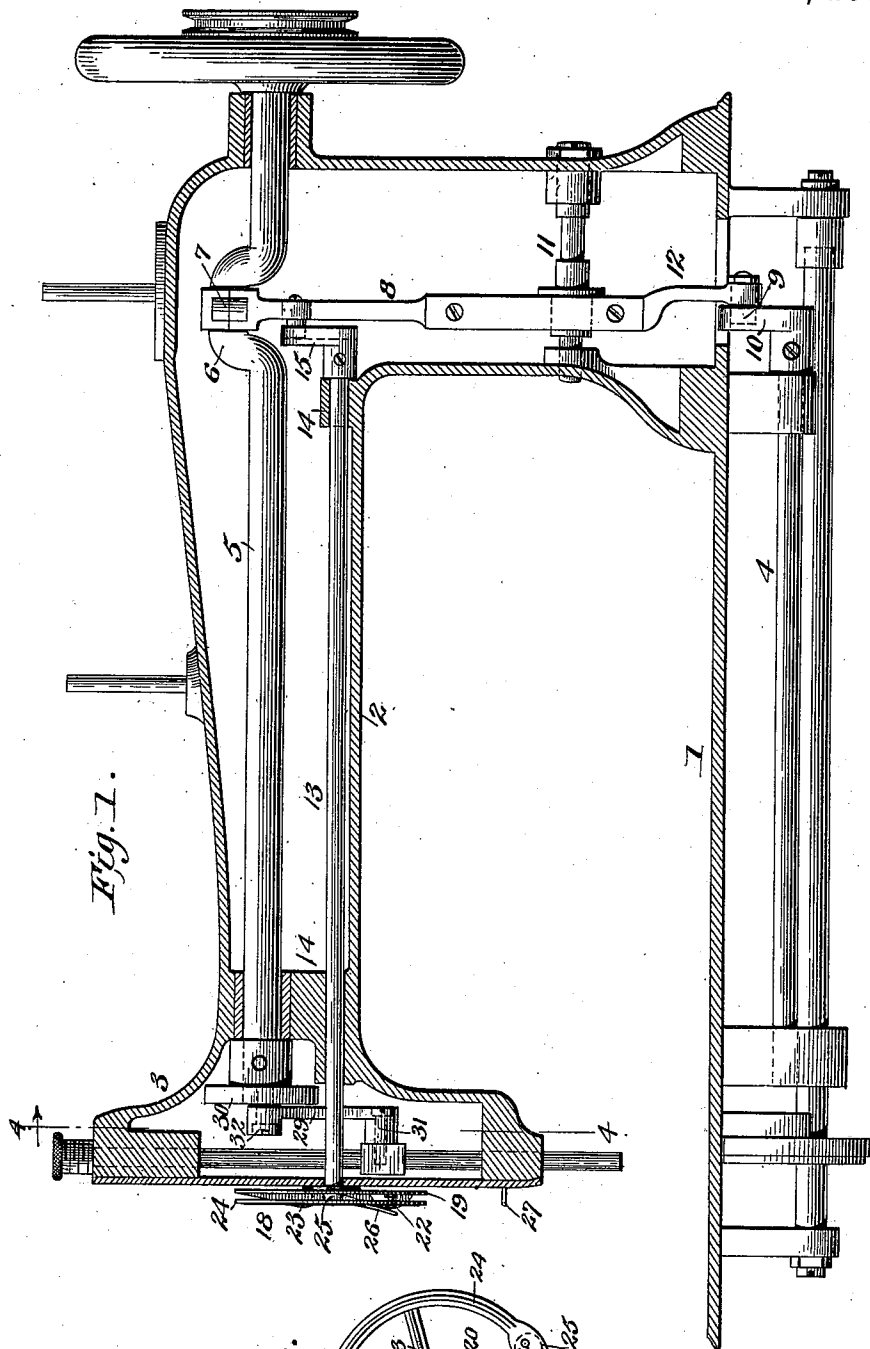


J. TRIPP.
ROTARY TAKE-UP FOR SEWING MACHINES.

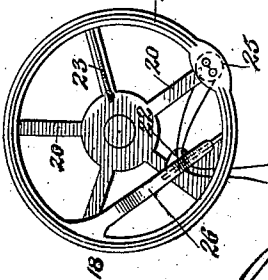
No. 549,171.

Patented Nov. 5, 1895.



WITNESSES:
M. S. Blouder.
G. H. Rea

Fig. 10.

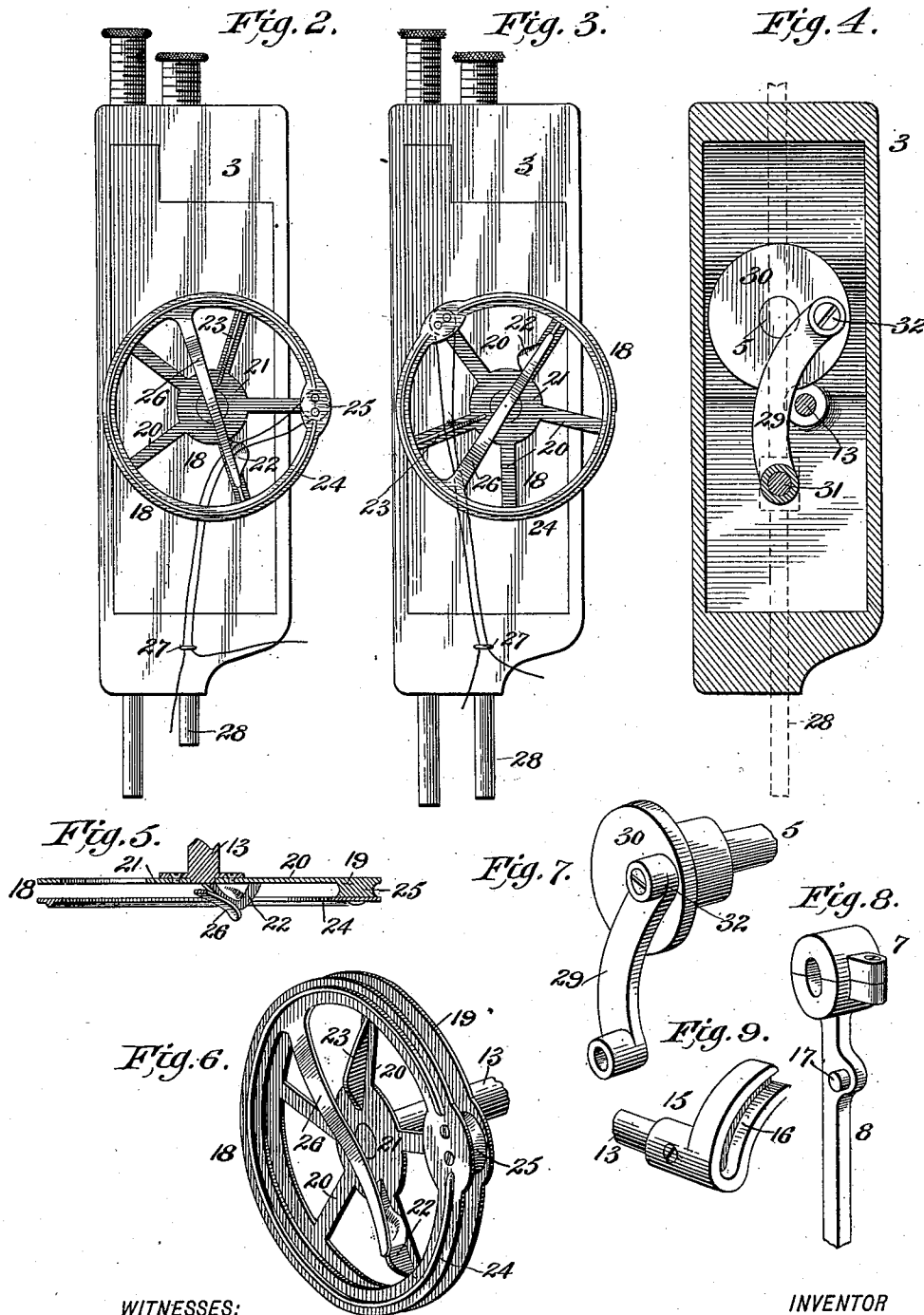


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BY
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UNITED STATES PATENT OFFICE.

JAMES TRIPP, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF TO AUGUSTUS H. TENNIS, OF SAME PLACE.

ROTARY TAKE-UP FOR SEWING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 549,171, dated November 5, 1895.

Application filed January 26, 1895. Serial No. 536,351. (No model.)

To all whom it may concern:

Be it known that I, JAMES TRIPP, a citizen of the United States, residing at New York city, in the county of New York and State of New York, have invented new and useful Improvements in Rotary Take-Ups for Sewing-Machines, of which the following is a specification.

This invention relates to a rotary take-up for sewing-machines, and has for its principal objects to provide an improved construction of rotary take-up to be located at the end of the head on the machine-arm and be carried by a shaft mounted in said arm below the main driving-shaft; to provide improved mechanism for operating the take-up shaft and attached rotary take-up at a positively-controlled differential or variable speed, so as to properly govern the slack of the thread in accordance with the movements of the needle; to provide an improved construction and arrangement of the needle-bar pitman, whereby its operation from the main driving-shaft will not be affected or interfered with by its proximity to the take-up shaft, and to provide simple and easily-adjusted connections for operating the take-up shaft and the looper or hook-shaft from the main driving-shaft with steadiness and in proper time movements.

The novel features and combinations of parts included in my invention will be hereinafter more particularly described and claimed.

In the annexed drawings, Figure 1 is a longitudinal vertical section of a portion of a sewing-machine provided with my improved rotary take-up and the mechanism for imparting to it the required differential or variable rotary movement. Fig. 2 is an end elevation of the machine-head with the rotary take-up in position to draw upon and take up the slack of the thread. Fig. 3 is a similar view showing the rotary take-up in position to exert a tension on the thread for tightening the stitch. Fig. 4 is a vertical transverse section through the head of the machine on the line 4 4 of Fig. 1. Fig. 5 is a transverse section through the rotary take-up. Fig. 6 is a perspective of the rotary take-up and a portion of its shaft. Fig. 7 is a perspective of

the curved needle-bar pitman and its connection to the main driving-shaft. Fig. 8 shows in perspective the upper portion of the link or bar for transmitting motion from the main driving-shaft to the looper-shaft. Fig. 9 is a perspective of a slotted crank-arm on one end of the take-up shaft and through which it derives motion from the bar or link that connects the main driving-shaft and the looper-shaft. Fig. 10 is a view of a rotary take-up, showing a slight change in the position of the take-up cam-lug and of the spring arm or bar for retaining the thread.

The reference-numeral 1 designates the base-plate of a sewing-machine, and 2 the bracket-arm or goose-neck, having the head 3 on its end. Beneath the base-plate is journaled the looper-shaft 4, and the main driving-shaft 5 is mounted in the horizontally-extended portion of the bracket-arm 2, as usual.

On the main driving-shaft 5 is a crank 6, Fig. 1, for connection with an eye or coupling 7 on the upper end of a connecting bar, link, or rod 8, the lower end of which is slightly offset and provided with a pin or stud 9 to engage in a slotted crank 10 on one end of the rotary shaft 4, that carries the hook or looper. By means of the connecting rod, bar, or link 8 and the slotted crank-arm 10 the rotary motion of the main driving-shaft 5 is transmitted to the hook or looper shaft 4 in such manner as to provide for the proper relative time movements. The bar or link 8 is slotted or bifurcated for passage of a horizontally-arranged guide-pin 11, mounted in the vertical portion of the bracket-arm 2, and by providing the lower end of said bar or link with an offsetting portion 12 for connection with the slotted crank-arm 10, as shown in Fig. 1, the main body of the connecting rod, bar, or link 8 can be so arranged that the driving power will be exerted substantially in a direct line with the cranks 6 and 10, thus avoiding any liability to a twisting action and providing for a steady rotation of the looper-shaft.

In order to provide for a more convenient and satisfactory mounting of a rotary take-up and arrange for a differential or variable rotation thereof timed to accord with the required movements of the needle and of the

hook or looper, I have placed in the horizontal portion of the bracket-arm a longitudinally-extended take-up shaft 13, that may be suitably journaled in bearings 14, as shown in Fig. 1. On one end of the shaft 13 is secured a crank-arm 15, having formed therein a curved cam-slot 16, Fig. 9, for engaging a pin or stud 17, Fig. 8, carried by the rod, bar, or link 8, and through which the rotation of the driving-shaft 5 is transmitted to the take-up shaft 13 in such manner as to give the latter a differential or variable rotary movement. The other end of the rotary take-up shaft 13 is extended through the head 3 and carries the rotary take-up 18 on its outer end.

The rotary take-up that I have illustrated consists, preferably, of two steel rings or open-work disks placed parallel to each other and connected at only a single point, but spaced apart a sufficient distance to permit the passage of the thread and arrange for the convenient placing on one of said disks of two or more lugs or cams to assist in controlling the thread. The innermost disk or ring 19, Figs. 1, 5, and 6, comprised in the take-up, is provided with spokes 20, connecting with a central hub-plate 21, that is secured onto the outer end of the rotary take-up shaft. On one of the spokes 20 is located a cam-shaped lug 22, that is immediately concerned in the operation of taking up the slack of the thread upon the upward movement of the needle.

For the purpose of exerting a slight tension on the thread to aid in tightening the stitch a cam-shaped lug 23 may be located on another one of the spokes. The outermost disk or ring 24 of the take-up is connected to the disk or ring 19 at a suitable point near its periphery by means of a transverse pin or stud 25, by which the thread is carried during the differential rotation of the take-up. The disk or ring 24 may carry a spring-arm 26, arranged to bear lightly on the take-up cam-lug 22, and adapted to guide or retain the thread in such manner that it will properly engage with and disengage from the take-up lug or projection 22 and be free from any liability to fly off suddenly. A suitable and convenient arrangement of the parts comprised in the rotary take-up is shown in Figs. 2, 3, and 6; but the spring retaining-arm 26, instead of crossing the axis of the take-up, may be arranged to one side, if preferred, as shown in Fig. 10.

On the lower portion of the head 3 is a thread-guide 27 for passage of the thread from any suitable tension device to the take-up and thence to the needle.

The needle-bar 28 is actuated from the forward end of the main driving-shaft 5 by means of a laterally-curved pitman 29, Fig. 7, eccentrically connected to a disk or head 30 on the end of said shaft. As will be seen by reference to Figs. 1 and 4, the concave side or edge of the curved pitman 29 is turned toward the adjacent rotary take-up shaft 13, so that by this construction and arrange-

ment of the curved pitman 29 the proximity of the forwardly-extended portion of the take-up shaft will not obstruct or cause any difficulty in the required operation of the needle-bar. The connection of the opposite ends of the curved pitman 29 to the needle-bar 28 and shaft-head 30 may be effected, respectively, by crank-pins or pivotal studs 31 32 in any convenient manner.

The mounting of the rotary take-up 18 on the outer or forward end of a lengthened take-up shaft, as 13, that is separate from the main driving-shaft 5, has the advantage of imparting steadiness to the motions of the take-up and avoids any tendency to twisting or crankiness. The required differential or variable rotation of the take-up is accomplished in a simple, reliable, and positively-controlled manner through the curved cam-slot 16 of the crank-arm 15, loosely engaging the pin or stud 17 on the rod, bar, or link 8, that also connects the looper-shaft with the main driving-shaft. Through these connections and the manner of their arrangement a very perfect steadiness is imparted to the motions of the needle-bar, the hook or looper, and the take-up, and their various operations are facilitated with the requisite sequence in time movements.

By reason of the elliptic path described by the stud or pin 17, engaged in the cam-slotted crank-arm 15 of the take-up shaft 13, a quick upward motion is imparted to the portion of thread carried by the rotary take-up 18 during that part of its rotation in which the stitch is to be tightened on descent of the needle-bar and while a tension is being exerted on the thread by its passage over the cam-shaped edge of the lug 23 in the position shown in Fig. 3. After this quick upward movement in the rotation of the needle-bar and on the rise of the needle-bar, as shown in Fig. 2, the gradually-changing point of engagement between the pin 17 and cam-slot 16 will cause the take-up to rotate slowly while the thread falls onto and is engaged by the take-up cam-lug 22, now in the position shown in Fig. 2, which lug 22, assisted by the retaining-spring 26, will hold the thread and draw thereon in such manner as to positively control the slack until it is to be released, as required, by the hook and by the time that the take-up has rotated to the position indicated in Fig. 10, where the thread is shown as being just about to slip off from the cam-lug 22 of the take-up.

It will be seen that the rotary take-up and its operating mechanism are so constructed and arranged in their several parts as to provide, in a simple and effective manner, for the required differential or variable rotation of the take-up, so that it will positively control the thread with reference to the time movements of the needle-bar and the hook or looper, and so that each of these parts will move with steadiness and accuracy and without liability of obstruction.

What I claim as my invention is—

1. A sewing-machine take-up mechanism consisting of the combination with a main driving shaft, of a take-up shaft parallel with said driving shaft and actuated therefrom with a variable movement, two parallel disks mounted on the forward end of the take-up shaft and connected to each other, at but a single point, by means of a pin adapted to carry the thread, a cam-lug carried on one of said disks to control the thread, and a spring-arm carried on the other disk and adapted to bear lightly on said cam-lug to retain and guide the thread, substantially as described.

2. A sewing-machine take-up mechanism consisting of the combination with a main driving shaft, of a take-up shaft parallel with said driving shaft and actuated therefrom with a variable movement, two parallel disks mounted on the forward end of the take-up shaft and connected to each other, at but a single point, by a pin that is adapted to also carry the thread, a cam-lug located on one of said disks and adapted to become engaged with and disengaged from the thread to positively control the slack, a spring-arm supported by the other disk and arranged to bear lightly on said take-up cam-lug to guide the thread and assist in retaining it until the time proper for its release from the said take-up lug, and another cam-lug mounted on one of said disks and adapted to exert a tension on the thread to tighten the stitch, substantially as described.

3. A sewing-machine take-up mechanism consisting of the combination with a main driving shaft, of a take-up shaft parallel with said driving shaft and actuated therefrom with a variable movement, two parallel disks mounted on the forward end of the take-up shaft and connected, at but a single point, by a pin that is adapted to also carry the thread, a take-up and retaining device carried by said disks to positively control the slack, and a cam-lug mounted on one of said disks in position to exert a tension on the thread during a portion of the rotation of the take-up, to tighten the stitch, substantially as described.

4. In a sewing machine take-up mechanism, the combination with a main driving shaft, the needle-bar, and the take-up, of a take-up shaft journaled in the bracket-arm and extended longitudinally therein and parallel

with the main driving shaft, the forward end of said take-up shaft being extended beyond the forward end of the said main driving shaft, a curved pitman connecting the needle-bar and main driving shaft and having its concaved side or edge turned toward the adjacent and forward extended portion of the take-up shaft, to pass the same, and connecting mechanism intermediate the rear end of the take-up shaft and rear portion of the main driving shaft and through which the take-up is actuated with a variable movement, substantially as described.

5. In a sewing-machine take-up mechanism, the combination with a main driving shaft, the needle-bar, mechanism to operate a looper, and a link for actuating said mechanism from a crank on the rear portion of the main driving shaft, of a rotary take-up shaft mounted parallel with the main driving shaft and extended longitudinally in the bracket arm, a take-up on the forward end of said take-up shaft, a slotted crank-arm on the rear end of the take-up shaft, and a pin carried by the link that connects the main driving shaft and looper-operating mechanism, said pin being engaged with the crank-arm on the rear end of the take-up shaft, to impart a positive variable motion to the take-up, substantially as described.

6. In a sewing-machine take-up mechanism, the combination of a take-up shaft mounted longitudinally in the bracket arm and carrying a take-up on its forward end, a cranked main driving shaft mounted in the bracket-arm and parallel with the take-up shaft, a looper shaft having a crank on its rear end, a link connecting the cranks of the looper shaft and main driving shaft and carrying a pin near its upper end, and a crank-arm mounted on the rear end of the take-up shaft and provided with a cam slot engaged with said pin and through which is imparted a variable motion to the take-up shaft, substantially as described.

In testimony whereof I have hereunto set my hand and affixed my seal in presence of two subscribing witnesses.

JAMES TRIPP. [L. S.]

Witnesses:

F. M. HURLBUT,
WM. H. ROCKWOOD.