

(No Model.)

W. C. PIERCE.
WINDING MACHINE.

No. 492,613.

Patented Feb. 28, 1893.

Fig. 1.

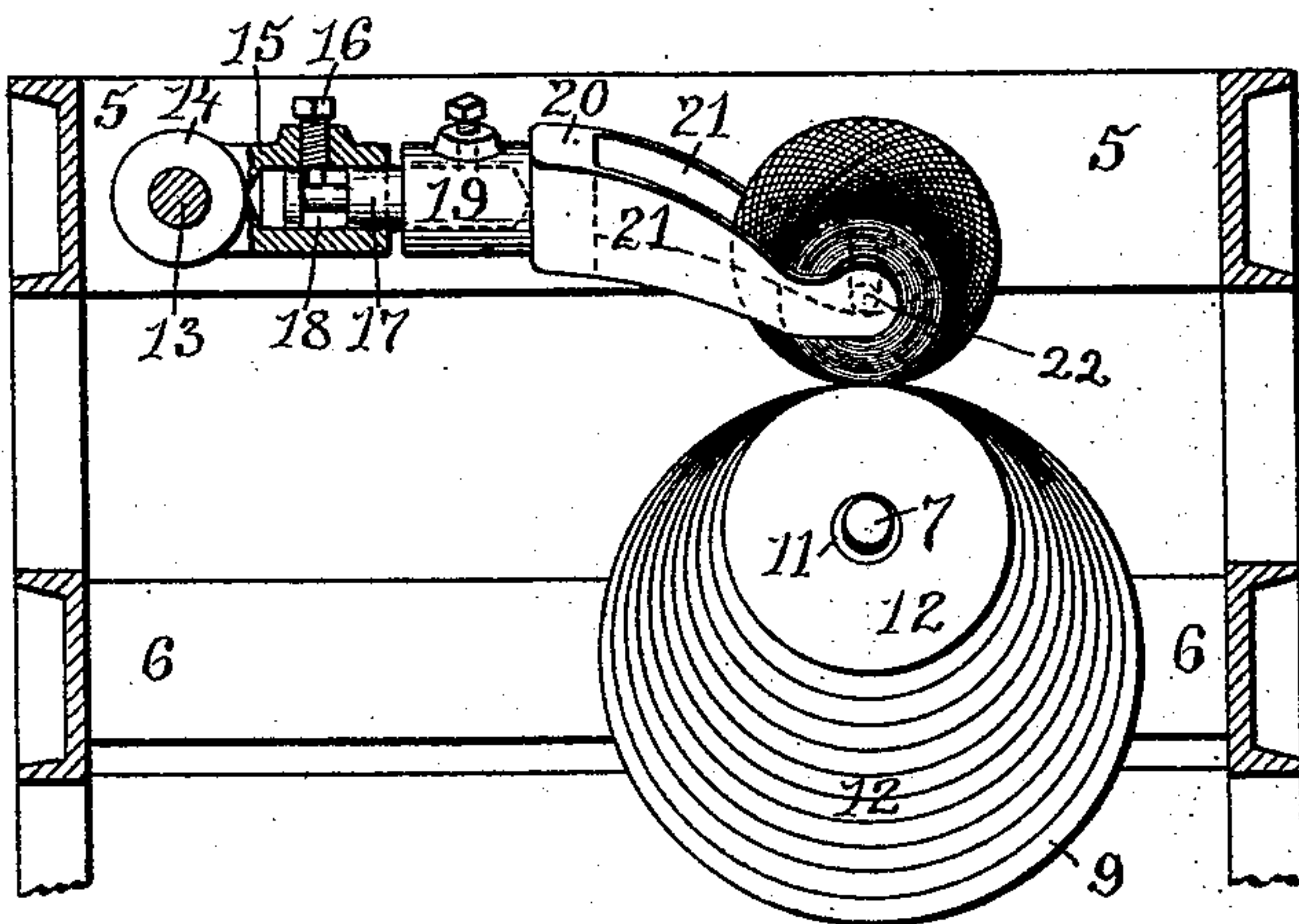


Fig. 2.

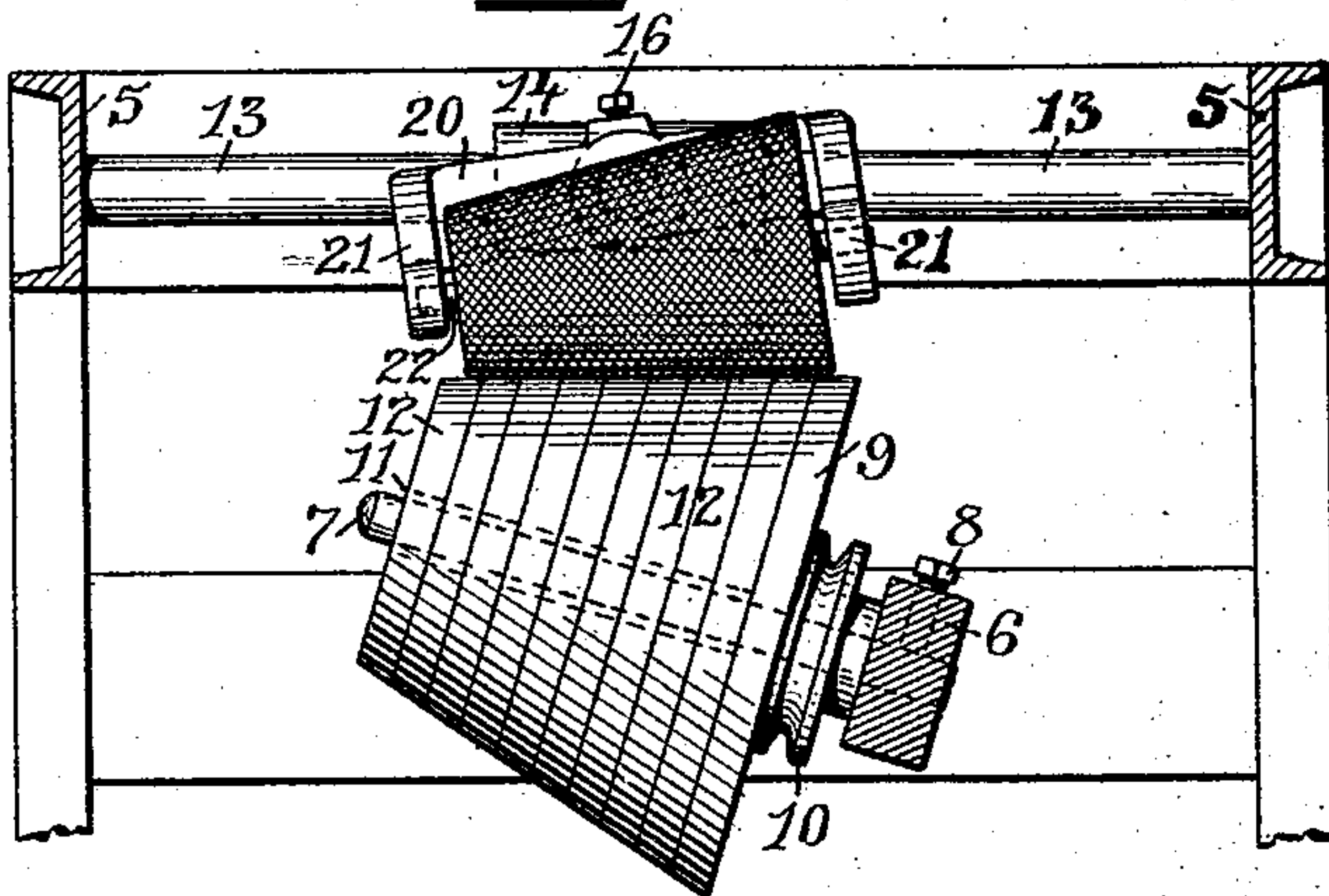
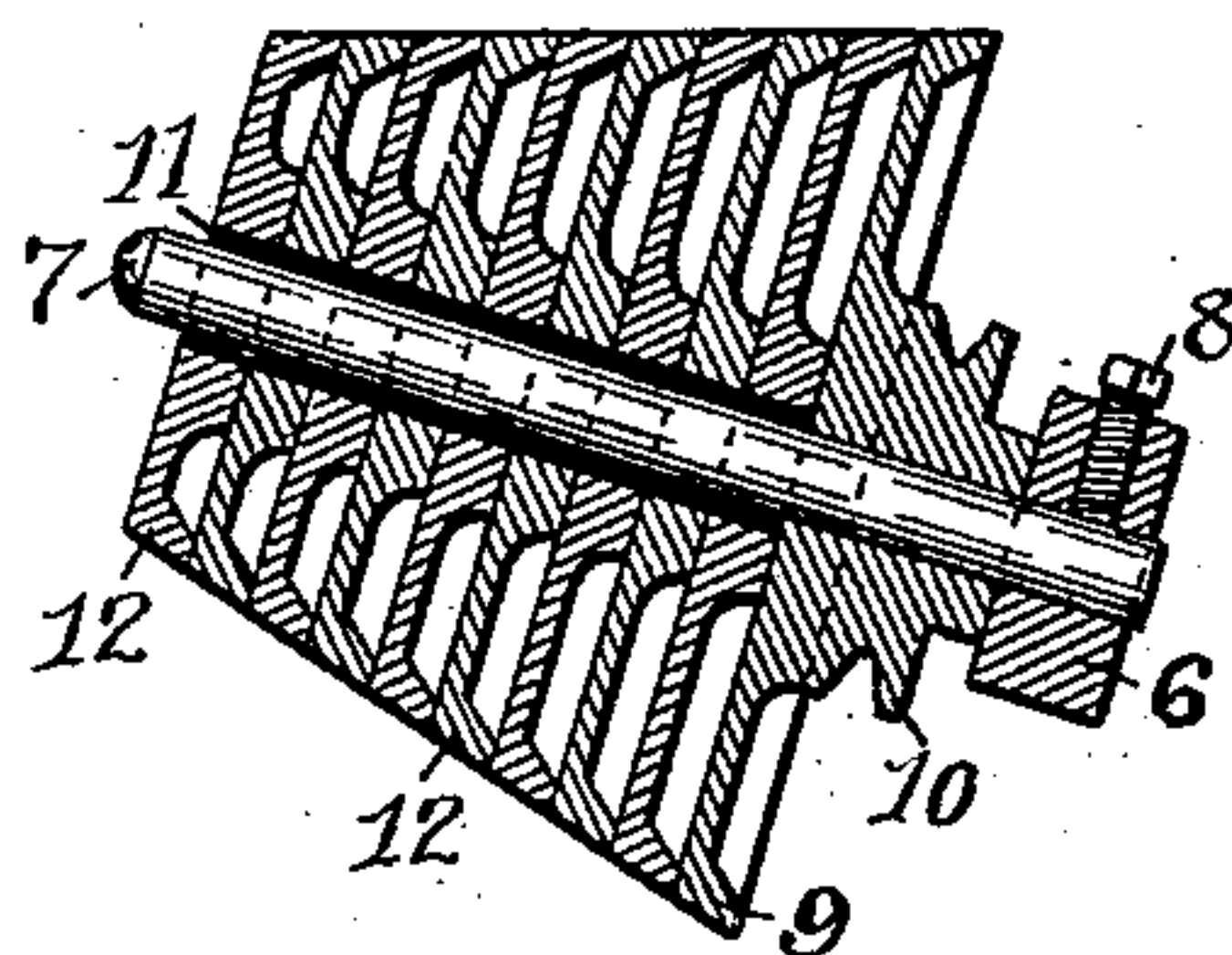


Fig. 3.



WITNESSES:

Henry J. Miller
Chas. H. Luther Jr.

INVENTOR:

William C. Pierce
by Joseph A. Miller & Co.
Atty.

UNITED STATES PATENT OFFICE.

WILLIAM C. PIERCE, OF PROVIDENCE, RHODE ISLAND.

WINDING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 492,613, dated February 28, 1893.

Application filed July 27, 1892. Serial No. 441,378. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM C. PIERCE, of the city of Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Winding-Machines; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification.

This invention has reference to improvements in machines for winding thread, yarn, &c., on quills or bobbins.

The object of this invention is to provide a winding-machine which will be more perfect in its operation than those heretofore constructed.

The further object of this invention is to produce a cone-winder, for winding thread, &c., the rotation of parts of which will be regulated to an extent by the bearing thereon of the thread.

Finally the object of this invention is to provide a support for the quill, or bobbin, of a winding-machine which will automatically vary the plane of its axial center to keep the same constantly in a vertical line with the axis of the cone-winder and the surface of the thread, wound on the quill, parallel to the side of the cone.

The invention consists in the peculiar construction of the quill or bobbin support and the novel combination of the same with the frame to which it is secured.

The invention further consists in the peculiar features of construction and novel combination of parts forming the cone-winder, as will hereinafter be more fully described and pointed out in the claims.

Figure 1 represents a front view of the improved winding-machine, partly in section, to more clearly illustrate the construction and operation. Fig. 2 represents a side view of the same, parts of the frame being shown in section. Fig. 3 represents a sectional view of the cone-winder to indicate its construction.

Similar numbers of reference designate corresponding parts throughout.

In the drawings 5 indicates the upper cross-rail of a winding-machine, and 6 is a lower cone-bearing rail which is set at an angle, these rails being suitably braced and sup-

ported. In the bearing-rail 6 are secured one or more inclined pins 7 which are fastened at their bases by the set-screws 8, and on these pins 7 are journaled the base-disks 9 of the cone-winders, the base-disks being each provided with band-pulleys 10, or gears, by means of which and the mechanism connected therewith a positive rotation may be imparted to the base-disks. Extending from the center of these base-disks and surrounding the pins 7 are the tubular-bearings 11 through which a lubricant may be inserted to lubricate the bearing of the base-disk, and mounted on these bearings are a number of independently-rotatable disks 12—12 portions of the lower surfaces of which are cut away to reduce the weight as well as the frictional contact between the disks, the outer circular surfaces of all the disks being tapered to form a truncated-cone.

The ends of the shaft 13 are secured in the cross-rails 5—5, and mounted on this shaft, at suitable distances apart, are the bearing-sleeves 14 having the forwardly-extending sockets 15 through perforations in the material of which the set-screws 16 extend, their inner ends being adapted to limit the reciprocation of the rotatable members 17 the inner ends of which have reduced portions 18 to receive the ends of the set-screws, the reciprocation of these members being thus limited to the width of the reduced portions.

The forward ends of the members 17 are rigidly secured by set-screws in the sockets 19 of the quill or bobbin frames 20 between the ends of the arms 21 of which is loosely journaled a shaft 22 on which the quill, or bobbin, is mounted. The quill-frame will thus be adjustable in a vertical plane by means of the reciprocating member 17 and the movement of the bearing 14 on the shaft 13, while this member 17 being rotatable in the socket 15 will allow the quill when first inserted and the surface of the thread afterward wound thereon to automatically adjust itself to the surface of the cone-driver.

Where the cone-driver is formed in one piece, it is obvious that the speed of any portion thereof remains constant, whereas in my improved sectional cone the speed of the independent disks may vary from that of the base, depending on the frictional contact be-

tween the disks and on the surface resistance.

In practice I find that the thread is wound on the quills, or bobbins, which can be cylindrical or conical, in a more even manner and with a more equal tension than as heretofore, the extra layers wound around the smaller end of a conical quill not being drawn tight enough to force the inner layers endwise of the quill, and the filled quill or bobbin presenting a better appearance than when wound by a solid cone.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. In a winder for a thread or yarn-winding machine, the combination with a shaft or pin, and a positively-driven base journaled thereon, of a series of independently-rotatable disks also journaled on said shaft, the outer surfaces of the disks and base being tapered to form a truncated cone, as described.

2. In a winding-machine having a suitable quill or bobbin support, the combination with the inclined-pin 7 secured in the rail 6, a base-disk 9, adapted to be positively driven, journaled on said pin, and a tubular-bearing 11 extending from the central portion of the disk and surrounding said pin, of a number of disk-sections 12 independently rotatable on said tubular bearing and having their lower surfaces more or less cut away, the outer edge surfaces of the disks and base being tapered so that when placed in position a truncated cone will be formed, as described.

3. In a thread or yarn winding machine having a suitable winder, the combination therewith of a quill or bobbin support, con-

sisting of a frame in which the quill or bobbin may be rotatably secured, a supporting-member secured to said frame, and a rocking-bearing in a socket of which the end of the member is free to automatically rotate and reciprocate, as described.

4. The combination with a cone-winder suitably supported and consisting of the base-disk 9, having the pulley 10 and the tubular-bearing 11, the inclined-pin 7, on which said bearing is rotatable and a series of independently-rotatable disks 12—12, of a quill or bobbin frame 20 adapted to carry a quill or bobbin, a member 17, having the reduced portion 18, rigidly secured to said frame, a shaft 13 and the sleeve 14 journaled on the shaft 13 and having the socket 15 adapted to receive the reduced portion of the member 17, and a set-screw for securing the same, as and for the purpose described.

5. In a winding-machine, the combination with a winder, of a quill or bobbin frame 20 adapted to carry a quill or bobbin, a member 17 having the reduced portion 18 said member being adjustably secured to said frame, the shaft 13 and the sleeve 14 journaled thereon and having the socket 15 adapted to receive the reduced portion of the member 17, said member 17 being free to move back and forth in the member 15 and a set-screw for limiting the reciprocation of said member, as described.

In witness whereof I have hereunto set my hand.

WILLIAM C. PIERCE.

Witnesses:

JOSEPH A. MILLER, Jr.,
M. F. BLIGH.