J. H. HUSTED.

ART OF MANUFACTURING ENVELOPES.

APPLICATION FILED NOV. 14, 1919.

1,404,526.

Patented Jan. 24, 1922.

2 SHEETS—SHEET 1.

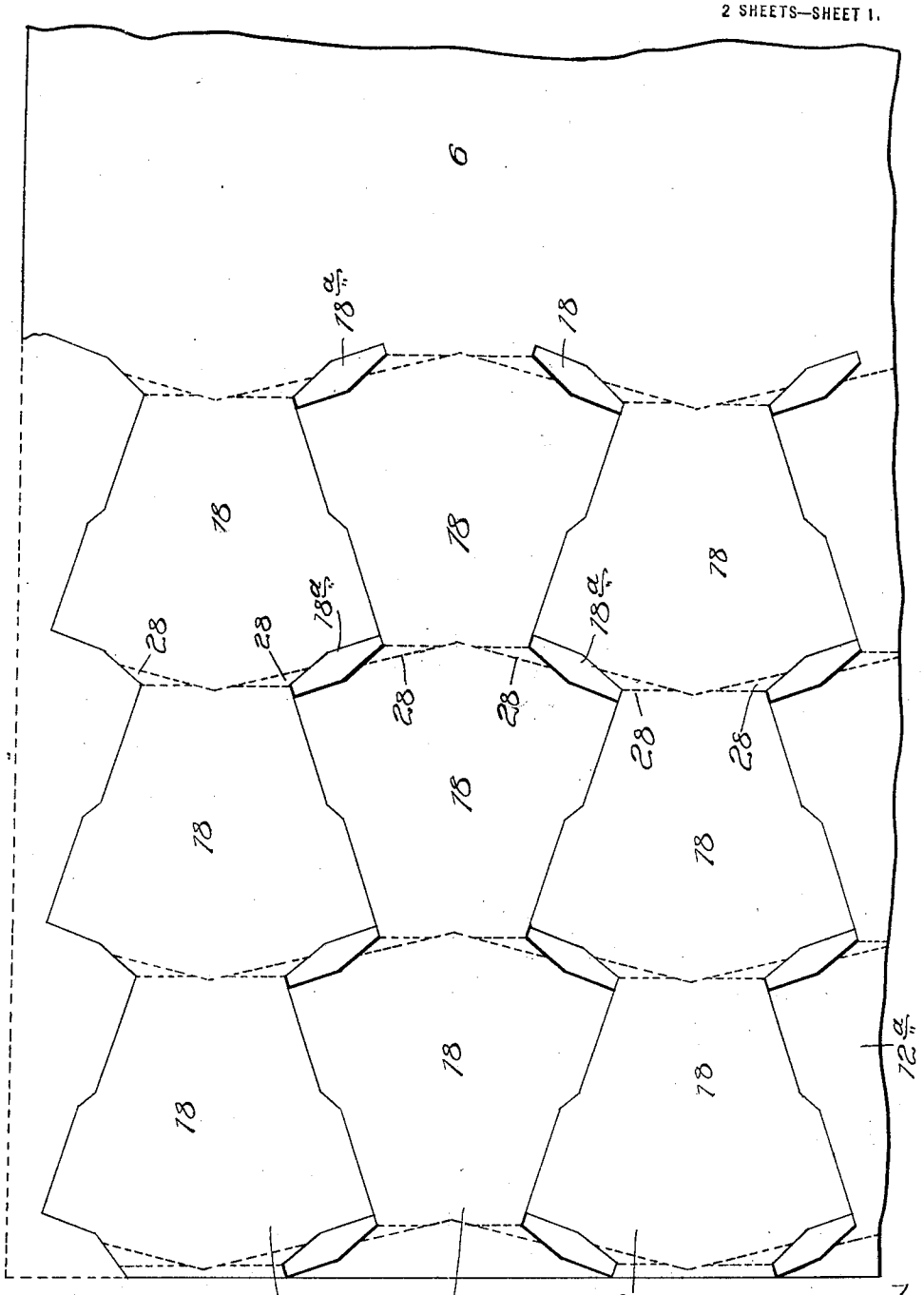


Fig. 1.

Inventor:
Julius H. Husted,
By Dyrenforth, Lee, Chrisman & Miles,
Attys.

J. H. HUSTED.

ART OF MANUFACTURING ENVELOPES.

APPLICATION FILED NOV. 14, 1919.

1,404,526. Patented Jan. 24, 1922.

2 SHEETS—SHEET 2.

Fig. 2.

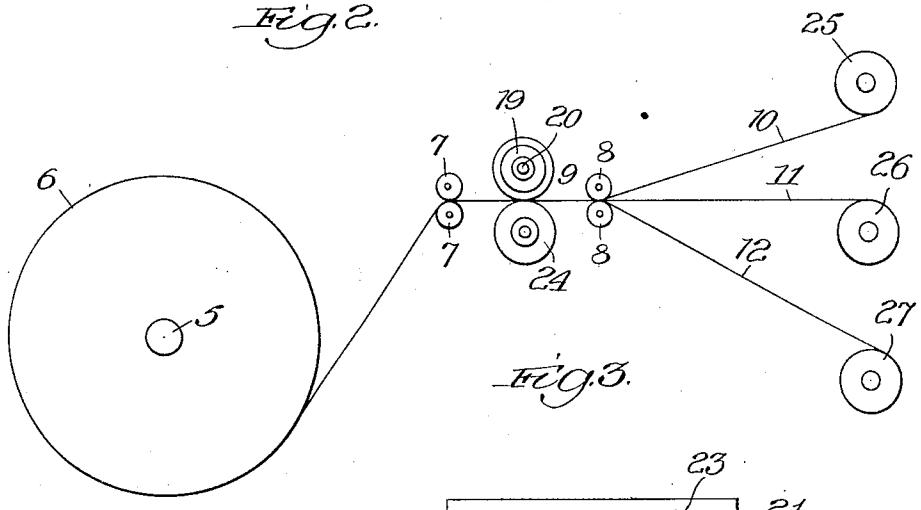


Fig. 3.

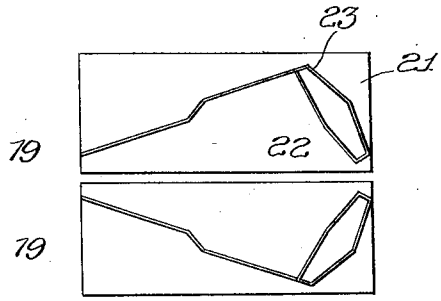
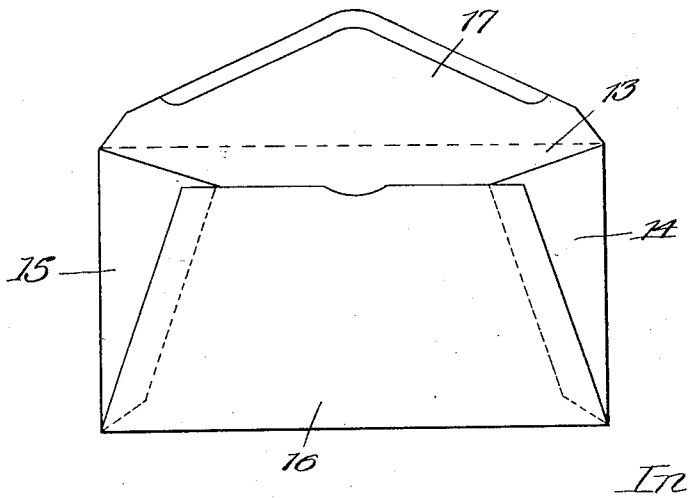


Fig. 4.



Inventor:
Julius H. Husted,
By Dyrenforth, Lee, Christy & Miles.
Attys.

UNITED STATES PATENT OFFICE.

JULIUS H. HUSTED, OF CHICAGO, ILLINOIS.

ART OF MANUFACTURING ENVELOPES.

1,404,526. Specification of Letters Patent. Patented Jan. 24, 1922.

Application filed November 14, 1919. Serial No. 338,014

To all whom it may concern:

Be it known that I, JULIUS H. HUSTED, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in the Art of Manufacturing Envelopes, of which the following is a specification.

My invention relates more particularly to the manufacture of envelopes of the form presenting a substantially rectangular portion with flaps disposed about its four sides, three of the flaps being folded toward the body portion and connected together as through the medium of gum, and the fourth one of which is adapted to be folded over and secured to the other flaps as through the medium of gum, the type of envelope referred to being that in common use.

According to prior practice, insofar as my knowledge of prior practice is concerned, two methods are mainly employed in producing this kind of envelopes. One of these methods consists in providing a relatively long roll or web of paper of a width from five to seven feet and of any desired length, and slitting this web into a plurality of strips extending lengthwise of the web and of uniform width equal to substantially the widest dimension of the envelope blank to be cut therefrom, the sides of these strips being parallel. These strips, upon being formed as stated, are wound upon rollers from which they are drawn into what are known as envelope-forming machines wherein these strips are subjected to cutting, gumming and folding devices which operate to cut from the strips the blanks from which the envelopes are to be formed, gum such edges of the envelopes as is desired, and thereupon fold the blanks to produce the open sided envelopes. The other method referred to consists in feeding large sheets of paper from which the envelopes are to be formed, arranged in superposed position and ordinarily numbering from forty to fifty sheets, to a reciprocating punch-press wherein the blanks from which the envelopes are to be formed are cut, the blanks thus formed being then fed to machines for gumming and folding them into finished condition.

The first-referred-to method presents the great advantage over the second-referred-to method of effecting the production of a much larger number of envelopes per unit of time than is possible with the second-referred-to method, this first method, however, presenting the serious objection of the relatively great waste of stock. The second method, while permitting of the economizing of the stock used in manufacturing envelopes, is a very slow method and by reason of the relatively small output per unit of time is an expensive one to employ in practice.

My primary object is to provide improvements in the art of manufacturing envelopes to the end that envelopes of the type above referred to, and even those of the so-called "cross-seam" type, may be manufactured much more economically than in accordance with methods hitherto used.

Referring to the accompanying drawings:—Figure 1 is a broken face view of a web of paper illustrating by full lines the lines along which the web of paper is slitted in the operation, involved in the carrying out of my invention, of slitting the web into strips to be further operated on to sever them into sections to form the complete envelope blanks, and by dotted lines the lines along which the strips of paper thus formed are afterwards severed in the operation of dividing the strips into the finished envelope blanks. Figure 2 is a view in side elevation, illustrating in a diagrammatic manner an apparatus suitable for practising my improved method. Figure 3 is a developed view of two of the cutter-blades employed in the forming of the strips as shown; and Figure 4, a rear view of one of the finished envelopes.

In the carrying out my improved method I slit the web of paper, provided in a roll, lengthwise of the web into a plurality of strips, the lateral edges of each of which conform to, and constitute, the lateral edges of the finished envelope blanks, each strip comprising a series of partially finished blanks connected together in a series extending lengthwise of the strip, alternate ones of these strips presenting the unfinished blanks in reversed condition to those of the other strips; or in other words, these strips being so formed from the web that those parts of the strips which form the end flaps in the finished blank are disposed in inter-meshing relation with the side edges of those parts of the strips adjacent thereto which form the bottom flaps in the finished blank.

The machine shown furnishes a desirable means for practising the method referred to, wherein 5 represents a shaft on which a roll of paper 6 is supported to adapt the paper to be unwound from the roll, the paper being in any suitable width, as for example five to seven feet. The outer end of the paper 6 extends between pairs of feed rolls 7 and 8 and into position between said pairs of rolls to be operated on by slitting mechanism represented at 9 for slitting the paper web 6 into strips extending lengthwise of the web, only three strips and a part of the adjacent strip being shown and indicated at 10, 11, 12 and 12a and which may be rewound, as for example in the manner common to machines of this general type.

In the particular arrangement shown, provision is made, and the invention is so illustrated, for the production of so-called "cross-seam" type envelopes and presenting diagonally disposed seams between the side and bottom flaps of the envelope which is a very common and highly desirable form of envelope, such an envelope being illustrated in Figure 4 wherein its rectangular body portion is indicated at 13, its end flaps at 14 and 15, its bottom flap at 16 and its top flap at 17.

In the forming of such an envelope, the web 6 is cut by the mechanism 9 along the irregular full lines in Figure 1, cutting out the chips 18a and thereby forming the unfinished blanks represented at 18, the unfinished blanks of each series thereof extending lengthwise of the web and which series form the several strips, these unfinished blank-forming sections being connected together at their portions adjacent the dotted lines in Figure 1, the unfinished blanks forming each alternate strip, extending in reversed condition relative to the unfinished blanks of the other strips, as illustrated, whereby the unfinished blanks 18 are nested or meshed at their wider portions with the narrower portions of the adjacent unfinished blanks, as clearly illustrated in Figure 1.

The slitting or cutting mechanism 9 may be of any desirable construction for accomplishing this general result, that shown in the drawings and which is desirable for my purpose, comprising a series of cutter-disks 19, two only of which are shown, mounted on a rotating shaft 20, these disks being each formed of collar sections 21 and 22, with an endless cutter-blade 23 clamped between them and extending, as by way of example, continuously about the periphery of the disk 19, the opposed faces of the disk-sections 21 and 22 being so shaped as to conform to the contour of the sides of the blades 23 which they oppose, thereby to firmly clamp the latter in place. The blades in the cutting of the web as shown in Figure 1 would be preferably of the shape shown in Figure 3, and each of a circumferential length equal to the length of an unfinished blank 18, each blade, by preference, being continuous whereby upon each rotation of the shaft 20 the web will be slitted for a length corresponding to the length of one of the unfinished blanks 18. The disks 19 with the cutting blades 23 secured thereto should be provided of a number corresponding to one more than the number of strips to be cut, alternate ones of the blades 23 being reversely positioned as shown of one of the blades 23 relative to the other in Fig. 3, it being understood that the disks 19 would be disposed along the shaft 20 at such positions thereon as to correspond with the width of the strips to be cut. The cutting blades 23, which form one construction which may be employed, are shown as co-operating with a plain-faced roller 24 against which the paper 6 is forced, in the operation of the blades 23 against the paper, the roller 24, which may be of wood or any other suitable material, forming a foundation against which the cutting blades operate.

In the use of the machine shown, the web 6 of paper is fed from the roll thereof into position to be acted upon by the cutting mechanism 9, which slits the relatively wide web into the plurality of strips each constituted by a series of unfinished, disconnected, blanks. The strips thus produced may then be wound into the rolls indicated at 25, 26 and 27.

The rolled strips 10, 11 and 12 are then operated on to sever them along the dotted lines shown in Figure 1, thereby cutting out the chips 28 and producing the finished blanks, and the edges of the flaps of the blanks gummed and folded to the condition shown in Fig. 4 to form the finished, open-sided, envelopes.

These operations may be performed in any suitable manner, as for example by employing the type of machine as commonly used in the production of side-seam envelopes from strips fed thereto. These machines, as commonly provided, present cutters for cutting the entire blank from a strip of paper, and thus the portion of the cutting blades of these cutting machines which form the lateral edges of the blanks may be omitted and only such portions of the blades as will operate to cut the strips along the dotted lines in Fig. 1 will be employed. As the unfinished blanks of the alternate strips are reversed relative to the unfinished blanks of adjacent strips, it is desirable that alternate ones of said strips be rewound, as for example from the rolls 10 and 12, to cause them to be drawn off from the rolls thereof for feeding to the envelope-making machine for the purposes above stated, and feed into the envelope-

making machine the ends of unfinished blanks corresponding with those fed into the machine forming the other strips. In other words, it is desirable that all of the machines which operate to finish the cutting of the blanks and perform the other operations stated, have the strips of paper fed into them with the large end first, and to permit this to be effected it is necessary to rewind alternate ones of the strips.

It will be readily understood from the foregoing that by employing my invention it is possible not only to produce envelopes very quickly, but waste of paper is reduced to the minimum, thereby permitting of the availing of the advantages, without the disadvantages, of the methods hitherto practised.

If desired, each alternate strip, the strips 10 and 12 in the structure shown in Fig. 1, cut from the web, may be fed directly, without rolling, into a machine for completing the blanks, folding them and gumming them as stated, those of the strips alternating with the strips 10 and 12, viz. 11 and 12^a if the same construction of envelope-forming machine is to be used for all strips, being wound into rolls and then fed into such a machine, the strips unwinding from such rolls.

It will also be understood that my invention is not limited to the production of envelopes of the particular form shown, but is applicable to the manufacture of envelopes of any form in which the body of the envelope is provided with flaps which, in the cutting of the paper, are, in accordance with my invention, caused to extend in nested or meshed condition relative to each other. Furthermore, I do not wish to be understood as intending to limit my invention to the particular apparatus shown, nor to the practising of the method in all of its details as stated.

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

1. In the art of manufacturing envelopes, the improvement which consists in cutting a web of paper from which the envelopes are to be formed, into strips each composed of integrally connected portions having narrow and wide parts extending crosswise of the strip with the narrow parts and wide parts of adjacent strips disposed in intermeshing, or nested, condition, the lateral edges of such portions at the opposite edges of the strips of a shape conforming to the lateral, or side, edges of the finished envelope blanks to be formed therefrom, whereby the blank-forming portions are connected together at the edges thereof forming the upper and lower flaps of the blanks.

2. In the art of manufacturing envelopes, the improvement which consists in cutting a web of paper from which the envelopes are to be formed, into strips each composed of integrally connected portions having narrow and wide parts extending crosswise of the strip with the narrow parts and wide parts of adjacent strips disposed in intermeshing, or nested, condition, the lateral edges of such portions at the opposite edges of the strips of a shape conforming to the lateral, or side, edges of the finished envelope blanks to be formed therefrom, whereby the blank-forming portions are connected together at the edges thereof forming the upper and lower flaps of the blanks, and thereafter severing said portions from each other and completing the forming of the blanks.

3. In the art of manufacturing envelopes, the improvement which comprises cutting a web of paper into strips each strip providing integrally connected material for a plurality of blanks, the lateral edges of the strips conforming to the side edges of the envelope blanks to be cut therefrom the blanks of alternate strips lying in reversed position and the edges of the strips interfitting whereby the web may be cut with a minimum of waste.

4. In the art of manufacturing envelopes, the improvement which comprises cutting a web of paper into strips each strip providing integrally connected material for a plurality of blanks having narrow and wide parts extending cross wise of the strips, the blank material of alternate strips being reversed in direction with the narrow and wide parts interfitting, the lateral edges of the strips shaped to conform to the side edges of the individual blanks, the connected portions of the blanks adapted to form the upper and lower flaps of the envelopes having divergent and convergent outlines interfitting in the strips the blank forming portions of the strips being in alignment.

5. The improvement in the process of manufacturing cross-seam envelopes, which comprises cutting a web of material into strips of alingned connected blank sections, the sections of alternate strips lying in reversed position, and shaping the side edges of each of said strips to conform to the side edges of the individual blanks, the edges of the alternating strips interfitting, whereby to effect a minimum of waste.

JULIUS H. HUSTED.