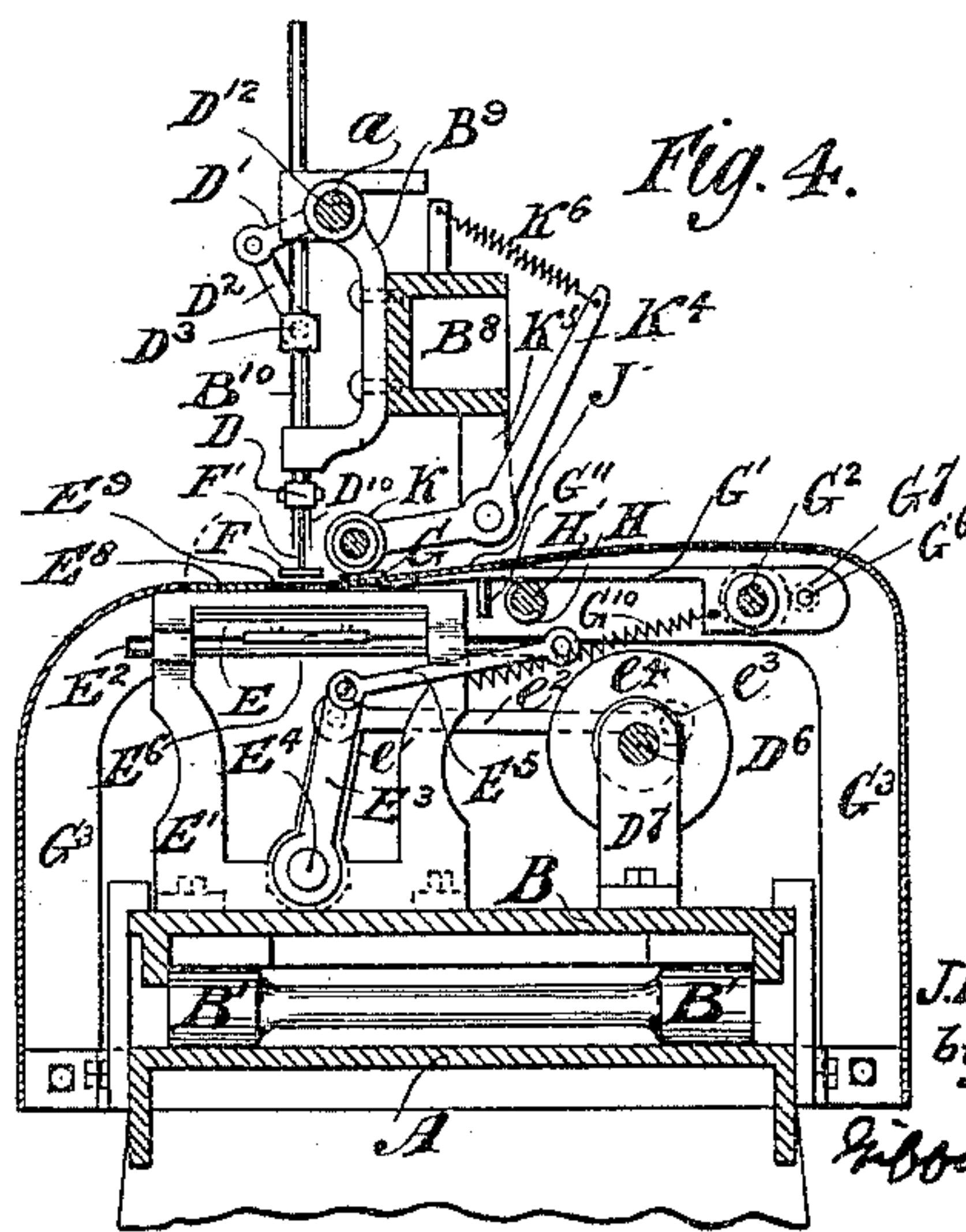
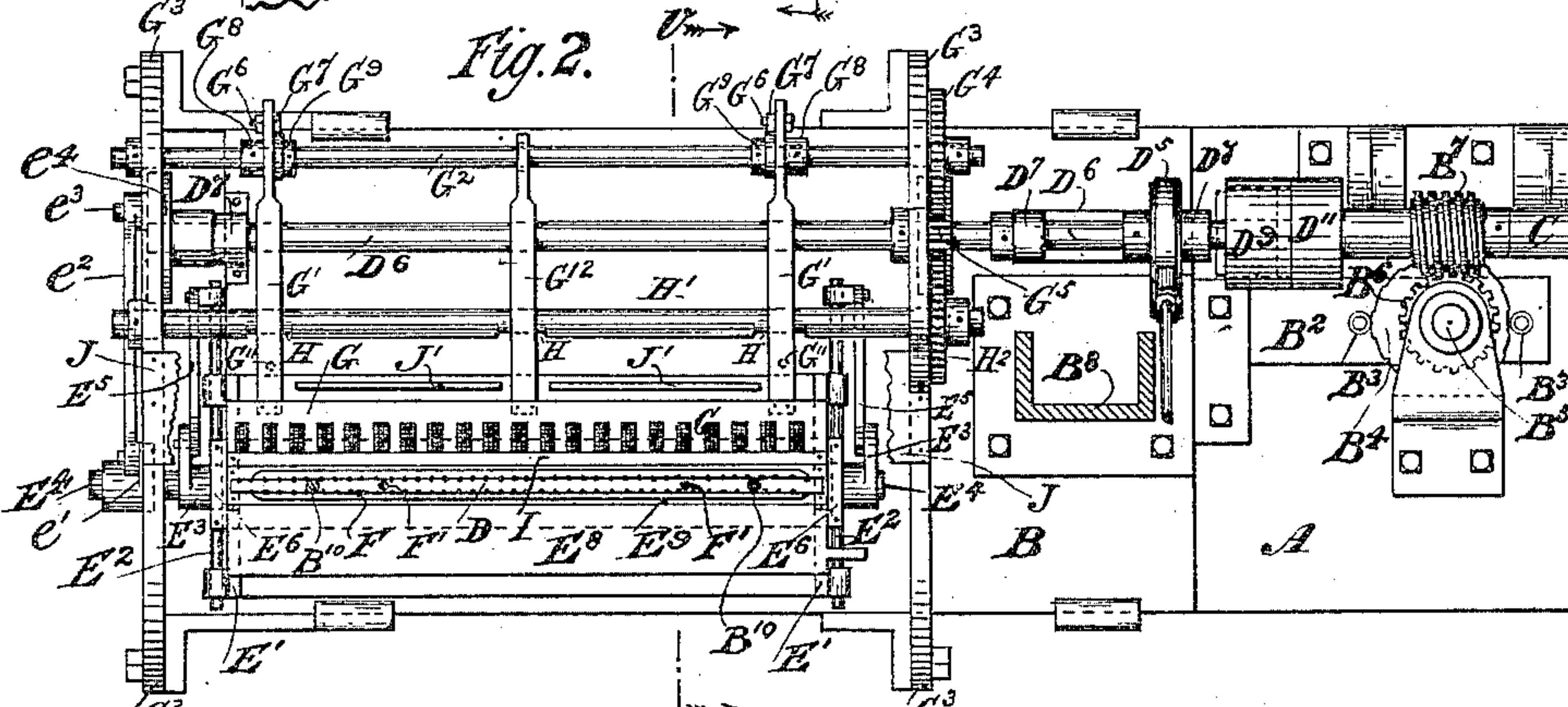


2 Sheets—Sheet 1.

QUILTING MACHINE.

Patented May 19, 1885.



Inventor
J.B. Hagenbuehle
by his atty.
Wood & Brown

(No Model.)

2 Sheets—Sheet 2.

J. B. HAGENBUCHLE.

QUILTING MACHINE.

No. 317,996.

Patented May 19, 1885.

Fig. 5.

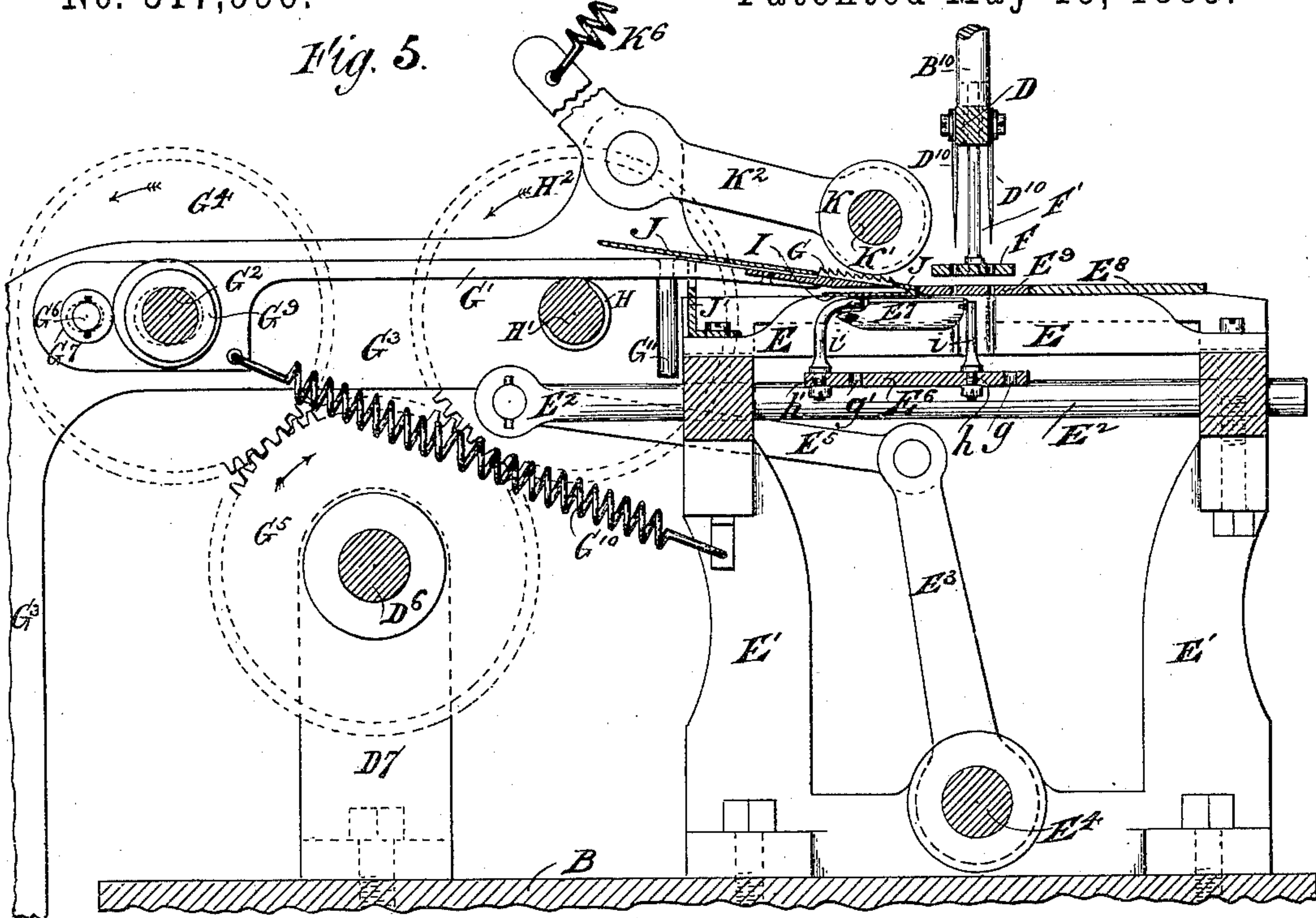


Fig. 6.

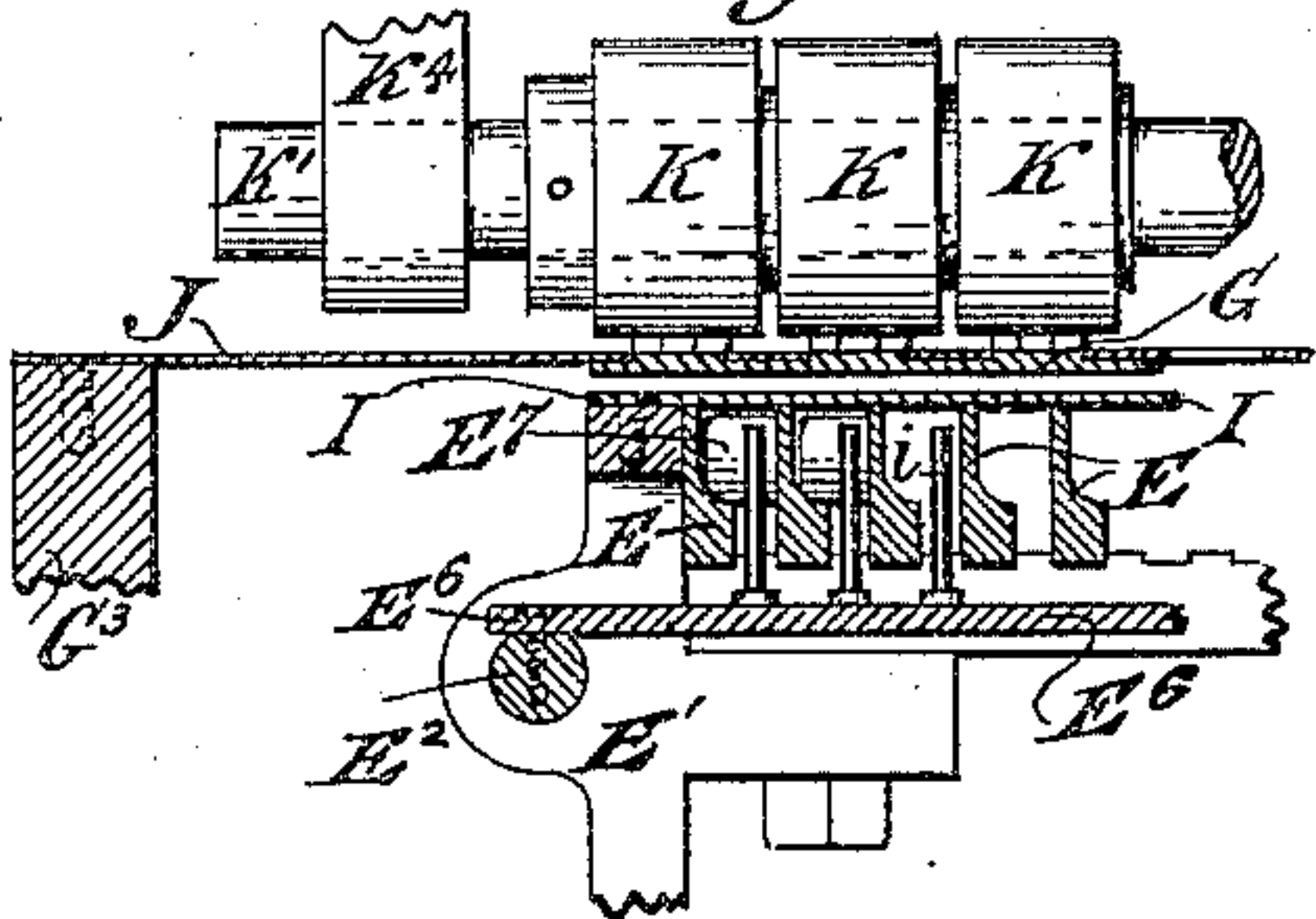


Fig. 10.

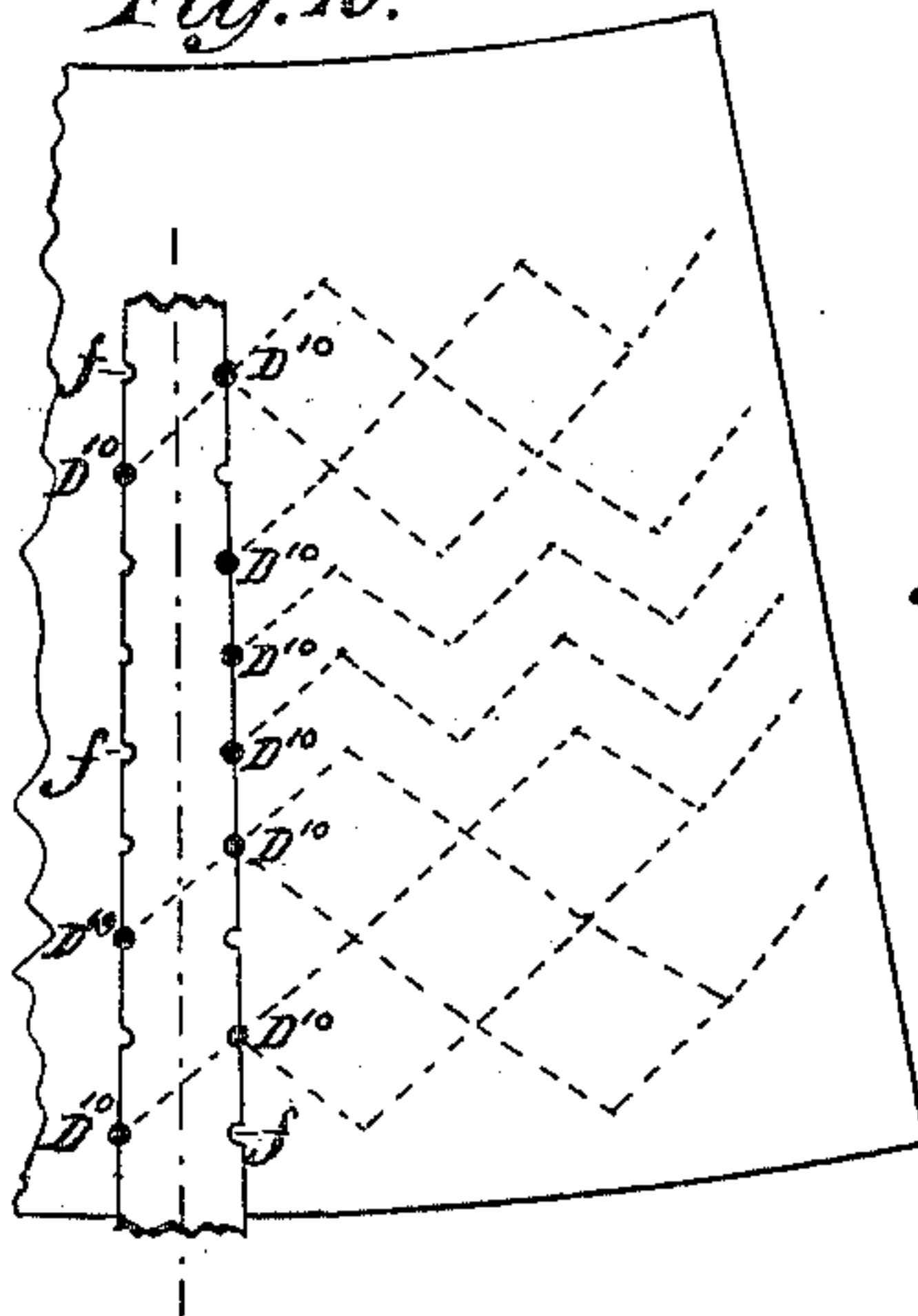


Fig. 11.

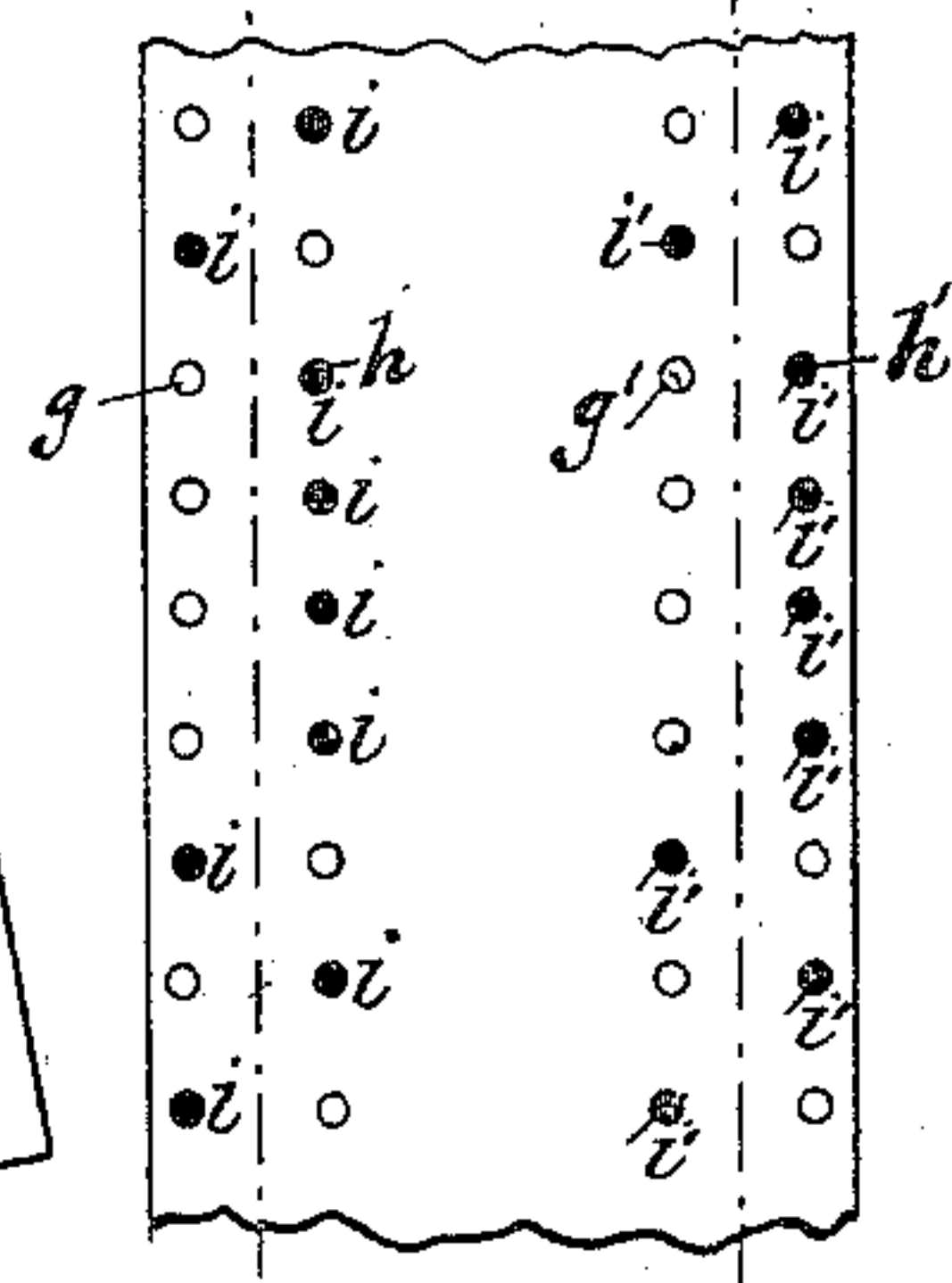


Fig. 7.

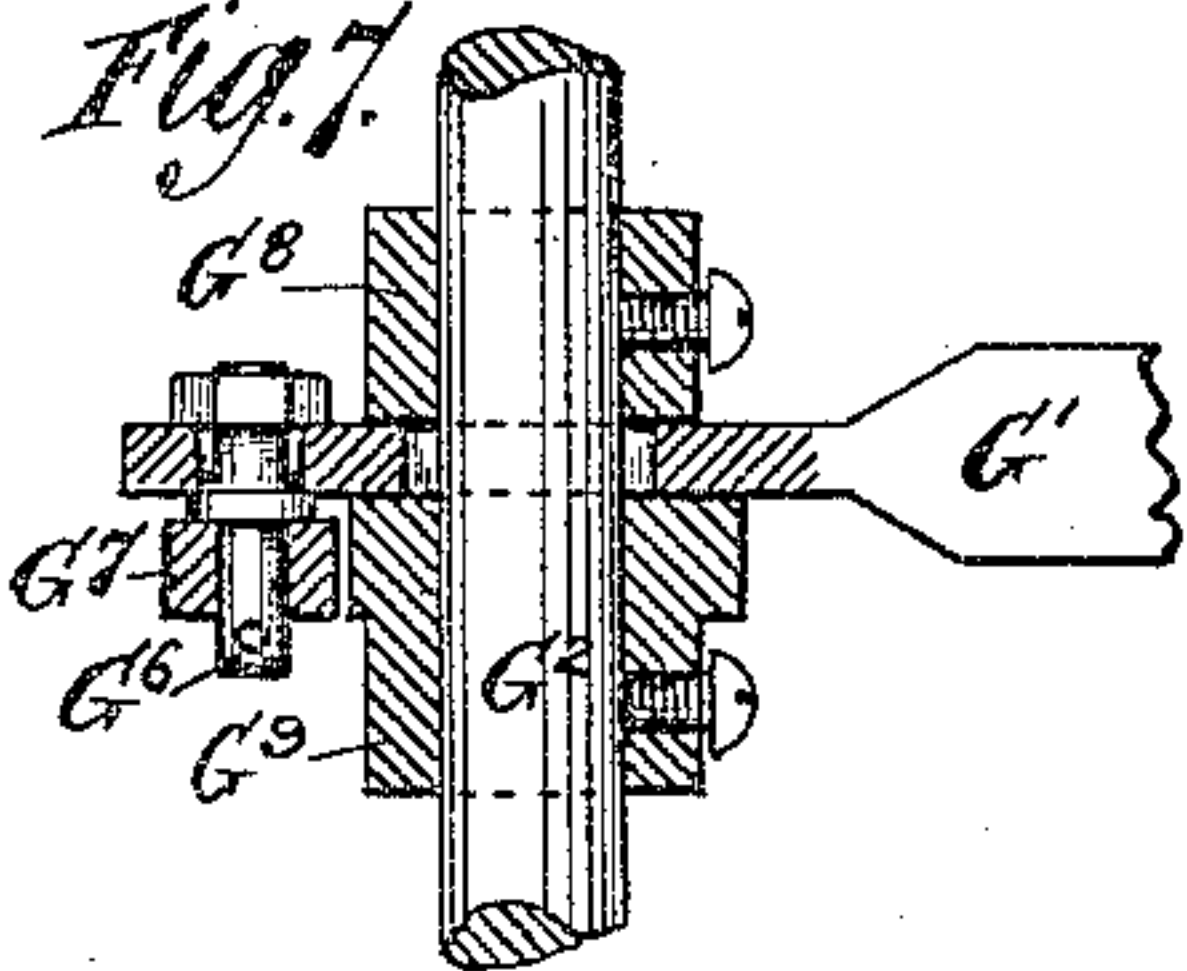


Fig. 8.

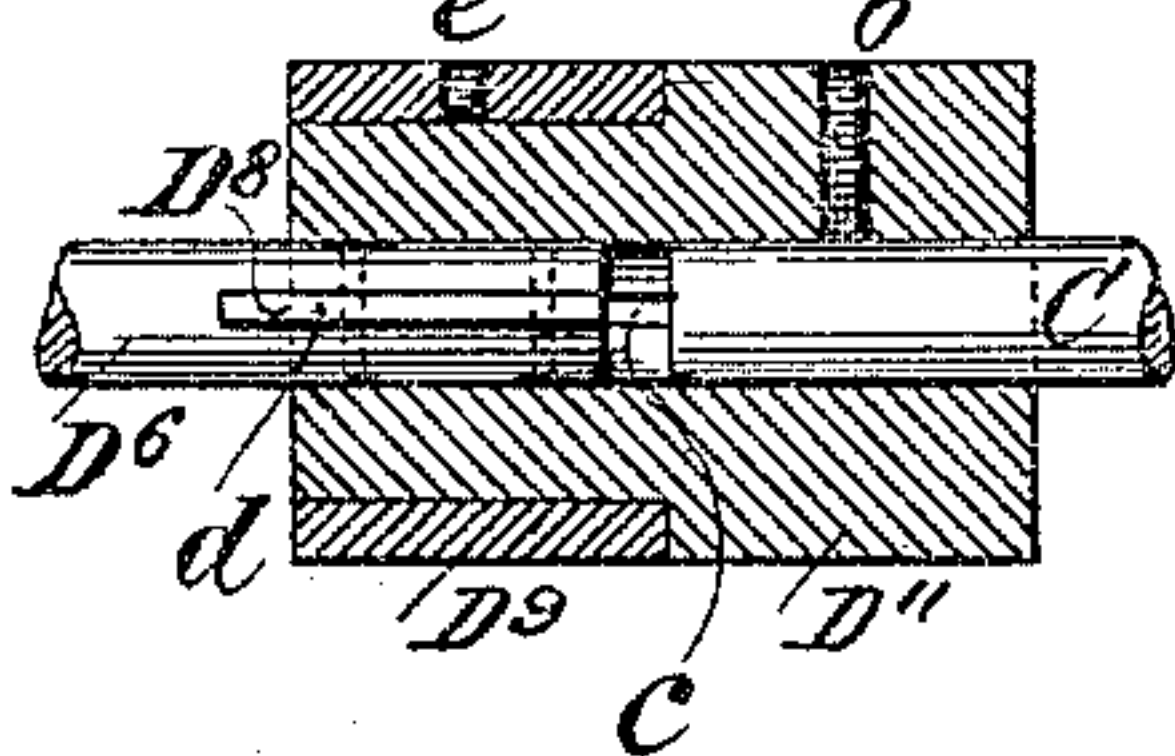
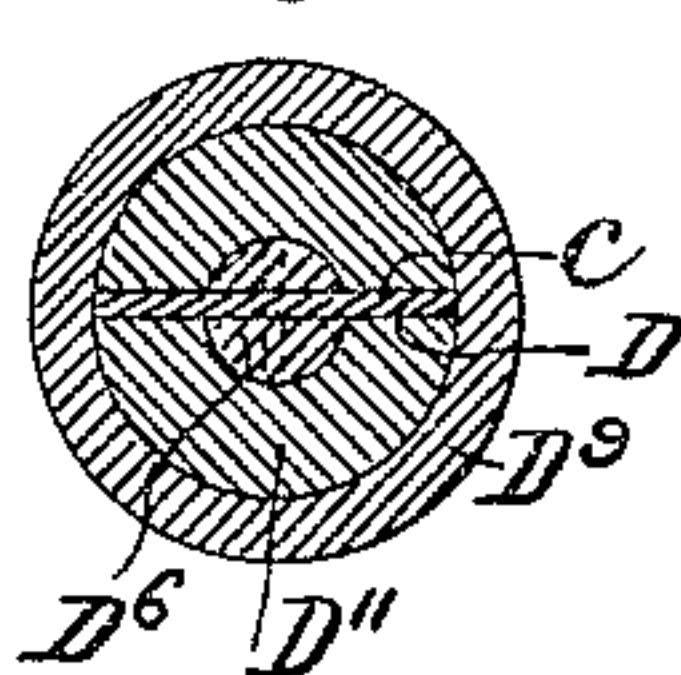


Fig. 9.



Witnesses
William G. Lipsey
Geo. Wadman

Inventor
John B. Hagenbuchle,
by his attorneys,
Libbards & Brown.

UNITED STATES PATENT OFFICE.

JOHN B. HAGENBÜCHLE, OF NEW YORK, N. Y.

QUILTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 317,996, dated May 19, 1885.

Application filed June 24, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOHN B. HAGENBÜCHLE, of New York, in the county of New York and State of New York, have invented a certain new and useful Improvement in Quilting-Machines, of which the following is a specification.

I will describe a quilting-machine embodying my improvement, and then point out its various improvements in claims.

In the accompanying drawings, Figure 1 is a front view of a quilting-machine embodying my improvement. Fig. 2 is a horizontal section thereof, taken on the plane of the dotted line *x x*, Fig. 1. Fig. 3 is a transverse section thereof, taken on the plane of the dotted line *y y*, Fig. 1, looking in the direction indicated by the arrows at the ends of said line. Fig. 4 is a transverse section of the same, taken at the plane of the dotted line *z z*, Fig. 1, looking in the direction indicated by the arrows at the ends of said line. Fig. 5 is a transverse section of the same on a larger scale, taken on the plane of the dotted line *v v*, Fig. 2, and looking in the direction indicated by the arrows at the ends of said line. Fig. 6 is a sectional front view of certain parts. Fig. 7 is a horizontal section of certain parts. Fig. 8 is a longitudinal section of certain parts. Fig. 9 is a transverse section of the parts represented in Fig. 8. Fig. 10 is a top view of the needle-bar and part of a skirt, and Fig. 11 is a top view of the shuttle-plate.

Similar letters of reference designate corresponding parts in all the figures.

A designates the main frame of the machine, consisting, essentially, of a base-piece erected on suitable legs. This main frame, as here shown, is stationary.

B designates a carriage consisting, essentially, of a plate traveling on rollers B', interposed between it and the main frame of the machine. This carriage has the needle-bar arranged on it, and is provided with a tail-piece, B². From the tail-piece B² extend studs provided with rollers B³, which impinge against the periphery of a cam, B⁴, having a series of facets or steps that are concentric, but at different distances from the center. This cam is affixed to an upright shaft, B⁵. On this shaft B⁵ is also arranged a worm gear-wheel, B⁶. Motion is transmitted to this

worm gear-wheel, and hence to the shaft B⁵, by means of a worm, B⁷, on a shaft, C, which forms the driving-shaft of the machine. The driving-shaft C is shown as provided with fast and loose pulleys C' C² and a fly-wheel or hand-wheel, C³. It rotates continuously while the machine is in use. In this example of my improvement the cam B⁴ is intended to have eighteen facets or steps, and the worm gear-wheel B⁶ is to have a like number of teeth. The worm gear-wheel is to have a movement equal to the distance from center to center of adjacent teeth, and the cam is to move a distance equal to the length of one facet or step for each rotation of the worm B⁷. It will be understood that the cam B⁴ imparts an intermittent motion to the carriage B. An arm B⁸ extends upward from the carriage B and horizontally over the same. It has affixed to its horizontal portion brackets B⁹. In these brackets rods B¹⁰ are fitted to slide in a direction transverse to the arm B⁸, and, in this example of the invention, vertically.

D designates the needle-bar. It is fastened to the lower ends of the rods B¹⁰ and moves with them. Motion is imparted to the needle-bar by means of cranks D' on a rock-shaft, D¹², which is journaled in bearings *a* on the brackets B⁹, and also in bearings *a'* on brackets B¹¹, affixed to the arm B⁸. The cranks D' are connected by links D² to collars D³ fastened by set-screws to the rods B¹⁰.

On one end of the rock-shaft D¹² is a crank, D⁴, to which is connected a rod, D⁵, which is also connected to an eccentric, D⁵, arranged on a shaft, D⁶. This shaft D⁶ is journaled in brackets D⁷ erected upon the carriage B. This shaft therefore moves with the carriage besides having a rotary movement. Its rotary motion is derived from the driving-shaft C. The driving-shaft C has affixed to the end which is adjacent to the shaft D⁶ a ring or socket, D¹¹. This ring or socket, as here shown, is fastened to the shaft C by means of a set-screw, *b*. This ring or socket extends beyond the shaft C and receives within it the end of the shaft D⁶. The end of the ring or socket which projects beyond the shaft C has a transverse notch, *c*, and the end of the shaft D⁶ which enters such ring or socket has a similar transverse notch, *d*. Into these notches *c d* a plate, D⁸, extends, thereby locking the shafts C and D⁶ together,

so that the former will impart motion to the latter, but yet so that a lengthwise motion of the one relatively to the other will be possible. The plate D^8 is shown as secured by rivets to the shaft D^6 . The end of the ring or socket D^{11} , which projects beyond the shaft C , has applied to it a surrounding-band, D^9 . A screw, e , passes through this band and impinges against the ring or socket D^{11} . By forcing the screw e farther into the band D^9 , the portions of the ring or socket D^{11} which are on opposite sides of the notch c may be pressed nearer together to compensate for wear.

Having now explained the motions of the needle-bar and the manner in which such motions are imparted to it, it behooves me to describe the shape of the needle-bar and the manner in which the needles are arranged upon it.

D^{10} designates the needles. They are shown as arranged in notches f in the longitudinal edges of the needle-bar. They may be secured there by screws or otherwise. If zigzag lines of sewing are to be produced, but one row of needles will be used. All which are then used will be arranged in the notches f of one edge of the needle-bar. When, however, zigzag lines of stitching are to be sewed, so as to meet and form diamond-shaped figures and other analogous figures, the needles will be arranged in two rows—one row along each longitudinal edge of the needle-bar.

With the organization of the machine which I have shown the needles when used in two rows will be so disposed that the needles of each row shall be opposite the spaces between the needles of the other row.

The machine is intended for quilting circular or curved fabrics and articles, such, for instance, as ladies' skirts.

The feed mechanism of the machine is such that the longer edge of the curved articles—for instance, the lower edge of a lady's skirt—will be caused to move through the machine more rapidly than the shorter edge. I shall presently describe this feed mechanism in detail.

As the machine is to be used for sewing circular fabrics and articles, the edges of the needle-bar are made flaring and occupy approximately the position of radii of the circles of the fabrics and articles. Throughout part of the length of the bar I may use two rows of needles; and throughout the remainder of the length of the bar I may use needles in a single row. In this way I can produce a variety of patterns.

I will now describe the shuttle-operating mechanism.

E designates a number of shuttle-races supported on bars fastened to brackets E' erected upon the carriage B . In the upper part of the brackets E' rods E^2 are arranged so that they can slide forward and backward. They derive motion from cranks or arms E^3 , extending from a rock-shaft, E^4 . Links E^5 are pivotally connected at one end to the arms E^3 and at the other end to the rods E^2 . A plate, E^6 ,

is fastened to the rods E^2 and extends between them. In the plate E^6 are two pairs of rows of holes, $g g'$ and $h h'$. Pins $i i'$ are arranged in these holes. They may be arranged in the holes $g g'$ or in the holes $h h'$. They extend up to the ends of the shuttles E^7 , and when the plate E^6 is reciprocated backward and forward they cause the shuttles to move similarly through the races E . When needles D^{10} are arranged on the front edge of the needle-bar, the pins $i i'$ for actuating the corresponding shuttle are placed in the holes $g g'$; but when needles are arranged on the rear edge of the needle-bar the pins for actuating the corresponding shuttle are placed in the holes $h h'$. I provide for shifting these pins $i i'$ at pleasure to correspond to the positions which the needles may from time to time have. The holes $g h$ occupy the same relation to each other as the notches in the edges of the needle-bar bear to each other. The relation of the holes h' to the holes g' is similar. The rock-shaft E^4 is provided with an arm, e' , which is connected by a rod, e^2 , with a crank-pin, e^3 , extending from a disk, e^4 , affixed to the shaft D^6 . By these means the shaft D^6 imparts motion to the shaft E^4 . Over the shuttle-races E is arranged a plate, E^8 . It is hinged at one end, and may be raised to facilitate access to the shuttles. A stitch-plate, E^9 , having holes corresponding in position to the notches in the edges of the needle-bar, is arranged between the needles and the shuttles. It may be secured to the brackets E' . The needles work through the holes of this plate as usual.

F designates a presser-bar having holes for the reception of the needles located similarly to the notches in the edges of the needle-bar. This presser-bar is attached to two rods, F' , which slide up and down in the brackets B^{11} , which are affixed to the arm B^8 . Cams F^2 on the shaft D^{12} act against rollers mounted on pins f' , extending from the rods F' , so as to raise the rods, and with them the presser-bar, at the proper time. When the cams F^2 release the rods F' , springs F^3 lower them and the presser-bar. These springs are coiled around the rods F' , between pins extending from the rods and the upper parts of the brackets B^{11} .

I will now describe the mechanism for feeding the fabric or article to be quilted.

G designates a feed-bar having a number of rows of ratchet-teeth, and moved upward, then forward, then downward, and then backward to the point of starting. It moves forward and backward in an arc-shaped path, its greatest length of movement being opposite the place which is occupied by the longer edge of the fabric or article during quilting. The rows of ratchet-teeth may be formed integral with the feed-bar, or they may be made on separate plates fastened thereto. The feed-bar G is secured to the forward ends of bars G' . The bars G' are hung on a shaft, G^2 , which is journaled in brackets G^3 , that are affixed to the stationary main frame A . The shaft G^2 has merely a rotatory movement—in other words,

it has no longitudinal movement. On one end of the shaft G^2 is a gear-wheel, G^4 , which engages with a gear-wheel, G^5 , affixed to the shaft D^6 . The gear-wheel G^5 is made so broad across its periphery that it will not become disengaged from the gear-wheel G^4 during the longitudinal movement of the shaft D^6 . The bars G' are longitudinally slotted where the shaft G^2 passes through them; hence, although they are supported at the rear end by said shaft, they are susceptible of a longitudinal movement independently of the shaft. On the bars G' , in rear of the shaft G^2 , are laterally-extending studs G^6 , which preferably will be furnished with anti-friction rollers or bowls G^7 . The studs pass through longitudinal slots in the bars G' , and hence they may be adjusted into different positions lengthwise of the bars. When adjusted into position they may be clamped tightly to the bars by means of collars extending from them and bearing against one side of the bars, and nuts applied to the ends and impinging against the other side of the bars.

On the shaft G^2 adjacent to one side of the bars G' collars G^8 are secured by means of set-screws or otherwise, and adjacent to the other side of the said bars eccentrics or cams G^9 are similarly secured to the shaft. The cams G^9 act on the rollers or bowls G^7 , and thus impart a backward movement to the bars G' . Springs G^{10} , fastened to the bars G' and to the brackets E' , impel the bars forward whenever the position of the cams G^9 is such as to permit of this. The bars G' are provided with downwardly-projecting pins G^{11} , which prevent the bars from being moved too far forward by the springs G^{10} . The manner in which the pins accomplish this is by coming in contact with the bars which are arranged at the top of the brackets E' . Owing to the use of the stop-pins G^{11} , the bars G' do not move as far forward as they would be permitted to move by the cams G^9 . By setting the rollers or bowls G^7 farther forward along the bars G' , the backward movement which the bars G' will derive from the cams G^9 may be made greater. The rollers or bowls G^7 are so set that the bar G' , which is connected to that end of the feed-bar G which is to feed the longer edge of the fabric or article to be quilted, will have the greater motion. The difference between the positions of the rollers or bowls G^7 should be such as to provide for the desired motion of the feed-bar G at both ends. The motion of the entire feed-bar G may be varied by adjusting the rollers or bowls G^7 ; but in making an adjustment for this purpose care must be taken to preserve the proper relative difference of motion between the ends of the feed-bar. A bar, G^{12} , similar to the bars G' , is shown as arranged between the latter. It will not, however, be necessary for this bar G^{12} to have any cam combined with it. The bars G' G^{12} derive an up and down motion from the cams or eccentrics H , arranged upon a shaft H' . As here shown, these cams are made by cutting away portions

of the said shaft. Separate cams or eccentrics may, however, be attached to the shaft, if preferable. This shaft is journaled in the brackets G^3 , and has merely a rotary movement. On one end it has a gear-wheel, H^2 , which engages with the broad gear-wheel G^5 of the shaft D^6 . The gear-wheels G^4 , G^5 , and H^2 are shown as of the same size, and hence the shafts D^6 , G^2 , and H' rotate at the same speed. The up-and-down motions of the bars G' G^{12} are for the purpose of raising and lowering the feed-bar. Below the feed-bar G is a plate, I , fastened to the brackets E' . Above the feed-bar is a plate, J , having slots through which the ratchet-teeth of the feed-bar rise to reach the fabric or article to be quilted. The plate J is shown as supported by a bar, J' , fastened to the shuttle-races E .

K designates rollers, arranged over the ratchet-teeth of the feed-bar. These rollers are mounted on a shaft, K' , supported at one end in a lever, K^2 , pivoted to one of the brackets G^3 , and at the other end in a lever, K^4 , pivoted to a bar, K^5 , depending from the arm B^8 . The lever K^4 slides along the shaft K' as the carriage moves, but no longitudinal motion is imparted to the shaft. Springs K^6 , attached to the levers K^2 K^4 , force the rollers K down as far as they can go. When the feed-bar is in its highest position, the rollers hold the fabric or article to be quilted down upon the ratchet-teeth of the feed-bar; but when the feed-bar descends the rollers hold the fabric or article to be quilted stationary upon the plate J . The rollers are loose on their shaft, and can move at different rates of speed.

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

1. In a quilting-machine, the combination of a needle-bar, mechanism for reciprocating said needle-bar vertically, a feed-bar having a number of rows of teeth arranged thereon, mechanism for imparting motion to said feed-bar through an arc-shaped path, and a number of freely-rotating presser-rollers arranged one above each of said rows of teeth, substantially as specified.

2. In a quilting-machine, the combination, with a reciprocating needle-bar, of guides upon a reciprocating carriage for directing the vertical reciprocation of said needle-bar, a feed-bar having a number of rows of teeth arranged thereon, a number of freely-rotating presser-rollers arranged one above each of said rows of teeth, and mechanism for imparting motion to said feed-bar through an arc-shaped path, substantially as specified.

3. In a quilting-machine, the combination, with a reciprocating needle-bar having needles arranged upon it in two rows diverging from one end to the other, of a feed-bar having a forward and backward movement through an arc-shaped path, substantially as specified.

4. In a quilting-machine, the combination, with a reciprocating needle-bar adapted to have needles secured upon it in one or two

rows, of shuttle-races E, a movable plate, E⁶, provided with holes *g g' h h'*, and pins *i i'*, adapted to be arranged either in the holes *g g'* or *h h'*, substantially as specified.

- 5 5. In a quilting-machine, the combination, with the carriage B, having a reciprocating motion, of the shaft C, having a rotary motion only and bearing the ring or socket D¹¹, and provided with notches *c*, the movable shaft
10 D⁶, provided with the notches *d*, the plate D⁸, the hoop or band D⁹, and the screw *e*, the

whole being arranged and combined substantially as described, whereby the carriage B will carry with it the shaft D⁶ in its reciprocating movements, but the shaft C will still 15 remain in engagement with the shaft D⁶ to rotate the same, substantially as specified.

JOHN B. HAGENBÜCHLE.

Witnesses:

WILLIAM G. LIPSEY,
T. J. KEANE.