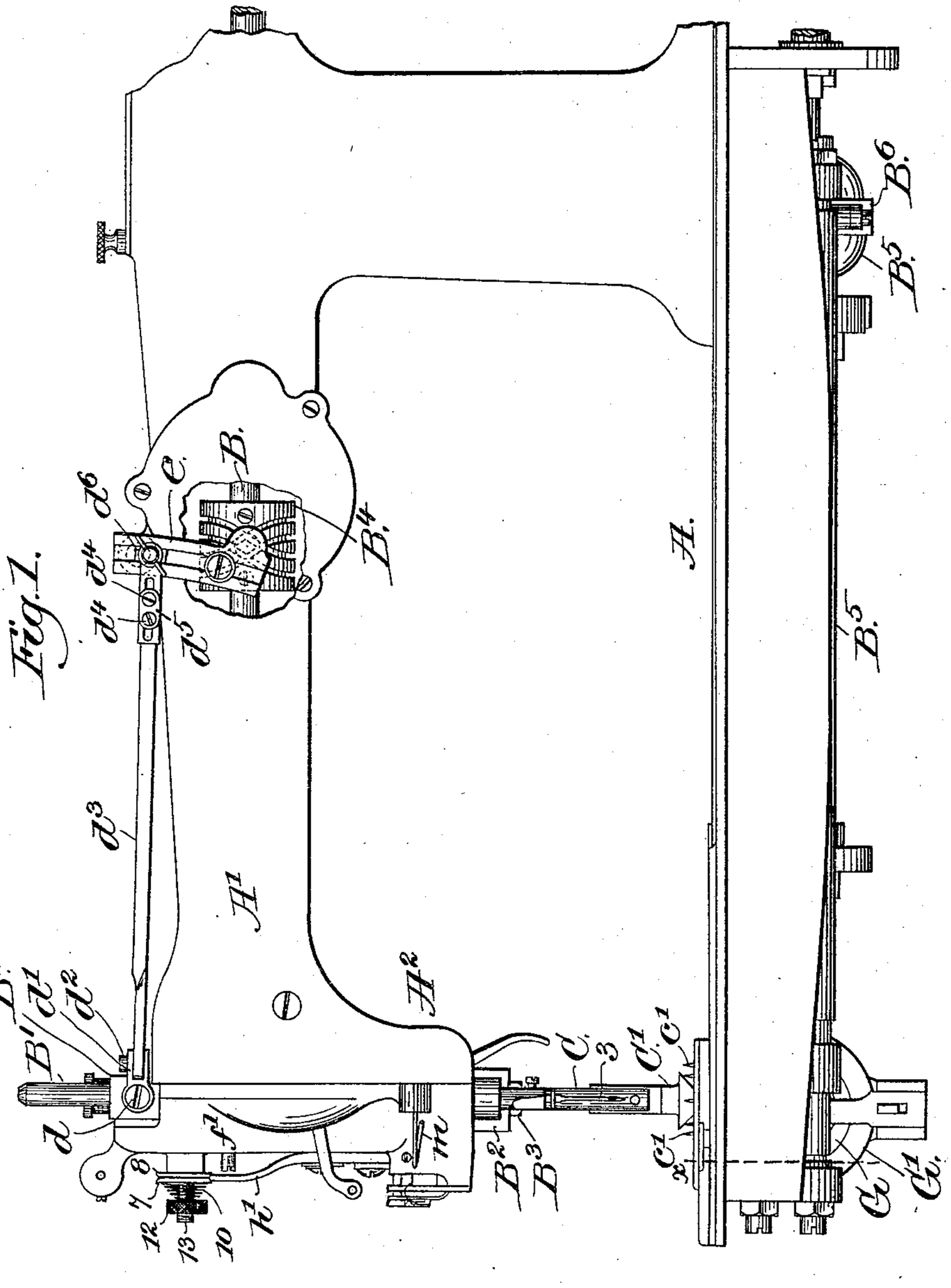
(No Model.) 2 Sheets—Sheet 1.

G. H. DIMOND.

SEWING MACHINE.

No. 479,740. Patented July 26, 1892.



Witnesses.
Louis N. Dowell
Edward F. Allen

Inventor:
George H. Dimond
by Crosby & Gregory Attys.

(No Model.) 2 Sheets—Sheet 2.

G. H. DIMOND.

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Fig. 3.

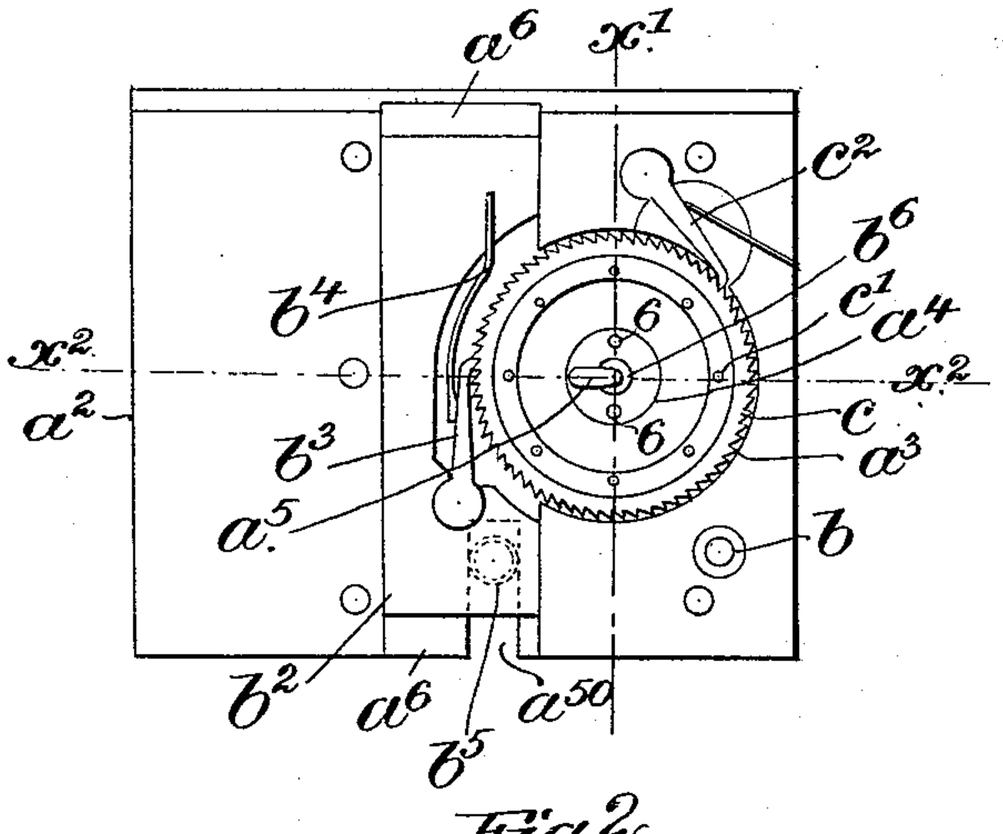


Fig. 6.

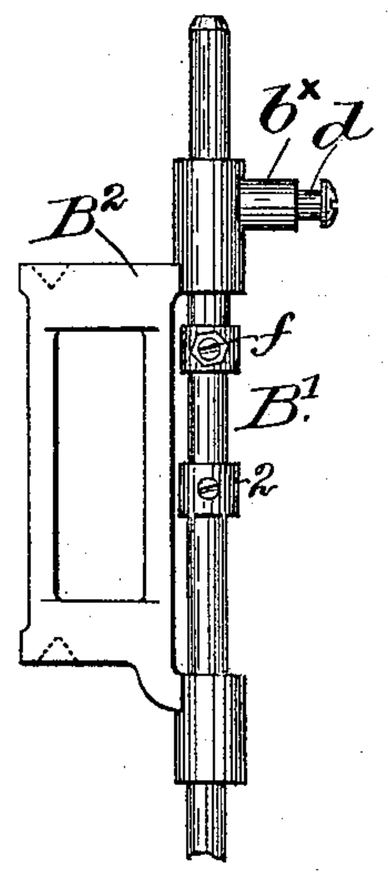


Fig. 2.

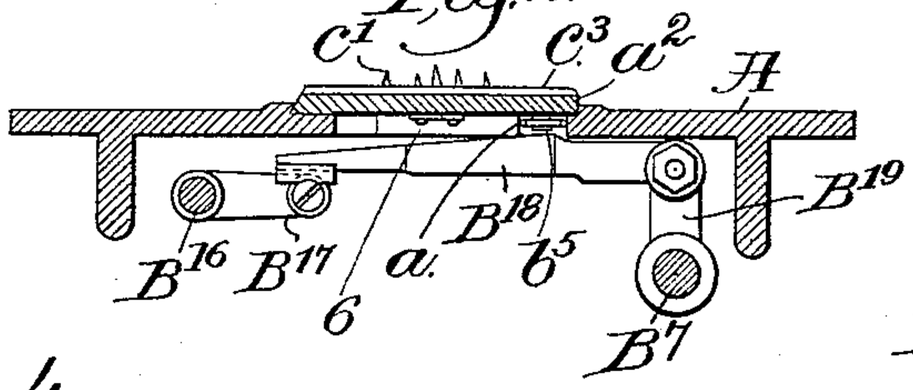


Fig. 4.

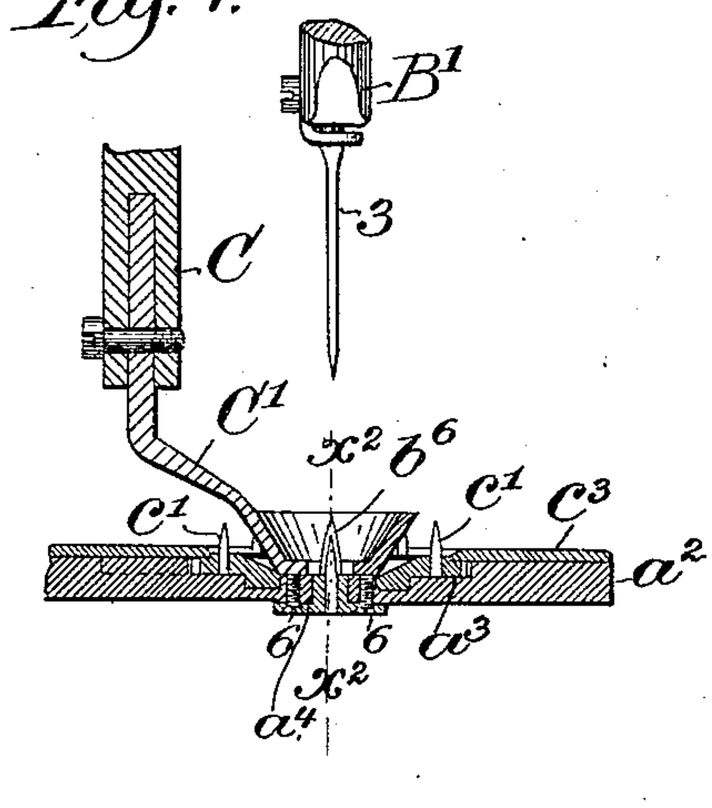


Fig. 5.

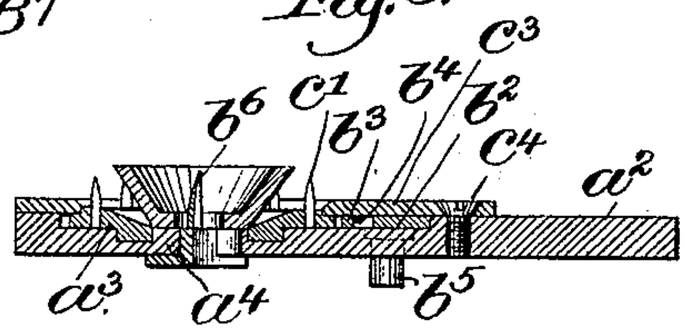
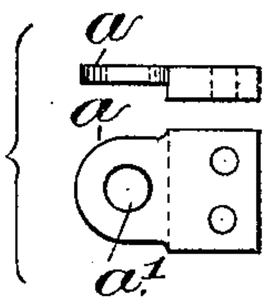


Fig. 7.



Witnesses.
Louis N. Dowell
Edward F. Allen

Inventor:
George H. Dimond.
By Crosby & Gregory Attys.

UNITED STATES PATENT OFFICE.

GEORGE H. DIMOND, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO THE WHEELER & WILSON MANUFACTURING COMPANY, OF SAME PLACE.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 479,740, dated July 26, 1892.

Application filed November 5, 1891. Serial No. 411,112. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. DIMOND, of Bridgeport, county of Fairfield, State of Connecticut, have invented an Improvement in Sewing-Machines, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

This invention has for its object to improve that class of sewing-machines more especially adapted for overstitching, my invention being shown as embodied in a machine for overstitching eyelet-holes. In this class of machines the material containing the eyelet-hole to be overstitched has been impaled on pins erected on a rotary feed-wheel mounted in a reciprocating frame, the needle of the stitch-forming mechanism having only a vertical motion. So, also, the material containing the eyelet-hole to be overstitched has been engaged intermittingly by a serrated surface at the upper end of an annular or ring-like feed, having in some instances merely an intermitting or step-by-step motion of rotation and in other instances a rising motion to engage the material, and then an oscillating movement to feed the material for the length of a stitch, and the said surface has then descended to engage the material, this action being repeated.

In my efforts to simplify and improve machines for stitching eyelets I have devised a novel feeding mechanism consisting, essentially, of a central spur, a surrounding ring-like thin feed-wheel having points at its upper side on which to impale the material, said feed-wheel being located in a circular raceway made in the face or upper side of a stationary throat-plate, the said feed-wheel being provided with notches or teeth at its periphery and extended through one side of the said raceway into a guideway, also made in said throat-plate, said guideway receiving a pawl-carrier provided with a pawl to engage the peripheral ratchet-teeth of and rotate the said feed-wheel step by step during the sliding movements of the said pawl-carrier, the pawl-carrier receiving its motion, as herein shown, from a bar located below the bed-plate, a bar preferably such as used when provided with serrated teeth to feed the material, the said feed-bar in this instance of my invention having its teeth left off, but being provided with a plate having a hole to engage a pin from the pawl-carrier. In my invention I combine with the feed-wheel described (it having only a motion of rotation) a stitch-forming mechanism, in which the needle-bar, besides its usual vertical movement, has a lateral or vibrating movement.

The particular features in which my invention consists will be hereinafter further described, and defined in the claims at the end of the specification.

Figure 1 is a partial side elevation of a sewing-machine to which my improvements have been added; Fig. 2, a section taken through the bed-plate in about the line x, Fig. 1, the said figure being made chiefly to show the usual feed-bar below the usual bed-plate. Fig. 3 is an enlarged top or plan view of the stationary plate detached from the bed-plate, the cap or cover plate being omitted to fully show the feed-wheel and the pawl-carrier and pawl. Fig. 4 is a sectional detail in the line x^2, Fig. 3, chiefly to show the presser-foot, the feed-wheel, and needle and needle-bar. Fig. 5 is a similar section supposed to be at right angles to the section of Fig. 4. Fig. 6 is a detail showing the needle-bar gate and needle-bar carried thereby. Fig. 7 is a detail showing the lug or plate carried by the feed-bar.

I have chosen to illustrate my invention on a machine of the Wheeler & Wilson construction adapted for overseaming.

Referring to the drawings, the framework, consisting, essentially, of the bed-plate A, the overhanging arm A′, the head A^2 at the front end thereof, the rotating needle-bar-actuating shaft B in the said overhanging arm, it in practice being connected by crank and link with a projection on a collar 2, fast to the needle-bar B′, having a needle 3, adapted to be reciprocated in bearings of a needle-bar-frame B^2, capable of being swung about suitable vertical pivots B^3, one of which is represented in connection with Fig. 1, and inserted in the head of the frame in said figure is and may be all, as in the Wheeler & Wilson machine, adapted for overstitching, or as in

another application filed by me, Serial No. 372,573.

The shaft B in practice is connected by a suitable link or links with suitable crank or cranks of and to rotate the lower shaft B^5. (Partially shown in Fig. 1.) This lower shaft in practice will be connected with and so as to rotate a suitable loop-taker G in a loop-taker guide G′, substantially as in United States Patent No. 419,541, dated January 14, 1890, to which reference may be had.

The rock-shaft B^7, having an arm B^{19}, jointed to one end of the feed-bar B^{18} to reciprocate the same longitudinally, and the rock-shaft B^{16}, having an arm B^{17}, provided with a shoe on which rests the free end of the said feed-bar, are and may be all substantially as in my application Serial No. 372,573.

The feed-bar shown, when used as it is in the Wheeler & Wilson machine, carries a block having serrated teeth; but herein such block is omitted and in its stead the bar has connected to it in suitable manner a plate or lug a, having a hole or opening a', the purpose of which will be hereinafter described.

The presser-bar C, adapted to rise and fall in usual manner in bearings forming part of the usual head of the overhanging arm, has fixed to its lower end a hollow cone-shaped presser-foot or work-clamp C′, which is adapted to bear upon and clamp the work outside of the eyelet-hole to be stitched.

Instead of employing the feed-bar B^{18} and its actuating mechanism, (shown and described,) I may employ any other usual devices for reciprocating a feed-bar, the up and down motions of the feed-bar in my invention not being essential or necessary.

In place of the usual throat-plate common to the Wheeler & Wilson machine, to which my improvement is added, as stated, I have mounted upon the machine by a suitable screw in a hole b a throat-plate a^2. (Shown detached and enlarged in Fig. 3.) This throat-plate has a circular or annular raceway a^3, and at its center a hub a^4, provided with a slot a^5, through which passes the needle 3 in the production of a stitch. The throat-plate is provided with a guideway or groove a^6, in which is placed a pawl-carrier b^2, having a pawl b^3, which, as represented, is acted upon by a spring b^4, a stud b^5, extended from the lower side of the said pawl-carrier, entering the hole a' in the plate or lug a, before referred to as attached to the feed-bar. The slotted hub of the throat-plate receives a spur b^6, grooved, preferably, at one side to aid in guiding the needle, the spur having preferably a sharp point, so as to readily pass through the material or readily enter the eyelet-hole previously cut therein. This spur has its base attached to the throat by screws 6, so that the spur may be detached when desired and another base and spur be substituted for it suitable for the particular-sized eyelet-hole to be left in the material. The raceway in the throat-plate receives a feed-wheel c, concaved at its upper side (see Figs. 4 and 5) and provided at its periphery with a series of ratchet-teeth and near its periphery with a series of points c', preferably sharp points, upon which to impale the material in which the eyelet-hole is to be worked. The ratchet-teeth of the feed-wheel project into the guideway and are engaged by the pawl b^2 during the movement of the pawl-carrier in one direction only, the said pawl-carrier and pawl thus rotating the said feed-wheel step by step and causing the material impaled on the feed-wheel to be moved with it, a suitable detent c^2 preventing retrograde motion of the feed-wheel. The feed-wheel referred to is retained in the said raceway by means of a cap or guard c^3, (see Figs. 4 and 5,) shown as applied to the top of the throat-plate and confined in place by proper screws c^4.

The needle-bar frame B^2 has an ear $b^\times$, which receives a stud-screw d, upon which is placed loosely a block d', to which is jointed at d^2 a link d^3, the said link being connected by screws d^4, preferably in an adjustable manner, with an arm d^5, having a slide-block d^6, (see Fig. 1,) which block enters the groove of a segment-lever e. The segment-lever e, pivoted in a suitable bearing upon the overhanging arm, has at its rear side a suitable stud, upon which is mounted loosely a suitable shoe to enter the crossing grooves of the cam B^4, fast on the shaft B, the said cam in its rotation vibrating the segment e and through the links referred to in connection with the frame in which the needle-bar is reciprocated imparting to the said needle-bar its lateral movements to make the necessary overseaming or depth stitch.

The devices referred to for vibrating the frame B^2 to give to the needle a lateral movement are better illustrated and described in my application Serial No. 372,573.

The guideway a^6 is slotted at a^{50} for the passage of the stud b^5, thus insuring a compact arrangement of parts.

I do not broadly claim a rotating ring having pins and actuated by a ratchet-wheel; nor do I claim anything shown in United States Patents Nos. 270,696, 291,855, and 300,331.

In this my invention the pawl-carrier b^2 always occupies a space a^6 cut in the throat-plate a^2 and intersecting the raceway, in which is placed the ratchet-wheel, and this pawl-carrier, by the stud a^6, and plate a is loosely connected with the feed-bar B^{18}.

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

1. The combination, with the bed-plate of a sewing-machine, of a detachable throat-plate having a raceway and a spur to hold the material at the center of the needle-hole, a feed-wheel placed in the said raceway and having points at its upper side, a cap or plate to retain the said feed-wheel in the said raceway, a reciprocating pawl-carrier resting in a groove made in the upper side of said throat-

plate, a pawl carried thereby to engage and rotate the feed-wheel step by step, the feed-bar B^{18}, means to reciprocate it, connections between it and the said pawl-carrier, a presser-foot or clamp to hold the material upon the feed-wheel, and stitch-forming mechanism adapted to make an overseaming stitch, all to operate substantially as described.

2. In a sewing-machine, the throat-plate a^2, provided with a raceway and with a guideway a^6, having in its bottom a slot, as a^{50}, the hub a^4, and spur located at the center of the raceway, and a feed-wheel placed in said raceway and having ratchet-teeth at its periphery and pins at its upper side, combined with a reciprocating pawl-carrier provided with a pawl and with a stud extended through said slot a^{50}, the feed-bar, and a plate attached thereto having an opening to receive the stud to reciprocate the said pawl-carrier to operate substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE H. DIMOND.

Witnesses:

WILBUR F. DIAL,

ISAAC HOLDEN.