Aug. 6, 1940. F. KROCH ET AL 2,210,298

METHOD AND APPARATUS FOR PRODUCING ENVELOPES, PAPER MONEY BAGS, OR THE LIKE

Filed Dec. 23, 1937 4 Sheets-Sheet 1

Fig.1

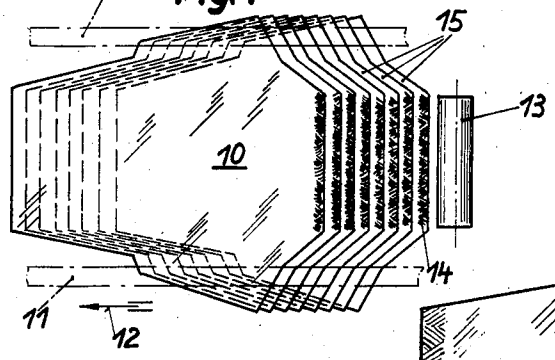


Fig.6

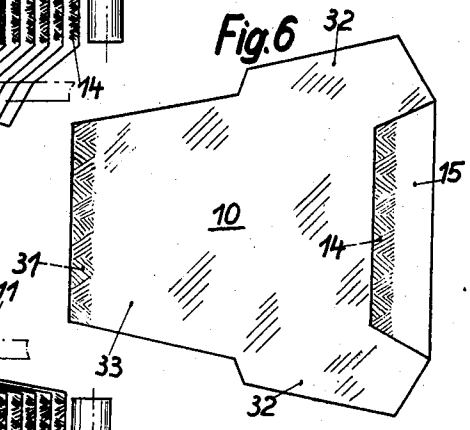


Fig.2

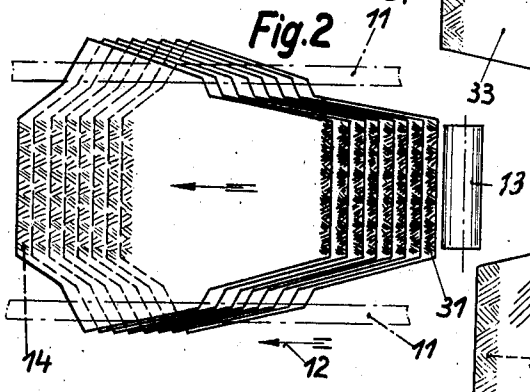


Fig.7

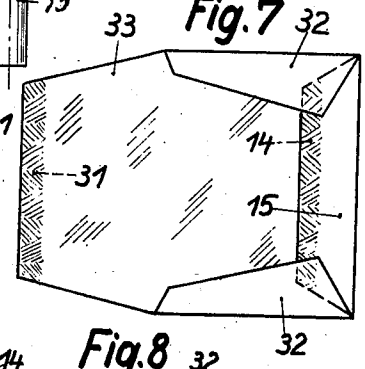


Fig.3

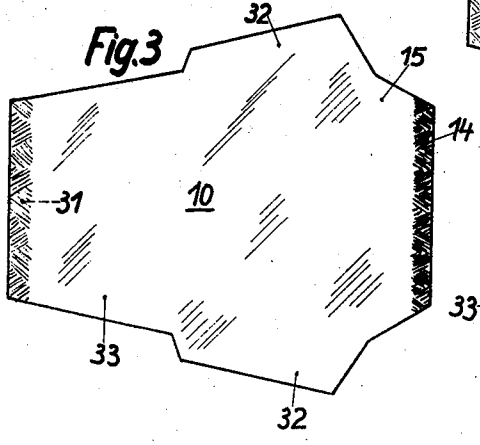
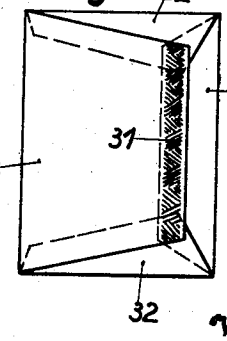


Fig.8



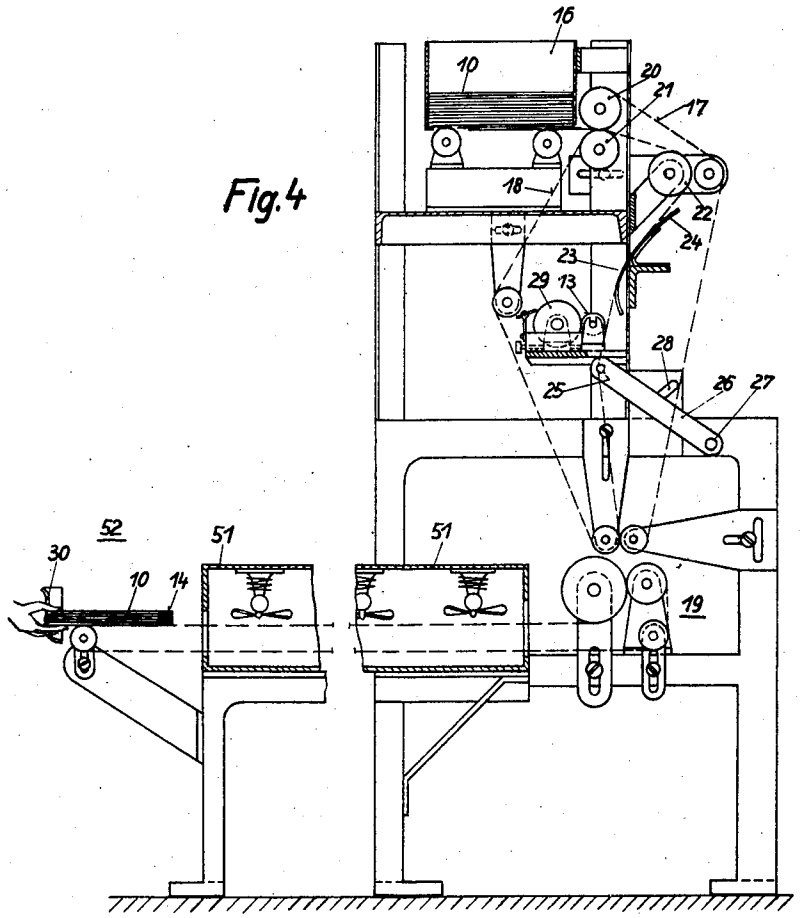
Inventors
Fritz Kroch,
Willy Sandner &
Albert Teicher
by Arthur Phillips
Attorney

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METHOD AND APPARATUS FOR PRODUCING ENVELOPES, PAPER MONEY BAGS, OR THE LIKE

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Fig. 4



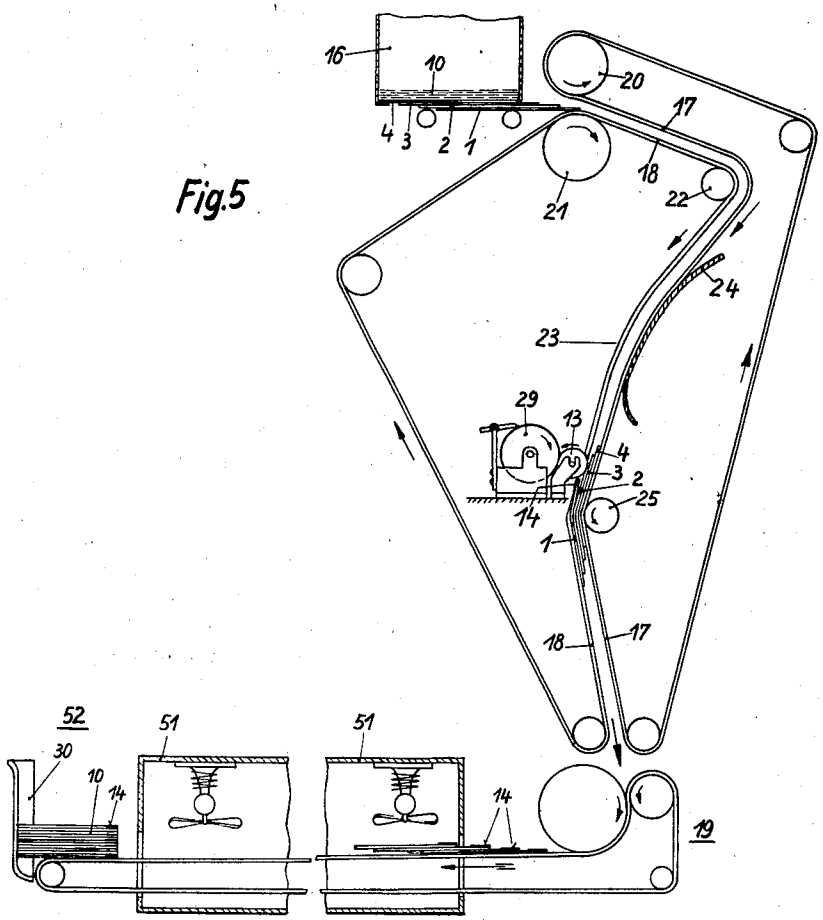
Inventors
Fritz Kroch,
Willy Sandner &
Albert Teicher
by
Attorney

Aug. 6, 1940. F. KROCH ET AL 2,210,298

METHOD AND APPARATUS FOR PRODUCING ENVELOPES, PAPER MONEY BAGS, OR THE LIKE

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Fig.5



Inventors
Fritz Kroch,
Willy Sandner &
Albert Zeicher
by Arthur Pinney
Attorney

Aug. 6, 1940. F. KROCH ET AL 2,210,298

METHOD AND APPARATUS FOR PRODUCING ENVELOPES, PAPER MONEY BAGS, OR THE LIKE

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Fig. 9

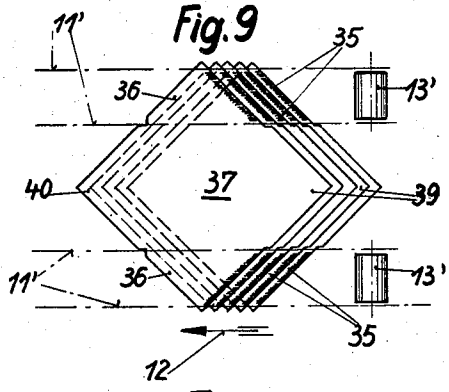


Fig. 10

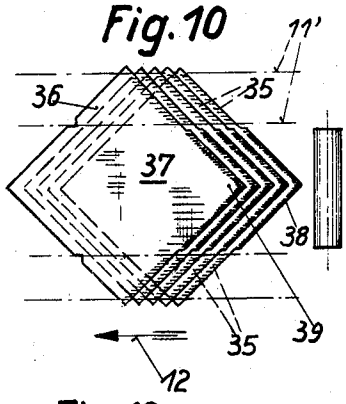


Fig. 11

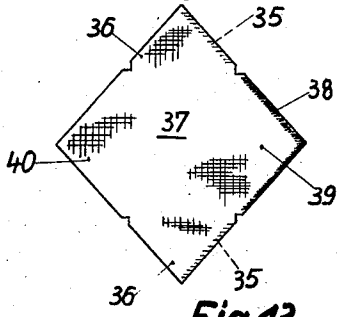


Fig. 12

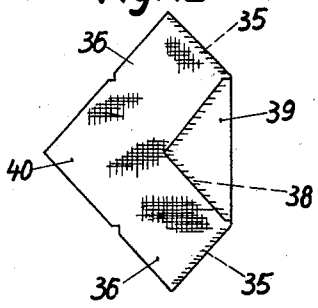


Fig. 13

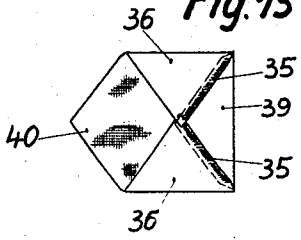


Fig. 14

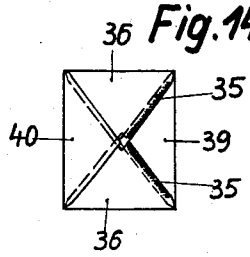


Fig. 16

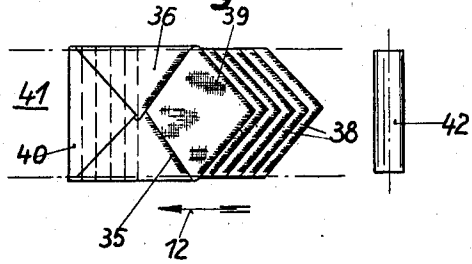
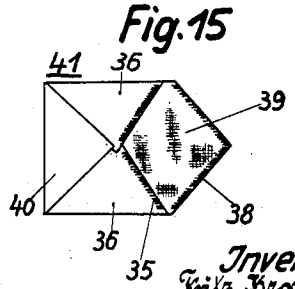


Fig. 15



Inventors
Fritz Kroch,
Willy Sandner &
Albert Teicher
by Robertson Sherman
Attorney

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UNITED STATES PATENT OFFICE

2,210,298

METHOD AND APPARATUS FOR PRODUCING ENVELOPES, PAPER MONEY BAGS, OR THE LIKE

Fritz Kroch, Willy Sandner, and Albert Teicher, Leipzig, Germany; said Sandner and said Teicher assignors to said Kroch

Application December 23, 1937, Serial No. 181,280
In Germany December 28, 1936

6 Claims. (Cl. 93—62)

This invention relates to a method of and apparatus for producing envelopes, paper money bags or the like having a dry-adhesive seal.

Envelopes, money bags or the like having a dry-adhesive seal are so formed that on the inside of the sealing flap and on the outer face of the back of the pocket or body of the envelope there are provided dry-adhesive strips corresponding one to the other and meeting one against the other when the flap is pressed down, thus causing the envelope to be sealed. In envelopes of this character it is accordingly necessary to ensure that the dry-adhesive strips are not allowed to contact with one another unintentionally and thus cause the envelope to be sealed at a premature stage. Envelopes having a dry-adhesive seal cannot be produced, therefore, in the manner hitherto usual in the manufacture of envelopes adapted to be sealed by a moist gum, as in the known methods of producing the envelopes there is no possibility of ensuring that the adhesive strips on the sealing flap and on the outer face of the body of the envelope will not enter into contact with one another.

Envelopes or the like having a dry-adhesive seal are usually produced, therefore, in such fashion that either the complete envelope is manufactured and the dry-adhesive strips are then applied to the finished article, which naturally renders the manufacture more difficult and uneconomical and necessitates the use of special apparatus, or the envelopes are manufactured on special, complicated machines, which moreover in each case are only suitable for certain sizes.

It is the other object of the invention to provide an improved method of producing envelopes or the like of all sizes having a dry-adhesive seal, which method is simple to perform, corresponds substantially to the previously known methods of producing envelopes adapted to be sealed by a moist gum, and can be carried out on existing envelope-making machines without alteration.

It is a further object of the invention to provide means for applying the dry-adhesive strips to the different side faces of the sheets constituting the envelope blanks, such means also being distinguished by their simple nature and reliability in operation.

The essence of the new method of producing envelopes, paper money bags and the like having a dry-adhesive seal consists in the fact that the blanks employed for producing the envelopes or the like, for the purpose of applying the dry-adhesive strips to the inner face of the sealing flap and the outer face of the back of the body of the envelope, are conducted in superimposed scale-like disposal in two consecutive operations of desired order past rollers or other adhesive-applying means by which the adhesive is applied in both cases in similar fashion, i. e., in "downstairs" application, the stack of blanks which have moved together after the first application again being drawn apart in similar disposal for the second application, whereupon following the application of the dry-adhesive strips the envelopes or the like are produced from the blanks in the conventional manner on an envelope-making machine of the known kind.

The essence of an apparatus according to the invention for applying the dry-adhesive strips to the envelope blank consists in the fact that the envelope blanks superimposed in scale-like order, immediately they have moved past an adhesive-applying roller of small diameter, are conducted over a rod, bar, strip, thin roller or the like at such an angle to the conveying direction that each blank, at the moment at which its rear end ceases to bear against the adhesive-applying roller, jumps with its rear end away from the adhesive-applying roller inwards, i. e., towards the axis of rotation of the roller, whereby the application or spreading of adhesive to the rear edge of the blank is prevented.

This is a matter of particular importance, as it is only in this way that the blanks can be prevented from adhering one to the other after they have been moved together, which condition would render a further treatment of the blanks impossible, particularly on envelope-making machines of the usual kind.

The method and apparatus according to the invention can be employed both for the production of envelopes of so-called American form as well as envelopes having sealing flaps which taper to a point.

A possible embodiment of the method according to the invention and of an apparatus for applying one or more parallel dry-adhesive strips to the one or other side face of envelope blanks are illustrated by way of example in the accompanying drawings.

Fig. 1 shows diagrammatically the application of dry-adhesive strips to the inner faces of the sealing flaps of blanks for the production of envelopes of American form.

Fig. 2 shows the application of corresponding dry-adhesive strips to the outer faces of the backs of the envelopes.

Fig. 3 shows an envelope blank with the adhesive strips applied to the different faces thereof.

Fig. 4 is an elevational view of an apparatus for applying dry-adhesive strips in accordance both with Fig. 1 as well as Fig. 2.

Fig. 5 illustrates diagrammatically the operation of an apparatus according to Fig. 4.

Fig. 6 shows the result of the first operation in

a particular method of producing envelopes from the blanks shown in Fig. 3.

Figs. 7 and 8 show the next two stages of this method of production,

Fig. 8 at the same time showing the finished envelope.

Fig. 9 shows diagrammatically the application of dry-adhesive strips to the outer faces of the side flaps of blanks for the production of envelopes having tapered sealing flaps.

Fig. 10 shows the application of dry-adhesive strips to the inner faces of the tapered sealing flaps.

Fig. 11 shows a blank furnished with dry-adhesive strips on both side faces.

Figs. 12 to 14 illustrate a particular method of producing envelopes having a tapered sealing flap from the blanks according to Fig. 11.

Fig. 15 shows an envelope with tapered sealing flap of the usual form produced from a gummed blank according to Fig. 11.

Fig. 16 illustrates a modified method of producing envelopes having a tapered sealing flap.

In the production of envelopes of American form there are employed envelope blanks 10 as shown in Figs. 1 to 3. These blanks 10, stacked in superimposed scale-like order, are conducted past a gumming roller 13 or other adhesive-applying means in the direction of the arrow 12, for example by means of conveying belts 11. In Fig. 1 it is assumed that the blanks 10 are so moved past the gumming device that by means of the gumming roller 13 the adhesive strips 14 are applied first to the inner faces of the sealing flaps 15 in "downstairs" application.

For the application of the adhesive strips, for example the strips 14, there is preferably employed a device according to Figs. 4 or 5. In this apparatus the blanks 10 to be gummed, in superimposed scale-like disposal, are taken by any desired means of the conventional kind from the magazine 16 and are conducted past the gumming device by conveying belts 17, 18, whereupon they are passed to a suitable device 19 for drawing them apart and conveying them through a drying device to the point where they are deposited. As shown clearly by Fig. 5, the blanks 10 at first pass between the two rollers 20 and 21 and then over the deflecting roller 22 into the part 23 of the conveying device which moves past the roller 13 of the gumming device. The part 23 of the conveying device is supported by a guide plate 24. The successive blanks 1, 2, 3, 4, etc., as shown in Fig. 5, are taken from the container 16, and owing to the reversal of the track by the roller 22 are conducted past the gumming roller 13 in superimposed scale-like disposal, as shown in Fig. 5, in such a manner that, as clearly shown, the rear ends of the blanks are gummed by the gumming roller 13 in "downstairs" fashion.

The blanks 10 are then moved at an angle to the direction of feed to the roller 13 over the deflecting rod or thin deflecting roller 25, which is formed by the cross-piece of a yoke 26 (Fig. 4), which by means of its limbs is mounted at 27 to be capable of rocking in the frame of the apparatus and can be rocked by means of a control grip 28. During the gumming operation this yoke 26 assumes the position shown in Fig. 4, so that in accordance with the actual inclined position of the yoke the blanks 10 upon their passage past the gumming roller 13 will be pressed more or less firmly against the roller 13, to which the adhesive is supplied by the roller 29 partially immersed in the adhesive in the reservoir. The sudden bend in the path of movement of the blanks caused by the deflecting rod or roller 25 results in the fact that, as clearly shown in Fig. 5, each blank, immediately its rear end has moved past the gumming roller 13 of small diameter, jumps inwards with its rear end towards the axis of the roller, as indicated in the case of the blank 1 in Fig. 5. In this way it is accomplished that no adhesive is applied to the rear end face of the blank or is capable of being transferred thereto, which might result in the fact that the blanks after moving together would tend to adhere to one another. The blanks 1, 2, 3, etc., furnished with the adhesive strips 14 are drawn apart by the device 19 and conducted through the drying device 51 of desired embodiment to the point 52 where they are deposited or stacked, the same, as clearly shown in Figs. 4 and 5, moving against bars 30.

After the adhesive strips 14 have thus been applied to the blanks 10 the adhesive strips 31 are applied to the backs of the blanks, as shown diagrammatically in Fig. 2, in which the blanks already furnished with the strips 14 are again conducted by the conveying belts 11, likewise in the direction of the arrow 12, to the gumming or adhesive-applying roller 13.

To perform the operation just described it is merely necessary to be able to withdraw in desired number from the stacking point 52 the blanks collected at this point and furnished with the adhesive strips 14, as indicated in Fig. 4, and to place these stacks in such fashion in the container 16 that when the blanks 10 pass through the gumming device in the manner described adhesive strips, viz., the strips 31, are applied by means of the gumming roller 13 to the other side faces as compared with the first operation or, in the case of rectangular blanks, to the other ends of the blanks.

After the blanks in accordance with Fig. 3 have been furnished with the adhesive strips 14 and 31 on different sides the blanks may be made into envelopes having an unfolded or merely a partially folded sealing flap on an envelope-making machine of the conventional kind.

It is also possible by means of an envelope-making machine which is adjusted accordingly at first to fold down the sealing flap 15 of each blank 10 on to the inner face of the latter in accordance with Fig. 6, whereupon the side flaps 32 are folded by the machine against the bottom sealing flap 15, as shown in Fig. 7, and finally the rear flap 33, in accordance with Fig. 8, is folded over against the outer faces of the side flaps 32, 32 and may be secured to the latter by ordinary gum.

There are then obtained on the envelope-making machine envelopes or the like in accordance with Fig. 8, in which the flap 15 is folded into the envelope, i. e., envelopes as described in the German Patent No. 229,718, in which the dry-adhesive strips 14 and 31 are unable to contact with each other unintentionally.

Figs. 9 and 10 show diagrammatically that also in the case of envelopes having tapered flaps the dry-adhesive strips 35 can be applied to the outside of the side flaps 36 of the blanks 37 and the dry-adhesive strips 38 to the inner faces of the tapered flaps 39 in exactly the same fashion as in the case of the blanks 10 for the rectangular envelope and naturally by the same means as indicated in Figs. 4 and 5. It is merely necessary for the one gumming or adhesive-applying roller 13 upon the application of the adhesive strips

to the outer faces of the side flaps 36 to be replaced by two coaxially disposed gumming rollers 13', 13'.

The gumming rollers 13', 13' must in any case correspond in size to the dimensions of the envelopes to be produced.

From blanks 37 furnished with the adhesive strips 35, 35 and 38, as shown in Fig. 11, it is then possible in the usual fashion to produce on envelope-making machines of the conventional kind envelopes having tapered flaps, such as shown for example in Fig. 15.

Blanks according to Fig. 11, however, may also be handled in ordinary envelope-making machines, with slight modifications thereto, in the manner indicated in Figs. 12 to 14.

In this case at first the flaps 39 furnished with the dry-adhesive strips 38 are folded down against the inner faces of the blanks 37 (Fig. 12), whereupon the two side flaps 36 furnished with the dry-adhesive strips 35 on their outer faces are folded down against the flaps 39 (Fig. 13), and finally the lower flap 40, which is secured by ordinary gum, is folded on to the side flaps 36, there then having been produced, as shown in Fig. 14, an envelope of the kind described in the German Patent No. 229,718. In an envelope of this kind the sealing flap 39 having the dry adhesive is situated within the envelope, and the dry-adhesive strips 35 and 38 are unable to contact with each other.

It is possible to use existing envelope-making machines, because it is merely necessary by simple adjustment to vary the order of folding of the flaps, which does not call for any structural alterations to the machines.

The method illustrated in Fig. 16 of producing an envelope according to Fig. 15 differs from the method already described of producing an envelope according to Fig. 15 by the fact that in this case at first merely the dry-adhesive strips 35 are applied to the outer faces of the side flaps 36 of the blanks 37, whereupon the envelopes 41 are completed in the envelope-making machine and are then passed, with the sealing flaps 39 in superimposed scale-like order, past the gumming device, for example the roller 42, in the direction of the arrow 12. The roller 42 then applies the dry-adhesive strips 38 to the inner faces of the sealing flaps 39.

Envelopes of American form may naturally also be produced by the method illustrated in Fig. 16, at first merely the dry-adhesive strips 31 being applied to the blanks 10, then the envelopes finally folded and gummed in the envelope-making machine, and afterwards the dry-adhesive strips 14 applied to the inner faces of the sealing flaps 15 by conducting the envelopes past the gumming roller in the manner indicated in Fig. 16.

What we claim as new and desire to secure by Letters Patent is:

1. A method of providing envelopes, paper bags and the like with coacting coats of dry adhesive at areas of their surfaces which are superimposed and in contact with each other upon closure of the flap, which comprises, the application of adhesive, first to one area and then to the coacting area of the envelope units at desired stages of their manufacture, respectively, each said application comprising the steps of arranging the envelope units in stepped formation so as to expose one of the respective areas of the units, applying adhesive to said area by moving the units, the uppermost unit leading, past adhesive applying means, temporarily bending the exposed end of the unit away from the underlying unit at the moment of completion of its passage past the adhesive applying means, increasing the stepping distance of the units and drying the same.

2. Apparatus for applying dry adhesive to envelopes and the like comprising, a device for applying dry adhesive to envelopes, means for conveying envelopes in superimposed step-like formation past said device, the uppermost envelope leading, conveying means comprising parallel conveyor belts between which the envelopes are gripped, and a guide roller for said belts arranged opposite said device and adapted to sharply change the direction of said belts to thereby deflect the gummed portion of the envelopes as they leave said gumming device.

3. Apparatus for applying dry adhesive to envelopes and the like comprising, a device for applying dry adhesive to envelopes, means for conveying envelopes in superimposed step-like formation past said device, the uppermost envelope leading, conveying means comprising parallel conveyor belts between which the envelopes are gripped, a guide roller for said belts arranged opposite said device and adapted to sharply change the direction of said belts to thereby deflect the gummed portion of the envelopes as they leave said gumming device, means to increase the stepping distance of said envelopes after they leave said gumming device, and means to pass said envelopes through a drying device.

4. In an apparatus for applying dry adhesive to envelope and like blanks, a gumming device for applying adhesive to the said blanks when the latter are in superimposed scale-like disposal, and means for sharply deflecting the gummed portions of the blanks immediately after they move out of contact with the said gumming device for the purpose of preventing application or transfer of adhesive to any other part of the blanks.

5. In an apparatus for applying dry adhesive to envelope and like blanks, a gumming roller for applying adhesive strips to the rear ends of the said blanks when the latter are in superimposed scale-like disposal, and a deflecting element adapted to deflect the path of movement of the said blanks in such fashion that each blank, at the moment when its rear end leaves the said gumming roller, jumps inwards with its rear end towards the axis of the said roller, for the purpose of preventing application or transfer of adhesive to any other part of the blanks.

6. In an apparatus for applying dry adhesive to envelope and like blanks, a gumming device for applying adhesive to the said blanks when the latter are in superimposed scale-like disposal, and means for sharply deflecting the gummed portions of the blanks immediately after they move out of contact with the said gumming device, the said gumming device and the said deflecting means being adjustable in their spacial disposal.

FRITZ KROCH.
WILLY SANDNER.
ALBERT TEICHER.