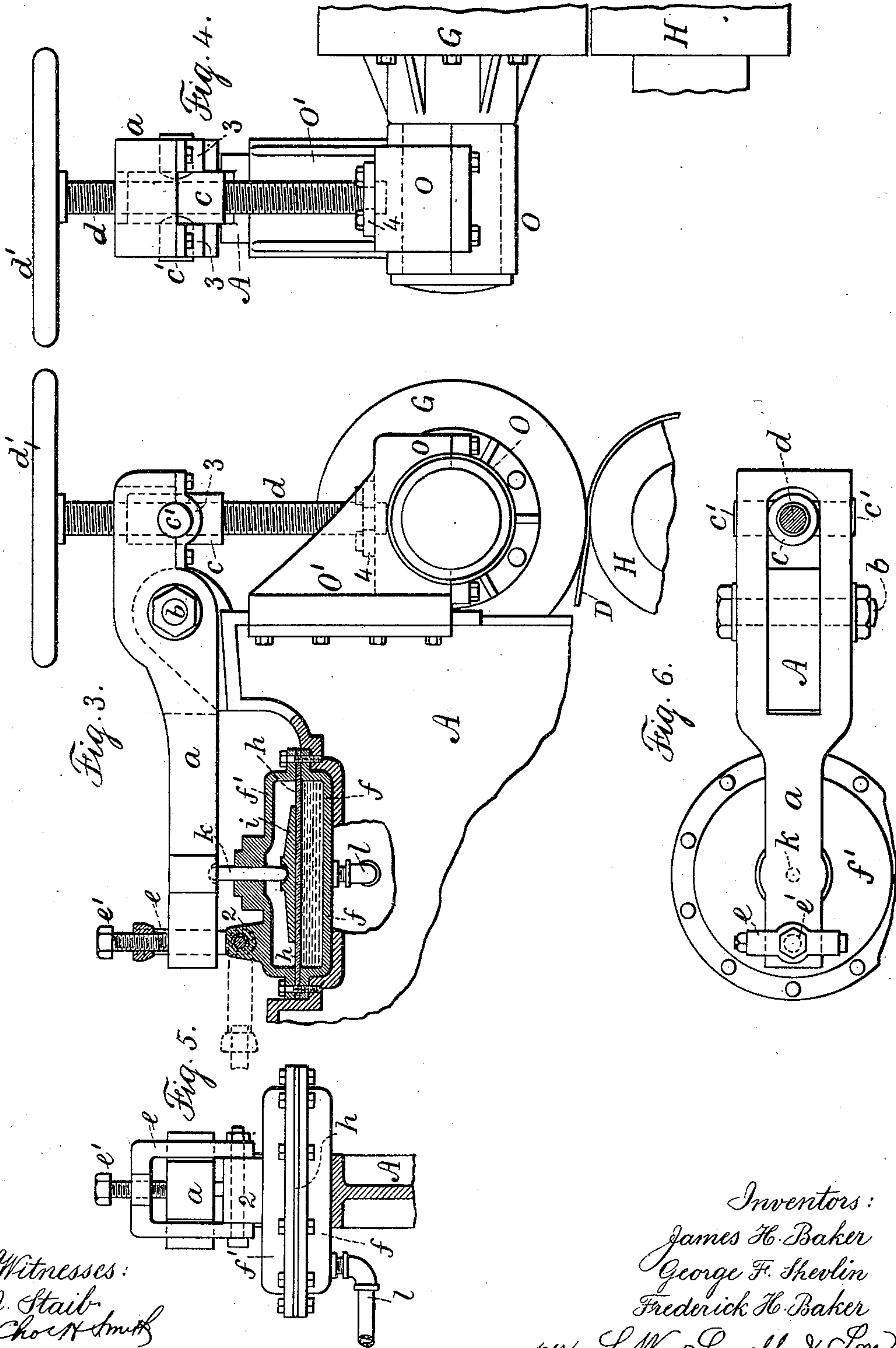
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UNITED STATES PATENT OFFICE.

JAMES H. BAKER, GEORGE F. SHEVLIN, AND FREDERICK H. BAKER, OF
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WET MACHINE FOR WOOD-PULP.

SPECIFICATION forming part of Letters Patent No. 639,882, dated December 26, 1899.

Application filed February 1, 1899. Serial No. 704,074. (No model.)

To all whom it may concern:

Be it known that we, JAMES H. BAKER, GEORGE F. SHEVLIN, and FREDERICK H. BAKER, citizens of the United States, residing at Saratoga Springs, in the county of Saratoga and State of New York, have invented an Improvement in Wet Machines for Wood-Pulp, of which the following is a specification.

Our invention relates to means for applying pressure on the upper roller of the pair of rolls used in this type of machines for pressing the water out of the pulp. Heretofore in these machines strong springs have been employed, on which the screws to apply tension thereto have been brought to bear. It has been almost impossible with these springs to insure the same pressure on both ends of the roll, and also as the pulp is gathered on the roll the pressure accumulates as the spring is forced together to make room for the pulp, (hence the pressure is constantly increasing, whereas it is advantageous that the pressure should be uniform;) and the object of our invention is to secure the same pressure at both ends of the roll and also a uniform pressure at all times as the pulp is gathered upon the roll.

In carrying out our invention we employ on each side of the machine a lever pivoted upon the upper portion of the frame of the machine. One end of the lever carries a nut with trunnions, and through the nut a screw passes that is at its lower end connected to the bearing of the roll and at its upper end is provided with a hand-wheel. The other end of the lever extends over a diaphragm, and a rod passing through the upper member of the case comes against the under side of the lever and rests at its other end upon a plate upon the diaphragm, and water under constant pressure in the lower part of the diaphragm-case exerts a pressure upon the diaphragm through the rod, lever, and screw upon the bearing at the end of the roller, and a clevis pivoted to the diaphragm-cover performs a function in connection with the lever hereinafter described. These parts are duplicated at the other side of the machine.

In the drawings, Figure 1 is a side elevation of a wet machine for wood-pulp embodying our improvement. Fig. 2 is a plan view

of the levers, the upper roller, and adjacent parts. Fig. 3 is a side elevation and partial section representing our improvements. Fig. 4 is an elevation at one end, and Fig. 5 an elevation at the other end, of the lever; and Fig. 6, a plan of the lever and diaphragm-case.

The parts of the wet machine for wood-pulp illustrated in Fig. 1 are substantially as follows: A A' represent the frames of the machine; B, the pulp-vat; C, the couch-roll for gathering up the pulp from the vat and delivering the same upon the felt belt D, which runs over this roll and around the roller C'. E represents a suction-box over which the felt belt passes, and F an adjusting-roller operated by a hand-wheel F'. G is the upper of the pair of presser-rollers, and H the lower roller, and I a table to receive the pulp-board after the same is severed upon the roller G and delivered. K is an adjusting-roll for bringing the felt belt against the beater L. M are squeezing-rollers for removing the water, and N a stretch-roller for tightening the felt belt. These parts are well known in this class of machines and do not require further description.

The upper roller G is supported in bearings O, connected to brackets O', the brackets sliding on the vertical edge of the frame of the machine.

The special features of our improvement relate to the levers *a a'*, pivoted at the bolts *b b'* to projections rising from the top of the frames of the machine and shown as entering the mortises.

The nuts *c*, with trunnions *c'*, are connected to the levers *a a'* at one end by the straps 3. The screws *d* pass through these nuts *c*. On the upper ends of the screws are the hand-wheels *d'*, and near the lower ends of the screws are annular grooves for the securing-plates 4, which connect the screws to the bearing-boxes of the roller G. Resting upon and secured to the upper part of the frames A A' at each side of the machine are the parts *f f'* of a diaphragm-case, between which parts is the diaphragm *h*, preferably of a sheet of heavy rubber, and resting upon this diaphragm is a plate *i* of metal, that receives the lower end of the vertical rod *k*, which passes

up through an opening in the top f' of the case and bears against the under side of the lever a near one end.

The lower part of the diaphragm-case is to be filled with fluid under pressure supplied through a pipe l from any suitable source, the supply and the means for securing the pressure forming no part of our invention. Upon the part f' of each diaphragm-case there is an ear 2, and pivoted to this is a clevis e , with a screw e' . The clevis may occupy the position shown in Figs. 1, 3, and 5, where the screw e' bears upon the upper surface of the lever near one end. The clevis may be turned down out of the way, as shown by dotted lines, Fig. 3. These parts are duplicated upon the other side of the machine, and the description of one applies with equal force to both.

In the operation of our improvement each screw d is operated by the hand-wheel d' to vertically move the upper roll and regulate the relation of the rolls to each other. The pressure of the fluid in the diaphragm-cases acts upon the diaphragms to raise the same and to move the rods k upward and swing the levers a a' and produce the pressure upon the upper roll G , and as the upper roll gathers the pulp upon it the levers a a' move slightly upon their pivots, but the pressure does not vary. In other words, the same pressure is maintained whether the felt belt alone is between the rolls or whether the roll has the pulp gathered upon it. The nuts c , with their trunnions c' , swing with the movement of the levers, so that the relation of the parts is maintained without undue strain. Each clevis e and its screw e' are brought into play when it is desired for any purpose to raise or support the upper roll G from the lower roll H . In doing this the clevis e and its screw e' at each side of the machine hold the long arm of the lever and the roll is lifted at the short arm of the lever, and the screws d , operated by the hand-wheels d' , can be turned to raise the roll G to any desired extent. The clevises e and their screws e' perform another function and for which purpose they are preferably left in an upright position—viz., the adjustable screws e' are so set that when the accumulated pulp upon the upper pressure-roller is removed said roller will lower until the levers are stopped by the screws e' , so that the upper roller will be suspended and will just bear upon the felt belt preparatory to repeating the operation.

The devices of our improvement are simple and strong and the pressure is maintained constantly and to any desired extent.

We claim as our invention—

1. In a wet machine for paper-pulp, the combination with the frame and the upper and lower pressure-rollers, of a lever at each side of the machine pivoted upon the frame, adjustable means connected to one end of the lever and acting against the bearing of the upper roller, and a diaphragm and fluid under pressure for applying a constant and reg-

ulable pressure at the other end of the lever, substantially as set forth.

2. In a machine for paper-pulp, the combination with the frame and the pressure-roller, of a lever at each side of the machine pivoted upon the upper portion of the frame, a screw connected at its lower end to the bearing of the upper pressure-roller and having a nut connected to one end of the lever, a diaphragm and means for applying pressure thereto and therefrom to the longer end of the lever, substantially as set forth.

3. In a wet machine for paper-pulp, the combination with the frame and the pressure-rollers, of a lever at each side of the machine pivoted to a projection rising from the upper part of the main frame, a nut with trunnions at one end of the lever, a screw passing through the nut, a hand-wheel for operating the screw and a connection at the lower end of the screw to the bearing of the upper pressure-roller, a diaphragm-case connected to the frame of the machine and a diaphragm inclosed therein, a rod passing through the upper part of the case and bearing at one end upon the under side of the lever and at its other end upon the diaphragm, and a pipe for supplying fluid under pressure below the diaphragm, substantially as and for the purposes set forth.

4. In a wet machine for paper-pulp, the combination with the frame and the upper and lower pressure rollers, of a lever at each side of the machine pivoted upon the frame, a nut connected to said lever, a screw passing through the nut, a hand-wheel for operating the screw, and a connection at the lower end of the screw to the bearing-box of the pressure-roller, a clevis e near the other end of the lever and a screw in said clevis to act upon the lever, substantially as and for the purposes set forth.

5. The combination in a wet machine for paper-pulp having upper and lower pressure-rolls and moving bearings for the movable roll, of a lever at each side of the machine, a case and diaphragm for applying fluid-pressure to the lever, an adjustable connection between the lever and the moving bearing for the roller and a clevis at the longer end of the lever for holding the same while the connection between the lever and the bearing is being adjusted, substantially as specified.

6. The combination in a wet machine for paper-pulp having upper and lower pressure-rolls and moving bearings for the movable roll, of a lever at each side of the machine, a case and diaphragm for applying fluid-pressure to the lever, an adjustable connection between the lever and the moving bearing for the roller and a clevis at the longer end of the lever for holding the same and a screw through the clevis for acting on the lever, substantially as specified.

7. In a wet machine for paper-pulp, the combination with the frame and the upper and lower pressure-rollers, the felt belt and movable bearings for the upper roller, of a lever at

each side of the machine pivoted between the
ends upon the frame, adjustable means con-
nected to the short end of each lever in engage-
ment with and acting against the said bearings
5 of the upper roller, adjustable screws and
means for connecting the same to the frame
of the machine adjacent to the long ends of
said levers, whereby said screws may be set
so as to bear against said levers and effect the
10 suspension of the upper roller in close prox-

imity to the belt when the accumulated pulp
has been removed, substantially as set forth.
Signed by us this 21st day of January, 1899.

JAMES H. BAKER.
GEO. F. SHEVLIN.
FREDERICK H. BAKER.

Witnesses:

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FRANK GICK.