

(No Model.)

A. I. JACOBS.  
MECHANICAL MOVEMENT.

No. 361,162.

Patented Apr. 12, 1887.

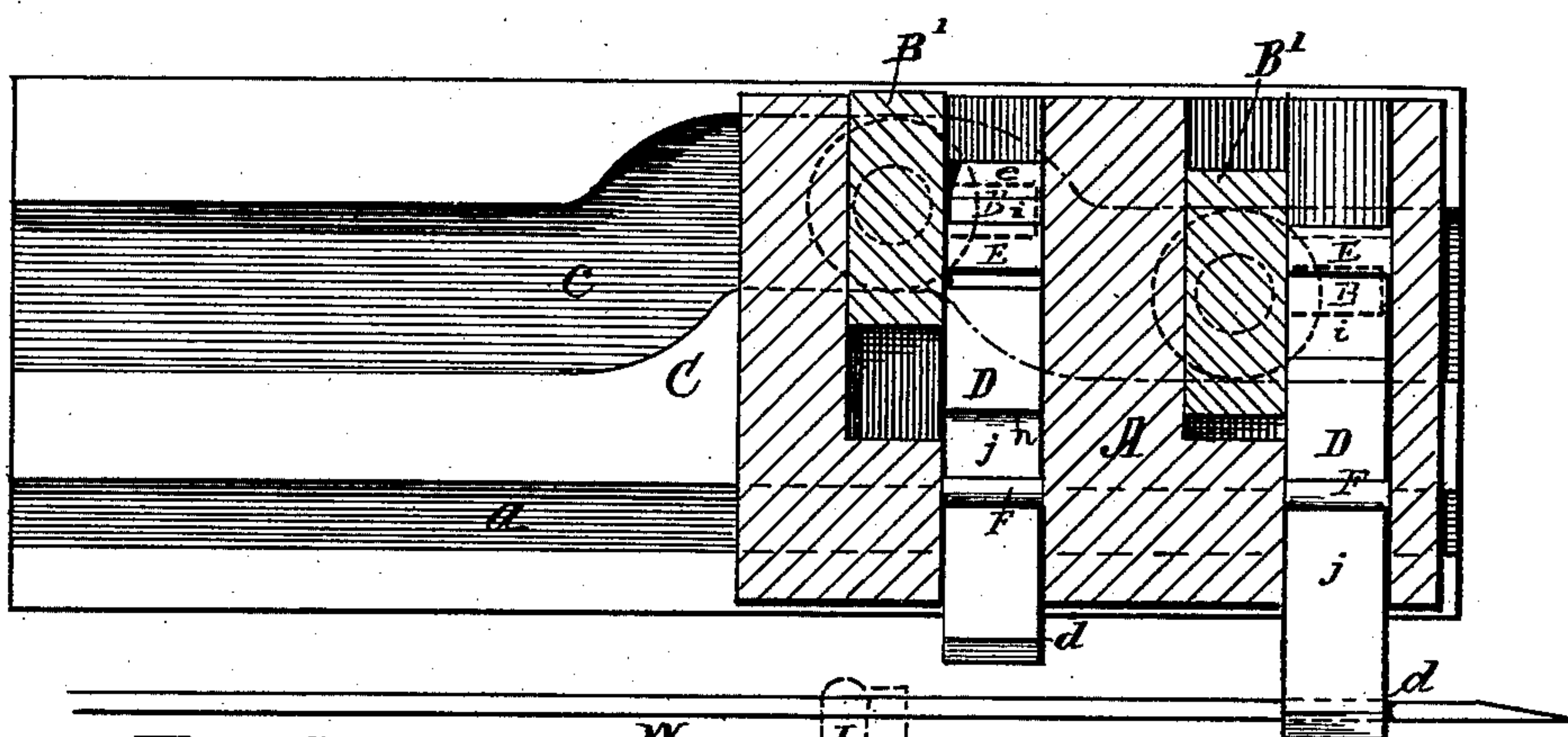
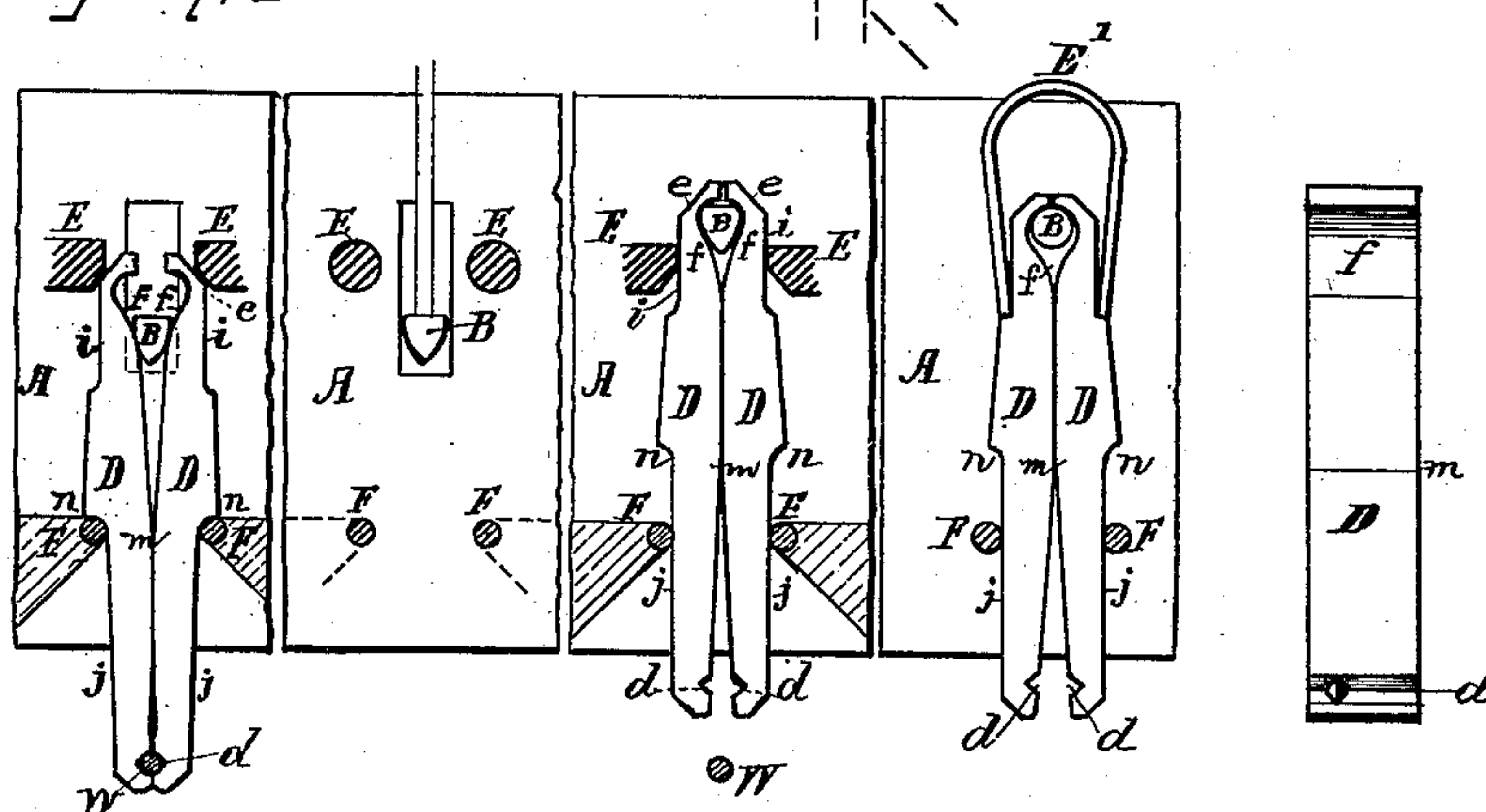


Fig. 1



Figs. 2 — 3 — 4 — 5 — 6

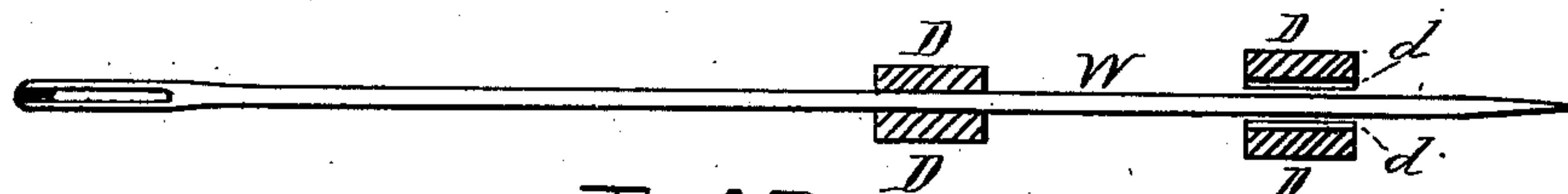


Fig. 7

WITNESSES.

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## MECHANICAL MOVEMENT.

SPECIFICATION forming part of Letters Patent No. 361,162, dated April 12, 1887.

Application filed August 23, 1886. Serial No. 211,583. (No model.)

*To all whom it may concern:*

Be it known that I, ARTHUR I. JACOBS, a  
citizen of the United States, residing at Wor-  
cester, in the county of Worcester and State  
5 of Massachusetts, have invented certain new  
and useful Improvements in Mechanical Move-  
ments, of which the following, together with  
the accompanying drawings, is a specification  
sufficiently full, clear, and exact to enable per-  
10 sons skilled in the art to which this invention  
appertains to make and use the same.

The object of my present invention is to pro-  
vide a practical and efficient mechanical move-  
ment, adapted for gripping and releasing pur-  
15 poses, and whereby wires, rods, or needles can  
be worked or fed forward or backward, or  
passed through interposed bodies or sub-  
stances, said mechanical movement being ap-  
plicable for use in connection with various  
20 classes of machinery, and various situations  
in the mechanic arts. These objects I attain  
by mechanism shown in the drawings, and ex-  
plained in the following description, the par-  
ticular subject-matter claimed being herein-  
25 after definitely specified.

In the drawings, Figure 1 is a sectional view  
of my improved mechanical movement as ap-  
plied in apparatus for working a reciprocating  
needle. Fig. 2 is a front view of the gripping-  
30 fingers with the jaws closed. Fig. 3 is a front  
view of the plate or frame on which the fingers  
are arranged, and the lifting device. Fig. 4  
is a view similar to Fig. 2, but with the fin-  
gers raised and jaws opened. Fig. 5 is a modi-  
35 fication showing the tops of the fingers or le-  
vers backed by a yielding, instead of a rigid,  
support. Fig. 6 is a face view of one of the  
fingers or jaw-levers, and Fig. 7 is a horizontal  
section through the jaws.

40 In the present instance my improved me-  
chanical movement is shown as employed in  
a book-sewing machine, or other similar sew-  
ing-machine for passing needles through an  
interposed object, and front and rear sets of  
45 grippers are employed in connection with a  
reciprocating head-block and a governing-cam,  
one set of grippers being operative for holding

the rod or needle while the other is released,  
and vice versa.

The essential features of my improved mech- 50  
anism consist of a pair of peculiarly-con-  
structed gripping fingers or levers, with back  
supporters for said levers, and a lifting or de-  
pressing follower or stud, which parts are dis-  
posed for action, as hereinafter more fully ex- 55  
plained.

In reference to parts, A denotes the head-  
block or frame; B, the lifting-piece or follower,  
which in the present instance consists of a  
stud or projection fixed in a vertically-re- 60  
ciprocating block or bar, B', worked by a  
traveler or wheel, (see dotted line, Fig. 1,)   
that engages with the groove *c* of a cam-  
plate, C, as the head-block is moved back and  
forth from one end of said plate to the other, 65  
the head traveling along the straight guide-  
way or groove *a*.

D D indicate the gripping fingers or levers,  
formed of a suitable shape, and arranged face  
to face in pairs. The lower ends of the fin- 70  
gers which act as gripping-jaws are preferably  
grooved on their faces laterally, as at *d d*, to  
receive the rod or needle, while their upper  
ends are beveled on the exterior at *e e*, and  
hollowed on their inner surfaces at *f f*, in the 75  
manner illustrated, so as to form a wedge-  
shaped opening or space between the two fin-  
gers, within which space the actuating part of  
the follower B is located. This opening is  
somewhat larger than the follower B, and the 80  
surfaces *f f* are curved or inclined on such lines  
that they will act, in conjunction with the fol-  
lower B, to impart the desired movement to  
the gripping-fingers D as the followers are  
raised and depressed. 85

The lower and upper portions of the fingers  
D are fitted with suitable bearing-surfaces at  
*i* and *j*, which surfaces rest against and slide  
upon the compressors and supporters E and  
F, which latter are fixed to the head or frame 90  
A. Shoulders *n* are formed on the fingers or  
levers D, that serve to limit their downward  
movement by contact with the supporters F.  
Said shoulders are located so as to stop the



fingers when the jaws *d* are at proper position for seizing the wire or needle *W*.

The back supporters *E* and *F* may be constructed as pins or studs fixed in the head *A*, or as flanges or projections formed thereon, or the head may be made with a cavity or recess for receiving the fingers and the back supports be the edges of said cavity. The distance apart of the lower supporters, *F*, is equal to the thickness of the two fingers at their fulcrum or center *m*, and said fingers are tapered toward their lower ends sufficiently to permit the opening of the jaws *d* as they move upward. The distance apart of the top compressors or supporters, *E*, is equal to the distance across the two fingers when their upper parts are brought together, as in Fig. 4. Said compressors *E* are formed and located in relation to the fingers *D* in such manner that the bearing surfaces *i* of the fingers will pass below the compressors, and the beveled portions *e* will permit the top ends of the fingers to separate, as in Fig. 2.

The action of the mechanism is as follows: Assuming that the parts are in position, as at the left in Fig. 1, and in Fig. 4, or with follower *B* elevated. The grippers or fingers *D* are in this position suspended upon the follower *B* by their inwardly-curved upper ends, and are retained, with the jaws *d* open, by the compressors *E* pressing against the surfaces *i*. The follower *B*, being now moved downward, strikes the surface *f*, and the fingers *D* meeting but slight frictional resistance, and being free to move, are thereby forced downward until the shoulders *n* strike the supporters *F*. This stops the further downward movement of the fingers *D*, and thus causes said follower to act as a wedge between the inclined or curved surfaces *f*, thus forcing apart the upper ends of the fingers, and by leverage against the lower supporters, *F*, as fulcrums, causing the jaws *d* to close together with a firm and rigid grip upon the rod, wire, or needle *W*. The bevel *e* at the upper end of the fingers is so formed and disposed as to allow the top ends to separate and the jaws *d* to close together at the proper instant in the movement. The parts are then in position, as at the right of Fig. 1, and as in Fig. 2. With the upward movement of the follower *B* the first part of the movement releases the wedging action between the surfaces *f*. The follower then striking the overhanging ends lifts the fingers, and the beveled surfaces *e*, in conjunction with the top compressors, *E*, open the jaws *d*, the fulcrum action of the fingers then being against each other at the position *m*.

With the mechanism arranged as in Fig. 1, the two sets of gripping-fingers seize and release the needle *W* alternately as the head is moved back and forth along the guideway, the needle at all times being held by either one set of grippers or the other. With this movement the needle may be passed through an interposed body or substance, as *L*, the

grippers *D* alternately letting go and passing around said body to take a new hold at the other side thereof, while the needle passes through said substance.

In some instances it may be preferred to have the jaws open by an elastic instead of a rigid and positive action, in which case a spring, *E'*, may be employed for pressing together the upper ends of the fingers *D*, instead of rigid compressors *E*, said spring being fitted as shown in Fig. 5, or in any other suitable manner for effecting equivalent action.

Although I have herein shown a bar, *B'*, and cam *C*, for raising and depressing the follower *B*, it will be understood that any other suitable means for imparting motion to said follower *B* may be employed as an equivalent for such actuating devices, and said follower can, if desired, be made as an arrow-head upon the end of a rod, as indicated in Fig. 3, instead of as a stud projecting laterally into the space between the fingers.

This mechanical movement may be successfully employed in the mechanism of carpet-looms for gripping and carrying the pile-wires; also, for the wire-feed of machines for making staples, nails, barbed fencing, card-teeth, and other articles where a wire is intermittently fed forward or into a machine for a predetermined distance. Of course it will be understood that in the adaptation to the various purposes of use the head or support would be given different size and shape, and the cams or operating devices would be arranged to act at such intervals and instances of time as the requirements of the work demanded.

What I claim as of my invention, and desire to secure by Letters Patent, is—

1. The within-described mechanical movement, consisting of a pair of loose fingers or levers centrally fulcrumed against each other and confined between back supporters, *F*, and a follower, *B*, disposed between the upper hooked end of said fingers, and adapted to wedge between them when depressed and to release and lift said fingers when elevated, all combined substantially as set forth.

2. The pair of fingers *D*, provided with curved or inclined surfaces *f* and inwardly-overhanging ends, and having stops or shoulders *n*, in combination with the back supporters, *F*, fixed on the head or frame, a reciprocating follower, *B*, disposed between said surfaces *f* and overhanging ends, and the top compressors, *E*, adapted to press the top ends of said fingers toward each other, substantially as set forth.

3. The combination of the head *A*, provided with supporters *F*, the gripping-fingers *D*, the finger-compressors *E*, the follower *B*, follower-block *B'*, and means for imparting reciprocative action to said follower in a direction longitudinal of the fingers.

4. The combination of the movable head-



block A, the front and rear sets of loose gripping-fingers arranged in said head and confined between back supporters and top compressors substantially in the manner shown; 5 the follower B, engaging said fingers, the reciprocative follower-blocks B', and the cam C, substantially as and for the purposes set forth.

Witness my hand this 18th day of August,  
A. D. 1886.

ARTHUR I. JACOBS.

Witnesses:

CHAS. H. BURLEIGH,  
ELLA P. BLENUS.