(No Model.) 4 Sheets—Sheet 1.

E. N. MARTINEAU.

METHOD OF AND MECHANISM FOR MAKING BLANK BOOKS.

No. 444,669. Patented Jan. 13, 1891.

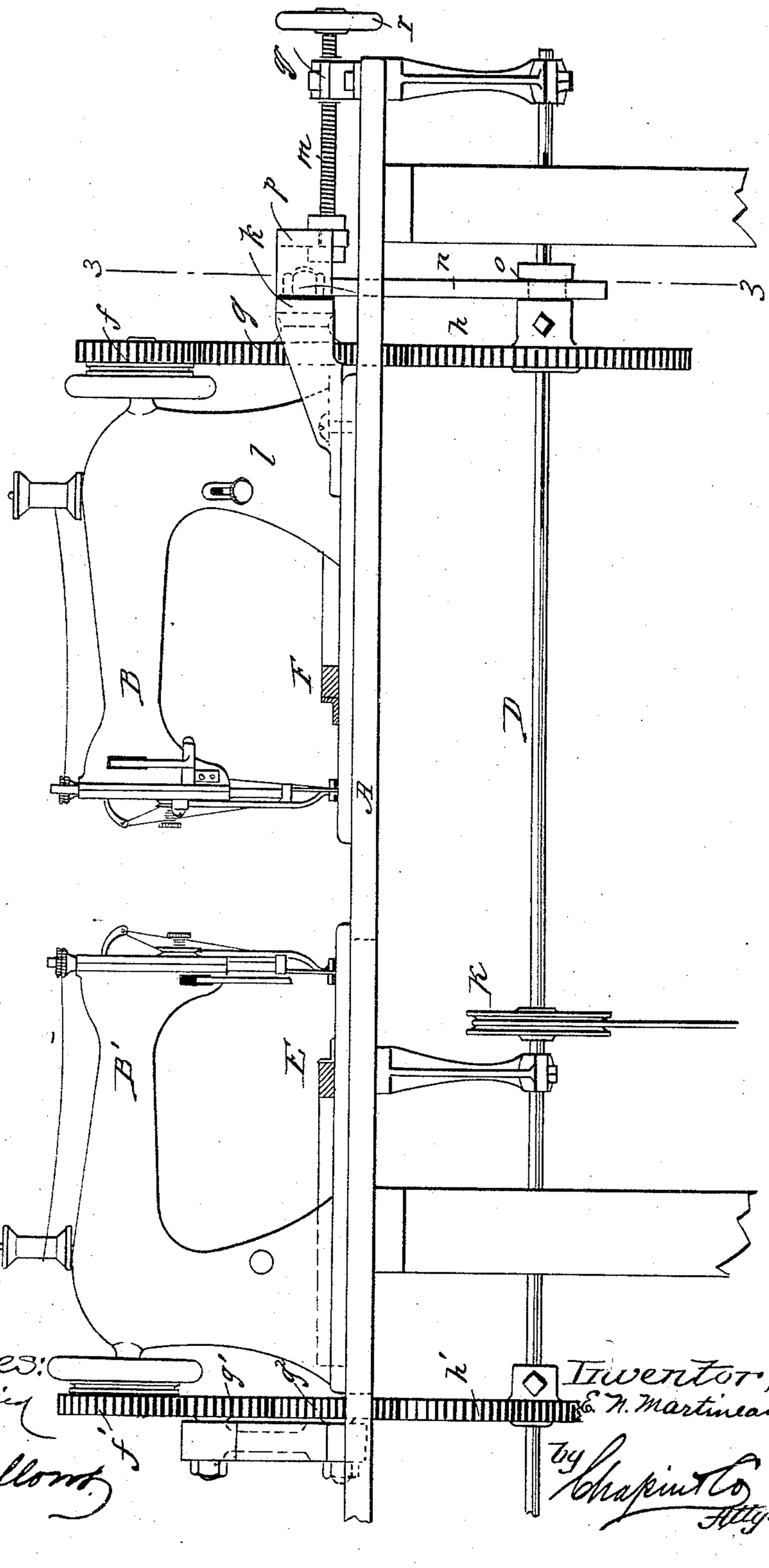

Fig. 1.

(No Model.) 4 Sheets—Sheet 2.

E. N. MARTINEAU.

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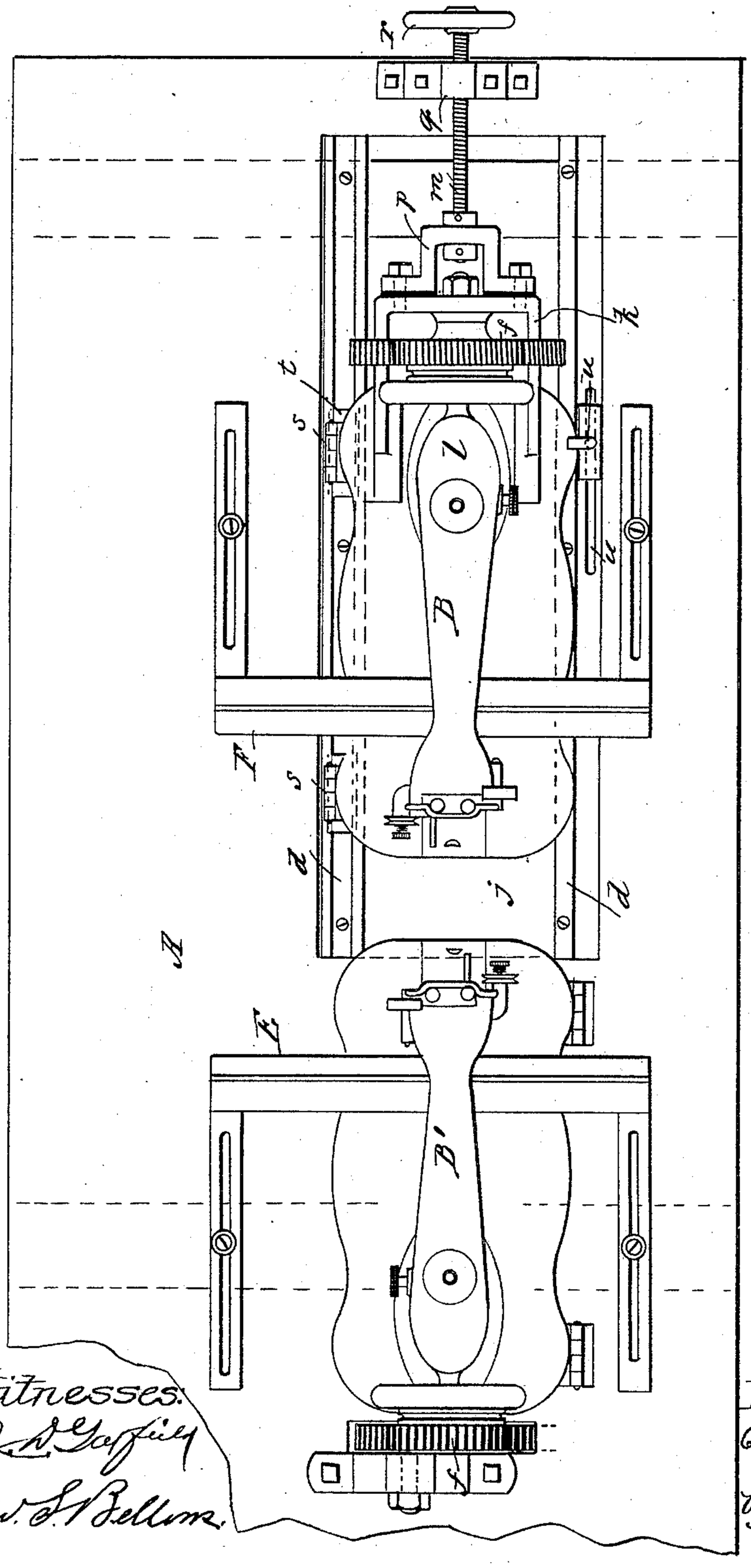

Fig. 2.

Witnesses:
J. D. Coffield
Wm. S. Bellamy.

Inventor,
E. N. Martineau
by Chapin & Co
Atty's

(No Model.) 4 Sheets—Sheet 3.

E. N. MARTINEAU.

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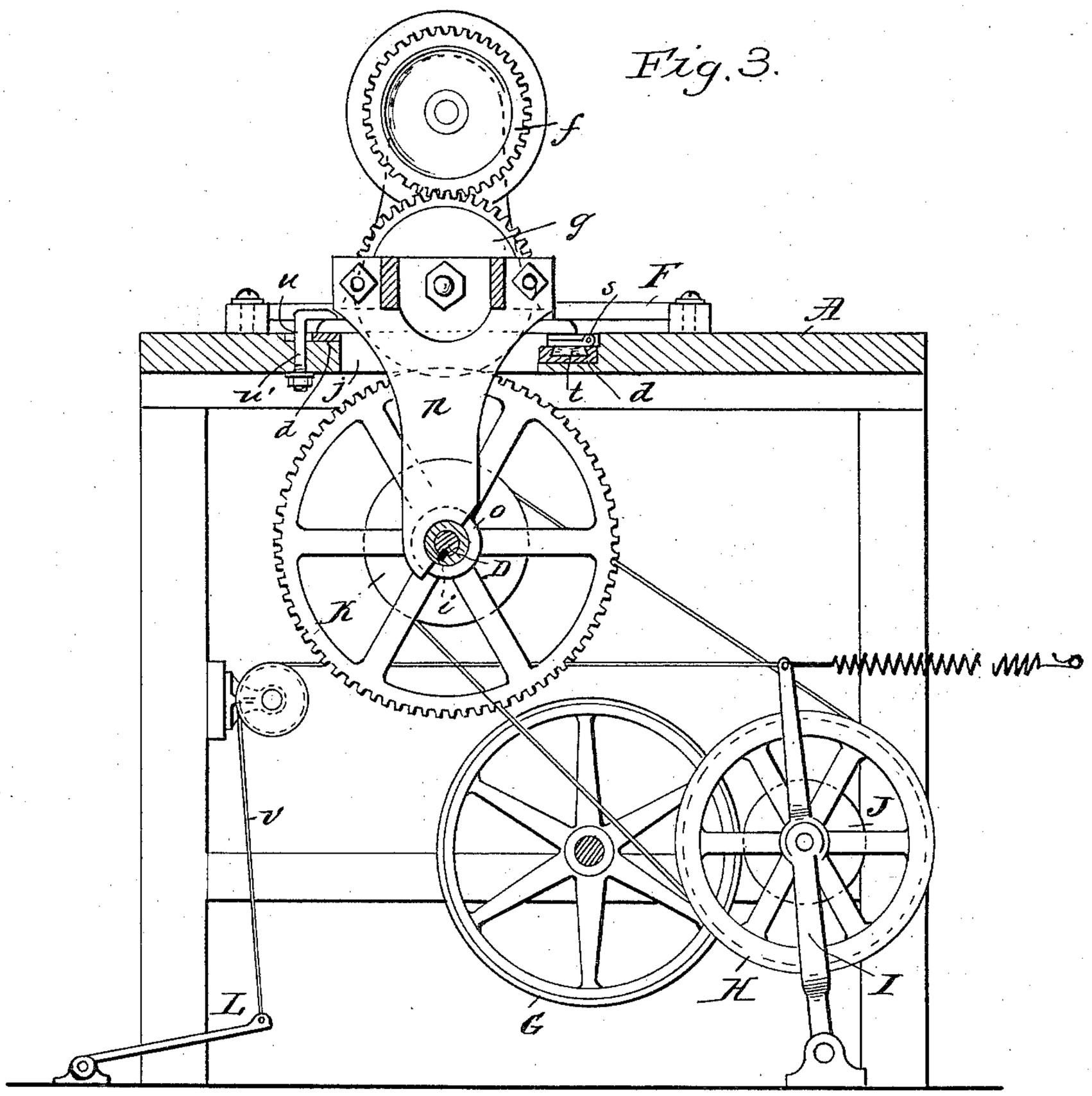
Fig. 3.



Witnesses:
J. Dougfield
Wm. F. Bellamy

Inventor
E. N. Martineau,
by Chapin & Co
Atty's.

(No Model.) 4 Sheets—Sheet 4.

E. N. MARTINEAU.

METHOD OF AND MECHANISM FOR MAKING BLANK BOOKS.

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Fig. 4.

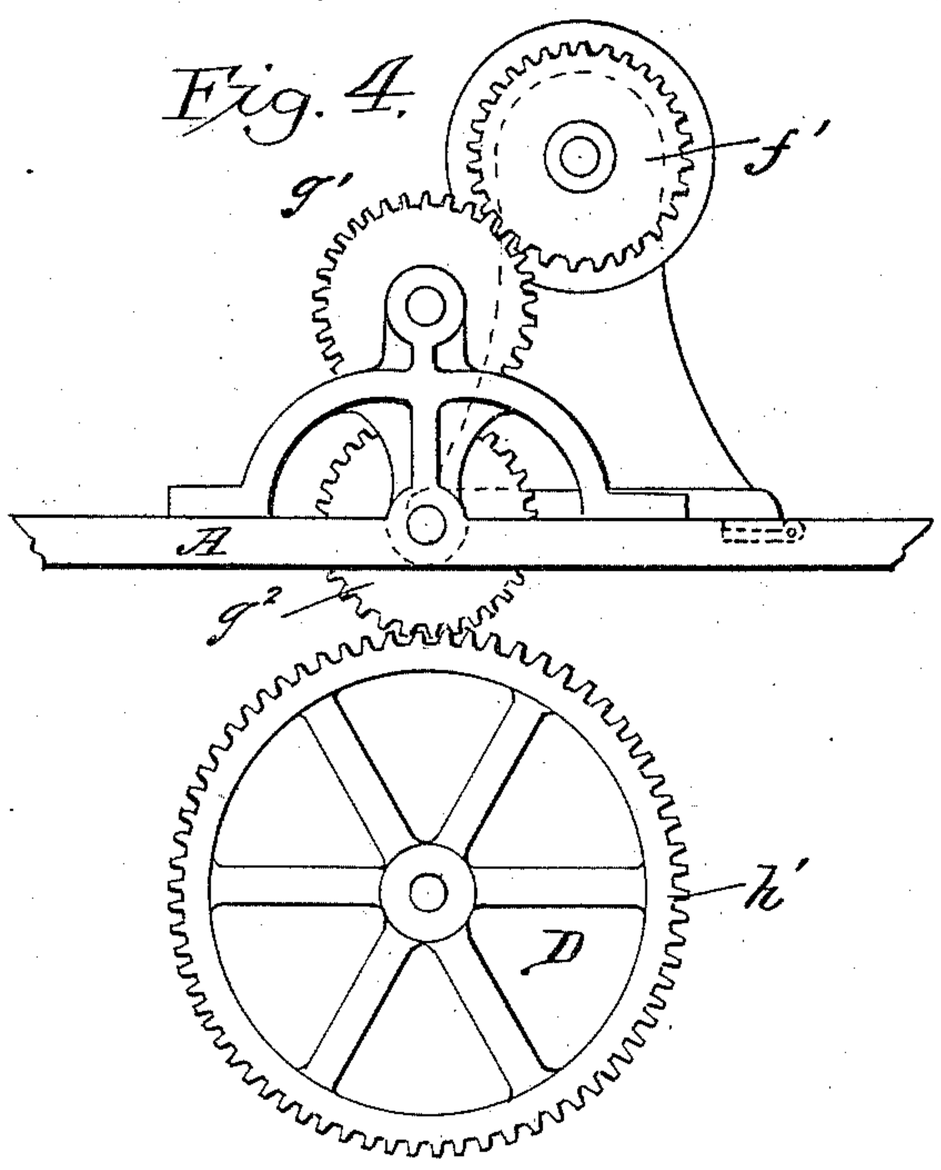
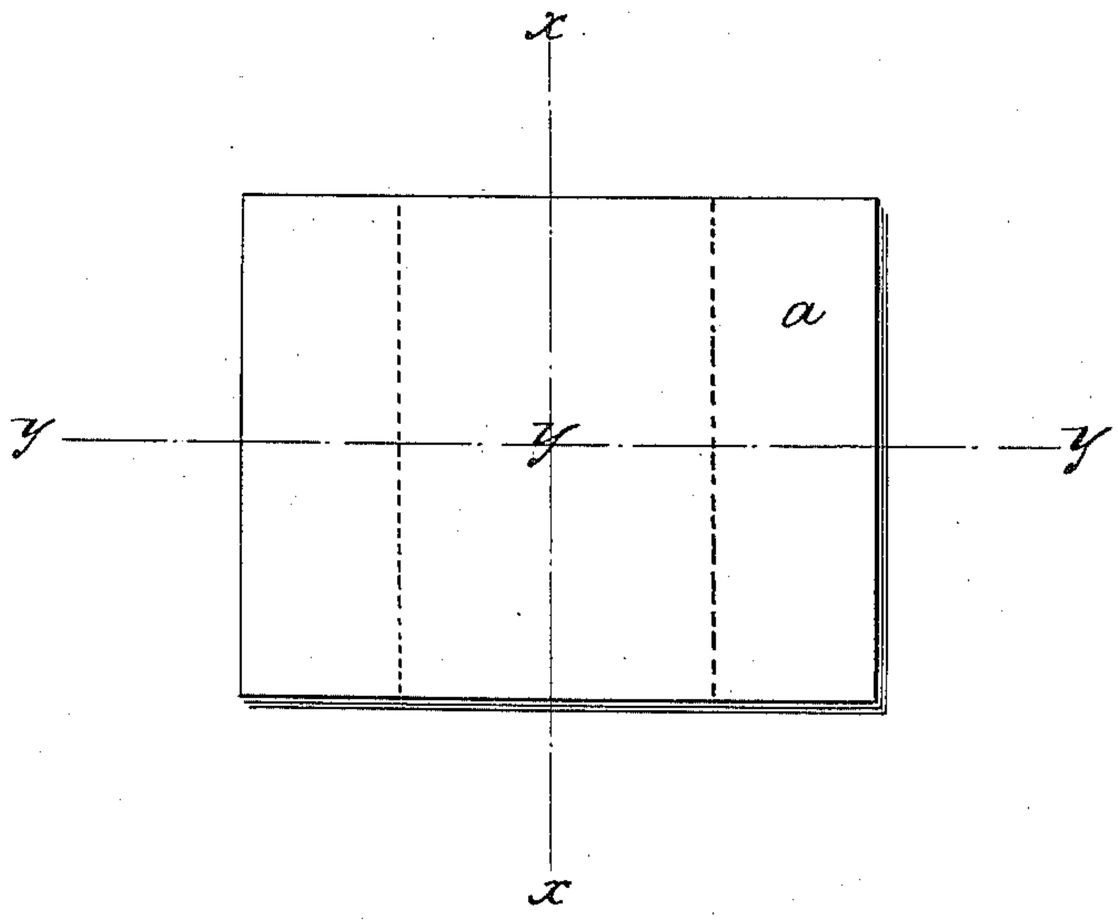


Fig. 5



Witnesses:
J. D. Garfield
Wm. S. Sellers

Inventor
E. N. Martineau,
by Chapin & Co.
Atty's.

UNITED STATES PATENT OFFICE.

EDMUND N. MARTINEAU, OF HOLYOKE, MASSACHUSETTS.

METHOD OF AND MECHANISM FOR MAKING BLANK BOOKS.

SPECIFICATION forming part of Letters Patent No. 444,669, dated January 13, 1891.

Application filed March 29, 1890. Serial No. 345,910. (No model.)

To all whom it may concern:

Be it known that I, EDMUND N. MARTINEAU, a citizen of the United States, residing at Holyoke, in the county of Hampden and State of Massachusetts, have invented new and useful Improvements in Methods of and Mechanism for Making Blank Books, of which the following is a specification.

This invention relates to a method or process of making blank books, and to improved mechanism for carrying out said process.

The process consists in first providing a superposed series of sheets of paper suitable for forming the leaves of books, and laying them upon a sheet of suitable fabric for the back or cover, as leather or pasteboard, then stitching said leaf-sheets and back through and through in parallel lines suitably separated from each other, and then severing the stitched leaf and cover sheets midway between and parallel with the sewed lines, thereby forming separate covered books.

The improved process may further consist in providing a superposed series of leaf-sheets, then laying them upon a sheet of suitable back or cover fabric, then stitching said leaf-sheets and back through and through in suitably-separated parallel lines, then severing the doubly-stitched leaf and cover sheets midway between and parallel with said sewed lines, and then severing said so-divided portions transversely of said stitching-lines into sub-sections, each of which constitutes a covered and sewed book.

The mechanism comprises, essentially, a support and guide for the superposed leaf-sheets and cover-sheet common thereto, and two sewing mechanisms in suitably-separated relations to each other and to said supporting and guiding means, all so that as the leaf and cover sheets in their proper arrangement are moved on and along said support in relation to said sewing mechanisms they may be sewed from end to end in suitably-separated parallel lines.

The invention consists in other subordinate details of construction, which will be hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a front elevation of a work-table and two sewing mechanisms, also showing connections and gears between said two sewing mechanisms, whereby they may be driven together, and other parts comprised in the book-sewing machine. Fig. 2 is a plan view of the book-sewing machine. Fig. 3 is a vertical cross-section taken on the line 3 3, Fig. 1, there being also shown in this view in elevation a power-shifting mechanism, which is not shown in Fig. 1, however. Fig. 4 is an elevation of gearing which is at the other end of the machine from that shown in Fig. 3. Fig. 5 is a view in the nature of a diagram in illustration of the present improved method of making books.

The improved process, as will appear, is dependent for its consummation on mechanism for sewing through and through the sheets and the cover in lines separated from each other, and each sewing-line is also separated suitably from the edges of the sheets. In the making up of the book a number of sufficiently large rectangular sheets *a*, suitable for the book-leaves, such number corresponding to that desired for the book, are provided in superposed relations, and these sheets are laid upon a sheet of material suitable for forming the book-covers, said cover material consisting of pasteboard, leather-board, leather, or other suitable material. These superposed leaf and cover sheets are then placed upon the work-table of the machine and moved rearwardly thereon, undergoing in such movement the sewing thereof through and through by the two sewing mechanisms comprised in the machine. One line of stitches through the leaves and cover, which extends from the upper to the lower end of the series of sheets, is at a distance from one edge of the book corresponding to one-quarter of the width of said sheet series, the other parallel line of stitches being at a corresponding distance from the opposing edge of the series of sheets, one-half of the area of the sheet series lying between the parallel lines of stitching. The leaf series and cover-sheet having been sewed in the separated parallel lines, as above, are then removed from the machine, severed longitudinally midway between the stitching-lines or upon the line of indication *x x*, Fig. 5, thereby producing a series of leaves and a cover sewed from top to bottom

midway between the edges thereof and adapted to form a book, the confining stitches being coincident with or forming the folding-line.

It is the intention in practice to the end of insuring the greatest expedition in the work to provide leaf and cover sheets which, in addition to being twice as wide as the double-page sheets for each book produced under the improved method, are twice or several times as long as is to be the produced book from its upper to its lower end, and therefore when the series of sheets of multiple length and double width have been sewed, as described, and severed midway between the stitching-lines, each longitudinally-divided portion may be transversely severed or divided, whereby therefrom is produced several covered and sewed books.

In Fig. 5 the leaves of the sheet series and the cover are of a size to constitute four books, each longitudinally-severed portion being transversely divided on the line *y y;* but it will be clear that instead of providing sheets to form but four books by making the sheets half as long again six books may be produced, or by making the sheets twice as long as those indicated eight books of the given size may be produced from one superposed series of leaf and cover sheets, and of course the extent to which the multiplication of the length of the sheet series and cover-sheet may be carried is only to be limited at the will of the operator.

With respect to the mechanism by which this improved method may be consummated, A represents the work table or bench, and B and B′ two sewing mechanisms supported on said work-table and movable longitudinally thereof the one toward and from the other. The said sewing mechanisms are to consist of any of the ordinary and well-known sewing-machines—such, for instance, as the "Singer" machine—one thereof being a "right-hand" machine while the other is a "left-hand" machine, so that in the sewing operation by both machines on one series of sheets the said sheets will be by the feeding devices of the sewing-machines uniformly fed forward.

As shown in the drawings, the one sewing-machine B′ is stationary, the other B being set in longitudinal ways *d d*, so that it may be moved bodily away from and toward the other machine that the heads of the machines may be in various relations in accordance with varied requirements for different work.

D represents a counter-shaft longitudinally mounted under the work-table and adapted to be intermittently or periodically rotated, at the will of the operator, by suitable mechanism, a form of mechanism for so rotating said counter-shaft being hereinafter described in connection with Fig. 3. The sewing mechanism B is geared for the driving thereof by said counter-shaft D, there being a gear *f* on the driving-shaft of the said sewing mechanism or machine B, which receives its rotation by means of the intermediate gear *g* meshing therewith, which intermediate gear in turn meshes with the gear *h* on the counter-shaft, whereby as the counter-shaft is forwardly driven the driving-shaft of the sewing-machine B will be correspondingly rotated. Between the gear *h′* on the counter-shaft and the gear *f′* on the shaft of sewing-machine B′ are two intermediate gears *g′* and g^2, (see Fig. 4,) whereby the shaft of the sewing-machine B′ will have a rotation in the same direction as has the shaft of the other sewing-machine B.

The portion of the table between the ways *d d* for the movable sewing mechanism B is cut out or open, as at *j*, and to the bed-plate of the mechanism B a bracket *k* is secured, which bracket extends outwardly beyond the end of the goose-neck standard *l* and forms a bearing-support for the intermediate gear *g*. The gear *h* has a spline connection *i* with the counter-shaft D, and said gear *h* is adapted to have a longitudinal movement on the counter-shaft as one with the sewing mechism B through means of the hanger-support *n*, which is affixed to said bracket *k*, and has an engagement by its lower extremity with the peripheral groove *o* in the hub of the gear *h*.

m represents a screw-shaft connected for free rotation with but against any longitudinal movement in relation to an extension *p* of said bracket *k*, said screw-shaft *m*, by another portion thereof, having a screw engagement with a supporting block or bearing *q*, and is provided with the hand-wheel *r* for convenience in securing its rotation.

The sewing mechanism B is hinged, as at *s*, to the slide *t*, that moves in one of the guide-ways *d*, which is of dovetail form, (see Fig. 3,) so that the said sewing-machine may be swung up on one edge of its bed, as usual in sewing-machines, and the opposite edge of the bed of said sewing mechanism from the one which is hinged is to be confined in place by the angular dog *u*, the shank of which passes through a vertical slot *u′* in the table A, said dog being drawn into confinement by its angular member on the bed of the sewing mechanism B through means of the nut under the table screwing on the threaded-shank extremity of said dog. It will be noticed that the said hanger *n* by its extremity engages said groove *o* only at one side thereof, whereby such engagement forms no obstruction to the swinging up of the sewing mechanism B and with it the gears *f* and *g*.

E and F represent adjustable guides and gages which range in parallelism transversely of the work-table under the goose-neck of each sewing mechanism and inside of the presser-foot and needle-bar thereof, which gages are for guiding the sheet series properly across the table, whereby they may receive the lines of stitching properly in accordance with the

essentials of the process, as hereinbefore set forth. Two gages are preferably provided, although two are not necessary.

Manifestly the pursuance of the said process and the employment of the above-described mechanism enable a most expeditious production of small books having flexible backs, the leaves and backs being sewed together at the folding-line. After the leaf-sheets and cover-sheet have been sewed, strips of tape or other flexible material are usually pasted over the line of stitches at the outside of the back, and this work may be very readily performed by the use of a machine forming the subject-matter of an application for Letters Patent of the United States, filed by me August 9, 1889, Serial No. 320,311.

Of course it will be understood that it is much preferable that the sewing mechanisms B and B′ be run only at the time that sheets are desired to be sewed, and, as the said sewing mechanisms are designed to be run by power, devices are provided whereby the power may only be transmitted to said sewing mechanism at the proper time, and one form of such devices is illustrated in Fig. 3, and comprises a permanently-driven pulley G, a swinging lever I, carrying intermediately thereon an arbor having a friction-disk J, which is located about in the same plane as said pulley G, and also a pulley H, the pulley K on the counter-shaft D, and a belt between said pulleys H and K, the spring for normally maintaining said swinging lever I in such a position that the friction-disk J is out of contact with the periphery of the driven pulley G, the treadle L, and the cord *v*, suitably guided and supported, one end thereof being connected to said treadle and the other to the swinging lever I, all so that when said treadle is depressed the lever I will be so swung as to present the friction-disk J in peripheral contact with said pulley G. The said friction-disk thus receiving rotation and imparting same to the pulley H, which is carried on the same arbor as said disk, enables said pulley H, through the belt-connection, to drive the counter-shaft D as long as the friction-disk is in peripheral contact with the pulley G.

What I claim as my invention is—

1. The method herein described of making blankbooks, which consists in providing a superposed series of leaf-sheets and a sheet of suitable back or cover fabric lying upon one side of said series, then stitching said leaf-sheets and cover fabric through and through in parallel lines within the edges of said sheets and separated from each other by a distance substantially equal to twice the distance of each of said stitching-lines from the edges of the sheets, and then severing the doubly-stitched leaf and cover sections midway between and parallel with said stitching-lines.

2. The method herein described of making blankbooks, which consists in providing a superposed series of leaf-sheets and a sheet of suitable back or cover fabric lying upon one side of said series, then stitching said leaf-sheets and cover fabric through and through in parallel lines within the edges of said sheets and separated from each other by a distance substantially equal to twice the distance of each of said stitching-lines from the edges of the sheets, then severing the doubly-stitched leaf and cover sections midway between and parallel with said stitching-lines, and then severing each of said so-divided portions transversely of its stitching-line into sub-sections, each of which constitutes a covered and sewed book.

3. A mechanism for making books, substantially as described, consisting of a suitable support or work-table and two sewing mechanisms mounted thereon in suitably-separated relations, and a guide or gage located inside of the stitch-forming devices of one of said sewing mechanisms and ranging parallel to the direction of the line of feed of said mechanism, substantially as and for the purpose set forth.

4. A mechanism for making books, substantially as described, consisting of a work-table and two sewing mechanisms mounted thereon in suitably-separated relations, and a guide or gage located inside of the stitch-forming devices of each of said sewing mechanisms and ranging in the direction of the line of feed of said mechanisms, and each guiding-gage being independently adjustable toward and from the other, substantially as described.

5. A mechanism for making books, substantially as described, consisting of a suitable support or work-table and two sewing mechanisms mounted thereon in suitably-separated relations to each other, a shaft D under said work-table, and driving connections interposed between said shaft and the driving-shaft of each of said sewing mechanisms, for the purpose set forth.

6. A mechanism for making books, substantially as described, consisting of a suitable support or work-table and two sewing-machines mounted thereon in suitably-separated relations, each sewing-machine having on the driving-shaft thereof a gear, and one of said sewing-machines being movable toward and from the other, a counter-shaft under said work-table having thereon a gear under each of said sewing-machine shaft-gears, and gearing intermediate of the gears on said sewing-machine shafts and counter-shafts, whereby said sewing-machine shafts are both rotated in the same direction, the said counter-shaft gear under the gear on the movable machine being splined on the counter-shaft, a part affixed to said movable machine and extended to engage with the hub of the said splined gear, whereby the latter is movable with said machine, and a suitable carrying support on the movable machine for the respective intermediate gearing between

said spline-gear and the shaft-gear on the movable machine, substantially as described.

7. A mechanism for making books, substantially as described, consisting of a suitable support or work-table and two sewing mechanisms in suitable separated relations to each other on said work-table, one of which is movable toward and from the other in suitable guideways, and a screw-shaft suitably mounted on said work-table and having an engagement with said movable sewing mechanism for insuring adjusting movements thereof, substantially as described.

8. In a mechanism for making books, substantially as described, in combination, a suitable support or work-table and two sewing mechanisms mounted thereon in suitably-separated relations to each other, a shaft D under said work-table, and driving connections interposed between said shaft and the driving-shaft of each of said sewing mechanisms, and devices for imparting a periodical rotation to said shaft D, consisting of a driven pulley G, a swinging lever I, carrying thereon an arbor having a pulley H and a friction-disk J, the pulley K on said shaft D, and a belt between said pulleys H and K, means for normally maintaining said swinging lever I in a position away from proximity to said driven pulley G, the treadle L, and the flexible connection, suitably guided between said treadle and said swinging lever, all so that when said treadle is depressed the lever I will be swung to present the friction-disk J in peripheral contact with said pulley G, substantially as set forth.

EDMUND N. MARTINEAU.

Witnesses:

WM. S. BELLOWS,

G. M. CHAMBERLAIN.