No. 648,619. Patented May 1, 1900.

J. T. HOGAN.

BUTTONHOLE SEWING AND CUTTING MACHINE.

(Application filed Aug. 5, 1895. Renewed May 24, 1898.)

(No Model.) 4 Sheets—Sheet 1.

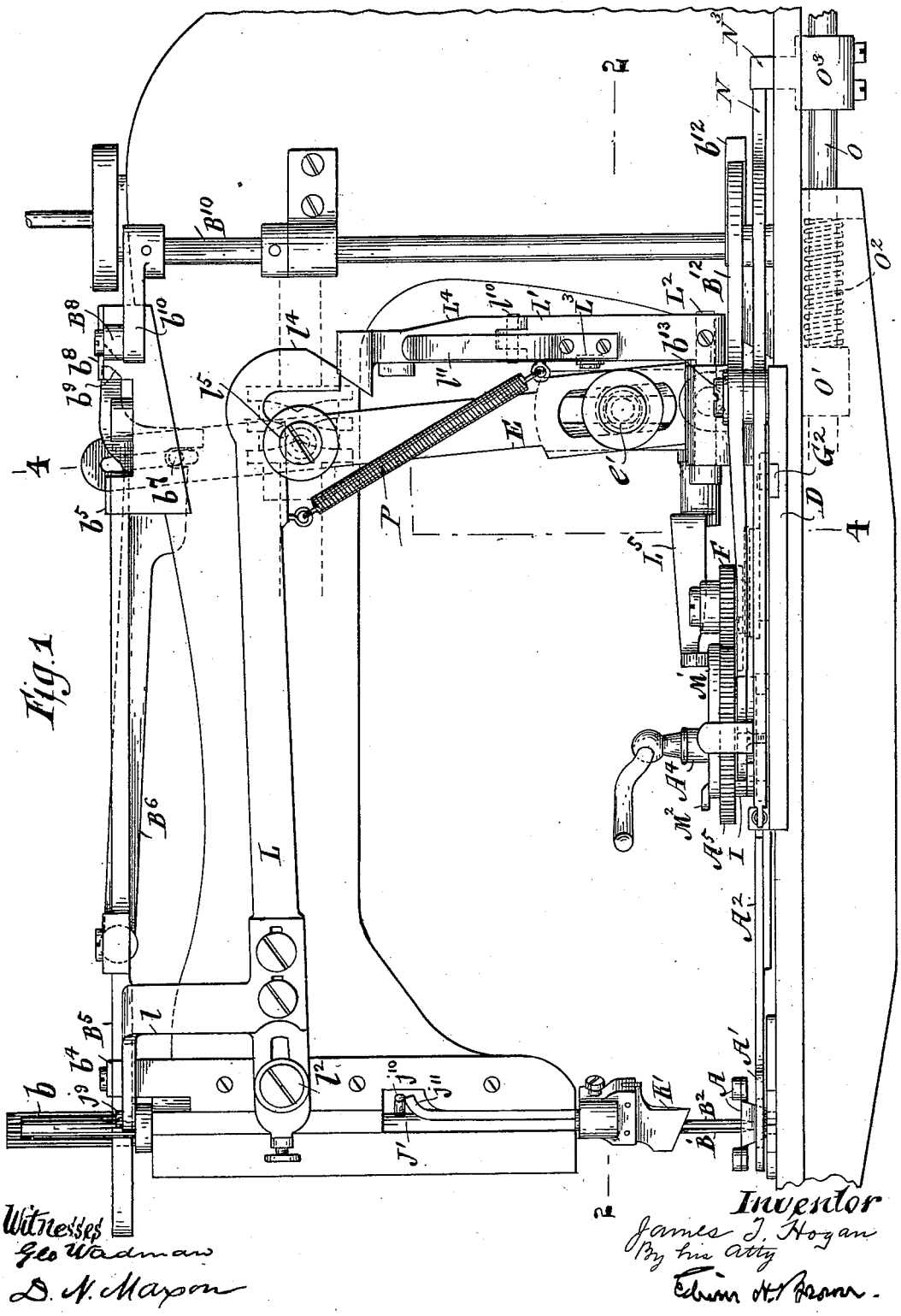

Fig. 1.

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(No Model.) 4 Sheets—Sheet 2.

Fig. 2.

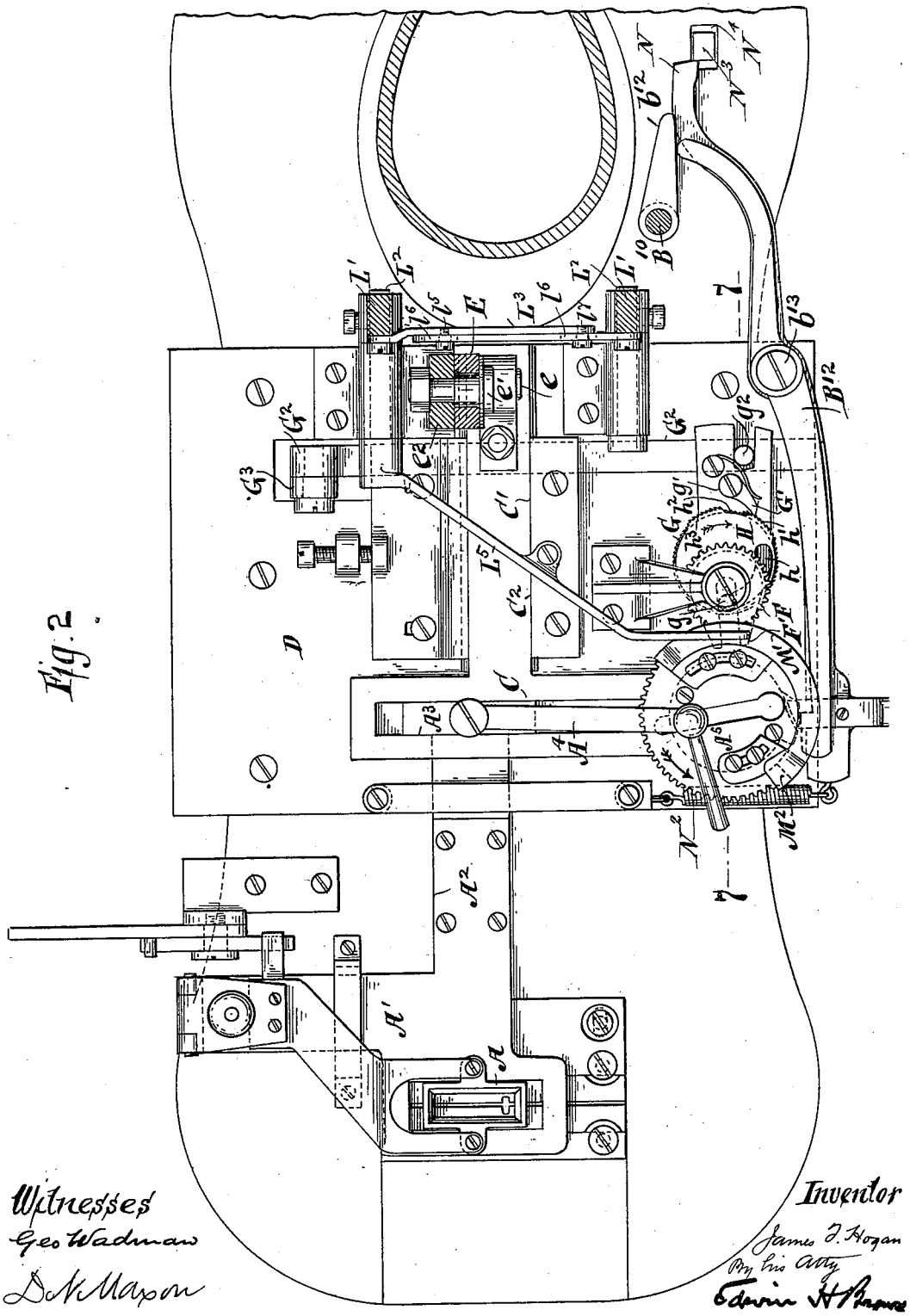

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Fig. 4

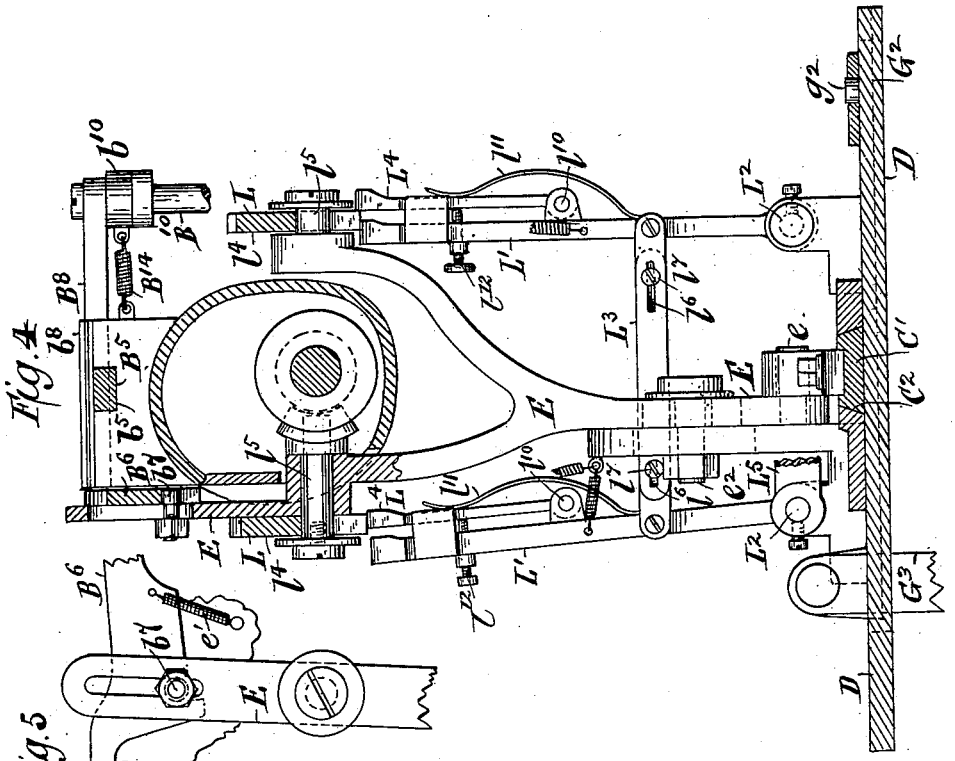
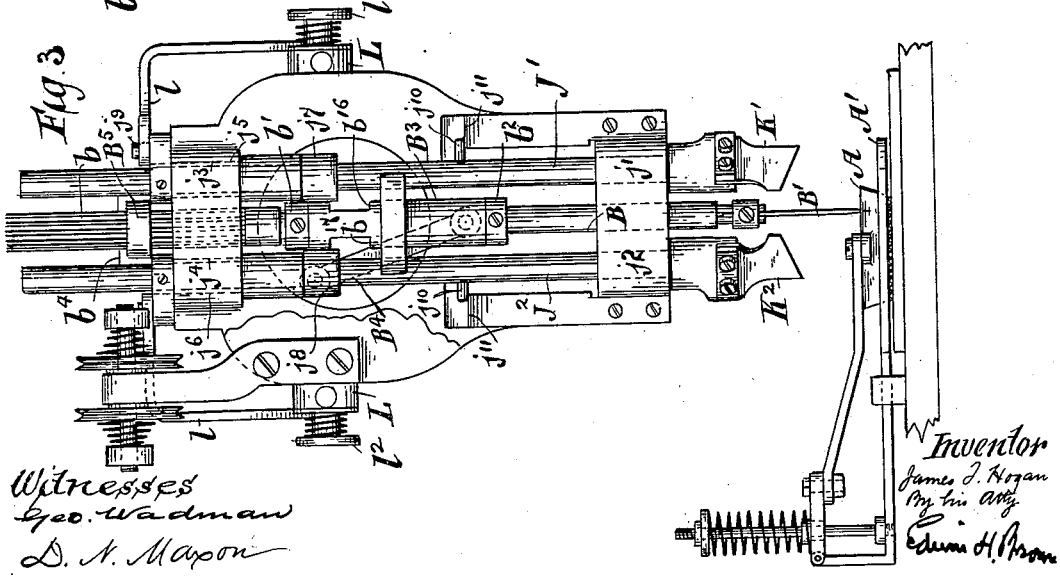


Fig. 5

Fig. 3



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(No Model.) 4 Sheets—Sheet 4.

Fig. 1

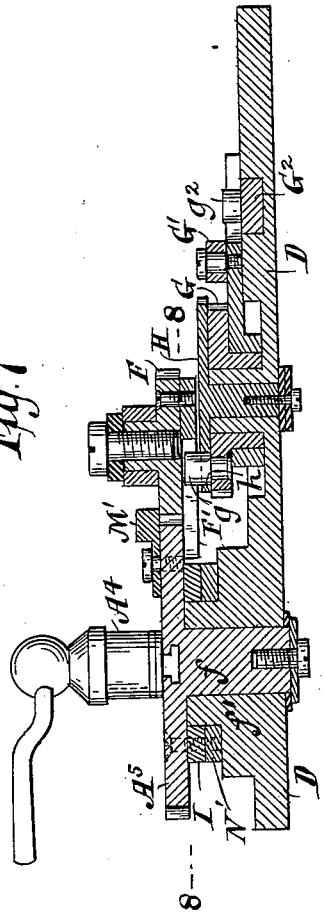


Fig. 6

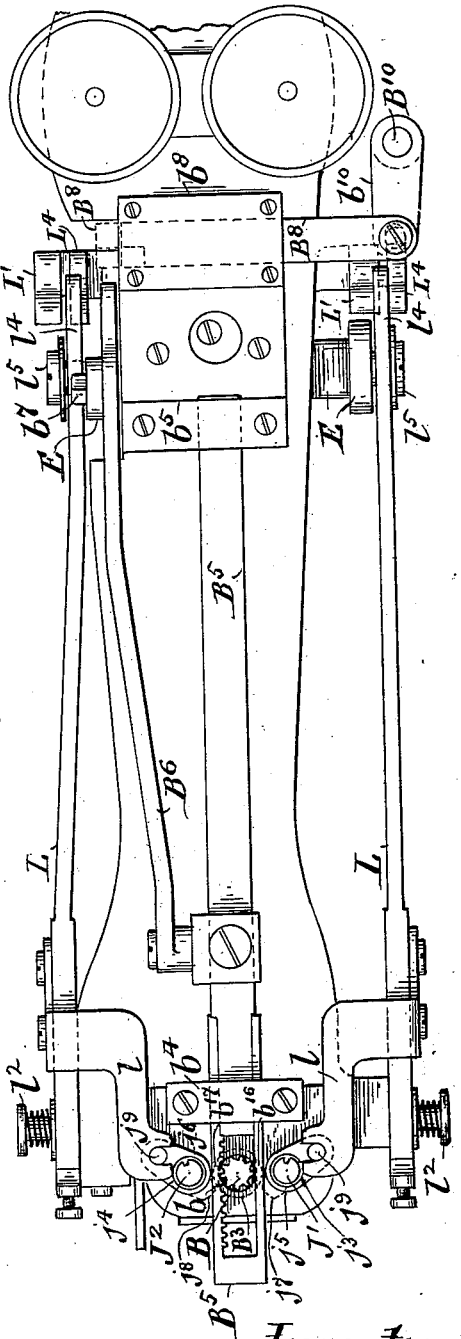
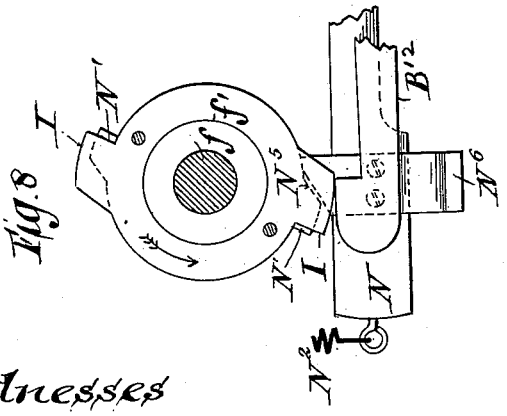


Fig. 8



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UNITED STATES PATENT OFFICE.

JAMES T. HOGAN, OF JERSEY CITY, NEW JERSEY, ASSIGNOR TO THE NATIONAL MACHINE COMPANY, OF TROY, NEW YORK.

BUTTONHOLE SEWING AND CUTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 648,619, dated May 1, 1900.

Application filed August 5, 1895. Renewed May 24, 1898. Serial No. 681,588. (No model.)

To all whom it may concern:

Be it known that I, JAMES T. HOGAN, of Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Buttonhole Sewing and Cutting Machines, of which the following is a specification.

I will describe a machine embodying my improvement and then point out the novel features in the claims.

In the accompanying drawings, Figure 1 is a front elevation of a sewing-machine embodying my improvement. Fig. 2 is a partial plan and partial horizontal section of the same, taken generally at the plane of the dotted line 2 2, Fig. 1. Fig. 3 is an elevation of one end of the machine. Fig. 4 is a transverse section taken mainly at the plane of the dotted line 4 4, Fig. 1. Fig. 5 is a rear elevation of certain parts which are shown in front elevation in Fig. 1. Fig. 6 is a plan or top view of the upper portion of the machine. Fig. 7 is a longitudinal section at the plane of the dotted line 7 7, Fig. 2. Fig. 8 is a horizontal section at the plane of the dotted line 8 8, Fig. 7.

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

A designates a cloth-clamp forming a part of a work-support for properly presenting the work to the sewing mechanism. In this machine there are two needles B′ B² for stitching the two side rows of stitches simultaneously and also for forming barring-stitches at the ends of said rows of side stitches. As it is intended that both side rows of stitches shall be formed at once, it is only necessary to impart to the cloth a feeding motion in the direction of the length of a buttonhole in one way, or, in other words, without moving it in the reverse direction again. I prefer to have no feeding movement during the barring of the ends of a buttonhole, and so the feeding motion mentioned will generally occur only during the forming of the two rows of side stitches. The vibrating motion will occur, as usual, during the feeding motion in order to form the two rows of side stitches and also during barring.

As in an earlier improvement made by me, the needles preferably will turn, twist, or revolve one about the axis of the other during barring, and when this feature of operation is adopted the vibrating motion may be of the same amplitude and in the same position during barring as when the two rows of side stitches are being formed. As all these features are very fully described in application Serial No. 449,121, filed by me October 17, 1892, for Letters Patent, it will be unnecessary for me to describe them here more fully.

In the present example of my improvement the work-clamp A is connected to a plate A′, whose shank A^2 is connected with a feed-slide A^3. The feed-slide A^3 is connected by a rod A^4 with a rotary feed-disk A^5. Preferably the connection with the feed-disk will be adjustable, as usual.

The feed-slide A^3 is fitted to the slot of the vibrating plate C in the usual manner. The vibrating plate has a shank C′, which is fitted in a slideway C^2 on the base-plate D of the attachment. To the shank C′ of the vibrating plate is pivotally connected by a pin or screw *e* the lower end of an upright lever E, which is fulcrumed between its ends on a pin or screw *e′*, extending from a stationary bracket e^2, rising from the base-plate D of the attachment. This lever is operated by a cam in the ordinary manner.

Having now explained generally the means whereby the feeding movement is produced and also the devices which produce the vibrating movement, I will describe means for suppressing the feeding movement during barring.

The rotary feed-disk A^5 is made in the form of a gear-wheel and meshes with another gear-wheel F, which is here shown as half the diameter of A^5. The said disk A^5 is mounted upon a shaft or stud *f*, supported by a bracket *f′*, extending from the base-plate D of the attachment. Any desired frictional device may be employed intermediate the gear-wheel and its shaft or stud *f* and bracket *f′*. Fastened to the gear-wheel F is a radial slotted or notched arm F′, in which is fitted a pin *g*, that extends upwardly from a ratchet-wheel G. This ratchet-wheel is eccentric with the gear-wheel F, as is common in work-moving mechanism of the kind under consideration. The ratchet-wheel is mounted upon a shaft or

stud that is supported in the base-plate D of the attachment.

G′ is a pawl that engages with the ratchet-wheel G. It is pivoted by means of a screw or pin g' to a swinging arm which is pivoted at one end to the shaft or stud of the base-plate D and at the other end is connected by a pin g^2 with a slide-bar G^2.

On the top of the ratchet-wheel is an intercepter-plate H, whose function it is to periodically prevent the pawl G′ from engaging with the ratchet G. It is loosely mounted upon the shaft or stud of the ratchet-wheel G, and has such frictional engagement with the ratchet-wheel as is sufficient to enable the latter to be carried along until some other device precludes its movement. It has three sets of ratchet-teeth h' h^2 h^3. The sets of ratchet-teeth h' h^3 project beyond the ratchet-teeth of the ratchet-wheel G, and the intermediate set h^2 of ratchet-teeth is coincident with the teeth of the ratchet-wheel G. The pawl is wide enough to engage not only the teeth of the ratchet-wheel G, but also the teeth of the intercepter-plate H. While barring is being done at the lowest end of the buttonhole, the ratchet-teeth h' will come opposite to the pawl G′, and the latter will then be moved out of engagement with the ratchet-wheel and will coöperate only with the intercepter-plate. After this barring shall have been done the set of ratchet-teeth h^2 of the intercepter-plate will come opposite to the pawl, and then the pawl will move both the intercepter-plate and the ratchet-wheel together. At this time a stop-motion, with which the machine will preferably be provided, may be operated. Obviously the set of ratchet-teeth h^3 of the intercepter-plate H will come in contact with the pawl during the formation of the first set of barring-stitches of the next buttonhole, and will disengage the pawl from the ratchet-wheel. It need hardly be added that whenever the pawl is disengaged from the ratchet-wheel by means of the sets of ratchet-teeth h' h^3 of the intercepter-plate H there will be no feeding of the work. It should have been mentioned that the intercepter-plate has a circumferential slot h, into which projects the pin g, and thus is positively connected to the ratchet-wheel at certain times when the ends of the slot coact with the pin.

The stop-motion above referred to consists of a friction-brake on the end of a lever fulcrumed on a bracket extending from the machine-head and adapted to engage a disk fixed to the main driving-shaft. As this forms no part of the present invention and is a means well known in the art, I have not illustrated such brake and disk. However, as will be readily understood, the end of the lever carrying the friction-brake is pivoted on the end of a bar O, fitted to slide longitudinally in suitable brackets on the under side of the bed-plate. The rod O has a suitable collar, with treadle connection, (not shown,) by which the said rod may be moved outwardly to throw the brake out of engagement with the disk, thereby permitting the main driving-shaft to rotate.

N designates a lever fulcrumed on a stud b^{13} and is located, preferably, beneath the lever B^{12}. The said lever N is normally held by a spring N^2 so that one end is in the path of a slot N^4, cut into the bed-plate. Through this slot projects a finger N^3, forming part of a collar O^3, fixed to the bar O, so that when the latter is moved forward to release the brake the spring N^2 throws the lever N back of the finger N^3, and thus prevents the rearward movement of bar O by its spring O^2. To release the finger N^3, I preferably secure to the feed-disk A^5 two cams N′, one of which at the completion of a buttonhole contacts with the inclined face N^5 on lever N to throw the latter, thereby carrying the end of lever N out of engagement with the finger N^3. The bar O will then be moved by its spring O^2, held between collar O′ and a supporting-bracket for the said bar, forming a part of the bed-plate, to bring the brake into contact with the disk on the driving-shaft.

N^6 designates a handpiece attached to lever N, by which the latter may be moved at any time to release the finger N^3.

The slide-bar G^2 will be operated in the usual manner by an arm G^3, that is operated by a shaft arranged underneath the base-plate of the sewing-machine in a manner well known.

The needles B′ B^2 are affixed to a single needle-carrier B, which is mounted in the head of the machine, so as to be free to reciprocate vertically and also to rotate. It may be journaled in a sleeve B^3, which is connected by a pin to one end of a rod B^4, whose other end is pivotally connected to a crank-pin or screw extending from a disk that is affixed to a shaft arranged horizontally in the arm of the sewing-machine.

The needle-carrier B has affixed to it just above and below the sleeve B^3 collars b' b^2, by means of which the reciprocating motion of the sleeve will be imparted to the needle-carrier and hence to the needles. The upper part of the needle-carrier is made in the form of a long pinion b, and it engages with a rack-bar B^5, fitted to slide in bearings b^4 b^5, provided in the upper portion of the sewing-machine head. The upright lever E is connected to this slide-bar by means of a rod B^6, which at one end is pivotally connected to the rack-bar and at the other end is provided with a hook for engaging a pin or screw b^7, that is fastened to the lever E. Whenever the rack-bar is reciprocated, it will rotate the needle-carrier B. Of course this should happen only at the end of a buttonhole, so normally the rod B^6 is supported by an adjustable support B^8, which is fitted in a bearing b^8 at the top of the sewing-machine head to slide transversely to the movement of the rack-bar and rod B^6. The rear end of the rod

B^6 has an inclined under face b^9, so that when this rod, with the rack-bar, is reciprocated rearwardly it will rise upon the support B^8 and so become unhooked from the upright lever E. It will be sustained in its unhooked position all the time, except during barring. Whenever barring should occur, the adjustable support B^8 will be adjusted transversely to the rod B^6, so that the latter may descend and engage with the lever E and derive motion therefrom. A spring e', attached to the head of the machine and the rod B^6, provides a positive means to seat said rod on the pin b^7.

I will now describe a means for adjusting the support B^8. The arm b^{10} is pivotally connected to the support B^8 and is fixed upon an upright rock-shaft B^{10}, journaled at the lower end on the base-plate of the sewing-machine and near the other end in a bearing fastened on the side of the sewing-machine head. Near the lower end this rock-shaft B^{10} is provided with an arm b^{12}, that coacts with a lever B^{12}, fulcrumed by a pin or screw b^{13} to the base-plate D of the attachment. The other end of this lever coacts with a cam or projection I, moving with the feed-disk A^5 and shown here as being arranged below it. When this cam or projection oscillates the said lever, it withdraws the adjustable support B^8 from the rod B^6. As the feed-disk A^5 continues to rotate, the cam I is carried out of engagement with lever B^{12}, and the spring B^{14}, secured at one end to the head of the machine and at the other end to arm b^{10}, moves the support B^8 into a position to coact with the rod B^6. As the feed-disk A^5 makes but one-half of a complete rotation for each longitudinal feed movement of the work-carrier, it is necessary to provide two cams I, as shown in Fig. 8, to withdraw the support B^8 at the end of each half-rotation.

It will be observed that the needles B' B^2 are equidistant from the axis of the cutter-carrier and diametrically opposite to each other. Owing to this, both may be revolved, so as to form the stitches on opposite sides of the center line of a buttonhole, as already described.

With the needles will be employed the usual concomitants, these ordinarily being two shuttles and means for operating them. As these features are fully set forth in my prior application aforesaid, I will not further describe them here.

J' J^2 designate cutter-carriers, consisting of bars arranged vertically in the sewing-machine head on opposite sides of the needle-bar, one forward and the other rearward of the needle-carrier. At the lower end they are provided with cutters K' K^2, each here shown as of a length suitable for cutting a buttonhole-slit at a single stroke. The lower portions of the cutter-carriers are fitted to slide in bearings j' j^2, with which the sewing-machine head is provided, their upper portions being fitted in sleeves j^3 j^4, which turn in bearings j^5 j^6 in the upper portion of the sewing-machine head. Although the cutter-carriers are free to slide vertically in these sleeves j^3 j^4 and in their lower bearings j' j^2, yet they are engaged with said sleeves by means of splines, so that they will be oscillated whenever the sleeves are oscillated.

The cutter-carriers are provided with arms j^7 j^8, which when the cutter-carriers are oscillated will engage with recesses b^{16} b^{17} in the sleeve B^3. Whenever either of the cutter-carriers is thus engaged with the sleeve B^3, the needle-carrier will cause the cutter of that carrier to make a buttonhole-slit. The top of each recess b^{16} b^{17} is therefore a depressor.

While the cutter-carriers J' J^2 are in their normal inoperative positions, pins j^{10}, with which they are provided, will bear upon shoulders j^{11}, forming appurtenances of the sewing-machine head, and thus the cutter-carriers will be sustained during the time that they are not engaged with the sleeve B^3.

The upper ends of the sleeves j^3 j^4 are provided with crank-pins j^9, which engage with fingers l on slide-bars L. The slide-bars L and the fingers are arranged in opposite sides of the upper horizontal portion of the sewing-machine head and are supported at the forward ends by means of pins or screws l^2, that are affixed to the sewing-machine head. At the rear ends these slide-bars L are provided with hooks l^4, that engage with pins or screws l^5, carried by the upright lever E.

With each slide-bar L is combined an adjustable support L' for determining when such slide-bar shall engage with the lever E. The supports L' at their forward sides and the hooks of the slide-bars L at their rear sides have inclined faces, so that the slide-bars may ride upon said supports when reciprocated rearwardly after the supports have been adjusted into the proper position. The two supports L' are at their lower ends mounted upon rock-shafts or studs L^2, affixed to the base-piece D of the attachment, and are connected together by a link L^3. Preferably this link will be made in two sections, adjustably connected by means of screws l^7, extending through slots l^6, provided in one of the sections and engaging with tapped holes in the other section. These supports rock toward and away from the front of the machine, the rocking being produced by means of a lever L^5, affixed to the rock-shaft of one and extending into a position to be actuated by two cams M' M^2, which are shown as being arranged upon the top of the rotary feed-disk. When one of the supports L' is rocked into position for disengaging its slide-bar L from the lever E, the other will be in position to allow of the engagement of its slide-bar L with said lever E. One of the cams M' M^2 is for one cutter and the other for the second cutter. Obviously whenever either of the slide-bars shall be engaged with the lever E the corresponding cutter-carrier will be rotated into a position for cutting and engage with its depressor, or, in other words, the slide B^3, to make a buttonhole-slit.

The rotary feed-disk makes only half a rotation for each buttonhole, and hence only one of the cams M' M² comes into play during the sewing and cutting of any buttonhole. As all parts of one buttonhole are sewed during one straight longitudinal feed of the work-clamp and another on the reverse straight longitudinal feed of the work-clamp, I employ two cutters, one of which operates at a proper relation to the termination of each straight longitudinal feed of the work-clamp, or, in other words, in proper relation to the sewing of each buttonhole.

With each of the supports L' is provided a supplementary adjustable arm L⁴, which is pivotally connected by a pin l^{10} to the said support and normally held against the support by a spring l^{11}. Into each of the supports L', I preferably set a stop-screw l^{12}, so that instead of holding the supplementary arm L⁴ against the supports L' they may be adjusted a short distance apart. This enables me to use smaller cams on the feed-disk to effect the movements of lever E. These supplementary arms and their appurtenances are well known; but one of them has a new function in my improvement. In the present instance the supplementary arm of the rear support L' has the function of sustaining the corresponding slide-bar L, while the rear cutter should remain inoperative. The supplementary arm of the rear support L' is adjusted to a position opposite the corresponding slide-bar L, when the rear cutter should be disengaged from its depressor and turned into an inoperative position. The supplementary arm of this rear support is a little higher than the rear support, so that when the front slide-bar is allowed to drop between the support L' and the supplementary arm of the support by the forward rocking of the two supports L' and their supplementary arms the rear slide-bar L will drop from the supplementary arm of the rear support L' onto the rear support L'.

I have shown a spring P attached at one end to the bar L and at its other end to the support L' to provide a positive means of bringing the bar L to its seat on the pin l^5 of the lever E. Each of the bars L will be provided with a spring P.

The drawings show the parts in position during the sewing of the second set of barring-stitches to complete a buttonhole when the lengthwise feed has been away from the operator. The lever L⁵ rests upon the face M', the front bar L rests upon its supporting-arm L', and the rear bar L rests upon its supplementary arm L⁴. After the barring the pawl G' passes into engagement with the teeth h^2 of the intercepter-plate H and the coincident teeth of ratchet-wheel G, and when the pawl is so positioned the stop-motion is operated. To begin the sewing of a buttonhole, the stop is released and both the intercepter-plate H and ratchet-wheel G are fed together for two or three teeth or until pawl G' is thrown from engagement with ratchet-wheel G and into engagement with the teeth h^3 of intercepter-plate H. The first set of barring-stitches is then formed during the suspension of the lengthwise feed of the work-support. When pawl G' passes out of engagement with teeth h^3 at the end of the barring, said pawl engages the wheel G and rotates the same to produce a lengthwise feed of the work-support toward the operator. As the feed-disk A⁵ rotates the cam M² is carried beneath the follower of lever L⁵ at or about the sewing of the last of the side stitches. As the lever L⁵ rides over the cam M² the shaft L² is rocked. This causes the front bar L to force the arm L⁴, against whose side it rests, it being higher than the support L', outward, thus permitting the bar L to drop between the support L' and arm L⁴ and to seat upon the pin l^5 of lever E. The lever E then moves the front bar L forward to bring the arm j^7 of cutter-bar J' into engagement with recess b^{16} of the needle-bar, thus turning the cutter-blade into operative position. Continued rotation of the main driving-shaft carries the needle-bar and cutter-bar J' down together, and the cutter-blade of bar J' cuts a buttonhole-slit between the two rows of side stitches while the feed-disk is at rest. The said bars are then raised together, and the rearward movement of bar L withdraws the arm j^7 from engagement with the recess b^{16}. As the bar L was moved forward out of contact with L' and L⁴ the latter was thrown back by its spring l^{11} until it struck the pin l^{12}, thus bringing the inclined face of arm L⁴ into position to cause the bar L on its rearward movement to ride out of engagement with pin l^5 of lever E, so insuring but a single cut. When the front bar L was moved, as above described, to cut a slit, the rear bar L remained on its supporting-arm L⁴. After the formation of side stitches and the cutting of the buttonhole-slit, as described, the pawl G' passes into engagement with the teeth h' of plate H, and the barring mechanism is thrown into operation to form the barring-stitches at the other end of the buttonhole-slit. The lever L⁵, however, remains on the cam M² during the barring. Upon completion of the barring the pawl G' falls into engagement with the ratchet-wheel G and the intermediate set of teeth h^2 of plate H. The rotation of the ratchet-wheel one or two teeth carries the cam M² from beneath lever L⁵, so that the latter rests upon the top of the gear-wheel, and as the shaft L² is rocked by the movement of said lever the two bars L are moved, so that each rests upon its respective supporting-arm L' with the outer face of the front bar L and the inner face of the rear bar L in contact with the side of their respective supplementary arms L⁴. When in this position, the stop-motion comes into operation, and the work is removed or moved into position to start another buttonhole. In starting a second buttonhole after the operations

above described the stop-motion is released, the pawl G′ engages the teeth h^3 of plate H, and the first set of barring-stitches are formed. The said pawl then engages ratchet-wheel G, and the work-carrier is fed in a direction the reverse of that during the sewing of the first buttonhole, or away from the operator, and the lever L^5 rests upon the top of the gear-wheel until near the end of the longitudinal feed movement, when said lever is caused to ride over the cam M′ This movement of lever L^5 rocks the shaft L^2, so that the rear supporting-arm L′ is moved to one side from beneath the rear bar L, permitting the latter to fall between arm L′ and its supplementary arm L^4 and into engagement with the rear pin l^5 of lever E. The forward movement of bar L by lever E carries arm j^8 of cutter-bar J^2 into engagement with the recess b^{17} of the needle-bar, and the cutter-blade is turned into operative position. The said cutter-bar is then caused to descend to cut a slit in the manner before described with reference to the cutter-bar J′. As the bar J^2 is raised, and on the rearward movement of the rear bar L, the latter rides over the inclined face and is caused to rest upon the top of rear supplementary arm L^4, out of engagement with the lever E. This completes the cycle of movements of the cutting mechanism, the parts being in the position as described at the beginning—that is, the front bar L rests upon the front supporting-arm L′ and the rear bar L rests upon the rear supplementary arm L^4. The buttonhole is then completed by barring the other end. When sewing the third or next buttonhole, the cutter-bar J′ is brought into position to cut a slit, the fourth buttonhole, the bar J^2, and so on. From this description it will be seen that the cutters are operated alternately, and this follows of necessity by reason of the fact that one buttonhole is sewed during one longitudinal feed of the work-carrier and the next on the reverse feed. The movements just described are, first, barring; second, forming side stitches; third, cutting the buttonhole-slit, and, fourth, barring to complete the buttonhole.

While I have referred to a base-piece D, it is not necessary to make the feeding mechanism in the form of an attachment, and consequently to make a base-piece D separate from the base-piece of the sewing-machine.

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

1. In a buttonhole sewing and cutting machine, the combination of suitable stitch-forming mechanism and a work-support, means for producing a relative movement between the needle and work-support for the sewing of a buttonhole, two cutters, and mechanism for operating these cutters alternately, whereby the respective cutters are caused to cut alternate buttonholes during successive operations of the machine, substantially as described.

2. In a buttonhole sewing and cutting machine, the combination with suitable stitch-forming and work-supporting mechanism for sewing a buttonhole with a single longitudinal feed of said support, of two cutters and mechanism for operating these cutters alternately, whereby the respective cutters are caused to cut alternate buttonholes during successive operations of the machine, substantially as described.

3. In a buttonhole sewing and cutting machine, the combination of sewing mechanism comprising a plurality of needles, a work-support mechanism for feeding the work suitably for the sewing of a buttonhole with a single longitudinal feed, two cutters and means for operating these cutters alternately, for successive buttonholes, substantially as described.

4. In a buttonhole sewing and cutting machine, the combination with sewing mechanism comprising a plurality of needles and a work-support, of means for imparting to said support a feed lengthwise of a buttonhole, means for producing a relative vibratory movement between the needle and work-support transversely to the length of a buttonhole, two cutters and means to operate said cutters alternately at the end of separate and distinct lengthwise feeding operations, whereby the respective cutters are caused to cut alternate buttonholes during successive operations of the machine, substantially as described.

5. In a buttonhole sewing and cutting machine the combination with sewing mechanism comprising a plurality of needles affixed to a single bar, and a work-support, of means for producing a relative vibratory movement between the needle and work-support transversely to the length of a buttonhole, also a feed lengthwise of a buttonhole, two buttonhole-cutters and means actuated by said lengthwise-feeding means to bring said cutters alternately into engagement with the needle-bar at predetermined periods, substantially as described.

6. In a buttonhole sewing and cutting machine the combination of sewing mechanism comprising a needle-bar, means to reciprocate said bar, two buttonhole-cutters, and means for bringing said cutters alternately into engagement with the needle-bar at predetermined periods, substantially as described.

7. In a buttonhole sewing and cutting machine the combination of sewing mechanism comprising a needle-bar, means to reciprocate said bar, a work-support, means for imparting to said support a progressive feed movement lengthwise of a buttonhole, means for producing a relative vibratory movement between the needle and work-support transversely to the length of a buttonhole, two cutters, and mechanism actuated by said feeding means for bringing said cutters alternately into engagement with the needle-bar, substantially as described.

8. In a buttonhole sewing and cutting machine, the combination of sewing mechanism, a work-support, means for imparting to said support a progressive feed movement lengthwise of a buttonhole, means for producing a relative vibratory movement between the needle and work-support transversely to the length of a buttonhole, two bars each carrying a suitable buttonhole-cutter, mechanism intermediate said bars and the feed mechanism actuated by the latter to bring these cutters alternately into operative position for cutting a buttonhole and means to actuate said bars, substantially as described.

9. In a buttonhole sewing and cutting machine, the combination with sewing mechanism and a work-support, of means to impart to said support a progressive feed movement lengthwise of a buttonhole, means for producing a relative vibratory movement between the needle and work-support transversely to the length of a buttonhole, two buttonhole-cutters, two cams actuated by said feeding mechanism, a lever actuated by said cams, and mechanism intermediate said lever and cutters for operating the latter alternately, substantially as described.

10. In a buttonhole sewing and cutting machine, the combination of sewing mechanism comprising a reciprocating needle-bar, a work-support, a feed-wheel for imparting to said support a progressive feed movement lengthwise of a buttonhole, means for producing a relative vibratory movement between the needle and work-support transversely to the length of a buttonhole, two buttonhole-cutters, two cams actuated by said feed-wheel, a lever actuated by said cams and mechanism intermediate said lever and cutters to bring the latter alternately into engagement with said needle-bar, substantially as described.

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

JAMES T. HOGAN.

Witnesses:

WILLIAM A. POLLOCK,

ANTHONY GREF.