

No. 705,388.

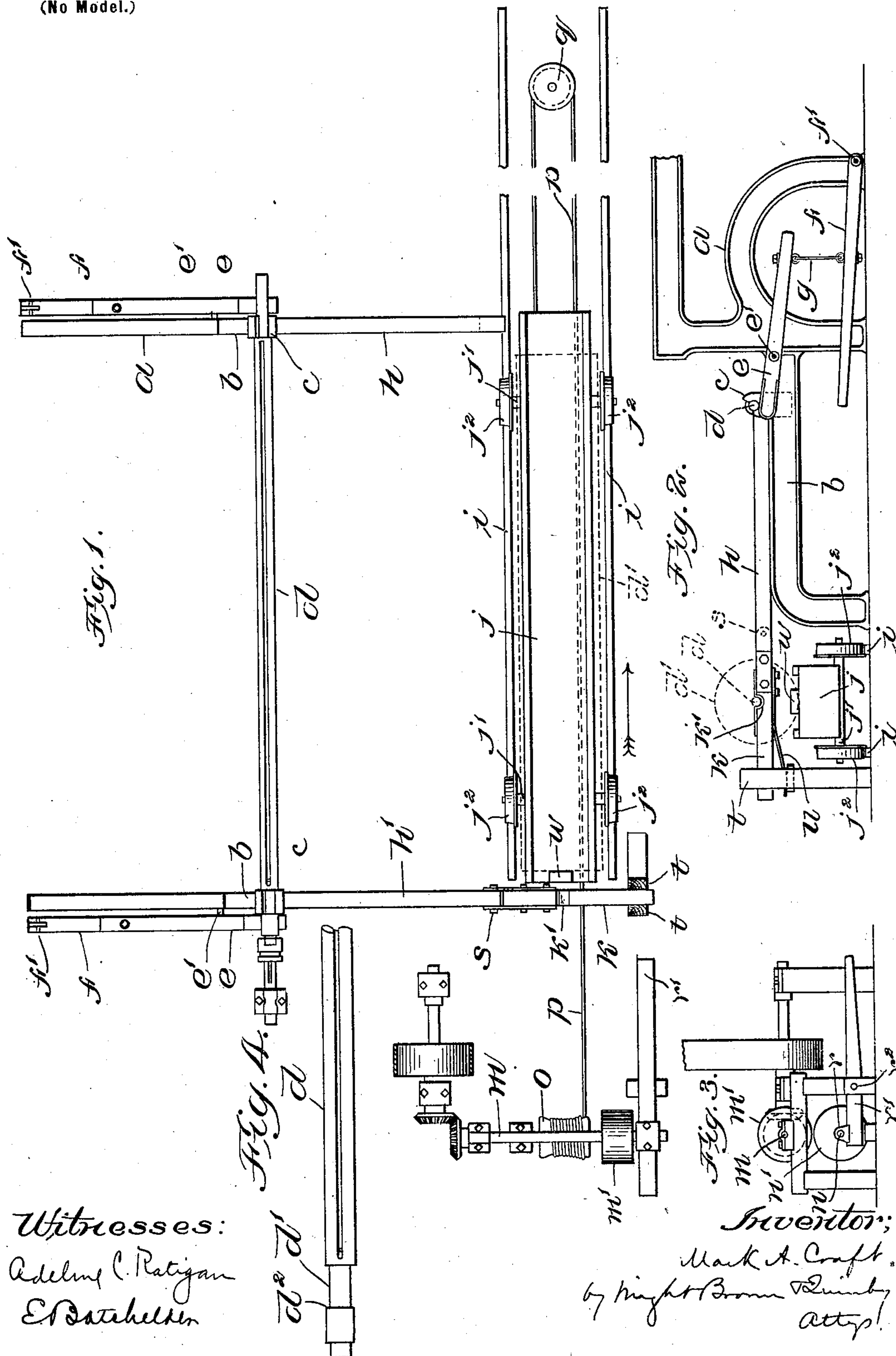
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M. A. CRAFT.

APPARATUS FOR REMOVING ROLLS OF MATERIAL FROM PAPER MACHINES.

(Application filed Nov. 29, 1901.)

(No Model.)



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UNITED STATES PATENT OFFICE.

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APPARATUS FOR REMOVING ROLLS OF MATERIAL FROM PAPER-MACHINES.

SPECIFICATION forming part of Letters Patent No. 705,388, dated July 22, 1902.

Application filed November 29, 1901. Serial No. 84,080. (No model.)

To all whom it may concern:

Be it known that I, MARK A. CRAFT, of Lincoln, in the county of Penobscot and State of Maine, have invented certain new and useful Improvements in Apparatus for Removing Rolls of Material from Paper-Machines, &c., of which the following is a specification.

This invention has for its object to provide means for quickly and conveniently removing without severe manual labor a heavy roll of paper, paper-pulp, or other material from the machine by which the roll was formed and from the mandrel on which the roll was wound.

The invention relates particularly to paper or pulp machines of the Fourdrinier or cylinder type in which pulp is formed into a web, dried by heated rolls, and accumulated or wound on a mandrel which is removable from the machine.

The invention consists in the improvements hereinafter described and claimed whereby the mandrel, with the roll of material wound upon it, may be first raised from its bearings and then rolled away from said bearings and whereby also the roll may be moved endwise off from the mandrel for storage or shipment.

Of the accompanying drawings, forming a part of this specification, Figure 1 represents a top plan view of a portion of the frame of a paper or pulp drying machine and in connection therewith an apparatus embodying my invention. Fig. 2 represents a side elevation of the same. Fig. 3 represents an end elevation of a part of the apparatus. Fig. 4 represents a side view of a portion of the mandrel.

The same reference characters indicate the same parts in all the figures.

In the drawings, *a* represents the rear end portion of the main frame of a pulp-drying machine, and *b b* the extensions of the frame, to which are affixed the bearings *c c*, whereby the winding shaft or mandrel *d* is supported. I do not show the web forming and drying means, as these are well known. The mandrel *d* may be of the ordinary expandible type and is separable from the bearings *c c*, which are open, and from the mechanism that rotates it to cause the dried web to accumulate in the form of a roll *d'*. Heretofore it

has been customary to remove the mandrel and the roll thereon by hand from the bearings *c c*, then carry it by hand away from the frame of the machine, and then pull the mandrel by hand out of the roll. These operations are very laborious and fatiguing to the attendants who perform them. In carrying out my invention I provide levers for raising the mandrel, with the roll thereon, from the bearings *c c*, tracks for supporting the end portions of the mandrel and permitting it, with its roll, to be rolled away from the frame, means for locking or holding the mandrel against endwise movement when it reaches the end of its rolling movement, and power mechanism for moving the roll endwise off from the locked mandrel, thus preparing the roll for storage or shipment without severe or objectionable manual labor. The mandrel-lifting levers are preferably compounded, as shown in Fig. 2, there being two primary levers *e e*, fulcrumed at *e'* to the frame, their shorter arms projecting under the end portions of the mandrel, and two secondary levers *f f*, fulcrumed at *f'* and connected by links *g* with the longer arms of the primary levers. The secondary levers are arranged to be depressed by the feet of the attendants, there being usually one attendant at each side of the machine. This depression raises the shorter arms of the primary levers and causes them to raise the mandrel from the bearings *c c*.

h h' represent the tracks, which are here shown as bolted to the frame extensions *b*, their upper surfaces being preferably flush with the adjacent sides of the mouths or openings through which the mandrel leaves and enters the bearings *c c*. The mandrel is therefore enabled when raised from the bearings to roll easily upon the tracks and along the latter to their outer ends, the tracks being separated by a space of sufficient width and depth to receive the lower portion of the roll *d'*.

Extending crosswise of the tracks *h h'* and below their outer ends is a way, preferably composed of rails *i i*, affixed to the floor which supports the machine, said rails being substantially at right angles with the tracks *h h'*. A carriage composed of a body *j*, axles *j'*, and

wheels j^2 is mounted to move on said way. The body j is formed to support the roll d' when the latter emerges from between the tracks $h h'$.

5 k represents an extension located at the outer end of the track h' and having in its upper side a recess k' , formed to receive the journal portion d' of the mandrel when the latter is over the longitudinal center of the
10 carriage. The mandrel has a shoulder d^2 at the outer end of the journal portion d' , and this shoulder engages the outer side of the extension k when the journal is seated in the recess k' . The extension k therefore locks
15 the mandrel against endwise movement in the direction indicated by the arrow in Fig. 1. Power mechanism is provided for moving the carriage and the roll supported thereon in the direction indicated by said arrow, and
20 thus drawing the roll endwise off from the locked mandrel. Said mechanism as here shown comprises a continuously-driven shaft m , having a friction-wheel m' , a shaft n , having a drum o , and a friction-wheel n' , nor-
25 mally disconnected from the wheel m' , a rope p , attached at one end to said drum and at the other end to the carriage, said rope passing partly around a guiding pulley or block q , and a vertically-movable bearing r for the
30 shaft n , whereby said shaft may be moved toward the shaft m to cause the engagement of the friction-wheels $m' n'$, this engagement causing the rotation of the drum o , which accumulates a part of the rope p and causes the
35 rope to move the carriage in the direction indicated. When the carriage has drawn the roll from the mandrel, the wheels $m' n'$ are separated, the roll is removed from the carriage, and the carriage is pushed back to the
40 position shown in Fig. 1. The bearing r is supported by one arm of a lever r' , fulcrumed at r^2 , its other arm being adapted to be depressed by the operator's foot to raise the bearing r .

45 The extension k is preferably hinged at s to the track h' , and thus adapted to swing vertically. The free end of the extension projects between stout vertical guides $t t$ and is supported by a spring u , which is adapted
50 to raise the extension or incline it upwardly from the track h' , and thus enable it to engage the mandrel in the manner described in case the diameter of the roll is such as to raise the mandrel above the level of the track
55 h' when the roll is seated on the carriage. Provision is thus made for variations between the diameters of different rolls. The weight of the roll may be relied on to cause it to move endwise with the carriage, although, if
60 desired, the carriage may have a projection w at its rear end, arranged to bear on the rear end of the roll and positively engage the carriage with it.

I claim—

65 1. The combination with bearings for a removable winding-mandrel, of tracks extending outwardly from said bearings and adapt-

ed to support the end portions of the mandrel, and means for raising the mandrel from its bearings to permit the transference of the
70 mandrel to the tracks, the said tracks being separated by a space adapted to receive a roll of paper wound upon the mandrel.

2. The combination with bearings for a removable winding-mandrel, of tracks extend-
75 ing outwardly from said bearings and adapted to support the end portions of the mandrel, and levers fulcrumed near said bearings and extending under the end portions of the mandrel when the latter is supported by said
80 bearings, said levers being movable to raise the mandrel from the bearings and permit its transference to said tracks.

3. The combination with bearings for a removable winding-mandrel, of tracks extend-
85 ing outwardly from said bearings and adapted to support the end portions of the mandrel, levers fulcrumed near said bearings and extending under the end portions of the mandrel when the latter is supported by said
90 bearings, and means for moving said levers to raise the mandrel from its bearings and permit its transference to the tracks.

4. The combination with bearings for a removable winding-mandrel, of tracks extend-
95 ing outwardly from said bearings and adapted to support the end portions of the mandrel, primary levers fulcrumed near said bearings and having shorter arms extending under the end portions of the mandrel, and secondary
100 levers fulcrumed below said primary levers and connected with the longer arms thereof.

5. The combination with bearings for a removable winding-mandrel, of tracks extend-
105 ing outwardly from said bearings and adapted to support the end portions of a mandrel and a roll wound thereon, a locking device at the end of one of said tracks adapted to engage one of the end portions of the mandrel, and means for removing said roll endwise
110 from the mandrel.

6. The combination with bearings for a removable winding-mandrel, of tracks extend-
115 ing outwardly from said bearings and adapted to support the end portions of the mandrel, a way extending substantially at right angles with said tracks and located below their outer ends, and a carriage movable on said way and adapted to receive from said tracks a roll containing said mandrel.
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7. The combination with bearings for a removable winding-mandrel, of tracks extend-
125 ing outwardly from said bearings and adapted to support the end portions of the mandrel, a way extending substantially at right angles with said tracks and located below their outer ends, a carriage movable on said way and adapted to receive from said tracks a roll containing said mandrel, means for locking
130 a mandrel contained in a roll supported by said carriage, and means for moving the carriage endwise to withdraw the roll from the locked mandrel.

8. The combination with bearings for a re-

movable winding-mandrel, of tracks extending outwardly from said bearings and adapted to support the end portions of the mandrel, a way extending substantially at right angles with said tracks and located below their outer ends, a carriage movable on said way and adapted to receive from said tracks a roll containing said mandrel, means for locking a mandrel contained in a roll supported by the carriage, and power mechanism for moving the carriage and roll away from the locked mandrel, said mechanism comprising a power-driven shaft, normally inoperative connections between said shaft and the carriage, and means for making said connections operative to move the carriage.

9. The combination with bearings for a removable winding-mandrel, of tracks extending outwardly from said bearings and adapted to support the end portions of the mandrel, a way extending substantially at right angles with said tracks and located below their outer ends, a carriage movable on said way and adapted to receive from said tracks a roll containing said mandrel, means for locking a mandrel contained in a roll supported by the carriage, and power mechanism for moving the carriage and roll away from the locked mandrel, said mechanism comprising a power-driven shaft having a friction member, a winding-drum having a complementary friction member, means for engaging and separating said friction members, a rope engaged with said drum and with the carriage, and suitable guiding means for said rope.

10. The combination with bearings for a removable winding-mandrel, of tracks extending outwardly from said bearings and adapted to support the end portions of a mandrel and a roll wound thereon, a locking device at the end of one of said tracks adapted to engage one of the end portions of the mandrel, and means for removing said roll endwise

from the mandrel, said locking device having provisions for automatically conforming to the height of the mandrel, and means for moving the carriage to withdraw the roll from the engaged mandrel.

11. The combination with bearings for a removable winding-mandrel, of tracks extending outwardly from said bearings and adapted to support the end portions of the mandrel, a way extending substantially at right angles with said tracks and located below their outer ends, a carriage movable on said way and adapted to receive from said tracks a roll containing said mandrel, an extension of one of said tracks, said extension having a recess formed to engage a shoulder on one of the end portions of the mandrel, and means for moving the carriage to withdraw the roll from the engaged mandrel.

12. The combination with bearings for a removable winding-mandrel, of tracks extending outwardly from said bearings and adapted to support the end portions of the mandrel, a way extending substantially at right angles with said tracks and located below their outer ends, a carriage movable on said way and adapted to receive from said tracks a roll containing said mandrel, a hinged extension of one of said tracks, said extension having a recess formed to engage a shoulder on one of the end portions of the mandrel, means for yieldingly supporting said hinged extension to enable it to conform automatically to the height of the mandrel, and means for moving the carriage to withdraw the roll from the engaged mandrel.

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

MARK A. CRAFT.

Witnesses:

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