I. & A. TOMPKINS.

Take-Up for Knitting-Machines

No. 163,119. Patented May 11, 1875.

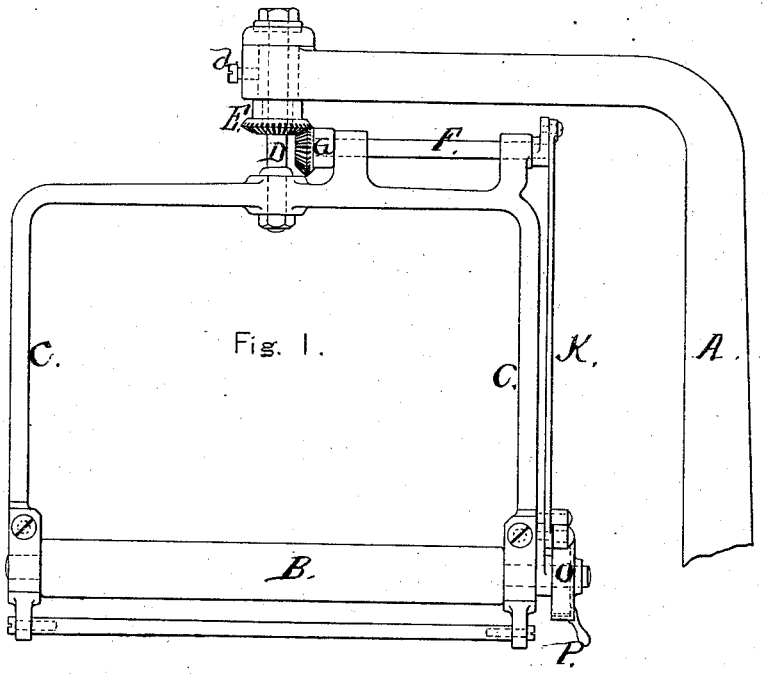

Fig. 1.

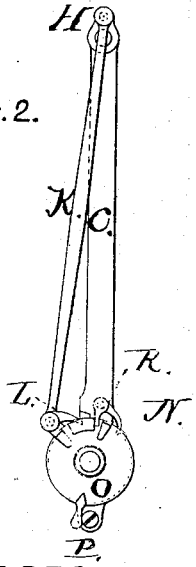

Fig. 2.

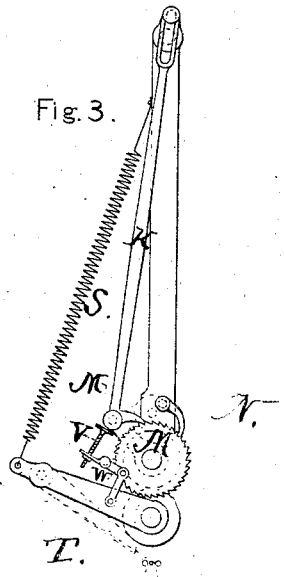

Fig. 3.

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IRA TOMPKINS AND ALBERT TOMPKINS, OF TROY, NEW YORK.

IMPROVEMENT IN TAKE-UPS FOR KNITTING-MACHINES.

Specification forming part of Letters Patent No. **163,119**, dated May 11, 1875; application filed March 25, 1875.

To all whom it may concern:

Be it known that we, IRA TOMPKINS and ALBERT TOMPKINS, of Troy, in the county of Rensselaer and State of New York, have invented certain Improvements in Rotary Knitting-Machines, of which the following is a specification:

This invention pertains to that part of a knitting-machine called a take-up mechanism; and it consists, first, in combining the take-up roll or rolls with a pair of gear-wheels differing in size, and so connected with intermediate mechanism as that the operation of drawing the fabric from the needles or cylinder will take place at constantly-varying points, and thereby avoid the now common objection of having the draw of the take-up always at the same point relatively to the cam, or some similar device which never varies its position. The invention also comprehends an improvement in the means of connecting and disconnecting the take-up roll with the gear-wheels that operate it, as will hereinafter appear.

Figure 1 is a side elevation of the improvements, as seen when suspended from the supporting-arm of the knitting-machine. Fig. 2 is an end view of the same, taken at the end that has the intermediate connections with the gear-wheels. Fig. 3 represents another form of the intermediate mechanism.

At A is represented the arm that supports the take-up mechanism of the machine, and at B is seen a take-up roll supported in the frame C, which rotates upon a spindle or axis, D, depending from the arm A, as shown at Fig. 1. The spindle D rotates in a bearing or box extending through the arm A, and is held therein by a set-screw, as at *d*, and the lower end of said bearing extends down sufficiently far to receive and support a bevel-wheel, as at E, which is fastened in a fixed position upon said bearing in any convenient manner. Upon the upper portion of the roll-frame C are bearings, which support a shaft, F, upon one end of which is fastened a bevel-wheel, as at G, which engages with the fixed wheel E, and these wheels are made of different diameters, and in proportion to the kind of fabric to be knitted, but so arranged that the crank H, which is on the other end of the shaft F, will constantly vary its bearing or ending of rotation, relatively, with any fixed point at every revolution, and thereby vary the time of beginning the drawing or taking-up action upon the fabric. Said crank is connected with the take-up roll B by a connecting-rod, as at K, the upper end of which surrounds the crank-pin, and the lower end of which is connected to a lever concentric with the take-up-roll shaft, and upon said lever, as at L, is pivoted a pawl, which works in a ratchet-wheel fastened upon the take-up-roll shaft, as at M, in Fig. 3, and also indicated by the dotted or broken lines in Fig. 2, and, therefore, as the crank revolves the pawl is operated to rotate the take-up roll B. To hold said roll from reacting a second pawl, as at N, is pivoted to the frame C, and engages with the same ratchet-wheel M, and thereby holds the take-up roll when the first pawl is reversing to engage another tooth.

Whenever it is desired to disconnect the take-up gear from the roll a device is provided, by which both pawls are raised simultaneously from the ratchet-wheel; and this consists simply of a flanged disk, as at O, mounted upon the roll-axis, and the flanges of which project over the teeth of the ratchet, but through said flange or flanges, holes or slits are cut for the ends of the pawls to project through when they are to engage with the ratchet; but when the disk O is so turned, which is easily done by the operator taking hold of the knob or handle at P, and rotating it until the flanges are under the ends of the pawls, then they will be held out of contact with the ratchet, and the take-up action will cease, although the machine may continue to revolve. Said disk or pawl-cam O is provided with stops on its side, which come in contact with a spring-keeper attached to the frame C, as at R, so that it may be held in any suitable position desired.

According to the arrangement shown in Fig. 3 the fabric passes (intermediately of the take-up roller and the knitting-machine) over a roller journaled in pivoted arms T, which are supported, in a nearly horizontal position, by a spring or springs, S. The connecting-rod K is provided with a slot in its upper end, which is longer than the throw of the wrist-pin of the crank-shaft. The said rod K is

held in the position shown, *i. e.*, the wrist-pin at the highest point in the slot, by a screw, V, which passes through the free end of a lever, W, which works on a fixed pivot, and whose rear end is connected with the adjacent arm T by means of a pivoted link.

The operation is as follows: When no new cloth or fabric is being formed, the revolution of the take-up frame will give motion to the crank-shaft, so that its wrist-pin will revolve in the slot of connecting-rod K, giving it only a vibratory movement, while the spring S keeps the fabric taut. When new cloth is formed the spring S is relaxed, the arms T thereby drawn up, the screw V falls as the lever W is tilted or turned on its central pivot, and the connecting-rod K consequently falls with it. Upon the next revolution of the crank it again raises the rod K to its highest point, where it remains until more cloth is formed, when the operation is repeated. The mechanism thus constitutes an automatic tension-regulator.

The object of taking up the web at various points is chiefly to equalize the strain upon the machine, so that it will wear evenly all around the cylinder, for if such provision were not made it would wear upon the opposite sides and acquire a tilting action.

By such a construction of devices a very neat and efficient take-up action is produced; but this, to a partial extent, is already patented, and therefore we do not claim it broadly; but

We do claim—

1. In combination with a take-up roll of a knitting-machine the differential gear-wheels and intermediate mechanism, as described, and for the purposes set forth.

2. The combination, with the take-up roll of a knitting-machine and its operating pawls, of the flanged disk O, having stops on its sides, and the spring-keeper R, as and for the purpose described.

3. The combination, with the crank-shaft F, of rod K, having a long slot in its upper end, the pivoted arms T, provided with the supplementary roller, the spring S, screw V, and pivoted lever W, and its link, all as shown and described, to operate as specified.

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