

No. 759,570.

PATENTED MAY 10, 1904.

C. A. STURTEVANT.

DELIVERY MECHANISM FOR SHEET FOLDING OR OTHER MACHINES.

APPLICATION FILED MAR. 2, 1903.

NO. MODEL.

2 SHEETS—SHEET 2.

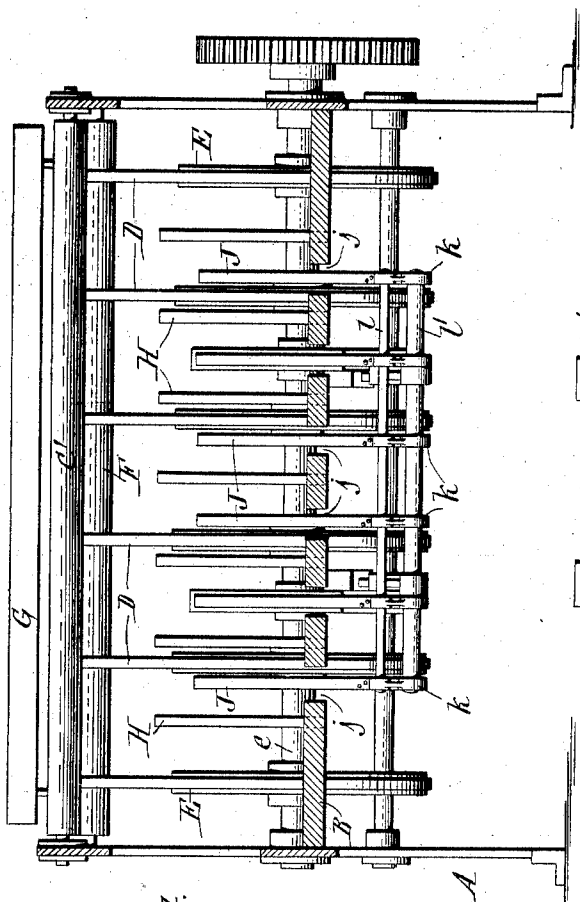


Fig. 4.

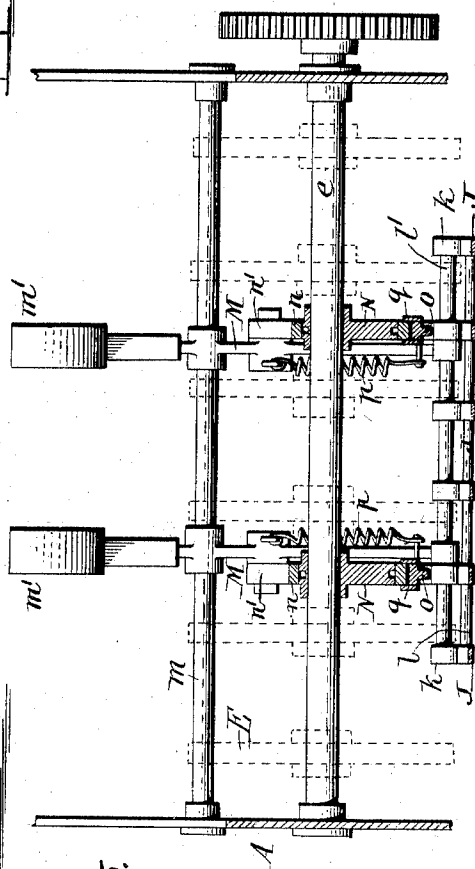


Fig. 5.

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DELIVERY MECHANISM FOR SHEET-FOLDING OR OTHER MACHINES.

SPECIFICATION forming part of Letters Patent No. 759,570, dated May 10, 1904.

Application filed March 2, 1903. Serial No. 145,796. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. STURTEVANT, a citizen of the United States, residing at Plainfield, in the county of Union and State of New Jersey, have invented new and useful Improvements in Delivery Mechanism for Sheet-Folding or other Machines, of which the following is a specification.

The object of this invention is the production of a sheet-delivery mechanism for sheet-folding or other machines which is very simple in construction, reliable in operation, and which has comparatively few moving parts.

In the accompanying drawings, consisting of two sheets, Figure 1 is a fragmentary longitudinal sectional elevation of my improved delivery mechanism applied to a sheet-folding machine. Fig. 2 is a similar view showing the parts in a different position from that shown in Fig. 1. Fig. 3 is a detached view of one of the plain packer-fingers. Fig. 4 is a vertical transverse section in line 4 4, Fig. 1. Fig. 5 is a horizontal section in line 5 5, Fig. 1.

Like letters of reference refer to like parts in the several figures.

That part of the sheet-folding machine to which my delivery mechanism is applied, as shown in the drawings, consists, essentially, of a main frame A, a horizontal receiving-table B, arranged in rear of the frame, two pairs of folding-rollers C C', arranged in the upper part of the frame, and carrying or feed tapes D, which pass horizontally forward from the front rollers C to the rear rollers C', thence downwardly and backwardly around delivery-wheels E, thence upwardly and backwardly over a guide-roller F, and thence to the receiving part of the machine and back to the place first described.

G represents one of the folding-blades whereby the sheets are creased and fed between the folding-rollers.

The delivery-wheels E are mounted on a transverse driving-shaft e, which may be driven in any suitable manner. The delivery-table is substantially in line with the driving-shaft and terminates at its front or receiving end adjacent to the carrying-tapes.

H represents a transverse row of stationary upright fingers, which together form a guide or guard on the inner end of the delivery-table. These fingers are arranged at suitable distances apart and are secured at their lower ends to the delivery-table, while their upper ends are bent slightly inward, as shown at h, so as to cross the path of the signatures while the latter are carried by the tapes from the folding-rollers C' toward the delivery-wheels E. As the folded sheets, blanks, or signatures are carried downwardly from the last pair of folding-rollers C' to the delivery-wheels E the signatures engage with the stationary guide-fingers and are directed by the latter from the carrying-tapes to the receiving-table in an upright or edgewise position. The folded signatures are successively moved forward over the receiving-table and packed against a follower I, which slides on the receiving-table.

J represents the vertical fingers of the packer whereby the folded sheets or signatures are moved forwardly on the receiving-table and which are arranged in a substantially upright position between the stationary guide-fingers. These packing-fingers have a lateral movement in a direction lengthwise of the receiving-table for packing the signatures and also a vertical movement at right angles to the plane of the table for permitting the packing-fingers to pass successively from the front side of each signature to the back side thereof and clearing the same. The inner end of the receiving-table is provided with notches or recesses j, which receive the packing-fingers while packing and clearing the signatures. Each of the packing-fingers is secured at its lower end to a supporting-head k, and the heads of the several packing-fingers are connected by upper and lower transverse bars l l', which causes these fingers to move in unison.

M represents two rock-levers which are arranged underneath the driving-shaft e and mounted on a transverse shaft or rod m, which is supported at its ends on the side frames of the machine. Upon the front arms of these rock-levers is pivotally mounted the lower cross-bar n of the packer, the weight of which

is counterbalanced by counterweights m' , mounted on the rear arms of the rock-levers. The latter are oscillated for raising and lowering the packer by eccentrics $N N$, secured to the driving-shaft e and each having its surrounding strap n connected by a bar or link n' with the front arm of one of the rock-levers. The lateral forward and backward movement of the packer is produced by two shifting-arms $O O$, each of which bears with its upper part against the front side of the eccentric-straps, while its lower part is connected with the packer, preferably by forming the same integrally with the head of the adjacent packer-finger. The shifting-arms are held in contact with the eccentric-straps by springs p , so that the packer will follow the movement of the eccentric-straps. Each of these springs, as shown, is connected at one end to the lower part of the shifting-arm, and its other end may be connected with the rock-lever or to some stationary part of the machine. Displacement of the shifting-arms on the eccentric-straps is prevented by means of retaining-plates q , secured lengthwise to opposite sides of each shifting-arm and engaging against opposite sides of each eccentric-strap. When the eccentric is in the middle of its downward stroke, the packer is about to complete its forward packing movement and has begun its downward clearing movement, as shown in Fig. 1. In this position of the parts the packer-fingers are arranged in front of the guide-fingers a sufficient distance to form a pocket or clear space between the guide and packing fingers. While the fingers are in this position, the next following folded sheet or signature is delivered by the carrying-tapes into the pocket between the guide and packing fingers, as shown in Fig. 1. During the continued downward and rearward movement of the eccentrics the front arms of the levers are depressed to their fullest extent, in which position of the levers the packer-fingers are depressed below the signature which has just been delivered upon the receiving-table and the packing-fingers are also moved backwardly so that they stand in rear of the last signature on the table, as shown in Fig. 2. During the subsequent upward and forward movement of the eccentrics the packing-fingers are first raised in rear of the last signature and the guide-fingers and then moved forwardly past the guide-fingers, whereby the last signature is carried away from the guide-fingers and pressed against the stack or pack of previously-folded signatures, and at the same time a pocket is formed between the packing-fingers and guide-fingers for the reception of the next following signature. This compound horizontal and vertical movement which is imparted to the packing-fingers is derived from the same eccentric by transmitting the motion from the eccentric at two different places or points to the packing-fingers, which

places are nearly at right angles to each other. This causes the eccentric while moving through the upper and lower parts of its circle to be effective principally in a horizontal direction against the shifting-arm; but while moving through the front and rear sides of its circle the eccentric is effective principally in a vertical direction against the rock-lever. By this means the packing-fingers are moved forward in an oblique line while packing the signatures and then moved downwardly in a nearly straight line for clearing the next following signature. By thus effecting the delivery of the signatures by one set of eccentrics the construction of the machine is simplified and the cost of the same is reduced in the same measure.

I claim as my invention—

1. The combination of a signature or blank receiving table, a packer, an eccentric, and means engaged by different parts of the eccentric and operating to move the packer principally lengthwise of the table during one part of its rotation and principally at right angles to the plane of the table during another part of its rotation, substantially as set forth.

2. The combination of a signature or blank receiving table, a packer, an eccentric, a shifting device connected with the packer and acted upon by one part of the eccentric for moving the packer lengthwise of the table, and another shifting device also connected with the packer and acted upon by another part of the eccentric for moving the packer at right angles to the plane of the table, substantially as set forth.

3. The combination of a signature or blank receiving table, a packer, an eccentric, a shifting-arm connected with the packer and acted upon by one part of the eccentric, and a rock-arm also connected with the packer and acted upon by another part of the eccentric, substantially as set forth.

4. The combination of a signature or blank receiving table, a packer, an eccentric having a strap, a rock-arm carrying the packer and connected with one part of the eccentric-strap, and a shifting-arm also connected with the packer and engaging with another part of the eccentric-strap, substantially as set forth.

5. The combination of a signature or blank receiving table, a packer, an eccentric having a strap, a rock-arm carrying the packer and connected with one part of the eccentric-strap, a shifting-arm connected with the packer, and a spring whereby the shifting-arm is held in engagement with another part of the eccentric-strap, substantially as set forth.

6. The combination of a signature or blank receiving table provided at its inner end with upright guide-fingers and with notches or recesses between said fingers, packer-fingers which enter said recesses and have a movement lengthwise of the table and also at right angles to the plane thereof, a transverse bar

carrying the packer-fingers, a rotatable eccentric having a surrounding strap, a rock-arm carrying said transverse bar and connected with one part of said eccentric-strap, and a
5 shifting-arm connected with the packer-fingers and engaging another part of said eccentric-strap, substantially as set forth.

Witness my hand this 6th day of November, 1901.

CHARLES A. STURTEVANT.

Witnesses:

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A. W. HILSINGER.