

Improvement in Knitting-Machines.

Fig. 1.

Fig. 2.

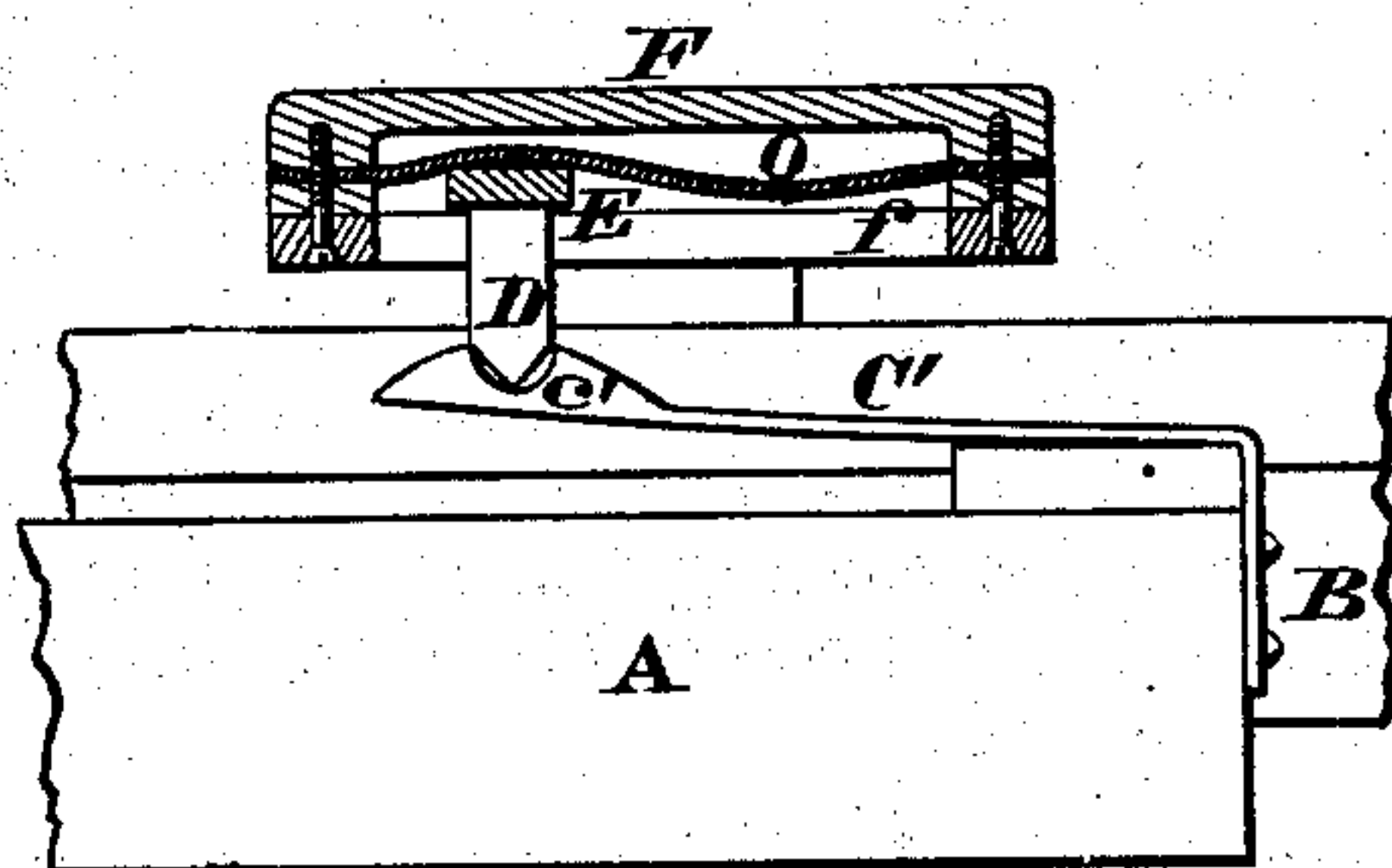
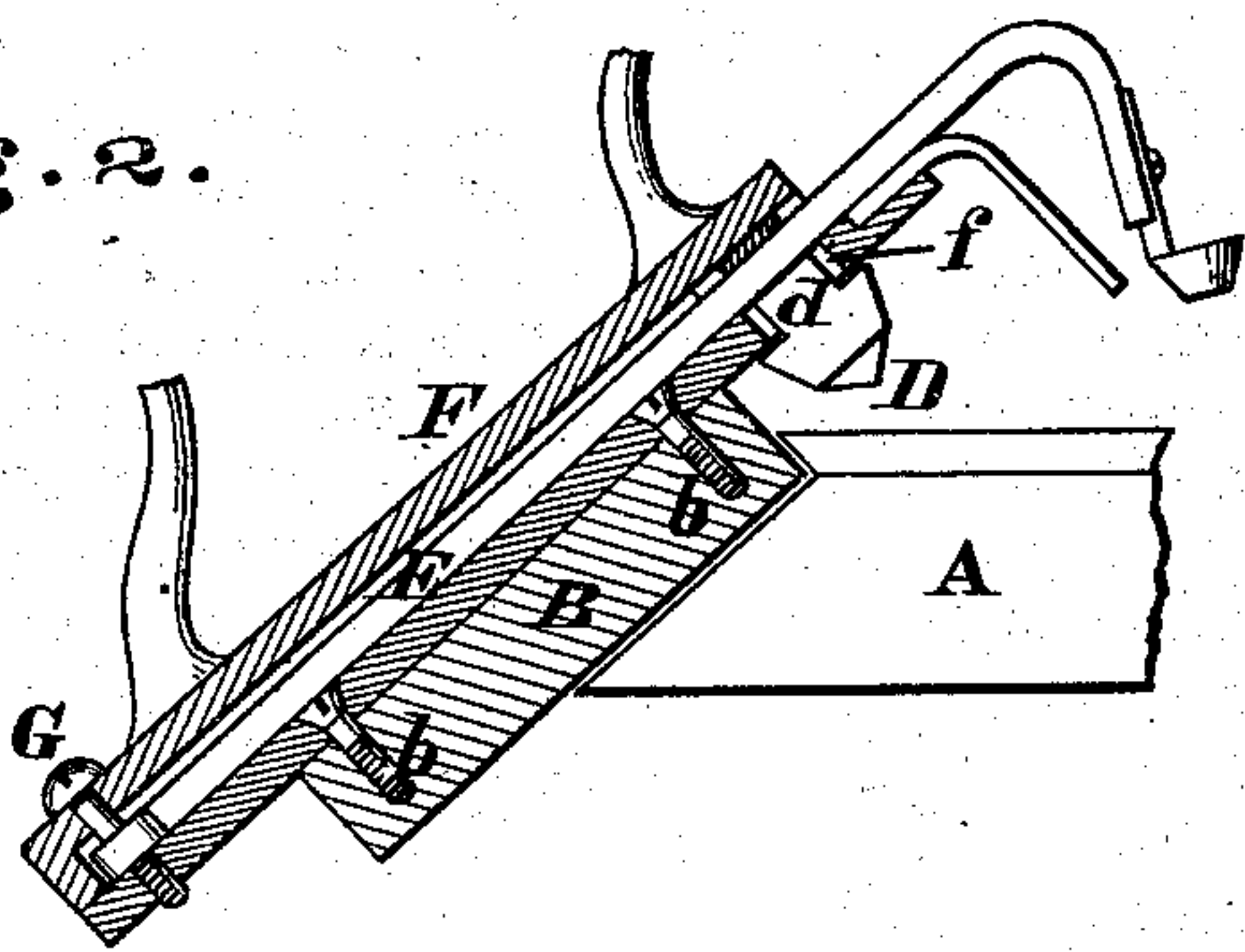


Fig. 4.

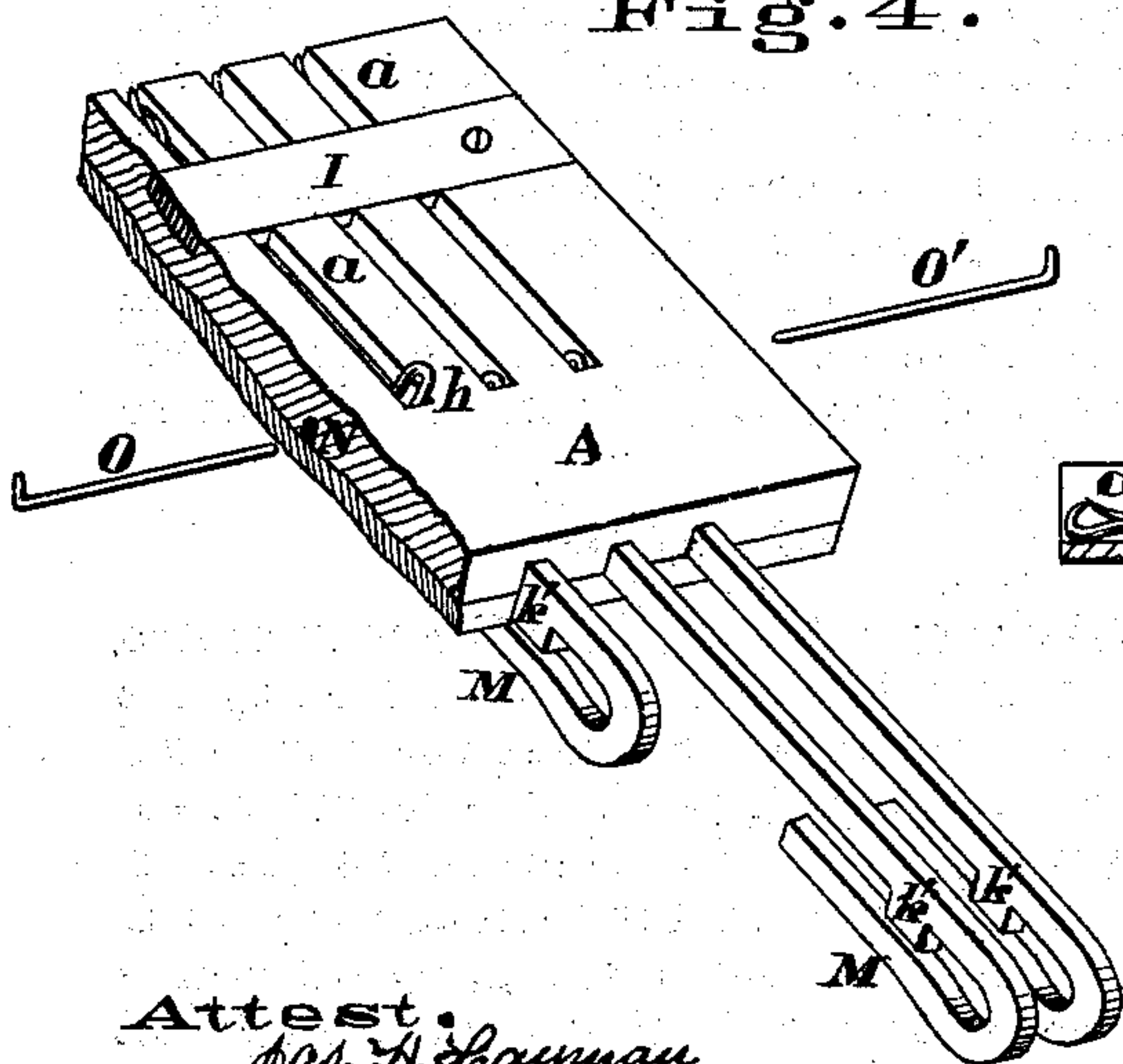
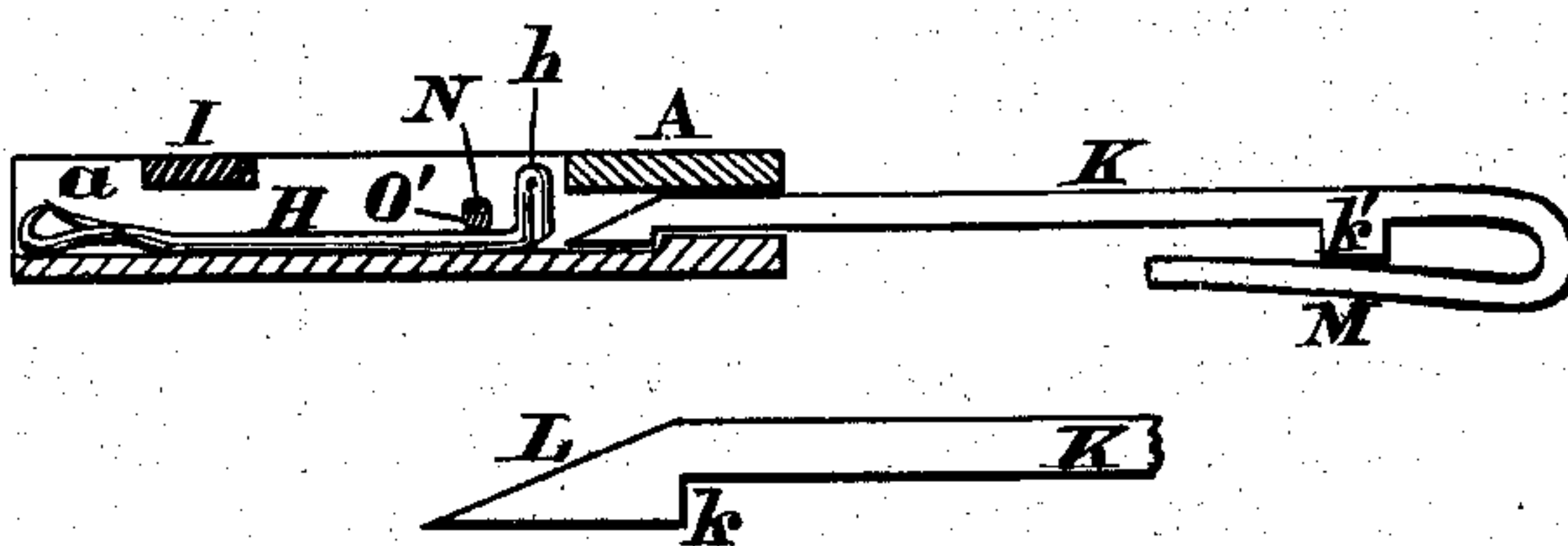


Fig. 5.



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IMPROVEMENT IN KNITTING-MACHINES.

Specification forming part of Letters Patent No. 115,983, dated June 13, 1871.

We, HENRY PUDDER, of Dayton, in the county of Campbell and State of Kentucky, and THOMAS W. HULBERT, of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain Improvements in Knitting-Machines, of which the following is a specification:

Nature and Objects of the Invention.

This invention relates to that class of implements commonly known as the "Lamb knitting-machine;" and our improvement consists in an arrangement of devices whereby the projections or shanks at the lower ends of the needles are capable of being depressed below the face of the bed-plate, at the option of the knitter, so as to prevent them engaging with the actuating cam of the carriage whenever it is desired to render any needle inoperative without casting the stitch, and without drawing the needle down from its proper place in the bed.

Description of the Accompanying Drawing.

Figure 1 is a perspective view of the carriage and bed-plate of a knitting-machine provided with our improvements. Fig. 2 is an enlarged sectional view through the yarn guide-arm and its accessories. Fig. 3 is a section through the yarn guide-arm longitudinally of the slot. Fig. 4 is a perspective view of a portion of the bed-plate, showing the devices for rendering the needles inoperative; and Fig. 5 is a transverse section through the bed-plate, showing one of the needles in its depressed or non-effective position.

General Description.

A represents the bed-plate of a knitting-machine, and B is a carriage, which has the customary reciprocating movements longitudinally of said bed-plate. Attached to the ends of the bed-plate A are spring catches C C', whose upper extremities are notched at c c', to permit the engagement therewith of a stud, D', which projects downwardly from the yarn guide-arm E. The shank d of this stud traverses a slot, f, in the frame F, which supports the tension devices of the machine. The frame F is secured to the carriage B by screws b. G is the bolt with which the arm E is pivoted to

the frame F. The bed-plate A is provided with slots or channels a, somewhat deeper than customary, for the reception of followers, hereafter described, and for the needles H, whose lower ends have the usual upturned projections or shanks h. I are gibs, which, spanning all of the slots a, prevent accidental displacement of the needles. In order to elevate the needles so as to cause their shanks to engage with the actuating cam, or to depress them so as to render them inoperative, at the will of the knitter, I provide the following devices: Each of the slots a is furnished with a follower, K, having an inclined or wedge-shaped inner end, L, two shoulders, k k', and a recurved spring portion, M. The portion L serves to elevate the needle whenever the follower is shoved into the slots, the shoulders k k' limit the movements of said follower, and the spring portion M, by pressing against the underside of the bed-plate, prevents accidental retraction of the follower. Extending longitudinally of the bed-plate A is a groove, N, which is designed for the reception of one or more pins, O O', and when the needles are depressed, and the pin O or O' slipped into said groove, as shown in Fig. 5, any improper elevation of the needle by the weight of the work or other cause is prevented. The machine is provided with two customary latch-openers, P, of which only one is shown in the drawing. A spring, Q, introduced between the take-up stand F and the arm E of the yarn-guide, holds the latter to its proper place until shifted by engagement of stud D with one of the spring catches C or C'.

Operation.

In the drawing the carriage B is represented as moving in the direction indicated by the arrow, and when said carriage has completed its stroke the spring-catch C' is caused to engage with the stud D. As soon as the carriage starts upon its return stroke the stud D is simultaneously drawn along, by the action of catch C', until said stud impinges against the end of slot f, when the movement of the stud is arrested and the catch is disengaged therefrom. Upon the completion of the return stroke of the carriage the other catch C engages with the stud, and when the carriage is

again moved in the direction indicated by the arrow said stud is restored to its original position, as shown in Fig. 1. It will thus be seen that the clutches *U U'* serve to throw the yarn-guide arm at every stroke of the carriage with a positive and unfailing movement, and there is no danger whatever of said arm not acting at the proper moment, as is frequently the case when it is operated by the ordinary friction device which is employed for that purpose. The arrangement of devices for depressing the needles also adds greatly to the utility of this class of machines, as any number of needles can instantly be rendered inoperative by simply withdrawing their respective followers, and needles situated at any part of the bed-plate can be thrown in gear with the operating cam in a moment by simply pushing up the followers.

In machines heretofore used, whenever it becomes desirable to remove a needle that may have been broken or worn, it is necessary to loosen the carriage by unscrewing the caps which hold it down, and by driving the gib part of the needle to be removed, involving considerable time and labor and some mechanical skill. The present improvement enables the operator to instantly remove a needle from the needle-bed without detaching the carriage or disturbing the gibs.

These improvements enable the operator to form a gore or wedge in any part of a tubular web, to turn the heel of a stocking completely,

or to form a glove with fingers, &c., complete, because by this means any needle may be rendered temporarily inoperative without casting its stitch.

We reserve the right to vary or modify the above devices, so long as we attain the same results, by means substantially equivalent; for example, a shorter and shallower follower may be provided with a spring above or below it, so as to dispense with a shoulder, and to enable the use of a shallower groove; or the follower may be replaced by a plate or rest underneath the needle, elevated by a wedge, by a set-screw, or by a spring.

Claim.

We claim as our invention—

The combination, in a knitting-machine, of the needles, needle-bed, and followers, constructed substantially as described, so as to enable the operator to lower any one or more needles in their place in the bed beyond the reach of the cam, so that they shall cease to operate without casting the stitch from the needles or disturbing their longitudinal position.

In testimony of which invention we hereunto set our hands.

HENRY PUDDER.

THOS. W. HULBERT.

Witnesses:

GEO. H. KNIGHT,

JAMES H. LAYMAN.