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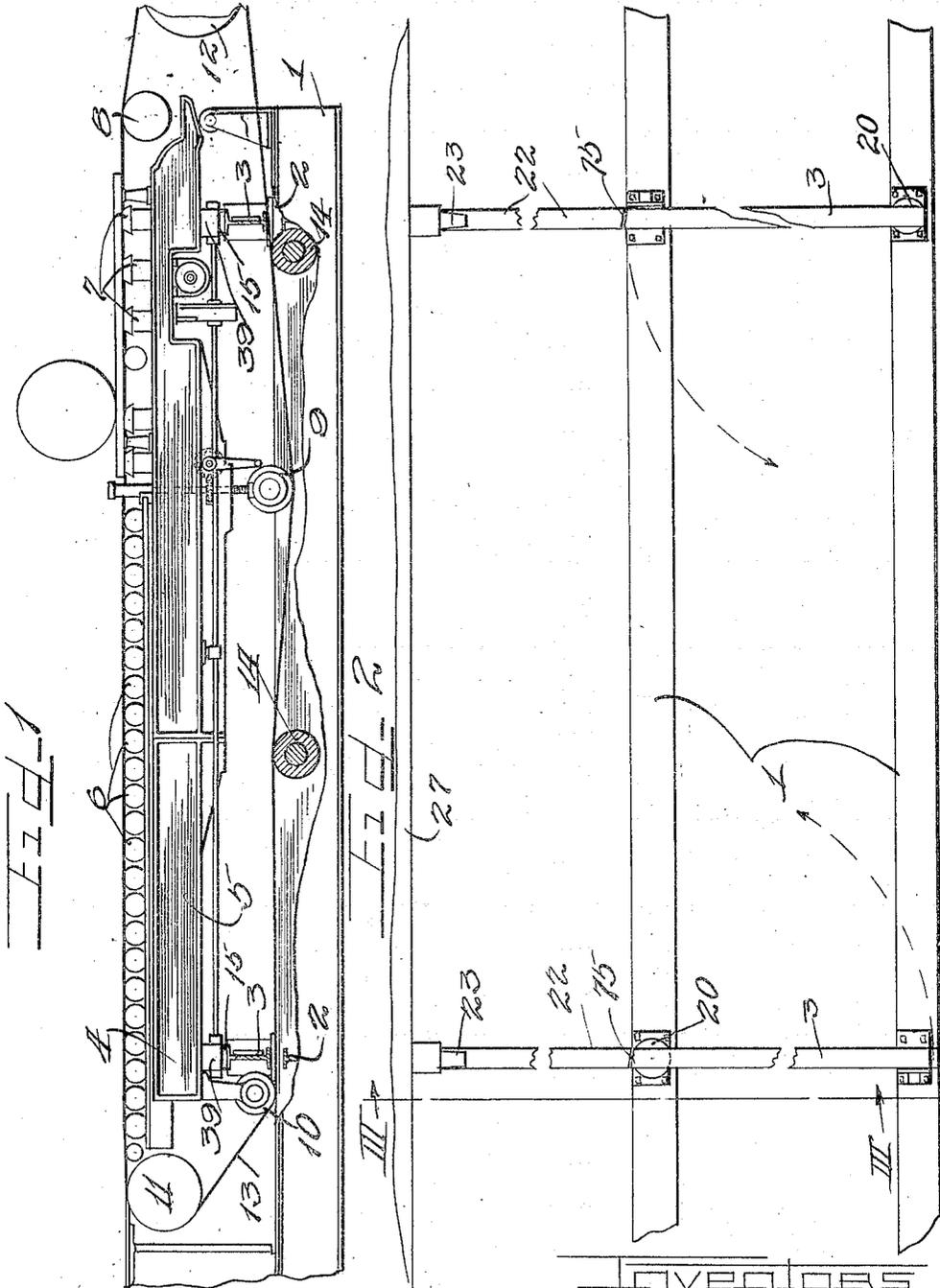
A. ALDRICH ET AL

1,715,528

REMOVABLE TYPE FOURDRINIER PAPER MAKING MACHINE

Filed Sept. 19, 1925

7 Sheets-Sheet 1



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June 4, 1929.

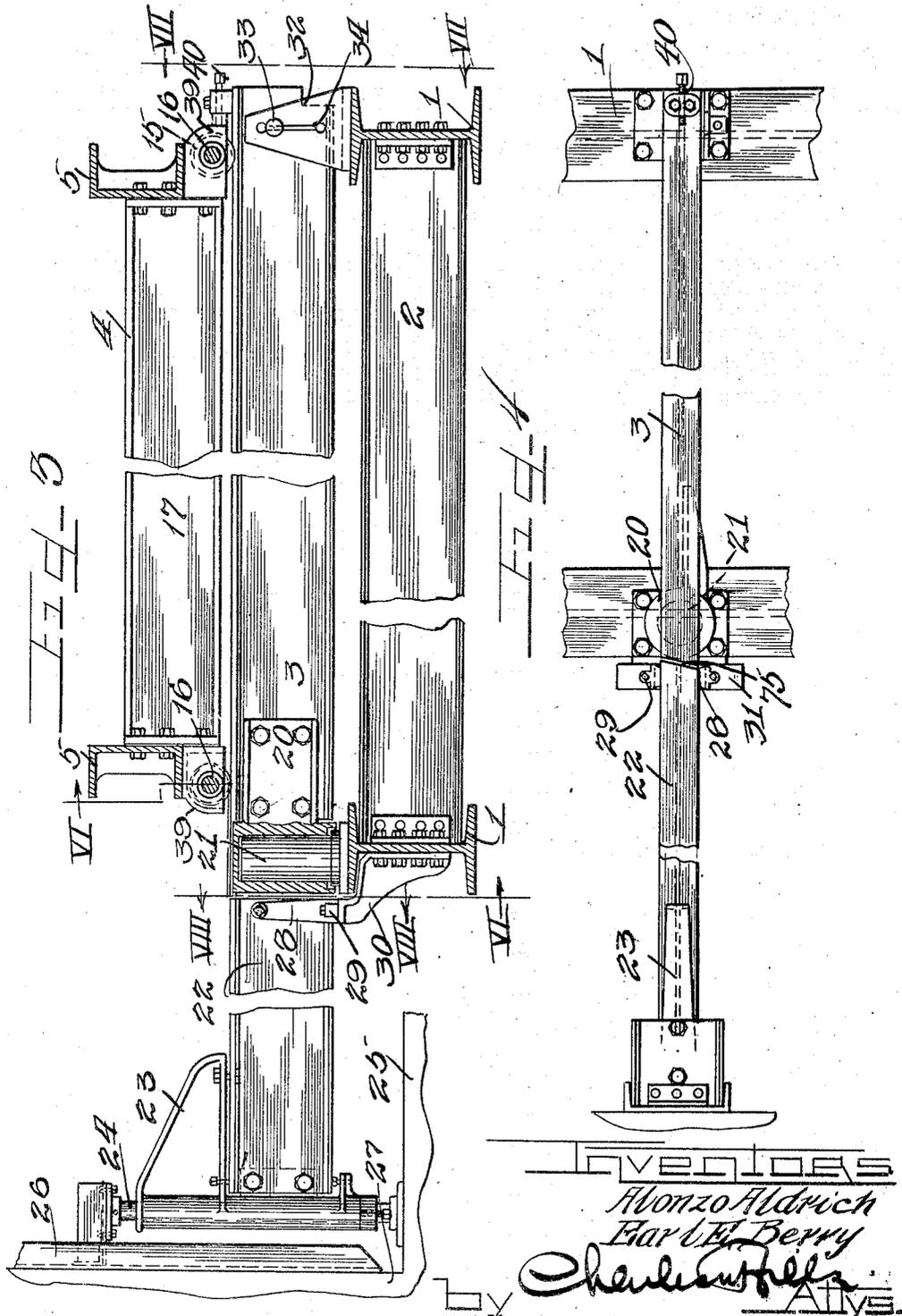
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1,715,528

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Filed Sept. 19, 1925

7 Sheets-Sheet 2



June 4, 1929.

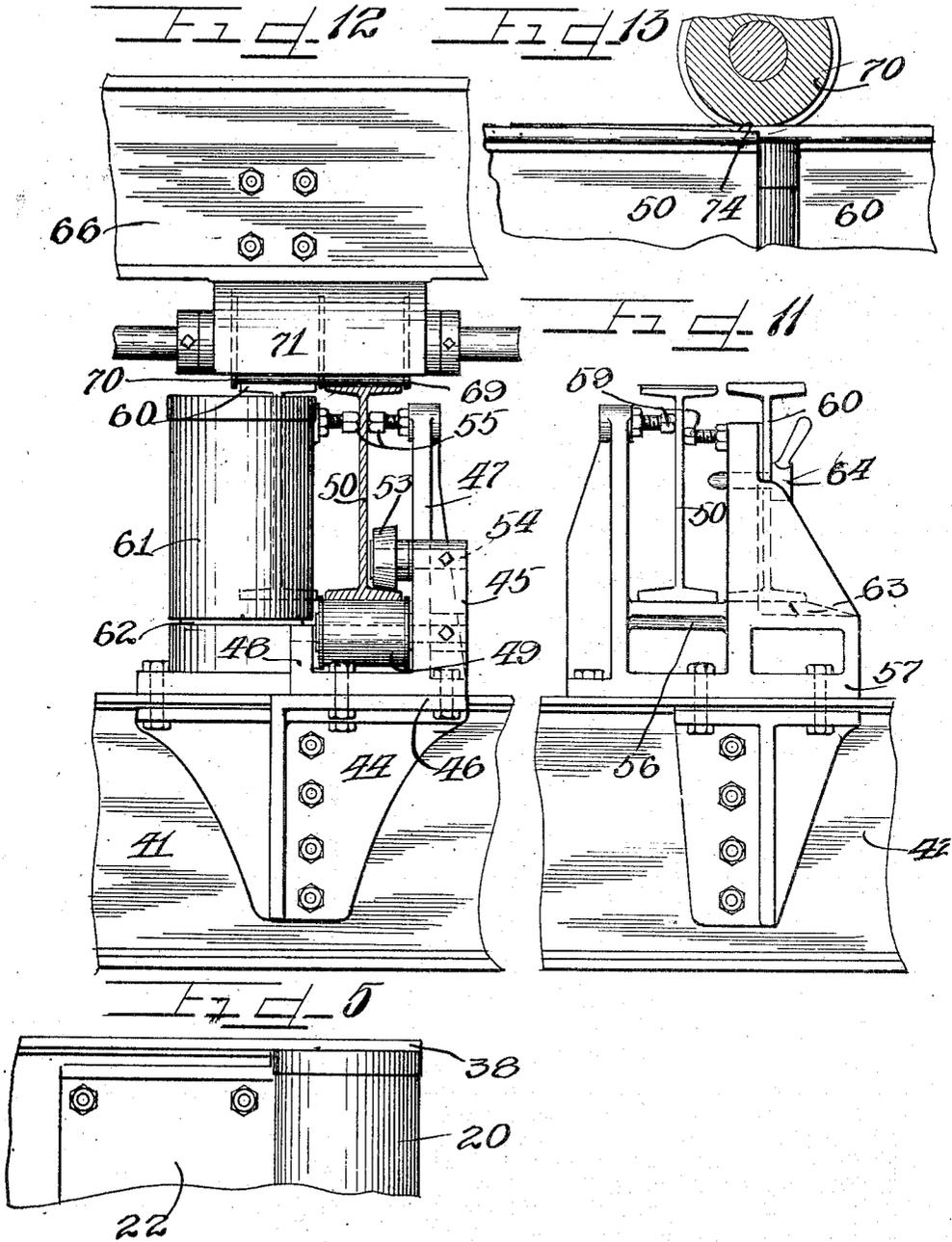
A. ALDRICH ET AL

1,715,528

REMOVABLE TYPE FOURDRINIER PAPER MAKING MACHINE

Filed Sept. 19, 1925

7 Sheets-Sheet 3



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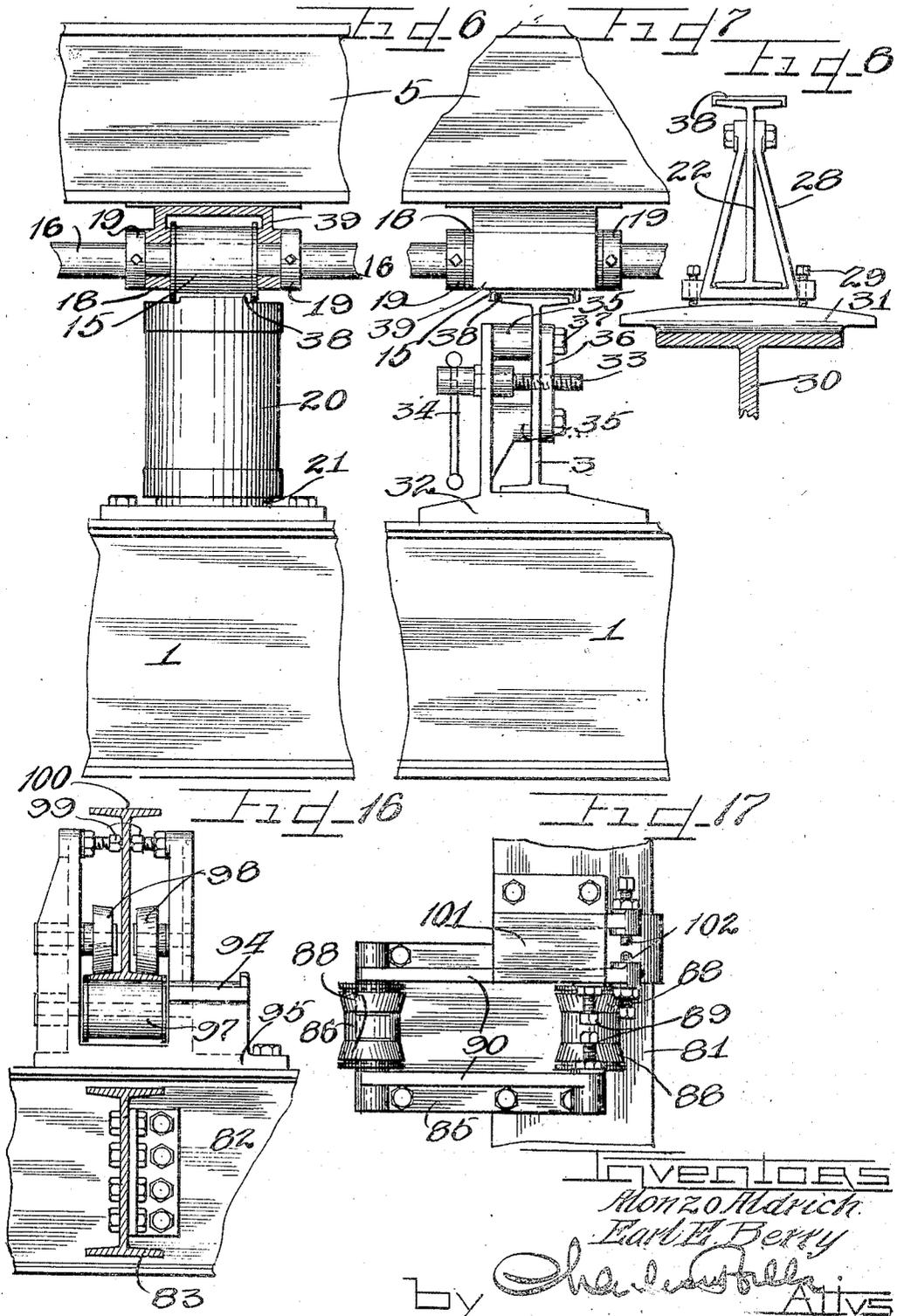
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1,715,528

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Filed Sept. 19, 1925

7 Sheets-Sheet 4



June 4, 1929.

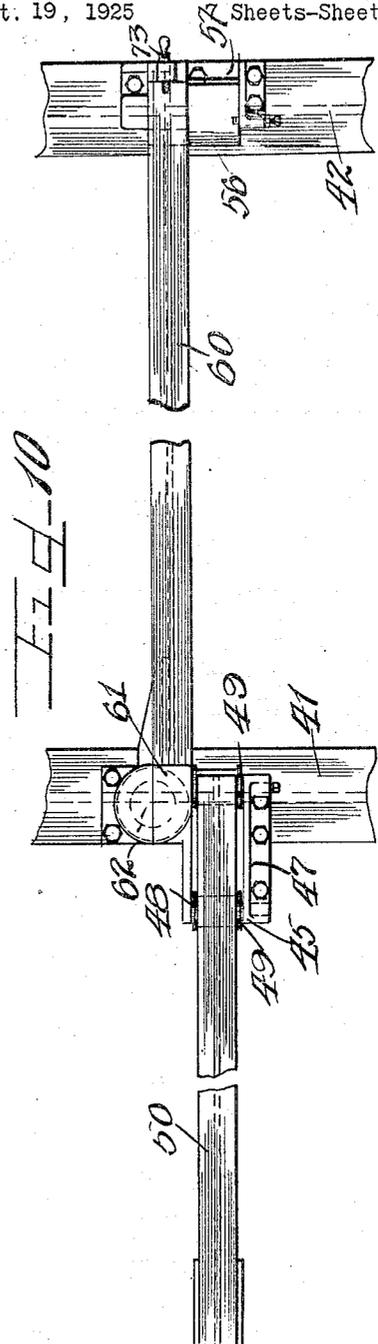
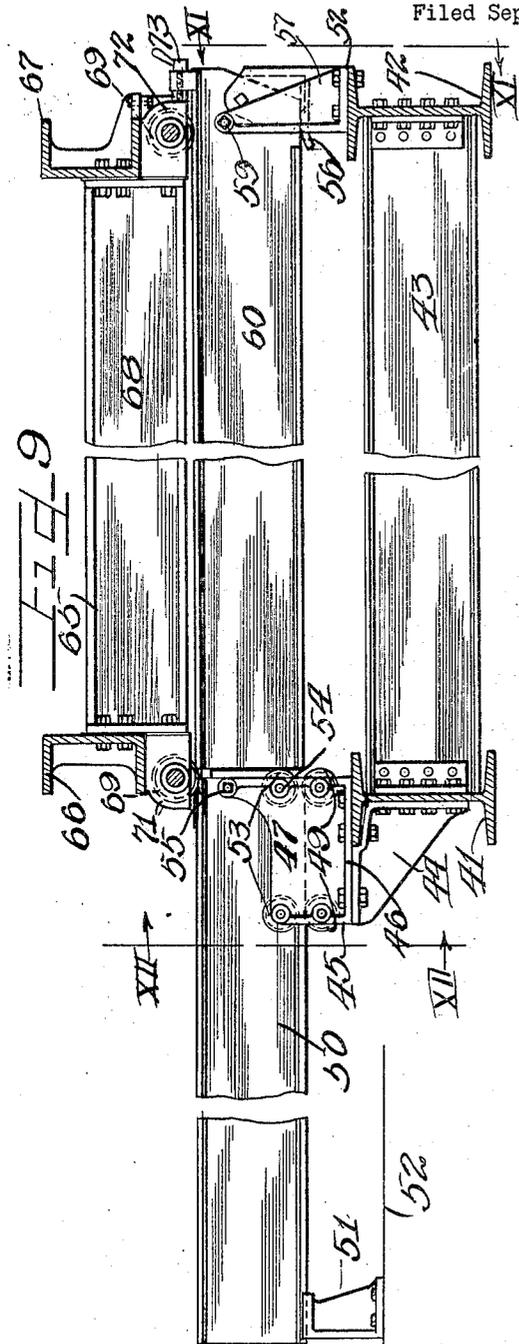
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1,715,528

REMOVABLE TYPE FOURDRINIER PAPER MAKING MACHINE

Filed Sept. 19, 1925

Sheets-Sheet 5



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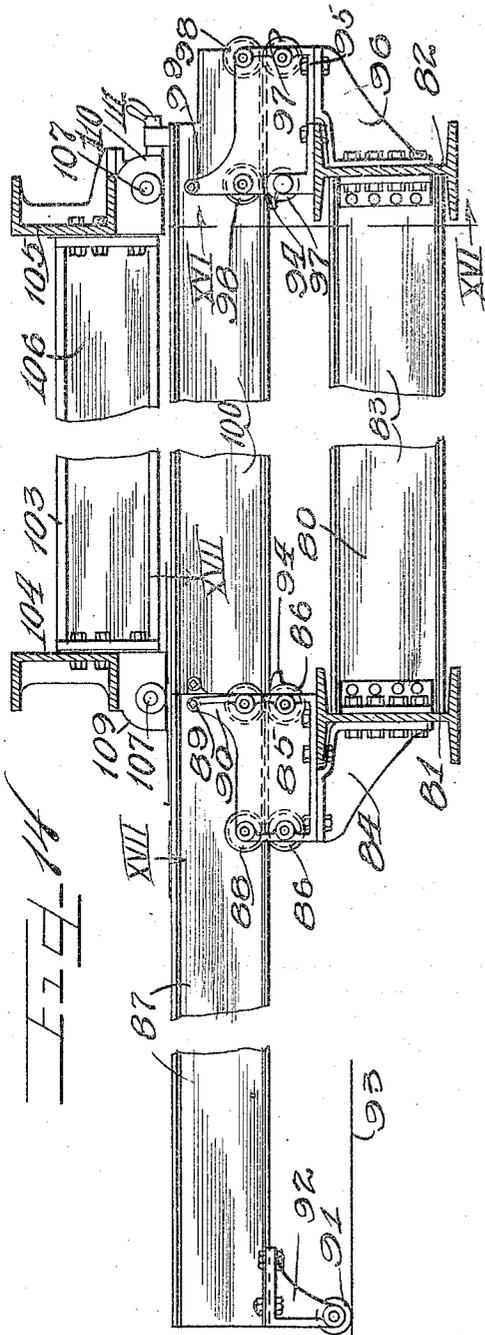
A. ALDRICH ET AL

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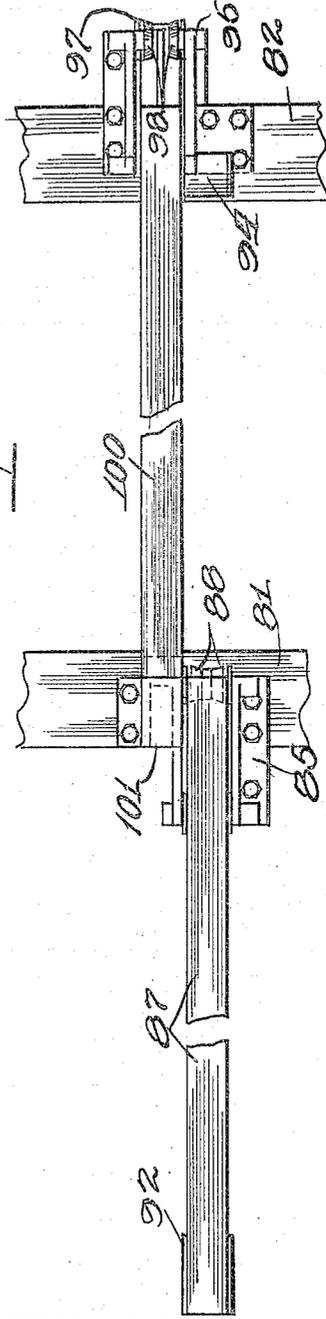
REMOVABLE TYPE FOURDRINIER PAPER MAKING MACHINE

Filed Sept. 19, 1925

7 Sheets-Sheet 6



XVIII



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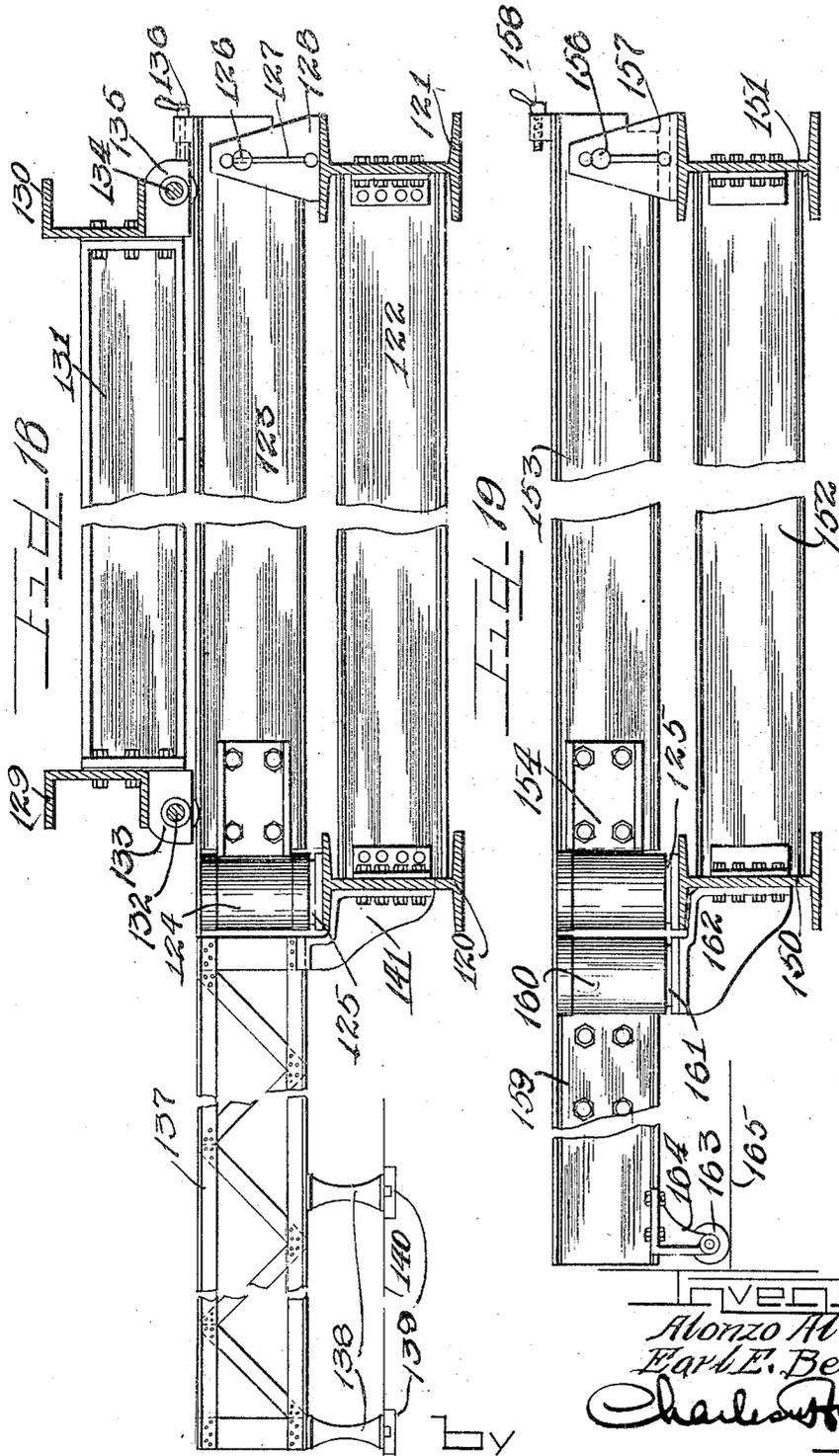
A. ALDRICH ET AL

1,715,528

REMOVABLE TYPE FOURDRINIER PAPER MAKING MACHINE

Filed Sept. 19, 1925

7 Sheets-Sheet 7



UNITED STATES PATENT OFFICE.

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REMOVABLE-TYPE FOURDRINIER PAPER-MAKING MACHINE.

Application filed September 19, 1925. Serial No. 57,272.

This invention relates to improvements in a removable table type of Fourdrinier paper-making machine. In machines of this type hitherto constructed, tracks have been provided, secured to the supporting structure, on which the table may be laterally removed temporarily to facilitate the changing of the Fourdrinier wire. In the operation of changing the wire, these tracks, which may be pivoted to the inside and outside of the supporting structure, are first brought into position at right angles to the length of the machine. The table is then moved out on to the outside tracks, the inside tracks swung out of the way and the new wire suspended in an unstretched condition. The inside tracks are then swung back into position, the table rolled back into place and the inside tracks again swung alongside the longitudinal supporting beams to allow the wire to be stretched into normal position. The necessity for swinging the inside tracks out of the way arises from the fact that said tracks are so positioned with respect to the wire that the lower run of the wire in normal position is above the tracks, whereas in suspended position said lower run must be below the level of the tracks to enable the table to be moved into normal position.

It is an object of our invention to provide a removable type of Fourdrinier wherein the number of steps required in changing the wire is considerably reduced.

It is a further object of our invention to provide track means upon which said table may be laterally removed, said tracks being positioned above the lower run of the wire for the purpose of facilitating the changing of the wire.

It is a further important object of our invention to provide an improved removable table and supporting structure therefor, wherein the tracks on which the table is adapted to be removed may be kept in operative position during the operation of the machine, said tracks forming a part of the supporting structure for said removable table in normal position.

It is also an important object of our invention to provide an improved removable table and supporting structure therefor, wherein the table is supported on inside tracks positioned above the lower run of the wire, whereby the necessity of moving or swinging down

the various wire rolls at the time of changing the wire is eliminated and the construction greatly simplified.

It is another object of this invention to provide in combination with a Fourdrinier paper machine of the shakeable type inside supporting beams or tracks for a removable table, whereby the distance between the shaking parts and a fixed support may be considerably lessened and a more rigid construction be thus obtained.

It is a further object of our invention to provide improved track means upon which the table may be removed.

Other and further important objects of this invention will be apparent from the disclosures in the specification and the accompanying drawings.

This invention (in a preferred form) is illustrated in the drawings and hereinafter more fully described.

On the drawings:

Figure 1 is a fragmentary diagrammatic side elevational view of a Fourdrinier paper-making machine, showing a table and supporting structure embodying the principles of this invention.

Figure 2 is a plan view of Figure 1, with the table removed to show the supporting structure and tracks.

Figure 3 is an enlarged end elevational view taken substantially on line III—III of Figure 2.

Figure 4 is a broken plan view of Figure 3 with the table removed.

Figure 5 is an enlarged detail view.

Figure 6 is an enlarged fragmentary sectional view taken on broken line VI—VI of Figure 3, showing parts in elevation.

Figure 7 is an enlarged fragmentary view taken on line VII—VII of Figure 3.

Figure 8 is an enlarged, fragmentary sectional view taken on line VIII—VIII of Figure 3.

Figure 9 is a broken, end elevational view of a modified form of our invention in operative position.

Figure 10 is a broken, plan view of the same, with the table removed.

Figure 11 is an enlarged fragmentary view taken on line XI—XI of Figure 9.

Figure 12 is an enlarged fragmentary view taken on line XII—XII of Figure 9.

Figure 13 is an enlarged detail view.

Figure 14 is a broken, end elevational view of a second modified form of our device in operative position.

Figure 15 is a top plan view of the same with the table removed.

Figure 16 is an enlarged fragmentary view taken on line XVI—XVI of Figure 14.

Figure 17 is an enlarged fragmentary view taken on line XVII—XVII of Figure 14 with parts removed.

Figure 18 is a broken end view of a third modified form of our device in operative position.

Figure 19 is a broken end view of a fourth modified form of our device, with the table removed, in operative position.

As shown on the drawings:

There is shown in Figure 1 a portion of a Fourdrinier paper machine of the removable table type embodying the principles of our invention. The reference numeral 1 indicates a supporting structure, comprising a pair of longitudinal beams, rigidly spaced apart by means of transverse beams 2 bolted thereto. Mounted on said supporting structure 1 are a plurality of transverse I-beams 3, which form a substructure on which a table structure 4 is adapted to be supported when in operative position and also form tracks on which the table is adapted to be moved when a wire is being changed. Said table structure 4 comprises a pair of table rails 5 supporting the usual table rolls 6 and suction boxes 7 together with a wire guide roll 8, a wire stretch roll 9 and an inside wire roll 10. A breast roll 11 and a lower couch roll 12 are separately supported. A Fourdrinier wire 13 is shown in normal position passing around said breast and couch rolls and over said table rolls. It will be noted that the rolls 9 and 10 are so positioned as to carry the lower run of the wire below the level of the bottom flanges of the tracks 3. The importance of this feature will be explained later. Return wire rolls 14, supporting the lower run of the wire, are journaled in bearings carried by the supporting beams 1. Any suitable shaking mechanism may be associated with the breast roll or table structure, or both.

The table rails 5 are supported by flanged rollers 15 running on said tracks 3, said rollers being operated by means of a driven shaft 16 to cause the table structure 4 to roll as a unit over the tracks 3. The construction and operation are best shown in Figures 2 to 8 inclusive, which, taken with Figure 1 show one form of our invention.

The table rails 5 (Figure 3) are tied together by means of transverse bars 17 to form the unitary table structure 4. The flanged rollers 15 are securely mounted on the shafts 16, which in turn are journaled in bearings 18 formed in bifurcated members 39, said members 39 being secured to the lower flanges of the beams 5 and to the ends of the

beams 17. A collar 19 on each side of said bearings 18 takes up any end thrust on the shafts 16 and holds the rollers 15 against binding.

The member 39 on the back end of each of the beams 17 is drilled and threaded to receive a locking screw 40 secured to the track 3, for locking the table structure in place.

The inside tracks 3 are adapted to be pivoted at the front and back sides respectively of the machine by means of swivel brackets 20 enclosing pivot pins 21 mounted on the I-beams of the supporting structure 1. An outside track 22 is supported at its outer end by a bracket 23, pivotally mounted on a post 24 in the floor 25. Said post 24 is here shown as braced by a bracket 26 from the front wall 27 of the machine room, but it is obvious that any suitable supporting means may be employed. The track 22 is adapted to be swung against the wall 27 when not in use. When it is desired to change a wire on the machine, the track 22 is swung into the position shown in Figure 2 in alignment with the inside track 3. The abutting ends of the tracks 22 and 3 are both formed on a diagonal as at 75 to limit the swing of track 22. The free end of the track 22 is further provided with a leveling and securing means (Figure 8) which comprises a triangular shaped member 28 bolted to the web of said track and having screws 29 threaded through its base. The front I-beam 1 carries a bracket 30 having a rounded upper face or cam 31 against which said screws 29 are adapted to be threaded to hold the track 22 in position. The free end of the track 3 is also adapted to be locked when in operative position. For this purpose a bracket 32 is secured to the I-beam 1 on the rear side of the machine, said bracket being provided with a threaded locking pin 33 operated by a vise handle 34. When the rail 3 is swung into operative position, the locking pin 33 is adapted to be threaded through a hole formed in the web of the rail 3 for that purpose. The pin 33 is threaded into the rail 3 by turning the vise handle 34 until the web of said rail abuts a pair of spacing bosses 35 integral with the bracket 32. A yoke 36 is then threaded over the end of the pin 33 and bolted into place by bolts 37, extending through said yoke and rail web into threaded sockets formed in the bosses 35.

It will be noted that both tracks 3 and 22 are provided with wearing channels 38 (Figure 8) fitted over the top flanges of said tracks and adapted to be spanned by the flanged rollers 15.

While the machine is operating, the tracks 3 are in locked position with the table 4 resting thereon and also locked. In order to change a wire the tracks 22 are swung into operative position and secured there by means of the bolts 29. The locking screws 40 are then withdrawn and the table 4 rolled

out over the track 22. The tracks 3 are now unlocked and swung parallel to the front I-beam 1 of the supporting structure. The new wire is draped in position, the tracks 3 swung
 5 back into locked position and the table 4 rolled back into place between the upper and lower run of the wire. Since the lower run of the wire 13 is below the bottom edges of the tracks 3, said tracks can be kept in opera-
 10 tive position while the machine is running, thus making it possible for the table 4 to rest directly on said tracks 3. This feature not only simplifies the construction but also reduces the labor attendant upon changing the
 15 wire.

In Figures 9 to 13 inclusive there is shown a modified form of construction of our invention, in which the inside tracks are similarly pivoted but the outside tracks are laterally slidable. The supporting structure comprises, as before, front and back side I-beams, 41 and 42 respectively, and transverse tie beams 43. A forwardly extending bracket 44 is bolted to the web of the beam 41 to
 20 form a support for a roller carrying frame 45. Said frame 45 is provided with a flanged base portion 46 bolted to said bracket 44 and the web of the beam 41, and a pair of upstanding sides 47 and 48. A pair of flanged rollers 49 are journaled in said sides 47 and 48. A slidable I-beam track 50 is supported in part by said rollers 49. The outer end of said track is adapted to be supported in extended position by means of a standard or
 25 rest 51 in the floor 52. A pair of small beveled rollers 53 are rotatably mounted vertically above the rollers 49 on one side of the track 50. Said rollers 53 are mounted on pins 54 adjustably secured in the side 47, and are so positioned as to bear against the top face of the lower flange of the track 50 and thus support
 30 said track in unbalanced position. The track 50 is held against said rollers 49 between the flanged ends thereof to prevent said track from jumping off said rollers 49 when being moved back and forth. A pair of oppositely positioned adjusting bolts 55 extend from the frame sides 47 and 48 to abut each side of the web of the track 50 and thus hold it
 35 vertical. When the track 50 is in inoperative position it extends between the beams 41 and 42, the back end of said track resting on a curved surface 56 formed in a frame 57 secured to said beam 42. The frame 57 also carries a pair of adjusting bolts 59 similar to the bolts 55. An inside swinging track 60 is pivotally mounted at its front end by means of a bracket 61. Said bracket 61 encloses a pivot post 62 secured to an extension of the
 40 frame 45 and is adapted to be swiveled on said post 62. The free end of the track 60 in operative position rests on an elevated seat 63 formed on the frame 57. A locking pin 64 (Figure 11) serves to lock said track
 45 60 in operative position to the frame 57.

A table structure 65, (Figure 9), comprising a pair of longitudinal channel-shaped table rails 66 and 67 respectively and transverse tie beams 68, is mounted for rolling
 50 movement on said tracks 50 and 60. A pair of flanged rollers 69 and 70 are mounted at each end of the beams 68 in housings 71 and 72 respectively. Said housings 71 and 72 are positioned beneath the lower flanges of the rails 66 and 67 respectively and are bolted thereto
 55 and to the beams 68. The back side housing 72 is adapted to be locked in place by a locking bolt 73 supported from the track 60. As best shown in Figure 12, the rollers 69 and 70 roll on the tracks 50 and 60 respectively. It will
 60 be noted that the inside tracks 60 are slightly higher than the sliding tracks 50 in order to permit the tracks 50 to be easily moved in and out of position. The inner end of each track 50 is slightly tapered on its top face as at 74
 65 (Figure 13) to provide a gentle slope extending below the top face of the adjoining track 60. By this means there is no possibility of jolting as the table 65 is rolled out and the rollers 70 leave the tracks 60 and the rollers 69
 70 start on the tracks 50. During the operation of the paper machine both sets of tracks 50 and 60 are adapted to be positioned between the beams 41 and 42 in locked position. When a wire is to be changed, the tracks 50 are
 75 pulled out to their extended position and the table structure 65 rolled out on them. The tracks 60 are then swung parallel to the beam 41, the new wire strung in place, and the tracks 60 swung back into locked position.
 80 The table 65 may now be rolled back over the tracks 50 onto the tracks 60, and the tracks 50 pushed into position alongside the tracks 60. The paper machine may be operated with the tracks 50 and 60 in this position for the reason that the lower run of the wire extends below said tracks and therefore does not interfere therewith.

In Figures 14 to 17 inclusive there is shown a second modification in the construction of
 85 our invention in which both the inside and outside tracks are relatively slidable or telescopic in effect. The reference numeral 80 indicates a supporting frame comprising front and back side beams 81 and 82 respectively and transverse connecting beams 83 bolted
 90 thereto. A bracket 84 bolted to the web and upper flange of said beam 81 at each of the front ends of the beams 83 supports a roller frame 85. Said roller frame 85 carries a pair of lower flanged rollers 86 upon which a track 87 is mounted for rolling movement, and two pairs of vertically oppositely positioned conical rollers 88 adapted to engage the upper face of the lower flange of said
 95 track 87. The conical rollers 88 serve to hold the track 87 in bearing relation with the rollers 86. A pair of opposing adjusting bolts 89 thread through a pair of upstanding ears 90 formed on said frame 85. Said bolts 89
 100 105 105 110 115 120 125 130

are adapted to be threaded against opposite sides of the web of the track 87 to hold said track in vertical position. A roller 91 mounted on a depending bracket 92 from the outer end of the track 87 supports said track end for rolling movement on a floor or other base 93. The inner end of each track 87 is adapted to rest on a shoe 94 when in inoperative position, said shoe 94 being formed on a roller supporting frame 95 bolted to the rear beam 82 and to a bracket 96 thereon. No stop is provided for the track 87 but its rearward movement is limited by the abutment of the bracket 92 against the front roller 86.

The frame 95 carries flanged lower rollers 97, conical rollers 98 and adjusting bolts 99 similarly positioned to the rollers and adjusting bolts carried by the frame 85. A rearwardly extending track 100 rests on each set of rollers 97 for rolling movement thereover, with the conical rollers 98 bearing against the upper face of the lower flange of said track to support the track in unbalanced position. A stop member 101 is formed on the frame 85 to limit the forward movement of said track 100 and a pair of opposing threaded bolts 102 are mounted on said member to vertically align said track 100 by contact with the web thereof.

A table structure 103, (Figure 14) comprising a pair of channel-shaped table rails 104 and 105 respectively and a plurality of connecting beams 106, is mounted on said tracks 87 and 100 for rolling movement. For this purpose a pair of flanged rollers 107 are carried in each of the housings 109 and 110 secured to the under sides of the rails 104 and 105 at the front and rear ends respectively of the transverse beams 106. Said rollers 107 are adapted to run on the tracks 87 and 100 respectively. A locking pin 111 is secured by a lug 112 to the rear end of the track 100 and is adapted to be thrown into engagement with the housing 110 to lock the table structure 103 in normal position.

When the paper machine is operating, both of the tracks 87 and 100 are in telescoped position, lying between the supporting beams 81 and 82. In order to change the wire, the tracks 87 are run out and the structure 103 rolled out over them. The stop member 101 is flanged to form a continuation of the track 100 over which the rollers 108 may run. While the table is resting on the tracks 87, the tracks 100 are pulled out to the rear to allow a new wire to be strung in position. The tracks 100 are then run back into place, and the table rolled back on them and locked. The tracks 87 are rolled into telescoped position again and the operation is complete.

Figure 18 discloses a third modified construction in which the inner tracks are pivoted and the outer tracks manually removable. A pair of longitudinal beams 120 and 121 on the front and back sides respectively,

together with connecting beams 122 form the supporting structure, which is the same in all the various constructions. A plurality of inner tracks 123 are each provided at their front ends with a swivel bracket 124 bolted thereto and adapted to pivot upon a pivot post 125 mounted on the beam 120. A locking device 126, having a vise handle 127, is supported by a bracket 128 on the beam 121 for locking the free end of each of said tracks 123. A table structure is rollingly supported on said tracks 123, said table comprising the usual channel-shaped table rails 129 and 130 and transverse tie beams 131 bolted thereto. A roller 132 in a housing 133 supports the front side of the table structure on each track 123 and a similar roller 134 in a housing 135 supports the back side of the table on each of said tracks 123. A locking bolt 136 is provided for engaging each rear housing 135 to lock the table in normal position. An outer removable track 137 affords a means for supporting said table when run out to one side of the machine. Said track 137 is preferably built up of some light metal such as aluminum so that it may be easily carried manually. It is here shown of truss-like construction with depending legs or supports 138 secured thereto and adapted to be positioned in sockets 139 formed in a floor or base 140. A bracket 141, securely bolted to the beam 120, removably supports the free inner end of said track 137 and holds it in alignment with the track 123.

While the machine is running, the outer tracks 137 may be removed entirely and put away, but when it becomes necessary to change a wire, the tracks 137 are brought into the position shown in Figure 18. The table is unlocked and rolled out on to said tracks 137, as in the previous instances, and the tracks 123 unlocked and swung parallel to the machine. After the new wire has been suspended in position, the tracks 123 are swung back into locked position and the table rolled back on to them and locked. The outer tracks 137 may then be detached from the bracket 141 and removed.

There is shown still a fourth modification of our invention in Figure 19, in which both the inside and outside tracks are pivotally mounted. The supporting frame in this case comprises, as usual, a pair of longitudinal beams 150 and 151 and connecting beams 152 secured thereto. A plurality of inner tracks 153 are each mounted on the front beam 150 by means of a swivel bracket 154 bolted to said track 153 and pivotally engaging a pivot post 125 secured to said beam 150. The free end of each of said tracks 153 is adapted to be locked in normal position by a locking device 156 secured to the rear beam 151 by a bracket 157. The free end of each track 153 also carries a locking device 158 for the table structure (not shown) similar to the locking

device 136 in Figure 18. A plurality of outer tracks 159 are each pivotally mounted by means of a swivel bracket 160 and pivot post 161, said post being supported from the beam 150 by a bracket 162. A roller 163, journalled in a depending bracket 164, supports the outer end of each track 159 on a floor or other base 165. When it is desired to remove the table laterally, as in changing a wire, the outer tracks 159 are swung out as shown in Figure 19 into alinement with said inner tracks 153. The table is then rolled out over the outer tracks 159, the inner tracks 153 unlocked and swung parallel to the beam 150 and the new wire suspended in position. The tracks 153 are swung back and locked in place, the table rolled onto said tracks and the tracks 159 swung alongside the beam 150.

In all the various modified forms of our invention, it will be noted that the wire in its normal position is below the tracks upon which the table is adapted to be removed. Consequently the inner tracks may be kept in operative position during the running of the machine without interfering with the wire. This means that the inner tracks are normally in position for changing a wire without the additional labor of placing them so. Consequently both time and labor are saved by means of our improved construction. Furthermore the table structure may be normally supported directly upon the inside tracks, thus simplifying the construction and operation.

We are aware that many changes may be made, and numerous details of construction may be varied through a wide range without departing from the principles of this invention, and we therefore do not purpose limiting the patent granted hereon, otherwise than necessitated by the prior art.

We claim as our invention:

1. In a paper making machine, a table, a supporting structure therefor, and a plurality of track members associated with said structure upon which said table normally rests and may be removed, said track members comprising inner tracks, pivotally secured to said structure, and outer tracks adapted to be alined with said inner tracks.

2. In a paper making machine, a table, a supporting structure therefor, and a plu-

rality of track members associated with said structure upon which said table may be removed, said track members comprising inner tracks, pivotally secured to said structure, and outer tracks adapted to be alined with said inner tracks, and pivotal supports for said outside tracks separate from the supporting structure.

3. In a paper making machine, a table, a wire associated therewith, a supporting structure therefor, and a plurality of track members associated with said structure upon which said table normally rests and may be removed, said track members comprising inner tracks pivotally secured to said structure above the lower run of said wire, and outer tracks adapted to be alined with said inner tracks.

4. In a paper making machine, a table, a plurality of inside and outside tracks upon which said table may be removed and means for supporting said outside tracks from their outer ends vertically hinged thereto.

5. In a paper making machine, a table, a plurality of inside and outside tracks upon which said table may be removed and means for pivotally supporting said outside tracks from their outer ends.

6. In a paper making machine of the Fourdrinier type, a table removable as a unit, longitudinal supporting side beams, and tracks each pivotally mounted at one end on said side beams on which said table is adapted to normally rest, said tracks serving as a partial support for said table during its removal.

7. In a Fourdrinier paper machine, a laterally removable table structure, comprising longitudinally extending side beams, table rails mounted thereon, tracks positioned beneath said side beams and normally extending transversely thereof, rollers carried by said side beams adapted normally to rest upon said tracks to support the table in operative position, and other tracks adapted to form extensions with said first mentioned tracks for the lateral removal of said table, all of said tracks being capable of movement in a horizontal plane.

In testimony whereof we have hereunto subscribed our names.

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EARL E. BERRY.