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HYDRAULIC PRESSING DEVICE FOR APPLICATION TO THE PRESS ROLLS OF PULP OR PAPER MAKING MACHINES.

APPLICATION FILED MAY 8, 1908.

**900,985.** **Patented Oct. 13, 1908.**

Fig. 2.

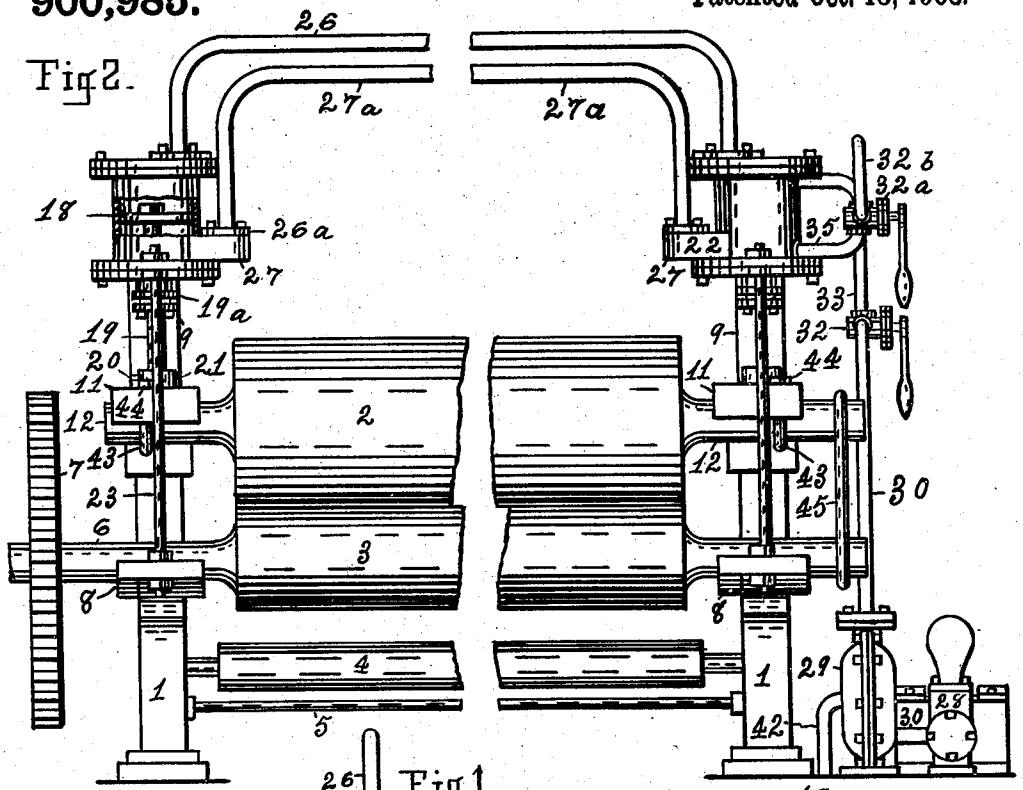



Fig. 1.

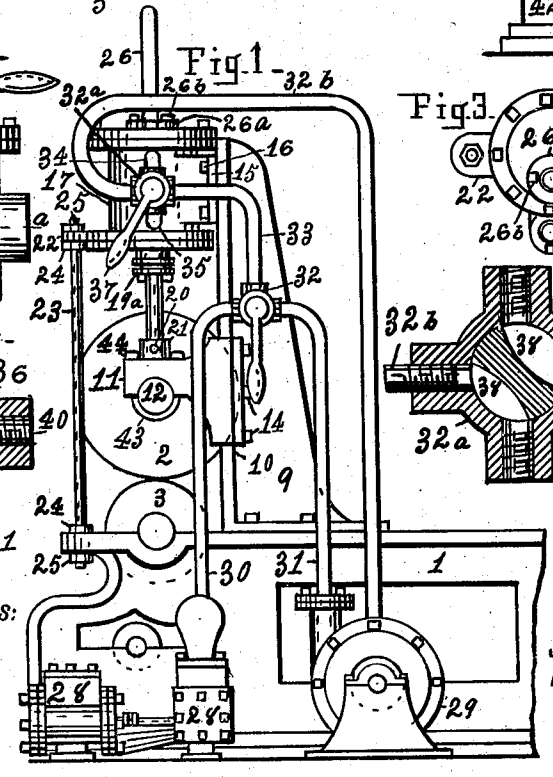



Fig. 3.

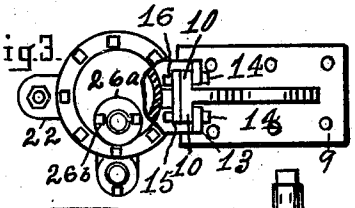



Fig. 4.

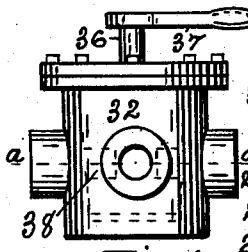



Fig. 5.

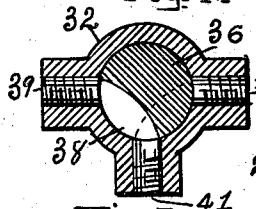
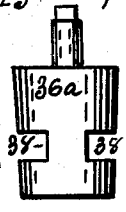



Fig. 6.




Fig. 7.




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## HYDRAULIC PRESSING DEVICE FOR APPLICATION TO THE PRESS-ROLLS OF PULP OR PAPER MAKING MACHINES.

No. 900,985. Specification of Letters Patent. Patented Oct. 13, 1908.

Application filed May 8, 1908. Serial No. 431,602.

*To all whom it may concern:*

Be it known that I, JOHN LOUIS COENEN, a citizen of the United States, residing at Little Chute, in the county of Outagamie and State of Wisconsin, have invented a new and useful Hydraulic Pressing Device for Application to the Press-Rolls of Pulp or Paper Making Machines.

My invention relates to improvements in the manner of applying hydraulic pressure to rolls which are used in the manufacture of paper, and is particularly designed to be applied to the upper roll in a "wet machine" for making pulp and forming it into sheets, and its object is, to facilitate the control of the pressure upon the roll by means of a hydraulic pressure cylinder connected directly to the journal box of the upper roll, said pressure being supplied preferably, by two pumps capable of delivering degrees of pressure varying widely, and having pipes for delivering water from each pump to the hydraulic cylinders connected with the two journals of the roll, said pipes being supplied with two valves which are arranged in position for easy access by the operator, and where he can apply the force from either pump and to either end of the hydraulic pressure cylinders by the swinging of levers within easy reach for operating each valve, the mechanism being shown in the accompanying drawing, in which,—

Figure 1 is a side elevation of a portion of one end of the frame of a "wet machine", and showing the press rolls therein, a hydraulic cylinder above the journals of said rolls, a high and a low pressure pump, and an arrangement of pipes leading from the pumps to the cylinder, with their valves. Fig. 2 is a front elevation of a "wet machine" and showing the rolls with their journals supported upon the frame, the hydraulic cylinders in position above the journals, and the pipes connecting the two cylinders, and an end elevation of the two pumps, the rolls and pipes being broken midway their ends. Fig. 3 is a plan of the hydraulic cylinder end and showing the manner in which it is secured to the machine frame standard, and also, the manner in which the journal boxes are arranged to slide up and down upon it. Fig. 4 is a side elevation of a valve which I employ, which is supplied with more than two inlets or outlets. Fig. 5 is a horizontal section upon the line *a*, *a*, of Fig. 4, of the lower half of a three way valve. Fig. 6 is a like section of a cut off, or four way valve. Fig. 7 is a side elevation of the stem of the four way valve. Figs. 4, 5, 6 and 7 are upon a larger scale than the other figures.

Similar numerals and letters indicate like parts in the several views.

1, indicates the frame of the machine which supports the pressing rolls 2 and 3 and also a small roll 4, the two end frames being spaced apart and held together with a rod 5. The roll 3 is provided with journals 6, one of which is extended and carries a gear wheel 7 by which the rolls may be driven from a suitable source of power, said journals being mounted in journal boxes 8, upon the frame 1. Rising from each frame 1, is a standard 9, having planed wings, or ways, 10, upon which journal boxes 11, are arranged to slide vertically, the journals 12 of the roll 2 being half inclosed by said boxes.

The boxes 11 are held to the standard wings 10 by keepers 13, one being bolted to each end of the journal box with bolts 14. Bolted to each standard near their upper ends through bracket 15 with bolts 16 is a hydraulic pressure cylinder 17, having piston 18, piston rod 19, and stuffing box 19$^a$, they being of the ordinary construction for such parts. The lower end of the piston rod is connected with a journal box 11 by means of a pin, 20, through the boss 21, of the journal box. The piston normally occupies a position in the cylinder midway its ends. Extending out from the lower end of each cylinder is an arm 22, from which a rod 23, screw threaded and provided with adjusting nuts 24 and securing nuts 25 extends downward to the frame 1 for assisting in supporting the cylinder and also, in relieving the bracket 15 from too much of a strain as pressure is applied upon the journal boxes 11.

Extending upward from each cylinder are pipes 26, which connect the water spaces at the upper ends of the cylinders, and near the lower ends of the cylinders an arm 27, extends outward and from which a pipe 27$^a$, extends and connects the two arms and the interior of the lower ends of the cylinders. The ends of the pipes are provided with circular disks 26$^a$, for their connection at the desired point by means of bolts 26$^b$. For providing the needed pressure in the cylinders, two pumps are preferably used, one, 28, being a high pressure pump capable of de-

livering a pressure of 75 to 100 pounds per square inch, and the other, 29, only 10 to 20 pounds. A pipe 30, leads from the high pressure pump and one 31, from the low pressure pump to the three way valve 32, and from which valve a pipe 33 extends to a cut off, or four way valve $32^a$, and from which latter valve pipes 34 and 35, extend to the cylinder nearest the pumps, the pipe 34 connecting the four way valve with the water space in the cylinder above its piston for producing the desired pressure of the upper roll upon the lower one, and the pipe 35 connecting the valve with the space below the piston for lessening the pressure or raising the roll the required amount.

It will be observed by referring to Fig. 5, that by turning the stem 36 of the valve by means of its lever handle 37, by reason of the cut away portion 38 in its stem, the current of water which enters through one of the openings, 39 or 40, will be directed to the outlet 41, so that the pressure from either pump can be directed to the cylinder, as occasion requires, and in Fig. 6, water entering the pipe 33 will pass to either end of the cylinder accordingly as the stem is turned, and at the same time permit the opposite end of the cylinder to be relieved of its water through the pipe $32^b$. The valve $32^a$ is provided with a pipe $32^b$ for relieving one end of the cylinder of water while pressure is being applied to the opposite end. The pumps are to be supplied with water from a suitable source, the pump 29 through the pipe 42 and the pump 30, through a pipe not shown, they delivering it as before described through their respective delivery pipes. No particular style or make of pumps are deemed essential.

For raising the upper roll entirely free from the lower roll for putting on or removing a felt, or for any other purpose, a loop 43, incloses the journal 11 upon both ends of the roll, or if only one end is required to be raised, then upon one end only, the loop being connected with the journal box 12 by means of nuts 44 upon the ends of the loop, and for raising one end of the lower roll, a link 45 is slipped over an end of a journal of each roll. The pressure cylinders being directly over the journals of the pressing roll, and with no intervening mechanism to require the attention of the operator their action can be instantaneously applied by merely swinging the lever handles of the valves, so that upon the occasion of a "crush" of the pulp relief can be instantaneous.

I am aware that it is not new to apply a hydraulic pressure to pressing rolls for various purposes, but I am not aware that it has been applied in as direct and simple manner as is herein shown and described, and with as few pieces entering into its construction.

Having described my invention, what I claim and desire to secure by Letters Patent, is,—

1. In a hydraulic device for a press roll, a frame for supporting a pair of rolls, a standard arranged vertically upon the frame at each end of the rolls, a planed way upon each standard, a journal box above each journal of the pressing roll arranged for a vertical movement along said ways, a loop extending downward from a journal box, around a journal and being secured to said journal box, a water pressure cylinder secured to said standard above each journal box, a piston in each cylinder, a piston rod extending downward from each piston, a connection between the lower end of each rod and a journal box of said roll, a stuffing box upon the lower end of each cylinder through which a piston rod passes, pipes arranged for connecting corresponding water spaces in the upper and lower ends of the cylinders, a suitable pump and source of water supply for producing the required pressure in the cylinders, pipes arranged for delivering water from said pump to a cut off valve, a cut off valve, pipes for directing the water from said pump to each end of one of said cylinders and also, for relieving the end of said cylinder opposite to that in which pressure is being applied, of pressure.

2. In a hydraulic device for a press roll, a frame for supporting the rolls, a standard arranged vertically upon the frame at each end of the rolls, a journal box for the pressing roll arranged for a vertical movement upon the standards and means for causing a journal of said roll to accompany the box in said movement, a water pressure cylinder secured to each standard directly above a journal box at each end of said roll, a piston in each cylinder, a piston rod extending downward from each piston, and a connection between the lower end of each piston rod and a journal box of the roll, a stuffing box upon each cylinder through which a piston rod passes, pipes arranged for connecting corresponding water spaces in the upper and lower ends of the cylinders, a high pressure pump, a low pressure pump, each having a suitable water supply, a pipe leading from each pump to a three way valve, a pipe leading from said three way valve to a cut off, or four way valve, pipes arranged for delivering water from said last named valve to both upper and lower ends of one of said cylinders, and a pipe for relieving the cylinder upon the side of the piston opposite to that upon which pressure is being applied of water, in accordance with the position into which the stem of said valve is turned.

3. In a hydraulic device for a press roll, a frame for supporting a pair of rolls, a journal box above each journal of the pressing roll arranged to slide upon a vertically arranged standard of the frame, means for causing a

journal of the pressing roll to rise and fall with its box, a water pressure cylinder secured to each standard above said journal boxes, an arm extending outward from near the lower end of each cylinder, a rod extending downward from each of said arms to the machine frame, adjusting and securing nuts on each end of said rod, a piston in each cylinder arranged for a reciprocation therein, a piston rod extending downward from each piston and being connected with a journal box thereunder, a stuffing box below each cylinder through which the piston rod passes, pipes arranged between said cylinders and communicating with the interior of corresponding ends of said cylinders, and means for producing a water pressure, simultaneously in each cylinder above or below its piston and of relieving the end of the cylinder opposite to that upon which pressure is being applied, of water.

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