April 15, 1958 A. NOVICK 2,830,508

BLANK INDIVIDUALIZING MECHANISM FOR ENVELOPE MAKING MACHINES

Filed Sept. 29, 1955 5 Sheets-Sheet 1

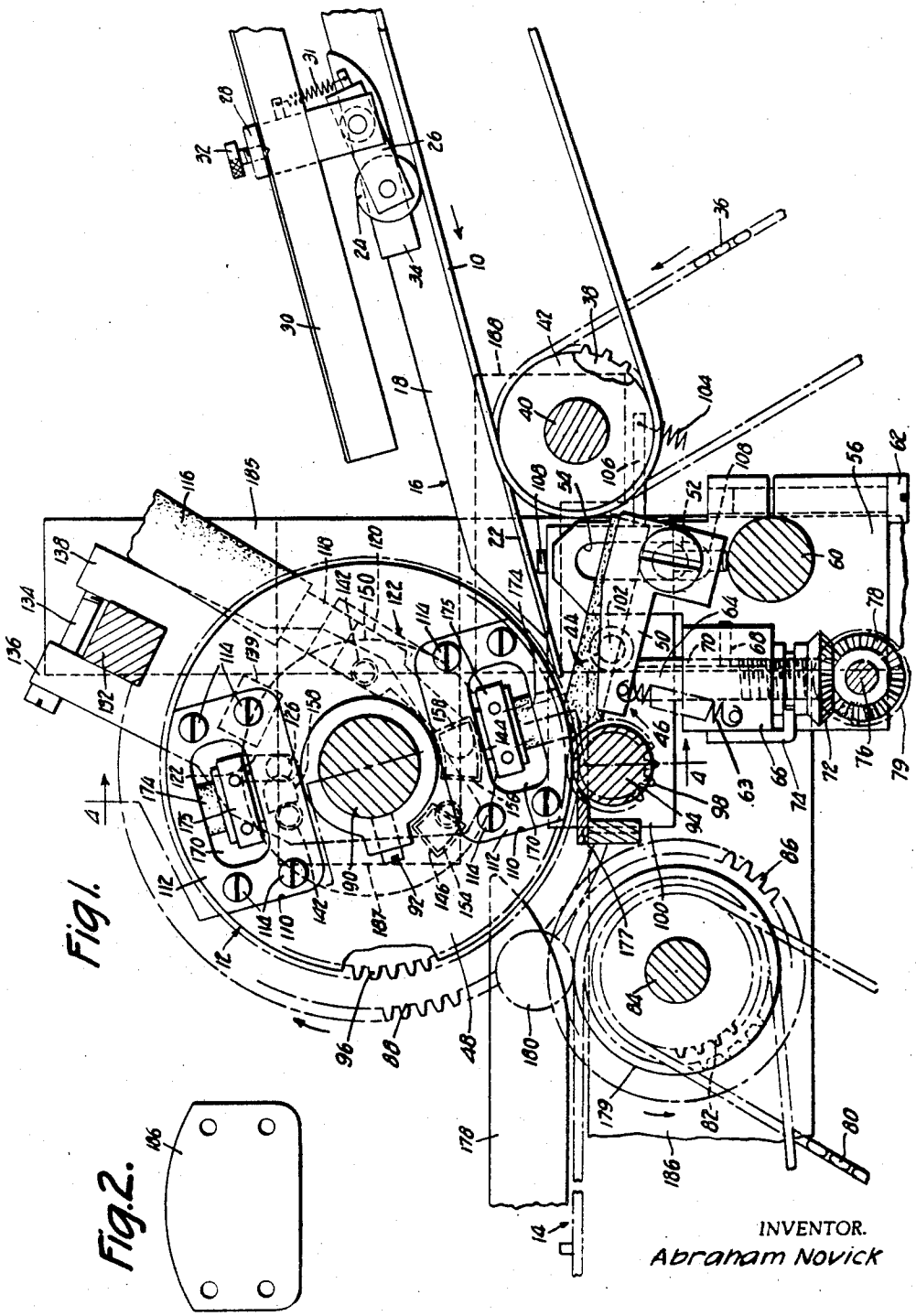


Fig. 1.

Fig. 2.

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Filed Sept. 29, 1955 5 Sheets-Sheet 2

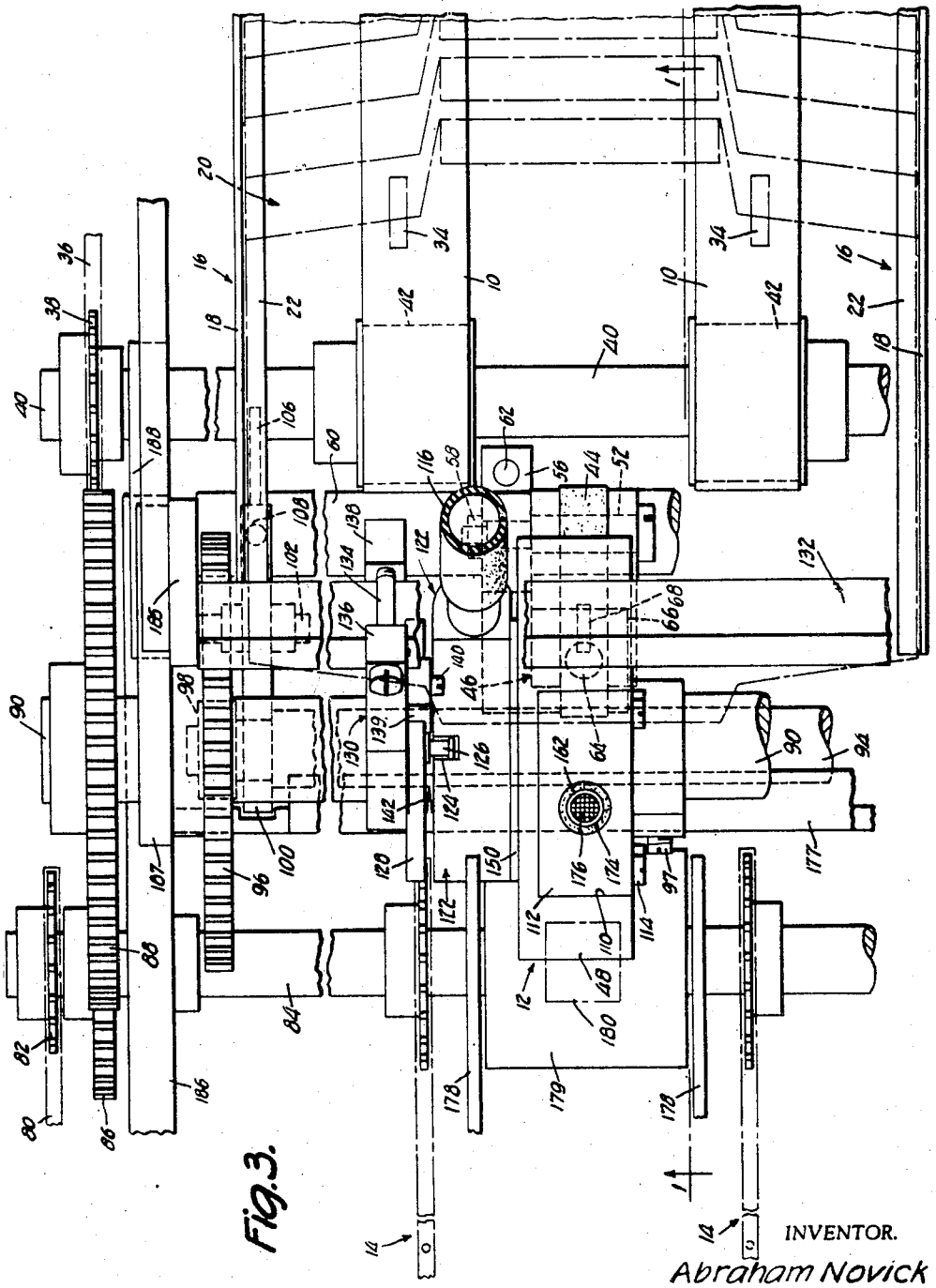


Fig. 3.

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BLANK INDIVIDUALIZING MECHANISM FOR ENVELOPE MAKING MACHINES

Filed Sept. 29, 1955 5 Sheets-Sheet 3

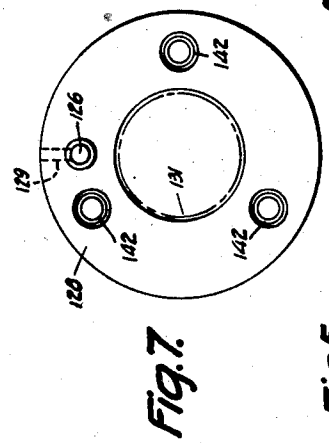


Fig. 7.

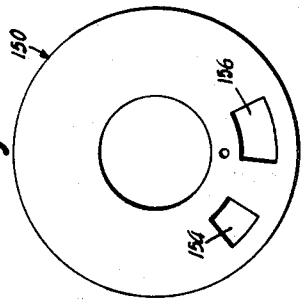


Fig. 6.

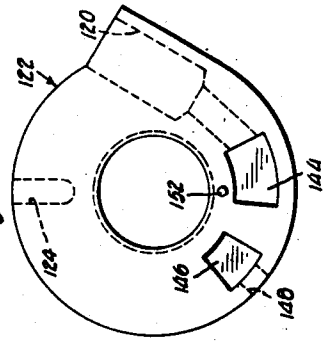


Fig. 5.

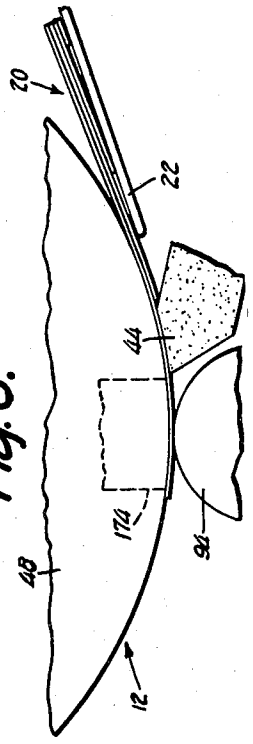


Fig. 8.

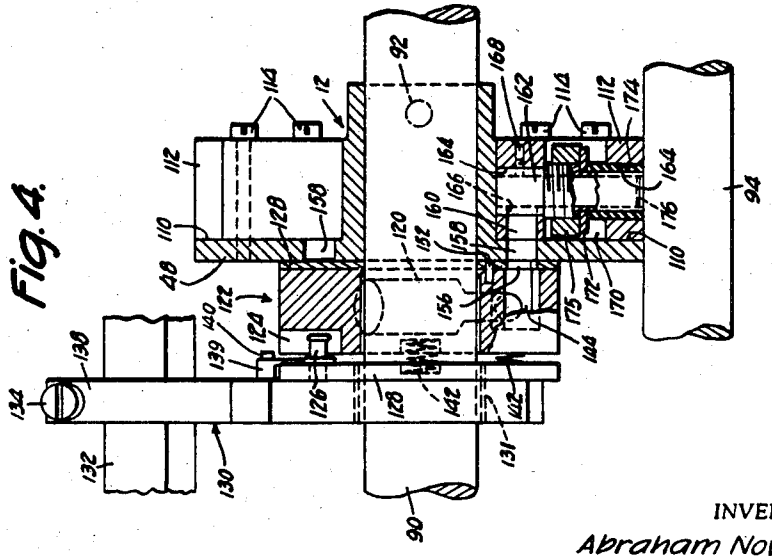


Fig. 4.

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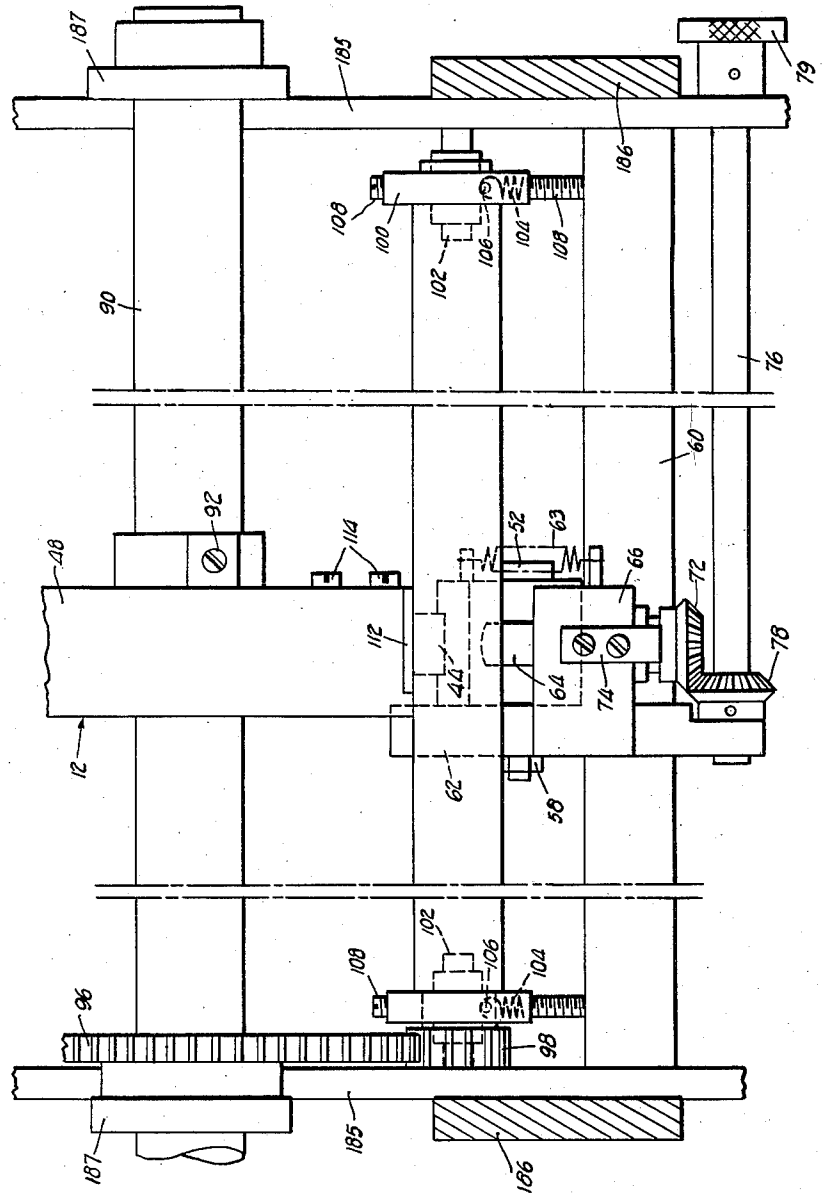
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BLANK INDIVIDUALIZING MECHANISM FOR ENVELOPE MAKING MACHINES

Filed Sept. 29, 1955 5 Sheets-Sheet 4

Fig. 9.



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BLANK INDIVIDUALIZING MECHANISM FOR ENVELOPE MAKING MACHINES

Filed Sept. 29, 1955 5 Sheets-Sheet 5

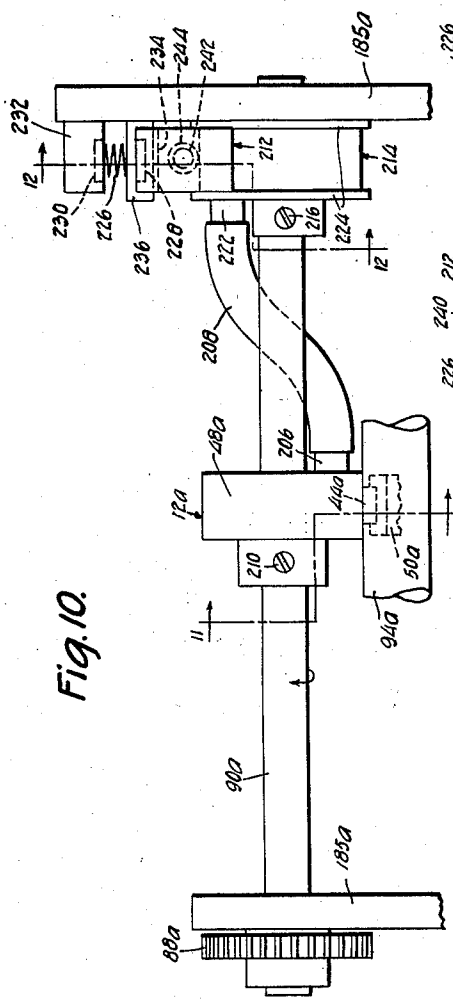


Fig. 10.

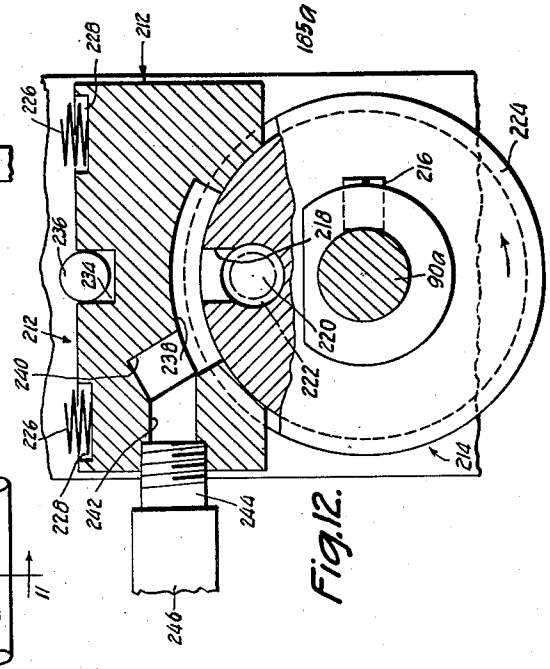


Fig. 12.

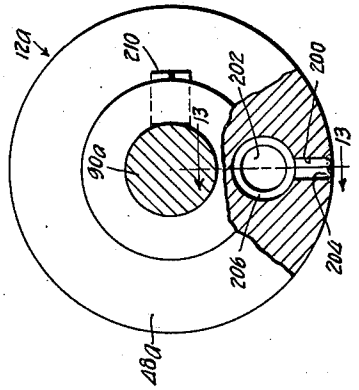


Fig. 11.

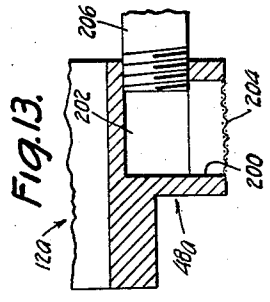


Fig. 13.

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United States Patent Office 2,830,508 Patented Apr. 15, 1958

2,830,508

BLANK INDIVIDUALIZING MECHANISM FOR ENVELOPE MAKING MACHINES

Abraham Novick, Flushing, N. Y., assignor to F. L. Smithe Machine Co., Inc., New York, N. Y., a corporation of New York

Application September 29, 1955, Serial No. 537,417

4 Claims. (Cl. 93—62)

This invention relates to envelope making machinery, and more particularly to machinery of the type in which the blanks are first fed in overlapped relation through a fan-out gummer and drier, and are then individualized, retimed and realigned in preparation for gumming, scoring and folding operations which are to follow.

A primary object of the present invention is to provide improved individualizing mechanism at the delivery end of the drying conveyor, the invention in this respect being an improvement upon the construction disclosed in Letters Patent of the United States, No. 1,807,867, granted to me on June 2, 1931, for Machine for Making Envelopes.

In the machine of the patent the drying conveyor is a chain conveyor to which the blanks are held by clips. Since the clips grip the blanks firmly, the blanks are not apt to become seriously disarranged by their travel along the drying conveyor although they may emerge slightly disarranged from one cause or another. Each blank as it emerges from the conveyor has its leading margin delivered between a rapidly running feed roller and a feed sector, the intention being that the blank shall be pulled out completely clear of the following blank before the leading edge of the following blank can become caught in the feed bight of the roller and the sector. This type of pull-out mechanism cannot act successfully upon the blanks if any substantial disarrangement has occurred, because of the danger of two blanks being caught in the bight and fed forward together. While it has been found to work successfully with a chain conveyor having clips, it has not proved satisfactory when used with a belt conveyor in which the blanks are held by friction between two opposed belts. Accordingly, the relatively expensive chain conveyor has been commonly employed in commercial machines.

It is a salient object of the present invention to provide a more versatile pull-out mechanism capable of successfully retiming blanks which have become too seriously disarranged to be dealt with successfully by the pull-out mechanism of the patent, and capable even of accumulating blanks at the individualizing station so that the original timing is completely lost, and then separating them one by one and feeding them forward in definitely timed relation.

It is an object to provide an individualizing feeder which comprises the combination with a yieldable obstructing member of a feeding wheel or roller having a suction port therein, together with means for so adjusting the obstructing member that no blank can pass it unless assisted by suction, but the leading blank will be carried past it with a high degree of dependability when assisted by suction.

In this connection it is an important feature that the blanks may be caused to accumulate on the obstructing member, each with its leading edge in retarding contact with the obstructing member, but each supported, as it becomes uppermost, almost completely on the next underlying blank, so that its separation requires only blank to blank friction to be overcome.

It is a further feature that a piece of tubing is set in the suction port and that provision is made for adjusting the tubing radially of the feed wheel so that it may be caused always to protrude a slight, substantially predetermined, uniform amount, both initially and as it is worn away by use.

It is still another feature that the wheel is arranged to carry two of the suction tubes at diametrically opposed points so that a small envelope blank may be fed forward, for each half revolution of the wheel, each tube being carried in a bored block set in a recess of the feed wheel, and either block being replaceable by a solid block when it is desired to feed one large blank for each revolution of the feed wheel.

Other objects and advantages will hereinafter appear.

The present application is a continuation-in-part of my application, Serial No. 453,781 filed September 2, 1954 for Blank Individualizing Mechanism for Envelope Making Machines.

In the drawing forming part of this specification:

Figure 1 is a fragmentary view in sectional side elevation showing a portion of an envelope making machine in which the present improvements are embodied, the section being taken on the line 1—1 of Figure 3, looking in the direction of the arrows;

Figure 2 is a detail view showing a solid filler block which may be placed in one of the recesses of the feed wheel when one blank per revolution is to be fed;

Figure 3 is a fragmentary plan view showing the portion of the machine illustrated in Figure 1;

Figure 4 is a fragmentary sectional view taken substantially on the line 4—4 of Figure 1, looking in the direction of the arrows;

Figure 5 is a view in side elevation of a stationary valve which is utilized in the suction control line;

Figure 6 is a view in side elevation of a fibre disc which is associated with the valve of Figure 5;

Figure 7 is a view in side elevation of a reaction plate by which axial pressure is applied to the valve of Figure 5 and the disc of Figure 6;

Figure 8 is a fragmentary view on a larger scale than Figure 1, showing in detail how the uppermost blank is drawn forward from the holdback into the bight formed by the feed wheel and an opposed roller;

Figure 9 is a fragmentary view in elevation showing the suction wheel and associated parts as seen from the right in Figure 1;

Figure 10 is a fragmentary view of a modified form of individualizing mechanism;

Figure 11 is a sectional view taken on the line 11—11 of Figure 10, looking in the direction of the arrows;

Figure 12 is a fragmentary sectional view taken on the line 12—12 of Figure 10, looking in the direction of the arrows; and

Figure 13 is a fragmentary sectional view taken on the line 13—13 of Figure 11, looking in the direction of the arrows, but on a larger scale than Figure 11.

The character of the illustrative machine will first be comprehensively outlined without attention to detail. The machine is desirably of the same general character as the machine illustratively shown and described in my pending application, Serial No. 182,384, filed August 30, 1950, for Envelope Feeding Mechanism (now abandoned). The blanks are supplied from a stack in timed relation, are directly arranged into fanned out relation, and are then advanced through a fan-out gummer and delivered to a slow moving fan-out drier which comprises opposed belts. Belts 10 may constitute the lower belts of the drying conveyor at the delivery end or they may

follow the lower belts of the drying conveyor. In either case, the belts 10 extend beyond the upper belts of the drying conveyor (not shown), and deliver the successive blanks to individualizing mechanisms 12 by which each blank is individually pulled clear of the underlapped blanks which follow it. Each individualized blank is delivered onto a pin conveyor 14, by which it is retimed and realigned for delivery to the usual scoring, pasting and folding instrumentalities by which the conversion of the blanks into finished envelopes is completed.

The utility of the present invention is not confined to machines of the kind just described, but it was contrived with that use in view and it will be illustratively described as embodied in such a machine.

The conveyor belts 10 have the terminal portions of their upper or active stretches disposed in a common, downwardly inclined plane. Angle bars 16 include vertical flanges 18 which serve as side guides for the overlapping band 20 of envelope blanks and inturned flanges 22 which are disposed in coplanar relation with the upper stretches of belts 10, and which support the end margins of the blanks.

Hold down rollers 24 are yieldingly pressed down through the fanned out blank band 20 against the belts 10. Each roller 24 is rotatively mounted in a lever arm 26, which lever is pivoted in a bracket 28. The bracket 28 embraces at its upper end a longitudinally extending, supporting bar 30. The bracket is adjustable along the bar 30, being adapted to be secured in any desired position of longitudinal adjustment by a set screw 32. A tension coil spring 31 connected at its lower end to the tail of the lever 26 and at its upper end to the bracket 28 causes the roller 24 to be pressed downward yieldingly and with limited force. Each bracket 28 has affixed to it a guide finger 34 which is spaced from the opposed belt 10 to overlie the blanks, and which presents a rounded sloping face toward the oncoming blanks.

The brackets 28 are so adjusted lengthwise of the bars 30 that the leading blank will move clear of the pressure of rollers 24 just as the blank comes into position to be acted upon by the individualizing mechanism. Up to that point the propulsive force has been supplied by the belts 10 which are driven slowly from the main shaft of the machine (not shown) through a driving train which comprises a chain 36, a sprocket 38 fast on a shaft 40, and pulleys 42.

As the blank runs clear of the rollers 24, the belts 10 are no longer capable of advancing it, and it comes to rest with its leading edge in engagement with a rubber block 44 which forms part of a yieldable obstructing member 46. The block 44 has a flat face which extends upward at a slight inclination toward the left as viewed in Figure 1, into contact, or substantially into contact, with the circumferential face of a feed wheel 48. The left end of the block 44 is formed with an arcuate upper face which is substantially concentric with the wheel 48 and either bears lightly against, or just clears, the periphery thereof. The leading edge of the bottom flap of each blank comes to rest substantially at the junction of the straight and arcuate faces of the block 44, remaining there until it is picked up and carried forward by one or another of two suction feeders which are carried by the wheel 48. The rubber block 44 is sufficiently yielding to permit a blank to pass when the blank is gripped and carried forward by suction. Each suction feeder advances a blank rapidly to a feed couple consisting of the wheel or roller 48 and an opposed roller 94, the blank being fed forward rapidly enough to individualize it.

The obstructing device 46 includes provision for adjusting the arcuate end of the block 44 relative to the wheel 48. The block 44 is affixed to the upper face of a channeled metallic block 50, which block is capable of angular tilting about a supporting headed and shouldered bolt 52. The bolt 52 has a bearing portion which passes through the block 50 and a reduced portion which passes through a slot 54 formed in an upwardly extending portion of a stationary supporting block 56. The bolt also has a further reduced threaded end portion. A nut 58, threaded on the end portion of the bolt 52, is tightened to clamp the block 56 between the nut and a bolt shoulder, to retain the bolt in any selected position along the slot while leaving the block 50 free to rock on the bolt. The block 56 surrounds a stationary supporting rod 60 and is clamped thereon by a headed screw 62.

The block 50 is biased in a counter-clockwise direction by a tension spring 63 (Fig. 1). The block 50 is held up toward the wheel 48 by the upper end of a vertically adjustable threaded supporting rod 64. The rod 64 extends downward through a fixed bracket 66, being slidably fitted therethrough. The rod 64 is held against rotation in the bracket 66 by a pin 68. The pin 68 is driven through a portion of the block 66 into the bore thereof, and has its inner end received in a longitudinal slot 70 formed in one side of the rod 64. A bevel gear 72 is threaded on the lower end of the rod 64 and serves as a feed nut for the rod.

A bracket 74, affixed to the block 66 fits into a grooved portion of the hub of gear 72 and holds the gear against longitudinal movement while leaving it free to rotate. A manually operated shaft 76 has fast upon it a bevel gear 78 through which the gear 72 is operated to adjust the rod 64. The shaft 76 extends transversely into a position accessible to the machine operator and is desirably equipped with an operating wheel 79. It may be operated to adjust the rod 64 when the machine is either idle or in operation, so that the best possible operating conditions may be secured for each class of work.

The feed wheel 48 is driven at uniform speed from the main shaft through a train of mechanism which comprises a chain 80, a sprocket 82 fast on a shaft 84, a gear 86 also fast on the shaft 84, and a gear 88 fast on a shaft 90. The wheel 48 is mounted on the shaft 90, being made fast therewith by a set screw 92.

The wheel 48 is opposed at its lower side by a feed roller 94. The roller 94 is driven at the peripheral speed of the wheel 48 through gears 96 and 98 which are fast respectively with the shaft 90 and the roller 94. The roller 94 extends from one side of the machine to the other and is rotatably supported at its ends by rocking levers 100, one at each side of the machine. Each lever 100 is pivotally supported upon a fixed pin 102, and is urged in a clockwise direction (Fig. 1) by a tension coil spring 104. The spring 104 is connected at one end to a finger 106 fixed on the lever, and at the opposite end to a fixed part of the machine frame. An adjustable stop screw 108 is threaded through the tail portion of each lever 100 and bears downward against the upper side of the rod 60 to limit approach of the roller 94 toward the wheel 48. The roller 94 is normally maintained in light and even contact with the wheel 48. The wheel 48 is narrow, but the roller 94 extends from side to side of the machine. By carefully adjusting the screws 108 the roller may be maintained parallel to the axis of the wheel 48, so that uniform feeding pressure will be applied from side to side of the wheel 48. The roller 94 can be set at a slight but uniform distance from the wheel 48, if desired, the distance being somewhat less than the thickness of a blank.

The wheel 48 is provided with diametrically opposed recesses 110 in which blocks 112 are secured by headed screws 114. The blocks 112 are duplicates of one another, carry duplicate suction feeding means, and are similarly mounted and controlled for connection with a source of suction (not shown).

A flexible rubber tube 116 is connected at one end to the source of suction, and is connected at the opposite end through a nipple 118 with a passage 120 formed in a stationary valve member 122. The valve member 122 is supported on the shaft 90 and is formed with a slot 124

in one of its faces. A headed pin **126** extends into the slot **124** for holding the valve member **122** against rotation. The pin head is provided so that the pin will have only point contact with the walls of the slot **124**.

The pin **126** is affixed to a plate **128** by a screw **129** (Fig. 7), which plate surrounds the shaft **90** but does not engage the shaft. The plate **128** is supported in fixed position by a mounting bracket **130**, which bracket has fixed therein a tube **131** which surrounds the shaft **90**, but does not engage the shaft. The tube **131** supports the plate **128**. The bracket **130** is formed at its upper end to receive and fit upon a fixed rectangular cross bar **132**. A headed screw **134** is passed freely through one ear **136** of the bracket **130** and threaded into an opposed ear **138**. The securement of the plate **128** to the bracket **130** is effected through a clamping block **138** which is formed with a shallow recess that partially contains a marginal portion of the plate **128**, and a headed clamping screw **140**. The shank of the screw **140** is passed through the plate **128** and threaded into the bracket **130**. The valve member **122** is urged toward the wheel **48** by a series of compression coil springs **142** which are equally angularly spaced about the axis of the shaft **90**, and which bear at their opposite ends in recesses formed respectively in the plate **128** and the valve member **122**.

The valve member **122** bears at its right end (Fig. 4) against the shaft **90**, but throughout the remainder of its thickness it is of somewhat larger diameter to clear the shaft. This construction permits the valve member to tilt if necessary relative to the shaft **90**, in order to maintain continuous sealing pressure against the side face of the wheel **48**.

The passage **120** of the valve member **122** communicates with a side passage **144** through which communication may be established with the interiors of the blocks **112**. A further side passage **146** of the valve member **122** is adapted at appropriate times to place the interiors of the blocks **112** in communication with the atmosphere through a radial passage **148**.

A fiber facing disc forms a unitary part of the valve member **142**, being positioned relative to the valve member by a pin **152**, and being provided with openings **154** and **156** in register, respectively, with the passages **144** and **146**. The wheel **48** is formed with diametrically opposite side passages or bores **158**, each of which successively crosses the passages **144** and **146** at appropriate times in the rotation of the wheel **122**, and places the interior of the associated block **112** alternately in communication with the source of suction and with the atmosphere.

Each passage **158** is in constant communication with a side passage **160** of the associated block **112**. A metallic tube **162** is lodged in a radial bore **164** of the block **112**, and communicates through a side bore **166** with the passages **160** and **158**. The tube **162** is secured in place, both longitudinally and rotatively by a screw **168** which is threaded into a wall of the tube.

The outer end of the tube **162** terminates a little short of the periphery of the wheel **48**. The intermediate portion of the tube **162** is enlarged and threaded and is located in a transverse opening **170** of the block **112**. The outer end of the bore **164** is of larger diameter than the inner end of the bore, being large enough to pass the threaded portion of the tube **162**. The tube is shouldered at opposite ends of the threaded portion. The upper shoulder engages the block **112**. A metallic washer **172** surrounds the tube **162** below the lower shoulder. A tube **174** of soft rubber surrounds the lower end of the tube **162** and may be adjusted to protrude a short distance outward beyond the periphery of the wheel **48**. An adjusting nut **175** is threaded on the enlarged threaded portion of the tube **162**, the nut being provided with peripheral recesses for coacting with a spanner wrench. The nut may be adjusted to support the tube **174** in a desired position initially. As the tube **174** becomes worn, the nut may be adjusted as required, in order to maintain the outer end of the tube in the desired position.

The novel suction feeding means is remarkably effective and dependable in individualizing the blanks without missing and without feeding doubles. The end of the soft rubber tube **174** can be adjusted to engage the blank lightly. The yielding character of the tube material promotes conformity of the blank with the engaged tube end, and improves the sealing by preventing the leakage of air past the blank into the suction line. The tube **174** can yield slightly as the blank is forced between the roller **94** and the wheel **48**. A perforated or air pervious disc **176** in the nature of a screw is secured in the tube **162**, near its outer end, to resist the tendency of the suction to draw a portion of the blank into the tube.

A stripper bar **177** is disposed adjacent to the roller **94** to assure that no blanks will be permitted to wind up on the roller **94**. Deflector bars **178** similarly prevent adherence of the blanks to the wheel **48** after the suction has been cut off. The blanks are forwarded by the wheel **48** and the roller **94** to a feed bight formed by a roller **179** fast on the shaft **84** and an opposed upper roller **180**. The rollers **178**, **180** feed each individualized blank forward until it clears the rollers, whereupon the blank is engaged and positively fed forward and aligned by pins **182**, carried on chains **184** of the pin conveyor **14**, as is well understood.

As shown in the drawing, the mechanism is set up to individualize an envelope blank for each half revolution of the wheel **48**. When it is desired to use the mechanism for individualizing one envelope blank for each full revolution, one of the blocks **112** is replaced in its entirety by a solid block **186** (Fig. 2) which exactly fills a recess **110** to provide an unbroken cylindrical surface.

The frame of the machine includes two vertical bars **185**, in which the cross bar **60** is supported. The bars **185** also support the pivot pins **102** for the levers **100**. Each bar **185** has secured to it a forwardly extending, horizontal bar **186** to support the shaft **84** of the aligner mechanism. Each bar **185** also has secured to it a short horizontal bar **187**. The bars **187** revolubly support the wheel shaft **90**. Each vertical bar **185** has further secured to it a rearwardly extending bar **188**. The two bars **188** rotatively support the shaft **40**.

The individual pull-out of the blanks in properly timed relation does not depend on preservation in any degree of the original timing of the blanks. By pinching off the suction for five or six blanks an accumulation of blanks may be developed at the rubber block **44**. In actual operation such an accumulation is preferred. It takes care of occasional misses at the front feeder. The individualizing feeder works better also when there is a small stack of blanks behind it.

The modified individualizing mechanism of Figs. 10 to 13 is generally like the mechanism of Figs. 1 to 9, but differs with respect to some of the suction mechanism features. Corresponding reference characters have been applied to corresponding parts with the subscript *a* added in each instance, and the description will be confined substantially to the points in which the construction of Figs. 10 to 13 differs from the construction of Figs. 1 to 9.

A shaft **90***a* rotatably supported in frame members **186***a*, is driven at constant speed through a gear **88***a*. The shaft **90***a* has affixed to it by means of a set screw **199** an upper feed rollers **48***a*. The shaft **90***a*, through suitable gearing, not shown, drives a lower, cooperative feed roller **94***a*. An obstructing member comprising a yieldable block **44***a* and a metallic carrying block or lever **50***a* cooperates with the roller **48***a* as has been described in connection with Figs. 1 to 9.

While the roller **48***a* could be provided, as before, with a plurality of suction devices, the illustration has been confined to one for the sake of simplicity. The

roller 48a is formed with a radial passage 200 which communicates with a lateral passage 202. The mouth of the radial passage is blocked with a piece of screen wire 204, which is soldered in place to prevent the blanks from being sucked partly into the passage. The lateral passage 202 is provided with a nipple 206 to which a flexible suction tube 208 is applied. The connection of the roller 48a to the shaft 90a is through a set screw 210, so that the roller 48a can be adjusted in its phase relation to the shaft.

The source of suction is alternately applied to, and cut off from, the tube 208 through stationary and rotary valve members 212 and 214. The rotary valve member 214 is secured upon the shaft 90a with capacity for rotative adjustment by means of a set screw 216. The valve member 214 is formed with a radial bore 218 and a lateral bore 220, the bores communicating with one another. A nipple 222 is secured in the bore 220 and has an end of the flexible tube 208 applied to it.

The valve member 212 is in the form of a block and has an arcuate lower surface adapted to fit against the base of a circumferential channel which is formed between flanges 224 of the valve member 214. The valve member 212 is pressed down into contact with the valve member 214 by compression springs 226. The springs 226 bears at their lower ends in recesses 228 of the valve member 212, and at their upper ends in recesses 230 of a stationary, rigid abutment member 232. The valve member 212 is formed with a notch 234 in its upper side. A stationary pin 236 which is rigidly supported by the adjacent frame member 186a extends into the notch 234 and prevents rotation of the valve member 212.

The stationary valve member 212 is formed in its arcuate face with an arcuate suction transmitting channel 238 along which the passage 218 of the valve member 214 travels once in each revolution of the shaft 90a. The channel 238 communicates through successive bores 240 and 242 with a nipple 244. The nipple 244 is connected through a flexible tube 246 with a source of suction, not shown. The tube 246 can be pinched to shut off the suction action altogether for a few cycles, when it is desired to accumulate a few blanks at the point of individualization.

It is evident that with the parts connected as shown the suction will be applied through the passage 200 of the roller 48a while the passage 218 of the rotary valve member travels the length of the channel 238. This is intended to cause the suction to be applied through the passage 200 from a time just before the passage reaches the yieldable obstructing member 44a until the passage reaches the line of center of the feed rollers 48a and 94a. Should it be found that minor phase adjustment of the passage 200 relative to the shaft 90a is required, this may be brought about without disturbing the valve member 214, merely by backing off the set screw 199, turning the feed roller 48a relative to the shaft 90a, and re-tightening the set screw.

Should a more extensive adjustment be required, the valve member 214 may be similarly readjusted relative to the shaft 90a through manipulation of the set screw 216. There is no reason, of course, why the roller 48a and the valve member 214 may not be adjusted concurrently in case of need.

I have described what I believe to be the best embodiments of my invention. I do not wish, however, to be confined to the embodiments shown, but what I desire to cover by Letters Patent is set forth in the appended claims.

I claim:

1. An envelope making machine comprising, in combination, means for separating envelope blanks from a stack and arranging and advancing them in fanned out formation in definitely timed relation, means for gumming and drying the seal flaps of the blanks as they are advanced in fanned out formation, means for holding back the leading blank of the fanned out band for at least a portion of the overlap spacing, so that the original timing and spacing of the blanks in the band is lost, comprising a feed wheel, an obstructing member of yieldable material, a pivotally mounted channel metallic block supporting said obstructing member, said obstructing member having a first surface extending across the path of blank advance said first surface contacting the feed wheel at a small acute angle to the direction in which the blanks are advanced to the accumulating station, and a second arcuate surface substantially complementary to a portion of the feed wheel circumference and adjustable mounting means for mounting said obstructing member, and metallic supporting block, below said feed wheel adapted to allow substantially vertical adjustment of the obstructing member and its metallic channel supporting block toward and from the feed wheel while the machine is in operation and further feeding means cooperative with the feed wheel beyond the obstructing member to continue the advance of the blanks in individualized relation for the completion of them into finished envelopes.

2. An envelope machine comprising, in combination, means for separating envelope blanks from a stack and arranging and advancing them in fanned out formation in definitely timed relation, means for gumming and drying the seal flaps of the blanks as they are advanced in fanned out formation, means for holding back the leading blank of the fanned out band for at least a portion of the overlap spacing, so that the original timing and spacing of the blanks in the band is lost, comprising a feed wheel and an obstructing member of yieldable material having a surface which extends across the path of blank advance and into contact with the feed wheel at a small acute angle to the direction in which the blanks are advanced to the accumulating station, suction means carried by the feed wheel to engage the upper surfaces of successive blanks periodically to start the individualization of each blank in a new, definitely timed relation, independently of the first timing but at the same frequency as the original feeding from the stack, barring misses, further feeding means cooperative with the feed wheel beyond the obstructing member to continue the advance of the blanks in individualized relation for the completion of them into finished envelopes said suction means including a tube of soft, yieldable material whose outer end engages the blank and through which the suction effect is applied to the blank, and means for adjusting the tube radially of the roller in which it is carried, said means being automatically effective to retain the tube in any adjusted position.

3. An enveloping making machine comprising, in combination, means for separating envelope blanks from a stack and arranging and advancing them in fanned out formation in definitely timed relation, means for gumming and drying the seal flaps of the blanks as they are advanced in fanned out formation, means for holding back the leading blank of the fanned out band for at least a portion of the overlap spacing, so that the original timing and spacing of the blanks in the band is lost, comprising a feed wheel and an obstructing member of yieldable material having a surface which extends across the path of blank advance and into contact with the feed wheel at a small acute angle to the direction in which the blanks are advanced to the accumulating station, suction means carried by the feed wheel to engage the upper surfaces of successive blanks periodically to start the individualization of each blank in a new, definitely timed relation, independently of the first timing but at the same frequency as the original feeding from the stack, barring misses, further feeding means cooperative with the feed wheel beyond the obstructing member to continue the advance of the blanks in individualized relation for the completion of them into finished envelopes a supporting and driving shaft for the feed wheel, means for driving the shaft continuously, continuously engaged rotary and stationary valve members having cooperative passages

for periodically placing a source of suction in communication with the rotary valve member, the rotary valve member being also mounted on said shaft, a suction transmitting flexible tube constantly connecting the rotary valve member with the suction passage of the individualizing roller, means for making the rotary valve member fast on the shaft in various positions of rotative adjustment, and means for making the feed wheel fast on the shaft in different positions of rotative adjustment relative to the shaft and relative to the rotary valve member.

4. An envelope machine comprising, in combination, means for separating envelope blanks from a stack and arranging and advancing them in fanned out formation in definitely timed relation, means for gumming and drying the seal flaps of the blanks as they are advanced in fanned out formation, means for holding back the leading blank of the fanned out band for at least a portion of the overlap spacing, so that the original timing and spacing of the blanks in the band is lost, comprising a feed wheel and an obstructing member of yieldable material having a surface which extends across the path of blank advance and into contact with the feed wheel at a small acute angle to the direction in which the blanks are advanced to the accumulating station, suction means carried by the feed wheel to engage the upper surfaces of successive blanks periodically to start the individualization of each blank in a new, definitely timed relation, independently of the first timing but at the same frequency as the original feeding from the stack, barring misses, further feeding means cooperative with the feed wheel beyond the obstructing member to continue the advance of the blanks in individualized relation for the completion of them into finished envelopes a supporting drive shaft for the feed wheel, means for driving the shaft continuously, continuously engaged rotary and stationary valve members having cooperative passages for periodically placing a source of suction in communication with the rotary valve member, the rotary valve member being fast on the shaft, a suction transmitting flexible hose constantly connecting the rotary valve member with the suction passage of the individualizing roller, and means for making the rotary valve member fast on the shaft in various positions of rotative adjustment relative to the shaft and relative to the feed wheel.

References Cited in the file of this patent

UNITED STATES PATENTS

1,385,468	Pflanze	July 26, 1921
1,482,752	La Bombarde	Feb. 5, 1924
1,807,867	Novick	June 2, 1931
2,058,979	Henry	Oct. 27, 1936
2,133,555	Novick	Apr. 5, 1938