

(No Model.)

2 Sheets—Sheet 1.

H. A. BATES.
COMBINED SPOOL HOLDER AND TENSION.

No. 490,096.

Patented Jan. 17, 1893.

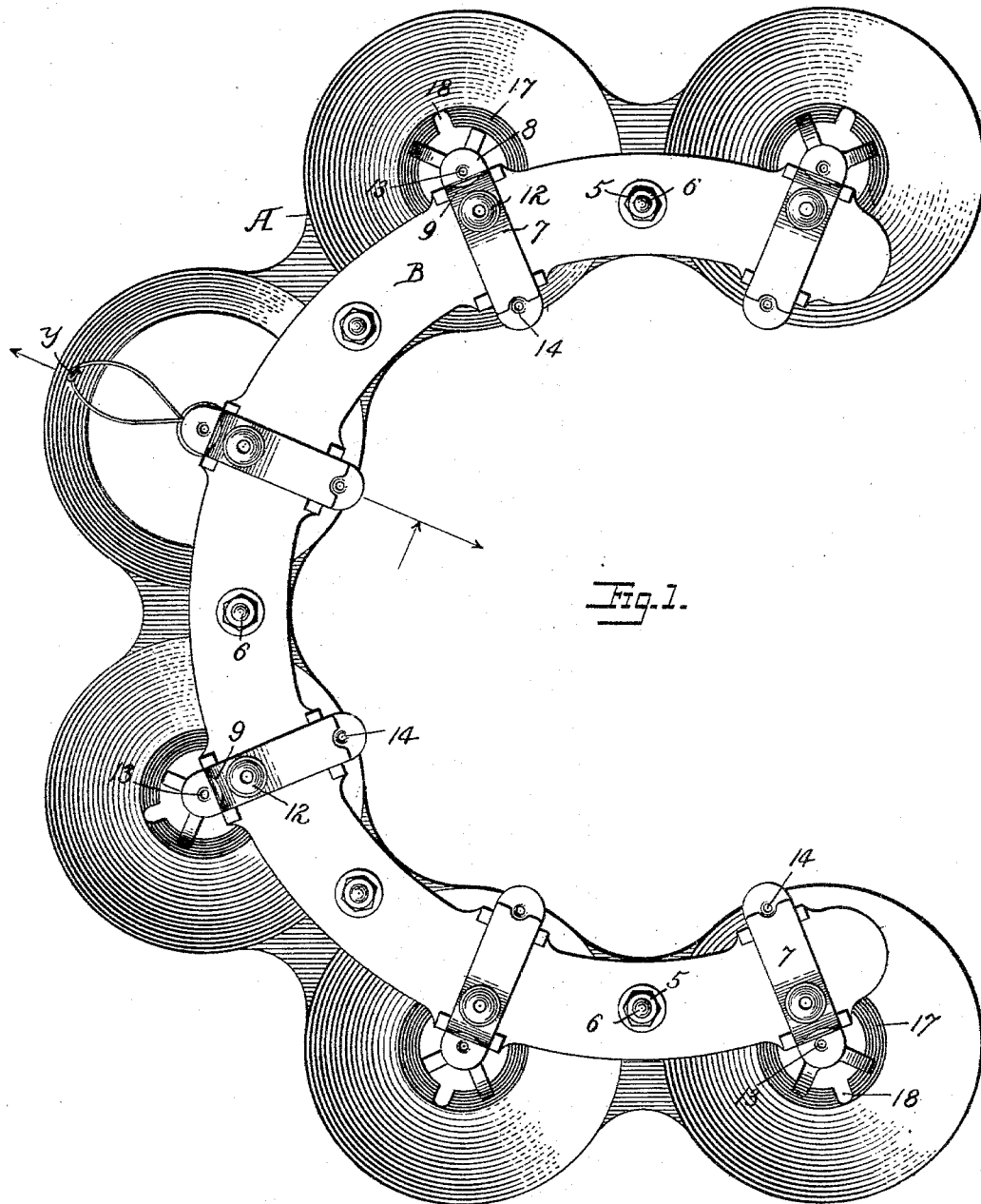


Fig. 1.

WITNESSES

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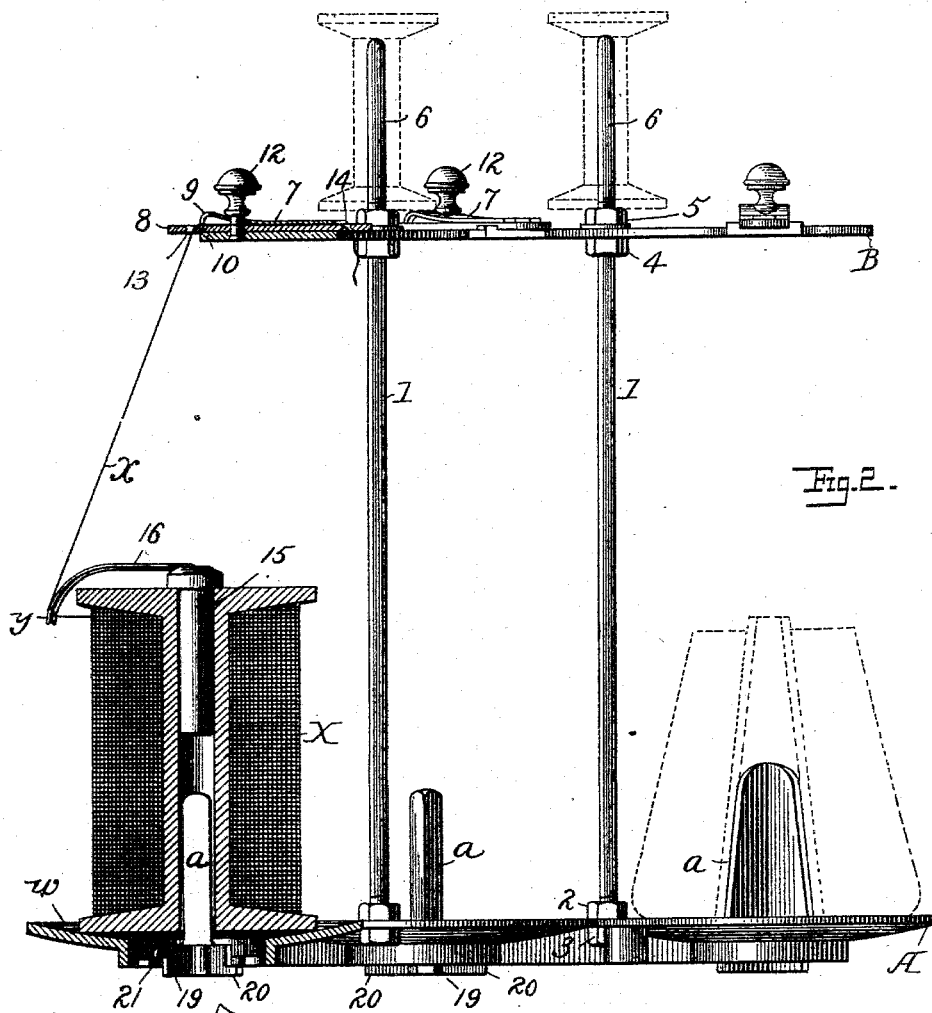


Fig. 2.

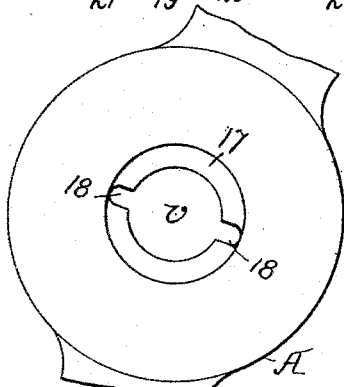


Fig. 3.

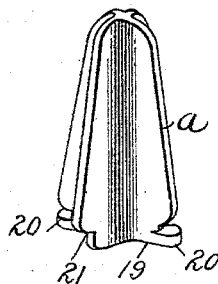


Fig. 4.

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UNITED STATES PATENT OFFICE.

HENRY A. BATES, OF NEW YORK, N. Y., ASSIGNOR TO J. R. LEESON & CO.,
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COMBINED SPOOL-HOLDER AND TENSION.

SPECIFICATION forming part of Letters Patent No. 490,096, dated January 17, 1893.

Application filed March 16, 1891. Serial No. 385,221. (No model.)

To all whom it may concern:

Be it known that I, HENRY A. BATES, a citizen of the United States, residing at New York, in the county and State of New York, have invented certain new and useful Improvements in a Combined Spool-Holder and Tension, of which the following is a specification.

My invention relates to that class of devices used for supporting the spools or bobbins from which threads are taken to sewing machines as for instances those sewing machines that are used in book-binding; and my invention consists of a device as fully set forth hereinafter to secure uniform tension, prevent the threads from entangling and breaking and otherwise improve its efficiency.

This invention is intended for use in connection with large spools, bobbins or cones which are of such size and weight that it is impracticable for them to be revolved and the arrangement and combination of the various parts of the device are such as to be especially adapted to be used with thread holding devices of this character.

The invention is also specially adapted for machines using several threads and having a jerking action upon the threads, and is also adapted for machines having no tension devices.

In the accompanying drawings:—Figure 1 is a plan view of a device adapted for supporting six or more main spools or bobbins. Fig. 2 is a part sectional elevation of said device. Fig. 3 is a plan of part of the bottom plate; and Fig. 4 is a detached perspective view of one of the centering pins for centering the bobbin.

A, is the main or base plate, and B the top plate the two connected together by upright standards 1, 1, each of which is provided at the lower end with a thread which extends through an opening in the lower plate and carries two nuts 2, 2, between which the plate A is clamped and the upper threaded end of each rod extends through the plate B, which is clamped between two nuts 4, 5, the latter extending above the end of the rod 1 so as to receive the lower threaded end of a short pin 6, which serves as a centering pin for small auxiliary spools sometimes used. The lower

plate A is provided with studs or centering pins *a*, for the large non-rotating spools or bobbins X, and the upper plate B, serves as a support for the tension devices each of which consists of a long flat plate 7, extending over a plate 8, secured to or forming part of the plate B, the plate 7, having downward projecting lugs 9, at each corner of the outer end which lugs fit a transverse recess 10, in the plate 8, and a screw-pin extends from the plate B, upward through openings in the plates 8, 7 and carries nut 12, which may be brought to bear upon the plate 7, to press its inner end with greater or less pressure against the upper surface of the plate 8. The plate 8, has two eyes 13, 14, one at the inner and the other at the outer end and the thread *x*, is conducted from the bobbin X, upward through the eye 13, over the upper surface of the plate 8, and below the plate 7, and downward through the eye 14, to the sewing machine. According to the degree to which the plate 7, is depressed the friction upon the thread will be increased, and this friction will remain uniform, is capable of ready regulation and adjustment by turning the nut 12, and in consequence of the long bearing surface presented to the travel of the thread the device is sensitive in its operation permitting any desired degree of frictional regulation to be effected, while should the thread be knotted it can pass between the friction surfaces without breaking it.

It will be seen that the above described friction device preserves a uniform tension upon the thread regardless of the amount upon the spool or bobbin, and in order that the friction may not vary from any inequalities in unwinding, I make use of a flier in the form of a light pin 15 preferably of wood adapted to fit loosely in the opening in the bobbin provided with a head or shoulder for limiting its downward movement and with a lateral curved arm 16, having a terminal eye *y*, through which the thread passes from the bobbin to the tension device. As the thread is drawn through the tension device and from the bobbin the flier revolves without friction or momentum and holds the thread away from the head of the spool preventing it from drawing across the edge of the latter and also from

binding against the coils upon the bobbin, and this results whether the bobbin is full or nearly empty. In consequence of the guide eyes 13, being in line with the axes of the respective spools or nearly so, the distances between the eyes y , at the ends of the flier arms 16 and the eyes 13 remain unaltered by the rotation of the flier arms, and the thread draws off with uniformity. To prevent the thread coils from slipping down under the lower head I prefer to make the plate A dished or with a sunken portion w , around each stud a , so that the edge of the lower head will have a close bearing preventing the thread from passing beneath.

To facilitate the packing of the machine it is preferable to make the studs a , detachable from the plate A. This may be done in any suitable manner, preferably by providing the plate with openings v , surrounded by flanges 17, having notches 18, said flanges increasing in thickness from the edge of one notch to the edge of the opposite notch and each stud has radiating wings 19, two of which have lugs 20, adapted to pass through the notches 18, and bear against the under sides of the flanges, while the other wings have overhanging lugs 21. To secure the stud in place the wings with the lugs 20, are passed through the notches 18 and the stud is then turned until the shoulders or lugs 21 bind upon the upper inclined faces of the flanges 17. Where the bobbins consist of paper tubes the thickness of the studs is increased by extending the wings upward to the top end of the stud as shown in Fig. 4.

It will be seen that the construction above described permits the studs to be detached and the rods 1, and 6 to be readily disconnected from the plates so that the parts may be separated and closely packed.

While I have described a device adapted for supporting six bobbins it will be evident that the construction may be varied to adapt the device to any required number of spools.

As shown the plates A and B are curved and the tension devices carried by the upper plate are arranged radially and preferably at substantially equal distances from a common point or center to which the threads are all to be led for delivery to the machines which are to use them.

In binding books by the use of sewing machines, it is necessary to employ independent sewing mechanisms operating upon independent threads, and at the same time it is absolutely necessary that the tension upon each thread shall be maintained uniform with that of the others, as otherwise the binding will not be properly effected. By the arrangement above described the course of each thread is maintained precisely similar to that of the others and access is readily had to each thread tension device to permit such regula-

tion of the tensions as will secure uniform tension upon all the threads.

I am aware that a single spool holder and a single tension device have been used, but an assemblage of such structures would not effect the purpose of that above described, because the threads could not be symmetrically arranged in respect to the sewing mechanisms, nor at equal distances therefrom and extending through similar courses.

Without limiting myself to the precise construction and arrangement of parts shown and described, I claim:—

1. The combination in a spool stand, of a base plate A, having a series of supports for spools, cones or bobbins and a plate supported in a position above the plate A, and tension devices upon such plate and guide eyes for the threads in line or nearly so with the axis of the respective supports and flier arms, and eyes for the threads whereby the threads will draw off with uniformity from the respective spools, substantially as specified.

2. The combination with the support for a spool or bobbin, of another plate or support carrying a perforated tension plate 8, the spring tension plate 7 having the downward projecting lugs 9 at one end which hold the plate at one end above the plate 8, the said lugs being separated from each other, and the plate 8 being provided with the holes 13, and 14, the hole 13 being in front of the opening between the lugs 9 whereby the thread may pass through the said hole and through the space between the lugs and between the tension plates, to the hole 14, and the adjusting screw, substantially as set forth.

3. The combination of the base plate A provided with the spool or bobbin studs, the upper plate B provided with the tension devices, the standards uniting the two plates, and the detachable spool pin supported above the plate B, substantially as described.

4. The combination of the base plate provided with the spool or bobbin studs, the upper plate provided with tension devices, the standards uniting the two plates, the nuts 4 and 5 upon the said standards between which the upper plate is clamped, and the detachable pins 6 screwed into the nuts 5, substantially as set forth.

5. In a spool stand the combination of the base plate having an opening surrounded by a notched flange, and the detachable spool or bobbin stud provided with the shoulders and lugs which embrace the said flange and hold the stud in place, substantially as set forth.

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

HENRY A. BATES.

Witnesses:

GEO. T. PINCKNEY,
WILLIAM G. MOTT.