

(No Model.)

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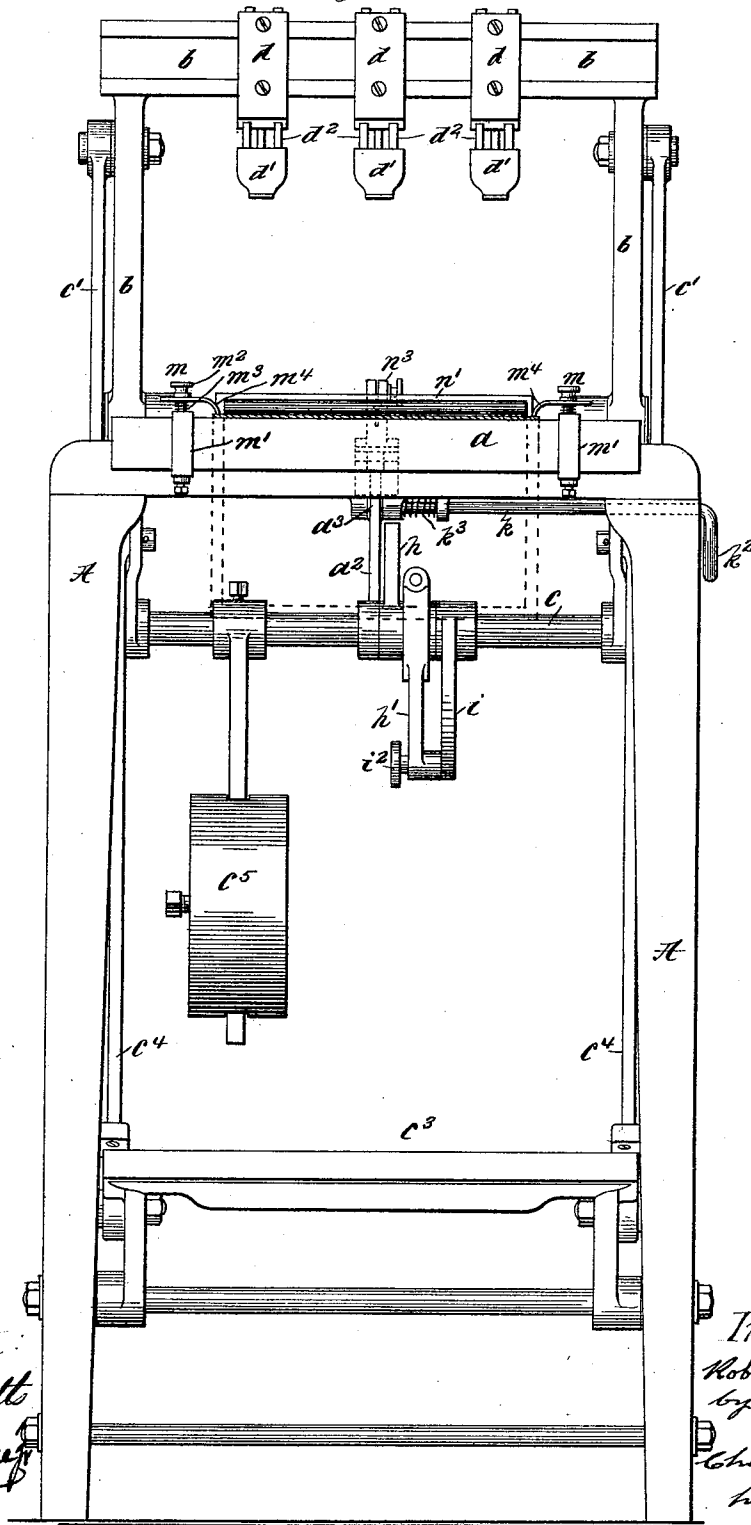
R. BURNET.

MACHINE FOR STITCHING WITH STAPLES.

No. 481,747.

Patented Aug. 30, 1892.

Fig. 1.



Attest:
Geo H. Holt
J. M. D. May

Inventor
Robert Burnet
by
Chas. F. Dane
his Atty.

(No Model.)

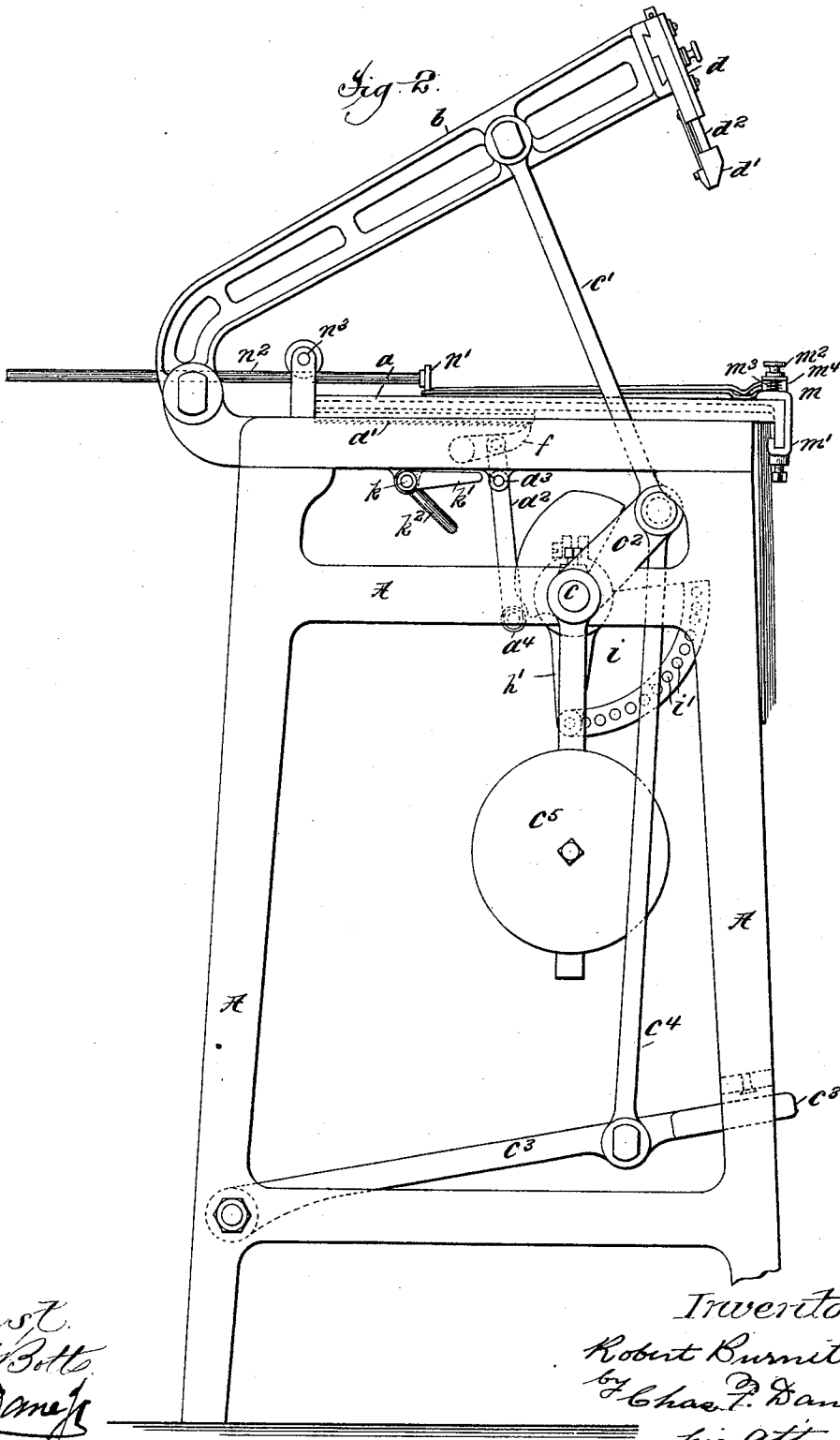
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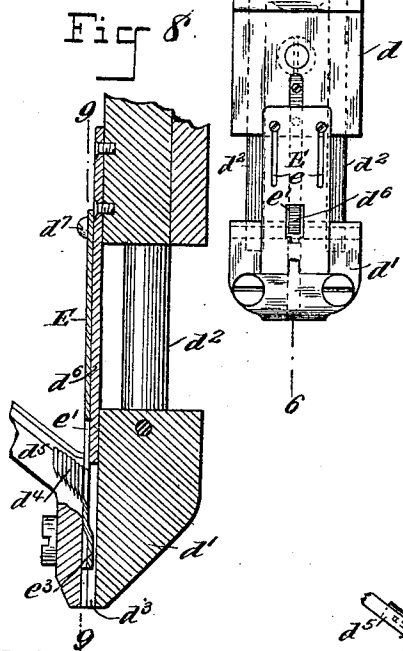
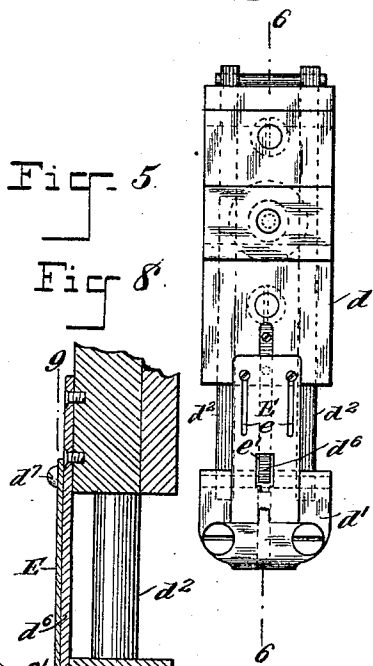
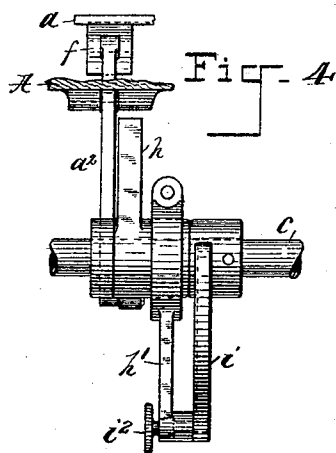
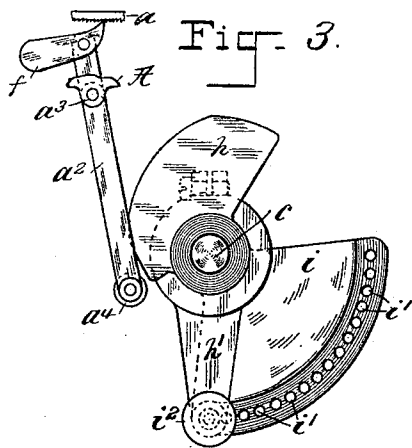
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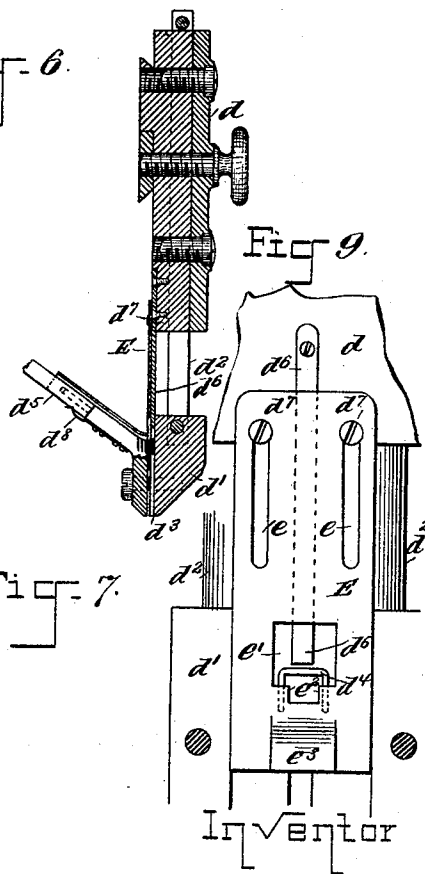
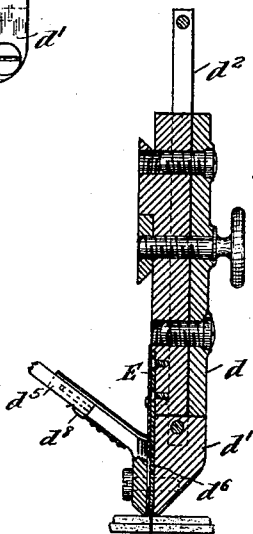
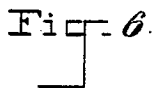
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UNITED STATES PATENT OFFICE.

ROBERT BURNET, OF EAST ORANGE, NEW JERSEY.

MACHINE FOR STITCHING WITH STAPLES.

SPECIFICATION forming part of Letters Patent No. 481,747, dated August 30, 1892.

Application filed August 24, 1891. Serial No. 403,556. (No model.)

To all whom it may concern:

Be it known that I, ROBERT BURNET, a citizen of the United States, and a resident of East Orange, in the county of Essex and State of New Jersey, have invented new and useful Improvements in Machines for Stitching with Staples, of which the following description, taken in connection with the drawings herewith accompanying, is a specification.

My invention relates to that class of machines adapted for stitching books or other articles with staples; and it consists of improvements upon the machine embodied in my application for Letters Patent for improvements in book-binding machinery, filed December 22, 1890, Serial No. 375,526.

In the present instance my invention consists, first, in the means for operating and adjusting the movement or feed of the bed or table upon which the book or other article to be operated upon is secured; secondly, in the means for regulating the feeding of the staples to their proper position to be operated upon; thirdly, in the means for adjustably supporting the staples in said position to be operated upon, and, fourthly, in other details of construction and arrangement of parts, as will hereinafter be described in detail, and pointed out in the claims.

Referring to the drawings, Figure 1 represents the front view of a machine embodying my invention, and Fig. 2 a side view of the same, the staple-feed bar d^5 being omitted therefrom. Fig. 3 represents a side view of the table adjusting and operating mechanism, enlarged, in detail, and Fig. 4 a front view of the same. Fig. 5 represents a back view of one of the staple driving and feeding devices detached from the machine, showing the staple-driver raised. Fig. 6 represents a vertical sectional view through line 6 6 of Fig. 5, showing one of the staples supported in position in the guideway to be engaged by the staple device; and Fig. 7 represents a view of the same with the driver depressed and the staple driven into a section of the object to be fastened or stitched, as shown. Fig. 8 represents a vertical sectional view, enlarged, through a section of one of the staple feeding and driving devices, showing one of the staples engaged by the cut-off or regulating device; and Fig. 9 represents a view from the rear

side of the same, through line 9 9 in Fig. 8, with the feed-rod removed.

To explain in detail, the main supporting frame or stand A, provided with the movable bed or table a , supported in suitable ways thereon, the vertically-operating frame b , hinged above and at the rear end of the said supporting-frame A, adapted for the support of the staple driving and feeding devices, the mechanism for raising and lowering said hinged frame b , consisting of the rock-shaft c , adapted to partially rotate to raise and lower said hinged frame b through the medium of connecting-rods c' , which connect at one end with said frame and at their opposite end with an arm c^2 , extending from said rock-shaft, the latter being operated in one direction by the foot-lever c^3 and connecting-rods c^4 and in the opposite direction by the counter-balance c^5 , and the said staple driving and feeding devices consisting, as more clearly shown in Figs. 5, 6, 7, 8, and 9, of the upper supporting-plate d , constructed for adjustable attachment with the frame b , and the lower supporting and guide plate d' , adjustably supported at a point below and in its relation to the upper plate d on the end of rods or plungers $d^2 d^3$, supported and adapted to slide in openings in the supporting-plate d and provided with a vertical centrally-arranged groove or guideway d^3 in its rear side, adapted to receive the staples (represented at d^4) from an inclined feed-rod d^5 , attached to the plate d' , and guide the same, are all of substantially the same construction and operation as in my said application above referred to, Serial No. 375,526. In the present instance and according to my invention I provide a device (represented at E) adapted for regulating the feed of the staples from the feed-rod d^5 into the guideway d^3 , in which latter they are adjustably supported until engaged by the staple-driver d^6 , as will hereinafter be more fully described in detail. Said device E consists of a plate which is supported by and has a sliding connection with the supporting-plate d in the rear of and adjacent to the plunger or staple-driver d^6 , by means of two headed pins or projections d^7 located on said supporting-plate, projecting through and overlapping the sides of two vertically-arranged slots or openings $e e$, lo-

cated in the plate E, adjacent to its upper end, as more clearly shown in Figs. 5 and 9. The lower or opposite end of the plate is loosely supported and guided in an opening or pocket in the lower plate d' , as more clearly shown in Figs. 6 and 7. This plate is provided with an opening e' , located about central therein and in line with the end of the feed-rod d^5 , slightly wider than the latter and of sufficient width for the passage of a staple through the same. The lower corners of this opening are provided with shoulders $e^2 e^2$, which are beveled at their upper edge on one side to form a point at their outer or rear edge to readily engage with the corresponding beveled points of the staples located on the feed-rod to throw the same into the guideway d^3 in position to be engaged by the staple-driver d^6 , as will be described. When the upper plate d and the lower plate d' have been brought together and the staple-driver d^6 has descended to its limit, as shown in Fig. 7, the said opening e' in the cut-off or regulating device E is directly opposite the end of the feed-rod d^5 to allow a staple to slide into the same and against the side of the staple-driver d^6 . As the plate or frame d is raised the driver d^6 is carried upward, and the device E remains stationary until the projections $d^7 d^7$ on the plate d has engaged the upper ends of the slots ee therein, at which time the end of the driver has passed above the lower end of the opening e' . The device E is then raised to cause the shoulders $e^2 e^2$ to engage the ends of the staple located in the opening e' and throw the same into the now opened guideway d^3 and at the same time cut off or prevent the next succeeding staple from sliding into the said guideway. As the first staple is thus moved into the guideway d^3 it is supported therein and prevented from falling by means of a spring arm or catch e^3 , projecting from the plate E into the said guideway. Said spring-arm e^3 is formed in the instance shown by cutting into the lower edge of the plate E and bending a piece of the same forward, as clearly shown. At the next descent of the staple-driver and as the plates d and d' are brought together the former engages the staple supported in the guideway d^3 and pushes the same past its supporting-arm e^3 and into the article to be stitched, and as the staple-driver is thus lowered the plate or cut-off device E remains stationary in its raised position until said driver passes below the opening e' therein and shuts off its communication with the guideway d^3 . The lower ends of the slots ee are then engaged to lower the plate or device E and bring the opening e' therein opposite the end of the feed-rod d^5 to allow another staple to slide therein to be fed or thrown into the guideway d^3 in position to be operated upon, as before described. It will thus be seen that the regulating device E is only moved a sufficient distance at the upward throw of the staple-driver to engage with a staple and force the same into

the guideway d^3 , and at the same time engage with and prevent the succeeding staples from sliding into said guideway and at the downward throw of the staple-driver to move the opening e' into position to receive the succeeding staple, as described.

The feed-rods d^5 are formed in two parts or sections, being adjustably connected at or near their lower or supporting end by a tongue on one part extending into a corresponding opening in the other, as shown by dotted lines in Figs. 6 and 7, and are adjustably held from longitudinal movement by the end of a spring d^8 , secured on one section, projecting into a groove in the other section, the object of such construction being to allow the feed-rod to be detached from its support for the purpose of being readily supplied with staples.

The sliding table a , supported in suitable ways on the frame A, as before described, is provided with a series of teeth or projections a' on its under side, adapted to be engaged by an operating-pawl f and be moved or advanced to automatically feed the book or other article secured thereon forward to receive the successive row or rows of staples adapted to be driven therein by the staple-driving device or devices, as before described. The said operating-pawl f is pivotally secured at or near the upper end of a lever a^2 , which is pivotally secured upon the frame A at a^3 , as shown in Figs. 1 and 2. This pawl is pivoted a little forward of its center in order that its forward or engaging end may be held in a normal raised position in engagement with the said teeth or projections a' on the table a by the weight of their opposite rear ends. The said lever a^2 is operated by the engagement therewith at its lower end (which latter in the instance shown is provided with a friction-roll a^4) of a vibrating cam or eccentric h , located on the rock-shaft c . This cam or eccentric engages with said lever and moves the pawl located at its upper end forward to advance the table a , and as said cam or eccentric moves back from engagement with the lever the latter moves back to its normal vertical, or nearly so, position, causing the pawl f to recede and engage with the table in a manner to move the latter forward, when the lever a^2 is again operated upon.

In order to adjust the forward movement or feed of the table a at each advance of the operating-pawl f to allow for the varied space desired between the several rows of staples, I provide an adjusting device, consisting of a segment or plate i , rigidly secured to the rock-shaft c , adjacent to the said cam or eccentric h located thereon. This plate i is provided with a series of holes or openings i' therein adjacent to its outer edge or periphery, and the said cam or eccentric h , which is adjustable on the shaft c , is provided with an arm h' , which extends therefrom to a point adjacent to the outer edge or periphery of

the plate or segment i and is adapted to be adjustably connected therewith by means of a pin or screw i^2 , adapted to extend through the same into one of the said openings i' . By this means the cam or eccentric h is adjustably held in a rigid or stationary position on the rock-shaft c in such manner that by adjusting the same, as described, it may be caused to engage with the lever a^2 to a greater or less extent and adjust the throw of the latter and the table operated thereby accordingly, as will be readily understood. It will appear obvious, however, that a clamping device or other suitable means may be employed for adjustably securing the arm of the cam or eccentric h with the plate or segment i in lieu of the pin i^2 , as described, without departing from the spirit of my invention.

When it is desired to move the table a back to its normal starting-point after being fed forward by the operating-pawl h , the rear end of the latter is adapted to be engaged and elevated to lower its forward end from engagement with the teeth or projections a' by an arm or projection k' , (see Fig. 2,) located on a rod or shaft k , which is supported in suitable bearings beneath the table a . One end of this rod or shaft projects one side of the frame A and is provided with a handle k^2 , as shown in Fig. 1, as a means by which it may be operated. The arm or projection k' on the shaft k is held in a normal position from contact with the pawl f by means of a spring k^3 , (see Fig. 1,) which connects at one end with the rod k to hold it in said yielding stationary position.

In the present instance illustrated I have shown the machine as adapted for stitching books, and to adjustably hold the books or several parts thereof firmly while being operated upon I provide two clamping devices, (represented at m .) These clamping devices consist of a supporting-frame m' , adapted to be secured to the front edge of the table a and provided with an adjusting-screw m^2 in its upper edge, around the stem of which is located a coiled spring m^3 . Between the end of this spring and the head of the screw an arm m^4 is elastically supported at one end in such manner that its opposite or free end, which is bent or turned downwardly, has an elastic pressure toward or against the table a , in order to firmly hold the edges of the book or other object placed beneath the same. The pressure of the arm m^4 may be regulated by adjusting the screw m^2 , as will be readily understood.

I have also shown a gage, consisting of an adjustable plate or bar n' , arranged across the table a to present a flat-face surface, against which one edge of the leaves or sections forming the filling of the book are placed, in order to form an even and uniform edge when the book is finished. The gage is adjustable to allow for the different sizes of books or other articles by means of an arm or stem n^2 , which is adjustably held by a

clamping device n^3 , located on the frame A at the rear of the table a . The said clamping device n^3 consists, as more clearly shown in Fig. 1, of two upright arms, between which the arm or stem of the gage n' extends, which are adapted to be clamped together by an adjusting-screw, as shown. It is obvious, however, that other suitable forms of clamping device might be used in lieu of the one shown and described without departing from the spirit of my invention.

Having thus set forth my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. A machine for stitching with staples, having a staple driving and feeding device consisting of two plates or devices movably supported in their relation to each other, one of which is provided with a staple supporting and feeding rod or device and the other provided with a device operated thereby to reciprocate adjacent to the end of said feeding rod or device and regulate the feed of the staples therefrom, substantially as described, and for the purpose set forth.

2. A staple-driving machine having a staple driving and feeding device consisting of two plates or devices adjustably supported in their relation to each other, one of which is provided with a staple-feeding device and the other with a device having an opening therein adapted to operate adjacent to the end of said feeding device to allow of and cut off the feed of the staples from the latter, substantially as described, and for the purpose set forth.

3. A staple-driving machine having a staple driving and feeding device consisting of two plates or devices adjustable in their relation to each other, one of which is provided with a staple supporting and feeding device and the other with a plate having an opening therein with shoulders or projections adapted for engaging with and releasing a staple from the said supporting and feeding device, substantially as described, and for the purpose set forth.

4. The combination, in a machine for stitching with staples, of a staple driving and feeding device consisting of two plates or devices adapted to operate in a line with each other, one of which is provided with a vertically-arranged groove or guideway and with a staple-feeding rod or device and the other provided with a device adapted to regulate the feed of the staples from the said feeding device into said guideway, a spring-arm extending into said guideway, and a reciprocating staple-driver, substantially as described, and for the purpose set forth.

5. The combination, with a supporting-frame, of a sliding bed or table mounted in suitable ways thereon and provided with teeth or projections, a pivoted lever carrying a pawl for engaging with and operating said bed or table, a cam or eccentric adjustably mounted on a rock-shaft for operating said pivoted lever, an adjusting device or plate secured on said

rock-shaft, and means for adjustably connecting the said cam or eccentric therewith, substantially as described, and for the purpose set forth.

- 5 6. The combination, with a supporting-frame, of a sliding bed or table mounted in suitable ways thereon and provided with teeth or projections on its under surface, a pivoted lever
10 carrying a pawl for engaging with and operating said bed or table, a cam or eccentric adjustably mounted on a rock-shaft for operating said pivoted lever, an adjusting device or plate secured on said rock-shaft provided with a series of openings therein, and a pin, screw,
15 or other device for adjustably connecting said cam or eccentric with the adjusting device or plate by insertion into one of the said openings thereon, substantially as described, and for the purpose set forth.
- 20 7. In a machine for stitching with staples, the combination, with the supporting-frame

and a sliding bed or plate mounted in suitable ways thereon, of holding or clamping devices, consisting of a plate adapted for adjustable attachment with said sliding table and provided with spring-arms elastically supported thereby, substantially as described, and for the purpose set forth. 25

8. In a staple-driving machine, the combination, with the supporting-frame, the sliding 30 bed or table mounted thereon, and the staple-driving mechanism, of a horizontally-sliding gage located above said sliding table and adjustably supported in an arm or bracket located on the supporting-frame by means of a 35 clamping device or screw, substantially as described, and for the purpose set forth.

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Witnesses:

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ANNIE L. HAYES.