

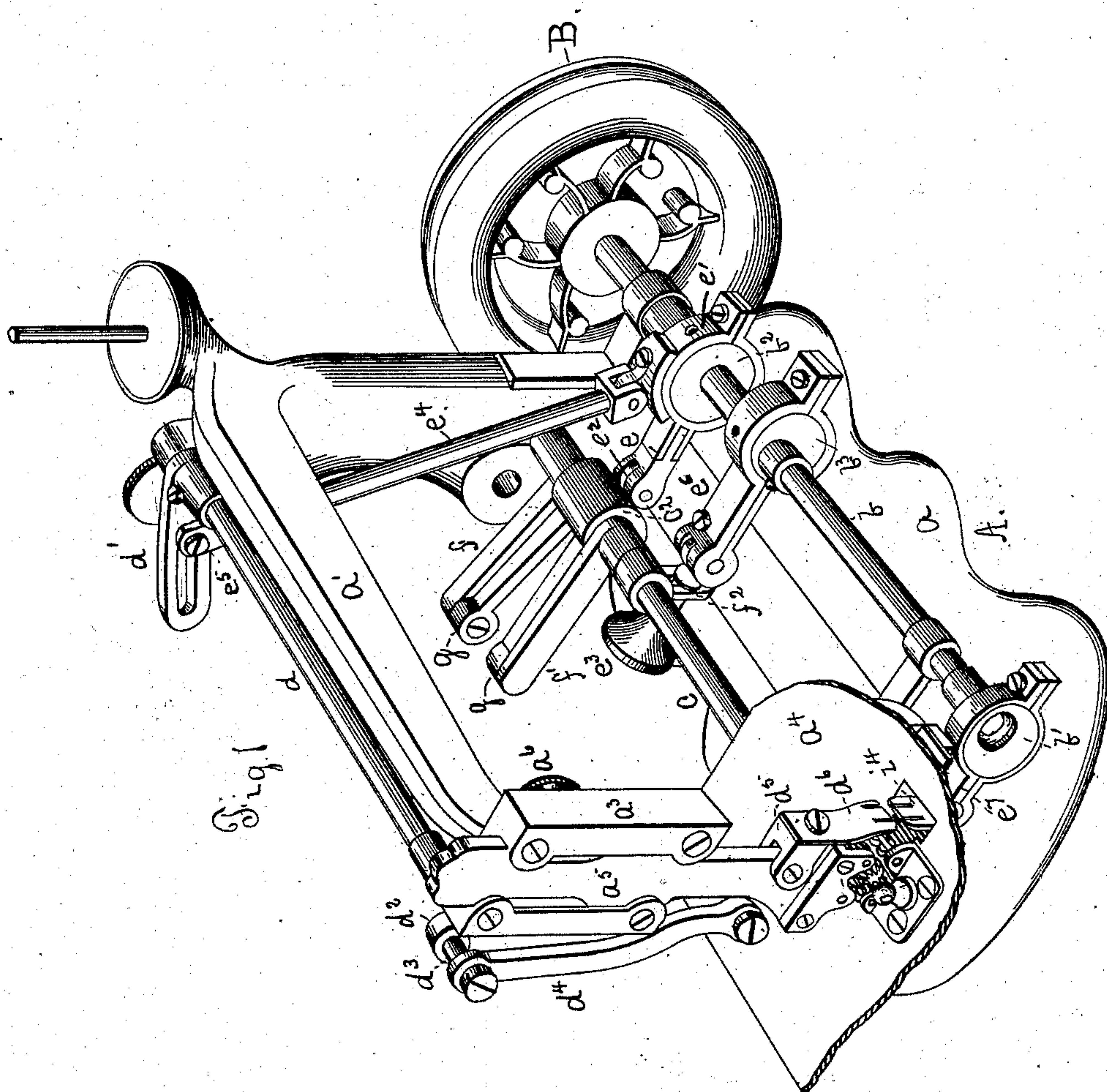
(Model.)

2 Sheets—Sheet 1.

J. HEBERLING.
RUNNING STITCH SEWING MACHINE.

No. 284,300.

Patented Sept. 4, 1883.



Attest
N. A. Clark
R. B. Jumper

Inventor,
John Heberling
By R. S. & A. P. Lacey
Attorneys

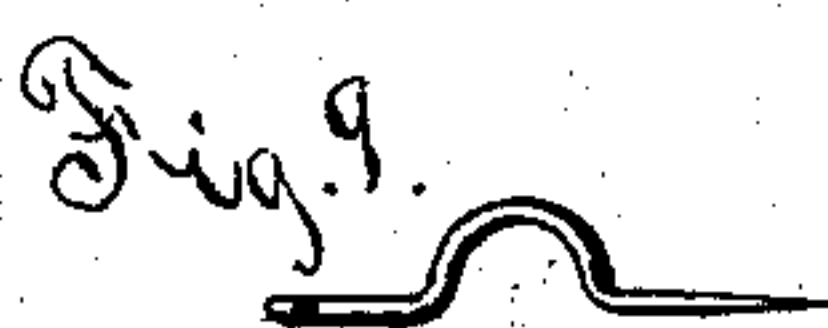
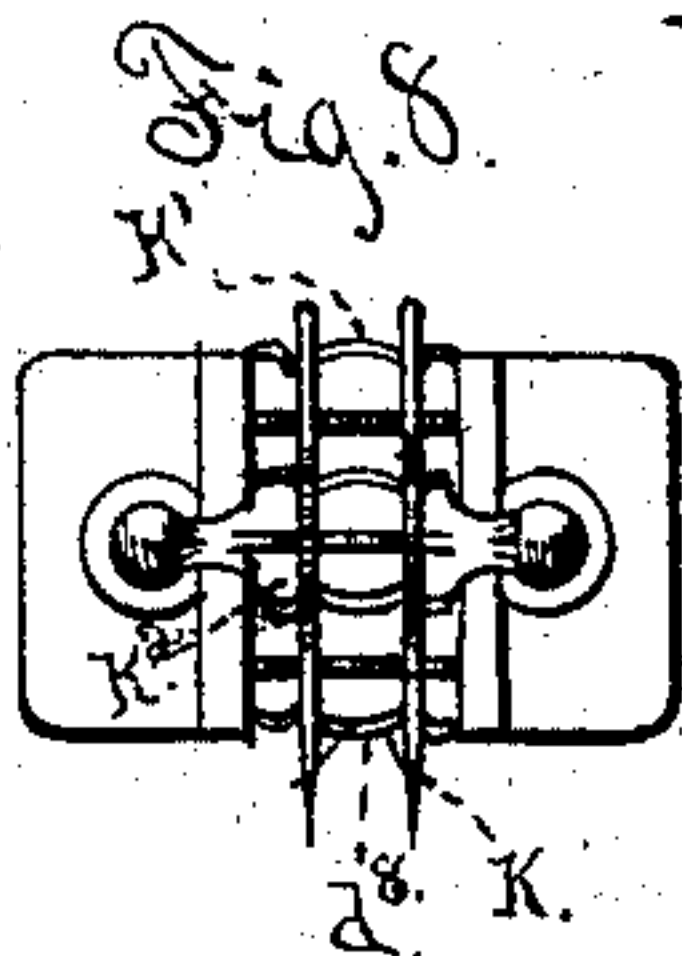
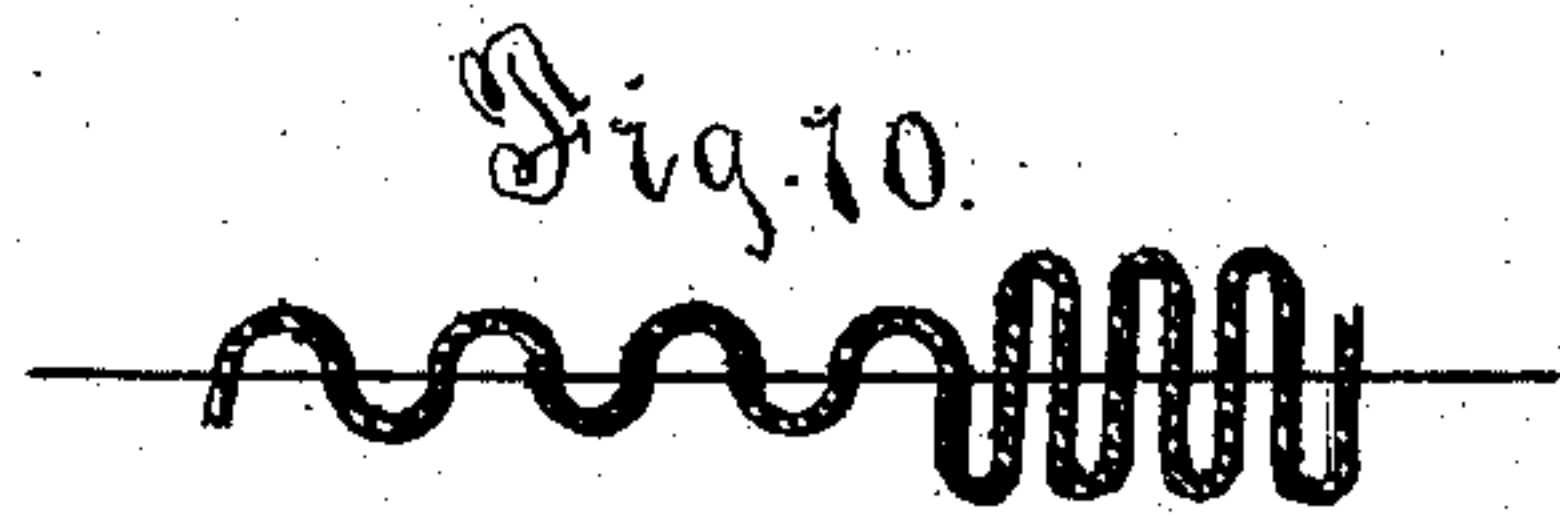
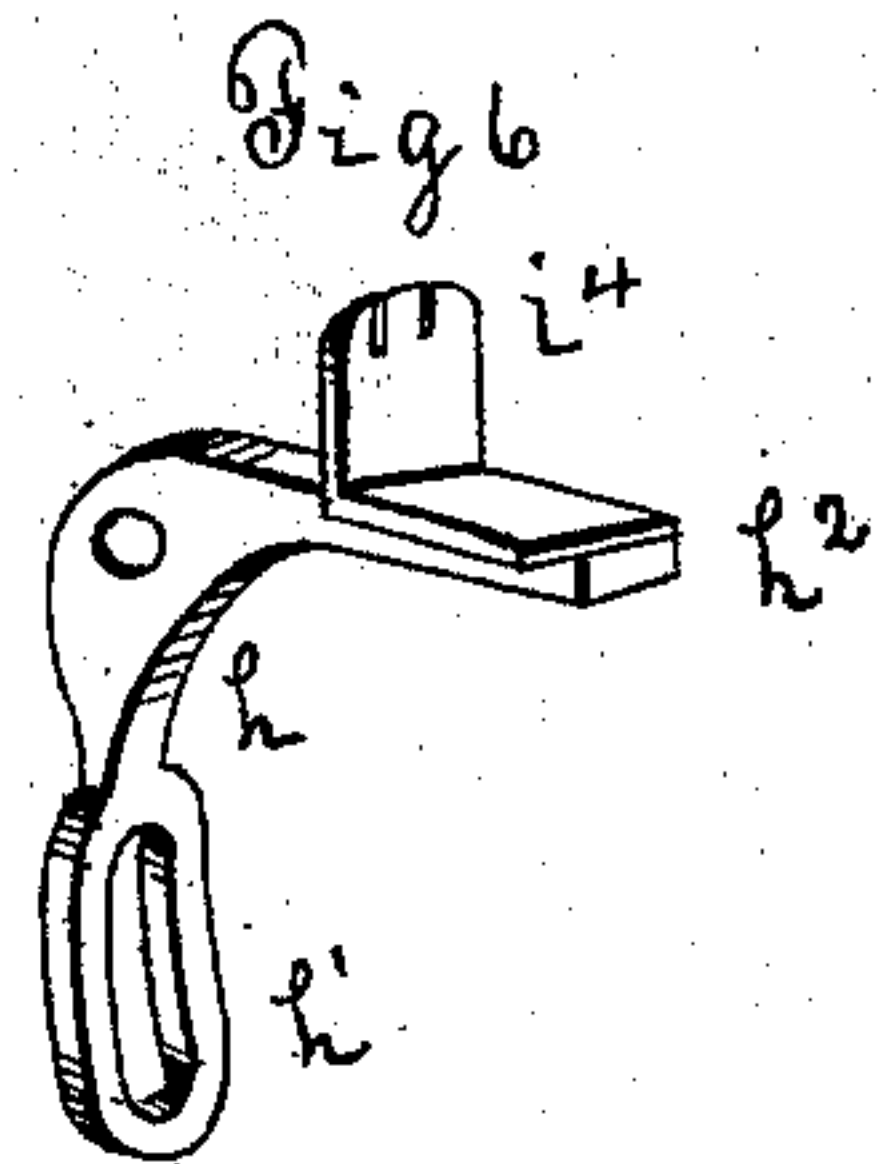
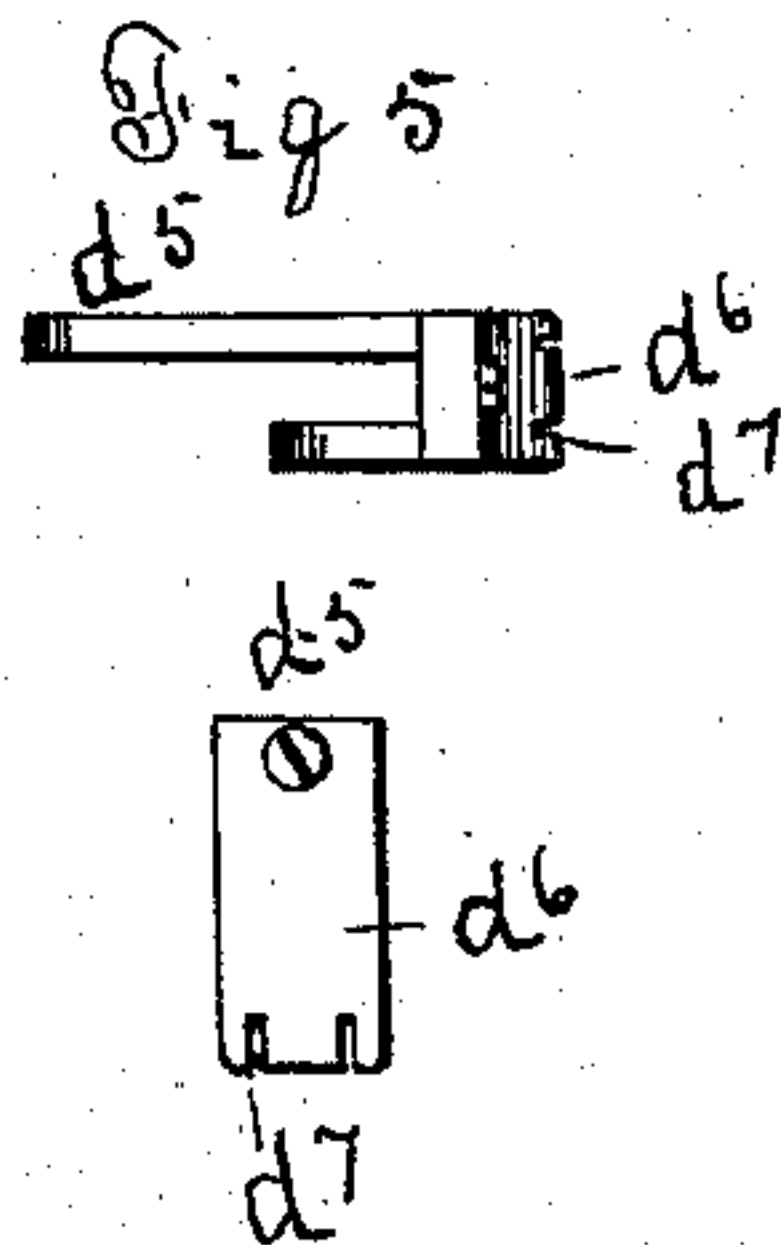
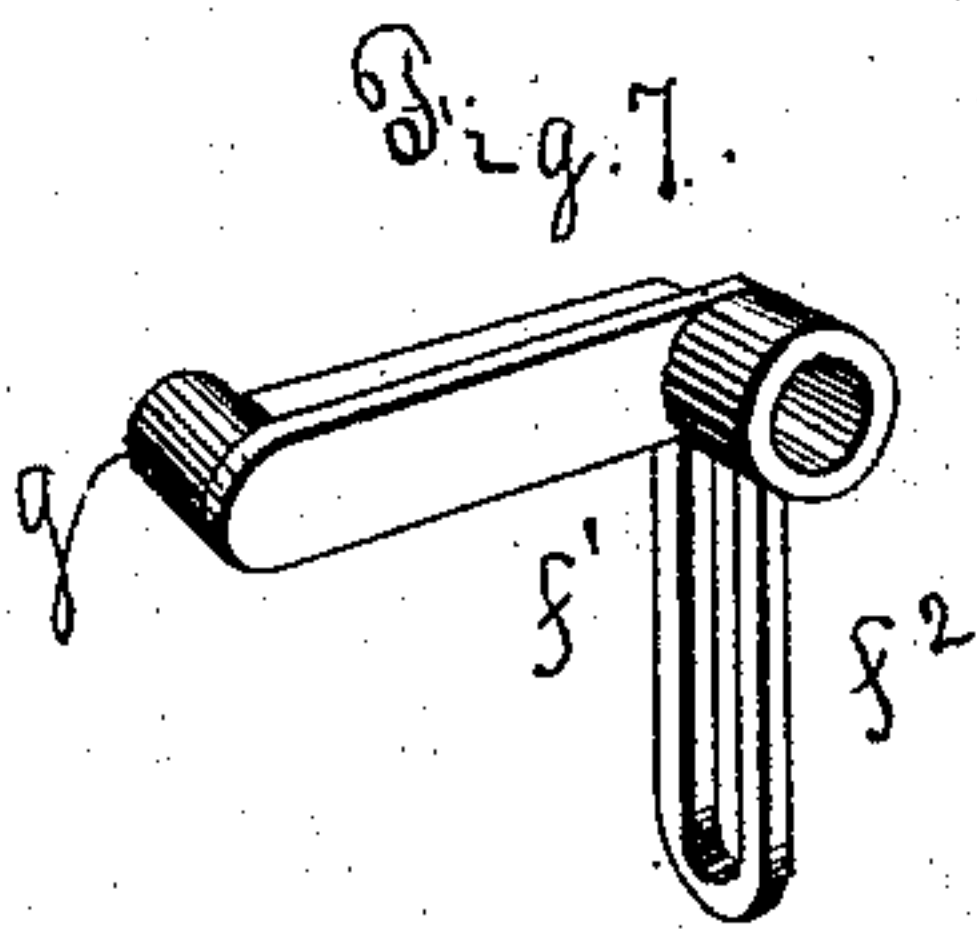
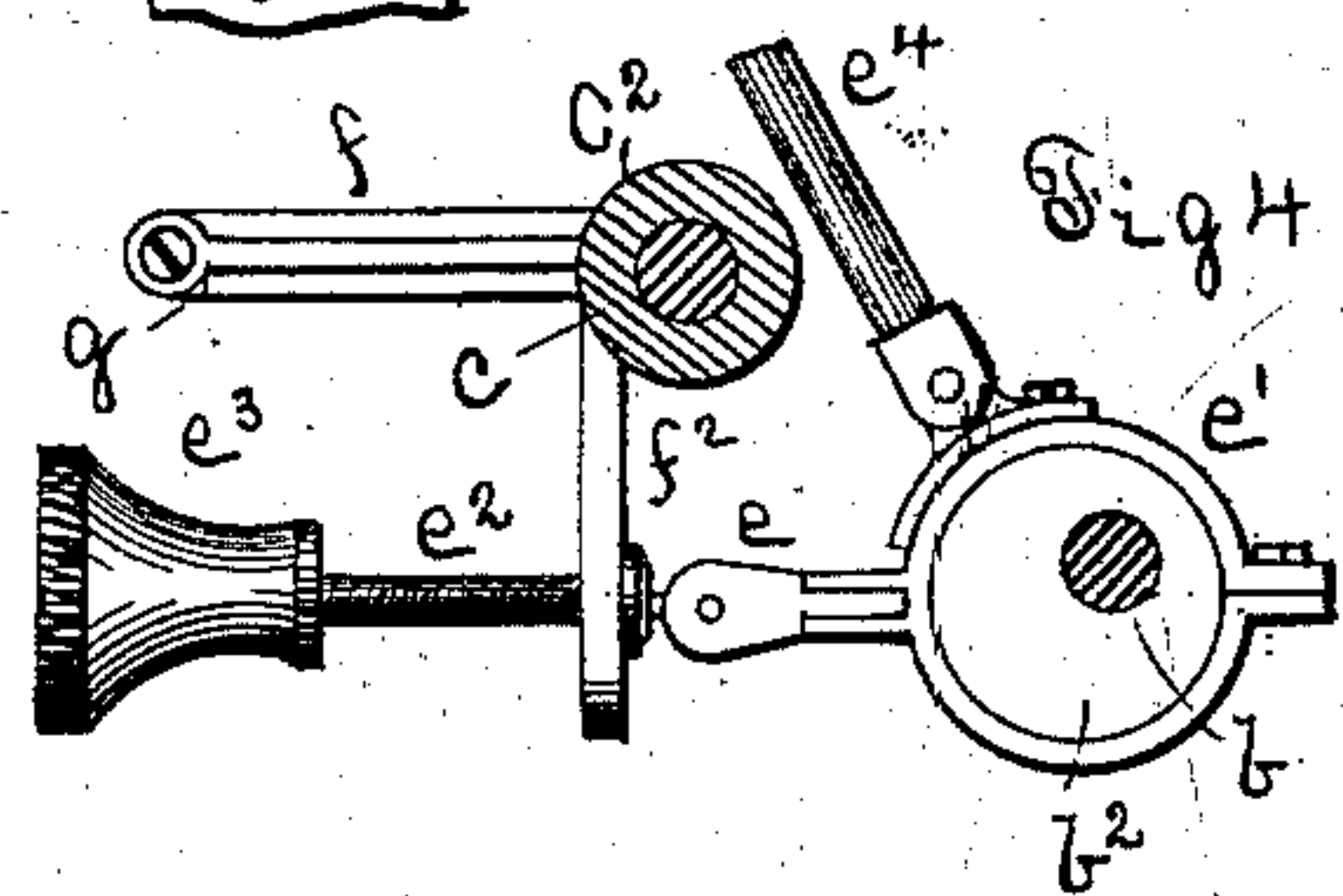
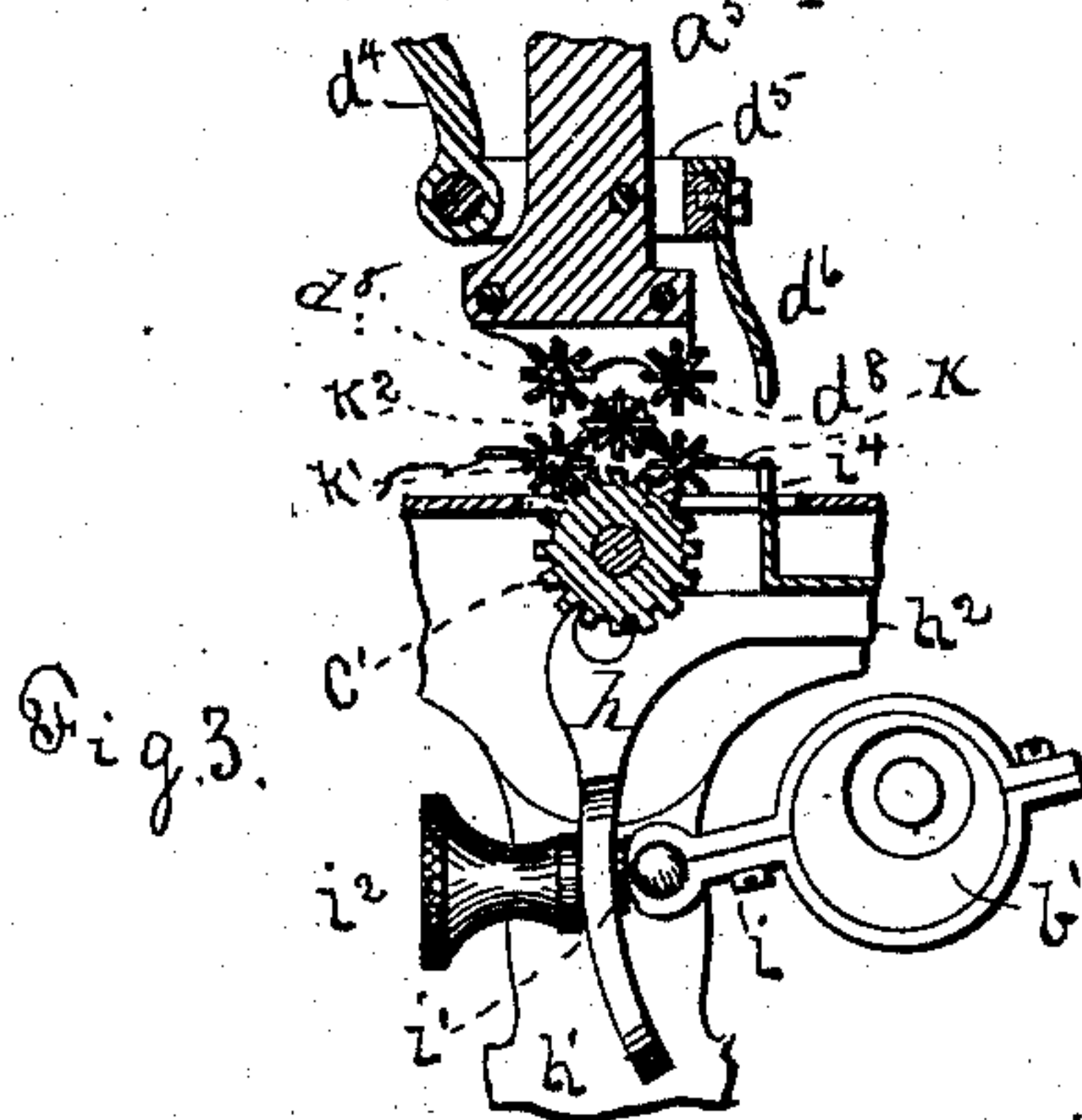
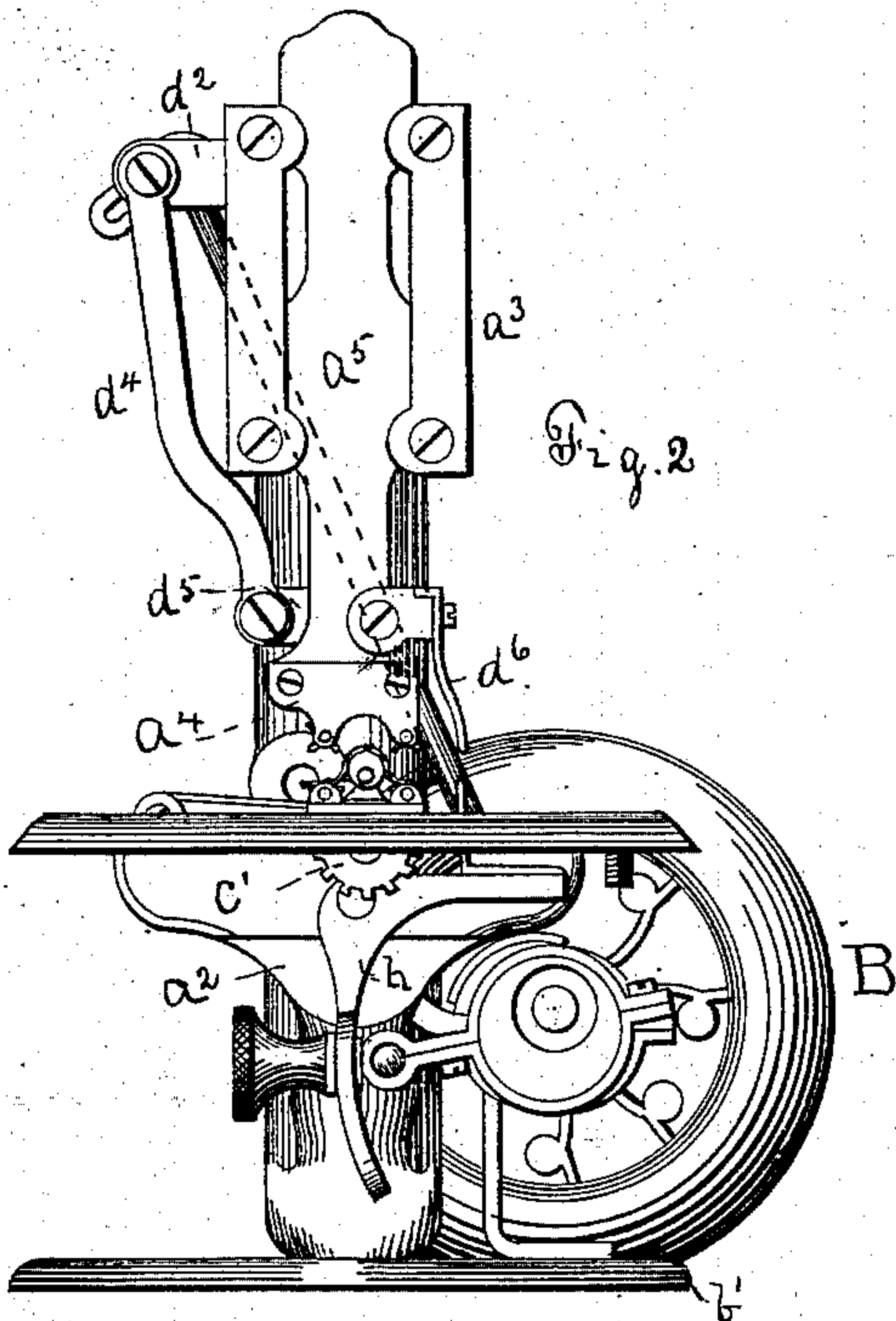
(Model.)

2 Sheets—Sheet 2.

J. HEBERLING.
RUNNING STITCH SEWING MACHINE.

No. 284,300.

Patented Sept. 4, 1883.



Attest.
N. A. blanks.
R. B. Triffin

Inventor,
John Heberling
By R. B. & A. Lacey
Attorney

UNITED STATES PATENT OFFICE.

JOHN HEBERLING, OF MOUNT PLEASANT, OHIO, ASSIGNOR TO THE HEBERLING RUNNING STITCH SEWING MACHINE COMPANY.

RUNNING-STITCH SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 284,300, dated September 4, 1883.

Application filed April 11, 1883. (Model.)

To all whom it may concern:

Be it known that I, JOHN HEBERLING, a citizen of the United States, residing at Mount Pleasant, in the county of Jefferson and State of Ohio, have invented certain new and useful Improvements in Running-Stitch Sewing-Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to that class of sewing-machines commonly called "running-stitch" or "shirring" machines.

The objects of my invention are, first, to furnish a device for making one or more rows of running-stitches at the same time by causing the goods to be alternately raised and lowered in short folds in front of and against the point or points of the needle or needles, whereby a succession of uniform running stitches will be formed in the goods as the latter is drawn through the machine by the feed-rollers; second, to provide a convenient way by which the stitches can be lengthened or shortened at pleasure and instantly without removing or interchanging or substituting any of the parts; and my invention consists, first, in reciprocating or oscillating stitch-formers having corrugated or recessed ends, and arranged opposite to the points of the needles; second, in the vertically reciprocating or oscillating stitch-formers, in combination with a curved needle or needles; third, in a slotted bell-crank lever and clamp-lever, in combination with a series of feed-rollers; fourth, in slotted bell-crank levers and adjustable crank-pins for regulating the stroke of the stitch-formers; fifth, in an adjustable pinion-bar, in combination with a hinged or pivoted stitch-former; sixth, in the combination of a gear meshing with grooved feed-pinions and needle-holders; seventh, in the combination and arrangement of other parts, hereinafter fully described, and pointed out in the claims.

In the drawings, Figure 1 is a perspective

of a machine constructed according to my invention. Fig. 2 is an elevation of the front end. Fig. 3 is a vertical section of the feed-rollers and the stitch-formers and lower end of the slide, made on a medial line drawn across the feed-rollers and parallel with the outer or front face of the said slide. Fig. 4 is a section cut through the enlargement of the supplemental axle. Fig. 5 shows the upper stitch-former. Fig. 6 shows the lower stitch-former, and Fig. 7 is a detail of one of the bell-crank levers and pawl for giving an intermittent movement to the supplemental shaft. Fig. 8 is a plan of the lower feed rollers or pinions, showing the circumferential channels or grooves and needles laid therein. Fig. 9 is a side elevation of one of the curved needles, and Fig. 10 shows an edge view of a piece of fabric as folded by the stitch-formers, and the longer folds thereof as they pass through between the feed-rollers. The straight line drawn through the middle of the folds indicates the line of the needles and of the thread drawn through by the needles.

A is the frame, composed of the base-plate a , the crane a' , and the short standard a^2 . The crane is provided with a head, a^3 , which is arranged over the cloth-plate a^4 , the latter being fixed upon the standard a^2 .

a^5 is the slide, adjustable vertically, and it is held in any desired position by the thumb-screw a^6 , inserted from the rear side of the head a^3 .

b is the main driving-shaft, journaled in bearings provided on the frame A. On one end of the main shaft I place the driving-wheel and on the opposite end I fix an eccentric, b' , and intermediately I place the eccentrics b^2 b^3 . The eccentric b' is below the cloth-plate and out of the way of the operator and of the goods which are being passed through the machine.

c is a supplemental shaft, journaled in the frame, and having its end below the cloth-plate arranged immediately below the feed-rollers, and provided with a gear-wheel, c' . It is also provided, near its opposite end, with an enlarged portion or drum, c^2 , which is arranged on a line drawn midway between the two ec-

centrics $b^2 b^3$. To the shaft c is given an intermitting rotating motion, for purposes hereinafter explained. The eccentrics $b^2 b^3$ are arranged on opposite sides to each other, as shown, so that they act reciprocally.

d is a rocking shaft, journaled in bearings on the crane a' . It has a slotted arm, d' , at its rear end, and has at its forward end the arm d^2 , arranged just in rear of the head a^3 . The arm d^2 is provided with pin d^3 , to which is attached the end of a pitman, d^4 , which extends downward near to the lower end of the slide a^5 , and operates the carrier d^5 , pivoted to and near the lower end of the said slide. The carrier d^5 has the upper reciprocating stitch-former, d^6 , fixed thereto. This stitch-former extends down in front of the points of the needles and is provided with short needle-slots d^7 . In the lower end of the slide a^5 there are mounted two toothed rollers or pinions, $d^8 d^9$, separated as shown, and so arranged that they will mesh with the feed-rollers mounted on the cloth-plate.

e is an arm, having on one end the ring e' , which is placed around the eccentric b^2 . To the other end of the arm e , I pivot a threaded shank, e^2 , which passes through a slot in a bell-crank lever, and it is provided with a thumb-nut, e^3 , (see Fig. 4,) so that the threaded shank may be set higher or lower, for purposes hereinafter explained.

To the ring e' , I secure the lower end of a pitman, e^4 , the upper end of which is adjustably connected to the slotted arm d' on the shaft d . By means of a set-screw, e^5 , the end of the pitman can be set at any desired place along the arm d' , and the length of stroke of the latter be regulated at will, and thereby the length of the stroke of the stitch-former d^6 will be also regulated.

There are attached to the eccentrics $b^3 b'$ arms $e^6 e^7$, to which are affixed pivoted shanks and thumb-nuts, so that they can be adjusted, for purposes hereinafter explained.

$f f'$ are two bell-crank levers, sleeved upon the shaft c and abutted against the opposite ends of the enlargement or drum c^2 , and they are held in position by any ordinary means. The lower or depending arms, f^2 , are slotted, and the pivoted shanks of the arms $e^6 e^7$ are held thereto by the thumb-nuts e^3 .

$g g$ are two friction-pawls, which have their outer ends pivoted to the upper arms of the bell-crank levers, while their inner ends bear on the drum c^2 . Each pawl is so arranged that it binds on and causes the drum to rotate as the upper arm of the crank is raised. When the arm falls, the grip of the pawl releases. The two pawls move reciprocally, and they give an intermitting movement to the shaft c through the action of the two eccentrics $b^2 b^3$.

h is a bell-crank lever, pivoted to the standard a^2 immediately below the cloth-plate and slide a^5 . It has its lower arm, h' , slotted, and connected to the eccentric b' by an arm, i , adjustable pivoted shank i' , and thumb-nut i^2 . On the upper horizontal arm, h^2 , I fix the lower

stitch-former, i^4 , which is arranged in front of the points of the needle and immediately below the upper stitch-former. The two stitch-formers operate reciprocally, so that each will alternately engage the cloth and press it onto the points of the needles. The upper former presses the cloth below the plane of the point of the needle, and the lower former presses the said cloth above said plane. Thus the cloth is alternately doubled in short folds in front of and pressed onto the needles, where it is caught by the feed-rollers and carried along the needles and through the machine.

k, k' , and k^2 are three pinions or feed-rollers, mounted in suitable bearings on this cloth-plate. They are so arranged as to lie above or nearly above the plane of the upper surface of the cloth-plate, so as to give them a better action when they engage the cloth. The middle pinion, k^2 , is raised about half its diameter above the pinions $k k'$. This construction and arrangement permits the curve of the needle to lie over the middle pinion, while its point rests on the front pinion, k , and the eye rests on the pinion k' .

The pinions or feed-rollers $k k'$ are arranged a little distance apart, and so that they mesh with the gear c' on the shaft c . The grooved pinion or roller k^2 is journaled on a medial line between and slightly above the pinions $k k'$; but it does not mesh with the latter. The needle, curved, lies over the roller k^2 , with its point end resting in the groove in the roller k , and its eye or heel end resting in the channel in the roller k' . The pinions d^8 are grooved correspondingly to the lower pinions, and when the slide a^5 is let down the grooves hold the needle or needles securely in place. The upper pinions, d^9 , mesh with the pinions $k k'$ and with the elevated pinion k^2 , so that the motion imparted by the wheel c' is communicated to all the rollers by positive action, by which a perfect, continuous, and regular feed is guaranteed.

All the pinions are provided with circumferential grooves in which the needles lie. I do not limit myself to the use of any particular number of needles. I make machines adapted to receive one, two, three, or more needles. The needles are removable, and one or more, as may be desired, can be used in the same machine.

By the arrangement of the feed-rollers or pinions, as hereinbefore described, I have placed them in close, compact form, and have so geared them with the driving mechanism that a perfect feed is secured.

The function of the fluted or cogged pinions is twofold: First, the upper and lower series, when brought together, hold the needles in position; secondly, they take the goods from the stitch-former and feed it over the needles in a succession of running stitches.

By means of the adjustability of the pitman e^4 along the arm d' , and by the adjustability of the arm i up and down in the slot in the arm h' of the bell-crank h , the length of the stitches

can be regulated at pleasure. By these means the reciprocating stitch-former can be so adjusted that one of them will make a long and the other a short stitch.

5 The feed of the machine is regulated by the adjustment of the arms $e^6 e^7$ in the bell-crank lever $f f'$. The adjustment of the arms $e^6 e^7$ may be such that the one will give a short stroke to the bell-crank to which it is attached
10 and the other will give a long stroke, thereby regulating the feed to alternate long or short stitches. I am thus enabled by these several adjustments to make long stitches above or below the cloth and alternating short stitches.
15 It will be seen that the stitch-formers are provided with slots in their adjacent ends. In the operation of the machines the formers are passed inward past the ends of the needles, the latter entering the slots d^7 . This is the preferable manner of construction and use; but I
20 am enabled by other constructions to dispense with the slots d^7 and at the same time press the goods onto the needles.

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

1. In a sewing-machine, the combination, with the needles, of the reciprocating stitch-formers, placed in front of the points of the
30 needles, and means for producing their alternating movements, substantially as and for the purpose set forth.

2. In a sewing-machine, the combination of the reciprocating stitch-formers, arranged in
35 front of the points of the needles, and provided with slots in their ends to receive the points of the needles, as set forth.

3. The combination, with the feed-rollers and the reciprocating stitch-former i^4 , of a bell-
40 crank lever, h , having the stitch-former fixed thereto, the arm i , the eccentric, and shaft b , substantially as and for the purpose set forth.

4. The combination, with the stitch-former i^4 , of the bell-crank lever h , having the stitch-
45 former fixed to its upper arm, and having a vertical slot in its depending arm, the eccentric arm i , means for adjusting the end of arm i in the slot in the bell-crank, and eccentric b' on shaft b , as and for the purpose set forth.

5. The combination, with the feed-rollers and the adjustable bar or slide a^5 , of the stitch-
50 former d^6 , supported upon a carrier, d^5 , pivoted to and adjustable with the slide a^5 , and means for connecting the carrier to the operating mechanism, as set forth.

6. The combination of the feed-rollers $k k'$, of the roller k^2 , arranged between and above the plane of the axes of the rollers $k k'$, the

upper feed-rollers, $d^8 d^8$, suitably supported and meshed with the lower rollers, $k k' k^2$, 60 the needle or needles, and the necessary operating mechanism, whereby the rollers $k k'$ are revolved and the goods are pressed on the needles, substantially as and for the purposes set forth.

7. The combination, with the gear c' , mounted on the shaft c , of the feed-rollers $k k'$, meshing with the gear c' , the roller k^2 , arranged between and above the plane of the
70 axes of the rollers $k k'$, and provided with circumferential channels or grooves, and the upper feed-rollers, d^8 , suitably supported, and also provided with circumferential channels or grooves, all arranged and operating substantially as and for the purposes set forth. 75

8. The combination, with the shaft b , provided with eccentrics $b^2 b^3$, and the shaft c , of the bell-crank levers $f f'$, sleeved upon the shaft c , pawls g , pivoted on the levers $f f'$, and engaging with the shaft c , and arms for
80 connecting the levers $f f'$ with the eccentrics on the shaft b , as set forth.

9. The combination, with the shaft b , provided with an eccentric, b^2 , the stitch-former d^6 , and carrier d^5 , pivoted on the bar a^5 , of the
85 pitman e^4 , rock-shaft d , and connecting-bar d^4 , substantially as set forth.

10. The combination, with the main shaft b , provided with eccentrics $b' b^2 b^3$, the shaft c , having gear c' , the feed-rollers, and the stitch-
90 former i^4 , of the connecting-arms, the bell-crank levers, and the pawls, substantially as and for the purposes set forth.

11. The combination, with the shaft c , of the reciprocating bell-crank levers $f f'$, sleeved
95 loosely on the shaft, the pawls $g g$, having one of their ends pivoted on the outer ends of one of the arms of the bell-cranks and their other ends bearing on the periphery of the said shaft c , and means for imparting a reciprocating
100 movement to the said bell-crank levers, substantially as set forth.

12. The combination, with the shaft c , bell-crank levers $f f'$, sleeved loosely on and provided with pawls to engage the shaft c , and the
105 main shaft b , of the reciprocating arms $e e^6$, connected adjustably to the lower arms of the bell-cranks, and means for imparting a reciprocating motion to the arms $e e^6$, substantially as and for the purposes set forth. 110

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

JOHN HEBERLING.

Witnesses:

GEO. A. CHAMBERS,
R. W. CHAMBERS.