E. S. BOYNTON.

Book Sewing Machine.

No. 232,446. Patented Sept. 21, 1880.

Fig. 1.

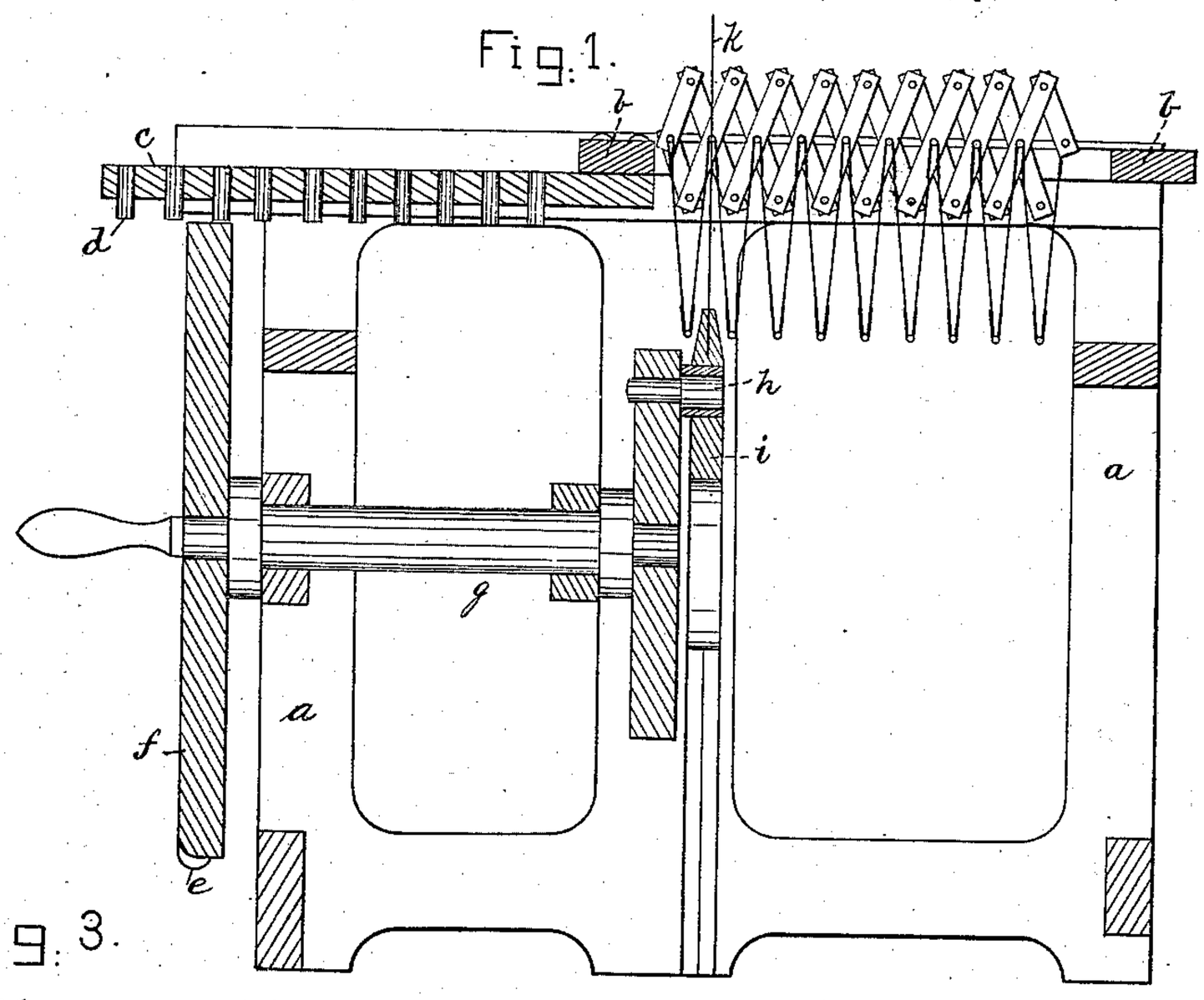



Fig. 3.

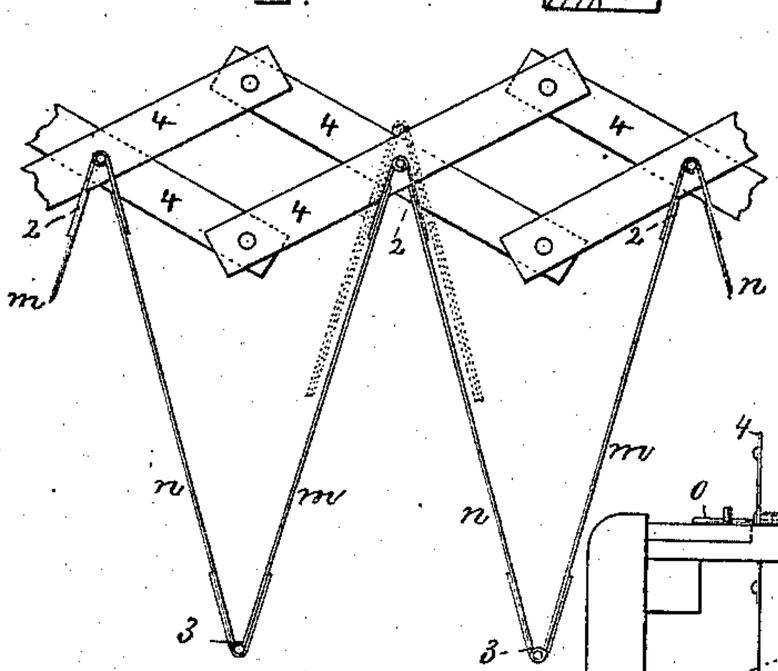
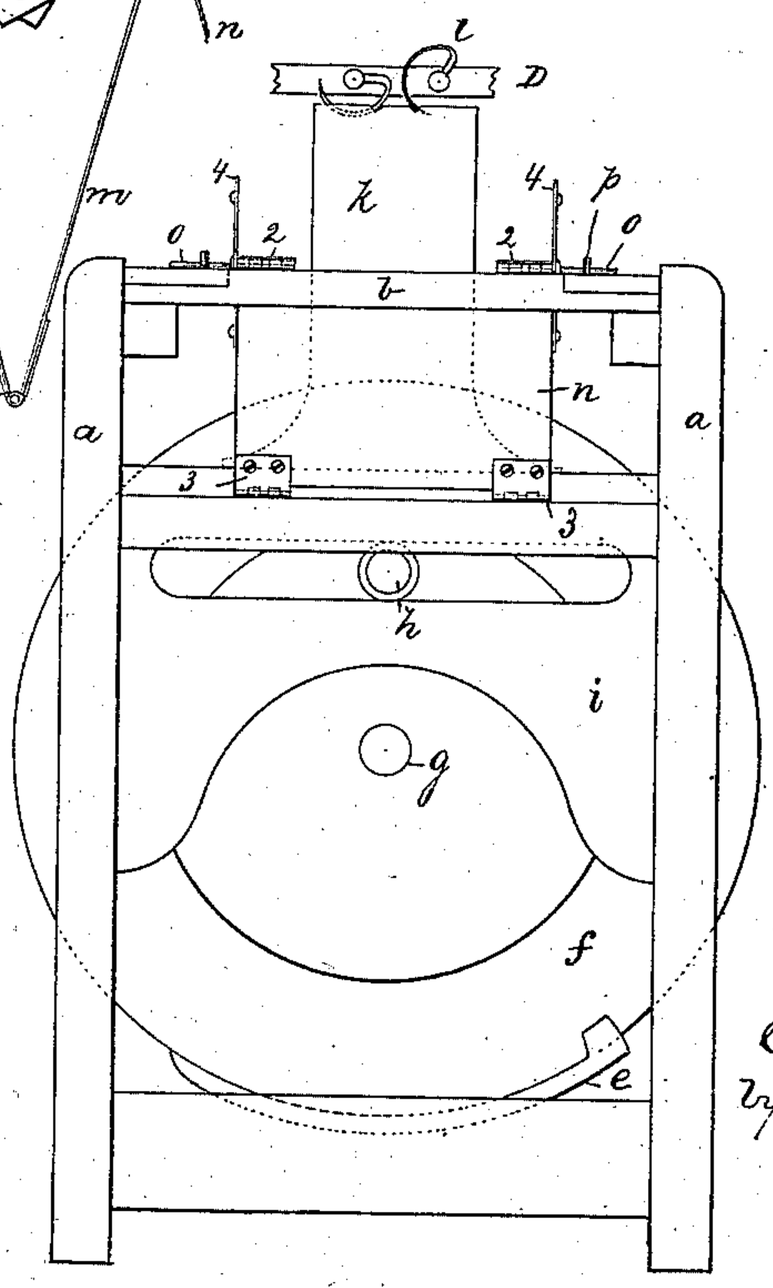



Fig. 2.




Witnesses.

L. F. Connor.

N. E. C. Whitney.

Inventor.

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by Crosby & Gregory

Attys

# UNITED STATES PATENT OFFICE.

EDWARD S. BOYNTON, OF BRIDGEPORT, CONNECTICUT.

## BOOK-SEWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 232,446, dated September 21, 1880.

Application filed February 9, 1880.

*To all whom it may concern:*

Be it known that I, EDWARD S. BOYNTON, of Bridgeport, county of Fairfield, State of Connecticut, have invented an Improvement in Book-Sewing Machines, of which the following description, in connection with the accompanying drawings, is a specification.

This invention relates to book-sewing mechanism, and has especial reference to improvements in the signature holding and presenting mechanism.

United States Patent No. 220,312, October 7, 1879, shows and describes a series of signature holding and sustaining arms intermittingly rotated to bring the signatures in position under the sewing-needles, in which position the arm containing the signature to be sewed is lifted. The capacity of such machine depends entirely upon the skill of the operator in placing the signatures in register upon the arms.

In this my machine I may employ sewing mechanism such as shown in the said patent, or any other well-known suitable sewing mechanism.

In order to insure the greatest speed and accuracy in book-sewing mechanism, I have provided a signature-holder which is independent of the sewing mechanism, but which, when the signatures are collated thereon, is placed in the machine and serves to hold the signatures while they are taken therefrom by the discharging mechanism, which places the said signatures in position to be entered by the thread-carrying needles. In this way, with a number of signature-holders for each machine, the signatures may be collated on the plates of the holders by unskilled labor, and these filled holders, kept in reserve, may be quickly set into position in the sewing-machine, which makes it possible to run the said machine at high speed from the commencement to the completion of a book.

Figure 1 represents, in vertical section, sufficient of my apparatus to enable one skilled in the art to understand it; Fig. 2, a front end elevation with the sewing-needles in place, and Fig. 3 a detail showing part of the signature-holder as it will appear when distended to be filled.

The frame D and needles *l* are supposed to be in construction and operation as shown and described in United States Patent No. 220,312, to which reference may be had, and such parts by themselves, not being of my invention, need not be herein further described.

Let *a* be supposed to represent part of the frame-work of the machine, and *b* a carriage therein, which by its movement carries the signature-holder forward intermittingly. This carriage has at one end of it a rack, *c*, having suitable teeth *d*, that are engaged by a section of a thread or worm, *e*, of a wheel, *f*, on the shaft *g*.

The front end of shaft *g*, as herein shown, has a crank-pin, *h*, which enters a slot in the slide *i*, which at its upper end has connected with it the signature-discharger *k*, it, when lifted, entering between the plates *m n*, which support the signatures, lifting the same above the holder and placing the signatures in position to be penetrated by the needles *l*. The top of the discharger *k* will be suitably shaped to permit the needles to enter the section resting upon it.

The signature-holder is composed of a series of plates, *m n*, alternately hinged together at their upper and lower edges by hinges 2 3, the upper hinges, 2, connected with the bars 4 of a lazy-tong of usual construction.

Opposite the points at which the hinges are pivoted to the lazy-tongs are journals or pivots *o*, which are received between the registering-pins *p* of the carriage, so as to place the upper portions of the plates *m n* at each intermittent movement of the carriage in exactly the proper position for the discharger *k* to strike the signature, which hangs upon the said plates *m n*, and lift it to the needles *l*.

In Fig. 3 I have shown a signature in dotted lines.

The upper edges of the plates *m n* are not connected except by the hinges 2 at their ends, and consequently a free space is left for the discharger *k* to strike the center of the folded signature.

When the holder is being filled or the signatures for a book are being collated the lazy-tongs are distended, affording ample space for fast work, and once filled are closed into their most compact space, in which position the signatures will be held until they are to be sewed.

Instead of the crank-pin *h* and slide *i*, and also instead of the wheel and worm *e*, I may

employ any other usual and well-known mechanical devices.

I have shown the plates *m n* connected with lazy-tongs to permit the series of plates to be separated when collating the signatures, and then to permit them to be brought near each other to necessitate the least possible motion for the carriage; but it is obvious that I might suspend the series of plates from fixed points; but this I do not prefer.

The plates *m n* may be more or less cut away to lighten them, and might be wire frames.

I claim—

1. The signature-holder composed of a connected series of plates, *m n*, and holding-bars for them, substantially as described.

2. The signature-holding plates *m n* and lazy-tongs upon which they are pivoted, substantially as shown and described.

3. The signature-holding plates *m n* and a carriage to move them intermittingly, combined with the discharger to remove the folded signatures from the said plates, substantially as described.

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

EDWARD S. BOYNTON.

Witnesses:
G. W. GREGORY,
L. F. CONNOR.