

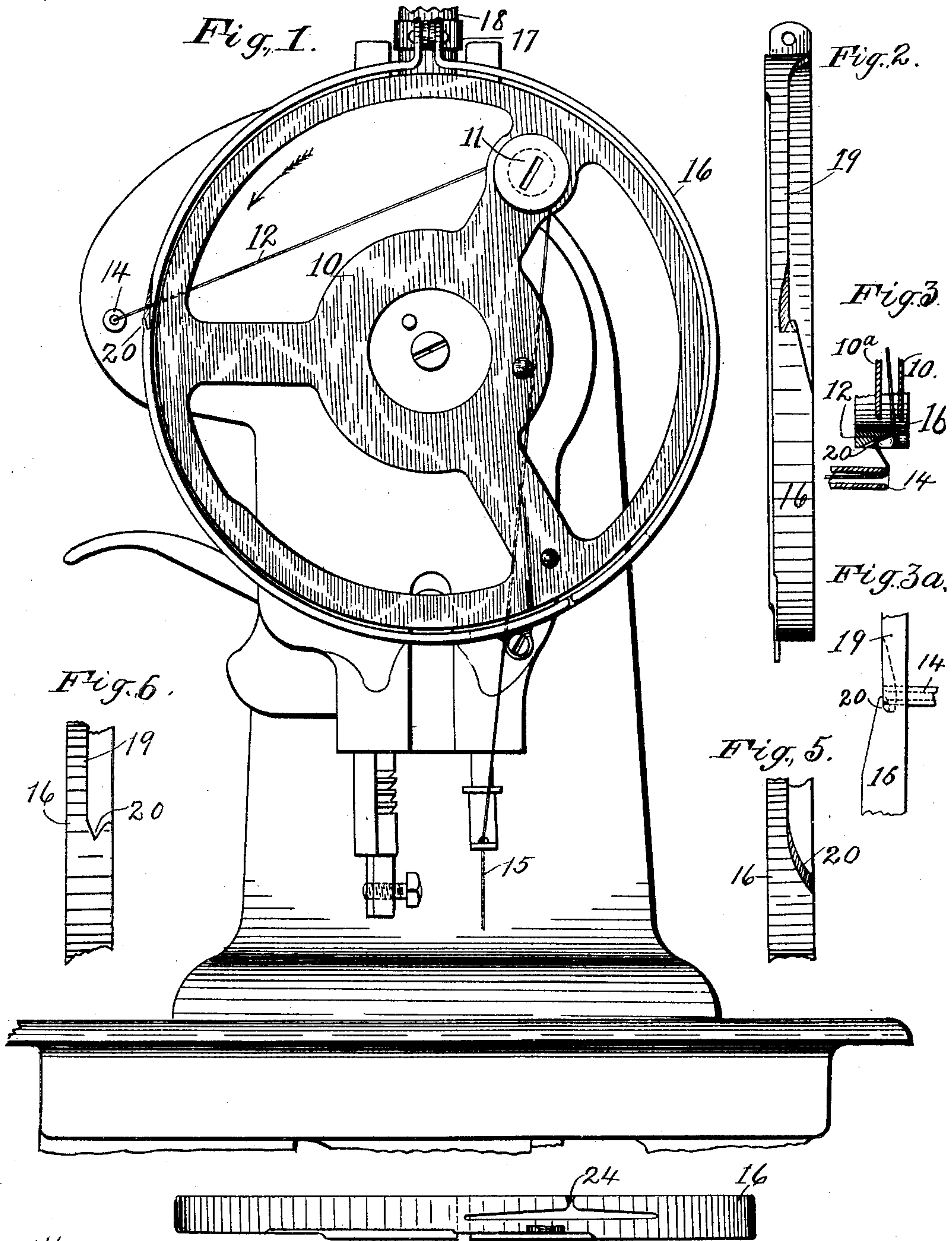
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Patented June 4, 1901.

O. B. BRUSH & S. BORTON.
ROTARY TAKE-UP FOR SEWING MACHINES.

(Application filed Jan. 26, 1901.)

(No Model.)



Witnesses
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UNITED STATES PATENT OFFICE.

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ROTARY TAKE-UP FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 675,438, dated June 4, 1901.

Application filed January 26, 1901. Serial No. 44,8514. (No model.)

To all whom it may concern:

Be it known that we, OTIS B. BRUSH, a resident of Bridgeport, Connecticut, and STOCKTON BORTON, a resident of Providence, Rhode Island, have invented a new and useful Improvement in Rotary Take-Ups for Sewing-Machines, which invention is fully set forth in the following specification.

This invention relates more particularly to rotary take-ups such as used in the Willcox & Gibbs lock-stitch sewing-machine. These machines are constructed with a view to being run at a high rate of speed, the maximum being about four thousand stitches per minute. The rotary take-up is mounted on the main shaft in the head of the machine, and the movements imparted thereby to the thread are extremely rapid. When the thread breaks at the needle, the machine often runs for a considerable time before the break is noticed and the machine can be stopped. In such cases the take-up continuing to draw thread from the spool accumulates a large mass thereof, which becomes entangled, involving a loss of time and a wastage of thread.

One object of the present invention is to minimize the inconvenience and waste resulting in such cases, and this object is accomplished by the improvements hereinafter described. The rapid revolution of the take-up creates a strong current of air, which is annoying and disagreeable to the operator.

A further object accomplished by the invention is to shield the face of the operator from such air-currents.

Figure 1 is an elevation of the head of a Willcox & Gibbs lock-stitch sewing-machine. Fig. 2 is a left-hand side view of the thread guard and cutter. Fig. 3 is a sectional plan view illustrating the thread-cutter. Fig. 3^a is an elevation of the thread-cutter from the right-hand side. Fig. 4 is a bottom plan view of the thread-guard. Figs. 5 and 6 are details illustrating different forms of thread-cutters.

The rotary take-up 10, having the take-up pin 11, is of well-known construction, requiring no description. The thread 12 is carried from the eye or thread-tube 14 to the take-up, passing around pin 11, and thence to the nee-

dle 15. For the purpose of carrying a cutter and thread-guide and to divert the air-current created by the rapid movement of the take-up, so that it will not strike the face of the operator, we provide a guard 16 in the form of a circular band entirely surrounding the take-up plates 10 10^a. This band is detachably secured by the clamp 17 to post 18 on the head of the machine. The rim of band 16 is partly cut away at the upper right-hand side 19, so that any slack thread will protrude through this opening, where there is nothing to engage or catch it while sewing. The cut-away portion of the guard begins at a point adjacent to the thread-eye 14 and extends upwardly for a distance of about ninety degrees. The width of the cut-away portion is about half the width of the band. The advantage of having the narrow portion of the guard remain at this point between the head of the machine and the inner take-up plate is that when the thread breaks (which is when the outer take-up pin 11 draws it tight between the tension and the material) its end tends to fly upward and if unguarded is carried down behind the take-up by a current of air and wound around the spindle or needle-bar crank, to which the take-up is fastened. The take-up in the machine shown rotates toward the operator at the bottom. The opening 19, formed by this cut-away portion, serves another purpose in connection with the thread-cutter 20, which is placed at the lower extremity thereof and is formed by a vertical or nearly-vertical slot or notch in the thread-guard. In case of breakage of the thread at the needle the centrifugal force due to the rapid rotation of the take-up often throws the broken thread outward through the opening 19; but frequently the thread drops back on the take-up and is carried down with it. If the break is a long one, the thread will wrap around the pins in the take-up, and when sufficient friction is created—about two or three wraps—the thread will be drawn against the cutter with sufficient force to sever it between the eye 14 and the take-up. This immediately arrests the drawing off of thread from the spool.

The thread-cutter 20, as shown in Fig. 5, has

a sharpened edge transverse to the band or thread-guard 16, which acts efficiently at high speeds. At a low speed, however, this form of cutter will not invariably sever the thread, and to insure certainty of action it is preferred to cut the slot in an oblique direction through the band 16, so that the thread when caught therein will have a bend, as shown in Fig. 3. By reason of this bend in the thread the latter will be held or retarded, causing it to be severed by the cutting edges, which are formed at 20.

As shown in Fig. 5, the thread-cutter may be formed by sharpening the curved edge 20, giving a knife-cut as the thread is drawn across it.

The thread-cutter could obviously be formed in other ways; but those described have been found best suited to the purpose.

As in former constructions, the thread passes out of the take-up through an oblong guide, in which the thread vibrates back and forth, but which restricts the range of its vibratory movement. This guide was heretofore a separate piece attached to the head of the machine. According to the present invention this guide 24 is formed in the band or guard 16, which simplifies the construction.

What we claim is—

1. The combination with the rotary take-up of a thread-guard in the form of a circular band surrounding the take-up, the rim of the band having a portion of its width cut away on one side to provide an opening through which loops of slack thread may protrude.

2. The combination with the rotary take-up and with the eye or guide through which the thread passes to the take-up, of a guard in the form of a band surrounding the take-

up and having part of its width cut away at a point adjacent to said thread eye or guide.

3. The combination with the rotary take-up, of a thread-cutter for severing the thread in advance of the take-up in case of breakage of the thread between the take-up and the work.

4. The combination with the rotary take-up, of a thread-cutter against which the rotation of the take-up will draw the slack thread accumulating after breakage thereof between the tension and work.

5. The combination with the rotary take-up, of a thread-cutter arranged adjacent thereto and comprising a slot or notch oblique to the direction of the thread, and a cutting edge.

6. The combination with the rotary take-up, of a thread-guard in the form of a band, and having a thread-cutter formed thereon.

7. The combination with the rotary take-up, of a thread-guard in the form of a band surrounding or partly surrounding the take-up, and having formed therein an oblong slot extending lengthwise of the band through which the thread passes from the tension to the needle.

In testimony whereof we have signed this specification in the presence of two subscribing witnesses.

OTIS B. BRUSH.
STOCKTON BORTON.

Witnesses as to Otis B. Brush:

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