No. 751,836. PATENTED FEB. 9, 1904.

W. E. CUMBACK.

ROLLER FOR LAUNDRY MACHINES.

APPLICATION FILED FEB. 4, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1.

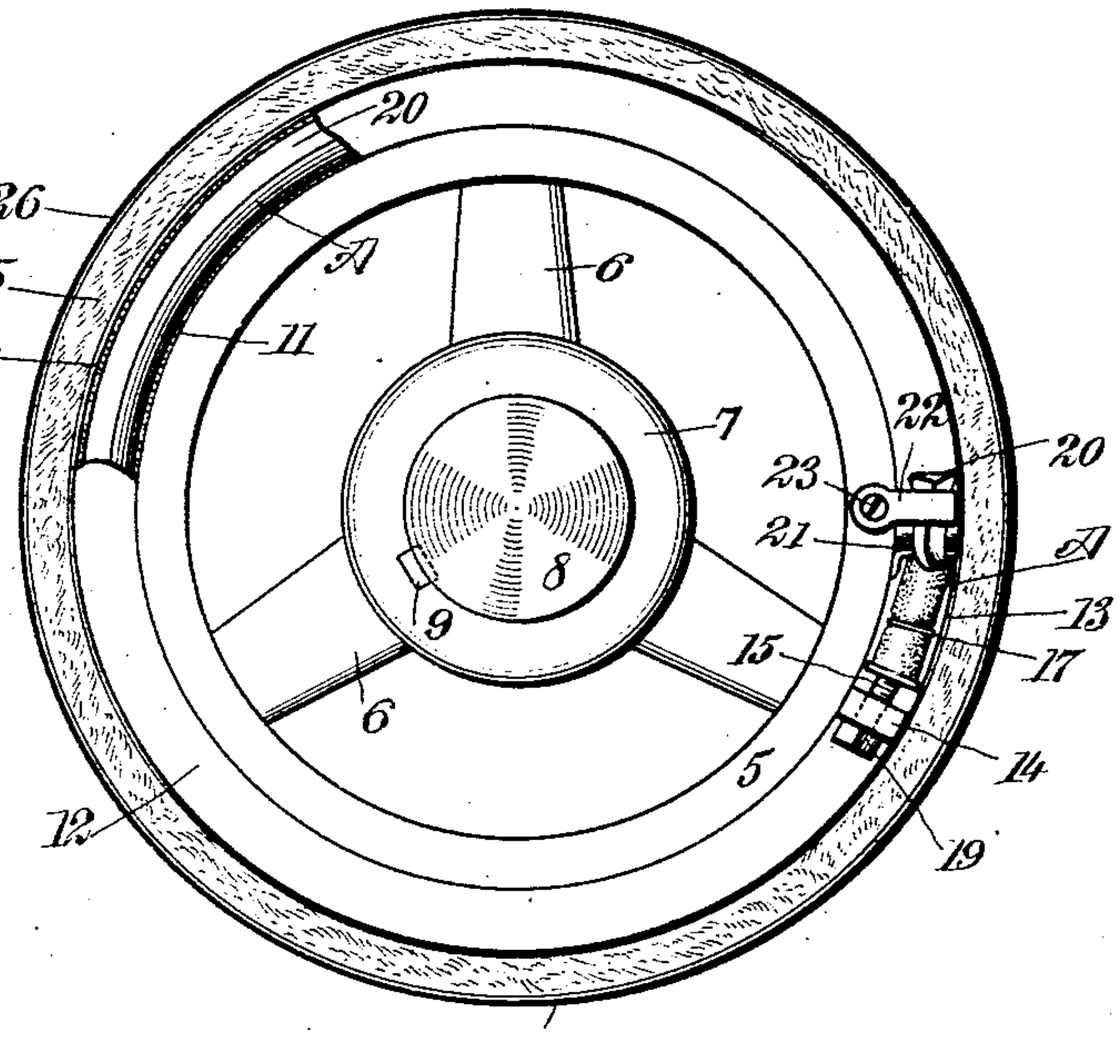

Fig. 2.

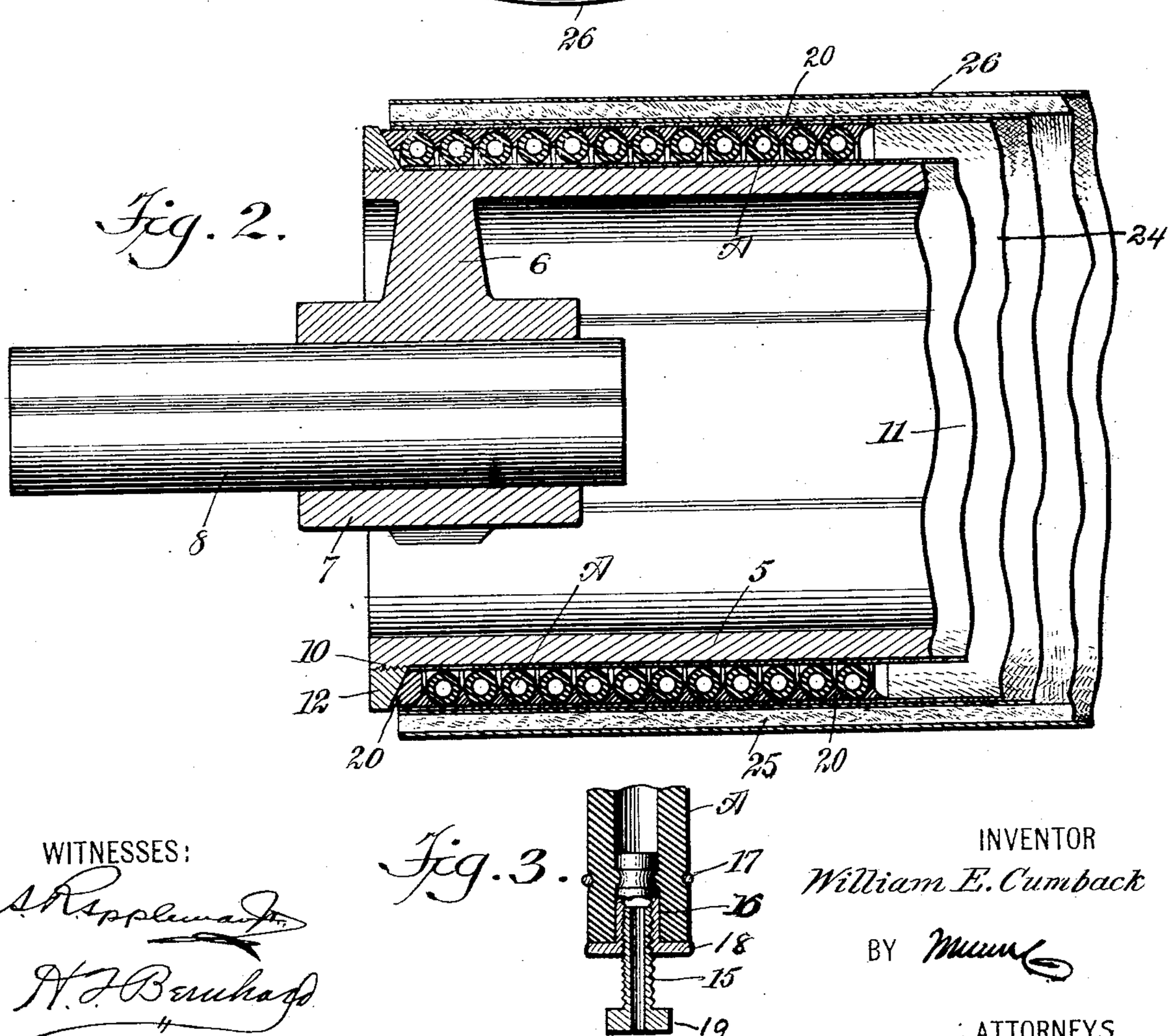

Fig. 3.

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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 4.

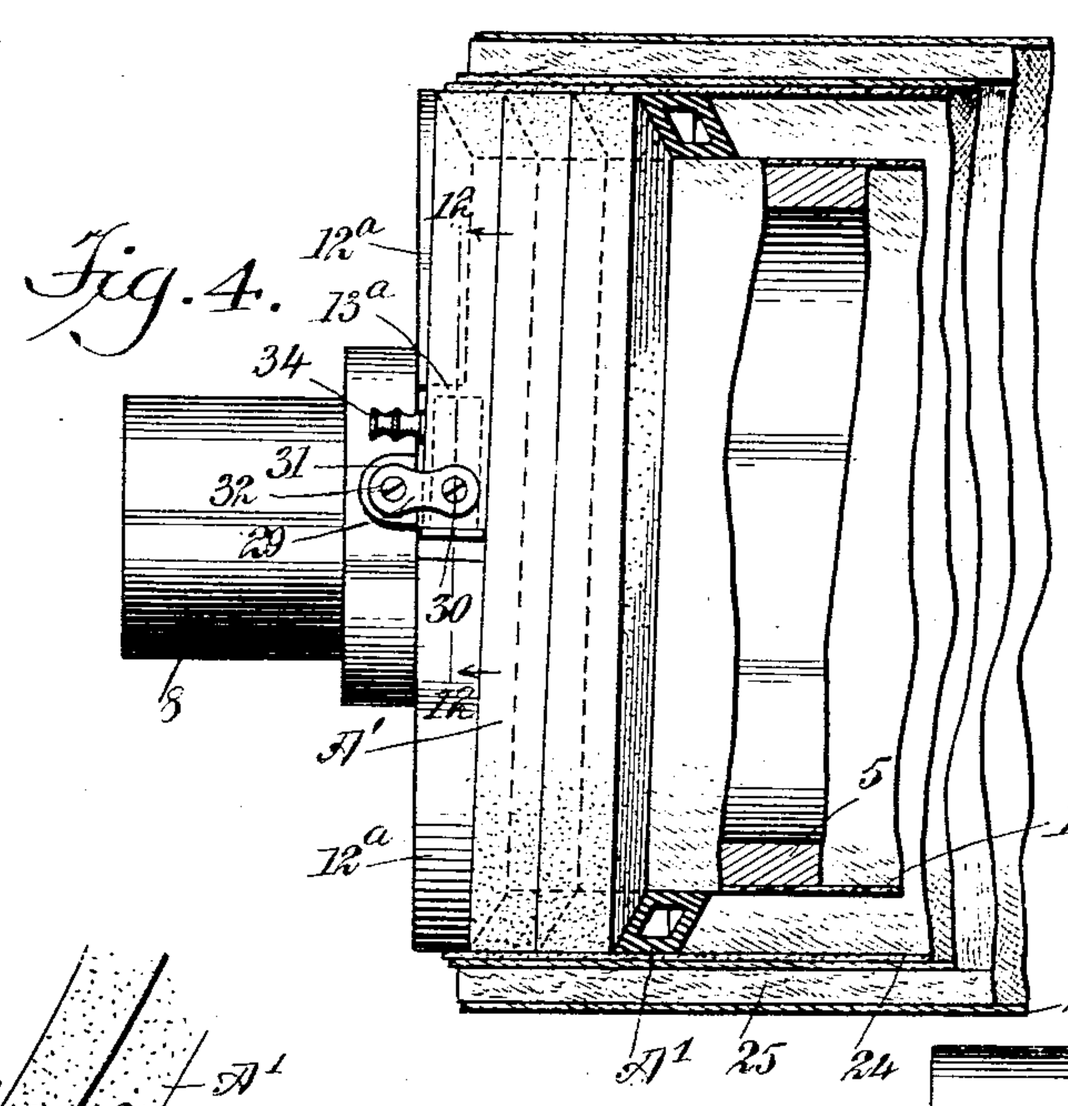


Fig. 10.

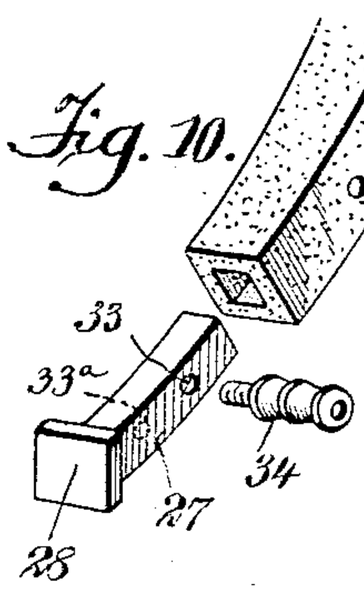


Fig. 5.

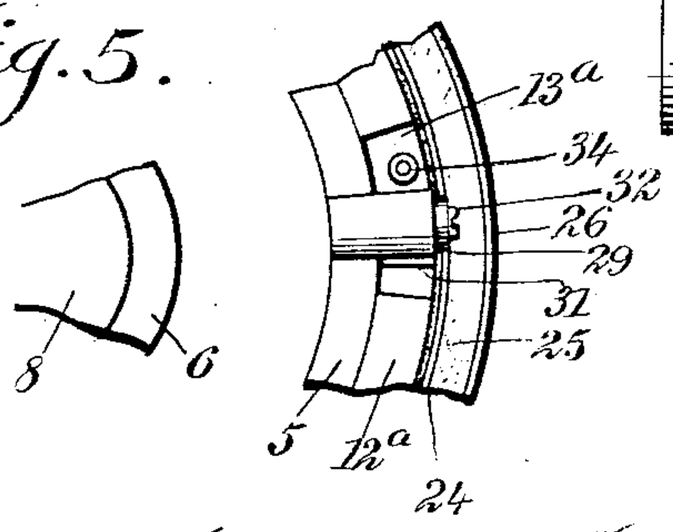


Fig. 11.

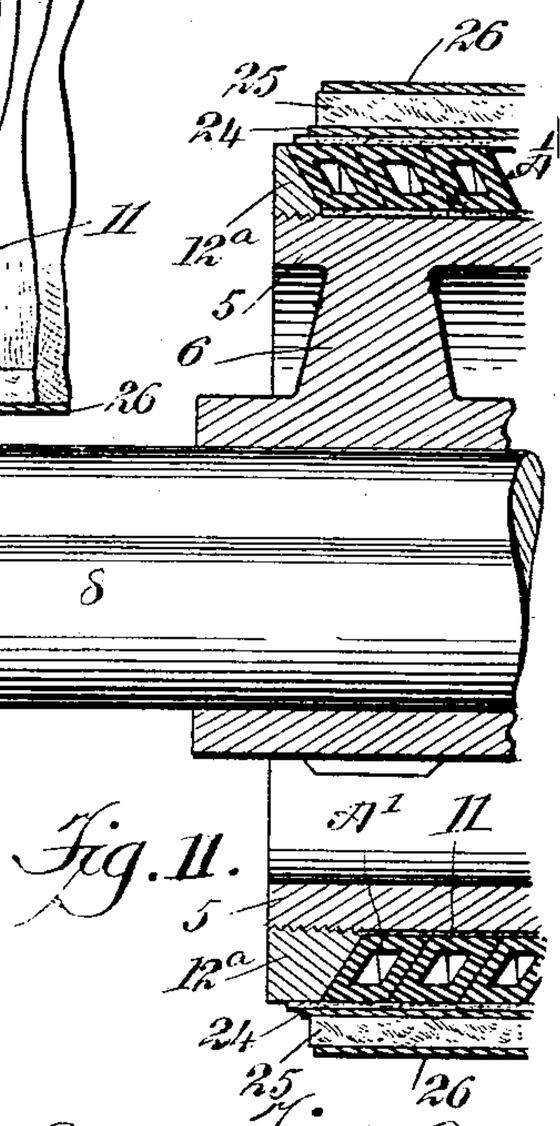


Fig. 6.

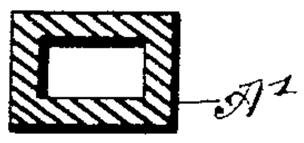


Fig. 7.

Fig. 8.

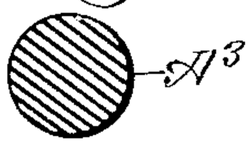


Fig. 9.

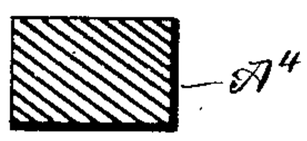
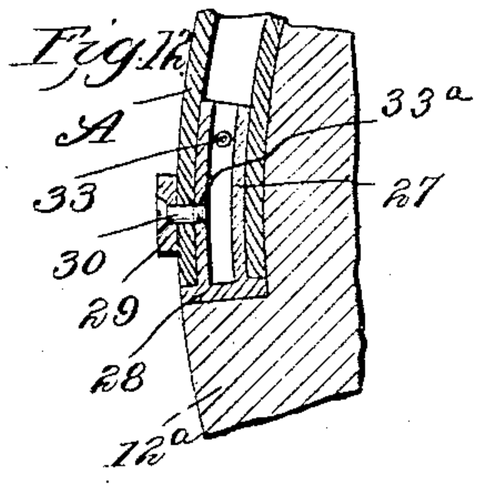


Fig. 12.



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No. 751,836. Patented February 9, 1904.

UNITED STATES PATENT OFFICE.

WILLIAM ELBERT CUMBACK, OF SAN FRANCISCO, CALIFORNIA.

ROLLER FOR LAUNDRY-MACHINES.

SPECIFICATION forming part of Letters Patent No. 751,836, dated February 9, 1904.

Application filed February 4, 1903. Serial No. 141,793. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM ELBERT CUMBACK, a citizen of the United States, and a resident of San Francisco, in the county of San Francisco and State of California, have invented a new and Improved Roller for Laundry-Machines, of which the following is a full, clear, and exact description.

This invention relates to improvements in rollers for laundry-machines, the said roller being useful in connection with laundry-machines of that class known as "mangles," although it may be used in collar-machines and, in fact, with all kinds of laundry and other machines which require the use of padded rollers.

In the present invention I aim to produce a padded roller which shall possess the required elasticity to secure smoothness of operation, increased efficiency as compared with ordinary covered rollers, durability, and economy in construction and repairs.

The improved roller of the present invention contemplates the employment of an air-cushion between a comparatively solid core or roller-shell and a fibrous jacket or cover, said air-cushion being preferably formed by a layer of hollow tubing wound spirally around the core and presenting in one form of construction an external smooth surface for the reception of an inclosing casing or jacket. Provision is also made for the maintenance of air in the cushion in order to secure uniform elasticity throughout the length and peripheral surface of the roller, and this air-cushion may be maintained by inflating the cushion under pressure or by permitting atmospheric air to circulate freely through the coils of the cushion.

Further objects and advantages of the invention will appear in the course of the subjoined description, and the novelty will be defined by the annexed claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is an end elevation of a padded elastic laundry-roller constructed in accordance with my invention and showing a part broken away to illustrate a portion of the hollow tube. Fig. 2 is a vertical longitudinal section through one end portion of the roller to illustrate the construction thereof, the remaining portion of the roller being broken away. Fig. 3 is a detail sectional view illustrating a means by which an inflating-pump may be connected detachably to a chamber of an air-cushion formed by a spiral hollow tube. Fig. 4 is a view, partly in side elevation and partly in longitudinal section, of an end portion of the roller, showing another form of construction, the middle and opposite end portions of said roller being omitted. Fig. 5 is a fragmentary detail view, in end elevation, of a portion of one end of the roller shown by Fig. 4 and illustrating a means whereby the end of the cushion-tube may be fastened to a part of the roller. Figs. 6, 7, 8, and 9 are views in cross-section of different forms of cushion layers which may be wrapped spirally around the roller-core to produce an elastic cushion thereon. Fig. 10 is a detail perspective view illustrating one means for fastening an end portion of the cushion-tube to the roller, said view also showing a detachable pump connection which may be employed to inflate the chambered cushion; and Fig. 11 is a detail sectional view of the roller, showing more clearly the tapering collar or flange adapted to be used in the construction of the roller shown by Figs. 4 and 5. Fig. 12 is a detail sectional view on the line 12 12 of Fig. 4.

In the construction of the padded elastic roller shown by Figs. 1 and 2 I employ a core or roller-shell 5, which is provided at each end portion with a series of inwardly-extending arms 6, adapted to support a hub 7. In this hub, at each end of the roller, is fitted a stub shaft or axle 8, adapted to be secured firmly in place by any suitable means, such as the key 9. The core 5 may advantageously be made in a single piece of metal, the same being externally threaded for a part of its length at each end portion, as indicated at 10 in Fig. 2. Around this core is wrapped one or more layers 11, of asbestos or other non-heat-conducting material, the same serv-

ing to protect the elastic envelop presently described from deterioration by heat absorbed by the metallic core when the roller is in use.

The leading feature of the present invention resides in an elastic envelop which is applied spirally to the asbestos-covered core, and in the preferred embodiment of this elastic envelop I employ a hollow strip A, which may be in the form of a tube, as represented by Fig. 2, or this enveloping strip may have the cross-sectional shape shown by Figs. 6 to 9, inclusive. The enveloping strips shown by Figs. 6 and 7 are hollow or chambered in cross-section, while the strips represented by Figs. 8 and 9 are solid. It is to be understood that a strip of suitable length, made of rubber or composition having a certain amount of elasticity or resiliency, must be provided to practically envelop the metallic core. Assuming that the elastic envelop is made of rubber tubing, it may be applied to the core by wrapping said tubing around the core in spiral layers, the coils of the enveloping strip lying close together, as shown by Fig. 2. This enveloping strip extends practically the full length of the core, and it constitutes an air-cushion for the elastic roller.

To hold the elastic enveloping strip in place, I provide each end of the roller with a collar 12, having an internal or female thread adapted to be screwed on the threaded part 10 of the core. The collar 12 is provided with a gap, slot, or opening, (indicated at 13 in Fig. 1,) and said collar is also provided with a lug or shoulder 14, which is adjacent to one terminal of the slot 13 and is made integral with the collar or fastened firmly thereto. This lug 14 is provided with a smooth opening, through which is passed an externally or male threaded tube 15. The end of the tubular enveloping strip is partly drawn through the slot or opening 13 in the collar 12 at each end of the roller, and in each end portion of said hollow strip is inserted a metallic bushing 16. (See Fig. 3.) Said bushing is fastened to the end portion of the hollow enveloping strip in any suitable way—as, for example, by wrapping a binding-wire 17 around the hollow enveloping strip at a point to compress the same around the bushing 16—and said bushing is furnished with an annular flange or head 18 and with an internal or female thread. (See Fig. 3) The threaded tube 15 passes loosely through the smooth opening in the lug 14 and is screwed into the threaded bushing 16, and on the opposite end of this threaded tubing 15 is secured a head 19, arranged to bear against the lug 14, and thereby couple the end portion of the hollow enveloping strip to a solid part of the roller.

It will be understood that the end portions of the hollow enveloping strip are coupled to the corresponding portions of the roller-core by the employment of the bushings 16 and by the threaded tubes 15. This construction provides vents at the end portions of the hollow enveloping core, thus permitting the free introduction and circulation of atmospheric air through the cushion afforded by the hollow enveloping strip.

The employment of a hollow enveloping strip which is circular in cross-section, and thereby takes the shape of an elastic tube, and the application of this circular hollow strip spirally to the core leaves a corrugated external surface on the enveloping jacket. It is desirable, however, to secure a smooth surface, and to accomplish this end I employ another elastic strip, which is of tapering form in cross-section, approximately triangular, as shown by Fig. 2. This supplemental elastic strip is coiled around the jacket formed by the primary hollow strip in a way to fit in the spaces between the coils, said supplemental strip being indicated at 20 in Fig. 2. The threaded collar 12 is provided with an inner beveled face, against which bears one edge of the tapering supplemental strip, and each end portion of this supplemental strip is carried or extended through the slot or opening 13 in the collar 12, one terminal wall of said slot being curved or rounded at 21 in Fig. 1 to afford a smooth bearing-surface around which the end portion of the supplemental strip may be bent without cutting the same. This end portion of the supplemental strip is adapted to be fastened in place by any suitable means—such, for example, as the clamping-plate 22, which is fastened by a screw 23 to the core 5 in Fig. 1. It should be understood that after the enveloping strip is applied to the core one end of the strip 20 is passed through the slot 21 and fastened by the plate 22, after which the strip 20 is wound or coiled between the beveled face of the collar 12 and the first coil of the enveloping strip, said strip 20 being thereafter applied to the coils of the enveloping strip, as shown by Fig. 2, in order to produce a smooth cylindrical surface on the roller. The elastic jacket or envelop formed by the two spiral strips is covered by an external layer of asbestos 24. This layer is applied to the smooth surface formed by the tubular strip and the solid supplemental strip, and, if desired, the asbestos may be applied in one or more layers to the elastic jacket, as shown by Fig. 2. Outside of the elastic envelop heretofore described is placed another jacket, 25, which may be in the form of the usual "blanket" employed in the construction of padded rollers generally, said blanket consisting of felt, a woven fabric, or any other approved material. Finally, the roll is covered by an external layer 26 of any suitable fabric, preferably canvas, and the layers 24, 25, and 26 should be applied tightly to the elastic jacket.

As heretofore described, the hollow elastic strip may be of any desired form in cross-section, and in Figs. 4 and 6 I have shown a hol-

low strip A′, which is rectangular in cross-section, said strip being applied to the core in the manner represented by Fig. 4. The core 5 and the asbestos layer 11 are the same as in the construction shown by Figs. 1 and 2; but the collar 12^a is modified in construction to serve in connection with the angular hollow strip. The collar 12^a is internally threaded in order that it may be screwed to the end portion of the core, and said collar is provided with a gap or slot 13^a. The collar in this form of construction is necessarily tapered, so as to have a thin end adjacent to one terminal of the slot 13^a, while the other end is quite thick, as clearly shown by Fig. 4, the collar gradually increasing in thickness throughout its perimeter from one end of the slot to the other. The collar 12^a has an inner beveled face which, owing to the tapering thickness of the collar, assumes a spiral shape and is presented to a flat side of the hollow strip A′, which is square in cross-section, thus affording a firm bearing for one side of the hollow square strip at an end portion of the roller. In each end portion of the square hollow tube is inserted a hollow plug 27, the outer end of which is closed by a head 28, thus making a part of the tube or hollow strip overlap the plug. The tube is lapped by a fastening-plate 29, and through this plate, the hollow strip or tube, and the hollow plug 27 passes a fastening-screw 30, the latter being screwed into a threaded opening provided in the hollow plug, as shown by Fig. 12. The plate 29 is disposed in lapping relation to a lug 31, which is integral with or secured fast to a part of the core, said plate being secured rigidly to the lug by a screw 32. The hollow plug 27 is provided at a point intermediate of its length with a lateral opening 33, which registers with an opening 33^a in the hollow tube, and these openings normally remain open to serve as a vent for the hollow strip or tube and provide for the free circulation of air through the jacket or cushion afforded by the tube. If desired, however, this vent 33 may be threaded to receive the threaded tube 34 of a pump connection, thus making provision for the attachment of a suitable inflating-pump, whereby air may be forced into the cushion formed by the tube. The square tube is wrapped spirally around the covered core, and the outer surface of the jacket or cushion afforded by the square tube is covered by the layers 24, 25, and 26 in the same way as in the construction represented by Figs. 1 and 2.

It will be understood that the end portions of the hollow square strip or tube are attached to the corresponding portions of the core by devices herein shown. If air is to circulate through this hollow cushion-jacket, both of the plugs 27 are provided with the vents 33 for the free ingress and egress of air; but if the enveloping jacket or cushion is to be inflated one of the vents 33 should be closed and the other vent should have the pump connection 34 applied thereto.

In Fig. 7 of the drawings I have shown another form of the hollow enveloping strip A^2, the same having a flat inner side and a segmental outer side; but it will be understood that I do not limit myself to the employment of hollow enveloping strips, because in Fig. 8 I have shown a form of the strip A^3 which is solid and circular in cross-section, while in Fig. 9 the enveloping strip A^4 is solid and of square cross-sectional contour.

It is evident that the pump connection 34 may be screwed into the threaded tube 15 of the construction shown by Figs. 1 and 2, thus making provision for inflation of the tubular enveloping strip A.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A roller of the class described, comprising a core, a yieldable jacket applied spirally to the core, a supplemental strip applied spirally to said jacket, and filling the spaces between the coils thereof, and devices for individually fastening the end portions of the spiral jacket and the supplemental strip.

2. A roller of the class described, having a core, a yieldable jacket of circular cross-section applied spirally to the core, and a supplemental strip of tapering cross-section wound spirally on the jacket and filling the spaces between the coils of said jacket, the exposed faces of the strip and the spiral jacket lying substantially flush and making the jacketed roller present an external cylindrical contour.

3. A roller of the class described, comprising a core, slotted heads fastened to the end portions of said core, each head being tapered to increase in thickness from one side of the slot to the other and produce a beveled surface on the inner side of the head, and a yieldable covering applied spirally to the core between the heads thereof, the end coils of said spiral covering having firm bearing against the beveled inner surfaces of the heads.

4. A roller of the class described, comprising a core, heads fastened to the end portions of the core and provided with transverse openings, a hollow enveloping jacket applied spirally to the core and having an end portion thereof extended through an opening in the head, and a hollow coupling attached to the end portion of the enveloping jacket and to the head.

5. A roller of the class described, comprising a core, heads fastened to the end portions thereof, a hollow enveloping jacket applied spirally to the core, and hollow couplings supported on the heads and attached to the end portions of the hollow jacket, said couplings affording vents to said hollow jacket.

6. A roller of the class described, comprising a metallic core, a heat-resisting layer applied externally thereto, heads on the end portions of the core, a yieldable inflatable jacket

spirally enveloping the heat-resisting layer, another heat-resisting layer applied externally to the yieldable jacket, and a cushioned fabric layer enveloping the last-mentioned heat-resisting layer.

7. A roller of the class described, comprising a core, a head thereon provided with an opening, a hollow jacket spirally enveloping the core, a coupling-sleeve secured to the end of the jacket, an adjusting-tube screwed in the coupling-sleeve and attached to the head, a supplemental strip applied spirally to the jacket, and means for clamping the end of the supplemental strip to the head.

8. A roller of the class described, comprising a core, a hollow elastic strip applied spirally thereto, and a supplemental strip filling the spaces between the coils of said hollow strip.

9. A roller of the class described, comprising a core, a collar attached thereto, a hollow elastic strip or tube coiled spirally on the core, a supplemental strip filling the spaces between the coils of the hollow strip, and means for separately fastening the end portions of the hollow strip and the supplemental strip to said core.

10. A roller of the class described, comprising a core, slotted heads fast with said core, a spiral hollow strip on the core, a hollow coupling inserted in each end portion of the strip and forming a passage for the ingress of a cushion or inflating medium into a chamber formed by said hollow strip, and means for fastening the couplings to the respective heads of the core, said couplings affording means for the attachment of inflating-valves.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM ELBERT CUMBACK.

Witnesses:
A. K. DAGGETT,
R. P. BURNS.