E. P. JENNINGS, JR.

COLLATING DEVICE.

APPLICATION FILED MAY 29, 1915.

1,253,247. Patented Jan. 15, 1918.

Fig. 1.

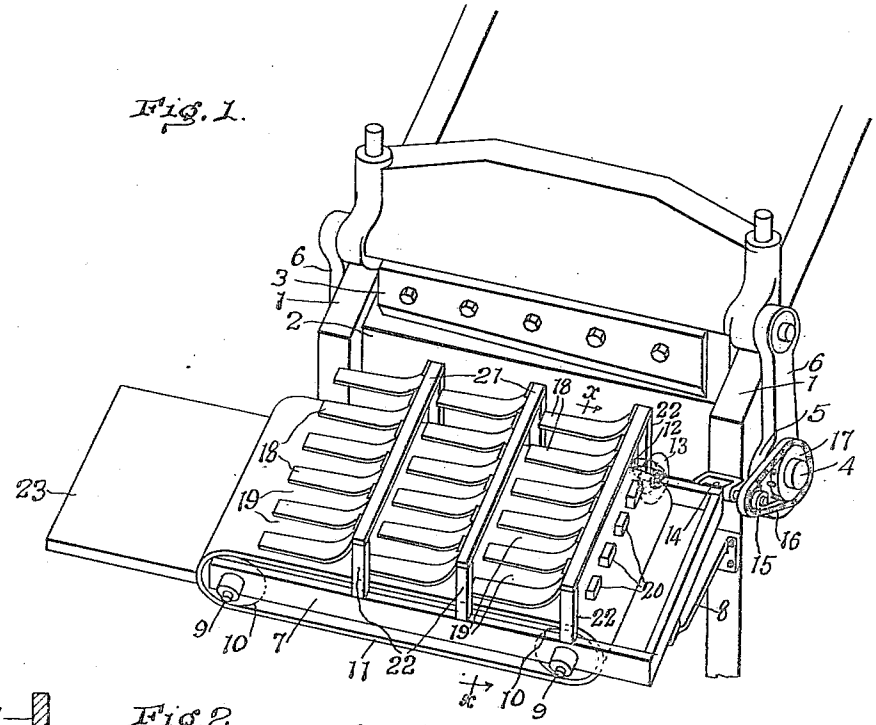


Fig. 2.

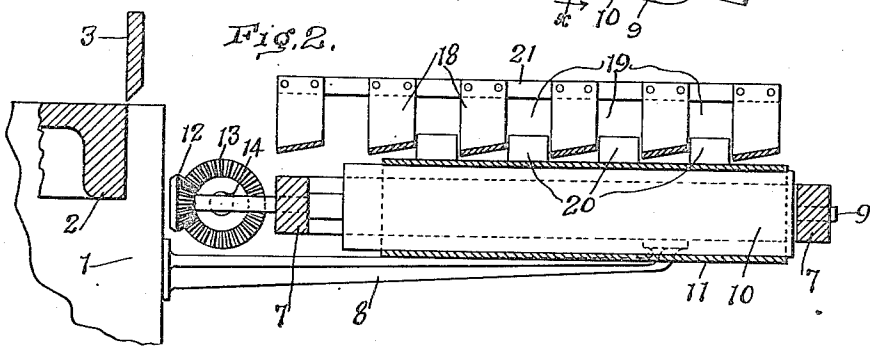
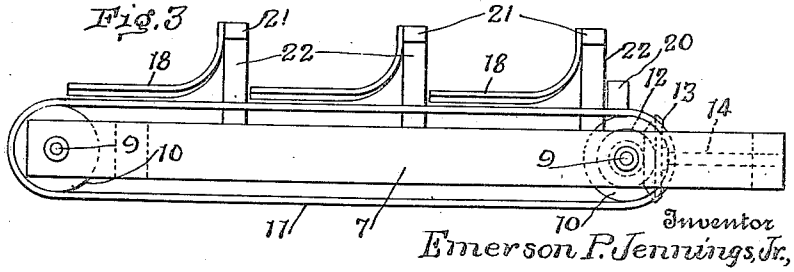


Fig. 3



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UNITED STATES PATENT OFFICE.

EMERSON P. JENNINGS, JR., OF LEHIGHTON, PENNSYLVANIA.

COLLATING DEVICE.

1,253,247. Specification of Letters Patent. Patented Jan. 15, 1918.

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To all whom it may concern:

Be it known that I, EMERSON P. JENNINGS, Jr., a citizen of the United States, residing at Lehighton, in the county of Carbon and State of Pennsylvania, have invented certain new and useful Improvements in Collating Devices, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to collating devices. In the production of certain classes of printed matter it is sometimes desirable to print simultaneously upon three webs from three separate forms carried side by side on the form-bed. The webs of paper are carried from rolls in parallel relation across the forms and to the cutter. They pass through the cutter side by side and each web is severed upon each operation of the cutter. The subject matter of the forms is often related in such a manner that it is desirable that the three impressions, or three printed sheets which have been severed, should be delivered in a predetermined superimposed relation. For example, the three sheets may constitute the original, duplicate and triplicate of a bill of lading and the three parts of the bill should be delivered with the original on top, the duplicate next below and the triplicate on the bottom. When severed from the webs by the cutter they are arranged side by side.

The object of the present invention is to provide a device which will receive a plurality of sheets side by side and will deliver the same in a superimposed arrangement, and to provide such a device which will be very simple in construction, positive in its operation and inexpensive to manufacture. To this end, it is a further object to provide such a device with an endless belt actuator which advances the several sheets to the delivery point and causes them to be arranged in proper superimposed relation. A further object of the invention is to provide in connection with such an endless belt a support comprising a plurality of parts, one for each sheet, and to so arrange these supports, with relation one to the other, that the sheets will be placed in superimposed relation as they are moved along the support. Other objects of more or less importance will appear as the invention is described.

In the accompanying drawings, Figure 1 is a perspective view of a device embodying my invention, showing the same mounted at the delivery end of a printing press; Fig. 2 is a sectional view, taken on the line *x x* of Fig. 1 and looking in the direction of the arrows; and Fig. 3 is a side elevation looking toward the press.

In carrying out my invention I have provided a device of such a character that it will receive, usually from the cutter or sheet delivery of a printing press, a plurality of sheets, the sheets being arranged side by side upon the device. This device comprises an endless belt actuating device which moves the several sheets toward the point of delivery and there delivers them in a superimposed relation. This actuating device may be driven in any suitable manner but preferably it is connected with a moving part of the printing press. In that form of the device illustrated in Figs. 1 to 3 I have shown the invention in connection with a printing press of a well known type which comprises a frame 1 having at its forward end a cutter comprising a fixed blade 2 and a vertically movable blade 3. The movable blade is driven from a continuously rotating shaft 4 by means of eccentrics 5 which are connected with the blade by arms 6 arranged at the opposite ends thereof. Mounted just beyond the cutter, on a slightly lower plane, is the collating device which, as here shown, comprises a frame 7 which may be supported on or adjacent to the frame of the printing press. In the present instance I have shown it as connected to the press by means of brackets 8. Journaled in the side members of the frame 7 are two shafts 9 having mounted thereon rollers 10 about which extends an endless belt 11. This endless belt constitutes an actuator for the collating device and it may be of any suitable character although, in the present instance, it is shown as consisting of a single web of material supported throughout its width upon the rollers or drums 10. This belt is preferably driven continuously, and in the present

arrangement of the mechanism I drive the belt from the continuously rotating shaft 4 of the printing press. This connection may be made in any suitable manner but, as here shown, the shaft 9 of one of the rollers is provided with a bevel pinion 12 meshing with a corresponding pinion 13 on a shaft 14 which is provided at its opposite end with a sprocket wheel 15 connected by means of a sprocket chain 16 with a sprocket wheel 17 mounted on the shaft 4. It is obvious, therefore, that as long as the printing press is in operation the endless belt 11 will be in motion. This belt constitutes the actuating devices for advancing the sheets of paper as they are received by the collating device. In this particular form of the device I have arranged above the endless belt actuating device a support upon which the sheets of paper are received, as they are severed by the cutter of the printing press. As here shown this support comprises a plurality of parts, one for each web of paper. In that form of the support shown in Figs. 1 to 3 each part is formed separately from the other parts and the several parts are supported in a predetermined relation upon the frame 7. As shown in these figures each part of the support comprises a series of bars or slats 18 spaced apart to form slots 19 between them. These slots extend longitudinally of the endless belt actuating device and this actuating device is provided with a series of fingers 20 adapted to travel through the slots and engage the sheets of paper which rest upon the support and extend across one or more of the slots in the respective parts thereof. The slots in the several parts of the support are arranged in alinement so that the fingers of the actuating device travel throughout the length of the support and successively engage the sheets of paper carried by the several parts thereof. The rear ends of the several bars 19 are curved upwardly, as shown in Figs. 1 and 3, and are connected one to the other by means of transverse bars 21, which bars are supported at their ends on the frame members 7 by means of standards 22. This arrangement has two results, first, it places the connecting members or bars 21 above and out of the path of the cleats or fingers 20 carried by the endless belt actuator. The arrangement also determines the relation of the sheets. It will be apparent that as the sheet first engaged by the actuator is moved forward, toward the left in Figs. 1 and 3, it will engage the rear portion of the second part of the support and will be deflected downward onto the actuator belt 11 and when the sheet on the second or intermediate part of the support is engaged by the fingers of the actuator it likewise will be deflected downward beneath the third part of the deflector. Thus, the three sheets are arranged one above the other with the sheet first engaged by the actuator on the bottom. As the sheet on the third and last part of the support is engaged by the actuator the three sheets move forward together and are discharged from the belt onto a suitable table or receiving board 23 which may be a part of the mechanism or may be supported independently thereof. To prevent the forward ends of the webs from passing between the bars or slats of the support, as the webs are fed past the cutter, I preferably arrange the bars at an inclination to a horizontal plane, as shown in Fig. 2. Consequently, the ends of the sheets, if they sag downward, will engage the sloping surfaces of the slats and ride upward over the same instead of passing beneath the slats.

The driving mechanism for the actuator is so timed with relation to the movement of the cutter that a set of fingers 20 will travel the entire length of the support between successive operations of the cutter, thus collating the sheets after each operation. In the present instance the actuator has but a single set of fingers 20 and is caused to make one complete revolution for each operation of the cutter.

It will be noted that with the mechanism here illustrated the several sheets are delivered to the receiving table in a proper superimposed relation; that the operating mechanism is of an exceedingly simple character; and that the whole device is such that not only is it positive in its operation and not liable to become disarranged so as to interrupt the operation thereof, but that there is no possibility of an improper arrangement of the sheets. They must of necessity assume the correct positions.

It will be understood that while I have shown the invention as embodied in a particular mechanism, this mechanism has been chosen for the purpose of illustration only and that I do not wish to be limited to the details of construction shown and described, for obvious modifications will occur to a person skilled in the art.

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

1. In a device of the character described, a support arranged to receive a plurality of sheets side by side, said support having a plurality of parts arranged in substantially the same plane to receive the respective sheets, the several parts having alined slots, and each part after the first having its rear end elevated above the forward portion thereof and above the adjacent edge of the preceding part, and an actuating device having a finger to travel through said slots and move the sheet on one part of said support

beneath the sheet on the following part thereof.

2. In a device of the character described, a support arranged to receive a plurality of sheets side by side, said support having a plurality of parts arranged in substantially the same plane to receive the respective sheets and each of said parts being provided with a slot and having its rear end turned upwardly, and an actuating device arranged beneath said support and having a finger to travel through the slots in the several parts of said support to move the sheet on one part of said support beneath the sheet on the following part thereof.

3. In a device of the character described, a support arranged to receive a plurality of sheets, side by side, said support having a plurality of parts arranged to receive the respective sheets, each of said parts comprising a plurality of substantially parallel bars spaced apart to form slots between them, the bars of each succeeding part having their rear ends turned upwardly to deflect downwardly the forward edges of the sheet advanced from the preceding part, and an actuating device arranged beneath said support and having fingers arranged to travel through the slots between said bars.

4. In a device of the character described, a support to receive a plurality of sheets side by side, said support comprising a series of bars arranged parallel one to the other and spaced apart, each of said bars being inclined transversely to its length, and an actuating device having fingers arranged to travel through the spaces between the respective bars.

5. In a device of the character described, a support arranged to receive a plurality of sheets side by side, said support having a plurality of parts arranged to receive the respective sheets, each of said parts comprising a plurality of substantially parallel bars spaced apart to form slots between them and each having its supporting surface inclined transversely to its length, said bars having their rear ends turned upwardy, and an actuating device arranged beneath said support and having fingers arranged to travel through the slots between said bars.

6. In a device of the character described, a frame, a support arranged to receive a plurality of sheets side by side, said support having a plurality of parts arranged to receive the respective sheets, each of said parts comprising a plurality of substantially parallel bars spaced apart to form slots between them, said bars having their rear ends turned upwardly, transverse bars supported on said frame and connected with the upturned ends of the bars of the respective parts, and an actuating device arranged beneath said support and having fingers arranged to pass beneath said transverse bars and to travel through the slots between the first-mentioned bars.

7. In a device of the character decribed, a frame, a support arranged to receive a plurality of sheets side by side, said support having a plurality of parts arranged to receive the respective sheets, each of said parts comprising a plurality of substantially parallel bars spaced apart to form slots between them, said bars having their rear ends turned upwardly, transverse bars supported on said frame and connected with the upturned ends of the bars of the respective parts, and an endless belt mounted beneath said support and having a plurality of fingers arranged in alinement transversely thereof and adapted to travel through the respective slots between said parallel bars and beneath said transverse bars.

8. In a device of the character described, a frame a support arranged to receive a plurality of sheets side by side, said support having a plurality of parts arranged to receive the respective sheets, each of said parts comprising a plurality of substantially parallel bars spaced apart to form slots between them, said bars having their rear ends turned upwardly, transverse bars supported on said frame and connected with the upturned ends of the bars of the respective parts, said parallel bars of each series being inclined transversely to their length to present inclined surfaces toward one side of said support, and an actuating device arranged beneath said support and having fingers arranged to travel through said slots between said parallel bars and to pass beneath said transverse bars.

9. In a device of the character described, a support arranged to receive a plurality of sheets side by side, said support having a plurality of parts arranged to receive the respective sheets, each of said parts comprising a series of bars spaced apart to form slots between them, the corresponding slots of the several parts of said support being arranged in alinement, and an actuating device arranged beneath said support and having fingers arranged to travel through the respective slots, the rear ends of the bars of each series after the first series being turned upward so that the sheet first engaged by said actuating device will be moved beneath that part of the support upon which the second sheet rests and the two sheets will then be moved beneath that part of the support carrying the third sheet.

10. In a mechanism of the character described, the combination with a device arranged to deliver, at each operation, a plurality of sheets, means to actuate said device, of a device arranged to receive said sheets as they are delivered and support the same

side by side, said device comprising a plurality of parts arranged in substantially the same plane to receive the respective sheets, the several parts of said device having alined slots, and each part after the first having its rear end elevated above the forward portion thereof and above the adjacent edge of the preceding part, an actuating device having a finger to travel through said slots and move the sheet on one part of said device beneath the sheet on the following part thereof, and a driving connection between said actuating device and the actuating means for said delivery device.

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

EMERSON P. JENNINGS, JR.

Witnesses:

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P. M. GRAUL.