

(No Model.)

S. W. WARDWELL, Jr.
YARN ROLL AND METHOD OF MAKING SAME.

No. 533,688.

Patented Feb. 5, 1895.

Fig. 1.

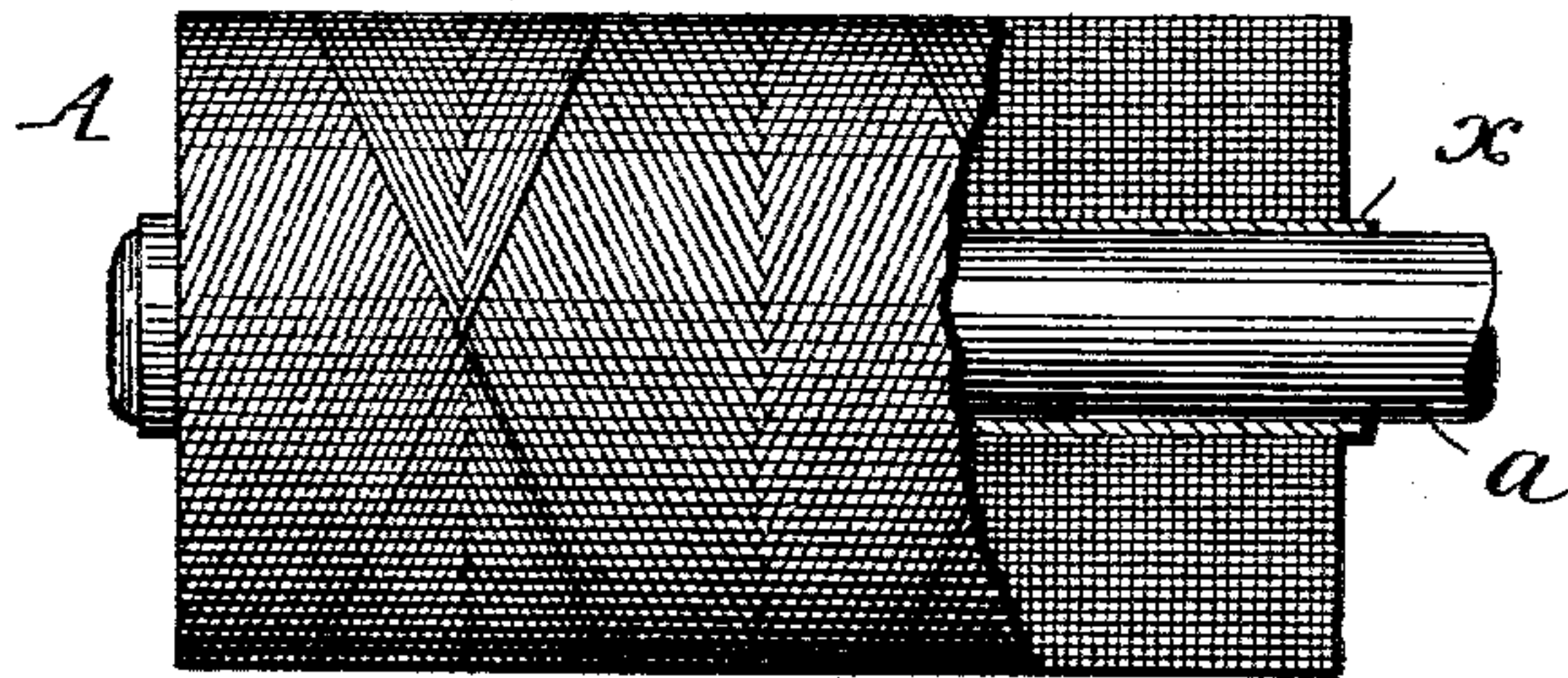


Fig. 2.

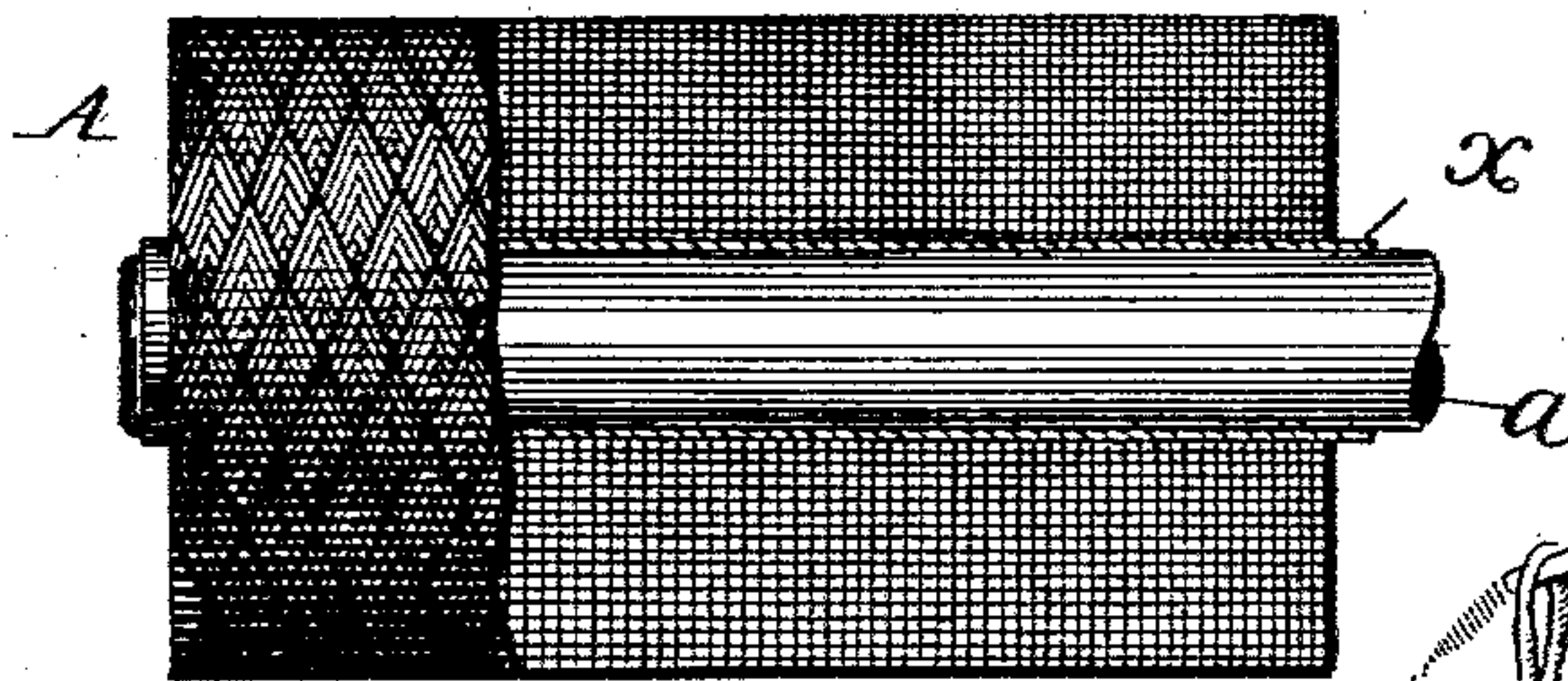


Fig. 3.

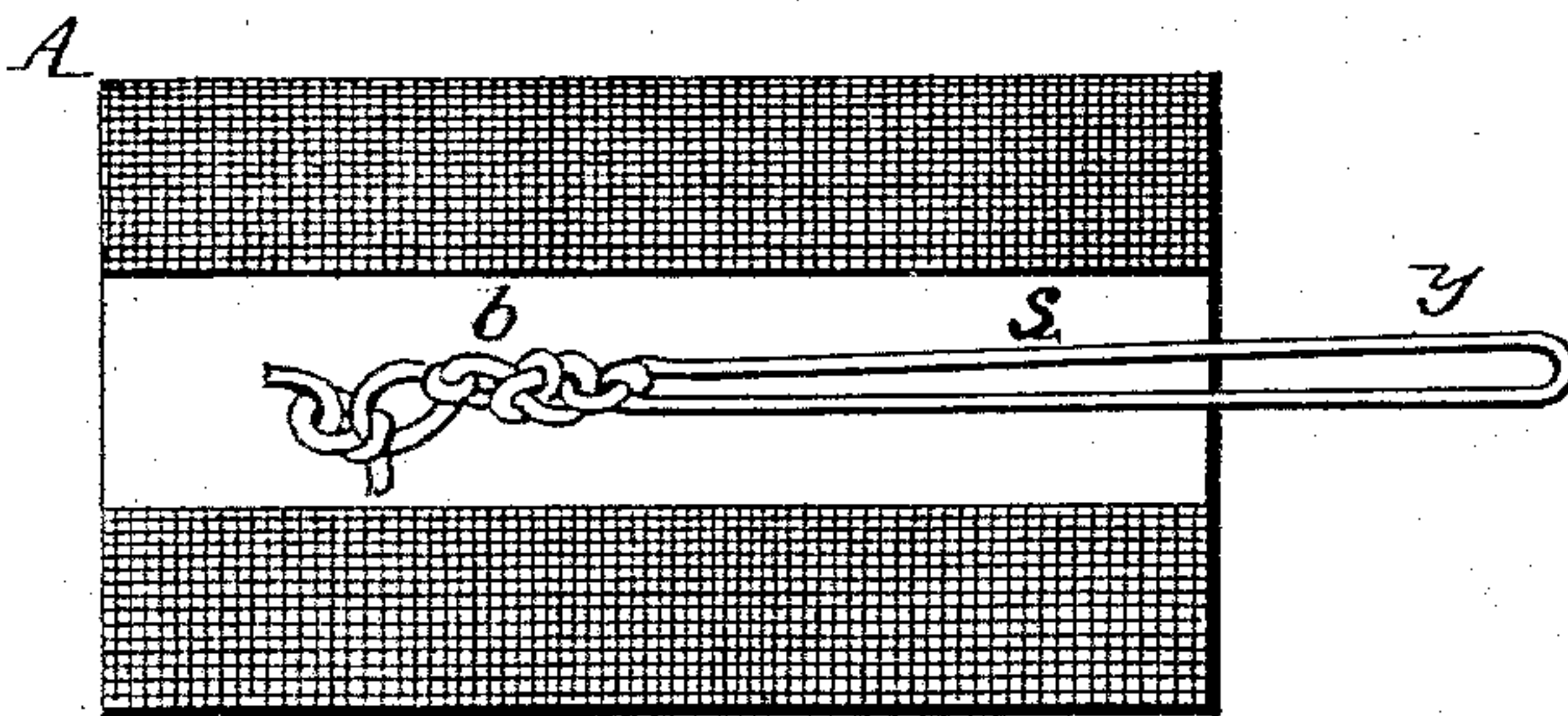


Fig. 5.

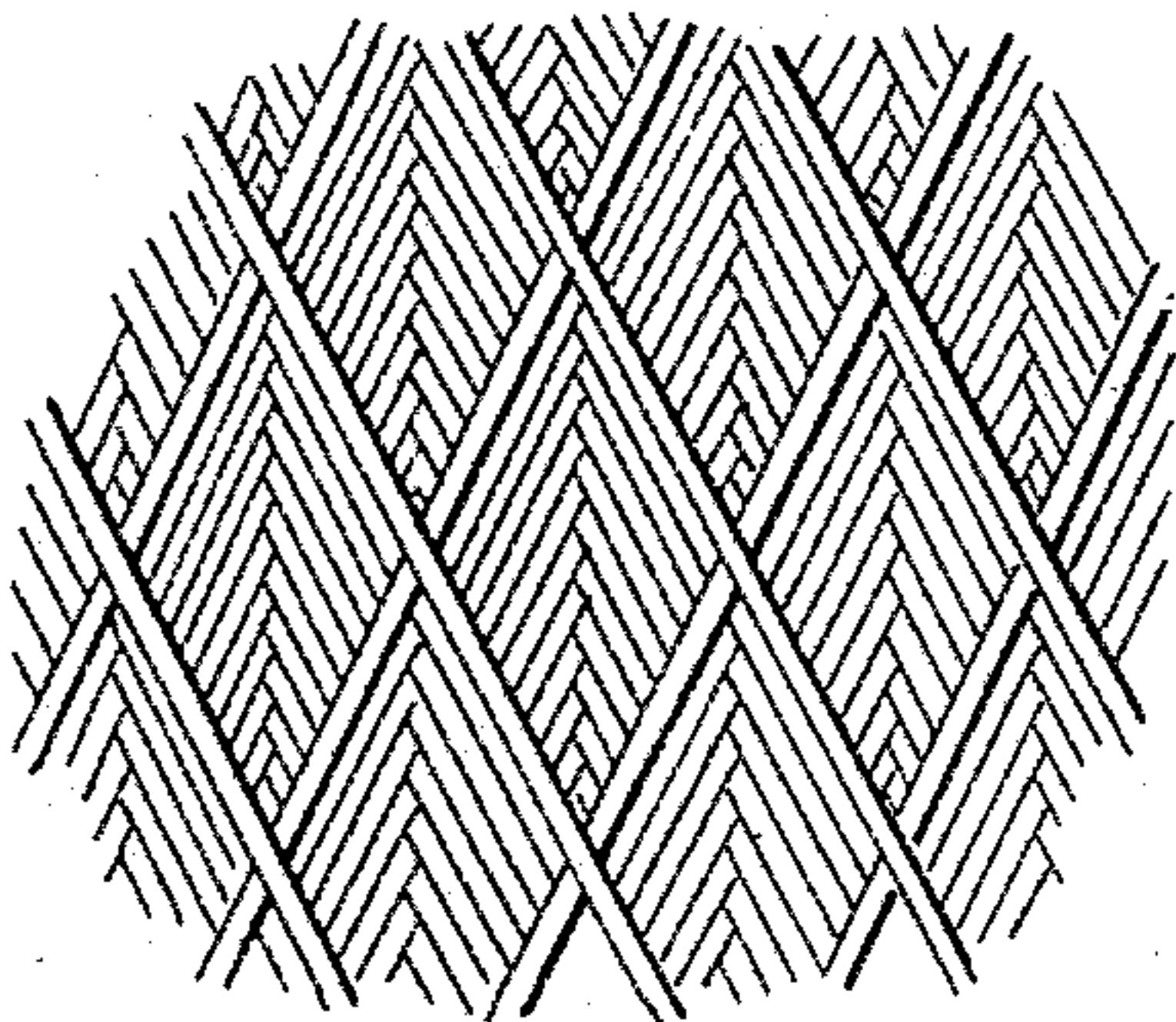
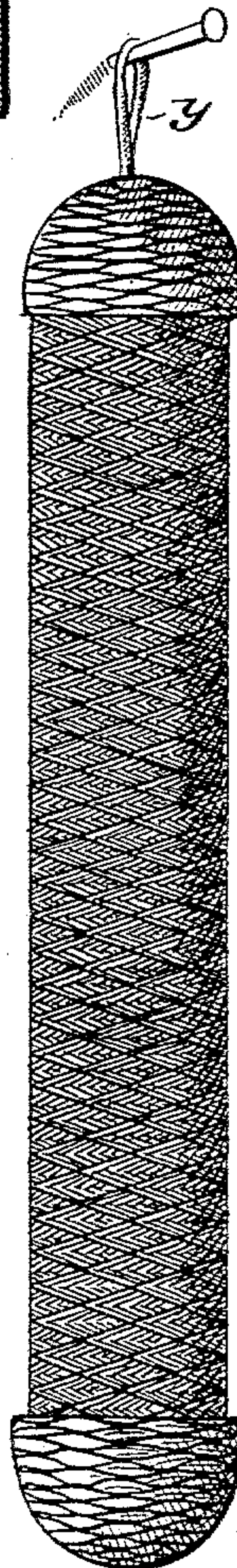


Fig. 4.



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SIMON W. WARDWELL, JR., OF BOSTON, MASSACHUSETTS.

YARN-ROLL AND METHOD OF MAKING SAME.

SPECIFICATION forming part of Letters Patent No. 533,688, dated February 5, 1895.

Application filed July 3, 1894. Serial No. 516,448. (No model.)

To all whom it may concern:

Be it known that I, SIMON W. WARDWELL, Jr., a citizen of the United States, residing at Boston, Suffolk county, State of Massachusetts, have invented a certain Improved Yarn-Roll and Method of Making the Same, of which the following is a specification.

It is customary in putting up worsted and zephyrs for the market, to wind the yarn upon a reel and after the proper amount has thus been wound to cut the yarn, take the material from the reel and twist it, or else fold it together forming a flat hank or skein, tying a piece of thread or yarn around the material of each hank to hold the same together at a single point. This mode of putting up this material for the market requires that after a skein or number of skeins have been purchased, the yarn shall be wound off into a ball or "matted" involving an expenditure of time and labor upon the part of the purchaser, while the skeins are apt to get tangled and broken in packing, to prevent which it is necessary to wrap them in separate bundles. In order to overcome these objections in packing yarns or other threads or material, I first wind the yarn onto a spindle or collapsible holder, forming a cop of proper size, then remove the cop from the spindle or holder, and then elongate the cop, thereby forming, without stretching or straining the yarn, a cylindrical, but flexible and solid, stick or roll of yarn which will retain its integrity under all circumstances, preventing the yarn from becoming entangled or broken, which can be readily packed and which, when sold presents the material in a shape for immediate use without any manipulation upon the part of the purchaser.

To this end I wind the cop as fully set forth hereinafter and as illustrated in the accompanying drawings, in which—

Figure 1, illustrates in part section a cop as wound and supported upon the winding spindle. Fig. 2, illustrates in part section a cop wound in a somewhat different manner and supported upon the windingspindle. Fig. 3, is a longitudinal section of the cop as removed from the spindle, together with a supporting loop. Fig. 4, is an external view of the roll as formed by winding and elongating

the cop, showing the same as provided with a supporting loop and as suspended from a support. Fig. 5, is an enlarged view illustrating the manner in which the threads are laid in the cop shown in Fig. 2.

The cop A, may be wound as illustrated in Fig. 1, and as described in my Letters Patent No. 486,745, where the thread is laid in spiral coils, extending from end to end of the cop, the succeeding coils being laid directly against those previously laid in the same direction, or it may be wound as shown in Fig. 2, and as described in my application, Serial No. 522,284, where the succeeding coils are laid distant from each other and the spaces between the coils first laid gradually filled up in laying other series of coils. In either mode of winding the thread is laid in coils extending from end to end of the cop. Each coil terminates in a bend at the end of the cop, the thread being carried across that of a preceding coil, and the cop presents throughout a series of layers, each consisting of the same number of coils, having the same number of turns or winds, and each coil lying in direct contact with the thread or yarn of another coil.

Instead of winding the yarn directly upon a supporting holder in the form of a tube or block as is customary in winding a cop, I wind the same upon a very thin tube of paper α , supported upon the spindle a , or I wind it upon a spindle made in sections, so that in either case after the cop is formed it can be removed from the spindle and when the paper tube α , is employed, the latter can then be withdrawn. The cop is then seized at the opposite ends and these ends are gradually drawn apart so as to elongate the mass of threads, separating to a degree the coils so that those at the center are elongated and practically brought together as the mass is elongated and reduced in diameter, as shown in Fig. 4 such reduction being from one-half to one-fourth the dimensions of the cop with a corresponding elongation. When the mass is elongated to any great extent there is a tendency of the central portion to contract to a greater degree than does the portion at the ends where the thread is bent back forming bends as described in my aforesaid Letters Patent; and

when the mass is long in proportion to its diameter, the difference in contraction is so great that the ends are relatively enlarged as illustrated in Fig. 4. This enlargement, however, does not take place when the elongated cop approximates a sphere or is of about the same dimensions longitudinally as transversely. This reduction in diameter and elongation of the mass tends to loosen the yarn to a certain extent and prevent it from becoming stretched, while as there is no core or supporting holder the mass is so flexible that there can be no cutting of the yarn, it being well known that for knitting purposes the yarn must be preserved absolutely free from any stretching, cutting or abrasive action. The stick or mass of yarn thus formed has peculiar advantages over the ordinary skeins or hanks, as it is impossible for two masses to become tangled together. The thread in each mass crosses at so many points, that there can possibly be no tangling of the yarn in that mass, while the necessity of subsequent handling and winding by the purchaser is absolutely prevented. It will further be seen that however much the stick of yarn may be reduced the number of such sticks may be packed together without any possibility of entanglement.

A peculiar advantage of the article thus produced is the facility of delivering the yarn as the stick may be hung from one end and the yarn drawn from the other end without resistance or stretching, twisting or entanglement.

One means of providing the stick with a suitable support, is to double a cord *s* so as to form a loop *y*, knotted at the ends so as to make enlargements *b*, introduce the knotted end into the central opening of the cop and then elongate the latter, causing it to shrink upon the cord and hold it in place, when the

loop *y*, at the end will afford means of hanging the cop to any suitable support.

I claim—

1. The within described improvement in making rolls of yarn and like material, the same consisting in first winding the yarn upon a spindle to form a cop, laying the yarn in successive layers and forming each layer of a series of parallel coils of yarn, and bending the thread of each coil back at the end of the cop to form a reverse coil, then removing the cop thus formed from the spindle or other support or holder, and then elongating it by drawing outward the ends of the cop thereby increasing its length and reducing its diameter, substantially as and for the purpose set forth.

2. The within described yarn roll, the same composed of a series of layers, each layer consisting of a series of parallel coils of yarn, each coil extending from end to end of the roll, and bent back at the end, and consisting wholly of a flexible mass of yarn (without any bobbin or other support) and solid throughout from the center outward, as set forth.

3. A yarn roll or cop consisting of a mass of yarn, and a supporting loop extending from the said mass, and secured at the center thereof, substantially as described.

4. The within described yarn roll, consisting of a flexible mass of yarn composed of successive layers each having a series of parallel coils with a supporting loop or cord extending from the center at one end, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

SIMON W. WARDWELL, JR.

Witnesses:

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CARL CHRISTENSEN.