C. J. RICH.

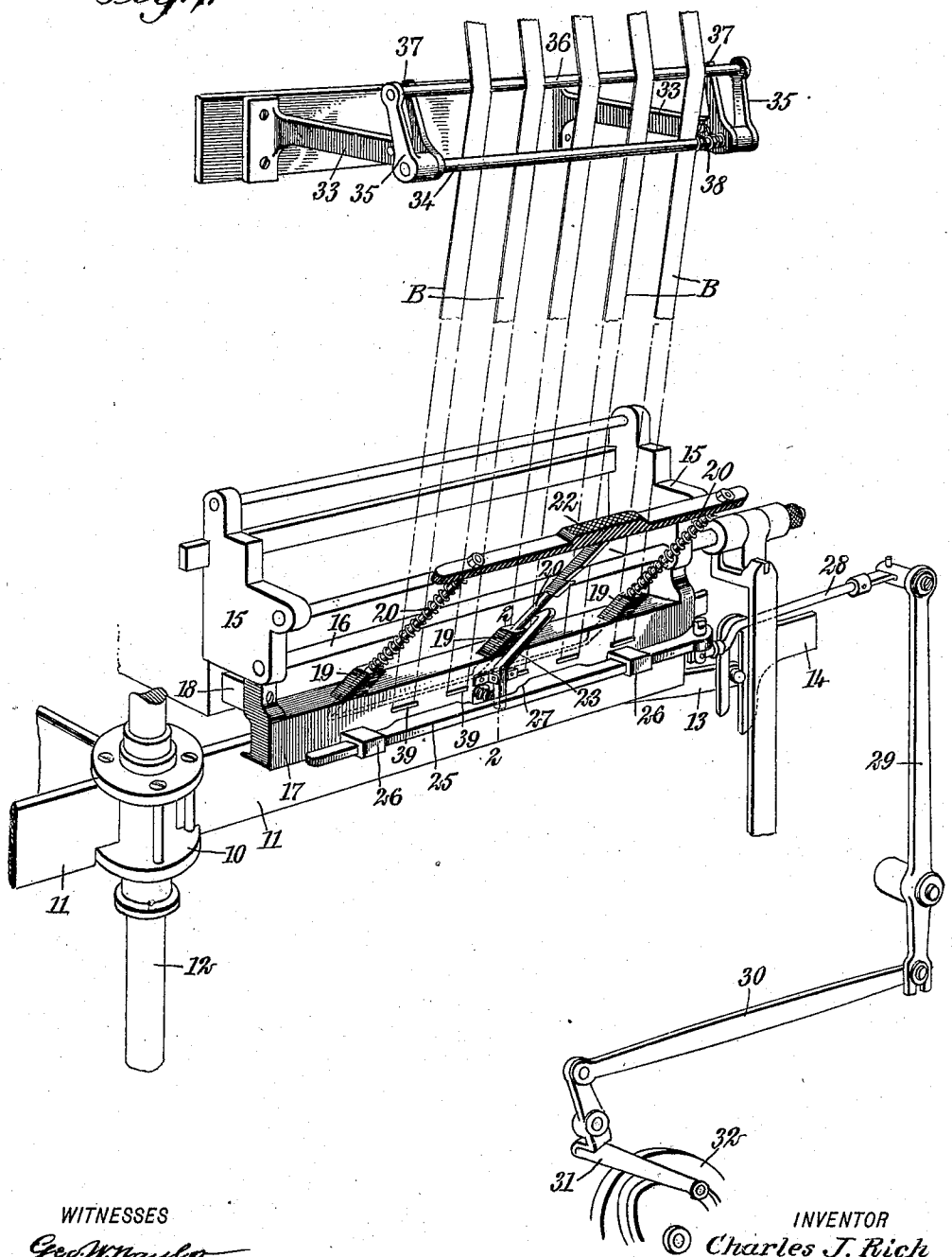
BOOK SEWING MACHINE.

APPLICATION FILED AUG. 24, 1908.

924,274. **Patented June 8, 1909.**

2 SHEETS—SHEET 1.

Fig. 1.



WITNESSES

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2 SHEETS—SHEET 2.

Fig. 2.

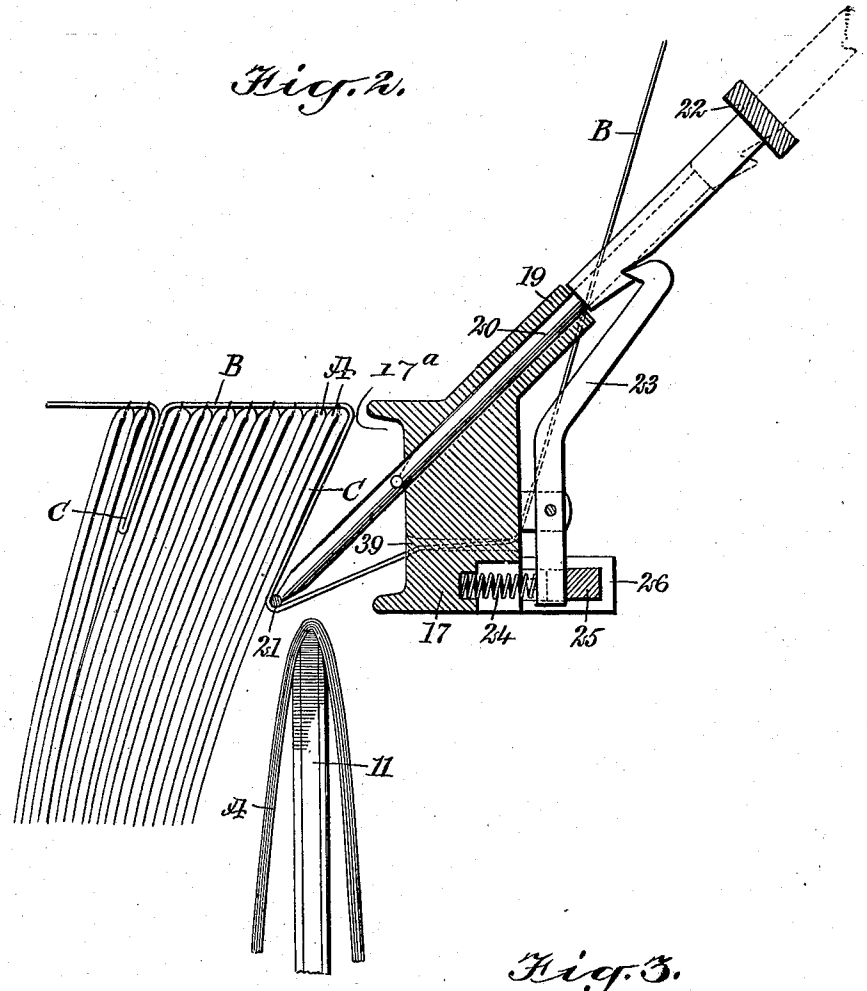
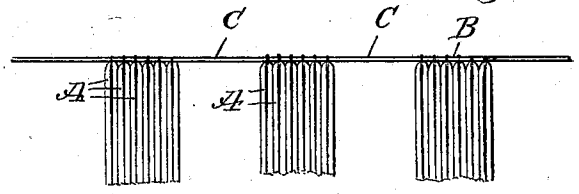


Fig. 3.



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BOOK-SEWING MACHINE.

No. 924,274. Specification of Letters Patent. Patented June 8, 1909.

Application filed August 24, 1908. Serial No. 449,940.

To all whom it may concern:

Be it known that I, CHARLES J. RICH, a citizen of the United States, and a resident of Norwood, in the county of Norfolk and State of Massachusetts, have invented a new and Improved Book-Sewing Machine, of which the following is a full, clear, and exact description.

This invention relates to certain improvements in book-sewing machines, and more particularly to that type of machine in which one or more tapes are sewed across the backs of the several signatures and constitutes a portion of the binding.

The object of the invention is to provide improved means for looping the tape intermediate the last signature of one book and the first signature of the next succeeding book, so that after the signatures are all sewed and the books separated, there will remain a free end of tape at each side of each book, which may be used in attaching the body of the book to the cover or to the binding.

My invention may be employed in connection with various different types of machines, and the details of my improvements do not interfere with or affect the normal operation of the machine.

The improvement constitutes an attachment which may be placed on machines already on the market, and I have therefore illustrated only those portions of an ordinary form of book-sewing machine in connection with which my attachment coöperates, and have omitted all other details of the machine, as their illustration and description would merely serve to confuse.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures, and in which—

Figure 1 is a perspective view of a portion of a common form of book-sewing machine and having an attachment constructed in accordance with my invention applied thereto; Fig. 2 is an enlarged transverse section on the line 2—2 of Fig. 1; and Fig. 3 is an end view of a plurality of signatures as they appear before the several books are cut apart.

In the type of machine to which my improvement is especially applicable, there is employed a signature-delivering turnstile, including a hub 10, a plurality of radiating arms 11, and a supporting guide 12. Suitable mechanism, not shown, is provided for rotating the guide 12, to bring the several arms into position successively, and other mechanism is provided for moving the hub longitudinally of the shaft. The signature A is placed on the signature-supporting arm while the latter is extended outwardly substantially at right angles to the body of the machine. The turnstile is rotated to bring the signature-carrying arm to a position directly below the sewing mechanism. The turnstile is then raised longitudinally of the shaft to the position illustrated in Fig. 1, and held there while the sewing mechanism operates to fasten the signature to the tape B, and thus to secure the signature to the next adjacent one. For the details of one mechanism which may be employed for operating the signature-carrying arms 11, attention is directed to Patent Number 220,312. The arm may carry means for puncturing the paper of the signature substantially as shown in Patent Number 366,793, but I have not illustrated any of the details of such mechanism save the longitudinally-movable bar 13, and the hook 14.

When the signature is raised to position by the vertical movement of the signature-carrying arm, the sewing mechanism comes into play and the signatures are fastened together and to the tape. The details of the sewing mechanism constitute no portion of my invention and have not been illustrated in detail other than to show the end supports 15 and the longitudinally-movable bar 16 for looping the thread.

During the sewing together of the several signatures going to make up a book, my improved mechanism does not come into play, but when the last signature of the book is sewed, I then operate my improved mechanism to form loops in the several tapes while the first signature of the next book is being brought into place, so that when said first signature is sewed, it will lie adjacent the last signature of the preceding book, but the two books may be spaced apart a distance equal to the length of the loop of tape and the latter may be cut to leave free unattached tape ends.

My attachment in its preferred form, includes a transverse bar 17 mounted upon sliding bars 18 and capable of a limited movement toward and from the signature-carrying arm 11. This bar 17 takes the place of the presser bar ordinarily employed for

forcing the last signature into close engagement with the adjacent one during the sewing. My improved bar 17 not only serves as a presser bar but is provided with a plurality of bosses 19, extending upwardly and outwardly therefrom, and extending through each boss is a reciprocating rod 20. As illustrated, there are three of these reciprocating rods, and at their lower ends they are all connected to a transversely-extending loop-forming bar 21. At the outer ends, all of the rods 20 are connected to a transverse operating bar 22, by the depressing of which the loop-forming bar 21 is brought to the desired position. The two end rods 20, 20, are each provided with coil springs which normally hold the rods in their elevated positions, and the supporting rod 17 is preferably provided with an elongated groove or recess 17^a in the surface thereof adjacent the signatures, so as to receive the loop-forming bar 21 when the latter is in its raised and inoperative position as shown in dotted lines in Fig. 2. It is desirable to hold the loop-forming bar 21 in its depressed position while the signature-carrying arm 11 is being brought upward, and it is also desirable to release the loop-forming rod just prior to the arrival of the signature-carrying arm to the position for sewing.

For holding the loop-forming bar 21 depressed, I provide a catch 23, adapted to engage in a notch in the central rod 20, and the lower end of the catch is normally forced outwardly by a coil spring 24, so that the upper hooked end of the catch is always ready for instantaneous operation. For releasing the catch, I preferably provide a longitudinally-movable bar 25, held within guides 26 carried by the supporting bar 17 and having a cam 27 for forcing inwardly the lower end of the catch 23.

Any suitable means may be employed for reciprocating the bar 25, but, as illustrated, I have provided a link 28 pivoted to one end of the bar 25 and having its opposite end pivoted to a lever 29. The lever may be supported intermediate its ends and have its lower end connected by a link 30 to an operating lever 31. The lever 31 may be moved intermittently by a rotating cam 32, operatively connected to any desired portion of the machine.

For loosening the tape and permitting the ready formation of the loops by the bar 21, I preferably provide the machine with outwardly-extending brackets 33 for supporting a rod 34 adjacent which the tapes normally pass, and pivoted to this rod 34, I preferably provide arms 35 having a rod 36 connecting their outer ends. The rod 36 is normally held against stops 37 carried by the brackets 33, a suitable spring 38 being provided for this purpose, but by pulling forwardly upon the rod 36 until the arms assume substantially a horizontal position, the correct amount of tape will be unrolled from the reels and upon releasing the rod a portion of the tape will be free to be depressed by the rod 21. The bar 17 may also serve not only to support the guide rods 20 of the loop-forming bar 21, but it may also be provided with openings 39, through which the tape may extend, and be guided to the signatures.

In the operation of my improved attachment, the bars 20 and 21 remain in the positions indicated in Fig. 1 during the sewing of the several signatures to the tape, but when the last signature going to make up one book has been sewed, the rod 36 is brought forward either mechanically or manually, and then released to leave the tape loose. The bars 20 and 21 are then depressed to form a loop in the tape, as illustrated in Fig. 2. This downward and lateral movement of the bar 21 serves not only to form a loop in the tape, but it also serves to force the signatures out of the path of the signature-carrying arm which rises during the time the bar 21 is in operation. The signature-carrying arm and the releasing means for the bar 21 are operated from the same source of power and the timing is such that the signatures are held out of the path of the rising signature-carrying arm until after said arm reaches a position above the lower edges of said signatures. At this time, the signature-carrying arm 11 rises to bring the next signature into position for sewing, and when said arm reaches approximately the position shown in Fig. 2, the cam 27 driven from the same source of power as the arm 11 operates upon the lower end of the catch 23, to release the loop-forming bar, and the latter instantly rises out of the path of the signature-carrying arm but leaving the loose tape to form a loop between the signature on the arm and the one last sewed in place.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. In a book-sewing machine, the combination of an upwardly-movable signature-carrying arm, a downwardly-movable tape-looping bar, means for holding said bar depressed during a portion of the upward movement of said arm, and means for releasing said bar to leave a loop of tape intermediate adjacent signatures.

2. In a book-sewing machine, the combination of a movable signature-carrying arm, a downwardly-movable tape-looping bar, a catch for holding said bar in one position, and means for automatically moving the bar to a second position upon the releasing of the catch.

3. In a book-sewing machine, the combination of a movable signature-carrying arm, a tape-looping bar, springs for nor-

mally holding said bar in inoperative position, a catch for holding said bar in operative position, and means for releasing said catch.

4. In a book-sewing machine, the combination of a supporting bar adapted to guide a tape to the signatures, a tape-looping bar carried by said supporting bar and movable in respect thereto, a catch carried by said supporting bar for holding said looping bar in operative position, and means for releasing said catch.

5. In a book-sewing machine, the combination of a supporting bar, a tape-looping bar adjacent one side thereof, guide rods secured to said tape-looping bar and extending through said supporting bar, an operating bar at the upper end of said guide rods, springs for normally holding said tape-looping bar adjacent said supporting bar, a catch for holding said tape-looping bar in its operative position, and means carried by said supporting bar for releasing said catch.

6. In a book-sewing machine, the combination of a supporting bar, a tape-looping bar adjacent one side thereof, guide rods secured to said tape-looping bar and extending through said supporting bar, an operating bar at the upper end of said guide rods, springs for normally holding said tape looping bar adjacent said supporting bar, a catch for holding said tape-looping bar in its operative position, and means carried by said supporting bar for releasing said catch, said means including a reciprocating bar having a cam surface.

7. In a book-sewing machine, the combination of a supporting bar having a recess in one side thereof and a passage through said bar and terminating within said recess, means movable transversely across the recess-bearing side of said bar for inserting a signature, a tape-looping bar normally disposed within said recess and rods carrying said tape-looping bar and longitudinally movable through said supporting bar to move the tape-looping bar across the path of the signature-inserting means.

8. In a book-sewing machine, the combination of a supporting bar, a vertically-movable arm for inserting a signature between said bar and the signatures previously inserted, a tape-looping bar carried by said supporting bar and movable downwardly and laterally across the path of movement of said arm and means for operating said bar and maintaining the latter in engagement with the signatures during a portion of the vertical movement of said arm, whereby the tape is looped and the signatures are held out of the path of the signature carrying arm.

9. In a book-sewing machine, the combination of a vertically-movable signature-carrying arm, a supporting bar independent thereof, a tape-looping bar adjacent one side of said supporting bar, guide rods secured to said tape-looping bar and longitudinally movable through said supporting bar, and an operating bar at the upper ends of said guide rods for moving said tape-looping bar downwardly and laterally across the path of said signature-carrying arm.

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

CHARLES JAMES RICH.

Witnesses:

O. B. SMALL,

E. BATEMAN.