

W. Aiken.
Notching Knitting Needles.
N^o 71836
Patented Dec. 10, 1867.

Fig. 1.

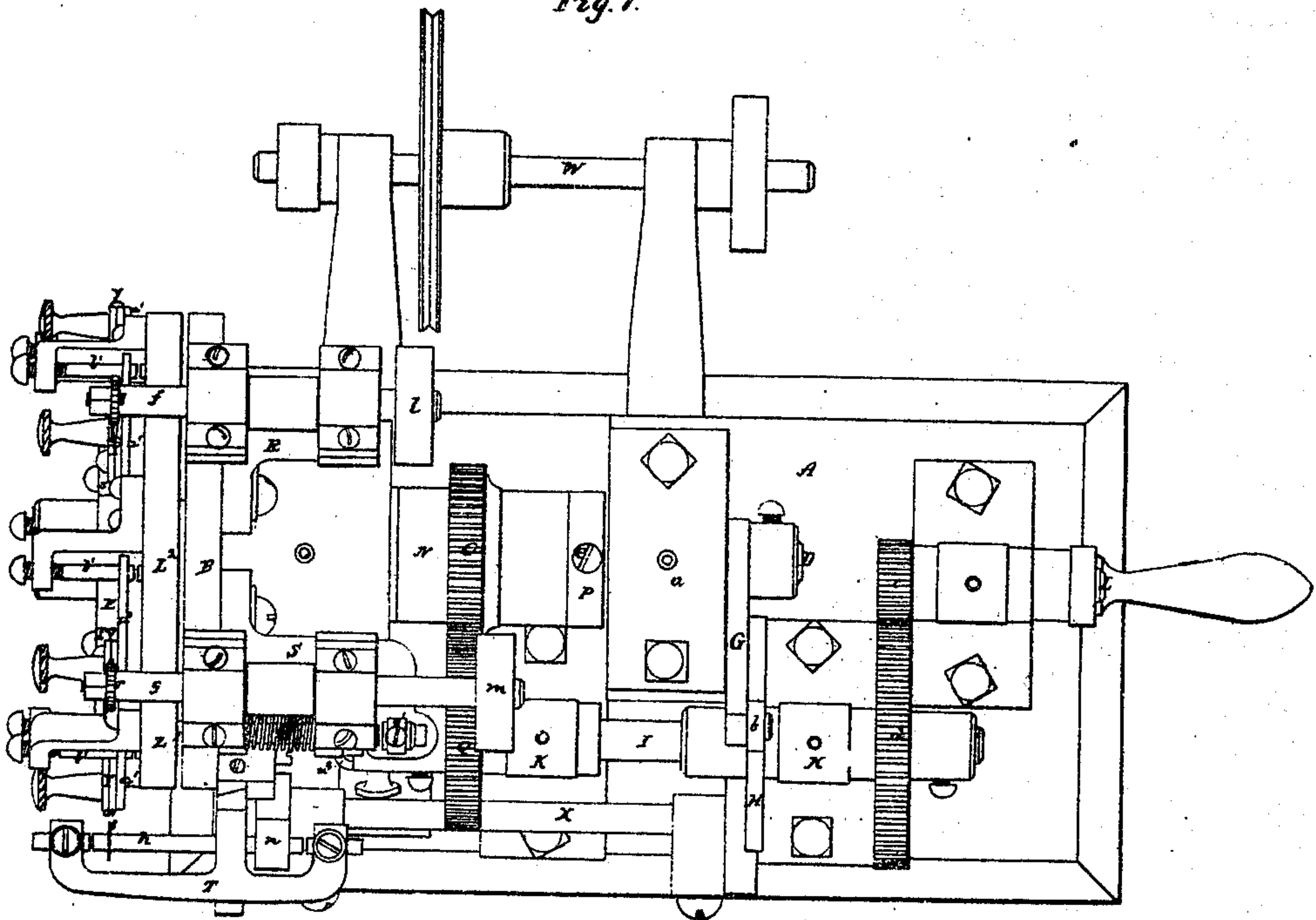
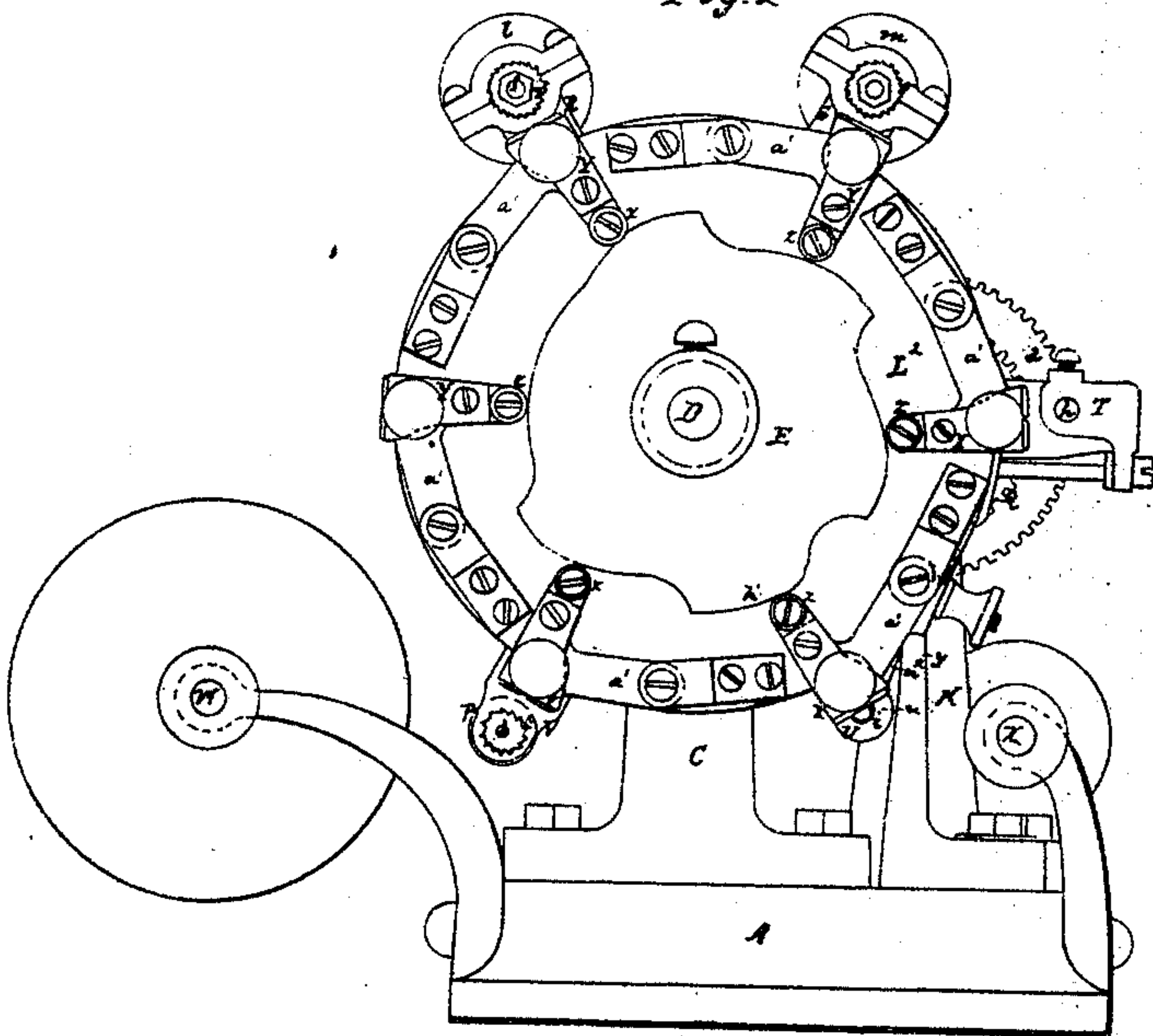


Fig. 2.



Witnesses.
S. N. Piper.
Lauritz Miller.

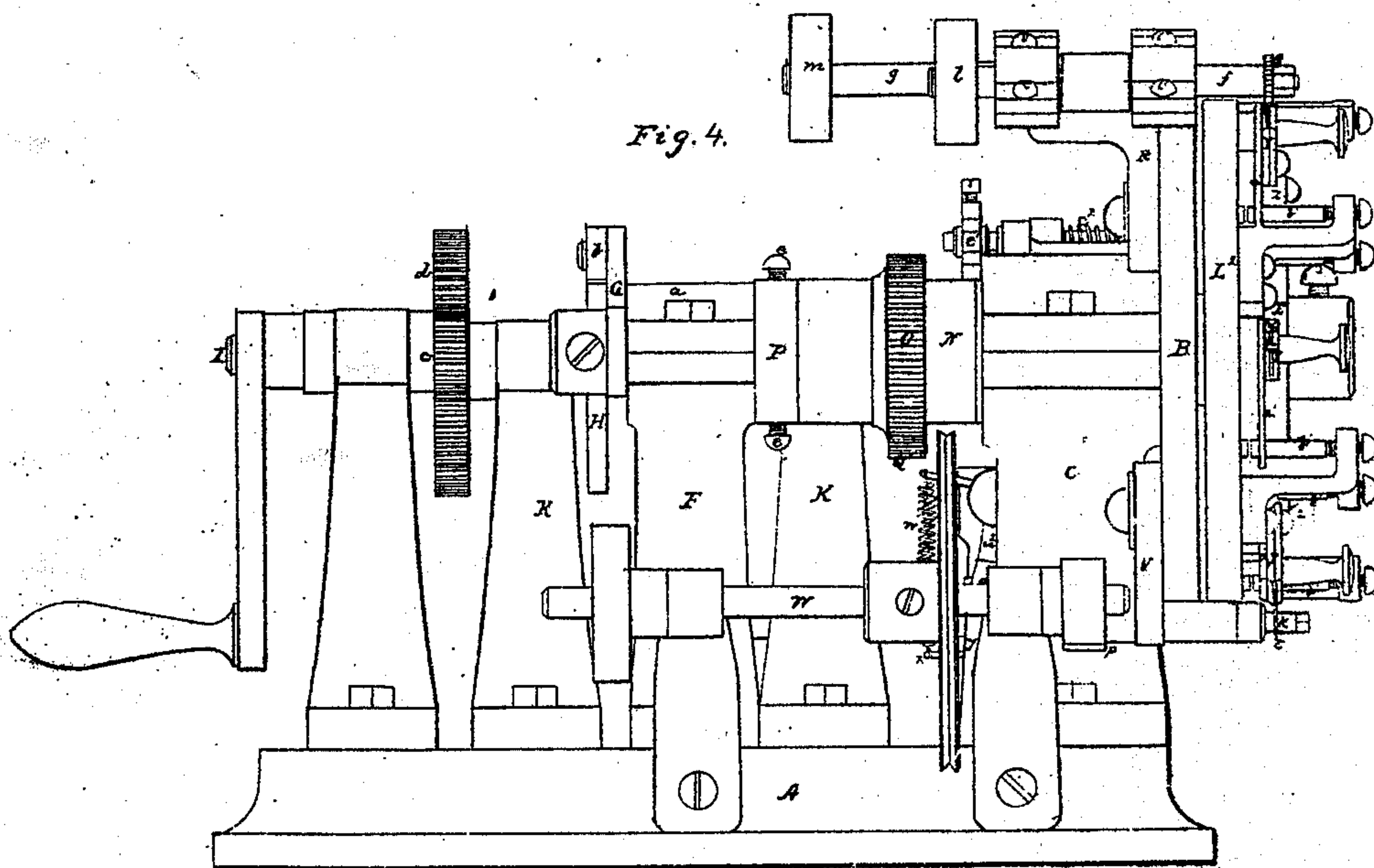
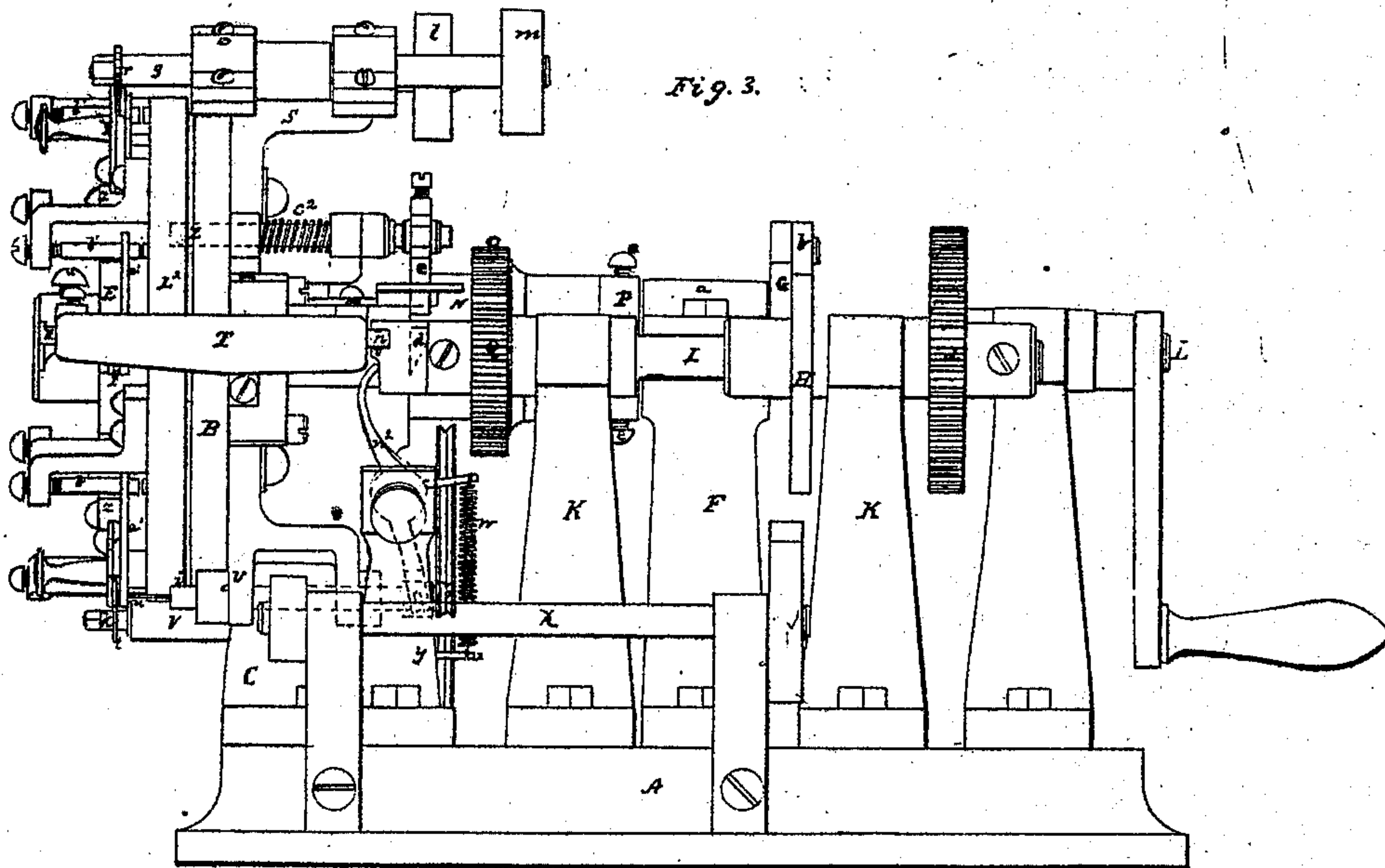
Inventor.
Walter Aiken.
by his attorney.
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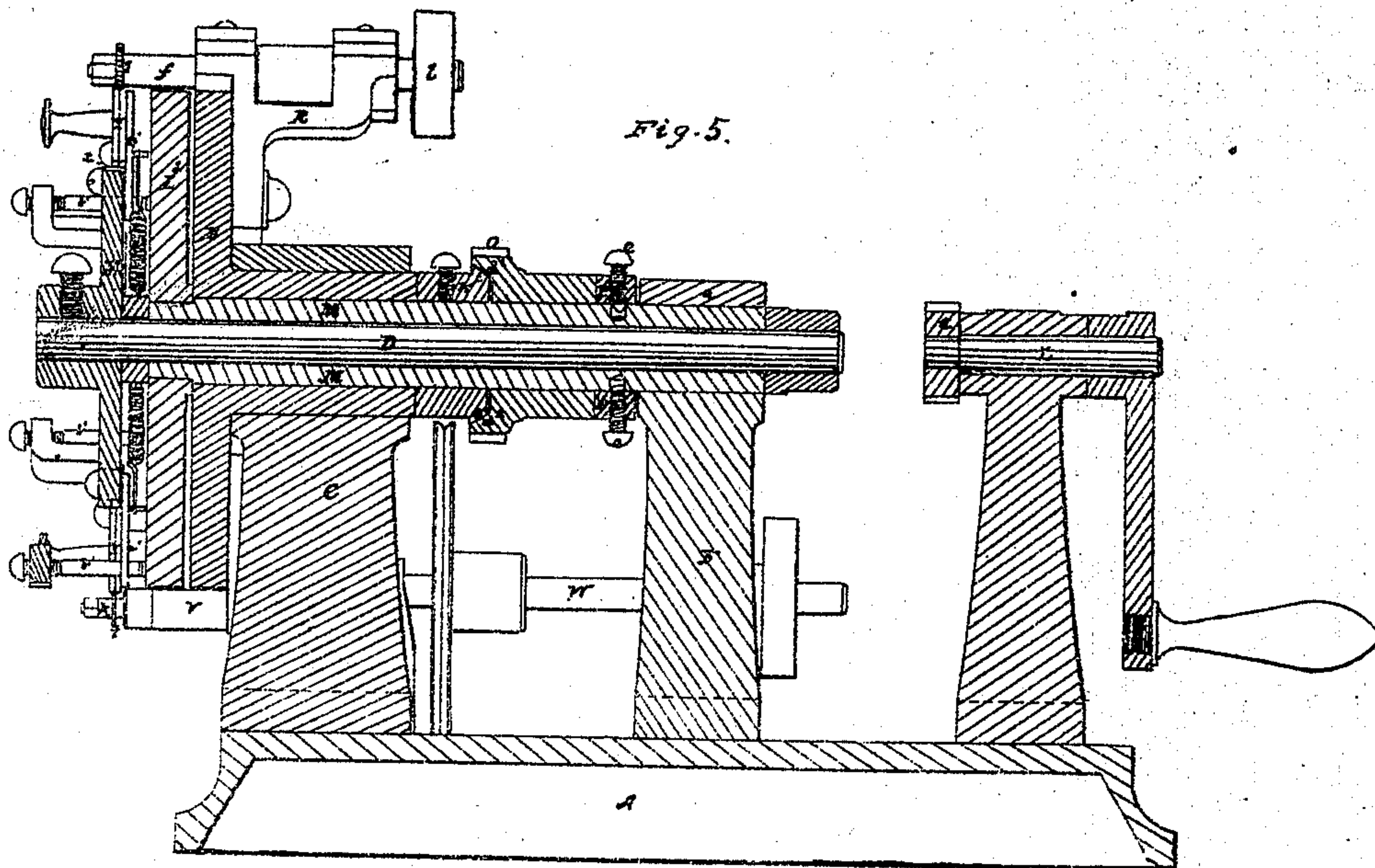


Fig. 5.

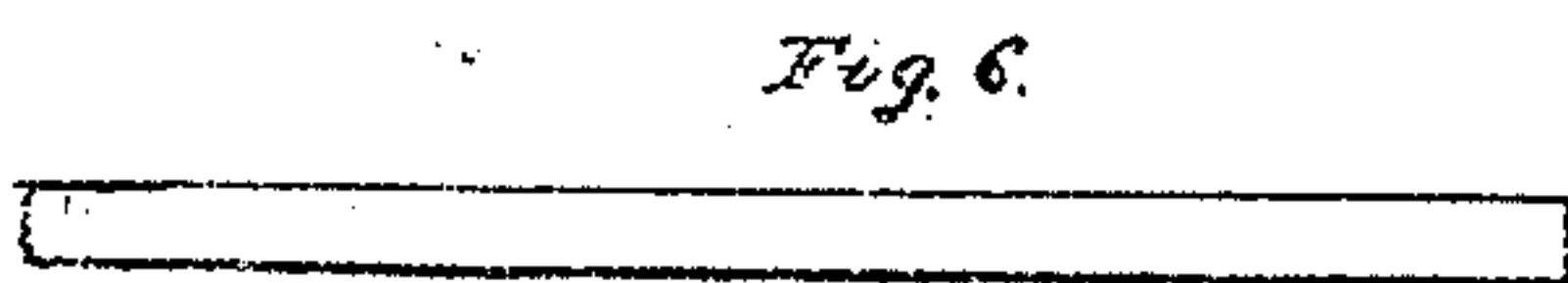


Fig. 6.

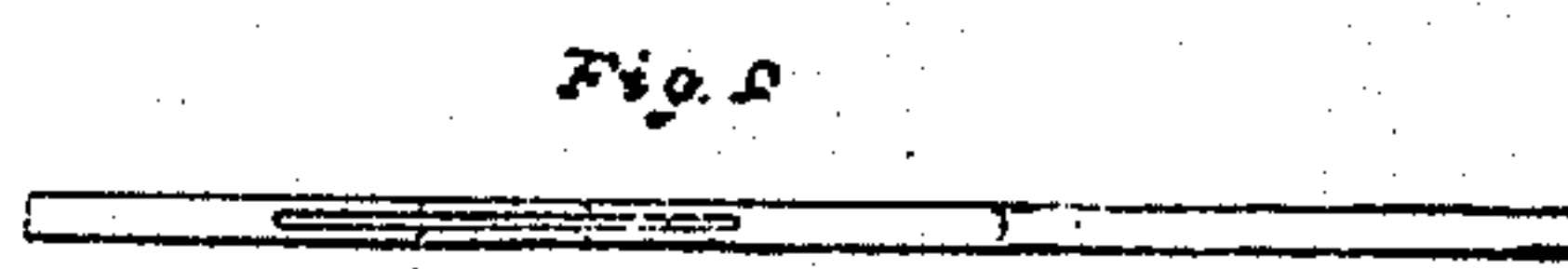


Fig. 9.

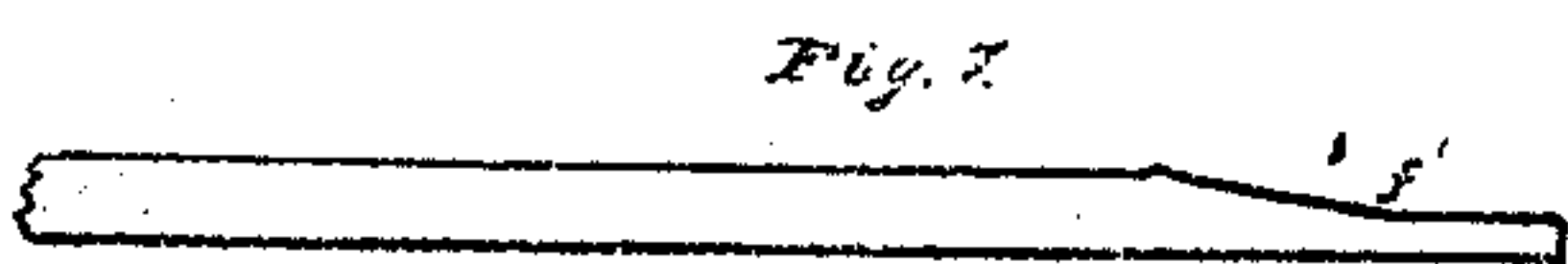


Fig. 7.

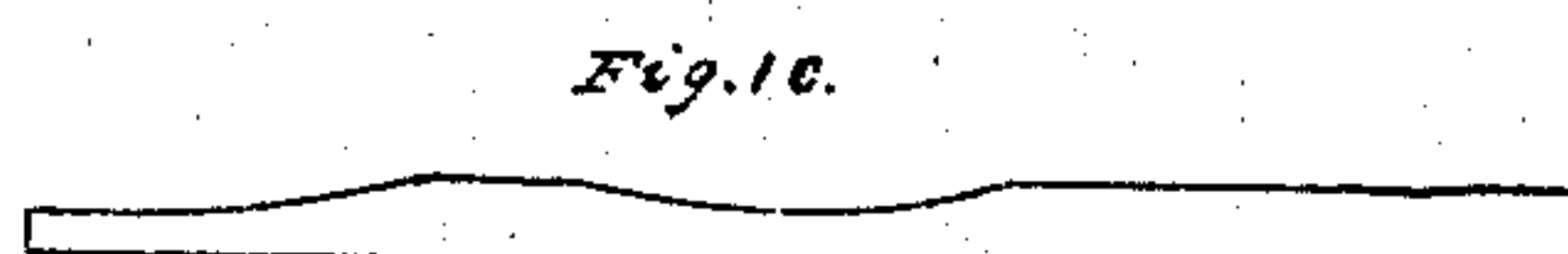


Fig. 10.

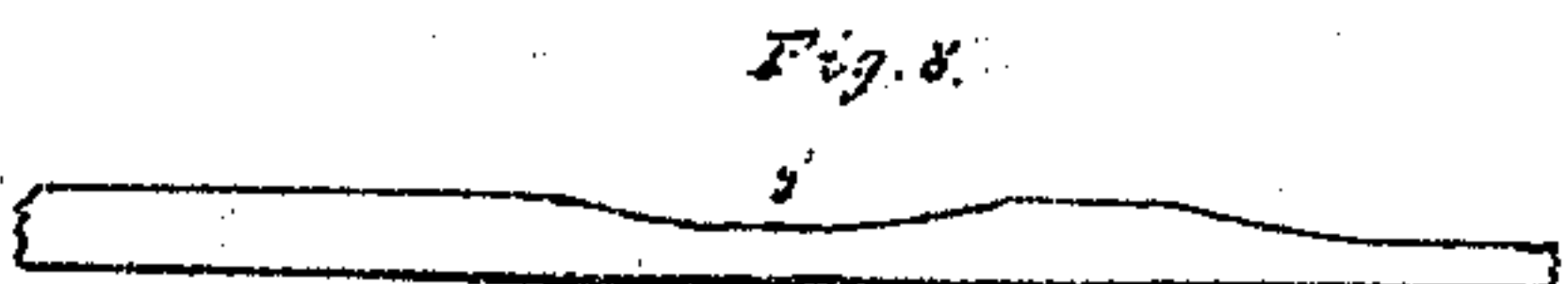


Fig. 8.

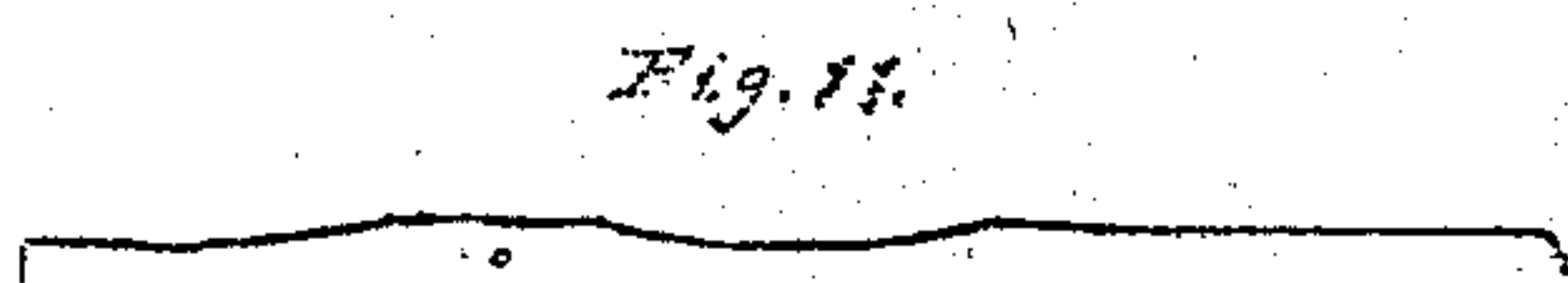


Fig. 11.

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UNITED STATES PATENT OFFICE.

WALTER AIKEN, OF FRANKLIN, NEW HAMPSHIRE.

IMPROVED MACHINE FOR NOTCHING KNITTING-NEEDLES.

Specification forming part of Letters Patent No. 71,836, dated December 10, 1867.

To all whom it may concern:

Be it known that I, WALTER AIKEN, of Franklin, in the county of Merrimac and State of New Hampshire, have invented a new and useful Machine for Performing the Operations of Notching, Slotting, Boring, and Burring Knitting-Needle Blanks; and I do hereby declare the same to be fully described in the following specification, and represented in the accompanying drawings, of which—

Figure 1 is a top view, Fig. 2 a front-end elevation, Figs. 3 and 4 side elevations, and Fig. 5 a longitudinal section, of it. Fig. 6 is a side view of the blank to be operated on. Fig. 7 exhibits it after its first reduction or notching. Fig. 8 exhibits it after its second reduction or notching. Fig. 9 shows a top view, and Fig. 10 a side view, of the blank as it appears after being slotted, the burr produced on its lower edge by the slotting operation being subsequently ground off. Fig. 11 exhibits the blank after the next operation of boring the tongue-joint pin-hole in it has been performed, and the operation of removing from its slot the burr left on the inner surface of the slot by the drill or borer while making the joint pin-hole.

In such drawings, A denotes the base-plate of the machine. B is a stationary disk, arranged vertically, and supported by a standard, C, erected on the base-plate.

A shaft, D, runs axially through and concentrically with the disk B, and has a cam-wheel, E, fixed on that end of it which is next to the disk. The said shaft, near its opposite end, is supported in a box, a, of a standard, F, erected on the base-plate. The said shaft D, at such last-mentioned end, carries an arm, G, which has a friction-roller, b, to rest on the periphery of a cam, H, such cam being fixed upon a shaft, I, which is duly supported in standards K K, and geared to a driving-shaft, L, by gears c d.

Between the cam-wheel E and the stationary disk B is a circular plate or head, L², which is fixed on one end of a tubular shaft, M, that is arranged concentrically with the shaft D and extended through a bearing in the standard C. The said tubular shaft M has a conical collar, N, fixed on it, the cone part c of which projects into a conical recess, d², formed in a spur-gear, O. This gear turns on

the shaft M, and is forced or kept in close contact with the cone c by means of a sliding collar, P, arranged upon the shaft M, and held thereto by clamp-screws e e. The gear O engages with a spur-gear, Q, fixed on the shaft I.

From the above it will be seen that the head L² will be revolved by the action of the gears O Q and the friction-cone and its recess.

The disk B supports, by suitable brackets R, S, T, U, and V, extended therefrom, five arbors or shafts, f, g, h, i, and k, each of which has a driving-pulley fixed on it, the same being as shown at l m n o p. Each of such pulleys is to be revolved by a separate belt applied to it.

The arbors f, g, h, and k carry rotary cutter-wheels q, r, s, and t, there being one of such wheels to each of the said arbors. The other or remaining arbor, i, has a drill, u, projecting from one end of it. This drill, at the proper time, is moved lengthwise in one direction by a lever, w², actuated by a cam, v, fixed on the end of the shaft I. A spring, w, applied to the lever and to a projection, x, extended from a standard, y, serves to retract the drill-arbors.

W and X are shafts, carrying pulleys for driving, by means of belts, some of the arbors. Extending around the cam-wheel E is a series of clamps, Y, for holding the needle-blanks. Each of such clamps has a friction-roller, z, to rest on the periphery of the cam-wheel. Furthermore, each of the clamps is supported by an arm, a', projecting from a rocker-shaft, b', sustained by bearings fixed to the rotary head L².

A series of springs attached to a ring placed next to the head L², and connected with the several clamps Y, serve to draw such clamps into contact with the cams of the cam-wheel. A bolt, Z, is applied to the disk B, and plays through it and into the head L², such head being provided on its inner face with a series of six holes to receive the bolt, they being arranged at equal distances apart. The bolt is shot forward by a spring, c², and retracted by a cam, d¹, fixed on the shaft I, and made to act against an arm, c¹, extended from the rear part of the bolt.

The operation of the machine may be thus described: The clamps, as they are brought around to the attendant, are to be successively supplied with the needle-blanks. The head

L² being put in revolution will be stopped when a needle-blank may have reached its position under the first rotary cutter, *q*. This stoppage will be effected by the bolt Z. Next, the cam-wheel will be partially revolved by the action of the cam H and the arm G, and will crowd the clamps toward the cutter-wheels, and thereby force the blanks up to them. A blank, on being reduced by the first cutter, will have a notch formed in it, as shown at *f'* in Fig. 7. Next, the bolt will be withdrawn, and the head L² will be again partially revolved, so as to carry the blank up to the second cutter-wheel. The blank, by the action of the cam-wheel, will be again notched, as seen at *g'* in Fig. 8. Next, the blank in a similar way will be carried in contact with the third cutter-wheel, and will be slotted for reception of the tongue. Next, the blank will be moved a farther distance, and will remain stationary while the drill is advanced and made to bore the joint-hole. The reason why the blank will be maintained stationary such period of time is that a circular arc, *h'*, of the periphery of the cam-wheel during such time will be moving against the friction-roller of the clamp, and consequently will produce no motion of the clamp. Finally, the blank will be carried around to the last or burring cutter, which will be caused to enter the slot of the blank and remove therefrom the burr made in it by the drill. The blank is now ready to be removed from the clamp.

I claim as my invention—

1. The improved machine, substantially as described, for effecting the several operations of notching, slotting, boring, and burring a knitting-machine needle-blank, in the order and manner as explained.
2. The combination of one or more vibratory clamps, Y, the cam E, and the two burrs or cutters *q r*, for forming the notches in the needle-blank, such clamp or clamps, cam, and cutters being provided with mechanism for operating them, substantially as described.
3. The combination of one or more vibratory clamps, Y, the cam E, the two burrs or cutter-wheels *q r*, and the slotting burr or cutter *s*, provided with mechanism for operating them, substantially as explained.
4. The combination of one or more rotary clamps, Y, the cam E, the burrs or cutter-wheels *q r s*, and the drill *u*, provided with mechanism for operating them, substantially as set forth.
5. The combination of one or more vibrating clamps, the burring-cutter *t*, the drill *u*, and the slotting cutter *s*, arranged and provided with mechanism for operating them, substantially as explained.

WALTER AIKEN.

Witnesses:

DANIEL BARNARD,
PARKER C. HANCOCK.