

(No Model.)

2 Sheets—Sheet 1.

G. LIND.
PAPER MAKING MACHINE.

No. 517,109.

Patented Mar. 27, 1894.

Fig. 1.

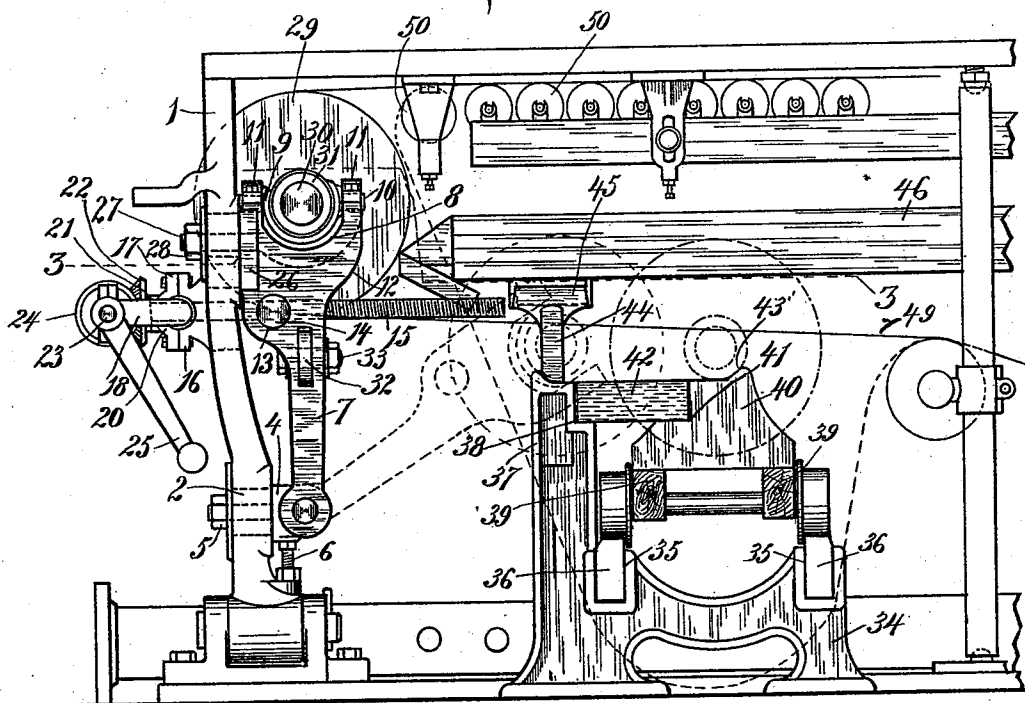
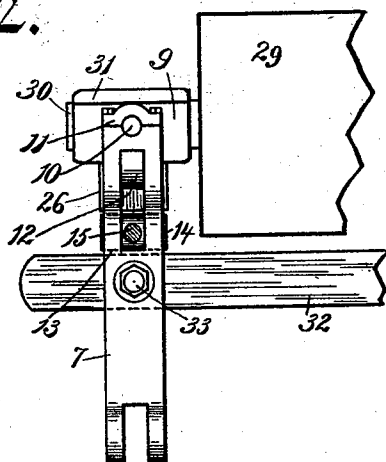


Fig. 2.



Witnesses.
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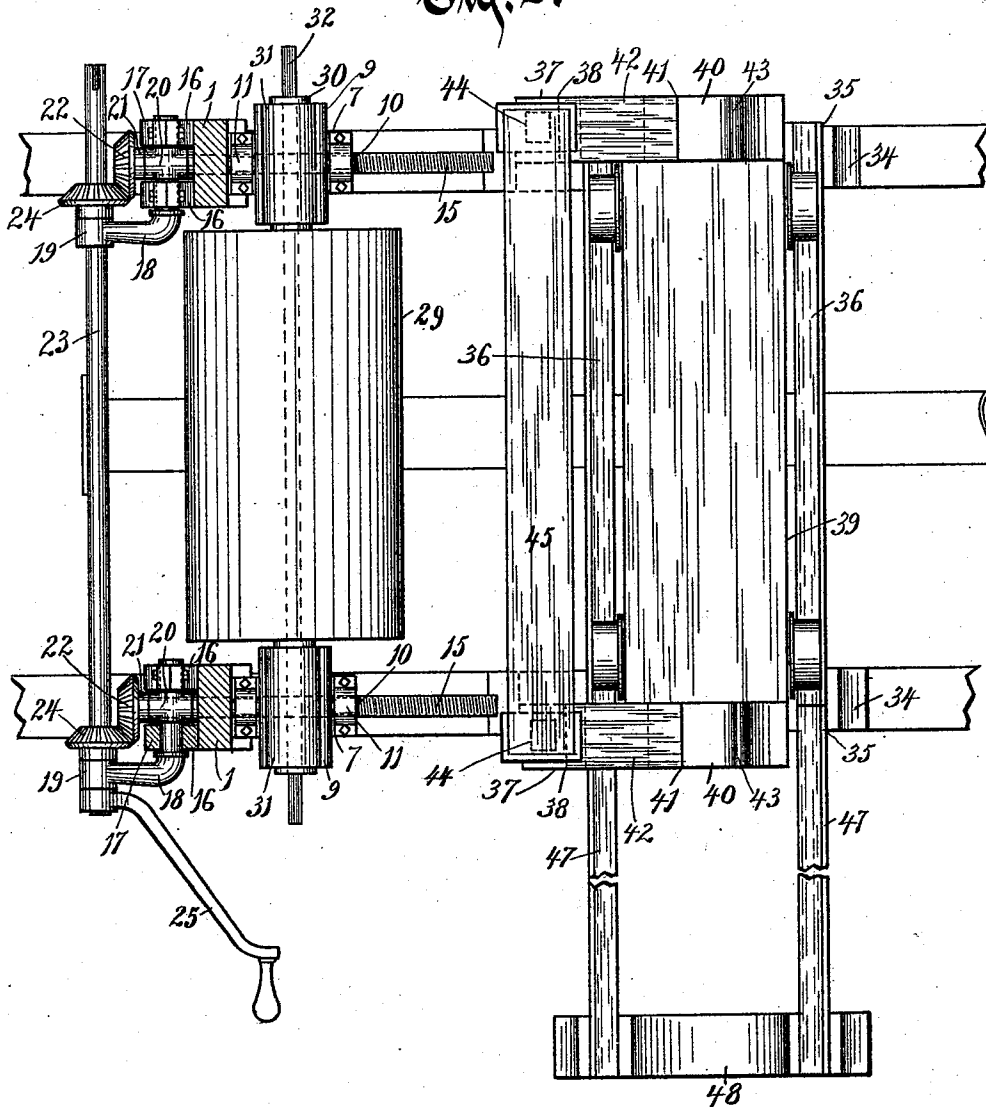
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Fig. 3.



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UNITED STATES PATENT OFFICE.

GUSTAVUS LIND, OF DULUTH, MINNESOTA.

PAPER-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 517,109, dated March 27, 1894.

Application filed February 6, 1893. Serial No. 461,101. (No model.)

To all whom it may concern:

Be it known that I, GUSTAVUS LIND, of Duluth, in the county of St. Louis and State of Minnesota, have invented a new and useful Improvement in Paper-Making Machines, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

My invention has relation to improvements in paper making machines. In the ordinary form of machines of this character, the breast roll bearings are provided with trunnion boxes, together with provision for vertical adjustment, as is well understood by experts in this line of machinery. This form of construction necessitates, in replacing a new wire cloth for one that is worn out, the lifting of the breast roll, which in wide machines is a very heavy piece to handle, out of its bearings and its removal to the front of the machine; and also the taking off of the deckle frame. The new wire is then placed in position and the breast roll brought back to its bearings by means of a piece of plank to slide the roll on, and other appliances well known to paper makers, all of them liable to cause damage to the wire cloth and the face of the roll, and besides requiring a large force of men to perform the work.

It is the object of my invention to obviate the above pointed out disadvantages existing in the usual form of paper making machines, and with this in view the invention consists in the improved construction hereinafter more fully set forth.

In the accompanying drawings, Figure 1, is a view, in side elevation, of a portion of a Fourdrinier paper machine, the deckle frame being removed. Fig. 2, is an edge view of the swinging arm, also illustrating fragments of the breast roll and the connecting cross bar, and Fig. 3, is a horizontal section on a plane indicated by the dotted lines 3—3 of Fig. 1.

Like numerals of reference designate like parts throughout the several views.

Referring to the drawings, the numerals 1, 1, indicate the shake posts, which are provided near their lower ends with elongated slots 2. A lug 4 passes through each slot, said lug receiving upon its outer end a nut 5 for

holding it in adjusted position within the slot. This adjustment is effected by means of an adjusting screw 6, working against the under side of the lug. A swinging arm 7 is hinged at its lower extremity to the inner end of the lug. This arm is provided at its upper end with a recess 8, which receives a semicircular journal bearing or yoke 9, said bearing having trunnions 10, 10, extending from the same, the trunnions bearing in journal boxes 11, 11, and turning freely therein, so as to permit the journal bearing to maintain its level upon the vertical adjustment of the swinging arm. An elongated opening 12, is formed near the upper end of the swinging arm, intersected near its lower end by a smaller opening 13, which receives therein a pin 14 having a threaded transverse aperture. Through the transverse threaded aperture of this pin passes a bolt 15, which is threaded for the greater portion of its length.

Extending laterally from the outer side of each shake post is a pair of bearing boxes 16, said boxes receiving a cap piece 17. A space is left between each set of boxes, as clearly shown in Fig. 3.

The numeral 18 indicates an angular arm formed at opposite ends, respectively, with bearing boxes 19 and 20, the latter at right angles to the former and arranged in the space between a set of bearing boxes 16. The unthreaded portion of bolt 15 after passing through shake post 1, enters the space between bearing boxes 16, and then passes through box 20, the outer end of the bolt provided with a shoulder, 21, contacting with the bearing box and preventing inward play of the bolt, and also having a bevel gear, 22, upon its extremity. A transverse shaft 23 is journaled in the bearing 19 of angular arm 18, said shaft carrying a bevel gear 24, meshing with the gear upon the end of bolt 15, and provided upon each end with a crank 25, one only being shown upon the drawings. The swinging arm 7, is provided with a swell or flange 26, which receives through the same a bolt 27, said bolt receiving on its outer end a nut, 28, bearing against the shake post. This serves to normally connect the swinging arm rigidly with said shake post.

The numeral 29 indicates the breast roll,

the opposite ends of the shaft 30 of said roll passing loosely through sleeves 31, which rest in and are supported by the yoke bearings 9.

While, for the sake of brevity, I have described most of the above parts of the machine in the singular number, taking the side of the machine illustrated in Fig. 1 as the basis of the description, it will be understood that these several parts are duplicated upon the opposite side of the machine as is clearly shown in Fig. 3. The two swinging arms in order to move in unison are united by a connecting bar 32 secured to each of the swinging arms by a bolt 33.

Rail supports, 34, are secured to the machine foundation upon opposite sides of the machine, said supports being provided with recesses 35, to receive removably rails 36, which extend transversely across the machine. Each of the supports upon the side nearest the swinging arm are formed with an upward extension 37, provided with a step or offset 38.

Supported upon the tracks or rails is a truck or carriage 39, said truck or carriage provided with end pieces 40, 40, having a step or offset 41, corresponding to the similar step or offset 38, of the upward extension, 37, of the rail support. These corresponding offsets are adapted to support removably thereon blocks 42. The end pieces of the truck are also formed with stops, 43, against which the journals of the breast roll bear, when the latter is transferred to the truck.

Fitting in sockets in the upward extensions 37 of the rail supports are standards, 44, 44, to which the ends of a transverse beam 45 are secured, said beam supporting the ordinary trough 46. By preference I employ extension rails 47 joining the end of rails 36, and having their outer ends resting in a support 48. The endless wire belt 49 passes around the breast roll, and over the small rolls 50, to the usual couch roll not shown.

In order to remove the breast roll from within the wire belt, and to insert a new belt in place of the old one, the cranks 25 are operated so as to turn transverse shaft 23, and cause the bevel gear, 24, thereon to mesh with gear 22, upon the end of bolts 15 thus causing said bolts to rotate. As the bolts pass through the threaded apertures of pins 14 the swinging arms 7, are caused to turn upon their pivots at the lower ends thereof and to swing inwardly. Before this operation is commenced, it will of course be necessary to remove bolts 27 which connect the swinging arms rigidly with the shake posts. The lower position of the swinging arms is illustrated clearly by dotted lines in Fig. 1. In order to obtain this position it will of course be necessary that the position of bolts 15 should also shift correspondingly as will be readily understood, although the adjusted position of the bolts is not indicated by dotted lines. As the swinging arms work inwardly upon the screw bolts in the manner just described, the inner ends of

said bolts are lowered with the swinging arms, while the outer ends work upwardly between the bearing boxes 16, at the same time turning the angular arms 18, and also, through said angular arms, elevating the transverse shaft 23, whereby the intermeshing of the beveled gears is maintained during the movement of the swinging arms. After the swinging arms have reached the position shown by dotted lines in Fig. 1, sufficient slack is given to the wire belt, as also shown by dotted lines in the same figure, to readily permit the removal of the breast roll. When the breast roll is down far enough to rest on the extended portions 37 of the rail supports, the rails, 36, are inserted in the recesses. The carriage or truck, 39, is then brought in under the machine, and the blocks, 42, inserted in place so as to temporarily connect the carriage with the upward extensions 37. The shaft carrying the breast roll together with the loose sleeves 31, are now rolled on to the carriage to the position illustrated by the second dotted lines. Blocks, 42, are now removed and the carriage made to travel over the tracks on to the extension rails 47. The next step is to remove the rails 36, then the old wire cloth is taken out and the new one inserted in its place. The rails 36 are re-inserted and the carriage containing the roll again rolled under the machine into the new wire cloth. After this, blocks 42 are adjusted to place and the breast roll transferred to the upward extensions 37 at which point the shaft of said roll is readjusted to its bearings. The carriage is now taken from under the machine, the rails 36 removed, and the swinging arms carrying the breast roll swung back to their original position by means of the cranks 25. Bolts 27 are now reinserted and the machine is again ready for operation. Before operating the swinging arms the only parts necessary to be removed are the trough, 46, transverse beam 45 and the small roll 50, together with its bearing, that is located closest to the breast roll. From the fact that the bolts 15 pass through elongated slots in the swinging arms and in the shake posts, of course the changing of the angularity of the same is not interfered with.

Instead of employing the truck or carriage 39 to receive the breast roll, when the pivoted arms are swung inward from the shake posts, it is obvious that any suitable support to receive said breast roll may be employed in lieu of the carriage or truck, without departing from the broad spirit and scope of my invention.

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

1. In a paper making machine, the combination, of shake posts, arms pivoted to the shake posts, means for turning said arms upon their pivots from and toward the shake posts, a wire supporting breast roll removably seated in bearings in the pivoted arms, and a suitable support to which the roll is carried by

the inward swinging of the pivoted arms, said roll adapted to be removed from the pivoted arms to the support, when said arms have been swung into their full extent, substantially as set forth.

2. In a paper making machine, the combination, of a wire supporting roll, and roll journals, swinging arms forming bearings for the roll journals, and a truck constructed to receive the breast roll when the same is lowered by the swinging arms, substantially as set forth.

3. In a paper making machine, the combination, of a wire supporting breast roll and its journals, swinging arms forming bearings for the roll journals, said arms provided with elongated slots, pins intersecting the slots and provided with threaded apertures, and threaded bolts passing through the threaded apertures of the pins, and having pivotal connections at their outer ends, and means for turning the bolts, substantially as set forth.

4. In a paper making machine, the combination, of a wire supporting breast roll and its journals, swinging arms forming bearings for the roll journals, said arms provided with elongated slots, pins intersecting the slots and provided with threaded apertures, threaded bolts passing through the apertures of the pins and provided upon their outer ends with bevel gears, a transverse shaft provided with bevel gears meshing with the gears of the bolts and also provided with cranks, angle arms having one of their ends provided with bearing sleeves through which the transverse shaft passes, and having at their opposite ends bearings sleeves at right angles to the former through which the threaded bolts pass, and bearings for the end of the angle arms carrying the sleeve for the bolt, said sleeve being located between these bearings, substantially as set forth.

5. In a paper making machine, the combination, of a wire supporting breast roll and its journals, a pair of shake posts, swinging arms pivoted to said shake posts and forming bearings for the roll journals, said arms provided with elongated slots, pins intersecting the slots and provided with threaded apertures, threaded bolts passing through the elongated slots of the swinging arms, through the threaded openings of the pins, and through

elongated openings in the shake posts and provided upon their ends with bevel gears, a transverse shaft provided with bevel gears meshing with the gears of the bolts and also provided with cranks, angle arms having one of their ends provided with bearing sleeves through which the transverse shaft passes and having at their opposite ends bearing sleeves at right angles to the former through which the threaded bolts pass, and bearings for the ends of the angle arms carrying the sleeves for the bolts, said bearings extending from the outer sides of the shake posts, substantially as set forth.

6. In a paper making machine, the combination, of a wire supporting breast roll and roll journals, swinging arms forming bearings for the roll journals, rail supports provided with recesses, rails removably secured in said recesses, and a truck traveling on the rails and adapted to receive the breast roll when the same is lowered by the swinging arms, substantially as set forth.

7. In a paper making machine, the combination, of a wire supporting breast roll and roll journals, swinging arms forming bearings for the roll journals, rail supports provided with recesses, rails removably secured in said recesses, extension rails joining the rails proper and extending laterally from the machine and suitably supported at their ends, and a truck traveling on the rails and adapted to receive the breast roll when the same is lowered by the swinging arms, substantially as set forth.

8. In a paper making machine, the combination, of a wire supporting breast roll and roll journals, swinging arms forming bearings for the roll journals, rail supports carrying removable rails, said supports provided with upward extensions formed with steps, a truck having the end pieces thereof provided with similar steps, and removable blocks adapted to be seated upon said steps, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

GUSTAVUS LIND.

Witnesses:

R. R. GIEHEY,
A. J. REED.