H. GÜNTHER.

Knitting-Machines.

No. 134,881. Patented Jan. 14, 1873.

Fig: 1.

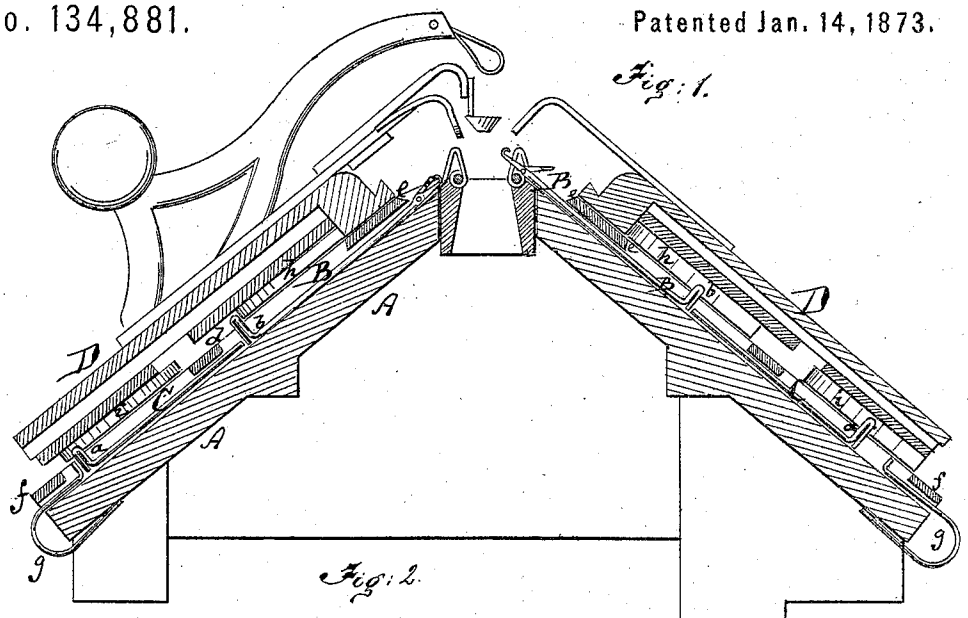


Fig: 2.

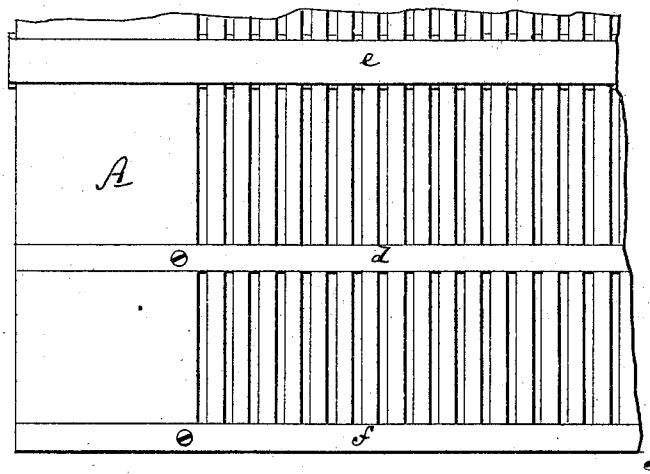
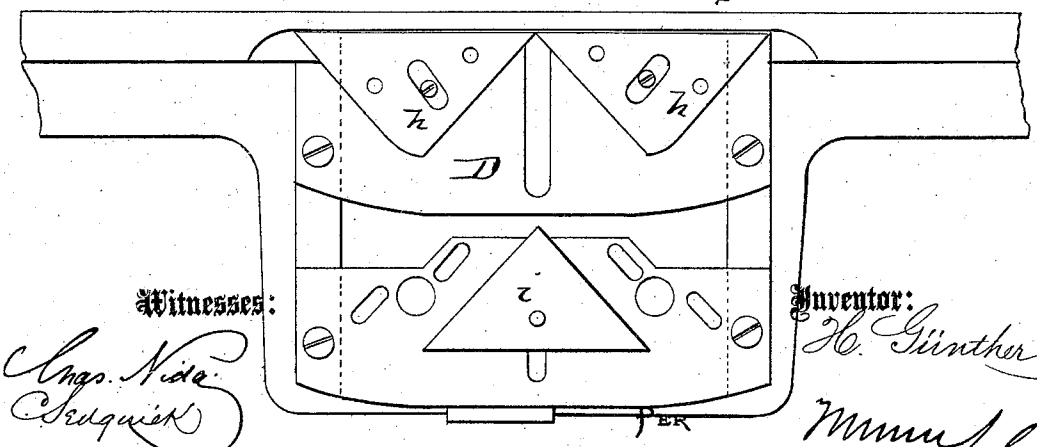


Fig: 3.



Witnesses:

Chas. Nida

Sedgwick

Inventor:

H. Günther

Attorneys.

UNITED STATES PATENT OFFICE.

HUGO GÜNTHER, OF NEW YORK, N. Y., ASSIGNOR TO HIMSELF AND CHARLES LUPPRIAN, OF SAME PLACE.

IMPROVEMENT IN KNITTING-MACHINES.

Specification forming part of Letters Patent No. **134,881**, dated January 14, 1873.

To all whom it may concern:

Be it known that I, HUGO GÜNTHER, of the city, county, and State of New York, have invented a new and Improved Knitting-Machine, of which the following is a specification:

Figure 1 is a vertical transverse section of my improved knitting-machine; Fig. 2 is a side view of the needle-bed; and Fig. 3 an inside view of the cams used in the movable carriage.

This invention has for its object to simplify the needle motion of knitting-machines, and to provide means for protecting the needles from injury to the greatest possible extent.

In the ordinary machines now in use the needles destroyed during operation constitute the largest and quite a considerable item of expense in operating the machine, and they are easily injured, because the friction to be overcome in operating them is considerable. In this machine the needle-bed is extended downwardly, and also the grooves in the same, for the reception of an additional series of needles, which are pusher or setter needles only, for pushing the latch-needles up, the downward motion of the latter being produced by the wing-cams directly moving the same in the ordinary manner.

The invention consists in a new arrangement of cams in the lock of the slide or carriage of the knitting-machine, in which arrangement the upper or wing cams are set as usual to move the latch-needles downward while in the lower part of the lock. The V-shaped driving or raising cam is set further down than usual, in order to apply to and operate the setting-needles, and not to the latch-needles. This will, of course, allow power to be applied to the setting-needles, so that they, when raised, will move the latch-needles. The latter will thereby be greatly protected, and if any injury is done by the elevating-cam it is only done to the setting-needles, which are inexpensive and easily replaced, so that the latch-needles will consequently be less liable to injury.

The letter A in the drawing represents the needle-bed, grooved on its upper face for the reception of the latch-needles B in the usual manner. The bed is extended downwardly to receive in each groove an additional needle, C, which is used to push the latch-needle above it upward. These latch-needles C are straight wires, with outwardly-projecting lugs *a* at their lower ends, which lugs are similar to the outwardly-projecting lugs *b* at the lower ends of the latch-needles. Across the needle-bed is laid a rail, *d*, which divides, without interrupting, the grooves of the needle-bed into upper and lower portions, and serves as a rest for the latch-needles when the same are drawn down. The setting-needles reach the latch-needles from under said rail *d*. *e* is the upper rail on the needle-bed, arranged in the usual manner. *f* is a rail at the lower edge of the needle-bed, to prevent the setting-needles from falling out. For each setting-needle there is provided a spring, *g*, in the lower part of the bed-plate groove, by which spring said setting-needles may be pushed upward to be engaged by the elevating-cam after they have been specially drawn down by hand to be out of play, so as to allow the latch-needle pertaining to it to remain undisturbed when out of operation, for a latch-needle cannot be raised when its setting-needle is out of reach of the elevating-cam. D is the knitting-machine carriage or movable slide, in which there is a lock for moving the needles in and out or up and down. This lock consists, as usually of the upper wing-cams *h h*, which, taking hold of the lugs *b*, draw the latch-needles down, and also of the V-shaped elevating-cam *i*, which in ordinary knitting-machines takes hold of the lugs *b* from beneath to raise the latch-needles. In my improved machine, however, the elevating-cam *i* is set so far down that it will take hold of the lugs *a* on the setting-needles in place of taking hold of the lugs *b*, so that the latch-needles are not raised by direct contact with the lock, but only by being pushed up by the setting-needles.

It is quite evident that the latch-needles will be considerably protected by being saved the direct contact with the elevating-cam *i*, the said cam producing the greatest friction on the needles and often tending to injure them by breaking off their lugs *b*. All this friction is now transferred to the setting-needles, which, even if they should break, are considerably cheaper than latch-needles and more convenient to replace.

Whenever any one of the latch-needles is to

be kept out of work for completing any kind of fabric it is only necessary to draw down the setting-needle under it, so that its lug *a* will no longer be in reach of the cam *i*, whereupon the latch-needle can no longer be elevated, and will consequently remain out of work. As soon as the setting-needle is again set up or raised its latch-needle again comes into operation.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

The combination, with latch and setting-needles of a knitting-machine lock, composed of the cams *h h* and *i*, which are placed so far apart that the upper cams *h h* will depress the latch-needles while the lower cam *i* will elevate the setting-needles, substantially as herein shown and described.

HUGO GÜNTHER.

Witnesses:
A. V. BRIESEN,
CHAS. LUPPRIAN.