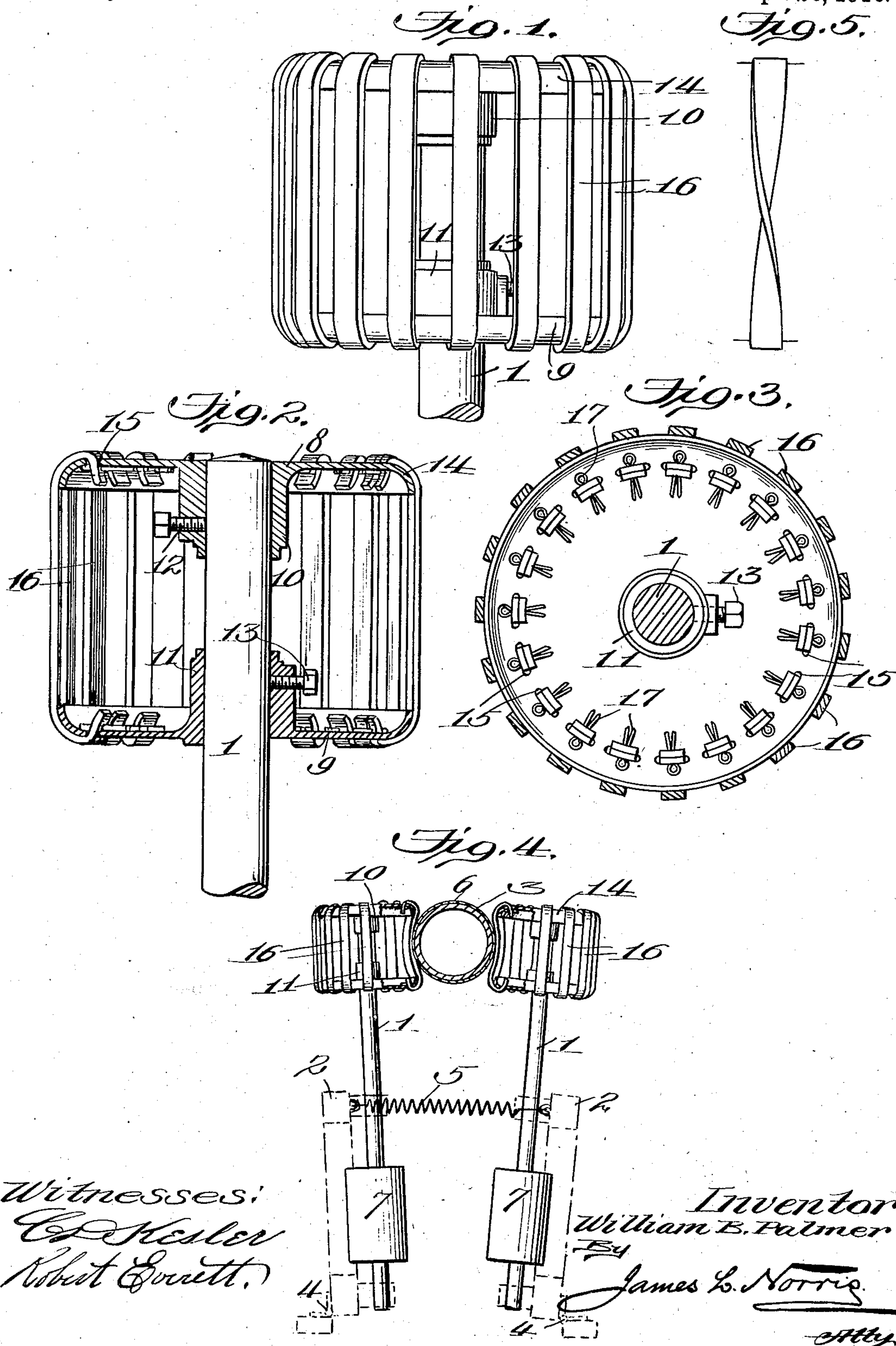


W. B. PALMER.
FABRIC FEEDING ROLL OR HEAD.
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956,408.

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Witnesses:
Ed. Kesler
Robert Everett.

Inventor
William B. Palmer
By
James L. Norris
Atty.

UNITED STATES PATENT OFFICE.

WILLIAM B. PALMER, OF GREENWICH, NEW YORK, ASSIGNOR OF ONE-HALF TO JESSE V. PALMER, OF GREENWICH, NEW YORK.

FABRIC-FEEDING ROLL OR HEAD.

956,408.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILLIAM B. PALMER, a citizen of the United States, residing at Greenwich, in the county of Washington and State of New York, have invented new and useful Improvements in Fabric-Feeding Rolls or Heads, of which the following is a specification.

My present invention relates to improvements in apparatus for handling tubular fabrics and more especially to the rolls that are used for feeding or advancing the fabric along a tube or mandrel, the primary object of the invention being to provide an improved feed roll of this class that has a periphery which presents a plurality of circumferentially-spaced fabric-engaging portions which are preferably flexible or yieldable and are under tension whereby said portions may act effectively upon the fabric so as to obtain a firm or non-slipping hold that will positively feed the fabric along the tube or mandrel, the invention consisting essentially in providing means for adjusting and maintaining the tension of the fabric-engaging portions whereby the same may at all times have a proper engagement with the fabric, to provide a simple and improved construction for the roll and furthermore to provide an improved mode of mounting the fabric-engaging portions upon the roll, the present invention being an improvement upon the rolls covered by my prior patent, No. 878,995, granted February 11, 1908.

To these and other ends, the invention consists in certain improvements, and combinations and arrangements of parts, all as will be hereinafter more fully described, the novel features being pointed out particularly in the claims at the end of the specification.

In the accompanying drawing: Figure 1 represents a side elevation of a fabric feeding roll constructed in accordance with my present invention; Fig. 2 represents a central vertical section of the roll shown in Fig. 1; Fig. 3 represents a transverse section of the roll; Fig. 4 shows a pair of the rolls mounted in coöperative relation with a tubular fabric supported by a tubular mandrel, the inner portions of the rolls being broken away so as to show the manner in which the rolls engage the fabric; and Fig. 5 is a detail view of one of the fabric-engaging strips showing the same twisted whereby it will have a tendency to lift the fabric upon the

receiving tube or to sustain its weight and thereby minimize friction and insure a proper packing of the fabric thereon.

Similar parts are designated by the same reference characters in the several views. 60

Rolls constructed in accordance with the present invention may be used advantageously in machines of various kinds wherein it is necessary to feed or advance a tubular fabric over a tube or mandrel and, moreover, various constructions may be adopted for carrying out the objects of the present invention which will be included within the scope of the claims at the end of the specification. 70

In the accompanying drawing, I have shown one particular embodiment of the invention and it is shown in connection with an apparatus for inverting tubular fabrics such as disclosed in my prior patent aforesaid. It will be understood, however, that the invention is not limited either to the precise embodiment shown or to the particular use to which it is shown applied. 75

In the present instance each roll is mounted upon a shaft 1 which is journaled in appropriate bearings upon a frame 2, a pair of these frames being shown in Fig. 4 which are mounted at opposite sides of a tubular mandrel 3 and they are hinged at 4 and connected by a spring 5 whereby the frames will have a normal tendency to move inwardly and thereby press the rolls against the fabric 6 upon the tubular mandrel with a yielding pressure. The roll supporting shafts are provided with pulleys 7 whereby they may be driven from a power shaft by means of belts or other appropriate power transmitting means. 80 85 90

In the present instance, each roll consists of a pair of heads 8 and 9 that are preferably annular and substantially disk-shaped, and these heads have axially elongated hubs 10 and 11 which closely fit the shaft so as to prevent tilting of the heads relatively thereto although either or both of the heads may be adjusted in a direction axially of the shaft so as to vary the distance between them, and in order to lock or retain the heads in any desired adjusted relation, set-screws 12 and 13 are provided which are preferably tapped through the hubs thereon and coöperate with the shaft. These heads may be duplicates although they are mounted on the shaft in reverse relation, each head 95 100 105 110

having its periphery rounded or curved as at 14 and each head or disk is also provided with an annular row of openings or apertures 15 which are preferably spaced concentrically with the axis of the head within the curved or rounded portion thereof.

In order to effectively feed the fabric, especially the tubular fabric, along a mandrel, it has been found necessary by experience to use a feed roll that has a peculiar construction, it being necessary that the roll should have a series of circumferentially spaced fabric-engaging portions which will cause the fabric to be pressed inwardly between such portions, and when the fabric so enters between the spaced portions on the periphery of the roll, the latter is capable of obtaining a non-slipping or firm hold upon the fabric and it is thereby able to feed the fabric positively along the tube or mandrel on which it is supported. Various means may be employed for obtaining this result, a plurality of strips 16 being shown in the present instance that are preferably composed of pliable or flexible material, leather being suitable and, in the construction shown these strips are all of the same length and width and the roughened side of the leather is turned outwardly so as to insure the proper frictional hold of the strips upon the fabric. These strips are applied at suitable intervals to the periphery of the roll, their ends being curved inwardly over the correspondingly curved edges of the two heads, and their ends are thence extended through the appropriate openings or apertures 15 therein and suitable means are employed to fasten the ends of the strips so that they may be maintained under the proper degree of tension. In the present instance, the ends of the strips are perforated and are secured in position by means of pins 17 which pass through the perforated ends of the strips and lie against the adjacent surfaces of the heads. By this construction, the strips may be easily applied and readily renewed when necessary.

All of the strips should be of the same length and after one of the set-screws has been loosened, the two heads are forced apart until the peripheral strips are under the appropriate tension, any suitable means being used for separating the heads after which the set-screw is tightened and the heads are thereby maintained at such a distance apart as will sustain the tension upon the strips. In the operation of the rolls, the same are preferably held in such relation to the mandrel supporting the fabric as to cause the strips upon the roll to assume a somewhat curved or bowed form as shown in Fig. 4 whereby the roll may have an engagement with a sufficient area of the fabric, and the revolving movement of the roll will cause its periphery to so engage the

fabric as to permit a positive feeding movement thereof along the mandrel. Obviously, the yieldable nature of the periphery of each roll will permit it to accommodate any irregularities in the surface or thickness of the fabric without injuring it, and the strips may be maintained at the proper tension by adjusting the heads from time to time as occasion may require. Instead of using a plurality of separate strips, these fabric-engaging portions that are spaced circumferentially of the roll could, obviously be formed of one or more longer strips that would be threaded or laced through the openings in the heads and, in fact, the rolls may be formed in various ways whereby their peripheries shall have a series of circumferentially spaced portions which enable the rolls to obtain the proper frictional hold upon the fabric and, moreover, the invention is not limited to the specific means shown for securing the fabric-engaging portions of the rolls to the heads, it being understood that only one embodiment of the invention is shown.

Ordinarily, in placing a fabric upon the receiving tube or mandrel, such fabric will be suspended and the weight of the fabric upon the upper side of the tube will produce a certain amount of friction. In order to minimize the friction of the fabric on the upper side of the tube and also to insure a proper packing of the fabric, one of the heads may be slightly rotated with respect to the other so as to give the fabric-engaging portions thereon such a pitch as will tend to lift or support the weight of the fabric as the rolls revolve, or this result can be obtained by giving a twist to the strips or fabric-engaging portions as shown in Fig. 5 whereby a slightly inclined portion of the fabric-engaging strip will act to lift or sustain the weight of the fabric and in this way, the frictional resistance to the packing of the fabric upon the tube is minimized and a proper packing is insured.

I claim as my invention:

1. A feed roll of the class described embodying a series of circumferentially spaced fabric-engaging portions, and means for simultaneously producing uniform tension on said fabric-engaging portions.

2. A feed roll of the class described having a flexible periphery to engage a fabric, and means for uniformly adjusting the tension of said flexible periphery in a direction axially of the roll.

3. A feed roll of the class described embodying fabric-engaging strips stretched in a direction substantially longitudinally thereof, and means capable of adjusting the tension of said strips while in stretched position.

4. A feed roll of the class described comprising means relatively adjustable to vary

the distance between them, and a plurality of fabric-engaging portions on the periphery of the roll, said portions being attached to and stretched between said heads and forming spaces between them.

5. A feed roll of the class described comprising a pair of heads, and fabric-engaging strips stretched between the heads, said heads being relatively adjustable to tension said strips.

6. A feed roll of the class described comprising a pair of heads, and fabric-engaging strips stretched between them, said heads being relatively adjustable to tension said strips and relatively rotatable to adjust the angle of engagement between said strips and the fabric.

7. A feed roll of the class described having axially adjustable heads provided with oppositely arranged rows of openings, and uniformly tensioned fabric-engaging portions forming a yielding periphery for the roll and engaged in said openings.

8. A feed roll of the class described comprising a pair of axially adjustable heads having annular rows of openings, and fabric-engaging strips uniformly stretched between said heads and engaged at their ends in said openings.

9. A feed roll of the class described comprising a shaft, a pair of heads mounted on and relatively adjustable axially thereof, and a plurality of strips stretched between said heads and spaced circumferentially thereof to form a yieldable fabric-engaging periphery for the roll.

10. A feed roll of the class described comprising a shaft, a pair of heads having hubs engaging said shaft, at least one of said hubs being adjustable axially on the shaft and having means for locking it in fixed position thereon, and a yieldable periphery for the roll embodying circumferentially spaced strips stretched between the heads.

11. The combination of a tube or mandrel, and a roll for feeding a fabric thereon having strips constituting fabric-engaging portions on its periphery, each strip, with respect to its length being adapted to engage the fabric at an acute angle to the length of said mandrel.

12. The combination of a fabric-receiving tube or mandrel, a roll for feeding a fabric thereon and having a yieldable periphery to engage the fabric, means for producing uniform longitudinal tension about the circumference of said yieldable periphery of the roll, and means for pressing the roll in engagement with the fabric on the tube or mandrel.

13. The combination of a fabric-receiving tube or mandrel, a pair of rolls arranged at the opposite sides thereof and having yieldable peripheries to engage a fabric thereon, means capable of producing uniform longitudinal tension about the circumference of each of said yieldable peripheries of the rolls, and means for yieldably pressing the rolls against the fabric on the tube or mandrel.

14. In a machine for inverting tubular fabrics, the combination of a fabric-receiving tube, a pair of feed rolls mounted at opposite sides thereof and having yieldable strips spaced circumferentially thereon to engage the fabric on the tube, and means capable of adjusting the tension of said strips while attached at both ends to said rolls.

15. The combination of a tube or mandrel and a revoluble roll for feeding a fabric thereon, said roll having a plurality of strips spaced circumferentially and constituting fabric-engaging portions, said strips having a circumferential pitch whereby such strips are adapted to engage the fabric at an acute angle to the length of the mandrel.

16. The combination of a tube or mandrel, and a revoluble roll for feeding a fabric thereon, said roll having a plurality of circumferentially spaced fabric-engaging strips on its periphery, the forward longitudinal edge of each strip being adapted to engage the fabric at an acute angle with respect to the length of said tube or mandrel.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

WILLIAM B. PALMER.

Witnesses:

JESSE V. PALMER,

WILLIAM E. COX.