M. C. RITCHIE.

PAMPHLET COVERER.

APPLICATION FILED OCT. 24, 1910.

1,088,932.

Patented Mar. 3, 1914.

3 SHEETS—SHEET 1.

Fig. 1.

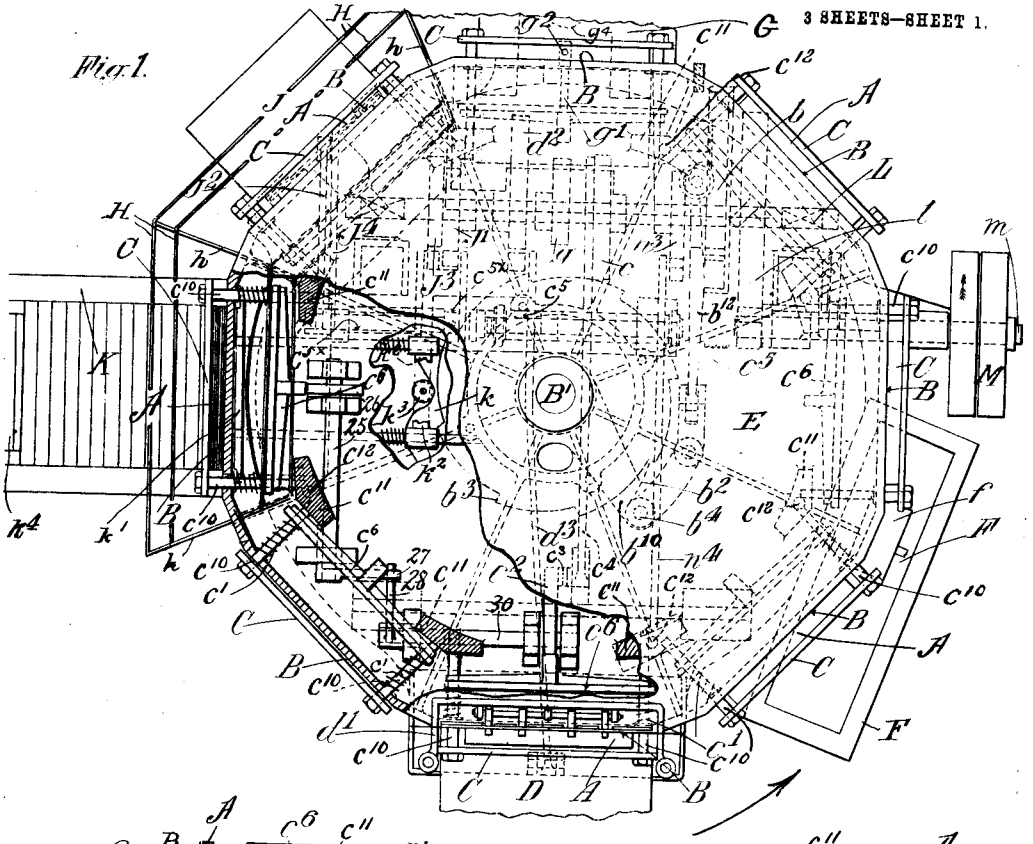
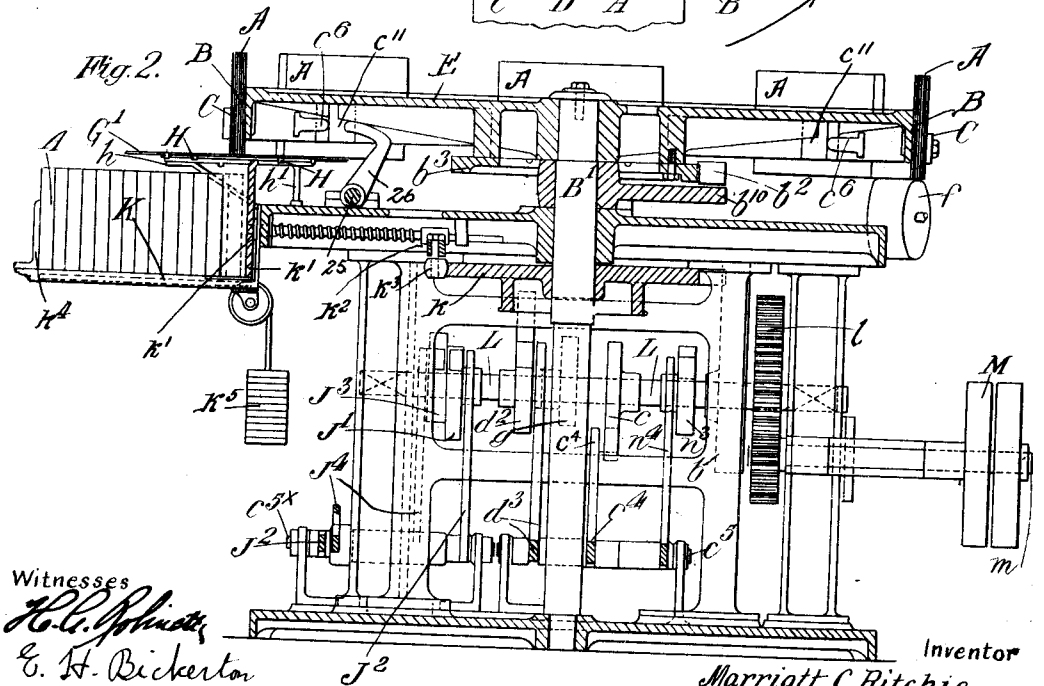


Fig. 2.



Witnesses

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3 SHEETS—SHEET 2.

Fig. 3.

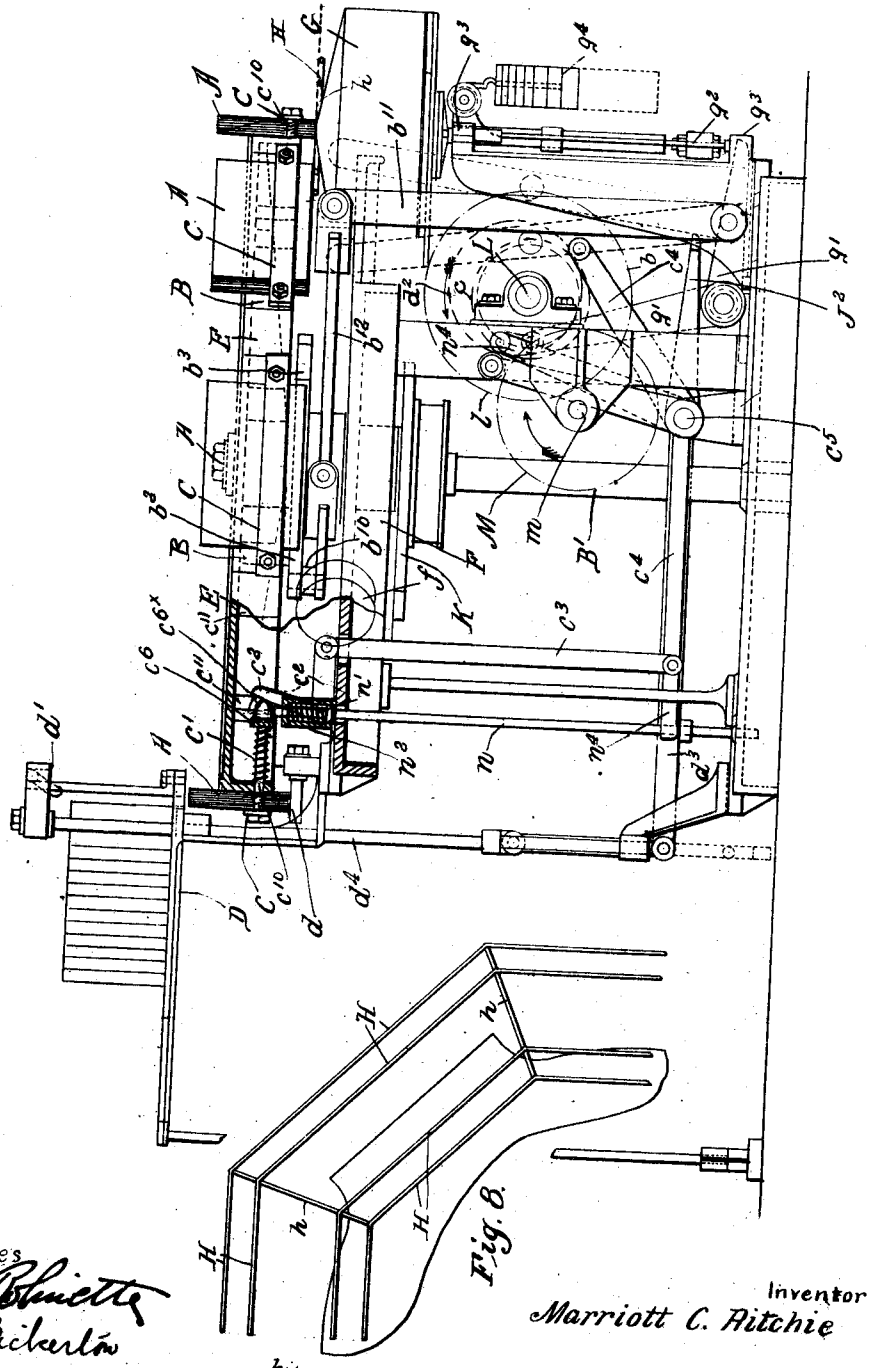

Fig. 8.

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3 SHEETS—SHEET 3.

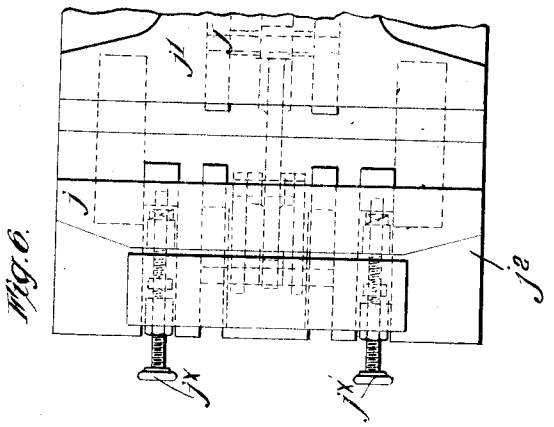

Fig. 6.

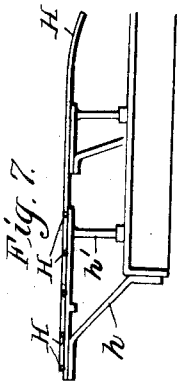

Fig. 7.

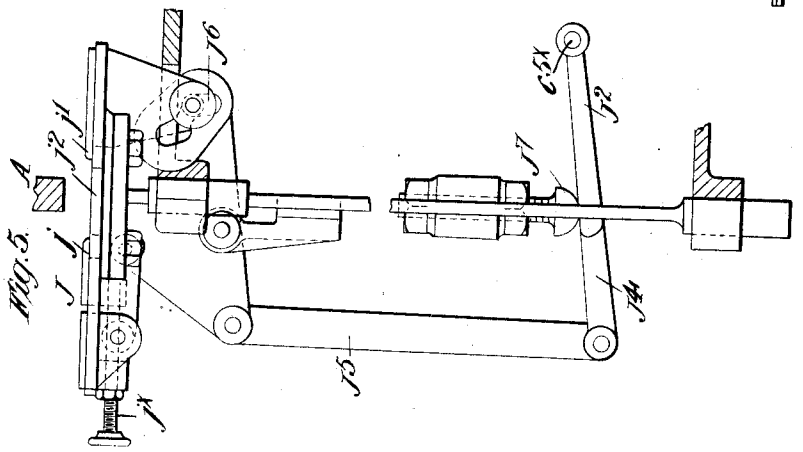

Fig. 5.

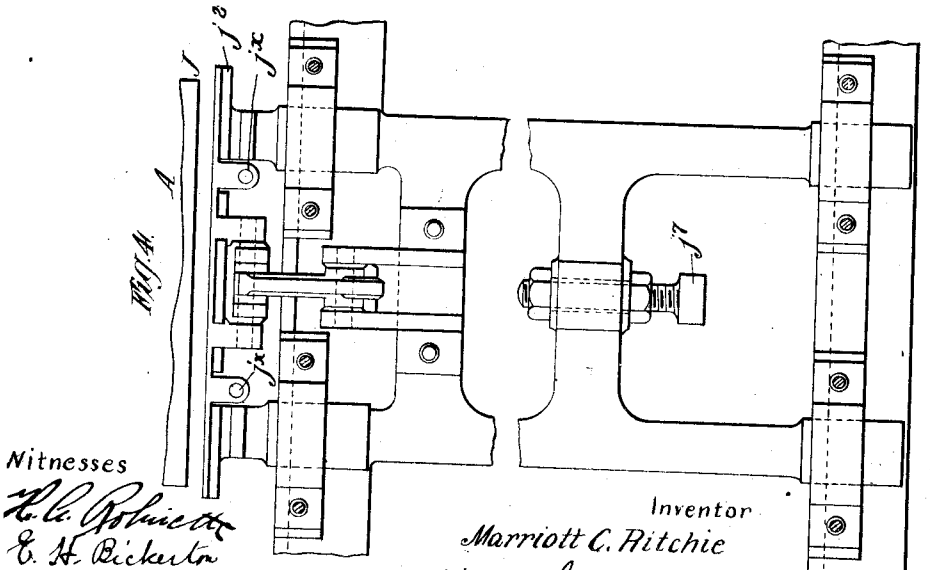

Fig. A.

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UNITED STATES PATENT OFFICE.

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PAMPHLET-COVERER.

1,088,932. Specification of Letters Patent. Patented Mar. 3, 1914.

Application filed October 24, 1910. Serial No. 588,714.

To all whom it may concern:

Be it known that I, MARRIOTT CLAUDE RITCHIE, a subject of the King of Great Britain, residing at 107 Clifton street, Finsbury, in the city and county of London, England, have invented certain new and useful Improvements in Pamphlet-Coverers, of which the following is a specification.

This invention relates to machines for supplying and affixing covers to books and the like and more particularly to machines in which thin flexible covers are employed for covering periodical magazines, and similar publications.

Heretofore machines of the above type have been somewhat objectionable or inconvenient owing to the amount of space required, and the chief object of the present invention is to provide a thoroughly efficient automatically operating machine in a neat and compact form.

According to the present invention the machine comprises a disk (preferably arranged horizontally) provided with a series of vertical "flats" or tables arranged about the circumference of the disk. The disk is adapted to be intermittently rotated by any suitable means and is so arranged that at each period of rest, one of the flats is brought to rest opposite the "feeding" hopper from which a book is automatically delivered to the said flat and gripped thereon by a clamping device, each "flat" in turn receiving its book and passing on to the subsequent steps in the binding process, each step occurring to each book when an empty "flat" arrives at the "feeding" hopper, the arrangement being such that, the first book in the disk is finished by the time or before its flat arrives at the feeding hopper, ready to receive a fresh book.

In order that the invention may be clearly understood and readily carried into effect, I will describe the same more fully with reference to the accompanying drawings, in which:—

Figure 1 is a plan of a machine embodying the features of the present invention. Fig. 2 is a sectional elevation of the same. Fig. 3 is a side elevation thereof, and Fig. 4 is a detail in front elevation of the device for gripping the books on the flat after receiving the cover. Fig. 5 is a side elevation of the same, and Fig. 6 is a plan thereof. Fig. 7 is a detail view of the guide wires for directing the course of the pamphlet cover. Fig. 8 is a plan view of the same showing their relation and connection to the main frame.

The apparatus comprises an intermittently rotating disk E provided with a number of vertical flats or tables B arranged about the circumference thereof. The book A is delivered to one of the flats B in a condition ready to receive its cover and is clamped by means of a gripping device C on the flat with the fastened edge or back downward being first received onto a non-rotary and separate adjustable support or supports d arranged beneath the feeding platform or table hopper D. The books are placed, for delivery to the machine, upon the platform or table D from which they are passed to the clamping device C by means of the sliding pusher d' which is actuated by the cam d^2 on the shaft L through the medium of the lever d^3 and rod d^4.

In describing the operation of the machine it will suffice to follow the sequence of operations in connection with covering of one book. Assuming the uncovered book to have been received and clamped, back edge downward, on one of the flats B, an angular movement is imparted to the disk E by the pawl b^2 engaging with one of the teeth of the ratchet b^3, this latter being secured to the said disk and having a number of teeth corresponding to the number of flats B on the disk. The pawl b^2 is mounted on the arm b^{10} and angular movement is imparted to said arm by a cam on the shaft L through the lever b^{11} and rod b^{12}. The disk E at each intermittent movement imparted to it by the pawl and ratchet mechanism described, brings an empty flat B opposite the feeding hopper to receive and clamp the book to be covered, the previously clamped book being carried by the same movement over a receptacle F containing glue or other suitable adhesive. This receptacle contains a roller f over which the back edge of the book passes in contact with the adhesive thereon. The disk being again operated is brought to rest in such a position that the book comes to rest immediately over the cover receptacle G from which a cover in a flat condition is delivered to the now adhesive back edge of the book. During the next period of rotation the book takes the cover with it and passes between inclined guides or wires H, whereby the cover is

caused to assume a horizontal position, and be supported by said guides or wires in that position. These wires H run continuously from the cover receptacle G to the delivery hopper K, hereinafter described, below the level of the disk and on a plane coincident with the back of the clamped book A. There are four of these wires H supported on brackets h, h', fastened to the main frame, two of the wires lying on the outside and two on the inside of the path of movement of the book A in position to hold the free sides of the cover horizontally. As the disk E rotates the cover just picked up by the book passes over the receiving ends of the wires, which at that end have a downward slope to insure the passing of the cover above them, and is held in a flat position at right angles to the book. The wires maintain the cover in this position and thus keep it clear of the mechanism until the book arrives over the delivery hopper. When this position is reached the disk E stops and the clamping device hereinafter described is opened permitting the book to drop between the wires which serve to close the sides of the cover over the book. After leaving the cover receptacle G the book is brought in proximity to a pressing device J adapted to press the cover firmly to the book at the back and sides. The book is now covered, and so far it has occupied four steps in the sequence of operations, but if desirable the time occupied by these processes may extend over more than four periods of rest. The book next arrives at the delivery hopper K. The delivery hopper K as shown is arranged at right angles to the feeding hopper and when the book arrives above the same the clamps C are automatically released, and the finished book falls between the wires H, into the delivery hopper where the finished books as they are received are conveyed away by any suitable means. After the finished book is clear of the flat the disk continues its rotation as before, the now empty flat being ready to receive a new book when it arrives at the feeding hopper D.

All of the mechanisms required for clamping, applying covers, pressing and so forth can be operated automatically by suitable means such as cams, levers and the like from the main shaft.

The aforesaid clamp comprises the bar C which is capable of outward movement for releasing the book A; the gripping of the latter being effected by the springs c' drawing the bar C against the flat B. The clamping bars C are each secured on two pins c^{10}, which are supported at their respective ends by bearings formed in the outer rim of the disk E and in the pentagonal members c^{11} cast on the disk E. The members c^{11} are also provided with centrally formed holes c^{12} which serve to engage with a spring-controlled rod or catch so as to retain the disk E in the correct position. The operation of the bar C is effected by means of the bell crank lever c^2 which works against the push bar c^6 coupling the pins c^{10} of the bar C and which is operated by the cam c carried by the shaft L through the medium of the rod c^3 and lever c^4, the latter being pivoted at c^5. When a flat B arrives at the feeding hopper, the bar C has been pushed outward by the aforesaid mechanism, but as soon as the book is in position, the parts assume the position shown in Fig. 3 that is to say the push bar c^6 has moved inward as at c^{6x} under the influence of the springs c'. The disk thereupon commences to rotate. The book in being delivered to the flat, of course falls between the flat and the bar C, the fastened edge of the book being downward and resting on the pins d. The book is thus firmly gripped between the bar C and the flat B and no longer requires the support of the pins d. Before the book arrives at the cover receptacle G, its fastened edge passes over the roller f which is capable of idle rotation in the bath or receptacle F containing paste, glue or other suitable adhesive substance. If desired, it may be so arranged that time is allowed for allowing the adhesive to become properly "tacky" before applying the cover, and in such a case, the disk may be arranged to stop any suitable number of times between the application of the adhesive substance and the arrival at the cover receptacle G. In the present case, the disk stops twice, between the said operations. The covers are arranged to lie flat in the hopper G and as the book arrives in a suitable condition for receiving a cover, the entire hopper is raised and the topmost cover is pressed against and caused to adhere to the back of the book. The raising of the hopper is effected by means of the cam g bell crank lever g' and plunger or rod g^2, the latter carrying the hopper G and being mounted in guides or bearings g^3. Suitable counter balancing weights such as g^4 may be employed to assist this operation, the hopper having the slight preponderance. Having received its cover, the book now passes on, and in order that the flat cover may be caused to assume its proper position or be preserved in contact with the back of the book, the wire guides H are provided. The next operation is the pressing or nipping of the cover on the book. This operation comprises first the pressing of the cover firmly to the back edge of the book, and then the pressing of the sides thereof adjacent to the back. The book A, with its cover supported by the wires H arrives at the "nipper" J (see Figs. 4, 5 and 6) in such a position that the back is just above and between the two parts

j j' and also above the table j^2. The part j is adjustable by means of the screws j^x. The book being in the aforesaid position, the table j^2 is forced upward against the back edge of the book so as to secure the correct position of the cover and then the two parts j and j' are brought together in such a manner that they nip the book and cover between them. These operations are effected by means of the cams J' and J^3 and the bell-crank levers J^2 and J^4, which work on the shaft c^{5x}, rod J^5 pivoted to the lever J^4, cam J^6, and the member J^7 which is struck by the arms of the cam operated lever J^2 and the side nippers by levers J^4 to which the rod J^5 is connected. The jaws j, j' and j^2 are then released from contact with the book, whereupon the disk again rotates. The book now passes on in a finished condition to the delivery hopper and as soon as the book arrives above the hopper, the clamp C is opened to release the covered book simultaneously with the opening of a similar clamp C at the feeding table D, by the following mechanism: Journaled on the fixed frame below the rotating disk E and back from the delivery table K is a horizontal rock shaft 25, carrying an upwardly projecting hook-shaped arm 26, the free end of which is adapted to engage the push bar c^6 of the book clamp and open said clamp. The shaft 25 is placed at a right angle to the shaft 30 of the bell crank lever c^2, see Fig. 1, from the contiguous ends of which shafts project fingers 27, 28, respectively, that interengage in such manner as to rock the shaft 25 when the shaft 30 is rocked by the cam c actuating the lever c^4 and rod c^3 as described, thus opening the clamp C. The springs c' automatically close the clamps when the bell crank lever c^2 and the hook-shaped arm 26 are retracted. For instance the finished books may be fed out of the delivery hopper one at a time at intervals and may also be pressed therein. For this purpose a notched cam k, arranged upon the central shaft B' and adapted to rotate therewith, is arranged to impart a reciprocating motion to the plate k' by means of the sliding frame k^2 upon which is the roller k^3 the arrangement being such that the plate k' is in contact with a book for the greater part of its time and is only withdrawn for a short time to permit of a new book entering the hopper, as shown in Figs. 1 and 2. A sliding device k^4 operated by a weight k^5 or the like always insures that the arrival of a new book and the subsequent outward stroke of the plate k' will impart considerable pressure to the books in the hopper and also move them all outward by an amount equal to the thickness of one book, and at each outward movement, the outermost book may be removed by hand, or otherwise.

The intermittent rotation of the disk carrying the flats B is effected as heretofore described by means of the cam b, lever b^{11}, rod b^{12}, pawl b^2 and ratchet wheel or disk b^3. The pawl b^2 is mounted loosely upon the pin b^4 and the movements of the rod b^{12} are conveyed to the pawl b^2 by means of the L-shaped connection or lever b^{10} which is arranged to turn or pivot on the central shaft or stud B'.

All the cams for operating the various mechanisms are arranged on the cam shaft L which is driven by suitable means such as gearing l driven by any suitable power through the pulley M and shaft m. It is of course obvious that more than one disk carrying the aforesaid flats may be arranged on the same shaft, or on separate shafts driven by chain, belt or other suitable gearing, the number of such disks being of course determined by the space available; and it is obvious that the receptacle for the finished books may be vertically below the feeding hopper or at any other convenient point of arrest of the motion of the disk.

The disk E which carries the flats B is arrested so as to bring the flats in position successively by means of a spring controlled rod n, which engages with the opening e^{12} in the polygonal members e^{11} the spring n' being arranged in the box n^2. The rod n is actuated by the cam n^3 on the shaft L through the medium of the bell-crank lever n^4 which is pivoted on the shaft c^5.

What I claim and desire to secure by Letters Patent of the United States is:—

1. In a machine for covering books and the like, the combination of a horizontal disk having a plurality of spaced flattened surfaces in its edge, means for intermittently rotating said disks, a plurality of clamping heads carried by said disk and movable each toward one of said flattened surfaces to firmly hold between said surface and a head a book to be covered with its back down, means for positively opening each clamping head during each pause in the movement of said disk to receive a book, means for applying adhesive to the back of each book as the disk is rotated, a support for a stack of covers, means for elevating said stack into contact with a back of a book to cause the uppermost cover to adhere to said book back, supports for holding said cover flat as said disk travels to the point of delivery, means for opening said clamping head to release said covered book, and means for folding said cover against the sides of the book as the latter is discharged.

2. In a machine for covering books and the like, the combination of a horizontal disk having a plurality of spaced flattened surfaces on its outer edge, means for intermittently rotating said disk, a plurality of clamping heads carried by said disk and

movable each toward one of said flattened surfaces to firmly hold between said surface and the head a book to be covered with its back down, a rocking arm for positively opening each clamping head when it is stopped in position to receive a book, means for applying an adhesive to the back of each book as the disk is rotated, a support for a stack of covers, means for elevating said stack into contact with the back of a book to cause the uppermost cover to adhere to said book back, supports for holding said cover flat as the disk travels to the point of delivery, a rocking arm for opening said clamping head to release said covered book, a common means for simultaneously actuating said rocking arms to open said clamps to respectively receive and discharge a book, and means for folding said cover upon the book as the latter is discharged.

3. In a machine for covering books and the like, the combination with a base plate, a top plate and supports between said plates rigidly secured thereto, of a vertical shaft journaled in said plates, a horizontal disk having a plurality of spaced flattened surfaces on its outer edge fixed on said shaft, a ratchet wheel on said shaft and means for actuating said ratchet wheel to intermittently rotate said disk, a plurality of clamping heads carried by said disk and movable each toward one of said flattened surfaces to clamp therebetween a book to be covered with its back down, a rocking arm mounted on said top plate for positively opening said clamping head as the disk rotates into position to receive a book, means for feeding a book between a clamping head and the flattened surface of the disk, an adhesive applying device for the back of a book, means for pressing a cover into contact with the adhesively coated book back, supports for sustaining said cover flatwise as the book travels to the point of delivery; a second rocking arm on said top plate for opening the clamping head to release a book, and a common means for simultaneously actuating said rocking arm, to open the clamps to respectively receive and discharge a book.

In testimony whereof I affix my signature in presence of two witnesses.

MARRIOTT CLAUDE RITCHIE.

Witnesses:

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W. J. SKERTEN.