

A. BECK.
Quilting-Machine.

No. 159,884.

Patented Feb. 16, 1875.

Fig. 1.

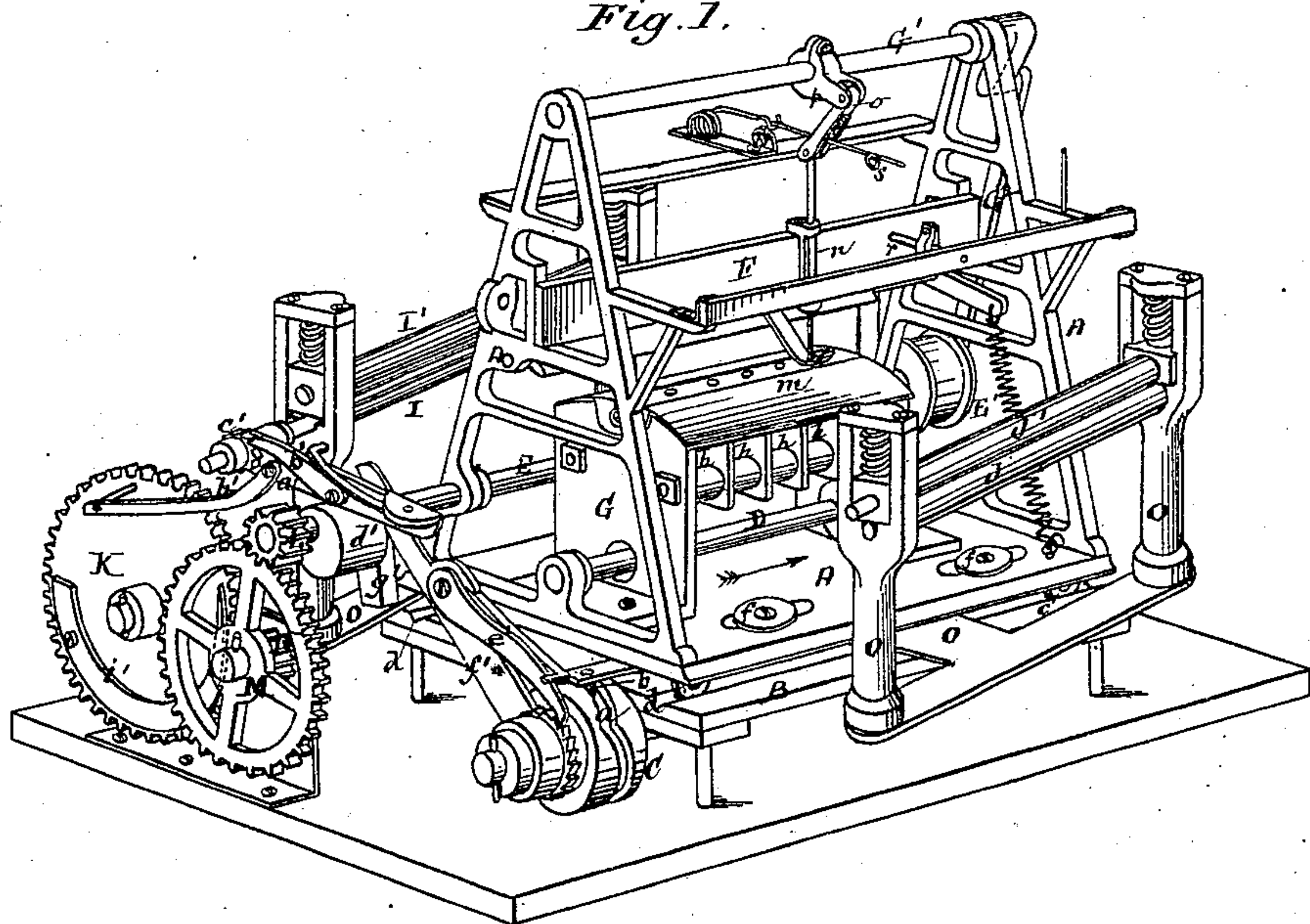
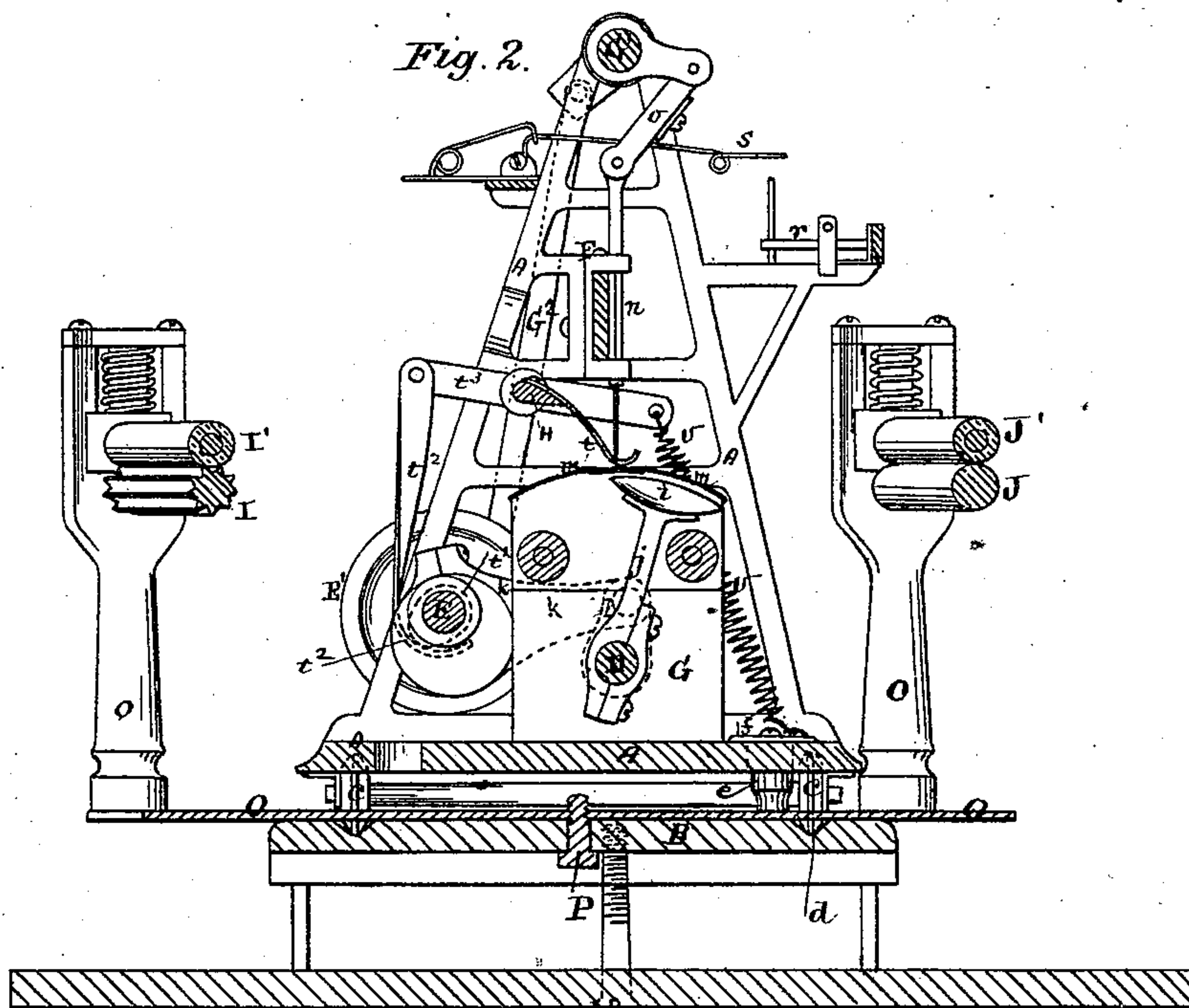


Fig. 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

AUGUST BECK, OF NEW YORK, N. Y., ASSIGNOR TO LOUIS DRYFOOS, OF
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IMPROVEMENT IN QUILTING-MACHINES.

Specification forming part of Letters Patent No. 159,884, dated February 16, 1875; application filed
January 12, 1875.

To all whom it may concern:

Be it known that I, AUGUST BECK, of the city, county, and State of New York, have invented certain new and useful Improvements in Quilting-Machines, of which the following is a specification:

The machine in which my invention is comprised is a sewing-machine, which is designed with special reference to quilting fabrics. It is adapted, however, for sewing ornamental patterns of various kinds.

I combine with feed mechanism, which holds the fabric at the proper times, feeding it along through the machine, a sewing mechanism, comprising a cloth-plate and two or more distinct sets of stitch-forming devices with the usual take-up and tension for each, which sewing mechanism has a movement transverse to the line of feed and is independent of the feed mechanism.

I also combine said laterally-moving sewing mechanism with a feed mechanism adjustable to feed the cloth in a line at various angles to the line of needles, whereby the lines of stitching can be varied and brought nearer or more less closely together, as occasion may require.

To enable others skilled in the art to understand and use my invention, I shall proceed to describe the manner in which the same is or may be carried into effect by reference to the accompanying drawing, in which—

Figure 1 is a perspective view, and Fig. 2 is a longitudinal vertical central section of a machine embodying my invention.

The stitch-forming devices are mounted in frame A, which has a lateral movement on the base-plate B of the machine. This lateral movement is produced by a revolving peripherally cam-grooved wheel, C, in whose cam-groove *a* projects a stud or friction-roller, *b*, carried by the frame A. The lateral movement of the frame is facilitated by means of rollers *c* on its under face, which run in grooves *d* in the base-plate. The frame is assured in position by upright friction-rollers *e*, which project from the base-plate through slots in the frame, and have washers *f* on their upper ends to hold the frame down in

place on the base-plate. On the bed of the frame are erected standards G, which support the shuttle-races *h*, in which move the shuttles *i*, one for each needle. Each shuttle is carried by a radial arm or sector, *j*, the outer end of which forms the shuttle-carrier; and these arms project from a common rock-shaft, D, mounted in bearings on the frame A, deriving its rocking movement from an eccentric on the driving-shaft E, through the medium of a connecting-rod, *k*, which is jointed to an arm, *l*, projecting from shaft D, and at the other end encircles the eccentric. The driving-shaft is supported in bearings on frame A, and is driven by belting passing around belt-pulley E'. Above the shuttles is the cloth-plate *m*, through which the needles work. F is the stock or head that supports the needles it is fixed to, and extends between the side standards of frame A. It carries bearings for each needle-bar *n*, through which the needle-bars play up and down in the usual way. I have not deemed it necessary to represent more than one needle, needle-bar, and adjuncts. It will be understood that as many such are employed as may be required.

The needle-bar is jointed at its upper end to a connecting-rod, *o*, which is jointed at its other end to a crank, *p*, on the upper shaft G¹, which has a rocking movement derived from driving-shaft E by a connecting-rod, G², jointed at one end to a crank-pin on belt-pulley E', and at the other end to a projecting arm on shaft G¹. Each stitch-forming mechanism is provided with a tension, *r*, and take-up *s*, of ordinary or suitable construction, the same being mounted on and carried by frame A. Each stitch-forming mechanism has also a presser-foot, *t*. All the presser-feet are mounted on a journaled bar, H, which, when the feed takes place, is operated to lift the presser-feet from the goods by means of a cam, *t*¹, on driving-shaft E, which is in contact with a curved arm, *t*², fast to a projection, *t*³, on the bar H. The arm is held against the cam by a spring, *v*, which normally holds the presser-feet down upon the cloth-plate with a yielding pressure.

The feed of the cloth is effected by feed-

rolls I I' at the rear of the machine, which draw the cloth through the machine, and have for this purpose an intermittent rotary movement that takes place while the needles are out of the cloth. One of the rolls is mounted in vertically-movable boxes, and is pressed down toward the other by springs, as shown. In front of the machine is a set of rolls, J J', identical with rolls I I', save that they have no positive movement of their own, and serve simply to maintain the goods stretched and under a certain tension.

The feed is operated by means of a rocking-lever, *a'*, on the axis of the lower roll I, which carries a pawl, *b'*, held by a spring against, and so as to engage, a ratchet-wheel, *c'*, fast on, the axis of lower roll I. The rocking lever rests on a cam, *d'*, on driving shaft E, which cam is of sufficient length to allow it to move laterally with the sewing-frame without removing it from under the pawl-lever.

The lateral movement of the sewing-frame is obtained by means of a ratchet fixed on the hub of the peripherally-cam-grooved wheel C, which is engaged by a spring-pressed pawl, *e'*, on a rocking lever, *f'*, that is mounted on the axis of wheel C. The free end of this lever rests on a cam, *g'*, on driving-shaft E, and the ratchet with the wheel C moves a distance of one tooth at every stitch.

The cam-groove shown in the drawing gives the sewing-frame an equal back-and-forth movement. This movement, in connection with the regular continuous movement of the feed, will cause the stitching to be done in zigzag parallel lines. The feed movement and the movement of the sewing-frame take place while the needles are out of the cloth. By varying the shape and outline of the peripheral cam-groove of wheel C the lines of stitching may be made to produce many various patterns. Length of feed and the length of the intermittent movements of the sewing-frame should be uniform, so that the stitches may be even and of the same uniform length.

In order to do quilting work I add to the pawl-lever *a'* a fixed arm, *h'*, provided at its outer end with a laterally-projecting stud that is intended to work under a semicircular cam-rib, *i'*, on the face of the toothed wheel K. During one half of the revolution of this wheel the stop-arm *h'* is free from the cam *i'*, and the feed operates. During the other half of the revolution of the wheel the stop-arm comes under the cam, and is thereby depressed, so as to raise the pawl-lever *a'* high enough to prevent it from having contact with its operating cam. The feed therefore ceases. The stop-wheel makes one revolution to one back-and-forth movement of the sewing-frame. It is so arranged that it engages the stop-arm, and consequently arrests the feed while the sewing-frame moves in the direction of the arrow in Fig. 1. When on the other hand the frame finishes this movement and begins to move in the opposite direction, the stop-

wheel releases the arm, and the feed thus operates. The distance which separates any one needle from the needle adjoining it on either side should, for quilting purposes, equal the length of traverse of the sewing-frame.

The stop-wheel K derives its movement from a long pinion, L, on driving-shaft E, through the medium of the toothed wheel M, mounted on the stationary frame of the machine, which engages pinion L, and is provided with a pinion, N, that engages stop-wheel K. The effect of this arrangement is to cause the lines of stitching to intersect, and form what is generally known as quilting.

It is desirable when using the machine for quilting to feed the cloth obliquely through the machine, and for this purpose the feeding-rolls must, of course, be set at an oblique angle to the line of traverse of the sewing-frame, as shown in the drawing, in which the feed-rolls are set at such an angle as to produce regular rows of stitching, which intersect each other to form a regular diamond-shaped pattern.

To bring about this result I make the feed adjustable in this respect. The adjustment may obviously be effected in many ways. I have represented in the drawings the method I prefer. The feed and tension rolls are mounted in a frame, O, which turns in a horizontal plane on a vertical axis, P, and can be set therefore at any angle that may be desired. After setting the frame in position it may there be held by any suitable clamp.

To allow this movement of the feed-frame without interfering with the engagement of the stop-arm and stop-wheel, the arm may fit on a rod or stud projecting from the feed-pawl lever, on which rod or stud the arm can be moved in one direction or the other, as required, and there held by a set-screw or other clamp. By throwing back and disengaging the pawl that gives motion to the peripherally cam-grooved wheel, the sewing-frame will be stationary, and the sewing will be done in straight lines.

Having now described my invention, and the manner in which the same is or may be carried into effect, what I claim, and desire to secure by Letters Patent, is—

1. The laterally-reciprocating sewing-frame, carrying the stitch-forming mechanisms, in combination with an automatic independent feed, which operates when said frame moves in one direction, and is at rest when said frame moves in the opposite direction, substantially as set forth.

2. The combination, with the series of stitch-forming mechanisms, of feed-rolls set obliquely to the same, and operating to feed the cloth through the machine obliquely to the line of stitch-forming mechanisms, substantially as set forth.

3. The laterally-reciprocating sewing-frame in combination with an independent feed, placed at an angle oblique to the line of trav-

erse of said frame, operating to feed the cloth when the frame moves in one direction, and remaining at rest when the frame moves in the opposite direction, substantially as set forth.

4. The combination of the laterally-to-and-fro moving sewing-frame, carrying the stitch-forming mechanisms, and the feed mechanism, adjustable to an angle more or less oblique to the line of traverse of the sewing-frame, substantially as shown and set forth.

5. The feed-rolls and tension-rolls, in combination with a supporting-frame adjustable upon a vertical axis to vary the angle of obliquity of said rolls, relatively to the sewing mechanism, substantially as set forth.

In testimony whereof I have hereunto signed my name this 6th day of January, A. D. 1875.

AUGUST BECK.

Witnesses:

A. C. BRADLEY,
EWELL A. DICK.