(No Model.)

C. COUPLAND.

ROLL FOR DRAWING AND SPINNING MACHINES.

No. 332,998. Patented Dec. 22, 1885.

Fig. 2.

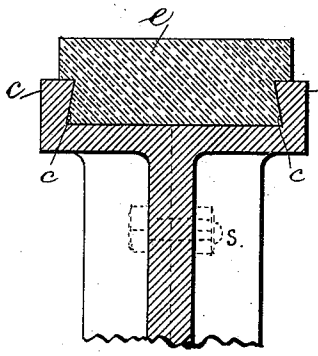


Fig. 3.

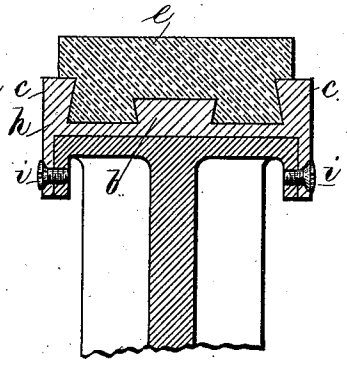


Fig. 4.

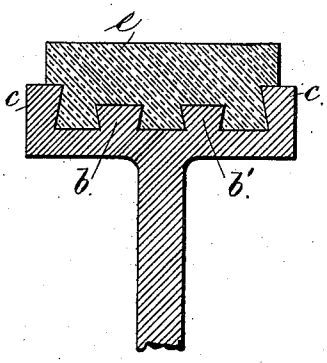
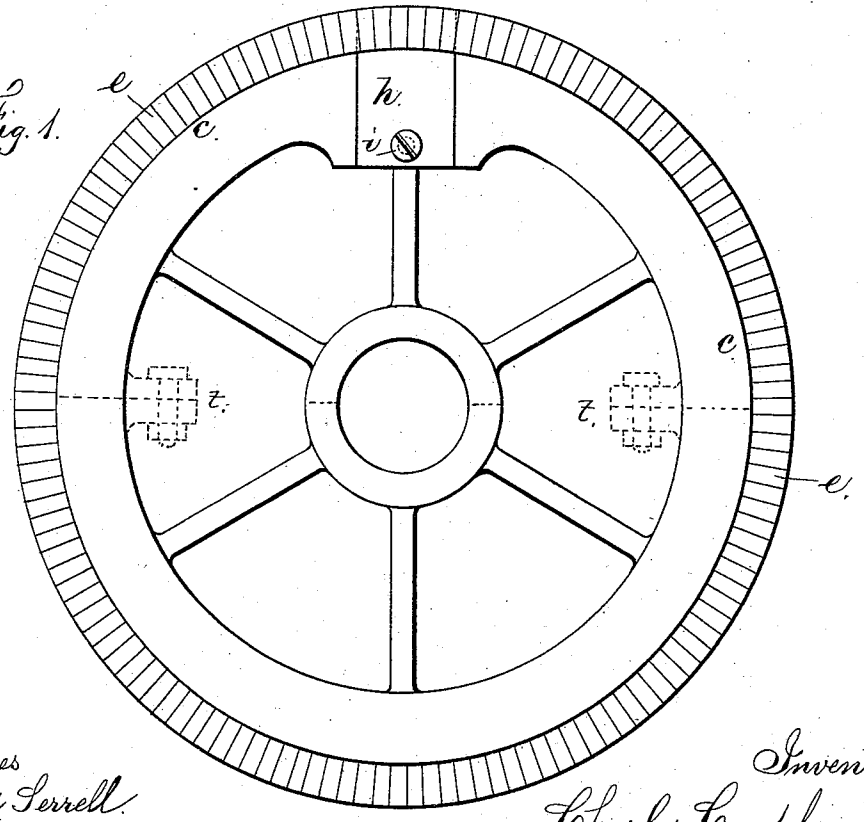


Fig. 1.



Witnesses
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UNITED STATES PATENT OFFICE.

CHARLES COUPLAND, OF SEYMOUR, CONNECTICUT.

ROLL FOR DRAWING AND SPINNING MACHINES.

SPECIFICATION forming part of Letters Patent No. 332,998, dated December 22, 1885.

Application filed November 12, 1883. Serial No. 111,520. (No model.)

To all whom it may concern:

Be it known that I, CHARLES COUPLAND, of Seymour, in the State of Connecticut, have invented an Improvement in Rolls for Drawing and Spinning Machines, of which the following is a specification.

Great difficulty has been experienced in maintaining the leather surfaces of drawing-rolls in perfect condition. The best quality of leather has to be used, and the same is, in the form of a strap or ring, passed around the roll to form the surface thereof. Sometimes the roll is of wood, and the leather glued and pegged thereto. Sometimes the roll is of iron, with the leather received into a recess. In either case the leather is liable to become loose, and also to be injured by turning off the surface to remove any inequality consequent upon use for a prolonged period.

My invention is made for rendering the roller more durable, and for preventing the leather becoming loose, for allowing the surface to be turned off when necessary to render it true, and for allowing pieces and cheaper scraps of leather to be used, so as to lessen the cost of such rolls. I make the surface of the roll channeled, with dovetailed or undercut edges, and cut out the pieces of leather in the proper shape, and introduce them into the channel and pack them radially, so that the surface of the roll is made by the edges of the leather segments, and the pressure and rolling action to which the leather is subjected tend to pack such sections into the channel and to render the same more hard and compact, and the turning or smoothing operation to which the surface of the roll is subjected from time to time is easily performed, because the cutting-tool acts across the grain of the leather, and such leather is separated in small pieces, and the tool does not tend to run into or follow the grain of the leather in turning off the surface.

In the drawings, Figure 1 is a side view of a drawing-roll embodying my invention. Fig. 2 is a section thereof with one dovetail channel in the periphery. Fig. 3 shows a similar roll with two of such channels, and Fig. 4 shows a roll with three of such channels.

The roll is of any desired size or shape, and usually it is of cast-iron. In the surface of the roll there are peripheral grooves turned with undercut or dovetailed edges. If there is but one groove, there will be a dovetailed rib at each edge of the pulley, as at *c c*, Fig. 2. There may also be one intermediate rib, *b*, as in Fig. 3, or two intermediate ribs, *b b'*, as in Fig. 4, each rib being undercut or dovetailed at its edges. The intermediate ribs should not be as deep as the ribs *c*, in order that the thickness and strength of the central portion of the leather may not be materially lessened.

The pieces or segments, *e*, of leather are cut out of a shape to fit tightly the grooves and dovetailed ribs, as shown. These segments are preferably cut out by a cutter of the exact shape required. Then they are packed into a tube of corresponding shape, with intermediate pieces of sheet metal that are thickest at the bases of the segments and thinnest at the upper parts of such segments, and these are pressed by a suitable follower entering the tube, the press being powerful—such as a hydraulic press—so that when the segments of leather are removed they will be thinnest at their bases, and their surfaces will be in converging planes intersecting at a point corresponding to the axis of the roll, or nearly so, in order that when the segments are packed side by side in the peripheral channels their surfaces may set closely together and be radial. In this manner a complete peripheral surface of leather may be obtained, and one that is very durable and that cannot become loose upon the roll, because the tendency of the leather to expand will cause the segments to set together closely in use, and this will be increased by the edgewise pressure upon the segments when in use in the drawing or spinning machines. These leather segments may be introduced in any convenient manner, so as to be entered properly into the peripheral channels. For instance, the roll may be made in halves, to be secured together by bolts, and in this case the peripheral channels are packed full of the leather segments, after which the halves are bolted together and the leather segments firmly consolidated in so doing.

In the form shown in Fig. 2 the roll may be in two halves, the separation being in a plane at right angles to the axis of the shaft, as seen at *s* by dotted lines. In the form shown in

Figs. 3 and 4 the separation into two halves should be in a plane coinciding with and passing across the axis of the shaft, with bolts similar to those in a two-part pulley, as seen by dotted lines at *t t*, Fig. 1. I however prefer to cut one, two, three, or more grooves transversely of the roll-face, so that the leather segments can be introduced and passed into their places and drawn tightly together, after which the transverse groove is to be filled with leather segments, preferably contained in a base-block, *h*, that is removable from the periphery of the roll, and is secured into place by screws *i* passing through end flanges into the roll, as seen in Fig. 3; but I do not limit myself to any particular manner of filling up the transverse groove or grooves through which the leather segments are introduced, so that their bases may enter the undercut peripheral channels of the roll.

I find that my leather drawing-roll is more elastic than those heretofore made, and that such surface does not become dented by any small lumps or pieces that pass between it and the steel roll; hence the hold on the filament is continuous and the drawing operation uniform.

I do not claim a roll in which the surface is of leather, as a band of leather has been used around the metal or wood roller; also, rings or disks have been used, either whole or divided into sections.

In my improvement the pieces of leather, being compressed into sectoral or wedge forms, lie side by side, the surfaces being in radial planes, and the whole roller is rendered more uniform and durable in its surface than the leather roll heretofore made.

I claim as my invention—

1. The roller for drawing or spinning machines, having a metallic body with undercut peripheral grooves, and pieces of leather consolidated by pressure into sectoral form and set together in said grooves flatwise and parallel to the axis, the same forming a leather surface to the roller, substantially as specified.

2. The combination, in a drawing or spinning roll having a leather surface, of a body with an undercut peripheral groove, sectoral segments of leather packed into such groove flatwise and parallel to the axis of the roller, and one or more movable base-blocks introduced into the roll and containing leather segments, substantially as set forth.

Signed by me this 3d day of November, A. D. 1883.

CHARLES COUPLAND.

Witnesses:
S. H. CANFIELD,
S. HART CULVER.