(No Model.)

A. C. MILLER.

BALL OF CORD, TWINE, &c.

No. 425,381. Patented Apr. 8, 1890.

Fig. 1.

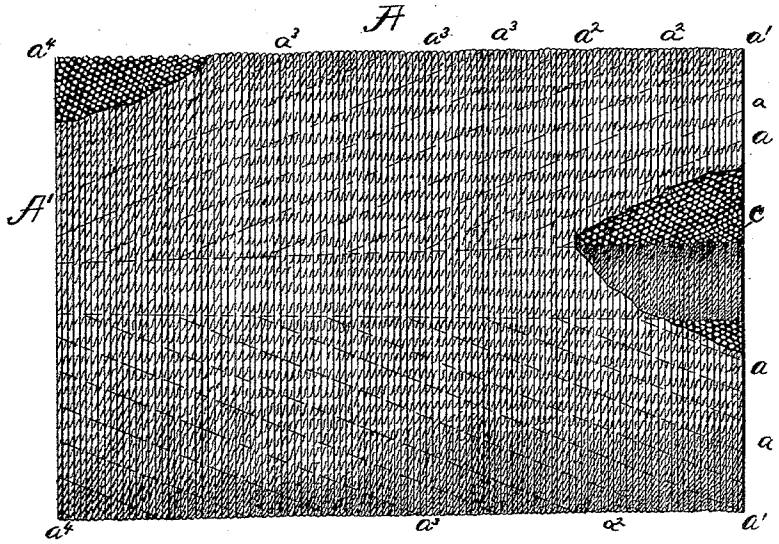
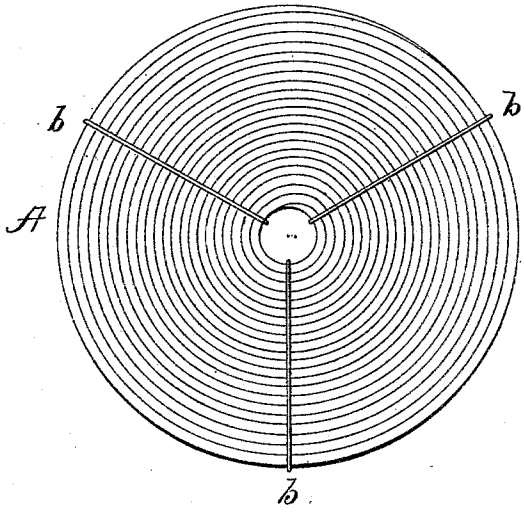


Fig. 2.



Witnesses.
Rob. M. Smith.
Thos. E. Robertson

Andrew C. Miller, Inventor;
By his Attorneys, A. M. Smith & Son.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ANDREW C. MILLER, OF AUBURN, NEW YORK.

BALL OF CORD, TWINE, &c.

SPECIFICATION forming part of Letters Patent No. 425,381, dated April 8, 1890.

Application filed October 11, 1889. Serial No. 326,694. (No model.)

To all whom it may concern:

Be it known that I, ANDREW C. MILLER, a citizen of the United States, and a resident of Auburn, county of Cayuga, and State of New York, have invented a new and useful Improvement in Balls of Cord, Twine, &c., of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification.

My invention relates to the formation of balls, rolls, or spools of cord, with especial reference to their use in binding grain and other purposes, in which the cord is ordinarily drawn from the inner side of the ball, the object being to so form the ball that the cord may be readily and freely drawn out until it is exhausted without liability of entanglement from the collapsing of the outer layers or shell of the ball after the cord has been drawn from the center.

It consists in forming the ball or roll by laying the cord in a series of inclined or tapering courses or layers, elongating from the core or base outward until the desired diameter of ball or spool is attained at one end thereof, then in substantially uniform lengths until the other end of the spool is reached, by a tapering layer, and then diminishing in length until the ball or spool is completed, in substantially cylindrical form, of uniform or nearly uniform diameter, whereby in unwinding from the center the outer and shorter layers or coils are made to support the inner and longer layers until all the cord has been used.

It will be best understood from the following description and claims, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of my improved ball or roll, partly in section, to show the arrangement of the layers or courses of cord composing it; and Fig. 2 is an end view showing a manner of fastening the ball or roll for transportation or market.

In the formation of the ball or roll (indicated at A) it is preferred to form it on a tapering mandrel, as permitting its more ready removal, and upon which it is started by wrapping the cord upon the mandrel at its larger end until a suitable base *c* is formed, tapering in shape and resembling a frustum of a cone, after which the cord is wrapped thereon in successive lengthening, inclined, or tapering layers or courses *a*, winding back and forth between suitable end disks or flanges on the mandrel until the desired diameter of ball or roll is attained at one end, (indicated at a',) after which the cord is continued to be laid in the same manner as indicated by the dotted lines a^2, and then in layers a^3, gradually shortening from the inner end until the ball or roll is completed, in substantially cylindrical form, terminating at a^4 in a short layer of one or more coils, substantially as it began, in similar coils at the opposite inner end.

For binding grain or other like use the ball is preferably stood on its end A′, and the inner end is drawn out from the other end, and as the successive inner layers are used the outer shell is left funnel-shaped or tapering in radial diameter internally from the base or end A′ toward the opposite end, and after such inner layers reach the periphery at a^3 the layers of the outer shell, which still retains its tapering inner surface, begin to shorten, the outer shortening layers upholding the inner and longer ones until the final outer coil is reached and used, and that, without any liability of collapse of the outer shell, supported as it is until the final coil or short outer layer is reached.

The cord may of course be used with equal facility from the outer side; but in such case it will be advisable to employ a central spindle, properly supported, and preferably provided with end disks or annular collars for holding the ends of the ball or roll.

The ball or roll when completed, as above described, is preferably removed from the mandrel on which it is wound, and is secured by one or more cords or bands *b*, passed through its central perforation and tied around outside the ball or roll in a manner resembling that in which coils of rope are ordinarily fastened, and as indicated in Fig. 2; but it may be secured in any other suitable manner adapting it for transportation and market.

Mechanism for winding the cord in the manner described is made the subject-matter of another application of even date herewith, Serial No. 326,695.

Having now described my invention, what I

claim as new, and desire to secure by Letters Patent, is—

1. A ball, roll, or spool of cord, the courses or layers of which are tapering or inclined substantially throughout, the outer layers thereof diminishing in length, substantially as and for the purpose described.

2. A ball or roll of cord made substantially cylindrical in form and composed of layers tapering or inclined toward one end of the ball or roll, whereby the outer layers are made to support the inner layers and prevent collapse of the ball and entanglement of the cord, substantially as described.

3. A ball or roll of cord, the layers or courses of which taper or are inclined toward one end of the ball or roll, and are made shorter toward said end on the outer surface of the ball or roll, substantially as described.

4. A ball of cord or its equivalent, made substantially in the form of a hollow cylinder and composed of tapering or inclined layers or courses, elongating from the center or starting-point outward and shortening again at the periphery, substantially as and for the purpose described.

In testimony whereof I have hereunto set my hand this 7th day of October, A. D. 1889.

ANDREW C. MILLER.

Witnesses:

M. D. MAKEPEACE,

A. WOODRUFF.