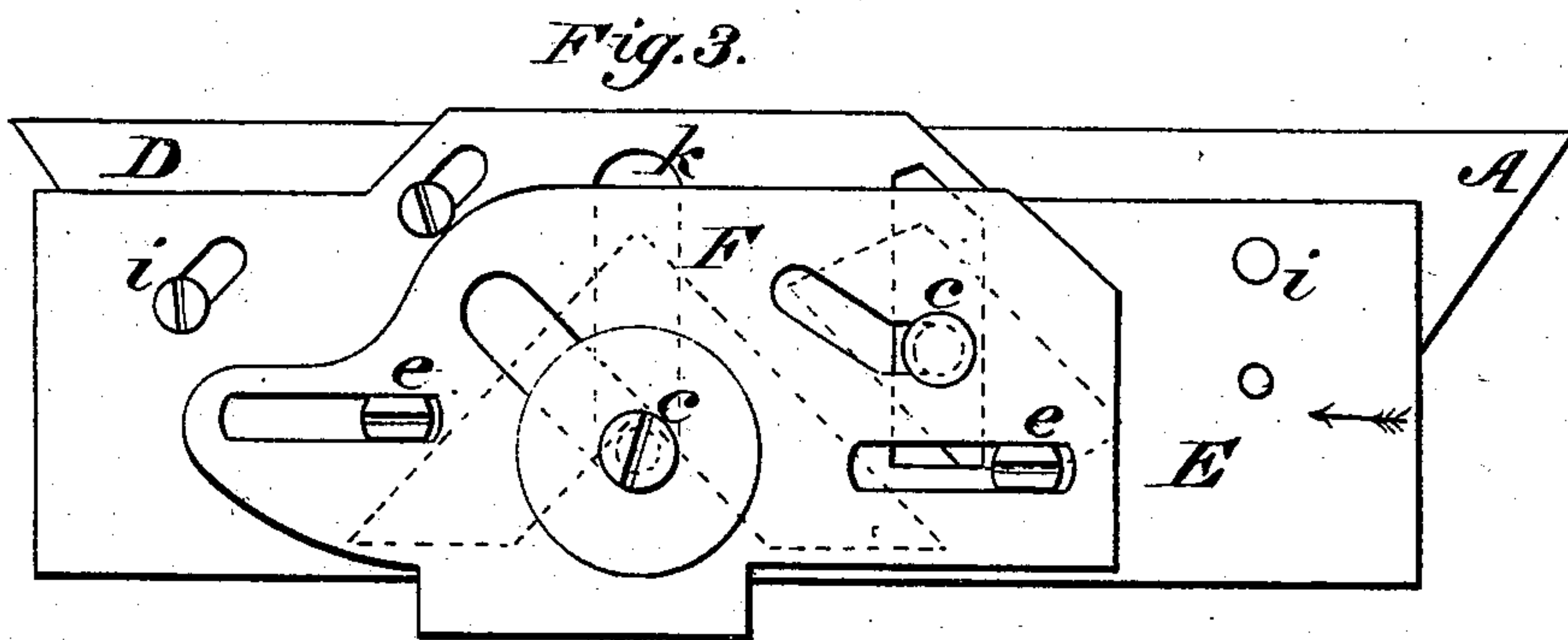
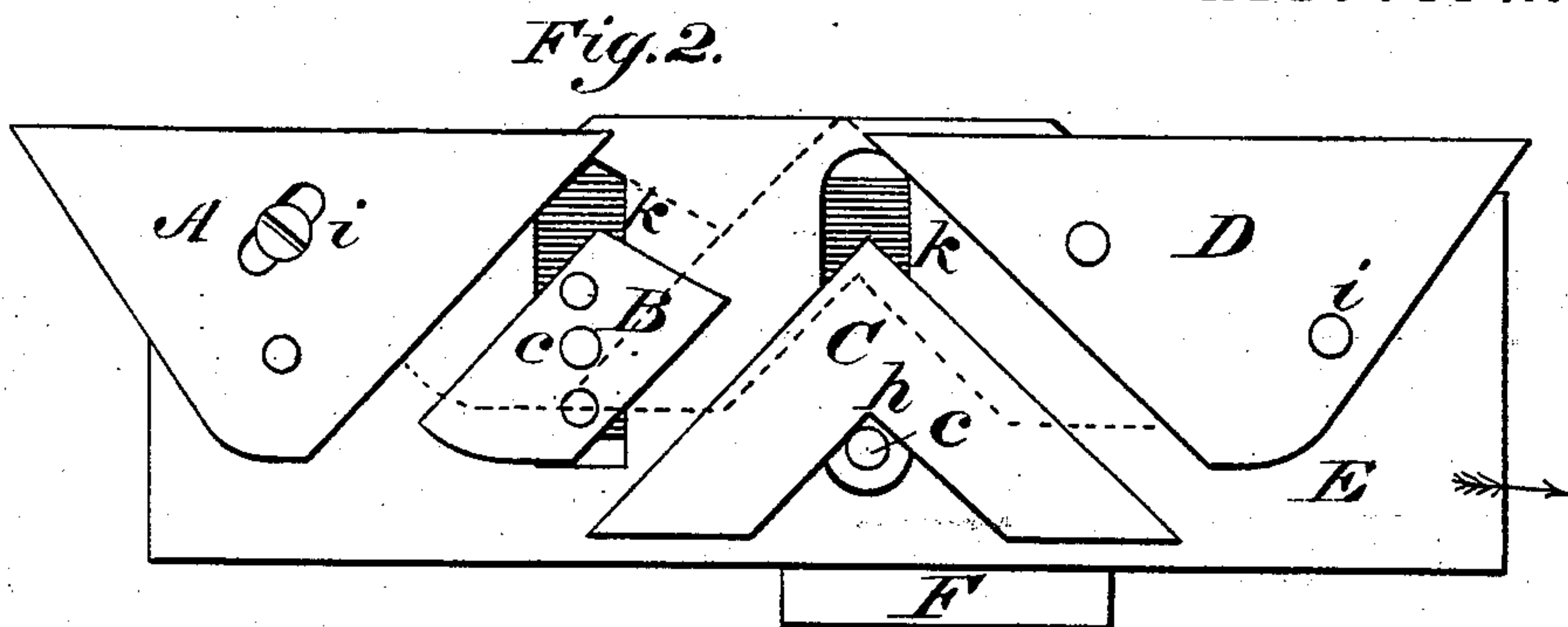
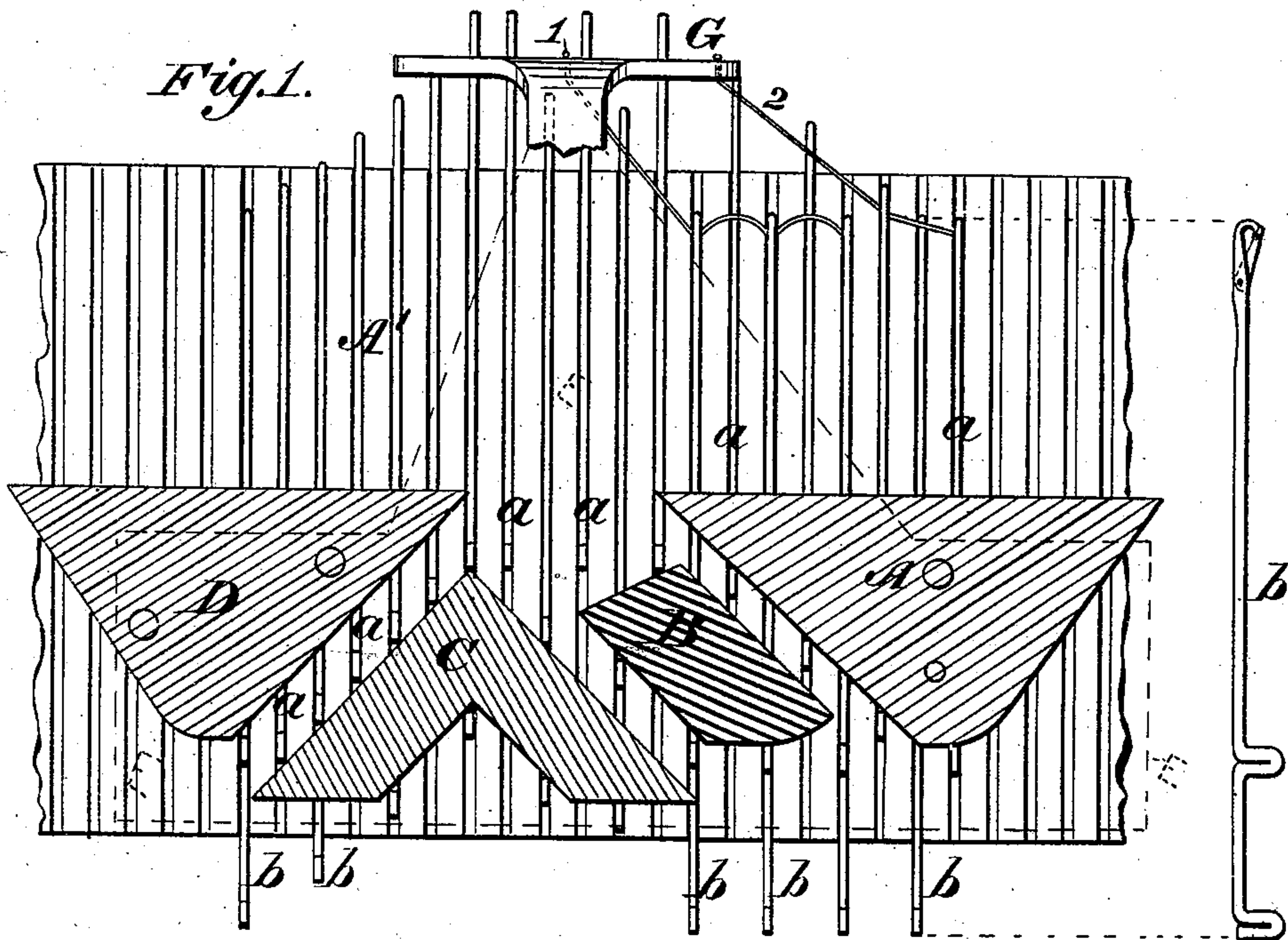


(No Model.)

I. N. MOORE.
Knitting Machine.

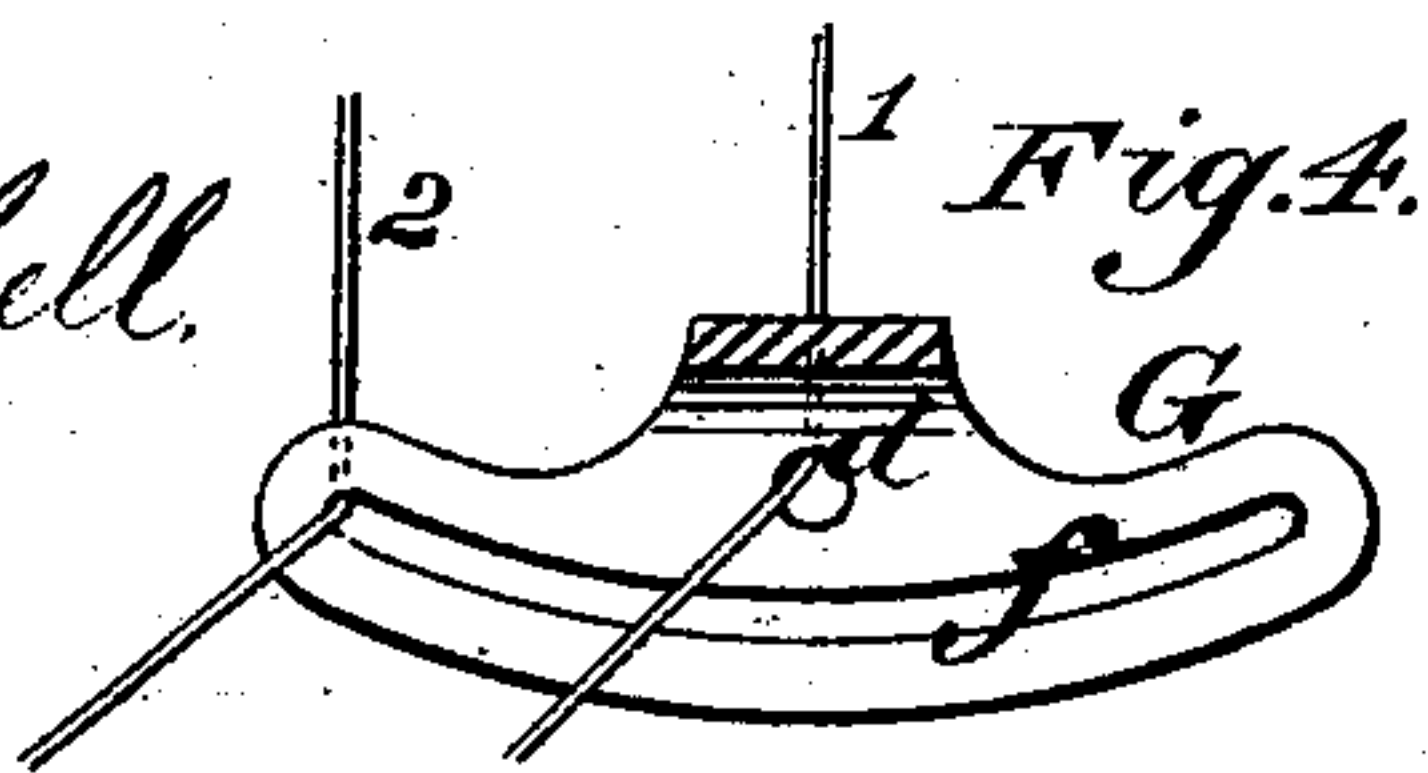
No. 236,062.

Patented Dec. 28, 1880.



WITNESSES:

Donn P. Twitchell.
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UNITED STATES PATENT OFFICE.

ILA N. MOORE, OF BATTLE CREEK, MICHIGAN.

KNITTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 236,062, dated December 28, 1880.

Application filed July 9, 1880. (No model.)

To all whom it may concern:

Be it known that I, ILA N. MOORE, of Battle Creek, in the county of Calhoun and State of Michigan, have invented a new and useful Improvement in Knitting-Machines, of which the following is a specification.

My improvements relate to the cams and thread-carriers of knitting-machines, and the improved devices are intended specially for use with machines having two parallel rows of needles and two pairs of cams.

The object of my invention is to knit a double web with two threads in such manner that if threads of different colors be used the fabric shall be striped lengthwise.

The construction and operation will be described in detail hereinafter with reference to the accompanying drawings, forming part of this specification, wherein—

Figure 1 is a front view of a portion of a needle-bed, the cams being in section. Fig. 2 is a back view of the cams as attached upon the carrier-plate. Fig. 3 is a front view of the carrier-plate. Fig. 4 is an inverted plan view of the yarn-carrier.

Similar letters of reference indicate corresponding parts.

A' is the needle-bed, fitted with the needles *a*, of usual character, and needles *b*, having two projections, which needles are placed in alternate order.

A, B, C, and D are the cams. A D are fixed wing-cams at opposite sides of the movable V-cam C, and B is a movable cam placed between A and C. These cams are attached upon the plate E. Cams A D are held by screws *i i*, which pass through inclined slots that permit adjustment. Cams C B are formed with guide-lugs that enter vertical slots *k* in plate E, into which lugs are tapped screws *c*, that pass through inclined slots in the shifting plate F. The plate F is guided by projections *e* on plate E entering horizontal slots in plate F, so that by the movement of the latter cams B C are raised and lowered. The downward position of the cams is shown in Fig. 2, which is the position with the plate E moving in direction of the arrow. The reverse position of shifter F brings the cams C B to the position shown by dotted lines, cam C closing against cam D, and cam B closing

the space between cams A and C. Cam B has its sides formed parallel with the inclined sides of cams A C, and its lower end slightly curved, as well as those of cams A D, so that the projections of the needles *a b* may be readily brought into contact with the lower part of cam C.

G is the yarn-carrier, which is sustained from plate E above bed A'. This guide G, as shown most clearly in Fig. 4, is formed with a central aperture, *d*, for the yarn 1, and with a long slot, *f*, extending an equal distance from the aperture *d* at opposite sides in the direction of the movement of the carrier, and through which slot passes the yarn 2.

In operation, the forward inclined side of cam C raises the needles *a b* by contact with the foot-projection of *a* and upper projection of *b*, until these projections reach the upper point of cam C and the foot-projections of needles *b* reach the angle *h* of the cam. The needles *b* are then drawn down by the under side of cam C until the cam B takes the upper projections and draws the needles *b* down the full distance, while the needles *a* remain up until they reach cam A. By this movement the yarn 1 is carried down by needles *b* first, and the yarn 2 afterward carried down by needles *a*. As the yarn-carrier G moves forward the yarn 1 leads. At the end, when the movement is reversed to feed the other row of needles, the yarn 2, being held by the last stitch, is brought to rear end of the slot, so that yarn 1 again leads, and the web will be uniform on both sides of the machine. On the return movement of the cam the cams C B are raised by the shifter, so that the needle-projections shall not catch on but pass beneath the cams B C.

By the above-described construction each yarn is knit by the same needles at every round, so that if the two yarns be of different colors the colors will be alternate at each round and the web striped lengthwise.

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

1. In a knitting-machine, the combination, with the bed A' and needles *a b*, having, respectively, one and two projections, of the cams A D, fixed, the cams B C, movable, and

the movable plate E, the cams B C having their outer inclined sides parallel to the inner sides of cams A D, as and for the purpose described.

5 2. In a knitting-machine, the needles *a b*, having single and double projections, combined with the needle-bed and cams that act to raise the needles together and depress those having double projections in advance, sub-
10 stantially as shown and described.

3. The combination of the yarn-carrier G,

having the median aperture *d* and slot *f*, the plate E, supporting it above the bed, the cams A D, fixed to said plate, the cams B C, movable on said plate, and the needles *a b*, having, re- 15
spectively, one and two projections, as and for the purpose specified.

ILA NEWBRE MOORE.

Witnesses:

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