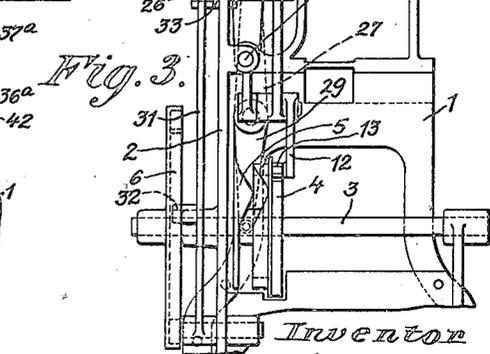
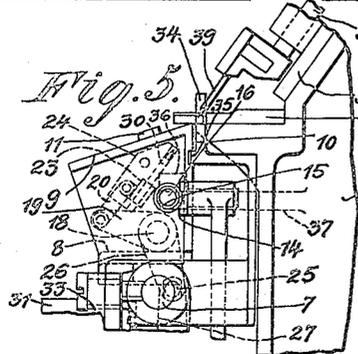
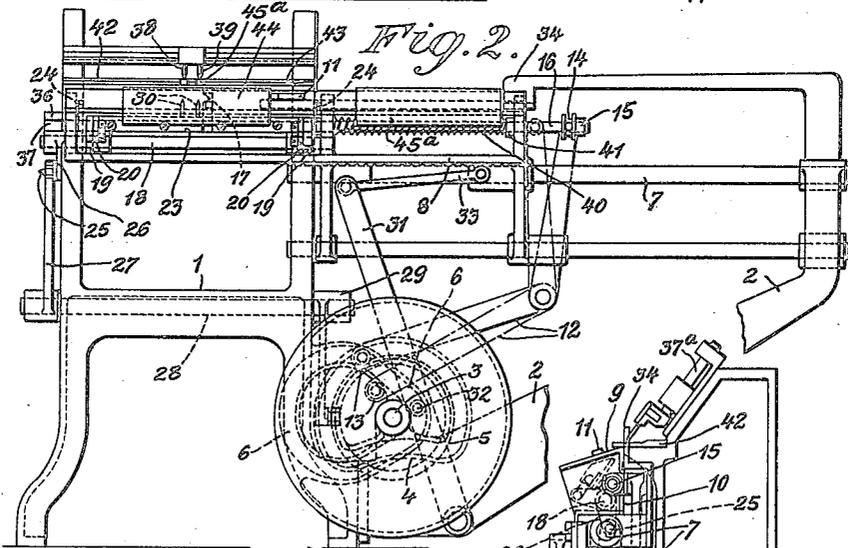
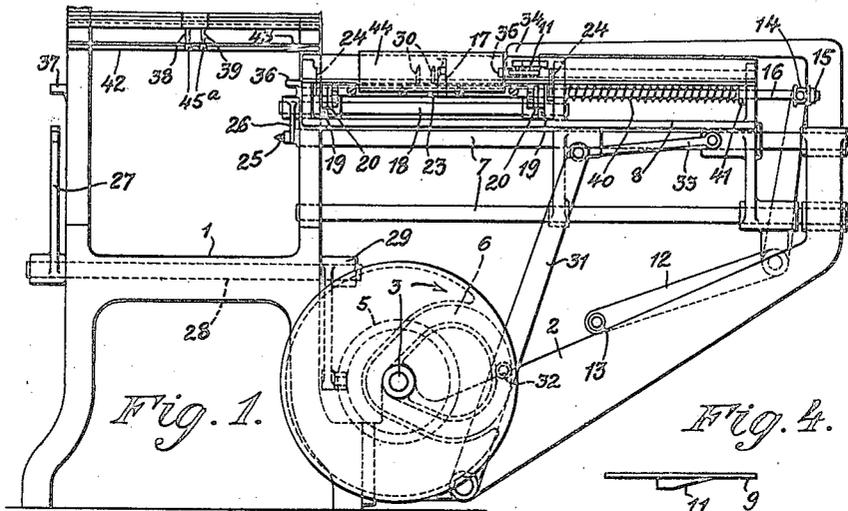


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U. BISCHOF.  
LAYING ON APPARATUS FOR BOOK FASTENING MACHINES.  
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UNITED STATES PATENT OFFICE.

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LAYING-ON APPARATUS FOR BOOK-FASTENING MACHINES.

Application filed January 22, 1921. Serial No. 439,232.

To all whom it may concern:

Be it known that I, ULRICH BISCHOF, a citizen of Switzerland, residing at Horgen, in the Canton of Zurich and State of Switzerland, have invented certain new and useful Improvements in Laying-On Apparatus for Book-Fastening Machines, of which the following is a specification.

Present-day book fastening machines comprise a rocking table for the reception of the signatures to be fastened; the laying-on of the signatures upon this table must take place each time when the latter is in its extreme end position. It is obvious that the output of the machine depends very considerably upon the attention and the skill of the operator who lays-on the signatures, because the time available, during one operation of the machine, for laying the signature upon the table is only very short. It is not always possible for the operator during this short period, to pull the signatures that have been laid upon the table, properly apart beforehand, so that it often happens that the stitches do not come exactly in the fold of the signature, or that the fastened signatures are badly done or even rendered useless.

With the improved laying-on apparatus, the time available for laying the signatures upon the laying-on table of the machine is considerably longer, and the other mentioned drawbacks are obviated.

The improved laying-on apparatus comprises a laying-on table which is shifted in the direction of the width of the machine for the purpose of laying-on a new signature, and has a width such that there is room on it for a second signature to be placed by the side of the signature that is situated in the working position, the lateral position of the said second signature being limited by a fixed stop. Each time after the signature situated in the working position has been fastened the laying-on table is shifted laterally, whereupon by the action of the said stop the second signature is moved automatically into the position of the first signature and is brought under the needles by the next following return of the table.

A constructional example of the improved laying-on apparatus is illustrated so far as is necessary for understanding the invention, in the accompanying drawings in which:—

Figs. 1 and 2 are front elevations of the

improved apparatus in different positions of the working table.

Figs. 3 and 5 are corresponding side views of the improved apparatus, and

Fig. 4 illustrates a detail.

1 is the framing of the machine; 2 a bracket mounted thereon carrying the shaft 3. This shaft carries three cams 4, 5 and 6. The bracket 2 carries also two parallel guide rods 7 which are guided at one end in the framing 1 and on which the laying-on table 8 is adapted to slide. The angular laying-on surface of this table is constituted by plates 9 and 10, of which the former carries a wedge-shaped stop 11 (Fig. 4). On the laying-on table 8 there is mounted a bell crank lever 12, one end of which carries an anti-friction roller 13, whilst its other carries a part 14 resting in the groove in the ring 15. The anti-friction roller 13 engages at times in the periphery of the cam 4 mounted on the shaft 3, whereas the ring 15 is fixed on a rod 16 that is mounted in the laying-on table and carries the thread-looper 17.

18 is a shaft mounted in the table 8; it has fixed on it two arms 19 connected by means of joints 20 to the piercer bar 23, which latter is in turn held in two guides 24 fixed to the table 8. On the shaft 18 there is also mounted an arm 26 provided with a pin 25. This pin 25 is intended to engage in an aperture of an arm 27. This arm is mounted together with the lever 29 on the shaft 28 mounted in the machine framing. The lever 29 carries an anti-friction roller working in the cam groove 5. The oscillations of the lever 29 caused by the cam groove 5, produce with the aid of the parts 28, 27, 25, 26, 18, 19, 20, a rise and fall of the piercer bar 23 with the piercer needles 30.

The bracket 2 also carries a lever 31 which engages by means of an anti-friction roller 32 with the cam 6. The upper end of this lever is jointed by means of the link 33 to the laying-on table 8.

From the foregoing it will be readily understood that in the rotation of the cam 6 the laying-on table 8 will receive through the parts 32, 31, 33, a to-and-fro motion. In order to support the laying-on table in its extreme left hand position, the said table has a lug 36 which in the aforesaid position is adapted to bear upon a lug 37 of the framing 1 (Fig. 2). 34 is a stop situated on the bracket 2, for the signatures to be placed

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upon the laying-on table, with guide rib 35 which engages in a corresponding groove in the laying-on table, and serves as a stop for the signature.

5 The needle apparatus is fixed to the framing 1 by means of the bracket 36<sup>a</sup>. This apparatus has slidably guided in it needle bars 37<sup>a</sup> that carry the needles 38, 39. Each time after the worktable has been shifted into its  
10 extreme left hand position (working position), these needle bars receive for the purpose of forming the stitches, a to-and-fro motion by known means not belonging to this invention. 42 is the stitching bar  
15 formed with apertures 45 for the passage of the needles, and with an inclined surface 43, the purpose of which is hereinafter described.

A compression spring 40 mounted on the  
20 bar 16 is situated at one end on the left hand arm of the table 8, and at its other end on a set ring 41 fixed on the bar 16. By this means it imparts to the bar 16, together with the ring 15 and the lever 12, a tendency to  
25 assume the position shown in Fig. 1.

The mode of operation of the improved apparatus is as follows:—

After the operator has laid first a signature 44 upon the machine table, the machine  
30 is started, the shaft 3 being caused to revolve continuously in the direction of the arrow shown in Fig. 1. The action of the cam 6 causes the lever 31 to rock to the left, with the result that by means of the link  
35 33, the worktable 8, together with the signature 44 situated on it, slides towards the left, so that the lug 36 of the table comes to bear upon the lug 37 of the framing 1, and the pin 25 of the lever 26 enters the hole in the  
40 end of the lever 27 (Fig. 2). In this position of the table 8 the needles 30 of the piercer bar are situated directly underneath the apertures 45<sup>a</sup> of the stitching bar 42. When the groove 5 acts upon the lever 29,  
45 the oscillations of the latter cause likewise the lever 27 to rock, with the result that through the parts 25, 26, 19, 20, the piercer bar 23 is lifted inside the guides 24, and the signature 44 is pierced from underneath by  
50 the needles 30, so that the said parts are returned again into their former position. Then by known means, not shown in the drawing, the needle bar 37<sup>a</sup> is depressed for the purpose of fastening the signature, and  
55 is then again raised. At the same time, for the purpose of forming the stitch, the bar 16 carrying the thread-looper 17, is shifted towards the left. This is effected by the fact that in the above mentioned left hand  
60 movement of the table 8, the anti-friction roller 13 situated at the lower end of the bell crank lever 12, comes into the path of the cam 4 which then, in its turn, causes the lever 12 to rock, so that the upper end of  
65 the latter produces the aforesaid movement

of the bar 16 by overcoming the resisting pressure of the spring 40.

It is obvious that during the fastening operation, the worktable 8 must remain in the left hand position shown in Fig. 2. During this operation the operator has abundant time to lay a fresh signature 45<sup>a</sup> straddleside upon the table 8 in such a manner that the said sheet will come with its right hand edge against the left hand edge of the stop 34. After the signature 44 has been fastened, the cam 6, by acting upon the lever 31, causes the table to move back into the right hand position. At the same time the fastened signature 44 on the machine  
80 is pushed by well known means (not shown in the drawing and forming no part of the invention) to the rear, that is to say, out of the range of the needles, whereas the signature 45<sup>a</sup> last laid-on, is on the contrary  
85 kept back by the stop 34, and the table 8 together with the stop 11 situated on it, passes under the signature 45<sup>a</sup>. The latter is now on the table exactly in the same place where the signature 44 was situated  
90 previously. In the next left hand movement of the table, the left hand edge of the stop 11 will strike against the right hand edge of the signature 45<sup>a</sup> last laid on, and will push the latter under the needles, where-  
95 upon this signature also will be fastened by the latter. During this fastening operation the operator has again abundant time to lay a fresh signature upon the table, and the series of operations begins afresh.  
100 From the foregoing it will be understood that the laying of the signatures upon the table does not require any special skill, and in order to utilize the time gained by the operator, the improved machine can be driven  
105 at a higher speed than a machine of the oscillating machine table type, with of course the additional advantage that the output of the machine is increased. If in laying a signature upon the table, its fold should not  
110 lie completely upon the apex of the table, this can be done with certainty in transferring the signature under the needles, because the back of the signature that may be accidentally raised off the table, serves by means  
115 of the inclined surface 43 of the stitching bar 42, to press the signature against the table. Further the signatures in passing between the stitching bar, are subjected to a braking action with the result that they do not move  
120 faster than the stop 11, and come to rest with it and in a position bearing against it.

What I claim is:—

1. In a book-fastening machine, the combination of a machine framing with a  
125 straight guide extending in the direction of the width of the machine a table for the signatures to be fastened, slidable along said guide and having a stitching portion and a signature receiving portion, a fixed  
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stop for limiting the signature in the receiving portion on the table and means for shifting the table away from the needles along its longitudinal axis after the signature lying on said stitching portion has been fastened whereby the signature lying on said receiving portion is caused to come in the stitching position.

2. In a book-fastening machine, the combination of a machine framing with a straight guide extending in the direction of the width of the machine, a table for the signatures to be fastened slidable along said guide and having a stitching portion and a signature receiving portion a fixed stop for stopping the signature on the receiving portion on the side furthest from the needles, a stop on the table, whose end surface facing the needles, is at right angles to the surface of the table, whilst the opposite end surface is inclined to the surface of the table, the arrangement being such that when the table is being moved away from the needles, the stop located on the table slips freely under the second last mentioned signature and when the table is being moved towards the

needles, the last mentioned stop on the table brings the signature under the needles.

3. In a book-fastening machine, the combination of a straight guide with an angle table, a needle mechanism and a fastening mechanism, a bar located under this mechanism, having apertures for the passage of the needles, an inclined surface at one end of said bar, means for moving the table under said mechanism, said surface having the function of pressing a signature lying on the table, tightly upon the latter.

4. In a book-fastening machine, the combination of a machine framing with a straight guide, a table slidable along the latter, a bar slidably guided in the table, a thread looper located on said bar, a compression spring located on said bar, having a constant tendency to push said bar in one direction, and a rocking lever located on said table, engaging said bar for the purpose of pushing same, and a cam for imparting oscillatory motion to said rocking lever.

In testimony whereof I have affixed my signature.

ULRICH BISCHOF.