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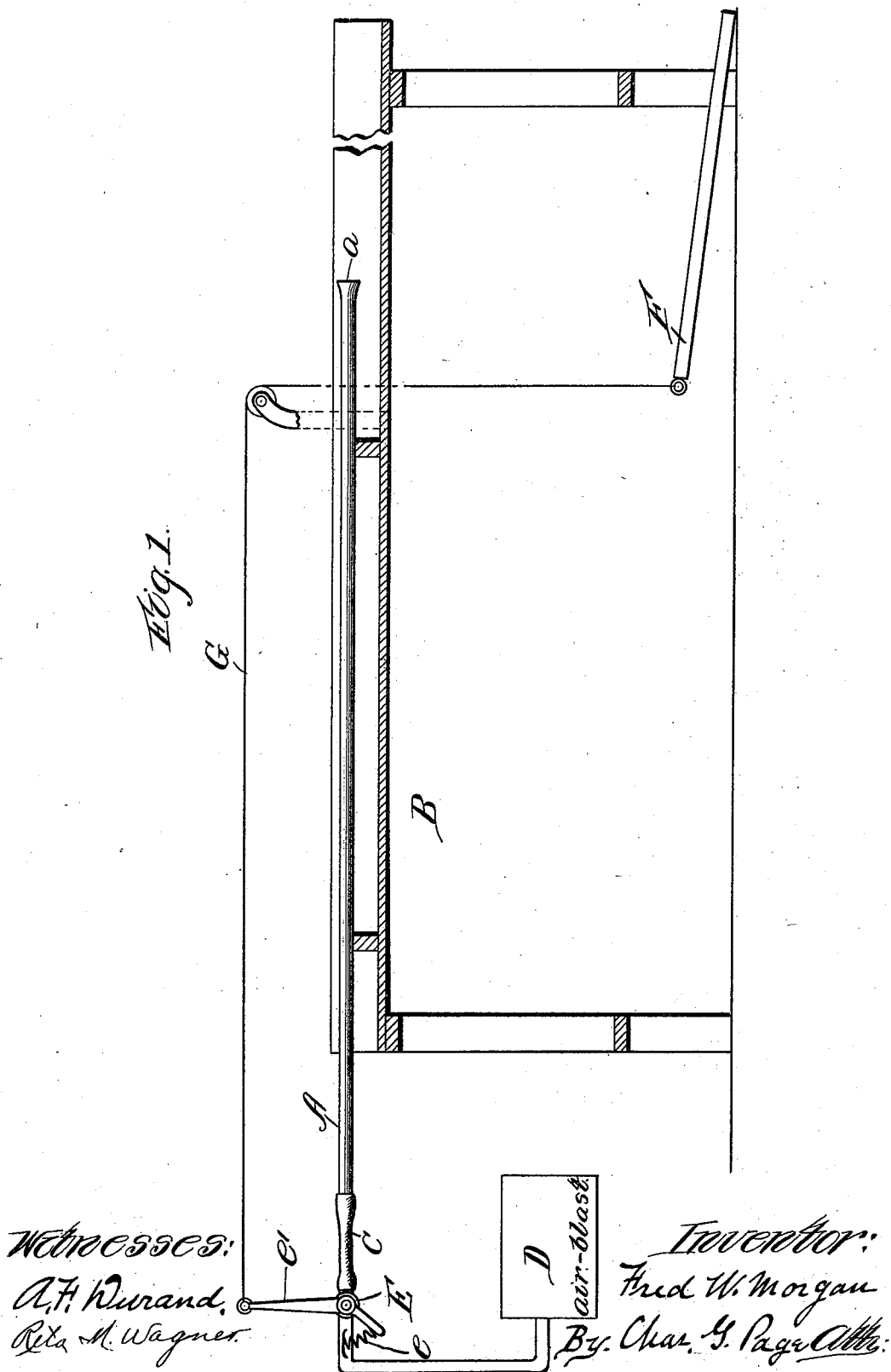
3 Sheets—Sheet 1.

F. W. MORGAN.

PNEUMATIC APPARATUS FOR TURNING AIR TUBES.

No. 548,264.

Patented Oct. 22, 1895.



Witnesses:

A. F. Wurand.

Reta M. Wagner.

Inventor:

Fred W. Morgan

By Chas. G. Page Atty.

(No Model.)

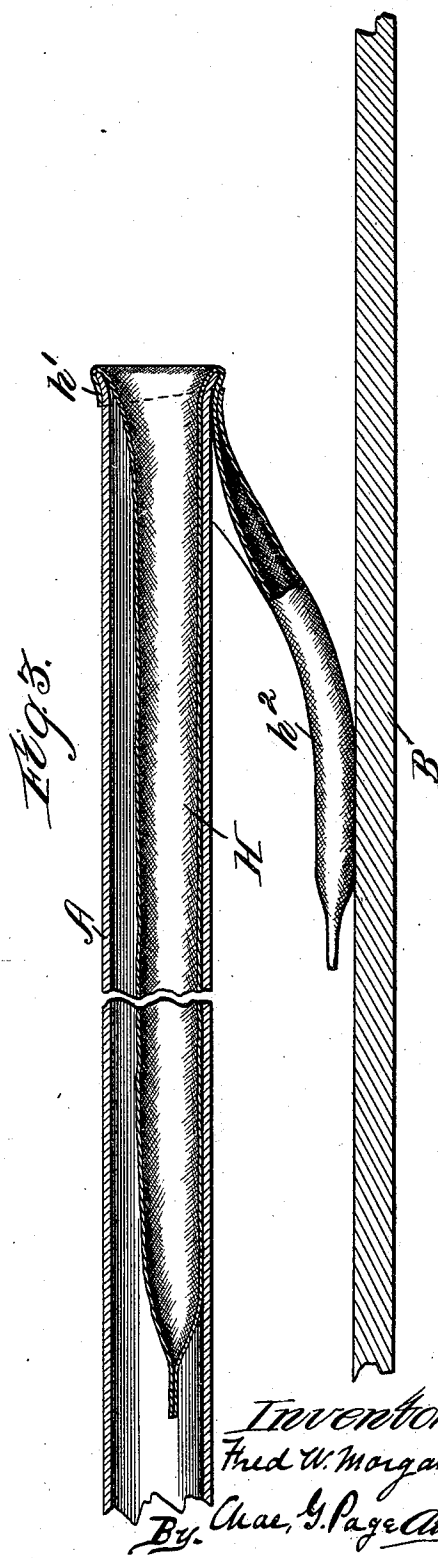
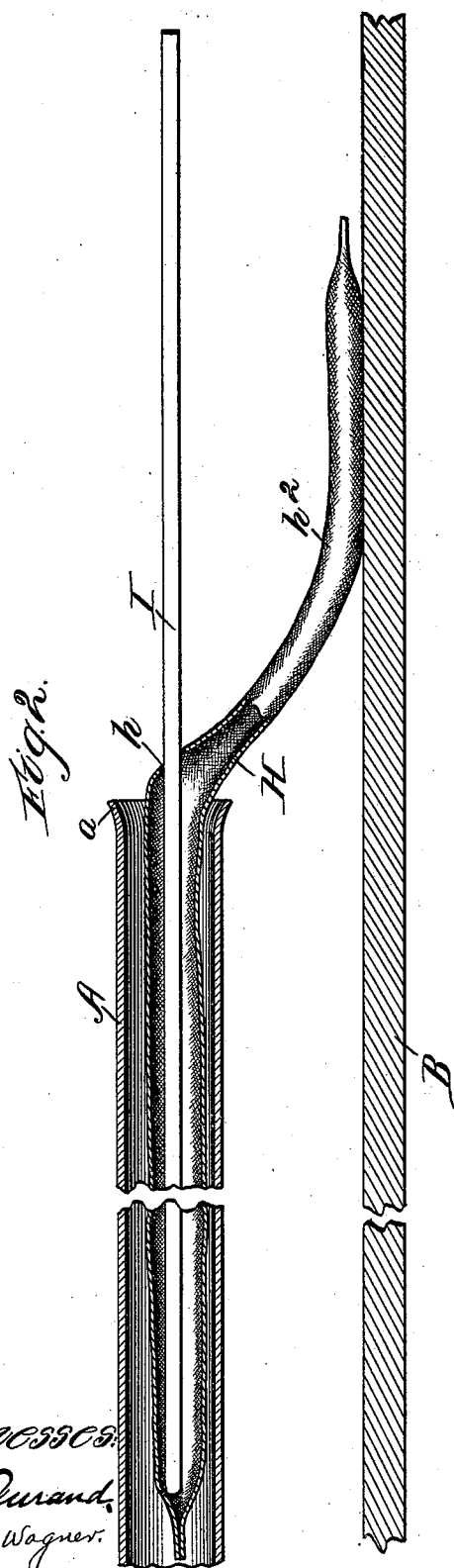
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A. F. Durand,
R. M. Wagner.

Inventor:
Fred W. Morgan
By: Chas. Y. Page *Att'y*

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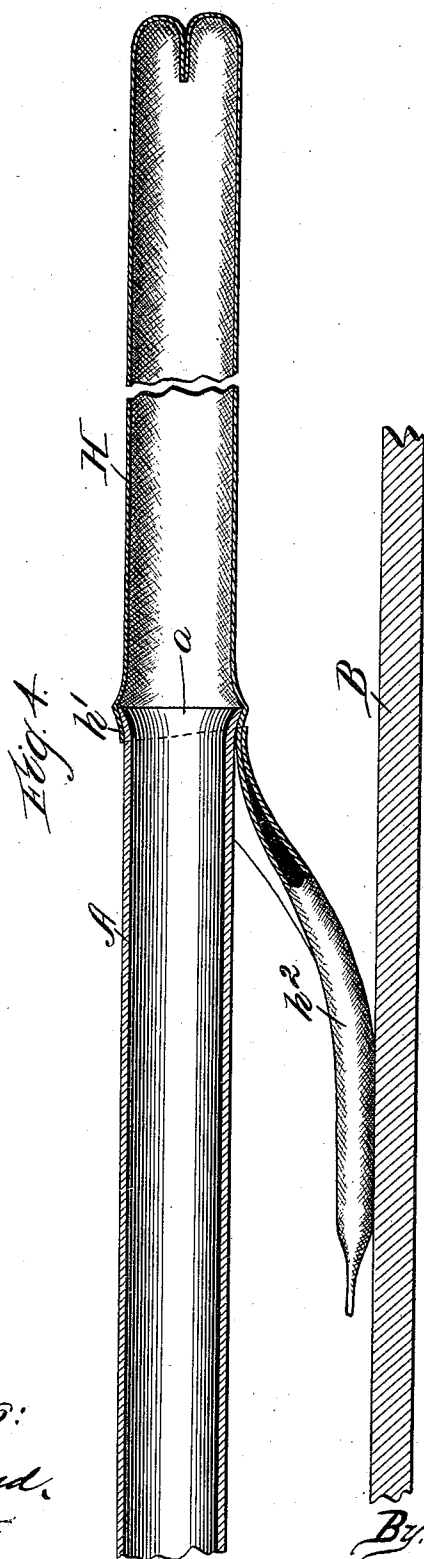
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PNEUMATIC APPARATUS FOR TURNING AIR TUBES.

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Patented Oct. 22, 1895.



Witnesses:
Arthur F. Durand,
Rela M. Wagner.

Inventor:
Fred W. Morgan.
By: Char. G. Page. atty

UNITED STATES PATENT OFFICE.

FRED W. MORGAN, OF CHICAGO, ILLINOIS.

PNEUMATIC APPARATUS FOR TURNING AIR-TUBES.

SPECIFICATION forming part of Letters Patent No. 548,264, dated October 22, 1895.

Application filed April 30, 1895. Serial No. 547,620. (No model.)

To all whom it may concern:

Be it known that I, FRED W. MORGAN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Pneumatic Apparatus for Turning Inner Air-Tubes for Pneumatic Tires, of which the following is a specification.

In order to provide elastic inner air-tubes for pneumatic tires with internally-arranged patching-ply, it is desirable to first turn the air-tube inside out, then attach the patching-ply to the exposed surface of the tube, and then again turn the tube so as to bring the patching-ply within the same. The process of turning the tube by hand is slow, laborious, and expensive.

The object of my invention is to provide extremely simple means whereby elastic inner air-tubes for pneumatic tires can be turned inside out with little labor and great rapidity, and to the attainment of such end I provide a long blast-tube having an open discharge end, over which a portion of the air-tube, about an opening in the latter, can be stretched and so held, whereby while all or a greater part of the remaining portion of the air-tube lies within the tubular casing it will be at one point so attached to the blast-tube that when it is expelled therefrom it must turn inside out through its said opening. The blast-tube is connected with some suitable means or apparatus for supplying a blast of air to the blast-tube at a point back of the discharge end of the latter, it being understood that any air-compressing machine or apparatus suitable for supplying a proper blast of air can be employed.

A suitable valve or cock is arranged between the blast apparatus and the blast-tube and placed subject to the control of an attendant, so that when the tube is in readiness for being turned inside out a blast of air of proper duration can be admitted into the blast-tube. Where the air-tube is closed at both ends and provided with an opening adjacent to one end, the said tube is turned inside out through such opening, and as a means for introducing the air-tube within the blast-tube I provide a push-rod, as hereinafter more conveniently explained in connection with the accompanying drawings, in which—

Figure 1 represents in elevation a pneu-

matic tube-turning apparatus embodying my invention, the table or bed being shown in vertical longitudinal section. In this figure the blast apparatus is indicated but not illustrated, it being understood that any suitable means or apparatus for supplying a proper blast of air can be employed. Fig. 2 represents portions of the blast-tube in longitudinal section and illustrates the method of introducing an air-tube into the blast-tube. The air-tube and blast-tube are shown broken away for convenience of illustration and a portion of the air-tube is shown in longitudinal section. Fig. 3 is a similar view showing a portion of the air-tube stretched upon one end of the blast-tube. Fig. 4 shows one end portion of the blast-tube in longitudinal section with the air-tube blown out therefrom and turned inside out, said air-tube being mainly in longitudinal section and broken away for convenience of illustration.

The blast-tube A is adapted to receive an inner air-tube for a pneumatic tire and is of such length that all or the greater portion of the air-tube can be extended along within the same, as indicated in Fig. 2, it being observed that the length of an inner inflatable air-tube for a pneumatic tire is usually from six to eight feet. The blast-tube is preferably cylindrical in cross-section, although its form in this respect could be varied. The blast-tube is arranged upon a support B and is held thereon so that its open end *a* is readily available to the attendant whose duty it is to introduce the air-tube therein. The opposite end of the blast-tube is connected by suitable tubing C with any suitable air-blast apparatus, (indicated at D.)

A valve or cock, as at E, is provided for opening and closing communication between the air-blast apparatus and the blast-tube, and as a desirable arrangement the valve or cock is subject to a closing-spring *e* and provided with an operating-lever *e'*, which is connected with a treadle F by suitable flexible connection G, in which way the treadle can be arranged below the open end of the blast-tube, as shown, and thereby permit the attendant to conveniently control the blast.

The air-tube H (represented) is understood to be an elastic inner air-tube for a pneumatic tire and is of the kind in which the ends of the tube are flattened and closed by pressure

and cement, either with or without vulcanization, it being usual, however, to vulcanize such ends, so as to effectively close the same. An air-tube of such character is provided
 5 with an opening h , which is formed near one end of the tube and provided for the usual flexible nipple. As a simple and rapid mode of introducing such air-tube within the tube-
 10 turning blast-tube A, a push-rod I is first introduced within the air-tube, and to such end it can be inserted through the opening h in said tube, and by such means the operator can readily introduce the air-tube in the open
 15 end a of the blast-tube and push the air-tube within the latter, as indicated in Fig. 2. The push-rod is then withdrawn from the air-tube, and the portion h' of the latter, around the
 20 opening h , is stretched upon the end a of the blast-tube, as in Fig. 3. The end a of the blast-tube is adapted to prevent the air-tube from becoming detached therefrom during
 25 the process of turning the air-tube, and for such purpose the end a of the blast-tube is made flaring, so as to provide an annular shoulder thereon.

After the push-rod has been removed from the air-tube a blast of compressed air is admitted from the blast apparatus into the blast-tube, and as a result the air-tube will be instantly expelled and turned inside out during
 30 its expulsion from the blast-tube, as in Fig. 4. The short portion h^2 of the air-tube shown in said figure can be turned inside out by hand, either before or after the main portion
 35 of the air-tube has been turned inside out; or such portion can be turned inside out by a repetition of the foregoing-described method of turning the main portion of said tube. It is also understood that where a hole occurs in
 40 the air-tube, as a result of either or both of its ends being open, an end portion of the air-tube can be stretched upon the discharge end of the blast-tube, and in such case, if the opposite end of the air-tube is closed, either
 45 temporarily or permanently, the air-tube can be expelled from the blast-tube and turned during such expulsion, as hereinbefore set forth.

What I claim as my invention is—

50 1. An apparatus for turning inner elastic air-tubes for pneumatic tires, comprising a source of supply of compressed air for producing a blast, and a blast-tube adapted to receive the air-tube and having its discharge
 55 end adapted to hold the marginal portion of the air-tube about an opening in the latter, said blast-tube being arranged to permit the air-tube to be expelled by the blast and to turn inside out during its expulsion, substantially
 60 as set forth.

2. A pneumatic apparatus for turning in-

side out, elastic inner air-tubes for pneumatic tires, comprising a blast-tube adapted to receive the air-tube and having its discharge
 65 end formed to permit the portion of the air-tube surrounding an opening in the latter to embrace said discharge end of the blast-tube, means for supplying the blast-tube with a blast of air at a point back of its discharge
 70 end, and a valve for admitting and cutting off the air-blast, the said blast-tube being adapted to permit the tube to be expelled therefrom by the blast and to turn inside out during its expulsion from the blast-tube, substantially
 75 as set forth.

3. A pneumatic apparatus for turning inside out, elastic, inner air-tubes for pneumatic tires, comprising a blast tube A arranged upon a support and adapted to receive the air-tube
 80 and having its discharge end formed to permit the portion of the air-tube surrounding an opening in the latter to embrace said discharge end of the blast-tube, means for supplying the blast-tube with a blast of air at a point back of its discharge end, and a valve
 85 for admitting and cutting off the air-blast to and from the blast-tube, said blast-tube being adapted to permit the tube to be expelled therefrom by the blast and to turn inside out during its expulsion from the blast-tube, substantially
 90 as set forth.

4. A pneumatic apparatus for turning inside out, elastic inner air-tubes for pneumatic tires, comprising a blast-tube A adapted to receive the air-tube, and having its discharge
 95 end formed to permit the portion of the air-tube surrounding an opening in the latter to embrace said discharge end of the blast-tube, means for supplying the blast-tube with a blast of air at a point back of its discharge
 100 end, a valve for admitting and cutting off the air blast, and a push rod I adapted for insertion within the air-tube, substantially as and for the purpose described.

5. A pneumatic apparatus for turning inside out, elastic inner air-tubes for pneumatic tires, comprising the blast tube A arranged upon a support and provided with a shoulder
 105 at its discharge end, means for supplying a blast of air to the blast tube, a valve for admitting and cutting off the air-blast, and a valve operating device subject to the control of an attendant, the said blast-tube being adapted to receive the air-tube and to permit
 110 the latter to be stretched upon its discharge end, substantially as and for the purpose described.

FRED W. MORGAN.

Witnesses:

ARTHUR F. DURAND,
 RETA M. WAGNER.