

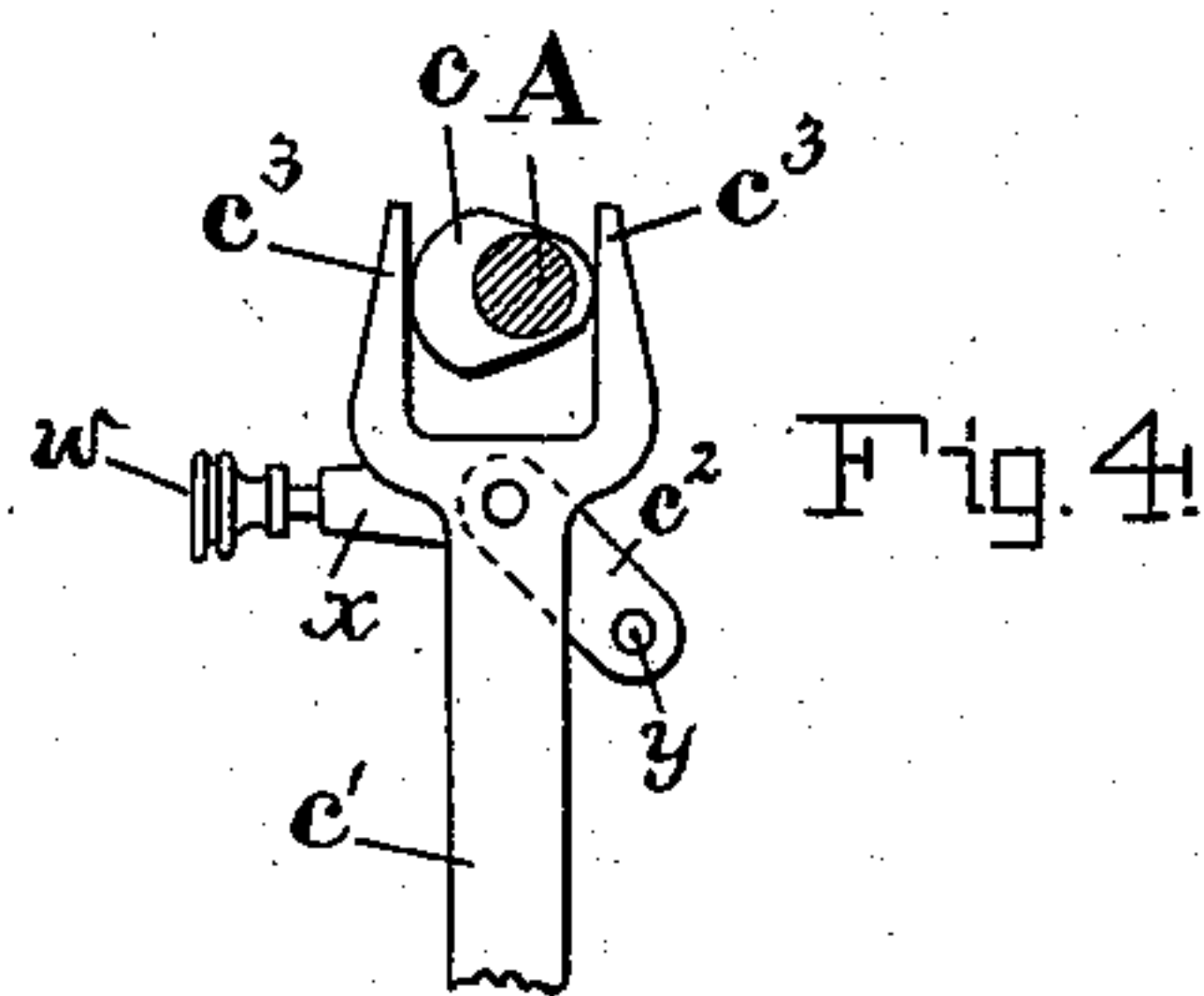
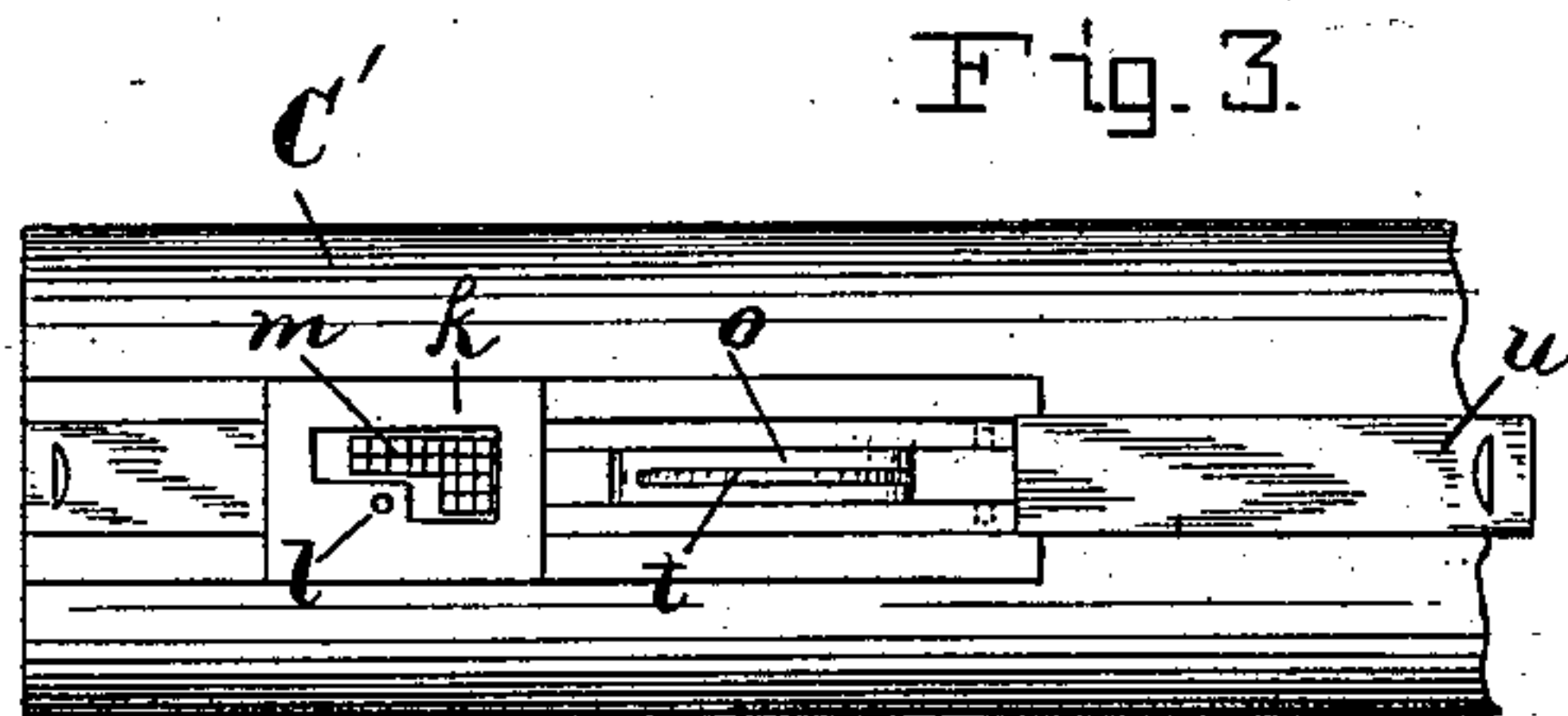
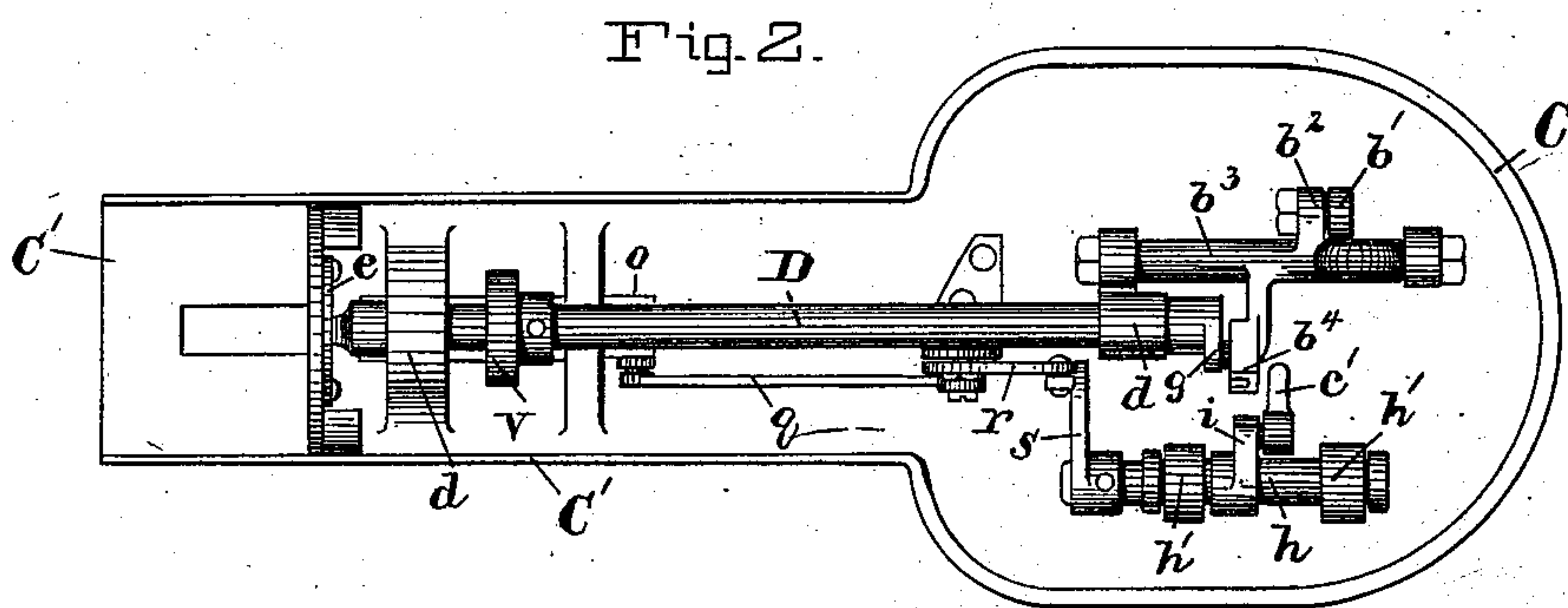
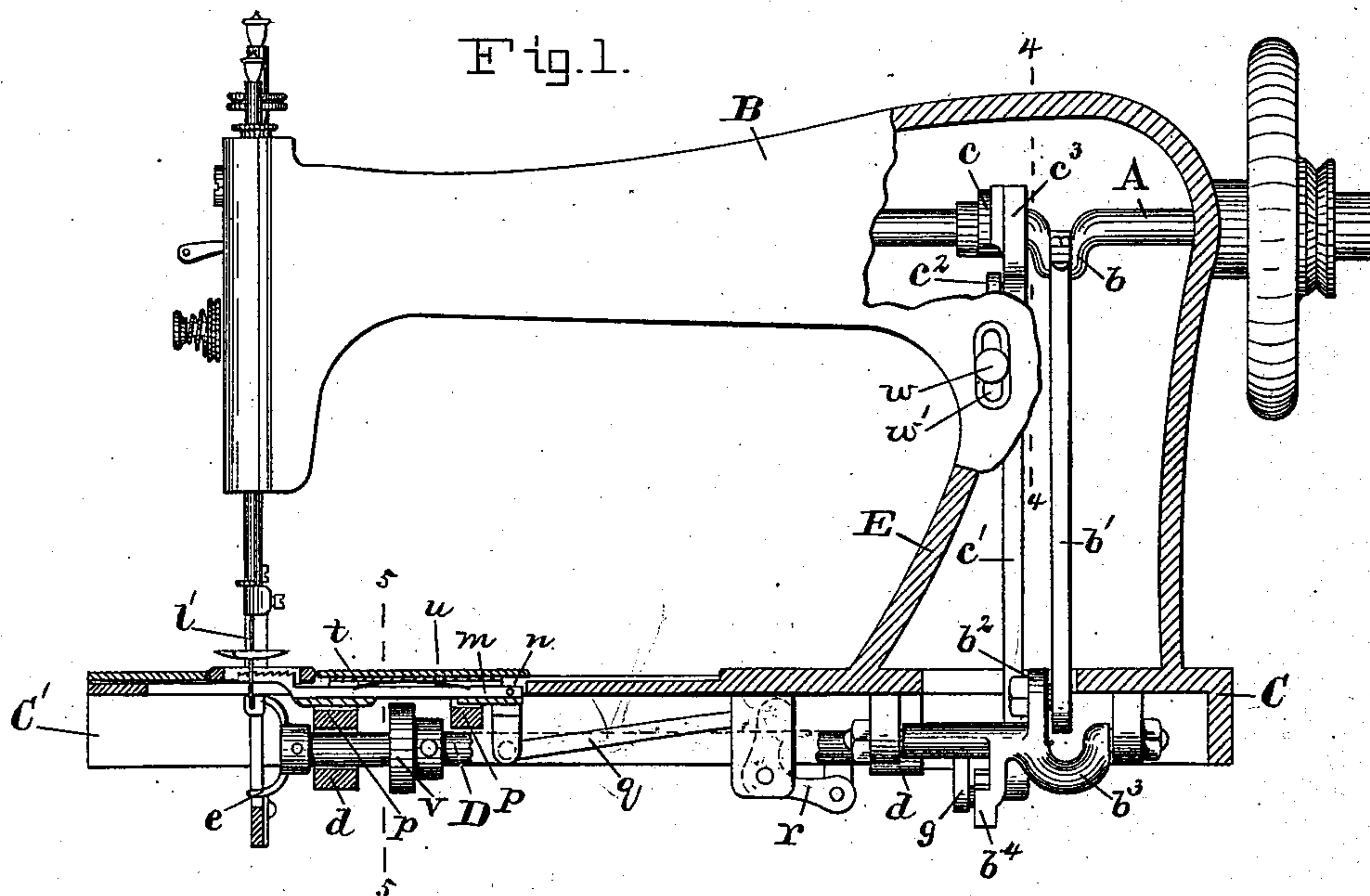
(No Model.)

2 Sheets—Sheet 1.

W. O. CRAIN.
SEWING MACHINE.

No. 376,978.

Patented Jan. 24, 1888.



WITNESSES.

John E. Morris
A. C. Eader

INVENTOR:

Wm O. Crain

BY

Chas B. Mann

ATTORNEY.

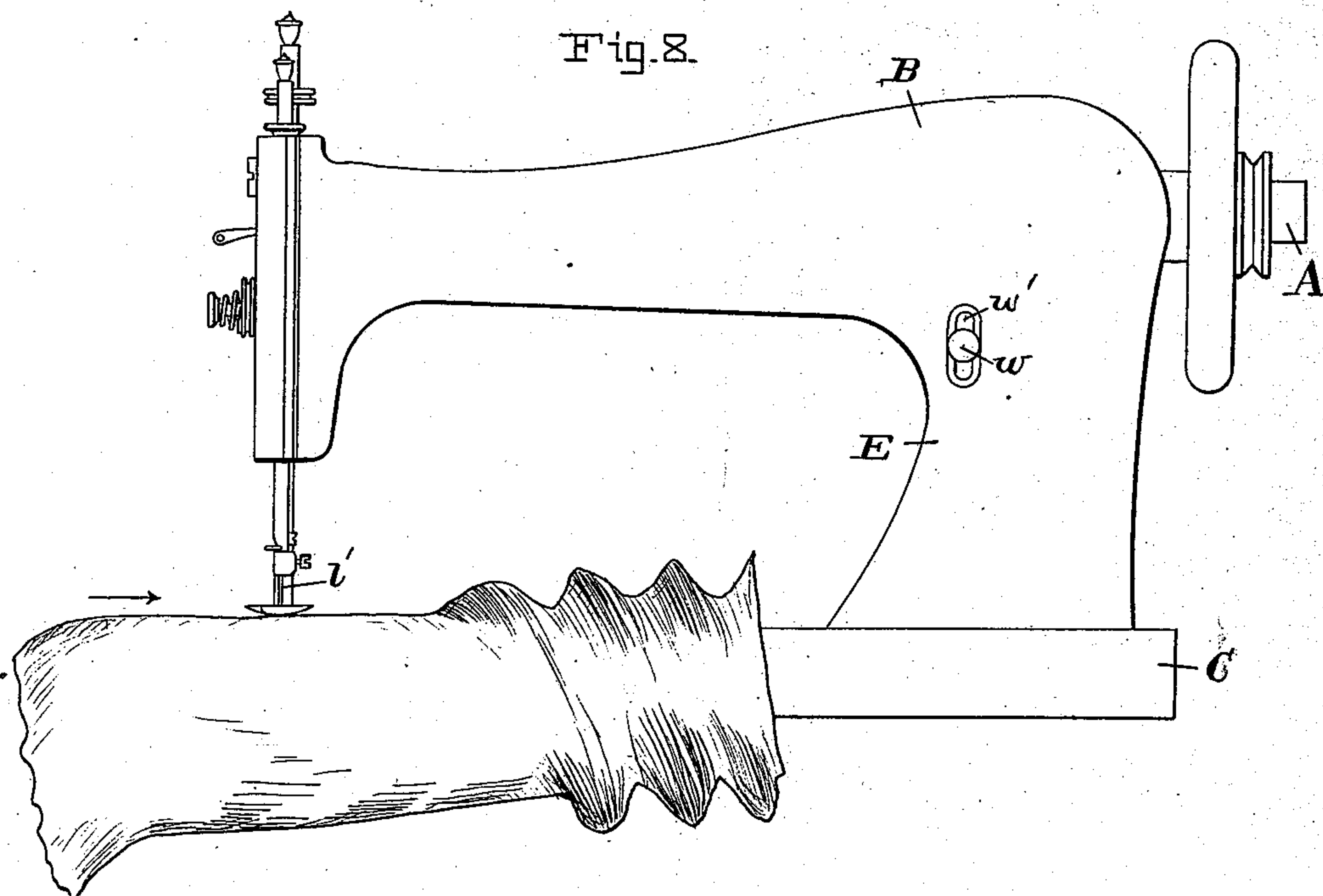
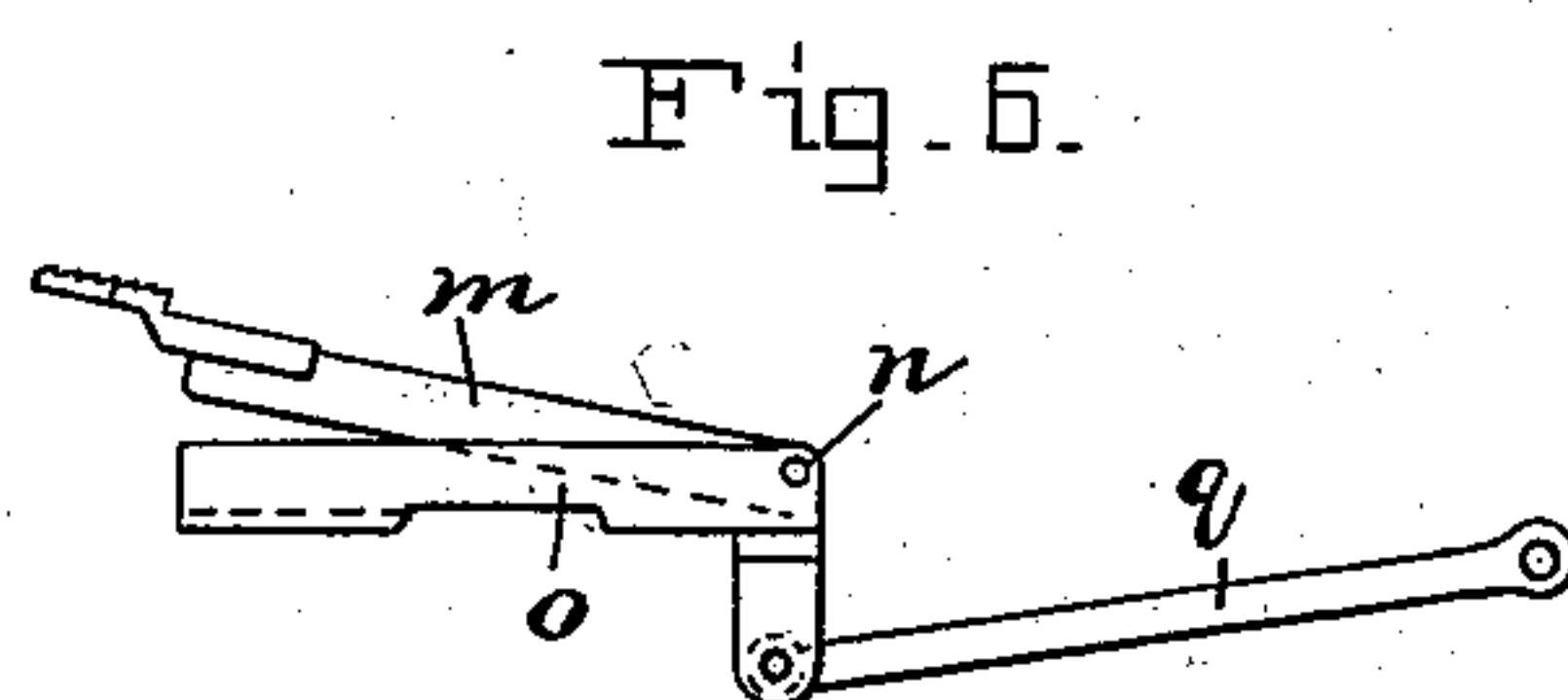
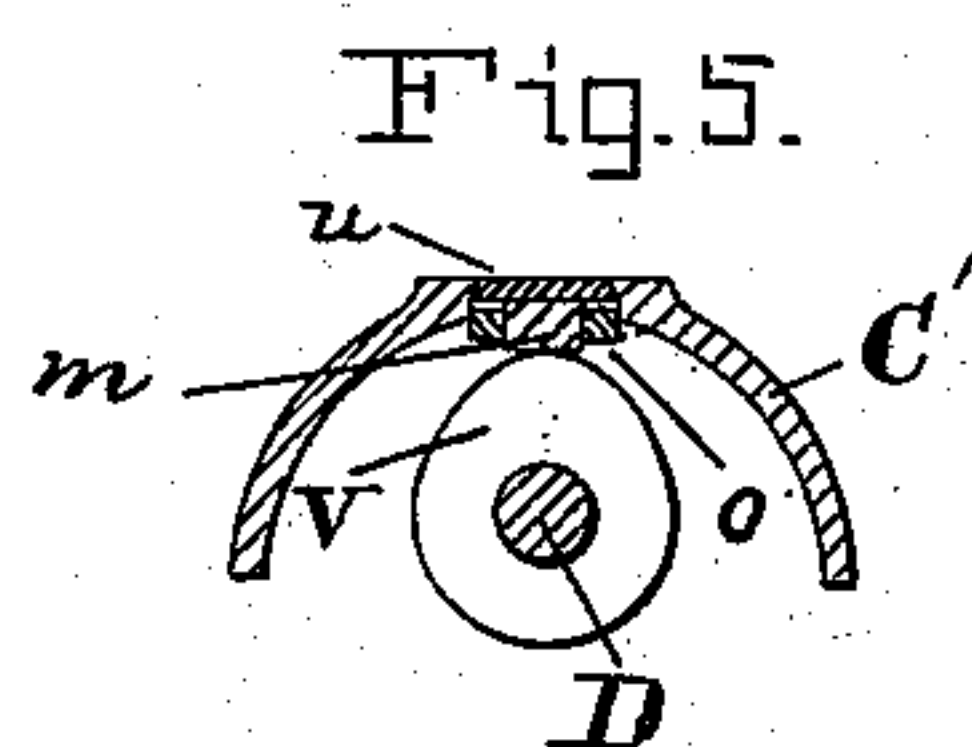
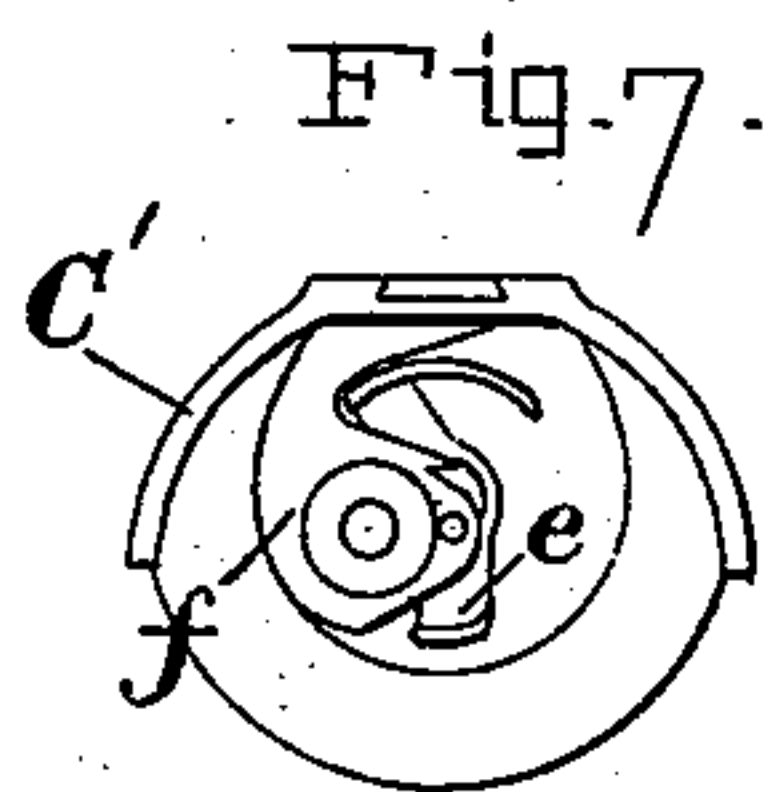
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UNITED STATES PATENT OFFICE.

WILLIAM OLIVER CRAIN, OF BALTIMORE, MARYLAND, ASSIGNOR OF TWO-THIRDS TO WISE BROTHERS, OF SAME PLACE.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 376,978, dated January 24, 1888.

Application filed March 14, 1887. Serial No. 230,771. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM OLIVER CRAIN, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a specification.

This invention relates to improvements in sewing-machines of the "oscillating-shuttle" class, and has for its object to combine in a machine the following several features, to wit: a bed-plate arm, an oscillating shuttle, and a feed device which will feed the goods lengthwise of the arm. By combining these features a machine is produced that is adapted for sewing felled seams on the legs of pants, overalls, and drawers, and on the arms of coats and shirts, and which at the same time may be run at higher speed than is possible with other machines which have heretofore been used for such work.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is for the most part a sectional elevation of a machine embodying my improvements. Fig. 2 is an inverted plan or bottom view of the machine. Fig. 3 is a top view of the arm of the machine, showing the feed-bar. Fig. 4 is a sectional view of the main shaft and cam and feed-lever moved by the said cam. Fig. 5 is a cross-section of the arm and oscillating shaft on the line 5 5. Fig. 6 is a view of the feed device attached. Fig. 7 is an end view of the arm, showing the oscillating shuttle. Fig. 8 is a side view of the sewing-machine, showing one leg of a pair of overalls on the arm, as in the operation of "felling" the seam.

It will be unnecessary to describe any of the well-known parts of the machine, except such as my improvements are directly connected with. The main shaft A, extending through the top or head B, has a crank, *b*, and a cam, *c*. A rod, *b'*, connects the said crank with an arm, *b''*, on a rock-shaft, *b'''*, situated in the base C of the machine. The bed-plate arm C' is attached to the base, and the garment to be sewed is to be drawn over this arm, as in Fig. 8. The oscillating shuttle-shaft D turns in bearings *d* in the arm, and at one end has the

carrier *e*, which holds and moves the shuttle *f* crosswise of the arm, and at the other end has a crank-arm, *g*. The rock-shaft *b'''*, before referred to, has a grooved arm, *b''''*, which receives the crank-arm *g* on the oscillating shaft D. A lever, *e'*, connects the cam *c* on the main shaft with my combined feed mechanism in the base of the machine. This feed-lever *e'* is attached to a link-bar, *c''*, and at its upper end has two prongs, *c'''*, each of which takes on an opposite side of the cam *c*. The feed-regulator screw *w* in the slot *w'* of the standard E is attached (see Fig. 8) to one end of a lever, *x*, which is centrally pivoted to the said standard, and the other end of the said lever is jointed at *y* to the said link-bar *c''*. This device is well known and determines the length of stitch.

The mechanism described to this point is well known.

Heretofore sewing-machines having a bed-plate arm, C', and an oscillating shuttle have had a feed device to move the goods crosswise of the said arm. My improvement effects a different result. I combine the said parts so as to move the goods lengthwise of the arm. I provide in the base a second rock-shaft, *h*, which has bearings *h'*. This rock-shaft has an arm, *i*, and the feed-lever *e'*, before described, has its lower end connected with the said arm *i*. Thus the cam *c*, through the connecting feed-lever *e'*, imparts the desired movement to the second rock-shaft, *h*. The needle-plate *k* on the arm C' has a hole, *l*, for the needle *l'*. The serrated end of the feed-dog *m* has the well-known "four-motion" in an opening in the needle-plate. The forward-and-back motion of the feed-bar is in the direction of the length of the arm C', whereby in sewing a felled seam on the legs of pants or overalls the goods will be fed toward the standard E, which supports the top or head B. The oscillating shuttle *f*, which has great rapidity of movement, is in the carrier *e*, directly below the needle-plate *k*. The end of the feed-dog *m* is pivoted at *n* to a slide-box, *o*, which is seated on two bearings, *p*, whereon it reciprocates in a direction lengthwise of the arm C'. The feed slide-box *o* and the second rock-shaft, *h*, both extend lengthwise in the same direction, and

are connected by mechanism whereby the movement of said shaft *h* imparts the forward-and-back motion to the feed-bar. This connecting mechanism comprises a rod, *q*, attached
5 by one end to the slide-box *o* and by the other to a bell-crank lever, *r*, and a crank-arm, *s*, on the second rock-shaft, *h*, attached to the said bell-crank lever.

The mechanism for imparting the up-and-down motion to the feed-bar *m* comprises a
10 thin bowed spring, *t*, placed on top of the feed-bar and covered and confined in place by the ordinary slide-plate, *u*. This spring presses on the feed-bar and serves to keep it normally
15 down. A cam, *v*, on the oscillating shuttle-shaft *D* has position between the two bearings *p* and serves to give the up motion to the feed-bar.

It will be seen that I have constructed a machine having a bed-plate arm, *C'*, an oscillating shuttle, *f*, moving crosswise of the said
20 arm, and a feed device which moves the goods lengthwise of the arm.

Having described my invention, I claim and desire to secure by Letters Patent of the United States— 25

In a sewing-machine, the combination of a bed-plate arm, *C'*, a main shaft, *A*, in the head *B* of the machine, provided with a crank, *b*, and a cam, *c*, an oscillating shaft, *D*, moving
30 a shuttle, *f*, crosswise of the arm and having a feed-bar cam, *v*, a feed device which moves the goods lengthwise of the said arm, a rock-shaft, *b'*, connected with the said oscillating shuttle-shaft, a second rock-shaft, *h*, to impart
35 a forward-and-back motion to the feed device, a rod, *b'*, connecting the crank on the main shaft with the rock-shaft *b'*, and a lever, *c'*, connecting the cam on the main shaft with the second rock-shaft, *h*, for the purpose set forth. 40

In testimony whereof I affix my signature in the presence of two witnesses.

WM. OLIVER CRAIN.

Witnesses:

JOHN E. MORRIS,
JNO. T. MADDOX.