

C. G. SHOOP.
PNEUMATIC ROLL.
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1,045,201.

Patented Nov. 26, 1912.

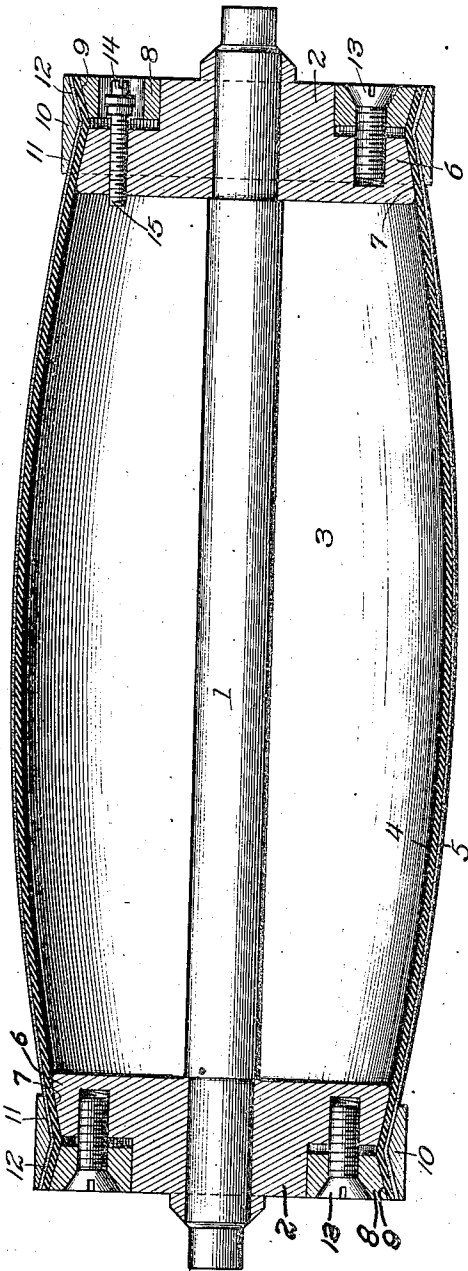


Fig. 1.

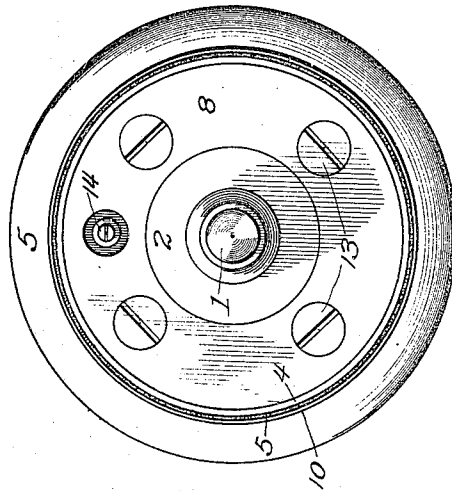


Fig. 2.

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UNITED STATES PATENT OFFICE.

CHARLES GUY SHOOP, OF BELOIT, WISCONSIN, ASSIGNOR TO C. MATTISON MACHINE WORKS, OF BELOIT, WISCONSIN, A CORPORATION OF WISCONSIN.

PNEUMATIC ROLL.

1,045,201.

Specification of Letters Patent.

Patented Nov. 26, 1912.

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To all whom it may concern:

Be it known that I, CHARLES GUY SHOOP, a citizen of the United States, residing at Beloit, in the county of Rock and State of Wisconsin, have invented certain new and useful Improvements in Pneumatic Rolls, of which the following is a specification.

This invention relates to a pneumatic roll to be used on sanding machines, ordinarily called sanders, for the purpose of carrying and cushioning an abrasive surface and to be used in smoothing variously shaped pieces of wood or other substances.

The object of the invention is to produce a means by which the pneumatic casing of the roll may be conveniently and effectively hermetically sealed to the ends of the roll and by which the protective covering may be held in place.

In the accompanying drawings, Figure 1 is a central section of a roll embodying the features of my invention, and Fig. 2 is an end view of the roll.

The pneumatic roll comprises a shaft 1 with a collar 2 mounted near each end. The collars are rigidly attached to the shafts in such a manner as to prevent the passage of air between the collars and the shaft. They may be placed on the shaft and fastened by any suitable means. I have found it desirable to heat them and then allow them to contract tightly upon the shaft. I have used in this embodiment of my invention a flexible pneumatic casing 3, comprising an inner tube 4 of rubber, to prevent the escape of air through the casing and to more perfectly seal the points of contact of the casing with the collars, and an outer tube 5 of leather, to act as a protection to the rubber. Other equivalent material, however, may be used for the purposes. Each of the collars has a radially projecting annular flange 6 on its inner side. The peripheral surface of each of the flanges tapers as shown at 7, the tapers converging outwardly. Encircling each collar, spaced somewhat from the flange, is an inner ring 8. The peripheral surface of each ring tapers as shown at 9, the tapers converging inwardly. The outer diameter of each ring is substantially equal to the outer diameter of the flange. Encircling both the flange of each collar and the adjacent inner ring is an outer ring 10. The inner surface of the outer ring tapers from each edge to the

center, both tapers converging toward the center of the ring as indicated at 11 and 12. The inner surface of the outer ring thus conforms to the outer surfaces of the flange and the inner ring. Screws 13 passing through the inner ring and threaded into the flange may be used for the purpose of pressing the outer ring and the flange closely together for the purpose hereinafter set forth.

In assembling the roll the rings are removed; each end of the casing is passed over one of the collars; the outer rings are then passed over the ends of the casing, and the inner rings screwed to the flanges, the inner and outer diameters, respectively, of these parts being such as to allow sufficient space between the parts to admit the walls of the casing. The inner ring and the flange are then pressed together by means of the screws. The taper on the inner ring pressing the wall of the casing against the taper on the outer ring forces the outer ring and the flange together with the wall of the casing between, hermetically sealing the casing. Compressed air may be conducted into the casing through an ordinary valve 14 and the tube 15 to which it is attached.

The casing 3 may be made either barrel-shape or cylindrical, according to the objects to be sanded, and the amount of air compressed in the casing may be varied to suit particular work. The roll may be used on any form of belt sander by using it as an idler belt pulley, and having the outer surface of the belt coated with abrasive material, holding the object to be sanded against the belt where it passes over the roll. The casing forms a yielding cushion for the belt to pass over, and allows the belt to readily adapt itself to the many shapes that cannot be successfully handled by an other method except hand work. When partly inflated, the belt readily conforms to any rounded or oval shape, and when fully inflated, it forms a barrel-shape cushion to take care of hollow or concave surfaces. It may also be used without a belt by applying the abrasive material directly to the surface of the casing and driving the roll by any suitable means. These casings have usually been attached to the collars by passing the walls of the casing outside of and down over the outer ends of the collars, fastening the ends of the casings with wire or strings.

This presents a very untidy appearance, the casing is easily injured where it passes over the edge of the collar, and the projecting ends are likely to cause trouble by flying out because of the very high speeds which are necessary. My method of attaching the casing ends is very strong and durable, and presents a neat appearance. The casings are also very easily and quickly attached or removed. It is necessary only to remove the rings and the casing will slip on or off.

I do not wish to limit myself to the details of construction herein shown, for modifications within the scope of the claims will occur to those skilled in the art.

I claim as my invention:

1. In a pneumatic roll, a shaft, a collar mounted on said shaft near each end thereof, a flexible casing, each end of said casing extending over one of said collars, a ring encircling each end of said casing and the adjacent collar, means for compressing the ends of said casing between said rings and collars respectively, and means for conducting compressed air into said casing.

2. In a pneumatic roll, a shaft, a collar hermetically mounted on said shaft near each end thereof, a flexible tubular casing, each end of said casing extending over one of said collars, an outer ring encircling each end of said casing, an inner ring inside of each end of said casing adjacent said collar, means for hermetically clamping together said rings, said collar, and the walls of the respective ends of said casing, and means for conducting compressed air into said casing.

3. In a pneumatic roll, a shaft, two collars rigidly and hermetically mounted on said shaft and spaced a substantial distance from each other, an annular flange on each of said collars projecting radially, an inner ring encircling each collar adjacent said flange, an outer ring inclosing each of said flanges and said inner rings, a flexible tubular casing, the walls of each end of said casing extending between said outer ring and the flange and inner ring, means for hermetically clamping said ends to said rings and flanges, and means for conducting compressed air into said casing.

4. In a pneumatic roll, a shaft, two collars rigidly and hermetically mounted on said shaft spaced a substantial distance from

each other; radially extending annular flanges on the inner ends of said collars, the peripheries of said flanges tapering and converging outwardly; inner rings encircling said collars outside of and adjacent said flanges, but spaced therefrom, the peripheries of said rings tapering and converging inwardly; outer rings encircling each of said flanges and inner rings, the inner surface of said outer rings conforming to the outer surfaces of said flanges and inner rings; a casing, the walls of each of the ends of said casing extending between one of said outer rings and the adjacent flange and inner ring; means for pressing together said inner rings and said flanges, whereby each of said outer rings and the adjacent flange are pressed together causing the walls of said casing to be hermetically sealed to said flanges, and means for conducting and retaining compressed air in said casing.

5. In a pneumatic roll, a pair of end members spaced apart and having tapering peripheries, a pair of rings encircling said end members and being internally tapered to coact with the tapered end members, a flexible tubular casing having its ends encircling said end members and lying within said rings, said rings being wedged on said end members to clamp the respective ends of said casing between the rings and end members, and means for holding said rings in such wedging position on said end members.

6. In a pneumatic roll, a pair of end members spaced apart; an elongated flexible tubular casing consisting of an inner tube of rubber and an outer tube of wear-resisting material; two rings each encircling one of said end members, the ends of both of said tubes lying between said end members and said rings, and said rings acting to clamp both of said tubes to said end members; means for securing said rings in such encircling and clamping position; and compressed-air inlet means connected to one of said end members.

In testimony whereof I affix my signature in the presence of two witnesses.

CHARLES GUY SHOOP.

Witnesses:

M. E. NELSON,
E. M. IRISH.