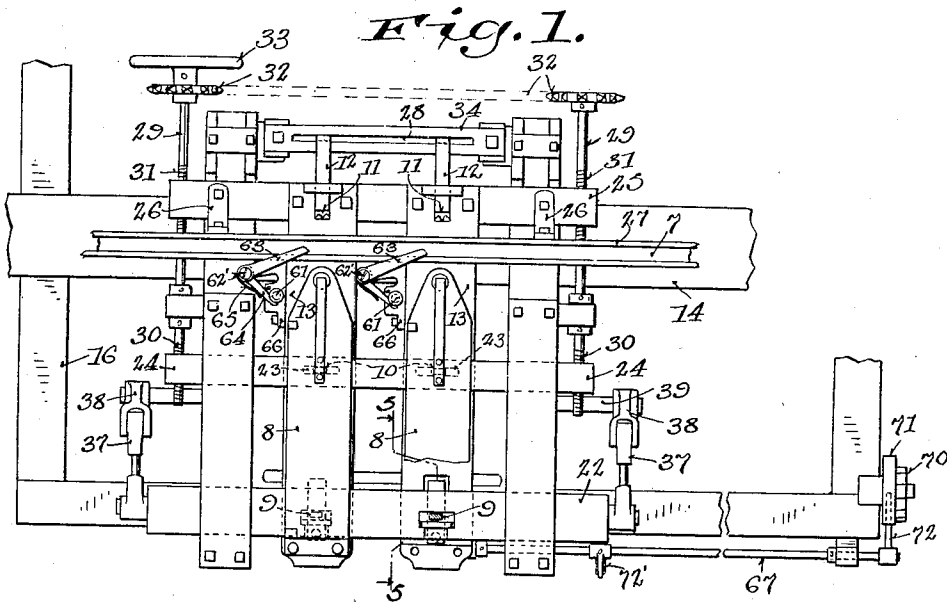
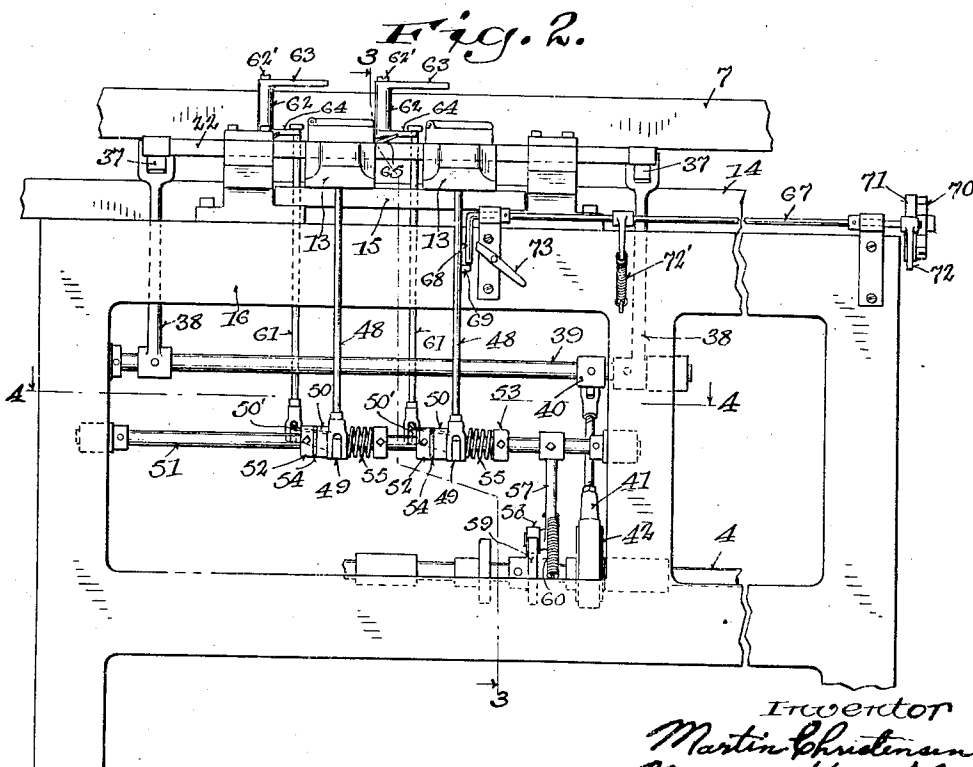


M. CHRISTENSEN.
CONTROL FOR STITCHING MACHINES.
APPLICATION FILED NOV. 7, 1918.

1,353,989.

Patented Sept. 28, 1920.
2 SHEETS—SHEET 1.

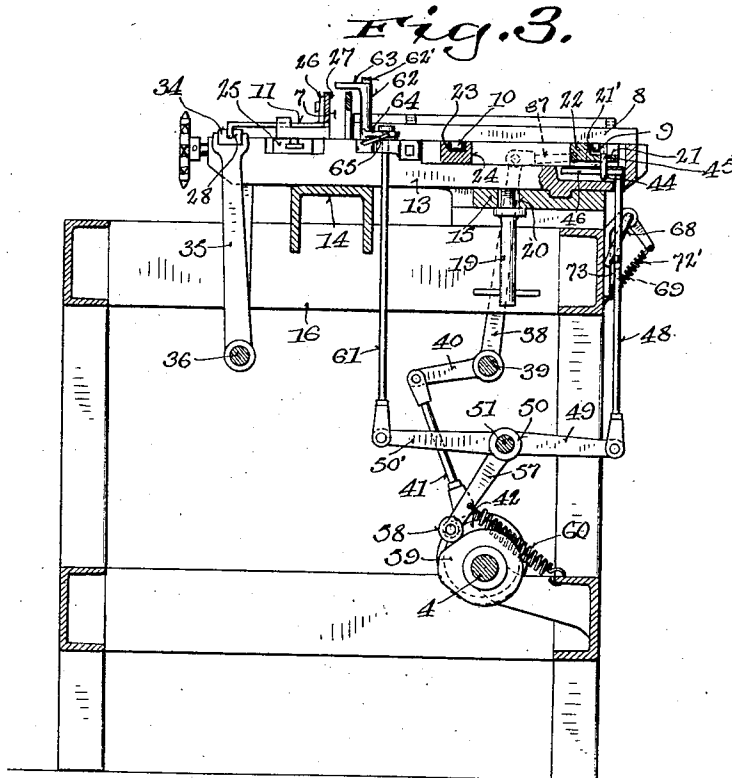
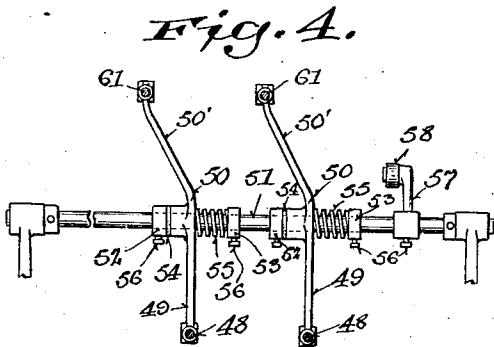
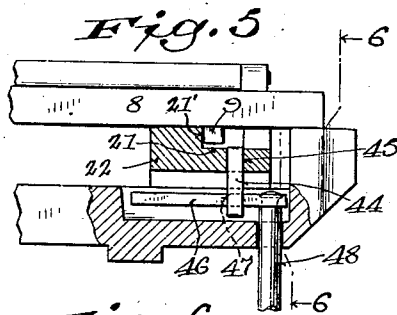
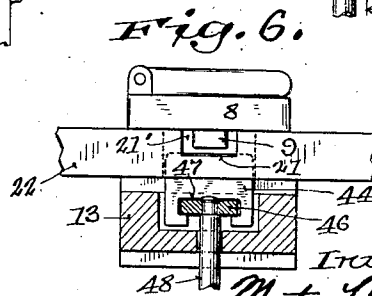


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UNITED STATES PATENT OFFICE.

MARTIN CHRISTENSEN, OF RACINE, WISCONSIN, ASSIGNOR TO CHRISTENSEN MACHINE COMPANY, OF RACINE, WISCONSIN, A CORPORATION OF WISCONSIN.

CONTROL FOR STITCHING-MACHINES.

1,353,989.

Specification of Letters Patent. Patented Sept. 28, 1920.

Application filed November 7, 1918. Serial No. 261,562.

To all whom it may concern:

Be it known that I, MARTIN CHRISTENSEN, a citizen of the United States, and resident of Racine, in the county of Racine and State of Wisconsin, have invented new and useful Improvements in Control for Stitching-Machines, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

The invention relates to signature stitching machines and more particularly to the mechanism controlling the stitchers and is fully described and explained in the specification and shown in the accompanying drawings in which:

Figure 1 is a plan view of the device embodying the invention, parts being broken away;

Fig. 2 is a front elevation view of the stitchers;

Fig. 3 is a section taken on the line 3—3 of Fig. 2;

Fig. 4 is a detail sectional view taken on the line 4—4 of Fig. 2;

Fig. 5 is a detail sectional view taken on the line 5—5 of Fig. 1; and

Fig. 6 is a section taken on the line 6—6 of Fig. 5.

In book-stitching machines suitable feeding means are provided for moving the books or groups of signatures past the stitchers and in the present instance the signatures are moved along a trough 7 during the stitching operation. The present invention is directed to the control for the stitchers.

Each stitcher in connection with which this invention is used is of usual construction including a staple former and driver which reciprocates within the staplers 8 and which has an extension 9, a feed control member which controls the length of wire fed to the stapler and which has an extension 10, and the usual clencher 11 having a reciprocating clencher actuating bar 12. Each of the stitchers including the staplers 8 and clenchers 11 are mounted on stitcher supporting frames 13 which are carried on frame members 14 and 15 on the frame 16 of the machine.

Each stitcher frame 13 is clamped to the frame member 15 by means of a clamping screw 19 which passes through a slot 20 in the member 15. The extensions 9 of the

staple forming and driving mechanisms are mounted in angular recess 21 in an actuating bar 22 and the extensions 10 of the wire feed control members are mounted in recesses 23 in a feed adjusting bar 24. The clenchers 11 are suitably clamped to a clencher adjusting bar 25 which bar has brackets 26 mounted thereon carrying a trough plate 27 so that the width of the trough may be varied for groups of signatures of different thicknesses. In adjusting for thickness it is also necessary to adjust the feed control and this is done by simultaneously moving the bars 24 and 25 toward or away from each other by means of shafts 29, each mounted in bearings on the frame and having a right screw threaded portion 30 and a left screw threaded portion 31 which engage in properly threaded apertures in the ends of the bars 24 and 25 respectively, said shafts being turned together through a chain and sprocket connection 32 on the turning of the handwheel 33. The clencher actuating bars 12 are mounted in a slot 28 in an actuating bar 34 carried by levers 35 mounted on a rock shaft 36, the mechanism for turning said shaft being shown and described in my copending application Serial No. 247946 filed Aug. 2, 1918.

The means for actuating the staplers comprises the bar 22, links 37 pivotally secured at one of their ends to said bar and pivotally secured at their other ends to cranked arms 38 carried by a rock shaft 39 mounted in bearings on the frame of the machine and moved by an arm 40, eccentric rod 41, and an eccentric 42 mounted on the drive shaft 4 of the machine whereby the bar 22 is continuously reciprocated. Under normal conditions the extensions 9 are operatively secured to move with the bar 22 by means of latches 44 mounted in slots 45 in the bar 22 and held upwardly behind the extensions 9. Thus when the latches are in position behind the extensions 9 said extensions will be held between said latches and the sides 21' of the recesses 21 and the staplers will be actuated by the bar 22 through the driving mechanism above described.

To prevent any one or all of the stitchers from actuating unless a group of signatures is presented to it or them, separate means are provided for controlling the upward movement of each latch 44. In each instance this consists of an arm 46 in which

the lower slotted end 47 of the latch is freely slidably mounted, a rod 48 carrying said arm, and means for moving said rod 48 and arm 46 upwardly to bring the latch into
 5 stitcher operating position or for keeping it in inoperative position. To accomplish this each rod is pivotally connected to the arm 49 of a lever 50 which is frictionally secured to a rock shaft 51 by means of col-
 10 lars 52 and 53, a friction washer 54, and a spring 55, the washer 54 and collar 52 being disposed adjacent one side of the lever 50 and the spring 55 being interposed be-
 15 collar 53, the collars being secured to the shaft 51 by means of set screws 56. The shaft 51 is continuously oscillated by an arm 57 carrying a roller 58 engaging a cam 59 on the drive shaft 4, the roller 58 being
 20 held against the cam by a spring 60. With this construction, under normal conditions, the cam 59 will move the arm 57 to turn the rock shaft 51 which through the lever 50, rod 48 and arm 46 will move the latch
 25 44 upwardly in stitcher actuating position and return it after the stitcher has operated. To prevent this operation in case a signature is not in position a vertically movable control rod 61 is pivotally secured to the
 30 other arm 50' of the lever 50 and is normally reciprocated by the lever 50 on the turning of the shaft 51. The movement of this control rod 61 is in turn controlled by a book engaging dog 62 mounted on a pin 62', said dog having a part 63 movable
 35 to a position in the trough 7 in the path of signatures passing therethrough and a part 64 movable into engagement with the rod 61. The dog is normally moved to the position shown in Fig. 1, to prevent downward
 40 movement of the rod 61 by means of a spring 65. Both the pin 62' and rod 61 are carried by a bracket 66 on the stitcher frame 13. When a group of signatures is passing through the trough they will en-
 45 gage the part 63 of the dog 62 and turn it so as to release it from locking engagement with the rod 61. When no signatures are presented the rod 61 will hold the lever 50 and rod 48 against movement and no
 50 movement will be imparted to the lever 50 by the rocking of the shaft 51 because under these conditions the frictional clutch formed by the washer 54 and spring 55 permits said shaft 51 to be turned with-
 55 out moving the lever 50 with it.

In certain kinds of signature binding work there is a blank left on the group of signatures which does not need to be
 60 stitched and to prevent the stapler operating on this blank means are provided, independent of the dogs 62, to prevent operation of one of the staplers. This consists of a stop rod 67 carrying a stop finger 68
 65 which when the rod 67 is turned, is moved

outwardly to engage a stop lug 69 on one of the rods 48. The movement of this rod and finger is automatically controlled from a timing ratchet wheel 70 which is actuated by a pawl (not shown) to turn a cam 71
 70 which acts upon a cam arm 72 on the rod 67 held in engagement with the cam 71 by means of a spring 72'. The ratchet wheel 70 is given a step by step rotative movement by the pawl and once during every revolu-
 75 tion of the wheel 70 the cam 71 swings the arm 72 outwardly thus swinging the rod 67 and its finger outwardly so that said finger may engage the stop lug 69 and prevent upward movement of the rod 48 which through
 80 the mechanism previously described will prevent movement of the latch 49 and consequently the operation of the stapler. The cam and its turning movement is so timed as to actuate the rod 67 when the blank
 85 aforementioned of the group of signatures is presented to the stitchers. Where it is desired to entirely prevent actuation of this stitcher the finger 68 is held in engagement with the lug 69 by means of a manually
 90 controlled latch 73 which is moved down behind said finger and prevents its return movement by the spring 72'.

I am aware that the details of construction herein set forth may be changed and I
 95 therefore desire it to be understood that such changes as come within the scope of the appended claims are within the spirit of my invention.

What I claim as my invention is:

1. In a book-stitching machine having a stapler, the combination, with an extension on the staple forming and driving mechanism of the stapler, of a movable member having a recess therein to receive said ex-
 105 tension, a latch movable into said recess behind said extension to operatively connect said extension with said member, means for moving said latch into operative position including a rock shaft, a lever frictionally
 110 secured thereto and operatively connected to said latch, and means for holding said lever against movement when no signatures are presented to the stitcher.

2. In a book-stitching machine having a
 115 stapler, the combination, with an extension on the staple forming and driving mechanism of the stapler, of a movable member having a recess therein to receive said extension, a latch movable into said re-
 120 cess behind said extension to operatively connect said extension with said member, means for moving said latch into operative position including a rock shaft, a lever frictionally secured thereto and operatively
 125 connected to said latch, and book-controlled means for holding said lever against movement when no signatures are presented to the stitcher.

3. In a book stitching machine, the com- 130

5 bination with a frame, of a stapler mounted thereon, a movable member, means for automatically connecting said movable member with the stapler to actuate the same when a signature is presented thereto, and manually operated means independent of said automatic means for controlling said connecting means.

10 4. In a book-stitching machine, the combination with a frame, of a stapler mounted thereon, means for actuating the stapler when a signature is presented thereto, and manually operated means independent of said other means for controlling the actuation of the stapler.

15 5. In a book-stitching machine having a stapler, the combination with an extension carried by the stapler, of an operating member adjacent said stapler extension, and means carried by said member and movable into the path of said extension to operatively connect said stapler and operating member.

6. In a book-stitching machine having a stapler, the combination with the driving mechanism of the stapler, of a reciprocating member adjacent said mechanism, an extension carried by said reciprocating member and movable into the path of said extension to operatively connect said reciprocating member with the mechanism.

7. In a book-stitching machine having a stapler, the combination with the driving mechanism of the stapler, of a reciprocating member adjacent said mechanism, an extension carried by the mechanism, a latch member carried by said reciprocating member, and means for moving said latch member to engagement with said extension whereby said mechanism will be carried by said member in its reciprocating movement to actuate the stapler.

In testimony whereof, I affix my signature.

MARTIN CHRISTENSEN.