

J. S. CRANE.
Take-up for Knitting-Machines.

No. 195,917.

Patented Oct. 9, 1877.

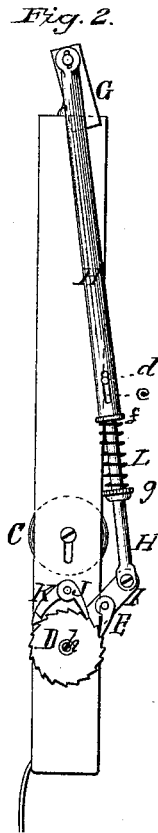
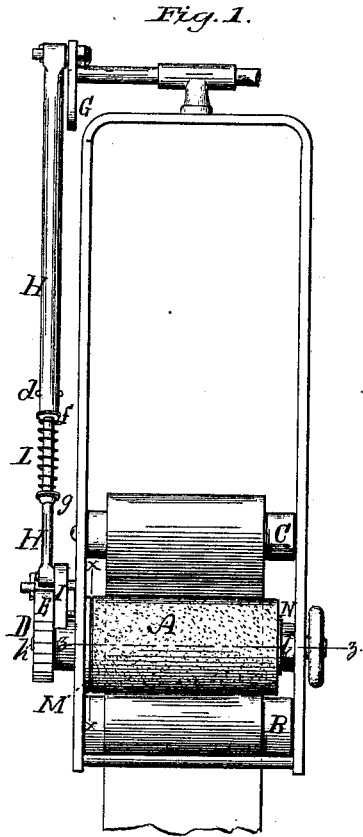


Fig. 3. - x

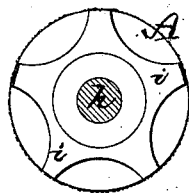
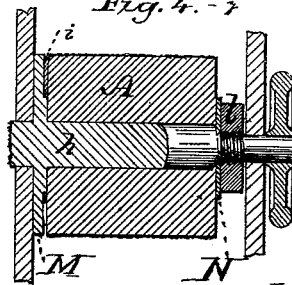


Fig. 4. - z



Witnesses:

Geo. P. Patton
Geo. B. Little

By

Inventor:-

John S. Crane
J. S. Brown
his Atty.

UNITED STATES PATENT OFFICE.

JOHN S. CRANE, OF LAKE VILLAGE, NEW HAMPSHIRE.

IMPROVEMENT IN TAKE-UPS FOR KNITTING-MACHINES.

Specification forming part of Letters Patent No. **195,917**, dated October 9, 1877; application filed August 1, 1876.

To all whom it may concern:

Be it known that I, JOHN S. CRANE, of Lake Village, in the county of Belknap and State of New Hampshire, have invented an Improved Take-Up for Knitting-Machines; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification.

Figure 1 is a front view of the improved take-up; Fig. 2, a side view of the same; Figs. 3 and 4, views of parts detached.

Like letters designate corresponding parts in all of the figures.

In the drawings, A represents the main or active take-up roll, covered with emery or other suitable material, to give the proper frictional surface thereto; B, the lower or guide roll; C, the upper roll, on which the fabric winds as fast as taken up, and which is operated by resting on and rolling in contact with the take-up roll A; D, a ratchet-wheel on the shaft of the said take-up roll; E, its actuating pawl; G, the pawl-driving crank; H, the connecting-rod between the crank G and the lever I, which carries the pawl; and J K, detents to prevent backward motion of the ratchet-wheel.

The first feature of my invention consists in the combination, with the ratchet-wheel and pawl D E, or their equivalent, and crank G, or its equivalent, of a connecting-rod, H, in two parts, one part having a movement in the other, and of an intervening spring, L, so adjusted and arranged in connection with the divided connecting-rod that, if the taking up of the knit fabric is too rapid, or too much strain or tension is produced thereon, the said spring will yield and allow the upper or active part of the connecting-rod to move without operating the pawl, or only partially, thereby adapting the take-up motion to the requirement of the machine, and producing good, even, uniform work.

For compactness and good workmanship, and freedom of motion, I construct the two parts of the connecting-rod for one to slide in the other, the fullest extent of the sliding motion being limited by the length of a slot, *c*, in the larger or tubular part, and a projecting pin, *d*, sliding therein, as shown. The spring L (preferably a coiled

spring) is mounted on the smaller part of the connecting-rod, and bears against the adjacent end of the larger part, or against an intervening stop or washer, *f*. The lower end of the spring bears against a nut, *g*, which turns on a screw-thread cut in the periphery of the rod, so as to adjust the same to any required height, and give any required compression and force to the spring thereby. Any suitable equivalent of the nut and screw-thread may be used.

The second feature of my invention is the combination, with the above-described feed-actuating device, of the hereinafter-described construction, which consists in the arrangement of the take-up roll A to turn on the ratchet-wheel shaft *h*, and combining with it a frictional device to couple it to the shaft, so that it will turn with the shaft under a resistance less than a given or determined amount, but will slip in the coupling, and allow the shaft to turn without it when the tension or an obstacle retarding the roll becomes too great for the said determined degree of resistance.

To construct a frictional coupling, I clamp the roll between a fixed collar or flange, M, on the shaft at one end, and a sliding collar, N, at the other end of the roll, and interpose a spring-washer, *i*, between one or both of the flanges and the roll, as between the fixed flange and the roll represented in the drawing. The pressure and force of the coupling are adjusted by means of a nut, *l*, screwed upon a screw-thread on the shaft *h* against the movable collar N. By this or equivalent means sufficient and any desired amount of friction is produced between the take-up roll and the shaft to resist the tension or ordinary strain of the work, but not enough to prevent the work being pulled back when necessary without removing the pawl from the ratchet-wheel. Then, by turning a hand-wheel at the end of the shaft *h*, the slack-work can be again taken up, and, if the shaft is turned further, no injury is done to the work, since the take-up roll then slips on the frictional surfaces of the coupling, and turns on the shaft when the proper tension upon the work is attained. This frictional coupling for the take-up roll is adjusted in connection with, and relation to, the force of the spring L on the divided connecting-rod H, as

above described, so that should the said spring be set too strong, and tend to produce too much strain upon the work, the roll slips in its coupling, and thus obviates all difficulty. The spring take-up connecting-rod acts within certain limits of tension, but, of itself, cannot produce an exactly uniform tension, and is liable to be adjusted too strongly, while the friction-coupled take-up roll alone only acts as a limit to the amount of tension which can be given, and cannot regulate the tension below that limit. Thus the two features work in harmony together to produce a combined result better than either can produce separately. Therefore, when the two devices are perfectly adjusted to the work and to each other, which is very easily done, the most perfect tension on the work, and a tension which adapts itself to all irregularities, is produced.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a take-up for knitting-machines, the combination with the actuating ratchet-wheel D, pawl E, and pawl-driving crank G, of a divided connecting-rod, H, and adjustable spring L thereon, operating substantially as and for the purpose herein specified.

2. The combination of the movable take-up roll A and its adjustable frictional coupling device with the divided connecting-rod H and adjustable tension-spring L, operating together substantially as and for the purpose herein specified.

JOHN S. CRANE.

Witnesses:

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