

[54] DOCUMENT FEEDER

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[51] Int. Cl. **B65h 3/10**

[58] Field of Search 271/100, 99, 107, 95, 94,
271/101, 96, 90, 2, 11, 12

[56] **References Cited**

UNITED STATES PATENTS

2,849,232	8/1958	Halahan et al.	271/101 X
3,291,482	12/1966	Stemmler	271/99 X
2,770,458	11/1956	Halahan et al.	271/99 X

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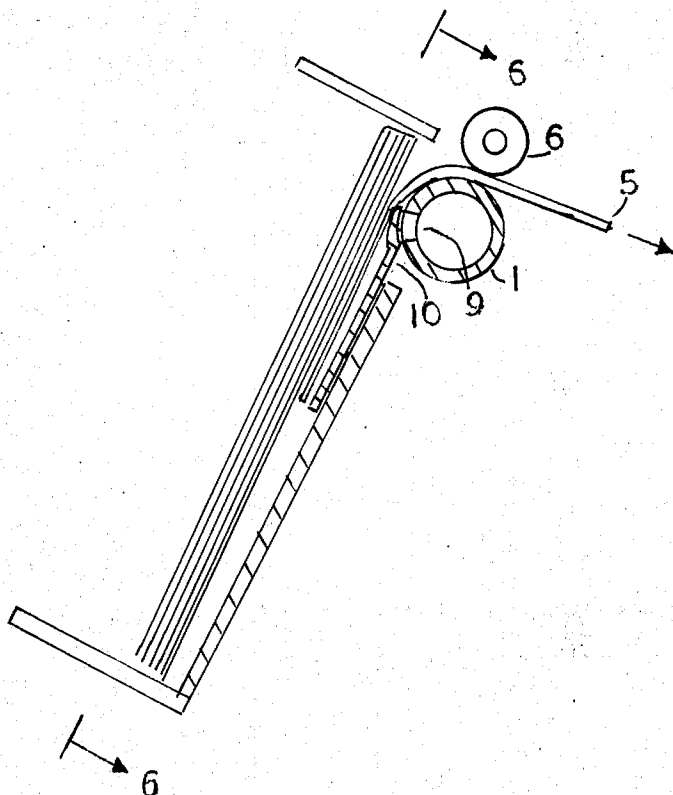
Attorney, Agent, or Firm—James P. Malone

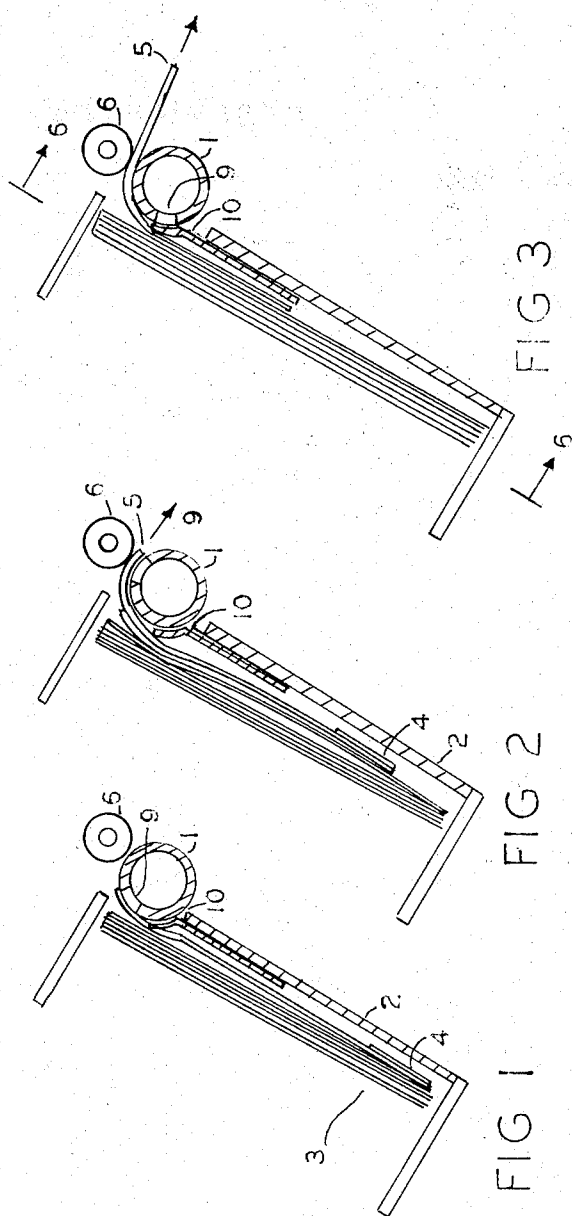
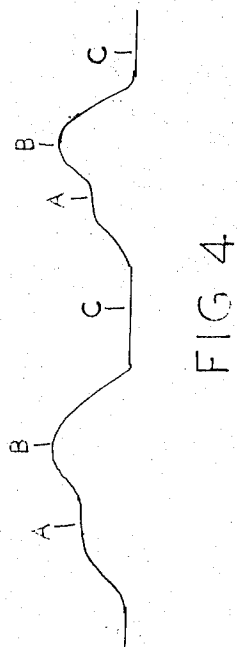
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ABSTRACT

Apparatus for feeding documents having an adhesive area thereon. An oscillatably mounted vacuum sucker has a curved surface and a slot. A rack holds a stack of documents in operative contact with the sucker. The sucker is oscillated to separate the closest document from said stack. Take-away roller means are connected to remove said document from said sucker. A mask is mounted on the bottom of said rack to cover said slot in one position of said slot whereby said adhesive areas do not come in contact with said slots in said sucker as the document is pulled across the sucker.

2 Claims, 6 Drawing Figures





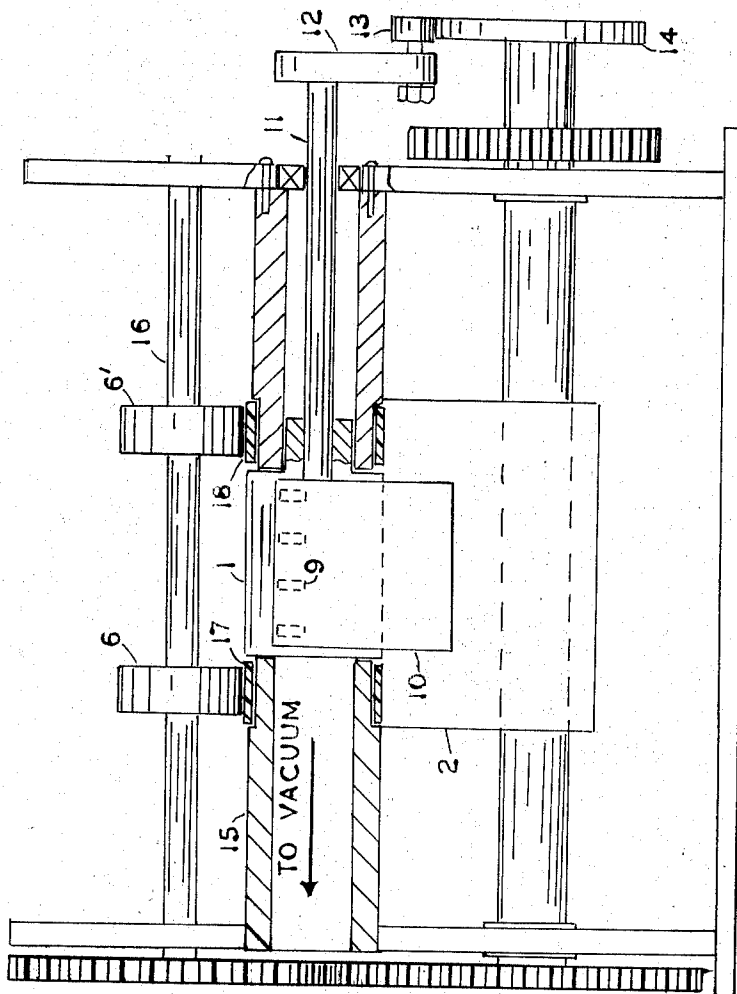


FIG 6

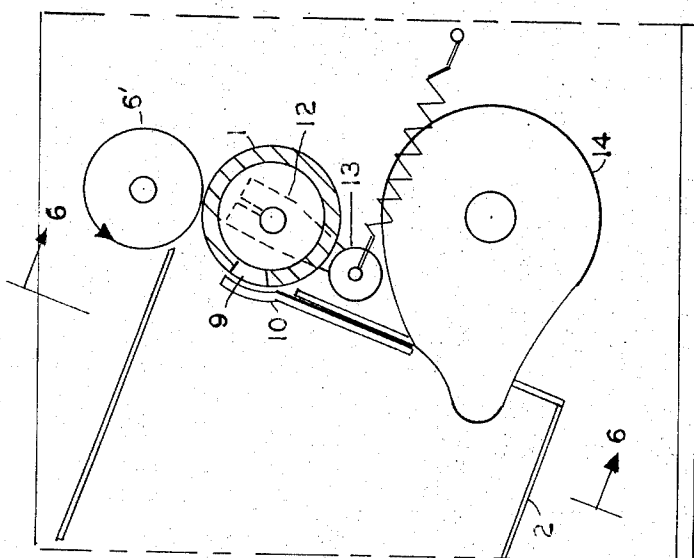


FIG 5

DOCUMENT FEEDER

This invention relates to means for feeding documents such as envelopes of the type having an adhesive portion.

When feeding self-sticking envelopes from a stack with a vacuum feeder, the conventional practice such as shown in U.S. Pat. No. 2,770,458 is to oscillate the vacuum sucker to separate the closest documents or envelopes from a stack and then feed the leading edge of the separated document into the nip of take-away rollers which then remove the documents from the vacuum sucker. There is a problem when the envelope or other documents containing an adhesive or self-sticking portion, since when the adhesive portion is pulled across the sucker by the take-away rollers, the adhesive portion comes in contact with the sucker and is abraded and damaged by the slots in the sucker. Also, some adhesive may stick to the sucker.

The present invention solves this problem by providing a mask to cover the slots in the sucker at the point in the cycle where the paper is being pulled across by the sucker by the take-away rollers. The use of the mask preserves the vacuum in the sucker and protects the adhesive portion from damage when being drawn over the exposed slots of the vacuum sucker.

Accordingly, the principal object of the invention is to provide new and improved means for feeding documents.

Another object of the invention is to provide new and improved means for feeding documents having adhesive or cement thereon.

Another object of the invention is to provide new and improved means for feeding documents having adhesive or cement thereon comprising a mask adapted to prevent the adhesive portion document from coming into contact with the exposed slots of the sucker.

Another object of the invention is to provide new and improved means for feeding documents having an adhesive area thereon comprising, an oscillatably mounted vacuum sucker having a curved surface and a slot, a rack for holding a stack of documents in operative contact with said sucker, means to oscillate said sucker to separate the closest document from said stack, take-away means connected to remove said document from said sucker, and a mask mounted on the bottom of said rack to cover said slot in one position of said slot whereby said adhesive areas do not come in contact with said slots in said sucker as said document is pulled across said sucker.

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

FIGS. 1, 2 and 3 show side views of an embodiment of the invention illustrating the method of operation.

FIG. 4 is a developed view of the cam for oscillating the sucker.

FIG. 5 is a side view of an embodiment of the invention.

FIG. 6 is a detail view partly in section along the line 6-6 of FIG. 3.

Referring to FIGS. 1, 2 and 3, the invention generally comprises an oscillatably mounted vacuum sucker 1, which is mounted adjacent to a rack 2, which is adapted to hold a stack of documents 3, such as envelopes of the type having an area 4, covered by an adhesive such as contact cement. Conventional vacuum suckers, such as in U.S. Pat. No. 2,770,458 separate the

leading edge of the document as shown in FIG. 1,, and then rotate as shown in FIG. 2 to place the leading edge of the document 5 between the nip of pinch rollers 6 and another roller 17, FIG. 6, which is coaxial with the sucker. The pinch rollers then take away the document across the face of the sucker while the sucker is rotating in the opposite direction as shown in FIG. 3. When feeding documents such as envelopes or envelope blanks, having an area of adhesive material, when the adhesive material is drawn across the slots in the sucker, it is abraded by the edges of the slots 9, which results in damaging the document. Also, adhesive may adhere to the sucker.

The present invention solves this problem by providing a mask 10 at the bottom of the rack 2. The mask 10 covers the slots 9 when the sucker is in the position shown in FIG. 3, namely, when the document 5 is being pulled across the sucker by the take-away rollers.

Specifically referring to FIG. 1,, the oscillating sucker 1 is shown in its initial position whereby it is separating the leading edge of document 5 from the stack.

Referring to FIG. 2, the sucker 1, then oscillates clockwise to pull the leading edge of the document 5 into the nip of the take-away rollers.

Referring to FIG. 3, the sucker then oscillates counter clockwise and under the mask 10 where it remains until the document 5 has been completely removed by the take-away rollers. The mask 10 preserves the vacuum in the sucker 1, and protects the adhesive 5 on the paper from contact with the slots 11 of the sucker. The adhesive area 4 is located near the trailing edge of the documents. Mask 10 may be a flexible sheet having a curved portion to fit the sucker.

FIG. 4 shows a developed view of the cam. When the cam follower rides on the portion A, the sucker is shown in the position as shown in FIG. 1. When the cam follower rides on the portion B, the sucker 1 is shown in the position as shown in FIG. 2. When the cam follower rides on the area C, the vacuum sucker is in the position shown in FIG. 3.

FIG. 5 shows a side view of a typical embodiment and FIG. 6 shows a detail view of FIG. 5 looking at the bottom of rack 2. The hollow sucker 1, is mounted on oscillatable shaft 11 which is adapted to be oscillated by means of the arm 12 and cam follower 13 which rides on the cam 14. The shaft 11 is mounted in bearings set in the side frames. The hollow sucker has slots 9.

On the other side of the sucker, a hollow pipe member 15 connects the interior of the hollow sucker to a source of vacuum. The rack 2 supports the documents 3 in operative contact with the sucker 1. A pair of take-away rollers 6 and 6' are mounted on the driven shaft 16 which is rotatably mounted in the frame members F and F'. A pair of idler rollers 17 and 18 are mounted coaxially with the sucker 1 and they are in pinching contact with the rollers 6 and 6' so that they are driven by the rollers 6 and 6'.

In operation, the sucker pulls the leading edge of the document into the pinching contact of the take-away rollers which pull the documents across the sucker. The documents are wider than the sucker so that they will be gripped by the take-away rollers.

In the position of FIG. 3, the mask 10 covers the slots 9 in the sucker until the next cycle starts.

I claim:

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1. Means for feeding documents having an adhesive area on its trailing edge comprising,,
 an oscillatably mounted vacuum sucker having a curved surface and a slot,
 a rack for holding a stack of documents in operative contact with said sucker,
 means to oscillate said sucker to separate the closest document from said stack,
 take-away means connected to remove said document from said sucker, and means to prevent physical contact of said adhesive area with the edges of

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said sucker slot as said adhesive area is pulled across said slot comprising a mask mounted on the bottom of said rack to cover said slot in one position of said slot whereby said adhesive areas do not come in contact with said slots in said sucker as said document is pulled across said sucker.
 2. Apparatus as in claim 1 wherein said mask is a curved flexible member mounted on the bottom of said rack and extending over said sucker.

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