

(No Model.)

E. TIFFANY.

NEEDLE ACTUATING JACK FOR KNITTING MACHINES.

No. 558,237.

Patented Apr. 14, 1896.

FIG. 3.

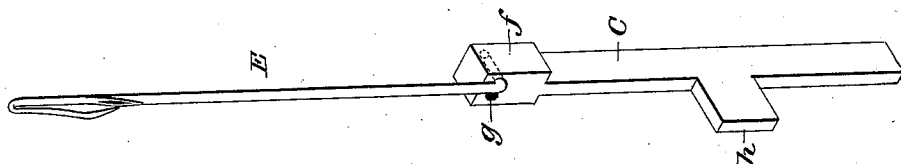


FIG. 2.

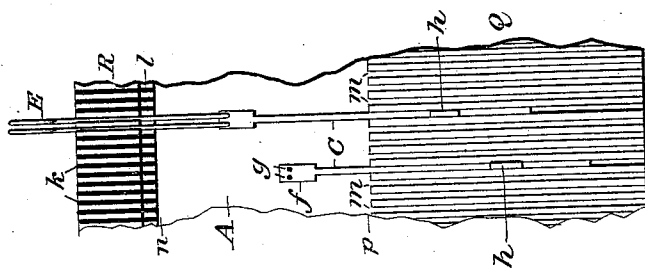
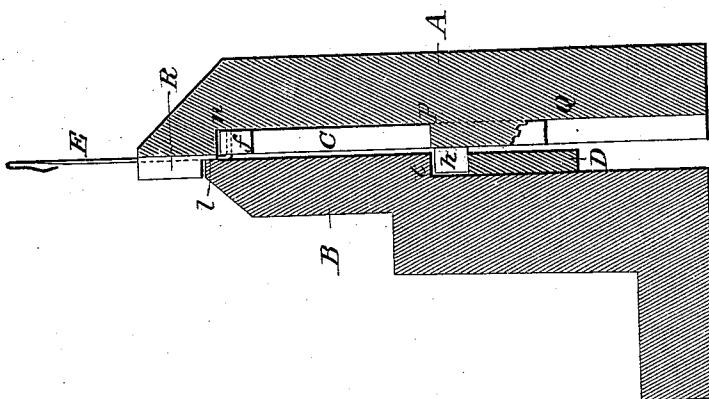


FIG. 1.



WITNESSES:

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UNITED STATES PATENT OFFICE.

ELI TIFFANY, OF BENNINGTON, VERMONT.

NEEDLE-ACTUATING JACK FOR KNITTING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 558,237, dated April 14, 1896.

Application filed February 8, 1895. Serial No. 537,706. (No model.)

To all whom it may concern:

Be it known that I, ELI TIFFANY, of the village of Bennington, in the county of Bennington and State of Vermont, have invented certain new and useful Improvements in Needle-Actuating Jacks for Knitting-Machines; and I hereby declare that the following description, in connection with the accompanying drawings, constitutes a specification thereof and of the best method of constructing and using the same.

The object of this invention is to make provisions in connection with cylinder knitting-machines whereby needles of much finer gage may be used than in machines as now constructed, and also in which a single broken needle may be removed and another substituted without loss or damage to any adjacent needle.

In a prior application by me for a patent on some parts of this invention, serially numbered 519,731, filed August 8, 1894, a needle-jack was shown in connection with a duplex needle made from a single wire or other material bent upon itself in the middle. This bend was adapted to connect with a jack fitted for the purpose. Such construction was successful in practice, but was open to the objection that if a needle was broken or became useless it cost in making a repair the sacrifice of the remaining uninjured half or the companion needle. To obviate this objection and also to provide for the employment of needles of ordinary construction are among the objects of this invention.

The invention is fully illustrated in the drawings, wherein—

Figure 1 is a vertical longitudinal section through the stationary and running portions of an ordinary cylinder knitting-machine. Fig. 2 is a view of a portion of the exterior of the running cylinder. Fig. 3 is a perspective view of one of my improved needle-jacks with a single needle connected therewith, the other one being removed.

A section of the running cylinder is shown at A. A part of its face is rabbeted back between the points *n* and *p* to a depth sufficient to take in the bodies of the jacks C. This leaves two lands Q and R, which are furrowed or grooved, as shown. The upper one, R, is grooved to take in the needles E and to a

depth coincident with the exposed surface of the jack when in position. The lower land Q is also grooved, as at *m m*, to receive the bodies of the jacks C. The grooves *m m* stand opposite the spaces between the grooves *k k* of the upper land or the needle-bed proper. As each jack carries more than one needle, it is obvious that the proportion of jack-grooves to needle-grooves will be the same as the proportion of jacks to needles. In this case I have shown the jacks as fitted to carry two needles; but they may be made to carry any feasible number of needles.

The jack is shown in Fig. 3, and consists of a blade of substantially uniform thickness, having a driving-shank *h* and an enlarged head *f*, through which are bored the holes *g* to receive the shanks of the needles E. The needle-shanks do not fit the holes so tight but that they may be easily removed.

In use the parts are assembled as shown in Fig. 1. The upper part of the stationary portion of the cam-cylinder B bears against the ledge *l* of the needle-bed, and thus closes in the needles, leaving but a small way for their free action. Below the shoulder *t* the needle-actuating cams D are placed at the proper distance to allow the jack-shanks *h h* to pass between them. The needles E are connected by their shanks with the holes *g g* of the jack-heads *f f*. Thus combined, if a needle fails in any way, to repair it it is only necessary to rotate the cylinder around to a point where there is a removable section of the cylinder B and take it out and replace it with a new needle or repair the old one, if it is capable of repair.

It is immaterial which of the two cylinders A or B is the rotating member of the combination, as both constructions are in use.

I therefore claim as my invention, and desire to secure by Letters Patent, the following:

The two cylinders A and B one of which rotates in contact with the other in combination with the needles E each of which has its inner end bent at right angles, and the jacks C each of which is constructed with a laterally-extending shaft *h* and an enlarged head *f* the latter having recesses *g* formed therein to receive the bent ends of two or more of these needles, the said cylinders being rabbeted in their proximate faces to receive respec-

tively the bodies and the shanks of the said
jacks and the cylinder B being provided with
shoulder *t* and cams D respectively above and
below the said shank, while the correspond-
5 ing face of the cylinder A has the lands R
and Q formed thereon, said lands being
grooved at *k* and *m* to guide the said jacks
and needles substantially as set forth.

In testimony whereof I have hereunto sub-
scribed my name, at Bennington, in the State 10
of Vermont, this 5th day of February, A. D.
1895.

ELI TIFFANY.

In presence of—

F. M. TIFFANY,
FRANKLIN SCOTT.