(No Model.) 2 Sheets—Sheet 1.

E. T. & E. H. MARBLE.

MECHANISM FOR SEWING WEBS OF FABRIC.

No. 568,032. Patented Sept. 22, 1896.

FIG. 1

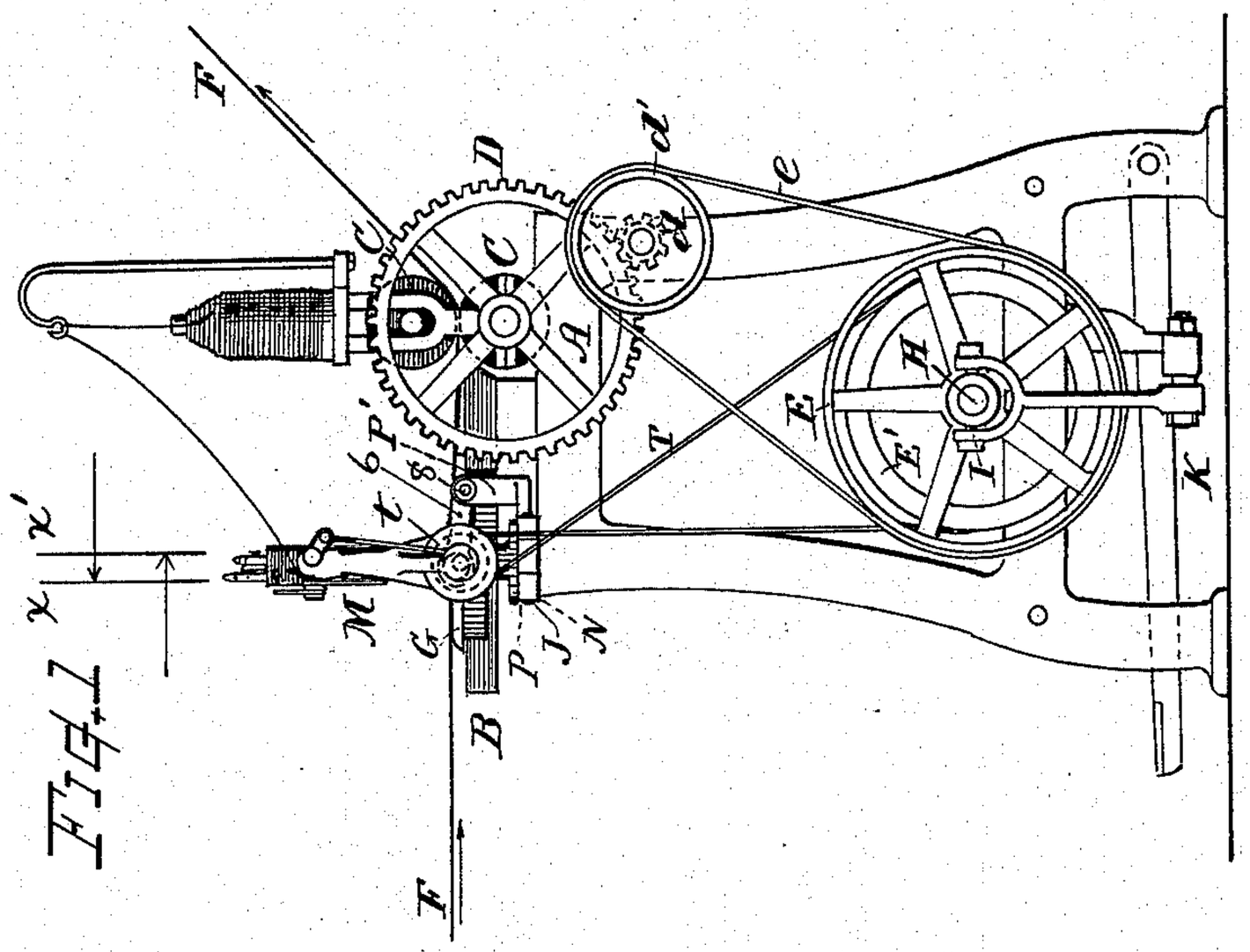
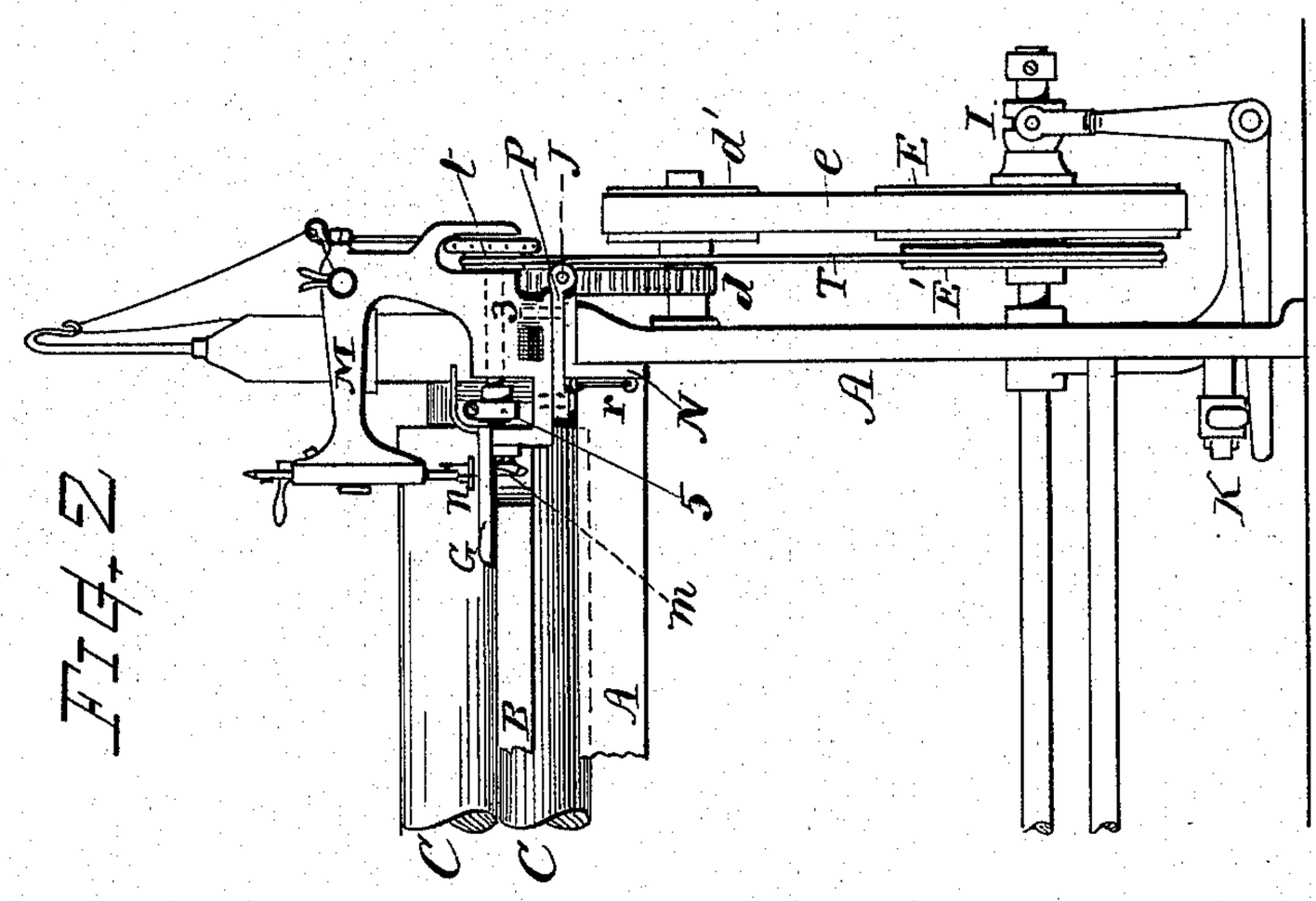


FIG. 2



Witnesses.

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(No Model.) 2 Sheets—Sheet 2.

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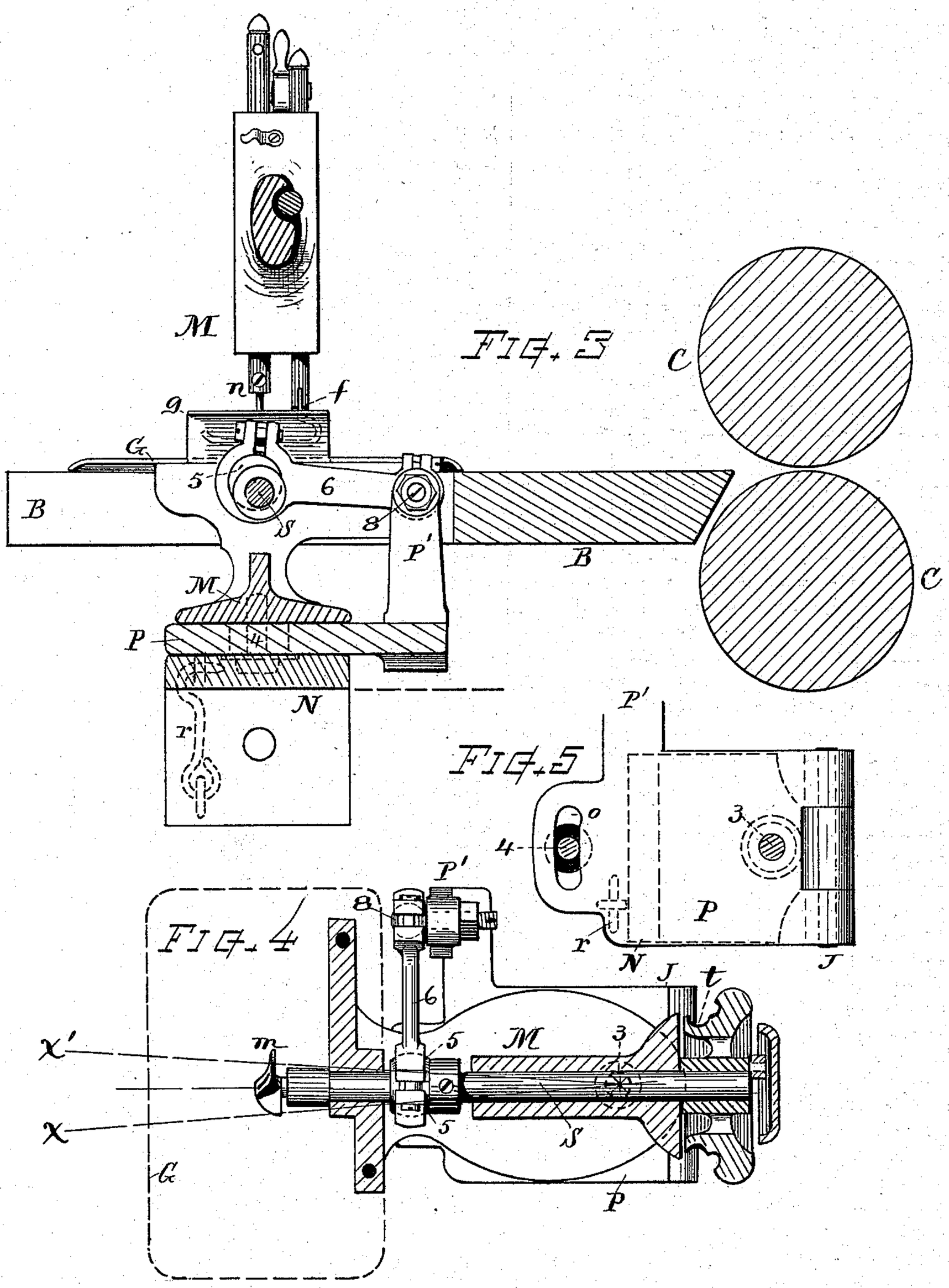

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UNITED STATES PATENT OFFICE.

EDWIN T. MARBLE AND EDWIN H. MARBLE, OF WORCESTER, MASSACHUSETTS.

MECHANISM FOR SEWING WEBS OF FABRIC.

SPECIFICATION forming part of Letters Patent No. 568,032, dated September 22, 1896.

Application filed February 28, 1895. Serial No. 539,971. (No model.)

To all whom it may concern:

Be it known that we, EDWIN T. MARBLE and EDWIN H. MARBLE, citizens of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Mechanism for Sewing Webs of Fabric, of which the following, together with the accompanying drawings, is a specification sufficiently full, clear, and exact to enable persons skilled in the art to which this invention appertains to make and use the same.

The object of our present invention is to provide a practicable and more efficient mechanism adapted for attaching or sewing together the selvages of webs of fabric preparatory to the fulling operations in the processes of manufacture and capable of sewing long loosely-drawn stitches, rendering the seam soft and open and better suited for fabrics undergoing the fulling process; also enabling the fabric to be passed through the attaching or basting operation at great speed without excessive strain or pull on the needle while operating upon a constantly-moving fabric. These objects we attain by mechanism organized for operation in the manner illustrated and explained, the particular subject-matter claimed being hereinafter definitely specified.

In the drawings, Figure 1 is a side view of our machine for attaching together the selvage edges of webs of fabric. Fig. 2 is a front view of the same, showing only a portion of the fabric-carrying mechanism. Fig. 3 is a vertical section, on somewhat larger scale, showing the sewing mechanism, a means for reciprocating the sewing mechanism, and the table and draft-rolls for carrying the fabric to be operated upon. Fig. 4 is a horizontal section of the sewing-machine through the shaft-bearings, showing the reciprocator connections; and Fig. 5 is a plan view of the plate, which is in the present instance employed for supporting the sewing mechanism upon the main frame.

In our invention we employ a sewing mechanism independent of feeding appliances, the sewing-machine frame pivoted upon a support-plate that is mounted on the side of the main frame, and provide, in connection with the sewing-machine shaft that carries the looper and rotates synchronously with the needle-bar movement, an eccentric and a connecting-rod therefor that is joined to a stationary arm fixed on the support-plate for swinging the sewing-machine horizontally, thereby carrying the stich-forming devices backward and forward adjacent to the edge of the fabric with the reciprocatory or vibratory action in a direction longitudinal of the seam, so that its return movement will be approximately coincident with the running movement of the fabric as the latter is drawn through the machine in a continuous or non-intermittent manner by the constant rotation of the draft-rolls between which the fabric passes, the sewing mechanism performing its stitch-forming functions as the fabric runs along, and the sewing mechanism moves back and forth with and in opposite direction to the movement of the fabric to accommodate its advancement as each stitch is being formed therein. By thus vibrating the sewing mechanism bodily backward and forward over a continuously-advanced fabric stitches of an inch, more or less, in length can be readily sewed into such fabric without undue strain on the needle and at a comparatively high speed and efficiency, thus rendering our invention of much practical utility and value for the purposes for which it is designed.

Referring to parts, A indicates the main frame, having the draft-rolls C mounted thereon in suitable bearings, and B is the table in front of said rolls, over which the web of fabric F is drawn. The draft-rolls are operated by the gear D, pinion *d*, carried by the pulley *d'*, and belt *e* from the pulley E on the main shaft H, which latter is controlled by the clutch I and treadle mechanism K. These parts represent a portion of a doubling and attaching mechanism of the class described in Letters Patent No. 489,590.

M indicates the sewing mechanism, having stitch-forming devices *m* and *n*, a presser-foot *f*, and throat-plate G, but without feed appliances of any kind. This sewing mechanism is mounted upon a suitable supporting-

plate P, that is horizontally hinged at J to an angle-piece N, that is rigidly bolted to the main frame A.

The frame of the sewing mechanism is pivoted to the plate P by the pin or swivel-bolt 3, so that it can swing backward and forward thereon bodily. It is further steadied by a stud 4, that passes through a slot *o* at the opposite end of said plate P.

Upon the principal shaft S, that carries the rotating looper *m* of the sewing mechanism, we provide a cam or eccentric 5, which is fixed thereon, and a connecting-rod 6 embraces and extends from said eccentric to a stationary arm P′, attached to the supporting-plate P, to which arm the end of said rod is pivotally joined by a ball-pivot 8, as illustrated more fully in Figs. 3 and 4. The sewing-mechanism shaft S has the usual pulley *t* thereon and is rotated by a suitable belt T from a pulley E′, connected with the pulley E on the main shaft H, and is thrown into and out of action by the clutch I and treadle mechanism.

When the sewing-machine shaft S is rotated, the action of the eccentric 5 and connecting-rod 6 causes the sewing-machine to have a horizontal vibratory motion backward and forward bodily, thereby carrying the stitch-forming devices *m n* from the line X to the line X′, and vice versa, at each rotation of the looper and its shaft S and as each consecutive stitch is formed. The devices for operating and reciprocating the sewing mechanism are so proportioned and adjusted that the sewing-machine, while the needle is in the fabric, is moved synchronously with the draft of the rolls C and in the general direction of the feed of the fabric, which is constantly drawn forward by said rolls, the speed of this reciprocal movement of the sewing-machine being substantially the same as the speed of the feed-roll surfaces by which the fabric is advanced, so that the needle enters the fabric, moves forward, and leaves the fabric, while running, practically without lateral strain thereon. Then when the needle is out of the fabric the continued feed of the fabric and the opposite reciprocation of the sewing-machine spans the stitch length. The extent of this movement accords with the throw of the eccentric, and the length of the stitches corresponds to the distance traveled by the continuously-moving fabric as carried along by the draft-rolls during each reciprocative movement of the sewing mechanism. This affords a much longer stitch interval than can be practicably covered by ordinary feed mechanism employed as a part of the sewing-machine, and no delay is occasioned in the run of the fabric through the rolls.

The eccentric cam 5 is best made with a spherical peripheral surface for the connection or strap to work upon, thus avoiding any binding tendency that might otherwise occur between the parts. A suitable guard *g* is arranged over the eccentric and connections.

The structural detail of the stitch-forming devices *m* and *n* is not of our invention, and such parts may be of well-known suitable kind, the chain-stitch being preferred for the classes of work for which this machine is designed.

The hinge J permits of the sewing-machine being turned over at any time to examine the stitch-forming devices, when desired, and a hook *r* or other suitable fastening device is provided for retaining the plate P when in normal position.

We do not claim, broadly, the invention of sewing mechanism capable of operating upon a fabric which is advanced by a constant motion or draft, since we are aware that in a prior patent there is described a sewing mechanism of diverse construction having needle-bars and rocking hook-looping devices mounted in a swinging gate or frame arranged for pendulous action and combined with draft-rolls for moving the fabric through said swing-frame for quilting purposes; but such prior mechanism, being of different constructive organization and operation, is impracticable for the purposes for which our improvement is designed.

We claim as our invention and desire to secure by Letters Patent—

1. The combination, with the fabric-supporting table, the draft-rolls, and main frame therefor; of the support-plate mounted upon said main frame at the edge of the table, the sewing-machine having its frame pivotally connected to said support-plate to have horizontal vibratory movement in a plane parallel with the table-bed, carrying the sewing mechanism bodily backward and forward in the general direction of and along the line upon which the selvage of the fabric is advanced, the eccentric fixed upon the rotating looper-shaft in said sewing-machine, the connection-rod, one end embracing said eccentric, its other end pivotally joined to a non-movable part, or stationary arm on said support-plate, and means substantially as described for imparting motion to said sewing-machine shaft and draft-rolls, for the purpose set forth.

2. In combination, substantially as described, the horizontally-vibrating sewing-machine, its support-plate, the pivot-bolt and the guide-stud connecting said sewing-machine and support-plate, the eccentric attached to the sewing-machine shaft, the stationary arm fixed on said support-plate, and the eccentric-strap connected to said stationary arm by a ball-pivot, as set forth.

3. In a machine for sewing together the selvages of webs of fabric, the combination, with the fabric-supporting table and feed-rolls, the main supporting-frame, and operating means for said feed-rolls, arranged as described; of the machine-supporting plate, having a hing-

ing attachment with a piece that is rigidly fastened to the main frame, the sewing-machine, its frame pivotally connected with said support-plate by a vertical pivot for horizontal vibratory movement, as described, the eccentric fixed on the rotating looper-shaft in said sewing-machine, and the connection-rod coupling said eccentric to a stationary arm fixed upon said support-plate and means for imparting motion to said sewing mechanism, as set forth.

Witness our hands this 14th day of February, 1895.

EDWIN T. MARBLE.
EDWIN H. MARBLE.

Witnesses:
CHAS. H. BURLEIGH,
ELLA P. BLENUS.