Sept. 5, 1933. A. H. STANDLEY ET AL 1,925,972

PRIMARY PRESS SECTION FOR PAPER MACHINES

Filed July 18, 1932 3 Sheets-Sheet 1

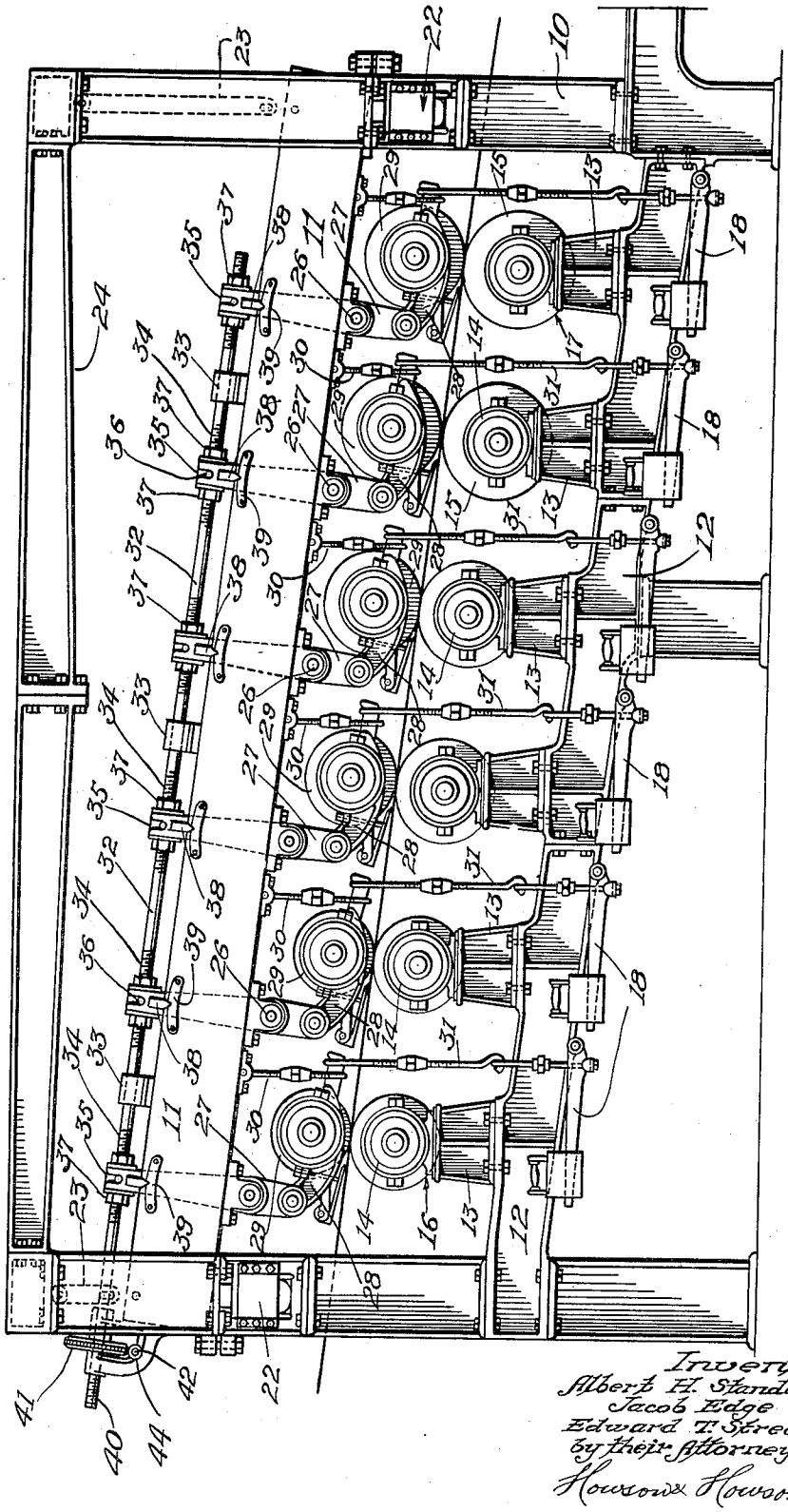


Fig. 1

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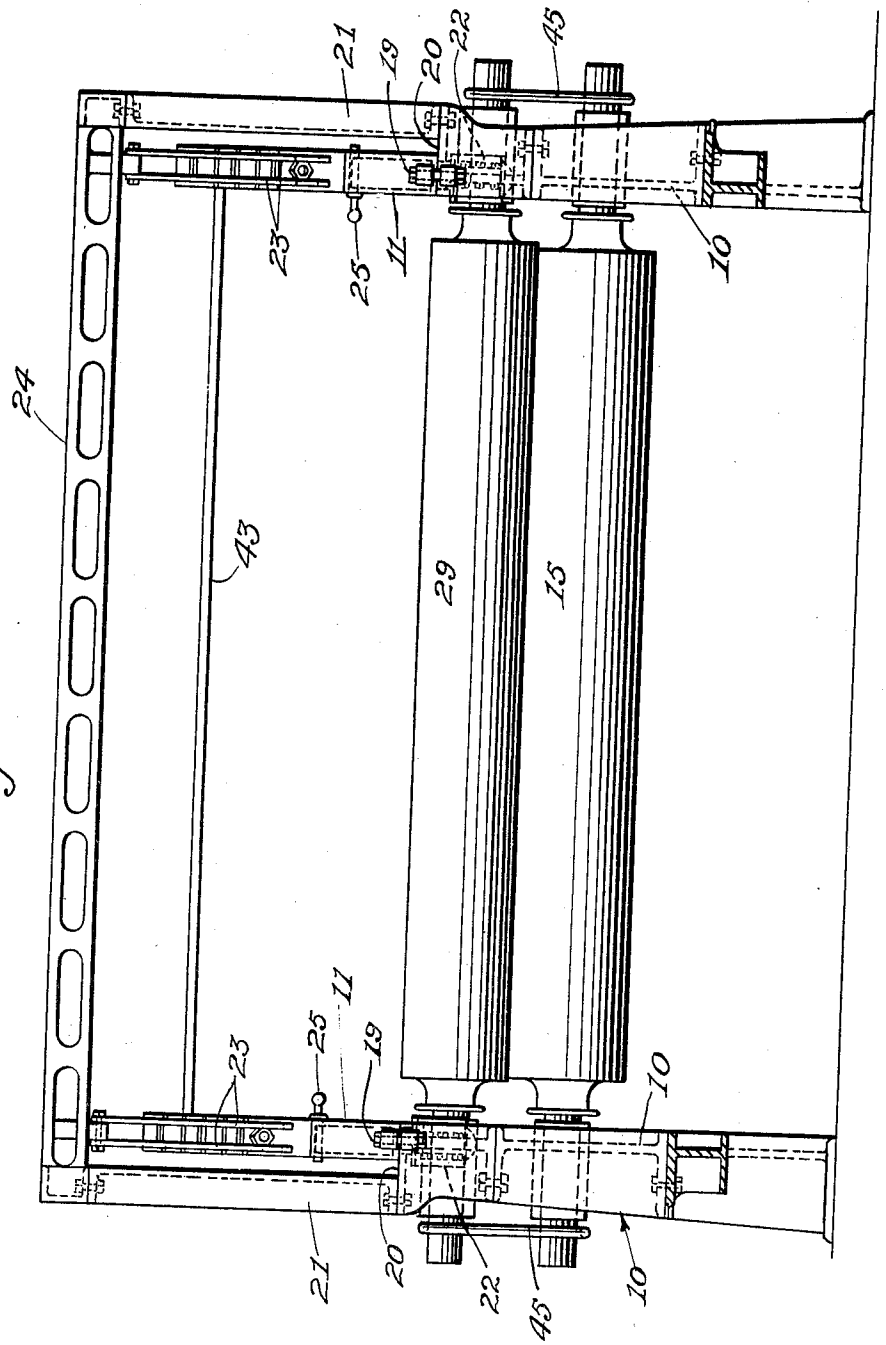


Fig. 2.

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Fig. 4.

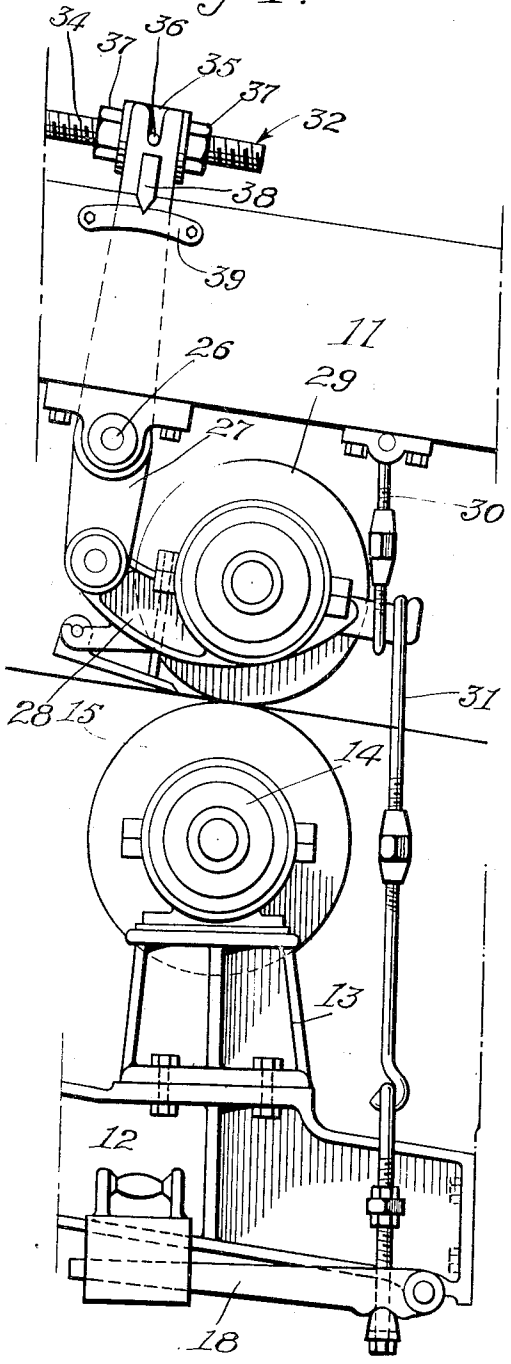
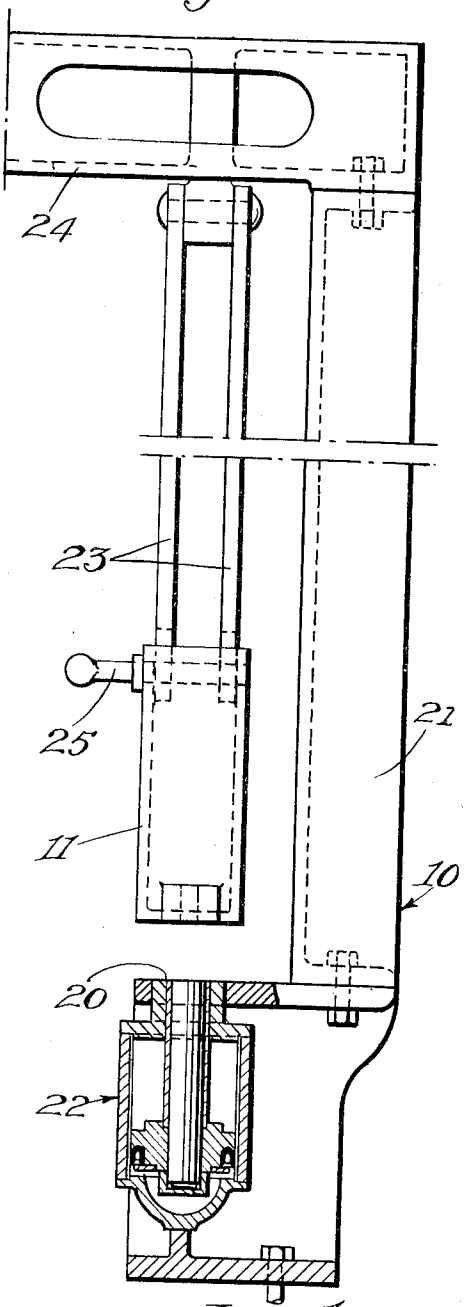


Fig. 3.



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PRIMARY PRESS SECTION FOR PAPER MACHINES

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Application July 18, 1932. Serial No. 623,278

36 Claims. (Cl. 92—49)

This invention relates to primary press sections for paper machinery.

An important object of the invention is the provision of a structure materially facilitating installation of the felts employed in such apparatus.

A further object of the invention is the provision of means whereby the couching of all of the presses of the primary press section may be simultaneously adjusted while still permitting independent adjustment of couching in the individual presses.

In the usual primary press construction, couching adjustment must be individually carried out for each press, requiring the services of an attendant at each end of the roll for each adjustment, so that in a six-press section, twelve separate operations are necessary to adjustment of all of the presses. Since such adjustment is necessary with a change of grade of the paper produced on a machine, and the changes of this character are frequent, particularly where job orders are being produced, it will be obvious that considerable production time is lost in effecting these changes. Therefore, the provision of a means whereby the adjustment of all the presses can be simultaneously effected is of considerable advantage.

A still further object of the invention is the provision of an apparatus embodying the features hereinbefore set forth and in which the construction is such that the operation of the presses may be very readily observed.

A still further object of the invention is the provision of an apparatus of this character permitting couching adjustment without variation in the weighting of the upper press rolls.

These and other objects we attain by the construction shown in the accompanying drawings wherein, for the purpose of illustration, we have shown a preferred embodiment of our invention and wherein:

Fig. 1 is a side elevation of a press section constructed in accordance with our invention;

Fig. 2 is an end elevation of the press section;

Fig. 3 is an enlarged detail sectional view illustrating the manner of suspending the upper rails;

Fig. 4 is an enlarged side elevation of one of the presses and associated mechanism.

Referring now more particularly to the drawings, the numeral 10 indicates side frames including upper and lower longitudinally-extending rails 11 and 12. Rails 12 are fixed with relation to the side frames and support, through removable blocks 13, the bearings 14 of the lower press rolls 15. These lower press rolls, as is usual in such presses, are made in graduated sizes, as will be readily noted by comparing the lower press rolls of the left hand press 16 and of the right hand press or final press 17. This graduation may be either complete throughout the press unit, or may be grouped with two or more presses in the group, the latter arrangement being more commonly employed in press constructions. This lower frame member further provides pivots for the weight levers 18 employed in weighting the upper press rolls. Rails 11 while normally bolted in a normal operative position, as indicated at 19, are in this normal position seated upon ledges 20 extending inwardly from the vertical members 21 of side frames 10 which are adjacent thereto, and these beams have their outer faces spaced from the inner faces of such vertical members for a purpose presently to appear. Each end of each beam 11 has associated therewith a hydraulic jack 22, or other means, whereby it may be vertically shifted, and has further associated therewith link mechanism 23 preferably dependent from a cross member 24 connecting side frames 10, such link members being detachably connectable with the rails 11 through removable pins 25 to maintain the rails in the elevated position attained by the elevating means 22. Each rail 11 mounts at each press a pivot 26 for a substantially vertical lever 27 to the lower end of which an arm 28, mounting an end bearing for the associated upper press roll 29, is pivoted. It further mounts a bearing for an adjustable link 30 by means of which the free end of the arm 28 may be suspended. This link and the weight lever link 31 are, in the present illustration, shown as simultaneously engaged with the arm 28 although it will be understood that but one of these links is operatively engaged with the arm on any given occasion.

Extending longitudinally of the top of each rail 11 is a shaft 32 which shaft is held against rotation, but mounted for longitudinal movement in bearings 33. Shaft 32 has a threaded section 34 associated with the upper end of each lever 27 and has mounted upon this threaded section a collar 35 having a pin-and-slot connection at 36 with the upper end of the lever. The collar 35 is held in adjusted position upon the threaded section 34 by means of nuts 37 abutting opposite ends thereof. Each lever 27 or a part moving therewith is preferably provided with an index pointer 38 co-acting with an index 39 secured

to the rail. At corresponding ends of the rails 11 the shafts are provided with threaded sections 40 mounting worm nuts 41 held against longitudinal movement with relation to the beam by means of suitable confining brackets 42. The shaft 43 extending transversely of the press section has at its ends worms 44 for co-action with the worm nuts 41, and it will be obvious that by rotation of this shaft, which may be effected in any suitable manner, this worm nuts 41 will be simultaneously rotated, thus causing longitudinal movement of the shafts 32 and a corresponding movement of the upper ends of levers 27. The levers 27 are graduated in value; that is to say, these levers are so proportioned that all of the upper press rolls are moved through corresponding angles with relation to their lower press rolls. Thus, after each shifting of the press rolls through the shafts 32, each upper press roll will have been shifted with relation to its associated lower press roll the same angular distance that the remaining upper press rolls have been shifted. The individual adjustment afforded by loosening of the nuts 37 associated with the upper ends of the levers of a given press roll will enable any given press roll to be placed in a setting at variance to the general setting employed for the rest of the rolls.

Assuming that the machine has been newly set up and it is desired to clothe the same, this is accomplished as follows: The couching adjustment is first operated to place each upper press roll at zero couch; that is to say, at a point where the upper press rolls directly vertically overlie the lower press rolls; the links 30 are then connected to the free ends of the arms 28 and links 31 are disengaged therefrom. Links 45 are then placed about the extended ends of the journals of the upper and lower press rolls, as suggested in dotted lines in Fig. 2. The hydraulic jacks 22 will then be operated to elevate rails 11 and remove the weight from the blocks 13 so that they may be readily removed. After removal of the blocks 13 one loop of the lower felt is placed within the machine and the removable blocks are replaced. The rolls are then lowered into position and when the lower press rolls are properly secured in place the links 45 are removed. The top felt is then placed within the machine, resting on the top press rolls. One loop of this felt is then passed over the upper face of one rail 11 and disposed between this rail and the adjacent vertical member 21. The jacks are then employed to elevate the rails 11 until they may be suspended from the links 23. With the rails suspended, the jack plungers are withdrawn, thus leaving an open space between the rail 11 and the inwardly-extending flange of the vertical ledge 20 upon which the rails normally seat, through which the outer loop of the press felt may be brought around the ends of all of the upper press rolls simultaneously and threaded into position between the press rolls. At the same time the upper loop of the bottom felt will be placed in position between the press rolls. When this operation has been completed, pressure is again supplied to the hydraulic jacks until these jacks support the weight of the rails 11 and their load, the pins 25 are removed and the rails lowered to their normal position and secured. Employing this structure, the time required to clothe a press section is reduced to minutes as compared with hours required ordinarily.

Since the structure illustrated is capable of considerable modification without in any manner departing from the spirit of our invention, we do not wish to be understood as limiting ourselves to the specific arrangement hereinbefore set forth except as hereinafter claimed.

We claim:

1. In a paper machine, a primary press section, a pair of vertically-movable beams arranged at opposite sides of the press section, means for vertically moving said beams, and means for connecting all of the upper press rolls of the section with the beams to be moved therewith.

2. In a paper machine, a primary press section, a pair of vertically-movable beams arranged at opposite sides of the press section, means for vertically moving said beams, means for connecting all of the upper press rolls of the section with the beams to be moved therewith, and means to suspend such beams in elevated position.

3. In a paper machine, a primary press section, a pair of vertically-movable beams arranged at opposite sides of the press section, means for vertically moving said beams, and means associated with each upper press roll for connecting the press roll to said beams to be supported thereby.

4. In a paper machine, a primary press section, a pair of vertically-movable beams arranged at opposite sides of the press section, means for vertically moving said beams, means associated with each upper press roll for connecting the press roll to said beams to be supported thereby and means to suspend such beams in elevated position.

5. In a paper machine, a primary press section, a pair of vertically-movable beams arranged at opposite sides of the press section, means for vertically moving said beams, and means to connect all of the press rolls of the section to said beams for movement therewith.

6. In a paper machine, a primary press section, a pair of vertically-movable beams arranged at opposite sides of the press section, means for vertically moving said beams, means to connect all of the press rolls of the section to said beams for movement therewith, and means to suspend the beams in elevated position.

7. In a paper machine and in combination with a primary press section including a plurality of presses, a pair of shafts and connecting means between each shaft and corresponding ends of the upper press rolls of all of said presses whereby the couching of the upper rolls is simultaneously varied as the shaft is shifted, and means for simultaneously shifting said shafts.

8. A device as claimed in claim 7 wherein the connections between each shaft and the associated press rolls comprise elements independently adjustable to vary the couching of a selected press without varying the couching of the remaining presses.

9. In combination with a primary press section including a plurality of different presses having rolls of different diameters, means operatively connecting all of the upper press rolls to simultaneously move said rolls to vary the couching thereof through a predetermined degree angle.

10. In a paper machine, a primary press section comprising a plurality of presses, a pair of vertically movable beams, an arm permanently connected at one end with each beam, means to connect the opposite ends of the arms to the beams to be supported thereby, and means to elevate said beams.

11. In a paper machine, a plurality of presses, a pair of rails, means to connect any or all of the

upper rolls of said presses to said rails for movement therewith, means to raise and lower the rails, and means to support the rails in raised and lowered positions.

12. In a paper machine, a plurality of presses, a pair of rails, means to connect any or all of the upper rolls of said presses to said rails for movement therewith, means to raise and lower the rails, and means to support the rails in raised and lowered positions, and means supporting the rails in lowered positions being constructed and arranged to permit disposition of an endless carrier with one loop thereof on the upper surface of the upper press rolls and the other loop thereof outwardly of the means supporting one of the rails in raised position.

13. In a paper machine, a plurality of presses, a pair of rails, means to connect any or all of the upper rolls of said presses to said rails for movement therewith, means to raise and lower the rails, and means to support the rails in raised and lowered positions, the means to raise and lower at least one of the rails being withdrawable when the rails are in raised position to thereby permit passage of a loop of a carrier between the rail and the means supporting the same when lowered.

14. In a paper machine, a plurality of presses, a pair of rails, means to connect any or all of the upper rolls of said presses to said rails for movement therewith, means to raise and lower the rails, and means to support the rails in raised and lowered positions, the means supporting the rails in lowered positions being constructed and arranged to permit disposition of an endless carrier with one loop thereof on the upper surface of the upper press rolls and the other loop thereof outwardly of the means supporting one of the rails in raised position, the means to raise and lower at least one of the rails being withdrawable when the rails are in raised position to thereby permit passage of a loop of a carrier between the rail and the means supporting the same when lowered.

15. In a paper machine and in combination with a primary press section including a plurality of presses, means to simultaneously vary the couching of the upper press rolls of all of the presses.

16. In a paper machine and in combination with a primary press section including a plurality of presses, longitudinally movable members associated with corresponding ends of the upper press rolls of all of said presses, means to simultaneously longitudinally move said members and operative connections between said members and the upper rolls of the presses whereby the said upper rolls are shifted longitudinally of the press section as the members are shifted longitudinally.

17. In a press including the usual upper and lower rolls, means at the ends of the upper roll supporting the upper roll for transverse movement with relation to the lower roll, and means to simultaneously shift said supporting means transversely of the upper roll.

18. In a press including the usual upper and lower rolls, means at the ends of the upper roll supporting the upper roll for transverse movement with relation to the lower roll, means to simultaneously shift said supporting means transversely of the upper roll, vertically movable members at each end of the upper roll and supporting said shifting means, means to vertically move said members and means to connect the upper press roll to said members to move therewith.

19. In a press including the usual upper and lower press rolls, supports at the ends of the upper press roll, levers pivoted on said supports and swinging in vertical planes transverse to the lower press roll, arms having bearings for the upper press roll pivoted to said levers, and means for simultaneously shifting said levers about the pivots thereof.

20. In a press including the usual upper and lower press rolls, supports at the ends of the upper press roll, levers pivoted on said supports and swinging in vertical planes transverse to the lower press roll, arms having bearings for the upper press roll pivoted to said levers, and weight levers operatively supported from said arms.

21. In a press including the usual upper and lower press rolls, supports at the ends of the upper press roll, levers pivoted on said supports and swinging in vertical planes transverse to the lower press roll, arms having bearings for the upper press roll pivoted to said levers, means for simultaneously shifting said levers about the pivots thereof, and weight levers operatively supported from said arms.

22. In a press including the usual upper and lower press rolls, supports at the ends of the upper press roll, levers pivoted on said supports and swinging in vertical planes transverse to the lower press roll, arms having bearings for the upper press roll pivoted to said levers, means for simultaneously shifting said levers about the pivots thereof, and means to simultaneously elevate said supports.

23. In a cylinder paper machine, a primary press section and means connecting the upper press rolls of all of the presses of said sections for simultaneously moving said upper press rolls longitudinally of the press section.

24. In a paper machine, a primary press section, a pair of movable rails extending adjacent the ends of all of the upper press rolls of said section, locating arms for said press roll linked to said rails and means to elevate the rails whereby to provide a line of free access between the press rolls of all presses simultaneously.

25. In a paper machine, a primary press section, a pair of movable rails extending adjacent the ends of all of the upper press rolls of said section, locating arms for said press roll linked to said rails, means to elevate the rails, means to connect the lower roll of each press to the upper roll thereof and removable bearing supports for the lower roll of each press.

26. The combination in a paper machine including a plurality of presses each including a frame and upper and lower press rolls, of rails extending longitudinally of the machine and adjacent the ends of all of said presses, means to supportingly connect each of the rolls of said presses to said rails and means to vertically shift said rails.

27. The combination in a paper machine including a plurality of presses each including a frame and upper and lower press rolls, of rails extending longitudinally of the machine and adjacent the ends of all of said presses, means to supportingly connect each of the rolls of said presses to said rails, means to vertically shift said rails, and means to support the rails in elevated positions.

28. The combination in a paper machine including a plurality of presses each including a

frame and upper and lower press rolls, of rails extending longitudinally of the machine and adjacent the ends of all of said presses, means to supportingly connect each of the rolls of said presses to said rails, means to vertically shift said rails, means to support the rails in elevated positions, and removable bearing blocks for the lower rolls of said presses.

29. In a press including the usual upper and lower press rolls, supports at the ends of the upper press roll, levers pivoted on said supports and swinging in vertical planes transverse to the lower press roll, arms having bearings for the upper press roll pivoted to said levers, means for simultaneously shifting said levers about the pivots thereof, and means to independently shift said levers about the pivot thereof.

30. In a press including the usual upper and lower press rolls, supports at the ends of the upper press roll, levers pivoted on said supports and swinging in vertical planes transverse to the lower press roll, arms having bearings for the upper press roll pivoted to said levers, means for simultaneously shifting said levers about the pivots thereof, and means to relatively adjust the positions of said levers.

31. In a paper machine and in combination with a primary press section including a plurality of presses, means to simultaneously vary the couching of the upper press rolls of all of the presses, and means to independently adjust the couching of said press rolls.

32. The combination with a plurality of presses of means common to and permanently associated with all of said presses to elevate the rolls thereof and means to selectively connect the rolls of said presses to said means.

33. In a press for paper machines, elevator means connected with the opposite ends of the upper press roll for vertically moving the press roll, the connections between said elevator means and the press roll including elements for varying the couching of the upper press roll.

34. In a press for paper machines, elevator means connected with the opposite ends of the upper press roll for vertically moving the press roll, the connections between said elevator means and the press roll including elements for varying the couching of the upper press roll, and means to simultaneously actuate said elements.

35. In a paper machine, a primary press section, means to simultaneously elevate the upper rolls of said section, and means to simultaneously vary the couching of the upper rolls of said press.

36. In a press including upper and lower press rolls, vertically-movable means, levers pivoted to said vertically-movable means and having vertically-extending portions, means connecting said vertically-extending portions and the upper press roll, and means to simultaneously rotate said levers about the pivots thereof.

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