W. F. GAMMETER.

COMPOSITE ROLL FOR TEXTILES.

APPLICATION FILED SEPT. 10, 1914.

1,168,188. Patented Jan. 11, 1916.

Fig. 1.

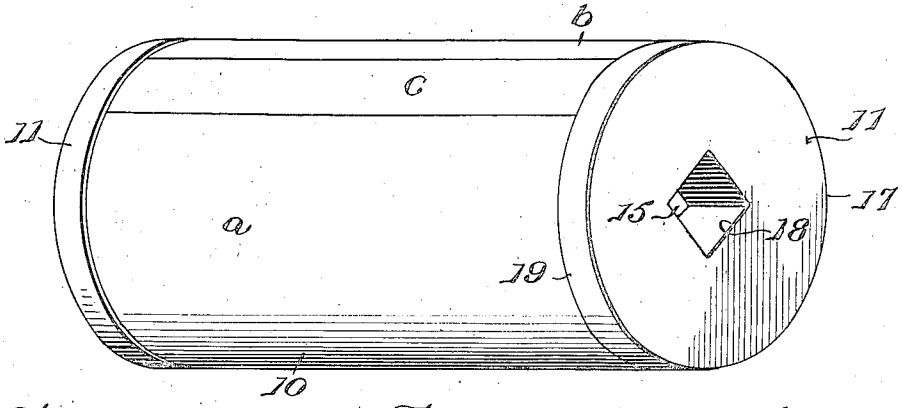



Fig. 3.

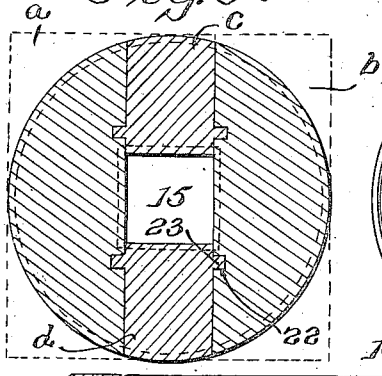



Fig. 4.

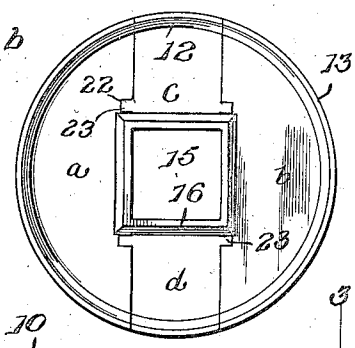
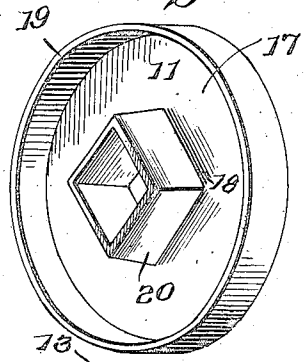



Fig. 5.



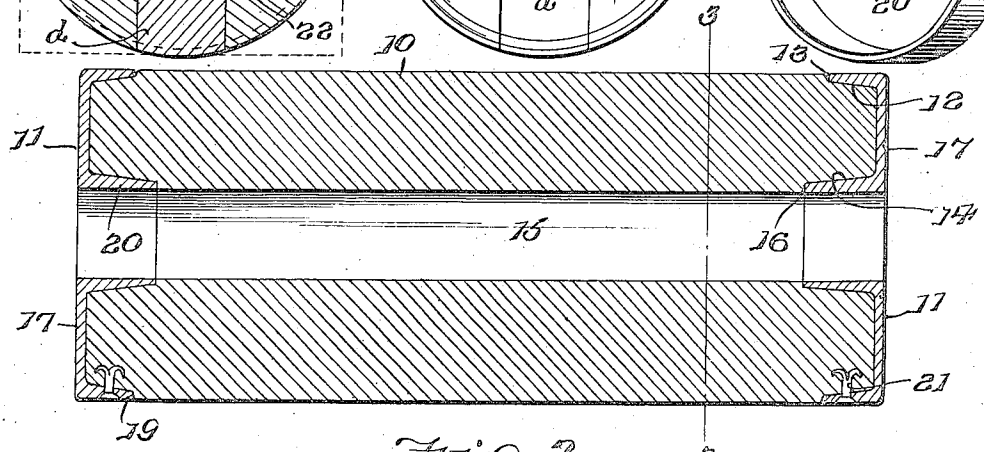




Fig. 2.

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# UNITED STATES PATENT OFFICE.

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## COMPOSITE ROLL FOR TEXTILES.

1,168,188. Specification of Letters Patent. Patented Jan. 11, 1916.

Application filed September 10, 1914. Serial No. 861,035.

*To all whom it may concern:*

Be it known that I, WILLIAM F. GAMMETER, citizen of the United States, residing at Cadiz, in the county of Harrison and State of Ohio, have invented certain new and useful Improvements in Composite Rolls for Textiles, of which the following is a specification.

My invention relates to new and useful improvements in composite rolls for use in winding textiles and fabrics, the primary object of my invention being the provision of a roll having a built up body of wood, or other suitable material, the parts of which are glued or otherwise fastened together, the body being reinforced at its ends by suitable metal caps or ferrules.

A further object of my invention is to provide a roll of the above described character having a centrally formed, squared bore adapted to receive the squared mandrel upon which the roll is used, the caps or ferrules being provided with inner flanges or tail pieces which form continuations of the bores to reinforce the roll and to provide for the distribution of rotary strain to all parts of the roll.

A still further object of my invention is to provide both the inner and outer flanges of the caps with beveled roll engaging faces in such a manner that the ferrules or caps when forced upon the body of the roll by a press or other means, will bind the ends of the roll to prevent them from splintering and to protect the wood from wear.

With these and other objects in view, my invention will be more fully described, illustrated in the accompanying drawing, and then specifically pointed out in the claims which are attached to and form a part of this application.

In the drawing: Figure 1 is a perspective view of my improved roll; Fig. 2 is a central longitudinal sectional view taken through a plane parallel to the plane of one of the faces of the squared bore; Fig. 3 is a transverse sectional view, taken on the line 3—3 of Fig. 2, the roll body, in partially finished condition, being shown in dot and dash lines in this figure; Fig. 4 is an end view of the roll body in finished condition but before the application of the cap or ferrule; Fig. 5 is a perspective view of the cap or ferrule employed upon my rolls, looking at it from its inner face.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawing by the same reference characters.

Broadly speaking, my improved composite roll includes a body portion 10 provided at its ends with caps or ferrules 11 of metal or other suitable material, the body and caps being so constructed as to form a central longitudinally extending, squared bore.

More specifically, as will be seen best by referring to Fig. 3 of the drawings, the body portion of the roll is constructed from a number of separate pieces of wood, indicated by the letters *a*, *b*, *c* and *d*. Each of these pieces of wood is in the form of a strip equal in length to the length of the roll and substantially rectangular in cross section. Further, the strips *a* and *b* are equal in width to the diameter of the roll, while the strips *c* are of less width and of such thickness that either one, together with the strips *a* and *b*, will be equal in thickness to the diameter of the roll. Furthermore, the strips *c* and *d* are equal in thickness to the size of the squared bore which is to be provided in the body of the roll. The inner edges and side faces of the strips *c* and *d* are carefully planed or otherwise finished, as also are the inner faces of the strips *a* and *b*, in such a manner that when the strips *c* and *d* are positioned between the strips *a* and *b*, adjacent the longitudinal edges thereof, as shown in Fig. 3, the inner faces of the strips *a* and *b* will bear snugly and smoothly against the adjacent faces of the strips *c* and *d*, while portions of the inner faces of the strips *a* and *b*, together with the inner faces of the strips *c* and *d*, will form a perfectly uniform, smooth and uninterrupted squared bore disposed centrally of the body portion which, as now formed, is substantially square in cross section. The portions or strips *a*, *b*, *c* and *d* are firmly glued or otherwise secured together in this position, after which the body portion, thus roughly formed, is placed upon a suitable machine and turned to cylindrical form.

The end portions of the roll body are then cutaway circumferentially, as shown at 12, in Fig. 2, to provide slightly tapered terminals and resultant annular stop shoulders 13. Said end portions are further cut-away interiorly, as shown at 14, to somewhat enlarge the ends of the squared bore 15, the faces of the cut-away portions being inclined

outwardly, as shown, and such cut-away portions providing stop shoulders 16. It will of course be clear that this cutting away of the interior portions of the body of the roll may be accomplished before the rough forming of the roll by properly cutting the strips from which the roll is formed, if such method be found more advantageous either because of simplicity in operation or because more accurate cutting is possible. When the roll has been thus formed, the caps or ferrules 11 are forced upon its ends by means of a press or other suitable mechanism to firmly bind the ends of the roll forming strips to prevent their splintering and to protect them from wear during use. Each of these caps or ferrules, both being identical in construction, includes a circular body portion 17 provided centrally with a squared opening 18 equal in size to the squared bore of the body portion of the roll, and further provided with a laterally directed peripheral flange 19 and an interiorly formed, laterally directed, flange 20 surrounding the squared opening 18, both flanges extending from the same face of the body portion of the cap or ferrule. As most clearly shown in Fig. 2 of the drawings, the flange 19 is thickened interiorly adjacent the body portion of the cap, tapering from its inner to its outer part to provide an inclined face corresponding to the inclined terminals of the roll, while the flange 20 is similarly thickened exteriorly to correspond to the inclined faces formed by cutting away the end portions of the roll about the squared bore 15. Preferably, however, the space between the flanges 19 and 20 is somewhat slighter than the space between inner and outer corresponding portions of the ends of the roll body in order that the said end portions of the roll body shall be compressed between these flanges when the cap or ferrule is forced into place. It should also be noted that the flange 20 is of greater lateral extent than the flange 19, for which reason it may extend a considerable distance into the roll to properly reinforce it.

The above completed roll is employed in the usual manner, being capable of use upon a squared metal mandrel as such mandrel may be extended through the bore of the roll which should be proportioned to receive it with reasonable closeness. Under these conditions, it will be apparent that the caps or ferrules not only serve to prevent the ends of the roll from splintering, but also to prevent injury to the roll, due to rotary strain applied to it by turning movement of the mandrel. In addition to this, the flanges 20 of the ferrules take up the greater portion of the strain applied to the roll by the mandrel, and as the ends of the roll are compressed between such flange and the flange 19, distribute such strain equally to all parts of the roll, thus permitting the placing of a much heavier load upon the roll, without danger of its falling apart, than would otherwise be possible.

Although not absolutely essential, I preferably provide means for securing the caps or ferrules against displacement from the roll ends but do not wish in any way to limit myself to any specific means for this purpose. One manner of accomplishing this consists in the employment of split rivets 21 which may be driven through openings formed in the caps or ferrules and into the wood of the roll body, the rivets being so formed that when driven into the wood their legs will separate and turn to form hooks to prevent their withdrawal.

Preferably, the strips *a* and *b* are provided in their inner faces, and slightly spaced from those portions of such faces which form the walls of the bore, with longitudinal channels 22 to seat longitudinal ribs or shoulders 23 formed upon the opposite side walls of the strips *c* and *d*. These interlocking shoulders and ribs materially assist in holding the roll forming strips or sections together, particularly during the shaping of the roll which, of necessity, must be done before application of the caps or ferrules.

Although I have illustrated and described my invention in all its details, it will of course be understood that I do not wish to limit myself to the specific details of construction, illustrated and described, as various changes, within the scope of the appended claims, may be made, without in the slightest degree departing from the spirit of my invention.

Having thus described the invention, what is claimed as new is:

1. A roll including a cylindrical body having a squared longitudinal bore, and reinforcing caps secured to the ends of the body and having squared openings alining with and forming continuations of the bore, said caps about the openings having laterally directed flanges extending into the ends of the bore, the body about such ends of the bore being cut-away to seat these flanges, and peripheral flanges extending laterally from the caps and surrounding the exterior end portions of the body, said end portions being cut-away to seat these latter flanges, and the outer surface of said flanges being flush with the surface of the body.

2. A roll including a cylindrical built up body having a squared longitudinal bore of uniform size throughout its length, the walls of said bore being flared at their ends and the body being tapered externally at its ends, and protective caps secured to the ends of the body, said caps each including a body portion engaging against the end of the roll body, an outer circular flange hav-

ing an inclined inner face fitting on the tapered end of the roll body, and an inner squared flange or sleeve projecting into the end of the bore, the outer face of said inner flange being inclined to fit the flared end of the bore of the roll body and the inner face of the said flange being flush with the walls of the bore, the body of the cap being formed with a squared opening forming a continuation of the squared bore of the roll body and equal in size thereto.

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

WILLIAM F. GAMMETER. [L. S.]

Witnesses:
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P. W. BOGGS.