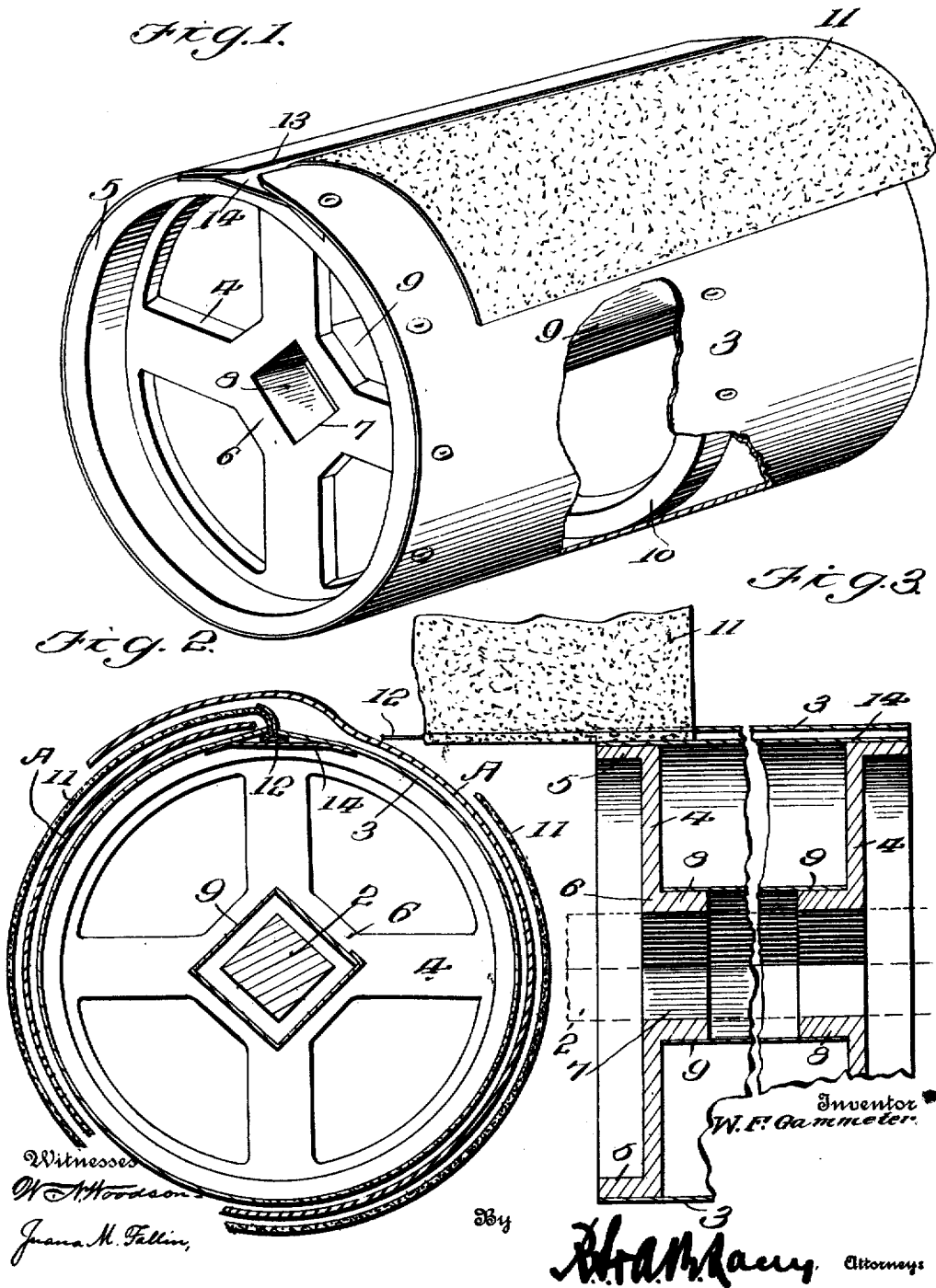


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METALLIC STOCK SHELL FOR FABRICS.
APPLICATION FILED FEB. 8, 1910.

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UNITED STATES PATENT OFFICE.

WILLIAM F. GAMMETER, OF CADIZ, OHIO.

METALLIC STOCK-SHELL FOR FABRICS.

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Specification of Letters Patent. Patented Sept. 19, 1911.

Application filed February 8, 1910. Serial No. 542,796.

To all whom it may concern:

Be it known that I, WILLIAM F. GAMMETER, a 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 Metallic Stock-Shells for Fabrics, of which the following is a specification.

My invention relates to winding shells or rolls such as are used in the manufacture of those fabrics which are worked hot and which are calendered, the improved winding shell devised by me being particularly applicable for the manufacture of sheet rubber, and being used in connection with the calenders or rolls which form the rubber compound into sheets. These sheets are run out upon the fabric, and the fabric carrying this newly formed sheet is wound upon a roll to facilitate handling and feeding the sheet rubber into the various machines through which it passes in the process of manufacture. Prior to my invention, wooden rolls have been used for this purpose, but they are unsatisfactory, as the heat of the rubber or other compound, when formed into sheets, does not easily dissipate, owing to the roll of stock being cooled from the outside only, the wood from which the winding shell is made being practically a nonconductor of heat. In consequence of this, the rolled sheets of compound were only slowly cooled, and such slow cooling had an injurious effect upon the newly formed rubber sheet, as the sulfur used in all rubber compounds to a greater or less degree, is driven to the surface, causing what is termed "sulfur bloom".

The primary object of my invention is to provide an all-metal shell or roll whereby the heat of the compound wrapped upon the roll is readily transmitted to the interior of the shell and carried away by internal ventilation therein. Thus the inner portion of the roll of stock readily dissipates its heat, and the entire roll cools more quickly and more evenly, thus reducing the sulfur bloom and permitting the stock to be prepared for use in a much shorter time.

Another object of the invention, attained by the use of an all-metal roll, is to provide a roll which will carry off the frictional electricity generated by the friction of milling or rolling the rubber into sheets. This electricity would be stored up on the nonconductive wooden roll, and the stock

thus become so electrified as to draw particles of dust, dirt, lint and even splinters into the rolled sheet. Furthermore, the roll of stock wrapped upon a wooden roll becomes so heavily charged with electricity that sparks will jump from the stock to the metal framework of the calender. These sparks are a considerable element of danger, inasmuch as benzol and other hydro-carbons of great inflammability are used in the vicinity of the calender rolls. Furthermore, this charging of the stock with electricity has a very detrimental effect on the product. The pure rubber is not affected by electricity, but the various other ingredients which enter into the compound, such as whiting, sulfur, etc., are so affected, and are affected differently, thus producing a condition detrimental to the proper amalgamation of the ingredients. An all-metal shell such as forms the subject of this description, which is mounted on the metal mandrel within the metal frame of a calender, will conduct away and dissipate the static electricity as it is formed, thus leaving the stock as it was originally intended in making up the compound.

A further object of the invention is the provision of means whereby the mandrel may be easily guided into place and passed through the winding shell without the possibility of damaging or jarring the internal braces of the shell from their proper position.

Further, my object is to provide a shell wherein ventilation of the stock can take place at the most critical time, that is, while the stock is being wound upon the shell, thus causing the stock to rapidly cool while it is being wound upon the shell.

Another object is to provide in connection with the shell, a binding apron which is used in starting to wind the fabric and new sheet rubber or other compound upon the shell. This apron depends from the shell and is attached at one edge to the shell, the fabric and the sheet rubber or compound placed beneath the apron, and the shell or roll rotated, which causes the apron to bind upon the fabric and rubber, and permits tension to be applied to the fabric and rubber to wind it straight and smooth and without any slipping.

For a full understanding of the invention and the merits thereof, and to acquire a knowledge of the details of construction, ref-

erence is to be had to the following description and accompanying drawings, in which:

Figure 1 is a perspective view of my improved roll partly broken away to show the interior ring. Fig. 2 is a transverse sectional view thereof, and, Fig. 3 is a fragmentary longitudinal section.

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

Referring to these figures, 2 designates an ordinary shaft or mandrel, square in section at its middle portion, but cylindrical at its ends. Shafts or mandrels of this character are usually used for the purpose of rotating winding rolls.

3 designates a metallic cylinder of thin metal. The ends of the cylinder or shell 3 are supported or attached to rings 5 each forming a part of a spider 4 and formed with spokes radiating from a central hub 6, this hub having a square opening 7 in its center and the outstanding walls 8 which define this square opening. Mounted upon the flanges 8 is the sheet metal casing 9 which extends from one head to the other and forms a central guiding passage through which the mandrel 2 may be placed and guided into position. The flanges 8 form the means whereby this central tube 9 may be attached at its end to the heads 4. A strengthening or reinforcing ring 10 extends around the interior of the cylinder 3, midway between its ends and is attached thereto by rivets, thus preventing any deformation of the metal cylinder 3.

It is pointed out that with the construction above described, the shell may be easily placed upon the mandrel, or the mandrel inserted through the shell, and that the mandrel is prevented from coming in contact with the reinforcing ring 10 or with the interior face of the cylinder 3. These rolls are relatively heavy, and hence there is great liability, under ordinary circumstances of the mandrel striking the interior of the shell and deforming it, or striking the ring 10 and jarring it loose. With the construction described, the shell may not only be more easily placed upon the mandrel, or the mandrel in the shell, but there is no chance of the mandrel contacting with the inner face of the cylinder 3. It is also to be noted that the ends of the shell or roll are not closed, but that the spokes 5, being spaced from each other, permit of a ventilation through the interior of the shell so that heat conducted to the shell may be rapidly dissipated. It will be seen that this dissipation of the heat of the stock as it is wound upon the roll is aided by the fact that the shell 3 is of thin sheet metal, so that the heat is readily communicated to the air inside the hollow roll, and

that this air will be constantly changed by reason of the openings in the ends of the roll or shell.

Referring to Figs. 1 and 2, 11 designates a web of canvas, duck, or other suitable fabric which is detachably connected to the roll. This apron or web 11, as shown, is provided at its end with a longitudinally extending pocket or hem into which a metallic strip 12 is inserted. The sheet metal 3 which forms the cylinder or shell does not extend entirely around the cylinder, but a slot 13 is left between the edges of the sheet metal. The margins of the sheet metal 3, however, are connected by a bridging plate 14 which overlaps the margins of the slot 13 and extends longitudinally the full length of the roll or shell. This bridging plate 14 is riveted at its edges to the margins of the sheet metal 3. In order that the shell shall retain its cylindrical contour at this point where there are two thicknesses of metal, the annular ring forming the periphery of the spider 4 is recessed to receive the bridging piece 15, as shown in Fig. 1. In order to attach the apron 11 to the roll, it is only necessary to insert the metal strip 12 into the hem at the edge of the apron, and insert the edge of the apron and strip into the slot 13. This strip is of course wider than the width of the slot 13, so that after it is inserted from the end of the shell, it cannot be removed except by withdrawing it laterally. The apron is withdrawn in order to renew or replace it, and this may be easily done by reversing the operation above described.

The object of the apron is to clamp or bind the sheet of compound and fabric upon the roll or shell so that it may be easily wound thereon. In starting to wind the sheet of fabric and the new sheet of rubber A upon the shell as shown in Fig. 2, the apron is raised, and the fabric carrying the rubber is started under it. One complete revolution of the shell causes the fabric to close down on the apron, and the apron being anchored to the shell, binds the end of the fabric and rubber closely to the shell, thus permitting tension to be applied to the fabric to carry it straight and smooth without any slipping on the shell. It will be understood that in Fig. 2, the relative positions of the apron and the sheets of compound which are being wound upon the roll are shown as exaggerated, and that in practice, the compound sheets being wound upon the roll will lie practically flat, the canvas apron 11 folding over tightly upon the edges of the sheet metal forming the cylinder. When the stock is being removed from the shell, the end of the fabric will of course be automatically released from its engagement with the roll. I thus dispense with

the necessity of any gripping or binding devices for holding the end of the fabric and rubber A and B to the roll, which devices would have to be actuated by hand 5 and which would prevent the smooth winding of the material upon the roll or shell.

In use, the roll is placed upon the shaft, or the shaft may be placed within the roll and connected to any means for rotating it.

10 The roll is rotated, and the stock is wrapped thereon, one convolution upon another, until the desired amount of stock has been received upon the roll. After the proper amount of stock has been rolled upon a 15 given roll, the shaft may be removed, and the roll, together with the stock, placed in any desired position.

While I have designed my improved roll for the purpose of winding sheets of hot 20 rubber, or like fabric, I do not wish to be limited to these sheets, as the device is equally applicable to winding oil cloth or other sheets of flexible material, particularly when hot.

25 One other practical advantage of my invention may be mentioned. The castings forming the spiders 4 or ends of the shell, can be molded in the regular way and will be much more uniform in shape and weight 30 than is possible if the castings had to be cored.

While I have described what I believe to be the best form of my invention, I do not wish to be limited thereto, as it is obvious 35 that various minor changes might be made therein, without departing from the spirit of the invention.

Having thus described the invention, what I claim is:—

40 1. A stock roll for winding sheets of hot material including a hollow cylindrical shell of thin conducting material, said shell having a smooth exterior face, metallic end sup- 45 porting pieces each comprising a central hub, and radiating arms rigidly attached to the shell, said arms forming conductors for frictional electricity generated upon the face of the shell, the spaces between the arms providing ventilating openings for conducting 50 the heat away from the interior of the shell, said end-supporting pieces each having an opening adapted to receive a metallic shaft.

2. A stock roll for winding sheets of hot

material, including a hollow cylindrical shell of thin conducting material having a smooth 55 exterior face and electrically conductive end-pieces, each comprising a central hub, radiating arms and an outer rim rigidly attached to the shell, said shell being support- 60 ed on the outer face of the outer rim of each end-piece, said end-pieces being formed with an aperture for the passage of a shaft.

3. A stock roll for winding sheets of hot material, including a hollow cylindrical shell of relatively thin conducting material 65 having a smooth exterior face from end to end, metallic end-pieces carried within the ends of the shell, each comprising a central hub, radiating arms and an outer rim rigidly attached to the inside face of the shell, the 70 center of each end-piece being formed with a many-sided aperture, and a central tube extending through the cylinder and attached to said end-piece, said tube being many- 75 sided in section, the end-pieces and tube being thereby adapted to receive a many-sided shaft, the tube acting to guide the shaft through the shell.

4. A stock roll of the character described, comprising a cylindrical shell of relatively 80 thin material, the edges of which are spaced from each other, a transversely extending metallic piece located back of the opening between the edges of the shell, in combina- 85 tion with an apron having in one end thereof a transversely extending strip adapted to be received between the margins of the shell and the back piece.

5. In a stock roll of the character described, the combination with a cylindrical 90 shell, the edges being spaced from each other and a transversely extending back piece located back of the shell and opposite the opposed edges of the shell, end pieces of open 95 formation secured to the ends of the shell and adapted to receive a shaft, of an apron of flexible material, one end of which is adapted to be received between the spaced edges of the shell and to be clamped therein.

In testimony whereof I affix my signa- 100 ture in presence of two witnesses.

WILLIAM F. GAMMETER. [L. s.]

Witnesses:

B. W. ROWLAND,
J. B. WORLEY.