

April 30, 1963

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3,087,723

BLANK FEEDING MEANS

Filed June 26, 1961

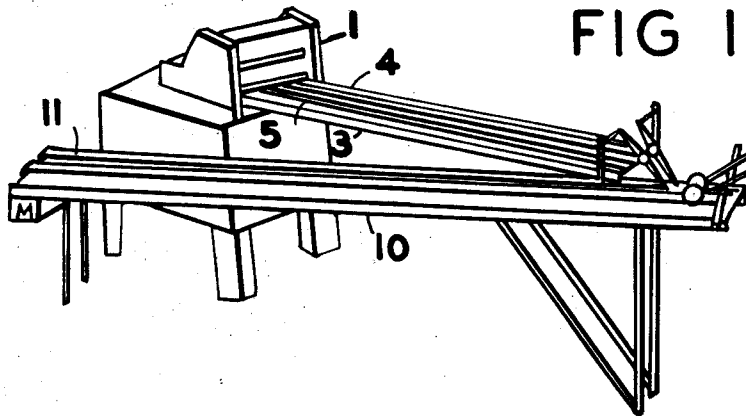


FIG 1

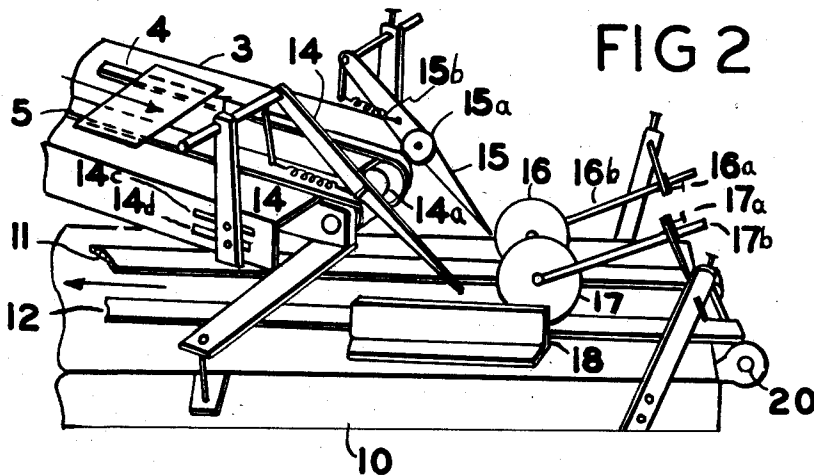


FIG 2

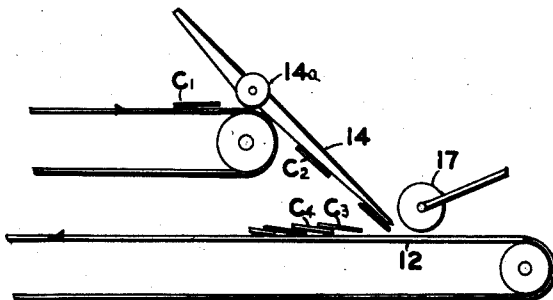


FIG 3

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3,087,723

BLANK FEEDING MEANS

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Filed June 26, 1961, Ser. No. 119,635
4 Claims. (Cl. 271-69)

This invention relates to means for feeding printed blanks or cards from a press and more particularly to means for conveying said cards or blanks a predetermined time for drying the printing and then returning them to the location of the press so that the conveyor may be unloaded by the press operator.

One of the problems in operating high speed printing presses is the fact that the output of the press is very rapid. This speed creates a problem in the drying and handling of the cards or blanks. Since the cards emerge from the press at a great speed it is necessary to convey them away from the press fairly rapidly in order to prevent them from sliding over each other and smearing the printing.

It is also desirable to convey the cards back to the vicinity of the press feed hopped so that the entire operation may be done by one operator, namely, feeding the press and removing the cards from the takeaway conveyor system. In order to achieve these purposes, it is necessary to reverse the direction of the cards back towards the press and this must be done without causing the cards to pile up and move over one another which would smear the fresh printing.

The present invention solves this problem by providing a high speed conveyor, which takes the cards away from the press at a speed sufficient to carry them separately for drying purposes, and a second conveyor mounted under the first conveyor and adapted to convey the cards back to the vicinity of the press so that they may be unloaded by the press operator. In reversing the direction of the cards from one conveyor to the other it is necessary to take special precautions so that the cards do not slide over one another and thereby smear the printing. These means include guide means to guide the cards down from the first conveyor against a stop, the second conveyor being arranged to take the cards away from the stop in a substantially opposite direction fast enough so that the leading edge of the succeeding cards fall directly on the second conveyor and do not fall on or scrape across the prior cards.

Accordingly, a principal object of the invention is to provide new and improved means for conveying printed cards or blanks from a high speed press a predetermined distance and then conveying said cards back to the vicinity of the press so that one operator can feed the press and unload the printed cards.

Another object of the invention is to provide new and improved means for conveying printed cards and reversing the direction of conveying the cards, without smearing the printing on the cards.

Another object of the invention is to provide new and improved means for conveying cards or blanks including means to substantially reverse the direction of said feeding means.

Another object of the invention is to provide new and improved means for conveying cards or blanks, including means to change the direction of said conveying through a variable angle approaching 180°.

These and other objects of the invention will be apparent from the following specification and drawings, of which

FIG. 1 is a perspective view of an embodiment of the invention illustrating the use thereof.

FIG. 2 is a perspective view of an embodiment of the invention.

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FIG. 3 is a schematic diagram illustrating the operation of the invention.

Referring to the figures, FIG 1 shows a high speed press 1 which feeds printed cards or blanks onto a first conveyor which comprises a long table 3 having a pair of driven belts 4, 5. The belts are preferably driven fast enough so that the cards are taken away from the press without any piling up which might cause smearing of the ink.

It is desired to convey the cards a sufficient distance which may be under heat apparatus so that they may dry, and then to convey them back to the press operator's station so that only one operator will be required to control the input and output of the cards. The cards are conveyed back to the operator's station by means of a second conveyor table 10, the leading edge of which is mounted under the end of the first table 2 so that cards may fall off the end of the first conveyor onto the second conveyor. The second conveyor 10 has a pair of driven belts 11, 12, which move the cards back to the operator's station where they may be removed conveniently by the press operator.

In order to reverse the direction of the cards, means are provided to feed the cards from the first conveyor to the second conveyor in such a manner that the cards do not slide relative one another, which might cause smearing of the printing. As shown in FIG. 3 the cards C1, C2, C3, C4, etc., are fed from the belts on the upper conveyor and guided down onto the lower conveyor in such a manner that the leading edge of the card, C3 in FIG. 3, strikes the second conveyor belts 11 and 12 without sliding over the prior card C4. The belts 11 and 12 on the second conveyor are driven by motor M to take away the prior cards preferably in overlapping relation.

More specifically, the cards are fed from the upper conveyor with sufficient force so that they slide against the under sides of the downwardly extending guides 14 and 15, which are pivotally mounted on the brackets 14', 15' which are mounted in slots 14c, 14d, etc. Each guide has a roller 14a and 15a which rides on the belts 5 and 4 respectively of the upper conveyor. The guide members 14 and 15 are spring loaded down against the upper conveyor by means of the spring 14b, 15b. The guide rollers 14a and 15a may be advanced or retarded by means of slot 14c, 14d, etc., adjustments so that each card will be twisted around in a counter clockwise direction, looking downwardly, so that it will tend to line up in the direction of the second conveyor 10. A pair of stop rollers 16 and 17 are pivotally mounted on the lower conveyor and adapted to ride on the conveyor belts 11 and 12, respectively. The rollers 16, 17 are driven by the motion of the belts 11 and 12 to prevent any jamming of the cards underneath them. The lower ends of the guides 14 and 15 do not extend close enough to the lower belts to cause any jamming. A stationary side guide 18 is mounted on the lower table 10.

The lower belts 11 and 12 pass over pulleys on shaft 20 and similar pulleys at the other end which are driven in conventional manner at a speed sufficient to move the cards so that they will not pile up. The belts 4 and 5 on the upper conveyor are similarly driven at the same speed as the belts on the lower conveyor.

In operation, as the cards are conveyed to the end of the upper conveyor they pass under the rollers 14a and 15a. The rollers 14a and 15a are advanced or retarded relative each other so as to impart a desired twisting motion to the card as it falls down underneath the tapering downwardly extending edges of the guides 14 and 15. The lefthand side of the card looking downwardly will then first hit stop roller 16 and will tend to pivot around that contact point until the righthand side of

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the card strikes the stop roller 17, at which point the card will be lined up with the direction of the second conveyor. The stationary guide 18 prevents the cards from sliding sideways relative the belts 11 and 12 on the second conveyor. The belts 11 and 12 are driven fast enough so that the prior cards are removed from contact with the stop rollers 16 and 17 before the leading edge of the succeeding card strikes the lower belt and/or the stops 16 and 17.

As shown in FIG. 1, the two conveyors are preferably arranged so that they form a large V, having an interior angle of the order of 30° so that the cards are conveyed back to the operator's station. This angle may be adjusted depending upon the space limitations at the printing press location. If the angle between the two conveyors is changed, then the positions of the stops 16 and 17 may be changed by means of the adjustable clamping members 16a, 17a which may be used to change the length of the supporting rods 16b, 17b which mount the roller stops 16 and 17. By making this adjustment, the orientation of the stops 16 and 17 may be adjusted for the best operation and guidance of the cards so that they will be properly lined up on the second conveyor. The cards are preferably taken away by the second conveyor in overlapping relation for easier handling by the operator. However, by adjusting the speed of the second conveyor the cards may be spaced out on it if desired.

The present conveyor means has been illustrated in connection with cards or blanks. However, it is not so limited but may be used with sheets or other equivalent articles which may be desired to be conveyed.

Many modifications may be made by those who desire to practice the invention without departing from the scope thereof which is defined by the following claims:

I claim:

1. Blank feeding means comprising a first conveyor means extending in a first direction, a second conveyor means mounted under the end of said first conveyor means, the direction of travel of said second conveyor means being at an angle to the direction of travel of said first conveyor means, means to prevent a succeeding card from smearing printing on a prior card on said conveyor means comprising means to guide and twist cards downwardly from the end of said first conveyor into alignment with said second conveyor, roller stop means driven by said second conveyor, said second conveyor being operated at a speed sufficient to remove prior cards from said stop before the leading edge of a succeeding card hits said second conveyor.

2. Conveyor and drying means for feeding blanks having a printed face from a high speed printing press comprising a first table extending from said press in a first direction, first continuous driven belt means on said first table, a second table extending in a second direction at

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an angle to said first table, the beginning of said second table being under the end of said first table and said second table extending back to the vicinity of said press, second continuous driven belt means on said second table moving in a direction to convey said blanks back to said press, means mounted on the end of said first table to guide cards downwardly in face up position onto said second table including means to twist the cards so that they will line up with the direction of said second conveyor and a pair of roller stop means driven by said second belt means mounted at the beginning of said second table adjacent the end of said downwardly extending guide means.

3. Blank feeding means comprising a first conveyor means extending in a first direction, a second conveyor means mounted under the end of said first conveyor means, the direction of travel of said second conveyor means being substantially opposite to the direction of travel of said first conveyor means, means to prevent a succeeding card from smearing printing on a prior card on said conveyor means comprising means to guide cards downwardly from the end of said first conveyor, with a twisting motion tending to align them on said second conveyor with printed face up, roller stop driven by said second conveyor, said second conveyor being operated at a speed sufficient to remove prior cards from said stop before the leading edge of a succeeding card hits said second conveyor.

4. Conveyor and drying means for feeding blanks from a high speed printing press comprising a first table extending from said press in a first direction, a pair of continuous driven belts on said first table, a second table extending in a second direction at a small interior angle to said first table, the beginning of said second table being under the end of said first table and said second table extending back to the vicinity of said press, means mounted on the end of said first table to guide cards downwardly onto said second table, adjustable roller means on said first table to twist the cards as they fall downwardly so that they will line up with the direction of said second conveyor, a pair of second driven belt means on said second table and a pair of roller stop means mounted at the beginning of said second table adjacent the end of said downwardly extending guide means, said roller stop means being driven by said second pair of belt means and being in line with said second pair of belts.

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