Nov. 30, 1926. 1,608,930

F. S. ENGLISH

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Filed March 5, 1925

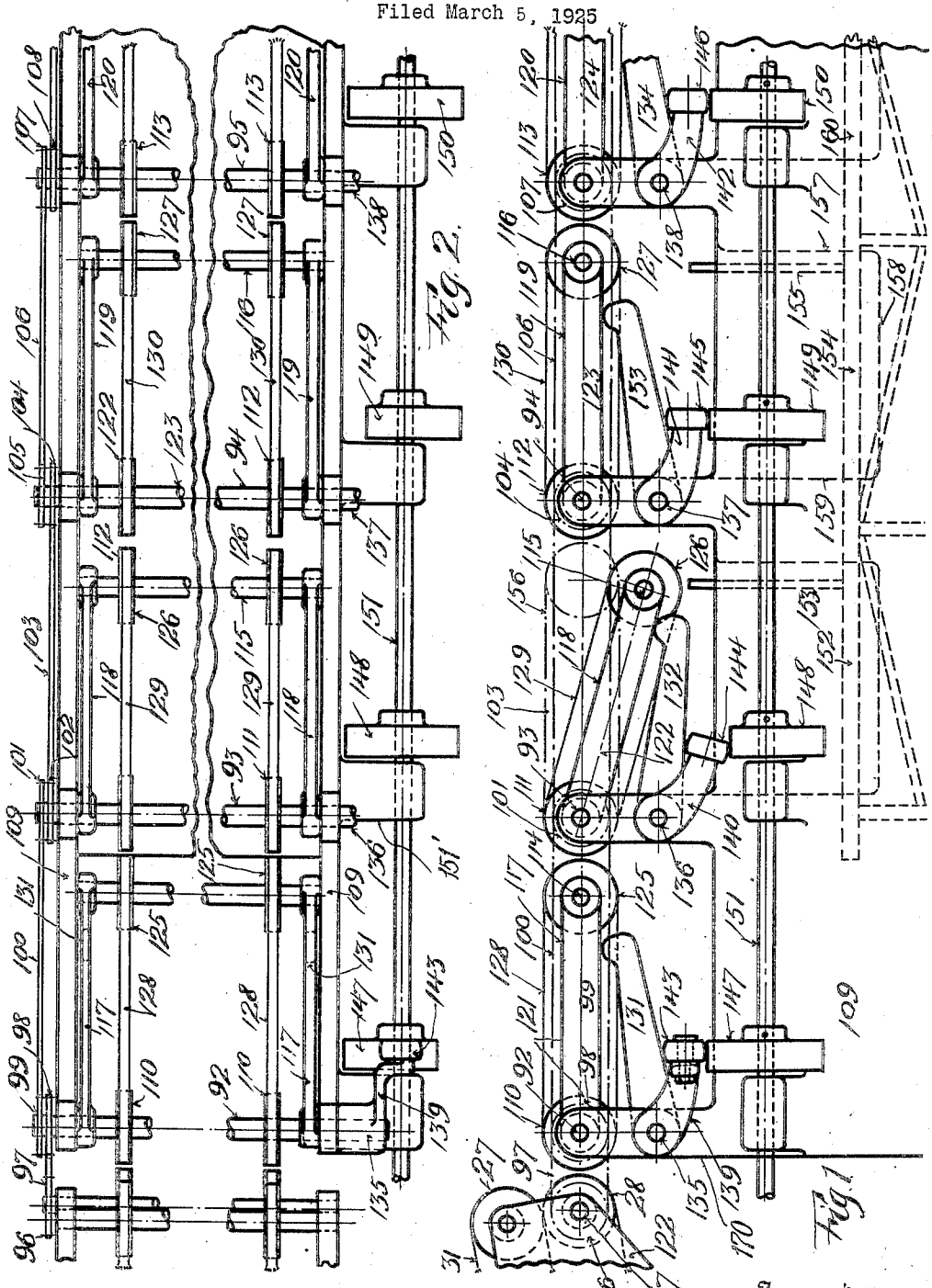

Fig. 2.

Fig. 1

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Patented Nov. 30, 1926. 1,608,930

UNITED STATES PATENT OFFICE.

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MEANS FOR DELIVERING SHEETS INTO A PLURALITY OF PILES.

Application filed March 5, 1925. Serial No. 13,342.

My invention relates to a device or mechanism for receiving sheets of stock successively as they are delivered from a machine, such for instance, as from the delivery device of a printing press or cutting and creasing press, and which will deliver the sheets into a plurality of independent piles. One use of the present invention is in connection with presses which cut and crease sheets of cardboard or corrugated board to form blanks from which boxes and the like are made. In such cases it is often customary for the box makers to take the sheets as they are delivered from the press and form them into boxes without intermediate handling of the stock. The object of the present device is to receive the sheets from the press and deliver them into separate piles so that if a number of box makers are working on the stock delivered from one press each of the several box makers may be supplied with a separate pile of sheets from which he may individually take the necessary stock for making up the boxes. While my invention is adapted to be used in connection with any machine in which sheets are delivered, it is very well adapted for use in connection with a press and in the present drawings I have shown my present invention receiving the sheets from the delivery device of that case.

The present mechanism receives the sheets successively at the same point as they are delivered from the press and it conveys the sheets along and drops them alternately into different piles and the operation of the mechanism is automatic.

In the drawings forming a part of this application,

Figure 1 is an elevation of my improvements, and

Figure 2 is a plan view thereof.

While the device may be attached to any form of machine for handling sheets, I have shown the same arranged to receive sheets from between the rollers 27, 28 forming part of the delivery device of the press and these rollers are the same as the rollers bearing similar numbers in my said copending application. I have shown the working parts of the present device mounted on a suitable frame 109 in which an operating shaft 151 is mounted in suitable brackets 151′ the shaft extending lengthwise of the device outside of the frame. Along this shaft are arranged cams 147, 148, 149, 150 all fixed to the shaft but angularly disposed with relation to each other so that the high portions of these cams will operate at different times on certain levers, as will appear. The shaft 151 is adapted to be operated by any source of power, preferably from the press from which the sheets are received. In the standards 170 on the frame 109 there are journaled shafts 135, 136, 137 and 138 extending crosswise of the machine. On the shaft 135 there is an arm 139 provided with a roller 143 which is acted upon by the cam 147 for the purpose of rocking the shaft 135 to cause the lever arm 131, which is fixed to the shaft 135, to rise and fall. On the shaft 136 there is an arm 140 having a roller 144 which is acted upon by the cam 148 to rock the shaft 136 and this causes the lever arm 132 to rise and fall like the arm 131, except that the movement takes place at a different time. The arms 141 and 142 arranged on the shafts 137 and 138 respectively correspond with the arms 139 and 140 and they are provided with rollers 145, and 146 which are actuated respectively by the cams 149 and 150. The arm 133 on the shaft 137 and the arm 134 on the shaft 138 correspond with the arms 131 and 132 except that they operate at different periods of time. Above the shaft 135 there is a shaft 92 extending crosswise of the machine and it is provided with a number of tape pulleys 110. On the shaft 92 there is pivoted a pair of lever arms 117 carrying on their free ends a cross shaft 114 on which are mounted tape pulleys 125 arranged in line with the pulleys 110. Around these pulleys 110 and 125 travel the tape belts 128 the upper runs of which are in position to receive the sheets as they pass out between the rollers 27. 28 of the press. Arms 131 are duplicated at opposite sides of the machine and their free ends engage under and support the free ends of the lever arms 117. When the arms 131 are in their raised position they support the arms 117 in a horizontal position as shown in Figure 1. There is a shaft 93 extending crosswise of the machine and it corresponds with the shaft 92; and on this shaft 93 there is pivoted a pair of arms 118 which carry on their free ends a cross shaft 115. The shafts 93 and 115

carry the tape rollers 111 and 126, respectively, around which travel the endless tape belts 129. These devices all correspond in construction and function to the device previously described. The lever arms 132 engage under and support the free ends of the lever arms 118.

There is another shaft 94 journaled crosswise of the machine and corresponding with the shafts 92, 93. On this shaft 94 there is loosely journaled a pair of arms 119 which at their free ends carry the cross shaft 116. The shafts 94 and 116 carry tape pulleys 112 and 127, respectively, around which travel the endless tapes 130. The lever arms 133 engage under and support the free ends of the arms 119. I have shown another shaft 95 corresponding with the shafts 92, 93, 94 having arms 120 supported by the lever arms 134 and the parts are shown broken as it will be understood that these devices may be duplicated any number of times according to the number of piles into which the sheets are to be delivered.

The several shafts 92, 93, 94, and 95 are driven from the shaft 87 on which the pulley 28 is mounted as follows. There is a chain 97 operated by a sprocket 96 on the shaft 87 and this chain operates the sprocket 98 on the shaft 92. There is another sprocket 99 on this shaft 92 and it operates the chain 100 which transmits the motion to the sprocket 101 on the shaft 93. On this same shaft there is another sprocket 102 which operates the chain 103 and the latter transmits the power to the sprocket 104 fixed to the shaft 94. On this same shaft there is a sprocket 105 which operates the chain 106 and the latter transmits the power to the sprocket 107 on the shaft 95. There is another sprocket 108 on this shaft, which operates another chain to carry the power further if any additional units are employed. These several sprockets are preferably of such a size that the several tape belts 128, 129 and 130 travel at the same speed as the pulleys 27 and 28 or at slightly lower speed if desired. Any other form of drive may be used for the several tape pulleys if desired.

When the arms 117 to 120 inclusive extend in a horizontal position the upper arms of all the tape belts 128 to 130 inclusive are in alignment and the sheets will be carried directly across from one set of tapes to the next one and if desired the sheets may be taken off directly from the different sets of tapes by the different operators if desired, but I prefer to deliver the sheets from these tapes into separate piles. The speed at which the shaft 151 is driven in relation to the speed of the press will be determined by the number of cams on this shaft; for instance. if there are four cams on the shaft 151 the latter will make one revolution for every four sheets that are delivered by the press to the tapes 128.

With parts in the position shown in Figure 1, the sheet received on the tapes 128 from the pulleys 27 and 28 will be carried over by the tapes 128, onto the pulleys 111 and this sheet will follow down on the tapes 129 and be shot across the gap against the stop 155; and it will fall on the delivery board 154 where one of the piles is formed. This downward projection of the sheet takes place because the lever arm 140 is allowed to rock downwardly by the cam 148 which permits the arms 118 to swing downwardly into the position shown in Figure 1. As soon as the sheet has been discharged from the tapes 129 the cam 148 will raise the lever 140, 132 and this will lift the tapes 129 into a horizontal position. While the tapes 129 are being returned to the horizontal position, the tapes 130 will be lowered by the action of the cam 149 on the lever arm 141 so that the next sheet delivered from the pulleys 27, 28 will be carried across the tapes 128, 129 and then downwardly on the tapes 130 to be shot across onto the pile support 160. This operation will proceed on the next unit of the machine and when all of the units have been operated in this manner the operations will be repeated. If desired, the cams can be so placed on the shaft 151 and so timed that the sheets will be delivered other than in the consecutive order described.

With the present device operating in connection with a cutting and creasing press, the sheets are taken successively from the press and are distributed automatically into individual piles from which the several box makers may take their respective sheets of stock without having to work all from one pile.

Having described my invention, what I claim is:

1. A device for delivering sheets into a plurality of separate piles, comprising a plurality of belts engaging over pulleys mounted on movable supports, said belts being adapted to receive the sheets successively one from the other, and means for automatically operating said movable supports periodically at different times whereby said sheets will be delivered by the several belts into different piles.

2. A device for delivering sheets into a plurality of separate piles, comprising a plurality of separate belts engaging over pulleys mounted on movable supports, said belts having runs arranged in the same horizontal plane whereby the belts will receive the sheets successively one from the other, and means for operating said movable supports periodically at different times whereby the sheets will be delivered by the several belts into different piles.

3. A device for delivering sheets into a

plurality of separate piles, comprising a plurality of separate belts engaging over pulleys mounted on rocking supports, said belts being arranged to receive the sheets one from the other, and means for rocking said supports to change the planes of the belts, whereby to cause the belts to periodically deliver the sheets into different piles.

4. A device for delivering sheets into a plurality of separate piles, comprising a plurality of belts engaging over pulleys mounted on rocking supports, means for operating the belts, said belts each having a horizontal run arranged whereby the sheets will pass successively from one belt to the other, and means for separately rocking said supports to change the planes of the belts and cause the sheets to be delivered by the belts into separate piles.

5. A device for delivering sheets into a plurality of separate piles, comprising a plurality of belts engaging over pulleys, said belts being arranged to receive the sheets successively one from the other, rocking arms supporting said belts, and cams angularly disposed in relation to each other for rocking said supports, whereby the belts will deliver the sheets into separate piles.

Signed at the city and county of New London, State of Connecticut, this 5th day of December, 1923.

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