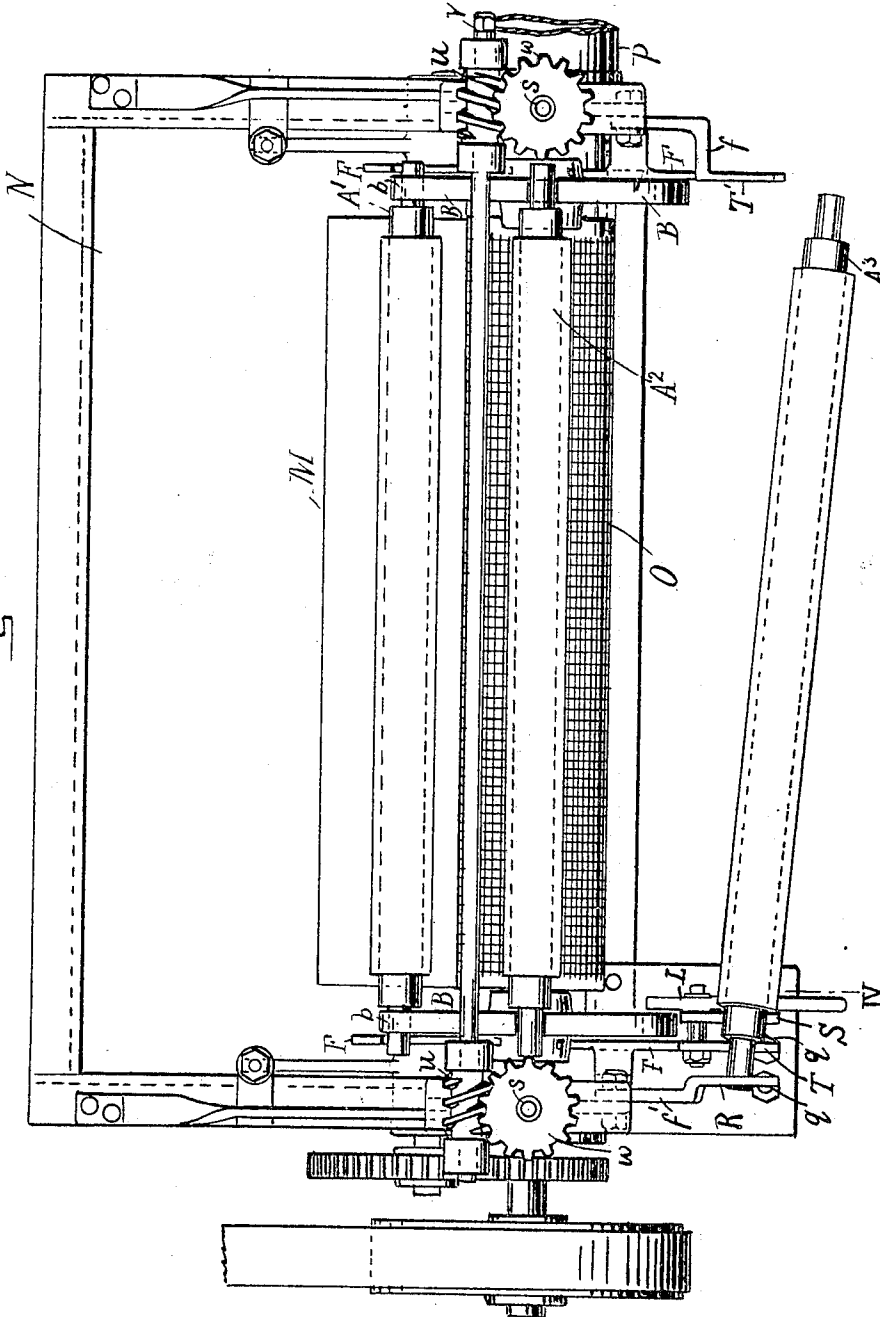


S. R. BRADLEY, Jr.  
MACHINE FOR MAKING PULP PIPE.

APPLICATION FILED APR. 29, 1905.

3 SHEETS—SHEET 1.

Fig. 1.



Witnesses:

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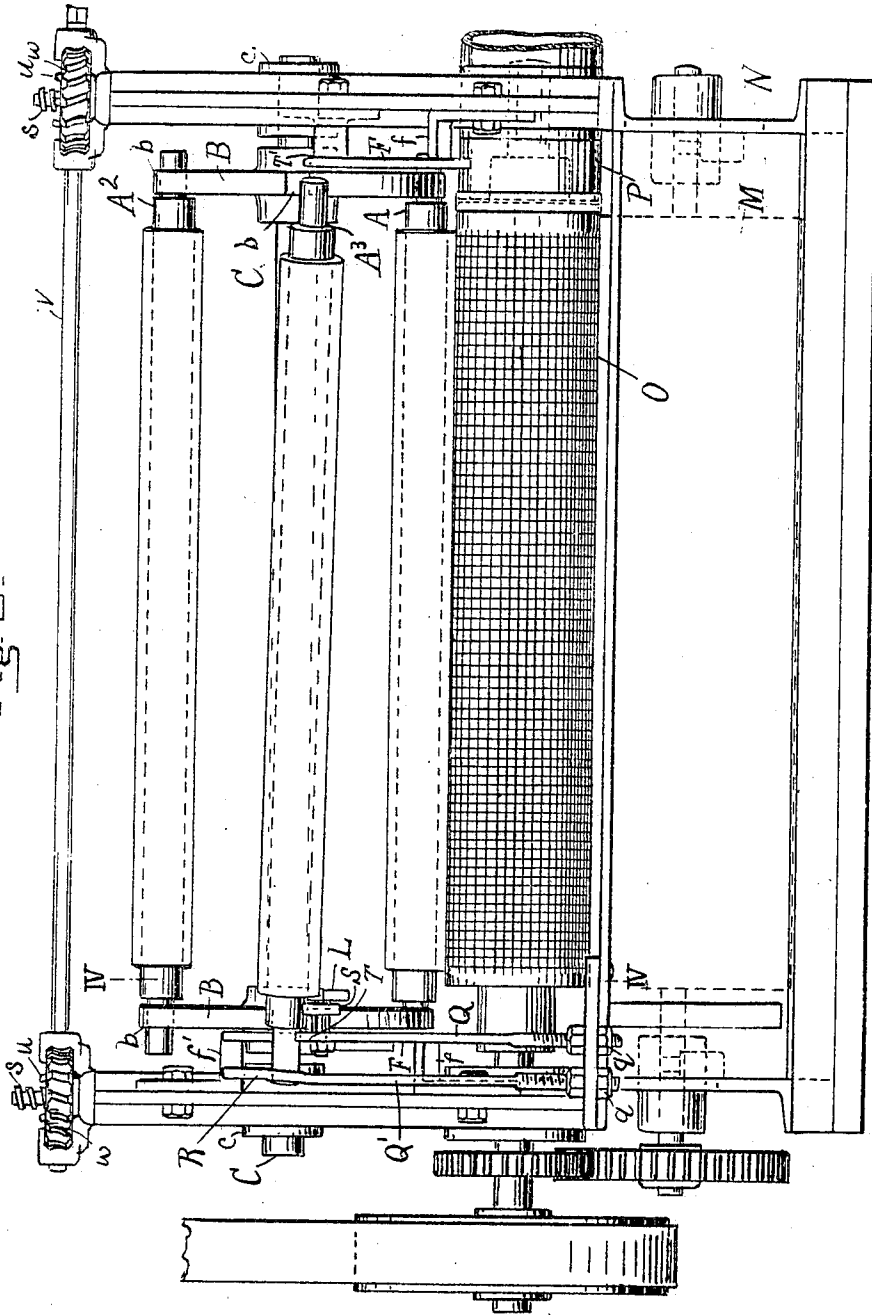
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3 SHEETS—SHEET 2.

Fig 2.

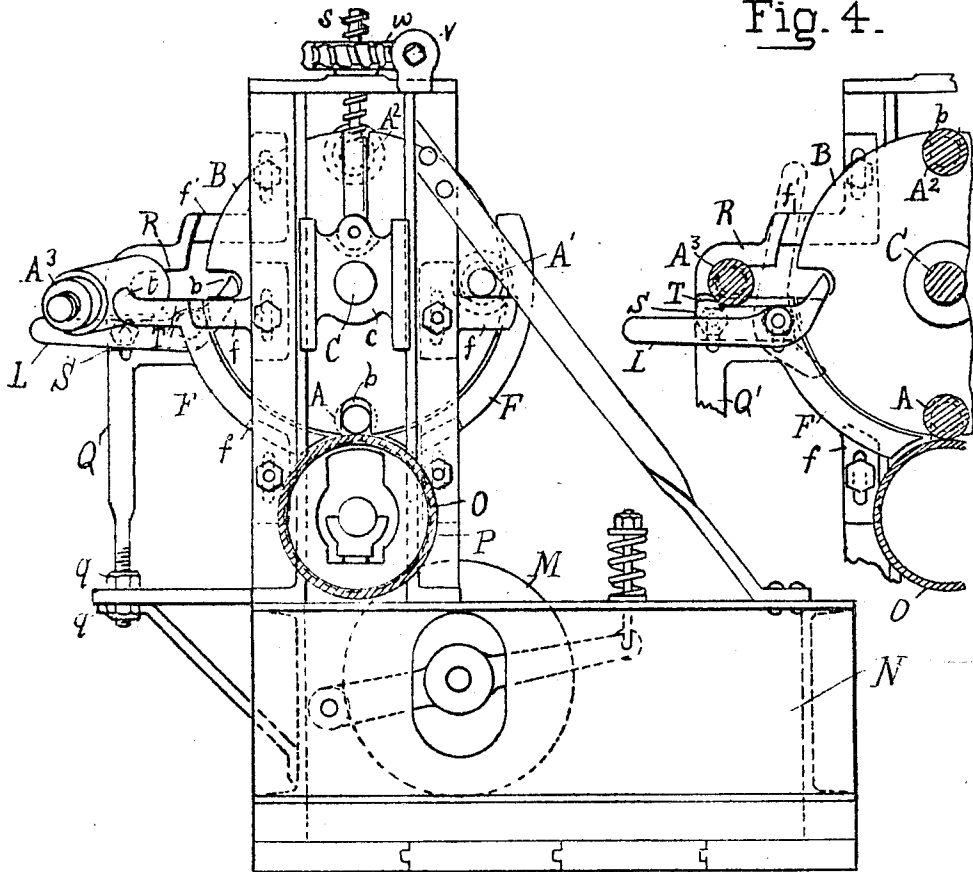


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Fig. 3.



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# UNITED STATES PATENT OFFICE.

STEPHEN R. BRADLEY, JR., OF SOUTH NYACK, NEW YORK, ASSIGNOR  
TO THE FIBRE CONDUIT COMPANY, OF ORANGEBURG, NEW YORK,  
A CORPORATION OF NEW YORK.

## MACHINE FOR MAKING PULP PIPES.

No. 799,028.

Specification of Letters Patent.

Patented Sept. 12, 1905.

Application filed April 29, 1905. Serial No. 258,104.

*To all whom it may concern:*

Be it known that I, STEPHEN R. BRADLEY, Jr., a citizen of the United States of America, and a resident of South Nyack, in the county of Rockland and State of New York, have invented certain new and useful Improvements in Machines for Making Pulp Pipes, of which the following is a specification.

This invention relates particularly to improvements in the provision for the removal of pulp pipes as they are finished in a machine of the type set forth in Letters Patent of the United States No. 583,898, granted June 8, 1897, to Henry Fairbanks. In this machine a pair of revoluble frames are mounted on a horizontal shaft, and forks spaced about their peripheries guide and support a series of forming-rolls while the rolls are being shifted to and from and while at the position in the machine at which the pulp pipe is formed on the rolls. The shaft which carries these frames is supported by bearings in vertical guides to permit adjustment, so that forming-rolls of different sizes may be substituted in the machine, according to the sizes of pipe which it is desired to make.

The object of the invention is to provide in conjunction with the machine tracks to which the forming-rolls can be transferred and from which the forming-rolls can be returned to the forked frames with a minimum of handling and lifting and by which the forming-rolls can be brought to a position where one end underlies an abutment in such manner that the other end may be freed from the support of the track on which it travels and the roll so held while the pipe is removed therefrom. The forks in the revoluble frames are so spaced and the tracks are so positioned that a forming-roll can be removed from and returned to the forked frames while another forming-roll is in position for the formation of the pipe thereon, whereby the operation of pipe-forming does not need to be interrupted during the operation of removing and returning a forming-roll to the forked frame or while stripping a pipe from the roll. Furthermore, these tracks and the abutment are supported through vertically - adjustable brackets, whereby they can be adapted to the height to which the forked frames are adjusted.

In the accompanying three sheets of draw-

ings, which form a part of this application, Figure 1 is a top view of a pulp-pipe machine 55 embodying my invention. Fig. 2 is a side elevation of the machine. Fig. 3 is an end view of the machine, and Fig. 4 is a section on the line IV IV of Figs. 1 and 2.

The machine to which my improvements 60 are applied comprises a pulp-vat N, in which a supply of paper-pulp is maintained. In this vat a mold-cylinder M revolves and carries a film of pulp to a couch-roll O. This roll is finely perforated except near each end 65 and coupled to a pipe P, through which air is constantly exhausted to cause the pulp film to transfer from the mold-roll to the couch-roll and become partially dried in passing half-way round the couch-roll to a forming-roll A, which rests on top of the couch-roll 70 and on which the pulp pipe is formed. The forming-roll is held in place at each end by forks *b b* of revoluble frames B B. These frames have several evenly-spaced forks in 75 their periphery, preferably four in each, so that when a fork in each frame is at the lowermost point of the periphery and holding a forming-roll in place on the couch-roll another fork in each frame will be in a horizontal 80 position for the convenient reception or discharge of another forming-roll. The revoluble forked frames are mounted on a horizontal shaft C, the ends of which are supported in bearings *cc*. These bearings lie in vertical guides and are vertically adjustable by means of worm-wheels *ww*, which are threaded to receive screws *ss*, which are attached to the bearings. The worm-wheels are concurrently operated by worms *uu* on a horizontal shaft *v*. By this mechanism the height 85 of the forked frames is adjusted according to the size of the forming-rolls which are to be used, so that when a forming-roll is resting on the couch-roll the trunnions at its ends will 90 lie between the forks and not touch the bottoms of the forks, both with and without the full thickness of pulp requisite for a pipe formed on the roll. Curved guards F F follow the peripheries of the lower halves of the 95 forked frames and hold the trunnions of the forming-rolls in the forks while they are being carried to and from the couch-roll. Brackets *ff* formed on the sides of these guides extend to the frame of the machine and are 100 bolted thereto by bolts which pass through 105

slots in the brackets, so that the height of the guides can be adapted to the height to which the revoluble forked frames are adjusted.

Short tracks T T' are located at points 5 even with lower sides of the forks at the sides of the forked frames and are preferably formed integral with the curved guides from which they are supported. An additional support is provided for the outer end of the track 10 T by a leg Q, which is threaded for nuts q q, by which the length of the leg above its point of support is adjustable. Beyond the track T and in position to engage the upper side of the extreme end of the trunnion of the forming-roll when on this track is an abutment R, 15 which is held in place by a bracket f' and a leg Q' and adjustably supported from the framework of the machine. A supporting-piece S is adjustably bolted to the side of the track T, the top of this piece being set below 20 the top of the track by an amount equal to the shoulder between a roll and its trunnion.

In the operation of the machine when a pulp pipe of the desired thickness has been 25 built up on the forming-roll which overlies the couch-roll the revoluble forked frames are turned by hand through a quarter of a revolution, thereby bringing a new roll onto the couch-roll and carrying the forming-roll, with 30 the pulp pipe formed thereon, to the point A'. The next repetition of the operation carries the forming-roll, with the pulp pipe, to the point A<sup>2</sup>, and the third repetition of the operation carries the forming-roll, with the pulp pipe, 35 to the opposite side from the second position, where it can be rolled out from the forks onto the tracks. While the forked frames are being revolved a lever L is held in the vertical position indicated in dotted lines, thereby 40 preventing the roll from leaving the forks when the forks are not in exact line with the tracks. When the frames have been brought to the proper position and stopped, the lever L is turned into the position in which it is 45 shown in full lines and the forming-roll is rolled out of the forks and onto the tracks. The forming-roll is prevented from accidentally rolling off from the tracks by reason of a hook t at the end of the track T' and the 50 abutment R, which is bent down in front of the trunnion at the other end. The attendant then lifts the end of the forming-roll which rests on the track T' and pushes the roll to the left, thereby bringing the main body of the roll at the other end onto the support S 55 and the trunnion at that end under the abutment R. The end held by the attendant is swung out clear of the hook t on the end of the track T and released. The roll will then 60 hang free at this end in a slightly downwardly-inclined position, as illustrated at A<sup>2</sup>, being supported in this position by the abutment and support and track at the other end. The

pipe is then stripped off from the forming-roll and the roll is returned to the forks over 65 the tracks by which it was removed while the pipe on the roll ahead is in process of formation.

What I claim as new, and desire to secure by Letters Patent of the United States, is— 70

1. In a machine for making pulp pipes, the combination of a couch-roll, forming-rolls, 75 revoluble forked frames for guiding and supporting the forming-rolls, a pair of tracks for receiving the forming-rolls from the revoluble forked frames, and an abutment for the upper side of one end of each one of the forming-rolls, when brought upon the tracks, 80 whereby the roll will be supported by the abutment and adjoining track at one end, when the other end is removed from the support of the other track, substantially as described.

2. In a machine for making pulp pipes, the combination of a couch-roll, forming-rolls, 85 revoluble forked frames with evenly-spaced forks for guiding and supporting the forming-rolls, a pair of tracks positioned for receiving a forming-roll from one of the pairs of forks when the forked frames are holding 90 another forming-roll on the couch-roll, and an abutment for the upper side of one end of each forming-roll when brought upon the tracks whereby the roll will be supported by 95 the abutment and adjoining track at one end when the other end is removed from the support of the other track, substantially as described.

3. In a machine for making pulp pipes, the combination of a couch-roll, forming-rolls, 100 revoluble forked frames with evenly-spaced forks for guiding and supporting the forming-rolls, means for adjusting the height of the forked frames, a pair of tracks, vertically-adjustable brackets whereby the tracks can be 105 adjusted and supported at the requisite height for receiving a forming-roll from one of the pairs of forks while the forked frames are holding another forming-roll on the couch-roll at any adjusted height of the forked frames, 110 an abutment for the upper side of one end of each forming-roll when brought upon the tracks, whereby the roll will be wholly supported by the abutment and adjoining track at one end when the other end is removed 115 from the support of the other track, and means for securing and supporting the abutment at variable heights conforming to the heights to which the forked frames and tracks are adjusted, substantially as described.

Signed by me, at New York, N. Y., on the 120 27th day of April, 1905.

STEPHEN R. BRADLEY, JR.

Witnesses:

THOMAS EWING, JR.,  
SAMUEL W. BALCH.