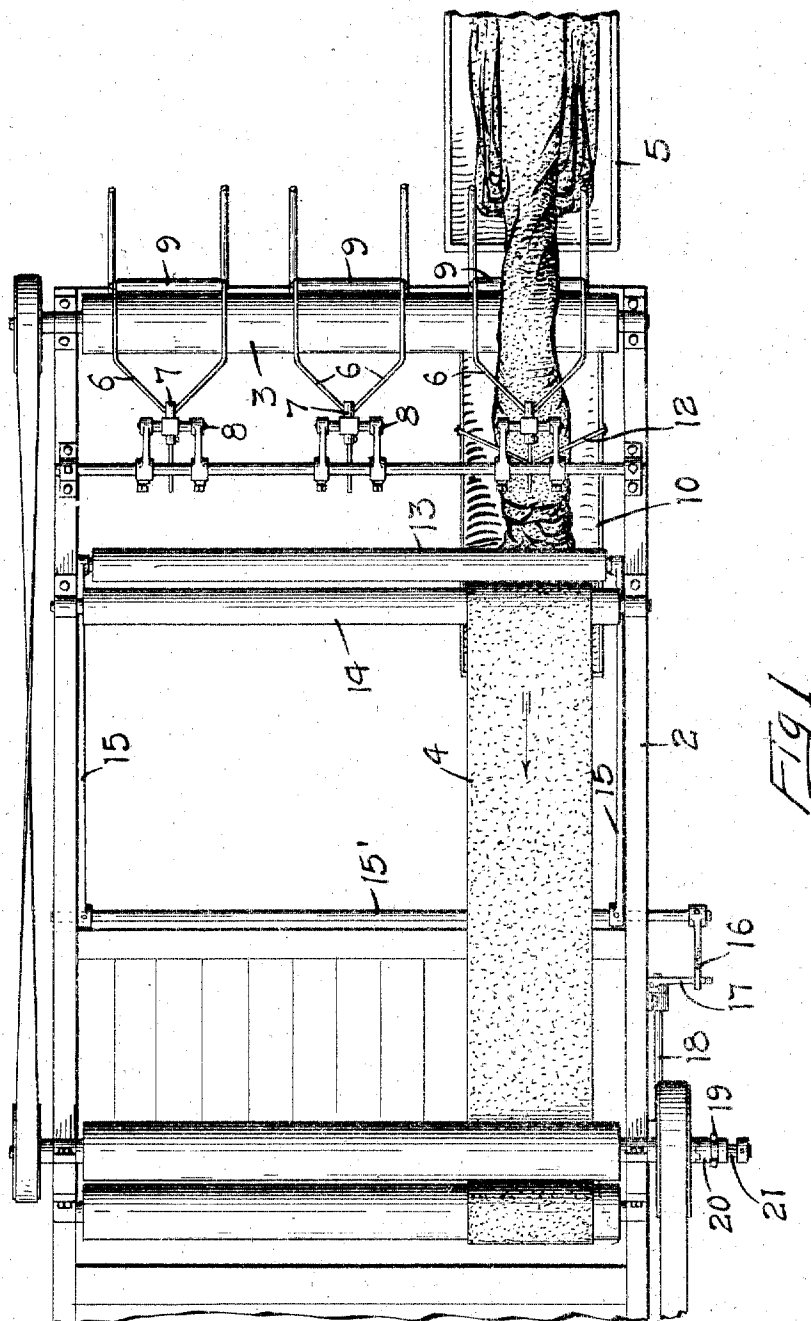


F. CHATFIELD.
FABRIC OPENING DEVICE.
APPLICATION FILED FEB. 5, 1910.

995,522.

Patented June 20, 1911.

3 SHEETS—SHEET 1.



WITNESSES
M. Walstrom
J. A. Byrnes

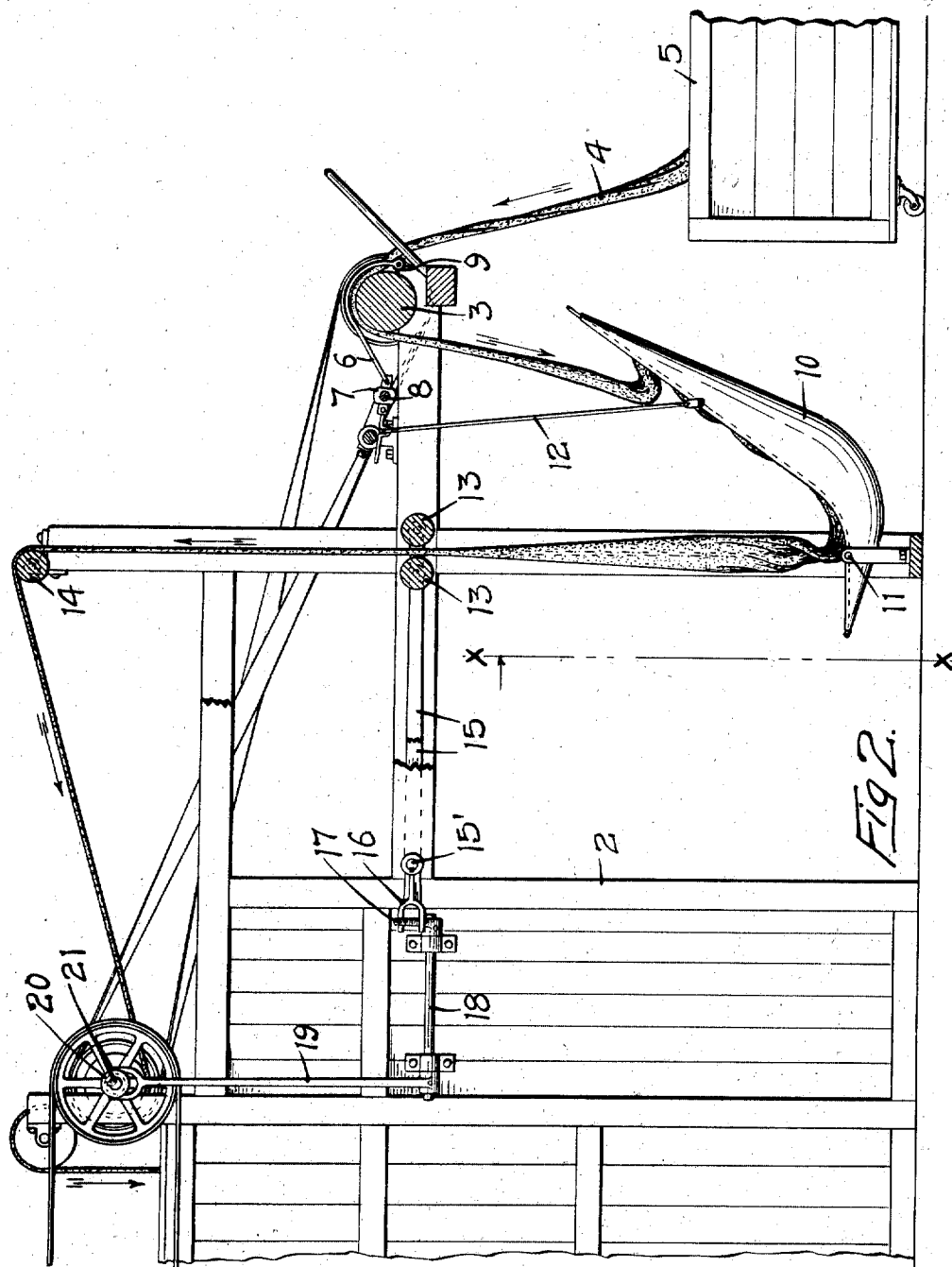
INVENTOR
FRANKLIN CHATFIELD
BY *Paul & Paul*
ATTORNEYS

995,522.

F. CHATFIELD.
FABRIC OPENING DEVICE
APPLICATION FILED FEB. 5, 1910.

Patented June 20, 1911

3 SHEETS—SHEET 2.



WITNESSES
M. Walstrom
J. B. Byrnes

INVENTOR
FRANKLIN CHATFIELD
BY *Paul & Paul*
ATTORNEYS

F. CHATFIELD.
FABRIC OPENING DEVICE.
APPLICATION FILED FEB. 5, 1910.

995,522.

Patented June 20, 1911.

3 SHEETS—SHEET 3.

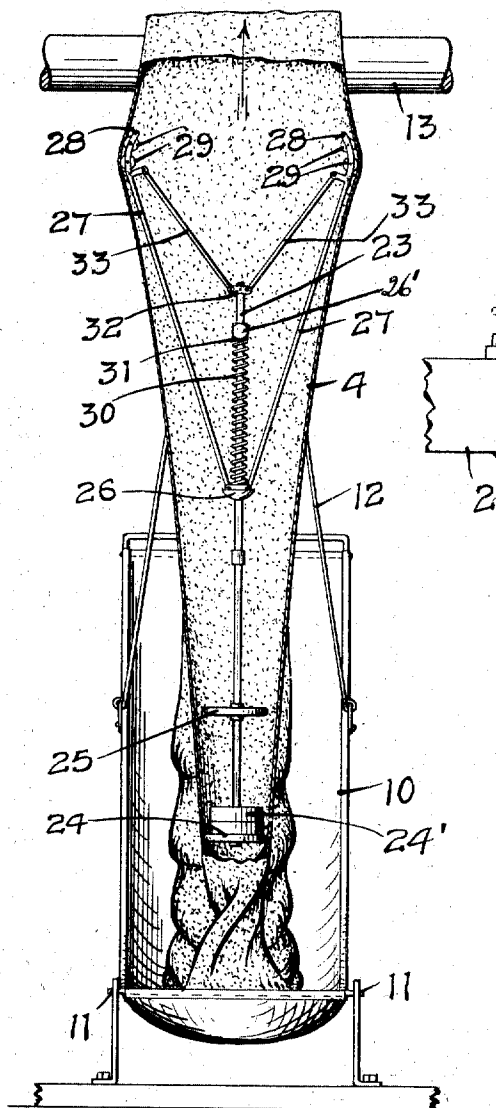


Fig 3. x-x

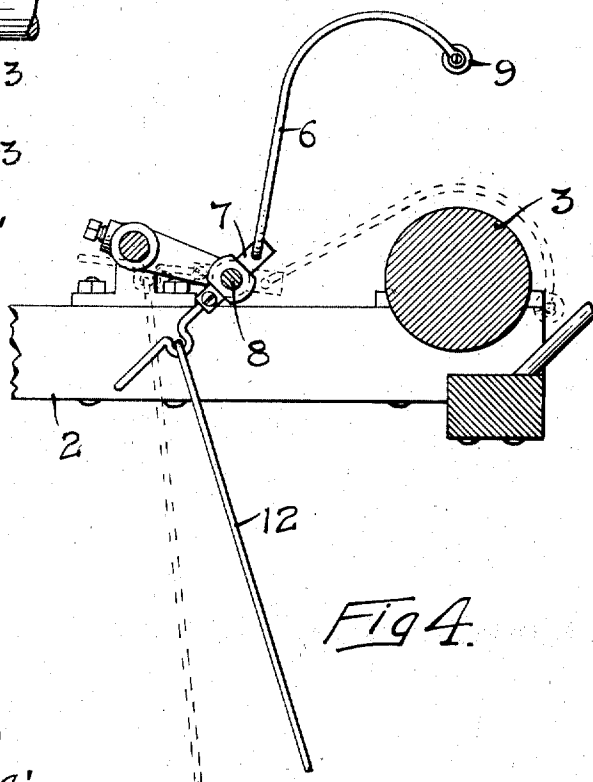


Fig 4.

WITNESSES
M. Walstrom
J. B. Barnes

INVENTOR
FRANKLIN CHATFIELD
BY *Paul & Paul*
ATTORNEYS

UNITED STATES PATENT OFFICE.

FRANKLIN CHATFIELD, OF MINNEAPOLIS, MINNESOTA.

FABRIC-OPENING DEVICE.

995,522.

Specification of Letters Patent. Patented June 20, 1911.

Application filed February 5, 1910. Serial No. 542,367.

To all whom it may concern:

Be it known that I, FRANKLIN CHATFIELD, of Minneapolis, Hennepin county, Minnesota, have invented certain new and useful
5 Improvements in Fabric-Opening Devices, of which the following is a specification.

The primary object of my invention is to provide means for opening a fabric tube before it enters the drier, and untwisting or
10 uncoiling the tube when it is necessary to do so. Generally this work has been done by hand and has been both laborious and expensive. My invention contemplates the use of an opening or untwisting device in connection with the fabric tube, which will be
15 extremely simple in construction and operation and entirely automatic.

A further object is to provide a receptacle with means for regulating the delivery of
20 the fabric thereto.

The invention consists generally in means disposed within the tube and supported by frictional engagement with the wall of the tube, the weight of said means operating to
25 open the tube and uncoil or untwist it when necessary as the tube is fed along.

Further the invention consists in a feed regulating mechanism by which the delivery of the tube is controlled.

30 Further the invention consists in means for checking the feed of the fabric when the weight of the opening device fails to open or uncoil the tube.

In the accompanying drawings forming
35 part of this specification, Figure 1 is a plan view of a machine embodying my invention, Fig. 2 is a side view, partially in section, illustrating the manner of feeding the fabric tube into the machine, Fig. 3 is an elevation of the machine with the fabric tube
40 broken away to show the straightening device, Fig. 4 is a detail view of the fabric feeding means.

In the drawing, 2 represents a suitable
45 frame, 3 a feed roller journaled therein over which the fabric tube 4 passes from a suitable receptacle 5. The fabric rests by gravity upon the roll and is fed with the revolution of the roll from the receptacle 5. Arms
50 6 are carried by brackets 7 pivoted at 8 and between these arms is a roll 9 which extends lengthwise of the roll 3 beneath the fabric tube. A receptacle 10 is pivoted at 11 and a bail 12 connects the said receptacle with the

bracket 7, so that when the bracket is de- 55 pressed, the arms 6 will be oscillated, the roll 9 lifted to raise the tube out of contact with the roll 3 and temporarily check the feed of the fabric. This takes place when a certain weight of fabric has accumulated in the receptacle 10 sufficient to overcome the weight 60 of the arms, roll 9 and the fabric tube. At this time the receptacle will swing downward, lifting the fabric out of contact with the roll and checking the feed of the fabric 65 until the desired amount has been drawn from the receptacle. The tube passes up between rollers 13 and over a roller 14 at the top of the machine frame and from thence to the drier, or to any other apparatus by 70 which the next step of the process is performed.

Arms 15 are secured on a shaft 15' and carry rollers 13 which are adapted to swing upwardly and operate the clutch device to 75 stop the feed in case the opening apparatus is carried up by the fabric into engagement with the rollers. The shaft 15' has a fork 16 arranged to receive an arm 17 on a rock shaft 18, said rock shaft having an arm 19 80 connecting it with a clutch device 20 on a shaft 21. When the rolls 13 are raised by the engagement of the straightening device therewith, the clutch 20 will be operated to stop the feed of the fabric. The straighten- 85 ing device, which I have illustrated in detail in Fig. 3, consists of a rod 23 having wheels 24 and 25 thereon near its lower end adapted to carry removable scale weights 24' which I utilize when the device is used for a heavy 90 fabric. A sliding collar 26 is mounted on the rod 23 and pivotally connected with arms 27 which diverge upwardly from said collar, terminating in slightly curved ends 28 carrying anti-friction wheels 29. A 95 thumb screw 26', (see Fig. 3) is mounted on the stop 31 and engages the rod 23 to lock the stop in its adjusted position thereon. These wheels bear on the fabric and follow the ribs therein. The collar 26 is slidable 100 against the tension of a spring 30 arranged on said rod between said collar and an adjustable stop 31, by the movement of which the tension of the spring can be increased or decreased in a given stroke of the collar. 105 The spring tends to force the collar 26 downwardly on the rod and spread the arms 27, holding them outwardly against the fabric

with a yielding pressure. A clamp 32 is mounted on the upper end of the rod 23 and pivotally connected by arms 33 with the upper ends of the arms 27. These arms 33 hold the arms 27 outwardly or press them apart, acting as guides therefor during the movement of the collar 26 on the rod 23. The opening device lies loosely in the tube below the rollers 13, being supported entirely by its frictional engagement with the walls of the tube, and its weight causes the twists in the fabric to be unwound, opening the tube and smoothing out the wrinkles and creases as the fabric slides over the wheels and arms upwardly between the rollers 13. In case a knot or twist forms in the tube below the opening device and does not uncoil or unwind, the opening device will be raised into contact with the rollers 13 and the feed of the tube will be temporarily stopped when the attendant will untwist the tube by hand, the opening device will drop down to its normal position and the feed will be automatically resumed.

The device as shown is adapted for various sizes of tubes and weights of fabric. For heavy fabric I may place a weight 24' on the rod 23 to assist in holding the device in place in the tube and preventing it from being carried upwardly with the tube against the rollers. By movement of the stop 31 the tension of the spring can be increased or decreased to adapt the device for fabrics of different weight or tubes of different sizes. The leverage of the arms 27 on the spring will increase as they move toward the rod and will equalize the increasing resistance of the spring resulting from such a movement. This increased leverage is due to the fact that the links 33 and the rod 23 and the slide 26 form, in effect, a toggle arrangement, and the nearer the links 33 are in line with the rod 23 the greater force the arms 27 will exert on the spring 30 and evidently, if the block 31 is locked by means of its set screw, the movement of the slide 26 upwardly on the rod will compress the spring 30 and increase its resistance to the movement of the arms. In this way I am able to provide a substantially uniform pressure for the varying sizes of tubes.

In various ways the details of construction of this opening device may be modified without departing from the spirit of my invention, the essential feature being the appliance adapted for tubes of various sizes and weights and capable of opening and smoothing the tube before its delivery to the drier. A number of these devices are usually arranged in a group where an attendant can easily care for them, in twisting or uncoiling portions of the tubes which the opening device may be unable to separate.

I claim as my invention:—

65 1. The combination, with a fabric feeding

means, of a tilting receptacle arranged to tilt under the weight of a predetermined amount of fabric therein, and means connected with said receptacle and operated thereby for temporarily supporting the fabric out of contact with said feeding means. 70

2. The combination, with a fabric feeding roll, of a tilting receptacle arranged to tilt under the weight of a predetermined amount of fabric therein, and means connected with said receptacle and operated thereby for temporarily moving the fabric out of contact with said roll. 75

3. The combination, with a fabric feeding roll, of a tilting receptacle arranged to tilt under the weight of a predetermined amount of fabric therein, pivoted arms overhanging said roll, means connecting said arms with one another and over which connecting means the fabric passes, said tilting receptacle being operatively connected with said arms and into which receptacle the fabric is fed. 80

4. A fabric tube opening device comprising a frame having arms adapted to bear on the fabric, and said frame being supported by frictional engagement of its arms with the fabric. 85

5. A device for untwisting a fabric tube, consisting of a rod, arms slidably mounted on said rod and adapted to bear on the wall of the tube, and braces for holding said arms apart, said rod and arms being suspended by frictional engagement of said arms with the wall of the tube. 90

6. A fabric tube opening device, comprising means within the tube and adapted to bear on the walls thereof and supported by frictional engagement with the wall of said tube, the weight of said means operating to unwind or untwist the tube as it is fed along. 95

7. The combination, with means for feeding a fabric tube vertically, of means adapted to be placed within said tube below said feeding means and bearing on the wall of said tube and held by frictional engagement with the wall of said tube and its weight operating to untwist or unwind the tube. 100

8. A fabric tube opening device, comprising a rod and adapted to fit within a fabric tube, a collar slidable on the upper portion of said rod, arms pivotally connected with said collar and having outer ends adapted to bear on the wall of the tube, said arms supporting said rod by their frictional engagement with the walls of said tube, braces slidably connecting said rod with the outer portions of said arms, and a spring interposed between said braces and arms on said rod. 105

9. A fabric tube opening device, comprising a rod having removable weights at its lower end, and spring pressed arms slidably connected with said rod and adapted to bear on the walls of the fabric tube, the frictional 110

engagement of said arms with the walls of said tube supporting said rod and said weight within said tube for the purpose specified.

5 10. A fabric tube opening device, comprising a rod, spring pressed arms slidably mounted at one end on said rod and having anti-friction wheels adapted to bear on the wall of the tube, means for guiding said arms; said opening device being suspended by the frictional engagement of said wheels with the walls of said tube, means for feeding the fabric tube, means controlling the operation of said feeding means, and rollers in the path of said opening device and operatively connected with said controlling means.

11. A fabric tube opening device comprising a rod, arms slidable thereon and normally in frictional engagement with the walls of said tube and supporting said rod by such engagement, the weight of said rod and arms operating to unwind or untwist the fabric tube, means for feeding the fabric, and means operatively connected with said feeding means to stop the same and located in the path of said opening device to be actuated thereby when the weight of said opening device fails to uncoil the tube, substantially as described.

12. A fabric opening device comprising a frame having means adapted to bear on the wall of the fabric and supported by frictional engagement of said means with the fabric, and a wheel carried by the lower portion of said frame.

13. A fabric tube opening device comprising a suitable frame and a wheel carried thereby, said frame being adapted to bear on the wall of the fabric, the weight of said frame and wheel causing the coiled or twisted tube below said wheel to unwind before passing the same.

14. The combination, with means for feeding a fabric tube at an angle to the horizontal, of a fabric opening device adapted to be loosely placed within the tube and supported by frictional engagement with the wall of the fabric, the weight of said device operating to unwind or untwist the fabric tube.

15. A fabric tube opening device comprising a frame having means for bearing on the wall of the tube and supported by frictional engagement with the tube, and removable weights carried by said frame.

16. A fabric tube opening device comprising an opening device having means adapted to bear on the wall of the fabric and supported by frictional engagement of said means with the fabric, the weight of said opening device operating to unwind and open the fabric tube, means for feeding the fabric, means operatively connected with said feeding means to stop the same and located in the path of said opening device to be actuated thereby when the weight of said opening device fails to uncoil the tube.

17. A fabric tube opening device comprising an expansible frame adapted to be placed within a fabric tube and supported by frictional engagement with the wall of the fabric, and means for regulating the degree of expansion of said frame to adapt it for fabrics of different weight or tubes of different sizes.

18. A fabric tube opening device comprising spring actuated arms adapted to bear on the inner surface of the tube and supported by frictional engagement with the tube, and means for increasing or decreasing the spring tension on said arms.

19. A fabric tube opening device comprising a rod, spring actuated arms mounted thereon and adapted to contact with the inner wall of the fabric and be supported thereby, the weight of said rod and arms operating to unwind and open the tube.

20. A fabric tube opening device comprising arms adapted to bear on the inner surface of a fabric tube and supported by frictional engagement with said tube, means for yieldingly holding said arms in contact with said tube and a weight device connected with said arms.

21. A fabric tube opening device comprising a rod, arms mounted thereon and adapted to contact with the inner surface of a fabric tube, a spring carried by said rod, the leverage of said arms on said spring increasing with the movement of the arms toward said rod, whereby the increased resistance of the spring will be equalized, the weight of said arms and rod operating to open said tube.

In witness whereof, I have hereunto set my hand this 27th day of January, 1910.

FRANKLIN CHATFIELD.

Witnesses:

L. C. CRONEN,
J. A. BYRNES.