

1,033,423.

B. LARSON.
WINDER SHAFT.
APPLICATION FILED SEPT. 29, 1910.

Patented July 23, 1912.

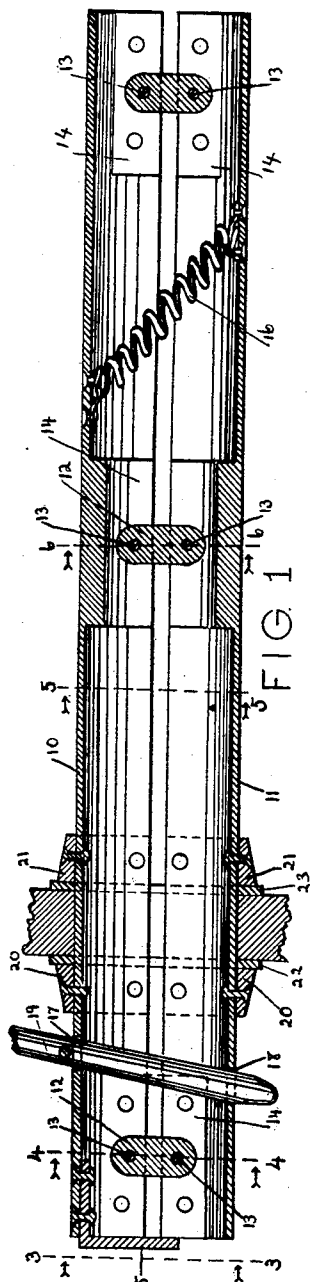


FIG. 1

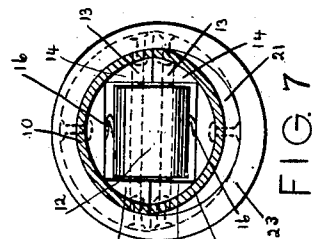


FIG. 7

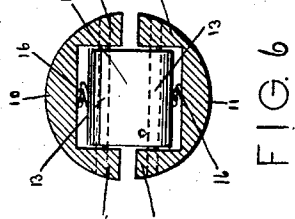


FIG. 6

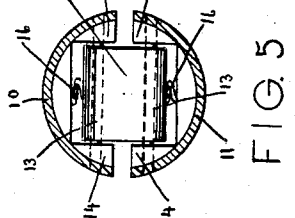


FIG. 5

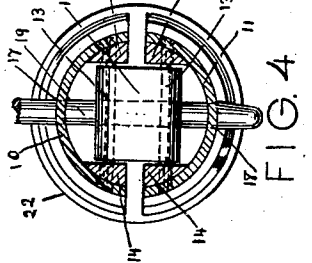


FIG. 4

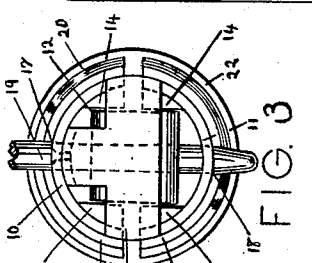


FIG. 3

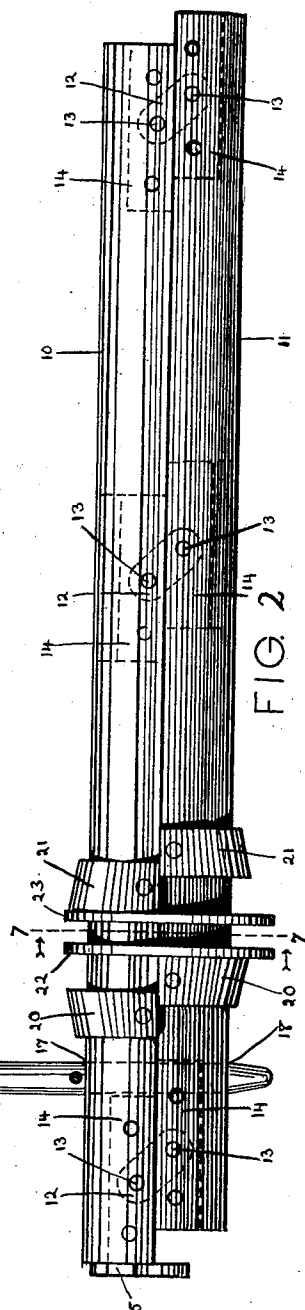


FIG. 2

WITNESSES:

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WINDER-SHAFT.

1,033,423.

Specification of Letters Patent.

Patented July 23, 1912.

Application filed September 29, 1910. Serial No. 584,454.

To all whom it may concern:

Be it known that I, BENNETT LARSON, of Rhinelander, in the county of Oneida and State of Wisconsin, have invented certain
5 new and useful Improvements in Winder-Shafts; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make
10 and use the same, reference being had to the accompanying drawings, and to the reference-numerals marked thereon, which form part of this specification.

The object of my invention is to provide
15 a collapsible winder shaft which is simple in construction and efficient in operation and well adapted to meet the desired ends of such a device. Its simplicity of construction permits of manufacture at small cost
20 and makes it very unlikely to get out of order.

One of the special objects I have in view is to provide a winder shaft that cannot be loaded in collapsed condition and thus avoid
25 the delay and waste that often result when using a device that can be loaded in collapsed condition.

Figure 1 is a longitudinal sectional view of a winder shaft in expanded condition,
30 embodying my construction. Fig. 2 is a side elevation of the same in contracted condition. Fig. 3 is a view of the left end of the device as shown in Fig. 1. Figs. 4, 5 and 6 are sectional views on lines 4—4, 5—5
35 and 6—6, respectively of Fig. 1. Fig. 7 is a sectional view on line 7—7 of Fig. 2.

Referring to the drawings in a more particular description, 10 and 11 are the segment pieces forming the body of the shaft.
40 These segments may be formed by cutting in half lengthwise a strong piece of tubing of the required diameter and length, in which process a little of the metal will be cut away, leaving each segment a little less
45 than half of the original tubing; or the segments may be made in the desired shape of course at the beginning instead of splitting the tubing.

At intervals along the shaft, hinge blocks
50 12 are securely pivoted at opposite ends to the segments 10 and 11 by means of pins 13 passing through the opposite sides of each segment and through spacing blocks 14. These spacing blocks are securely fastened
55 to the inside of the segments 10 and 11,

having one face preferably rounding to fit the curve of the inside of the segment. They keep the hinge blocks 12 centrally located and also support the pins 13 and distribute the pressure thereon over a greater
60 surface of the segments 10 and 11.

An obvious but minor modification is that shown in Fig. 6 of forming these spacing blocks integral with the segments 10 and 11. The hinge blocks are of such proportion and so placed that when they are at
65 right angles to the segments, the segments will be held a little distance apart at what I will call expanded condition of the winder shaft, while upon either segment being
70 moved longitudinally of the other, the hinge blocks will swing pivotally at both ends and the segments will be brought toward each other in an obvious manner until they meet and form the contracted condition of the
75 device. A stop 15 secured near the end of segment 10, projects over the end of segment 11 and prevents segment 10 from passing any farther to the right relative to segment 11 than shown in Fig. 1. A strong
80 spring 16 connecting the two segments is tensioned to hold the device in expanded condition. Near the end of the segments and oppositely located therein are two slots
85 17 and 18 in which may be inserted a suitable lever 19 to move the shaft from expanded to contracted position or vice versa if needed. The lever 19 of course will not be in place when the winder shaft is being
90 used. Near one end of the winder shaft there are located and suitably fixed upon each segment two half collars 20 and 21 so placed as to have the parts 20 in alinement when the device is in expanded condition;
95 likewise the parts 21 will be in alinement at that time. Between the two collars so formed and held in place thereby, are loosely hung upon the shaft two flat rings or washers 22 and 23. The half collars 20 and 21 are
100 so spaced and the thickness of the rings 22 and 23 is such that there is sufficient space between the two rings for the bearing 24 of the paper machine or of the rewinder, when the winder shaft is in expanded condition but not enough for the bearing when
105 the device is in contracted condition as the half collar 21 upon the segment 10 will have been then moved toward the half collar 20 upon the segment 11. This arrangement of collars and rings performs the usual purpose
110

of holding the winder shaft in place lengthwise in the machine and the additional one of rendering it impossible to put the winder shaft into the machine in contracted condition. Also as long as the device is in position in its bearing in the machine, it cannot be moved to contracted condition. It will be further noticed that this result is obtained entirely independently of the spring 16 which may be weakened from use or out of order or entirely dispensed with, without affecting this safety provision. In practical operation and to practical papermen, this element of safety can hardly be overestimated, as the length of time the men usually work, the speed with which they must manipulate the device and the liability of interruptions all tend to occasional carelessness in adjusting any winder shaft that is not inoperative in contracted condition. After the paper has been rolled upon the winder shaft, it with the roll of paper thereon is removed from the machine. The shaft may then be moved to contracted condition by use of the lever 19 as before mentioned and the shaft withdrawn from the roll of paper. The spring 16 will then change the shaft to expanded condition ready to be placed in the machine next time but the winder shaft must be in expanded condition before it can be placed in the machine again as already pointed out.

What I claim as new and desire to secure by Letters Patent is:

1. The combination in a winder shaft of two substantially semi-circular segments and hinge blocks pivotally connected at each end to said segments and adapted to hold said segments apart in expanded position and to allow them to be moved longitudinally of each other to a contracted position, said segments when in expanded position constituting nearly a complete circle and adapted to form the journals of the shaft.

2. The combination in a winder shaft of two substantially semi-circular segments and hinge blocks pivotally connected at each end to said segments and adapted to hold the segments apart and to move them toward each other as the segments are moved longitudinally of each other, the said segments when in expanded position constituting nearly a complete circle and adapted to form the journals of the shaft.

3. The combination in a winder shaft of two substantially semi-circular segments, hinge blocks pivotally connected at each end to said segments and adapted to hold the segments apart and to move them toward each other as the segments are moved longitudinally of each other, said segments when in expanded position constituting nearly a complete circle and adapted to form the journals of the shaft and yielding

means normally holding said shaft in expanded position.

4. The combination in a winder shaft of two segments having journal-forming portions at their ends, hinge blocks connected at each end to and holding said segments apart and adapted to allow the segments to be moved longitudinally of each other to a contracted condition and means upon said segments for preventing the journal portion of said shaft from resting in its bearings except when in expanded condition.

5. The combination in a winder shaft of two segments having journal-forming portions at their ends, hinge blocks connected at each end to and holding the segments apart and adapted to allow the segments to be moved longitudinally of each other to a contracted condition and projections upon said segments positioned and adapted to prevent the journal portion of said shaft from resting in its bearings except when in expanded condition.

6. The combination in a winder shaft of two segments, hinge blocks connected at each end to and holding the segments apart, and adapted to allow the segments to be moved longitudinally of each other to a contracted condition, projections upon said segments positioned to be in alinement only when said winder shaft is in expanded condition, and bearings receivable between said projections only when the shaft is in expanded condition.

7. The combination in a winder shaft of two segments, hinge blocks pivotally connected at each end to and holding the segments apart and adapted to allow the segments to be moved toward each other, and two half-collars upon each of said segments adapted to receive therebetween the bearings supporting said winder shaft only when it is in expanded condition.

8. The combination in a winder shaft of two segments, hinge blocks pivotally connected at each end to and holding the segments apart, and adapted to allow the segments to be moved longitudinally of each other to a contracted condition, and two half-collars upon each of said segments positioned and adapted to be in operative position relative to the bearing supporting said winder shaft only when said winder shaft is in expanded condition.

9. The combination in a winder shaft of two segments, hinge blocks connected at each end to and holding the segments apart, and adapted to allow the segments to be moved longitudinally of each other to a contracted condition, and two half-collars upon each of said segments positioned to receive therebetween the bearing supporting said winder shaft only when said winder shaft is in expanded condition.

10. The combination in a winder shaft of

two segments, blocks pivotally connected at each end to said segments and adapted to hold the segments apart and to move them toward each other as the segments are moved longitudinally of each other, and two half-collars upon each of said segments adapted to receive therebetween the bearing supporting said winder shaft only when it is in expanded condition and yielding means normally holding said shaft in expanded condition.

10 11. The combination in a winder shaft of two segments, blocks pivotally connected at each end to said segments and adapted to hold the segments apart and to move them toward each other as the segments are

15 moved longitudinally of each other, two half-collars upon each of said segments adapted to receive therebetween the bearing supporting said winder shaft only when it is in expanded condition and yielding means normally holding said shaft in expanded condition. 20

In witness whereof I have affixed my signature, in the presence of two witnesses, this 21st day of Sept. 1910.

BENNETT LARSON.

Witnesses:

A. O. RENDELL,

A. L. RENDELL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
