

UNITED STATES PATENT OFFICE.

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SIGNATURE-SUPPORT FOR BOOK-SEWING MACHINES.

No. 837,341.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN R. REYNOLDS, a citizen of the United States, residing at Hartford, county of Hartford, and State of Connecticut, have invented certain new and useful Improvements in Signature-Supports for Book-Sewing Machines, fully described and represented in the following specification and the accompanying drawings, forming a part
10 of the same.

This invention relates to certain improvements in the signature-carrying arm of book-sewing machines, and has for its object to produce an improved, simple, and cheap construction whereby the position of the punches which form the perforations through which the sewing-needle passes may be readily and quickly adjusted to bring sets of stitches into any desired relation with respect to each
20 other along the back of the book.

With this and other objects in view the invention consists in certain constructions and in certain parts, improvements, and combinations, as will be hereinafter fully described
25 and then specifically pointed out in the claims hereunto appended.

In the accompanying drawings, which show a preferred embodiment of the invention, Figure 1 represents in side elevation a
30 form of signature-carrying arm embodying the invention. Fig. 2 is a view of the construction shown in Fig. 1 with one of the side plates removed, certain parts being shown in section. Fig. 3 is a plan view. Fig. 4 is an end
35 elevation of the construction shown in Fig. 1. Fig. 5 is a section on the line 5 5 of Fig. 1, and Fig. 6 is a detail perspective view of one of the punch-guiding sections.

In the machine which has been selected to
40 illustrate the invention a plurality of signature-carrying arms provided with punches is employed, these arms being mounted on a vertical spindle around which they are rotated to bring the signatures successively
45 into sewing position.

Referring more specifically to the specific construction illustrated in the drawings, 1 indicates a supporting-spindle on which is mounted a rotating hub 2, said hub being provided with a pair of disks 3 4, in which the signature-carrying arms are mounted. The particular means for supporting the spindle

and for operating the hub are not necessary to an understanding of the present invention, and are therefore not illustrated. 55

In the preferred form of the construction the signature-carrying arm comprises a pair of side plates 5 6; but the construction may be varied in this respect, if desired. These side plates are supported between the disks 3 60 and 4 in any suitable manner, so that the arm will be firmly held during the rotation of the carrying-hub. These side plates 5 6 are spaced apart, and in the preferred construction the devices hereinafter described are 65 mounted between them.

The construction includes an actuator for the punches, to be hereinafter referred to, and in the preferred form of the construction this actuator will be mounted so as to receive
70 a combined sliding and vertical-reciprocating movement. While the construction of the actuator may be varied, in the construction shown, which illustrates a preferred embodiment of the invention, this actuator consists of a bar 7, provided with cam-slots 8, which slots engage pins 9, mounted in the plates 5 6. The means for operating the actuator may be of any desired character. In
80 the construction shown the operation of the actuator is effected by means of a gab-hook 10, which is given a reciprocating motion from any suitable part of the machine. This gab-hook is in a fixed position in the machine, and in the rotation of the spindle on
85 which the arms are mounted the studs on the arms come successively into engagement with the gab-hook, which then operates the actuator. In the preferred construction a spring 11 is employed to insure that the actuator is in proper position with respect to the gab-hook, so that the pin is in vertical alignment with the hook. In the preferred construction and as is usual the punches are arranged in pairs to provide entering and exit
95 perforations for the thread. The construction by which the punches are mounted may be varied within wide limits. In the construction shown, however, each pair of punches is provided with a carrier or holder 100 which, as illustrated, consists of a block 12, and these blocks are so connected to the actuator as to be moved thereby. In the particular construction illustrated the blocks are

connected to the actuator by providing each of them with a groove 13, said groove being engaged by a projection 14 on the bar. The punches (marked 15) may be secured to the carrier-block in any suitable manner—as, for instance, by means of screws 16.

The adjustment of the punches may be effected in any suitable manner. As shown, however, this adjustment is effected by means of the punch-guide. The construction of the punch-guide by which it is caused to effect the adjustment of the punches may be widely varied. As shown, however, the punch-guide comprises a plurality of independent sections 17, each section being provided with a pair of guiding perforations 18 for its pair of punches. These sections 17 are independently adjusted along the arm and are arranged to be held in their adjusted position. Means for effecting this adjustment may be varied; but, as shown, the sections slide between the plates which comprise the arm and are held in their adjusted position by means of holding-screws 19, suitably-threaded openings 20 being provided in the arm at desired points. The screws pass through these threaded openings 20 and through openings 21, formed in the shanks of the guides. In the best constructions these guide-sections will be provided with extended signature-supporting faces 22, which serve to entirely support the signature, and when the bar is intended to be used in a machine employing curved needles these guiding-sections will also preferably be provided with needle-raceways 23, these raceways being curved to conform to the curve of the needle.

The operation of the construction will be readily understood. Fig. 1 shows three sets of punches, although it is to be understood that as many sets of punches may be employed as desired, these punches being shown in a certain adjustment. The construction illustrated in this figure provides for two adjustments of the guide nearest the spindle 1 and for three adjustments of the guide next to it; but other adjustments are of course possible. By simply removing the screws, sliding the sections along until the holes 21 in their shanks come opposite the proper holes in the support, and then reinserting the screws the desired adjustment is effected, the movement of the guide-sections carrying the punches and their carriers with them.

While the specific construction illustrated embodies the invention in its preferred form, it is to be understood that the invention may be embodied in constructions which differ therefrom. The invention is not, therefore, to be limited to the specific construction herein shown and described.

What is claimed is—

1. The combination with a signature-support for book-sewing machines, of an actuator, means for giving the actuator a com-

bined sliding and reciprocating movement, a plurality of punches adjustable along the support, and means whereby the punches are operated by the actuator, substantially as described.

2. The combination with a signature-support for book-sewing machines, of an actuator, means for giving the actuator a combined sliding and reciprocating movement, a plurality of punches adjustable along the support, means for guiding the punches in their several positions, and means whereby the punches are operated by the actuator, substantially as described.

3. The combination with a signature-support for book-sewing machines, of an actuator, means for giving the actuator a combined sliding and reciprocating movement, a plurality of punches arranged in pairs, the pairs of punches being adjustable along the support, and means whereby the punches are operated by the actuator, substantially as described.

4. The combination with a signature-support for book-sewing machines, of an actuator, means for giving the actuator a combined sliding and reciprocating movement, a plurality of punches arranged in pairs, the pairs of punches being adjustable along the support, means for guiding the punches in their several positions, and means whereby the punches are operated by the actuator, substantially as described.

5. The combination with a signature-support for book-sewing machines, of an actuator, a plurality of holders adjustable along the support, a plurality of punches on each holder, and means whereby the actuator operates the holders, substantially as described.

6. The combination with a signature-support for book-sewing machines, of an actuator, means for giving the actuator a combined sliding and reciprocating movement, a plurality of holders adjustable along the support, a plurality of punches on each holder, and means whereby the actuator operates the holders, substantially as described.

7. The combination with a signature-support for book-sewing machines, of a plurality of punches arranged in pairs, the pairs being adjustable along the support, a punch-guide comprising a plurality of independent adjustable sections, each section serving as a guide for a pair of punches, an actuator for operating the punches, and means for giving the actuator a combined sliding and reciprocating movement, substantially as described.

8. The combination with a signature-support for book-sewing machines, of a plurality of punches adjustable along the support, a punch-guide comprising a plurality of independent adjustable sections each section having a face which entirely supports the signature, and means for operating the punches, substantially as described.

9. The combination with a signature-support for book-sewing machines, of a plurality of punches adjustable along the support, a punch-guide comprising a plurality of independent adjustable sections each section having a face which entirely supports the signature and a needle-raceway, and means for operating the punches, substantially as described.

10. The combination with a signature-support for book-sewing machines, of a plurality of punches arranged in pairs and adjustable along the support, a punch-guide comprising a plurality of independent adjustable sections, each section being provided with means for guiding a pair of punches and a face which entirely supports the signature, and means whereby the sections may be adjusted along the support, substantially as described.

11. The combination with a signature-support for book-sewing machines, said support comprising a pair of side plates, of an actuator held to move between said plates, a plurality of punches adjustable along the support, and operating connections between the punches and the actuator, substantially as described.

12. The combination with the signature-support for book-sewing machines, said support comprising a pair of side plates, of a plurality of pairs of punches, the pairs being adjustable along the support, a guide comprising a plurality of independent adjustable sections, a section for each pair of punches, means for retaining said guiding-sections in different adjusted positions along the support, and an actuator for the punches, substantially as described.

13. The combination with a signature-support for book-sewing machines, said support comprising a pair of side plates, of a plurality of pairs of punches, the pairs being adjustable

along the support, a guide comprising a plurality of independent adjustable sections, a section for each pair of punches and each section having a signature-supporting face, means for retaining said guiding-sections in different adjusted positions along the support, and an actuator for the punches, substantially as described.

14. The combination with a signature-support for book-sewing machines, said support comprising a pair of side plates, of a plurality of pairs of punches, movable supports in which the punches are mounted, a guide comprising a plurality of independent sections, one for each pair of punches, means for retaining the guiding-sections in different adjusted positions along the support, an actuator, and means for giving the actuator a combined sliding and reciprocating movement, substantially as described.

15. In a signature-support for book-sewing machines, the combination with a pair of side plates spaced from each other, of a plurality of adjustable guide-sections arranged between the plates, each section having a signature-supporting face, substantially as described.

16. In a signature-support for book-sewing machines, the combination with a pair of side plates spaced from each other, of a plurality of adjustable guide-sections arranged between the plates, each section having a signature-supporting face, a needle-raceway and punch-guiding means, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JOHN R. REYNOLDS.

Witnesses:

GEO. C. KIMBALL,
ROBERT H. SCHUTZ.