April 17, 1934. G. HILLER 1,955,066

STRIPPER AND FEEDER FOR POSTAL MACHINES

Filed Jan. 18, 1933 4 Sheets-Sheet 1

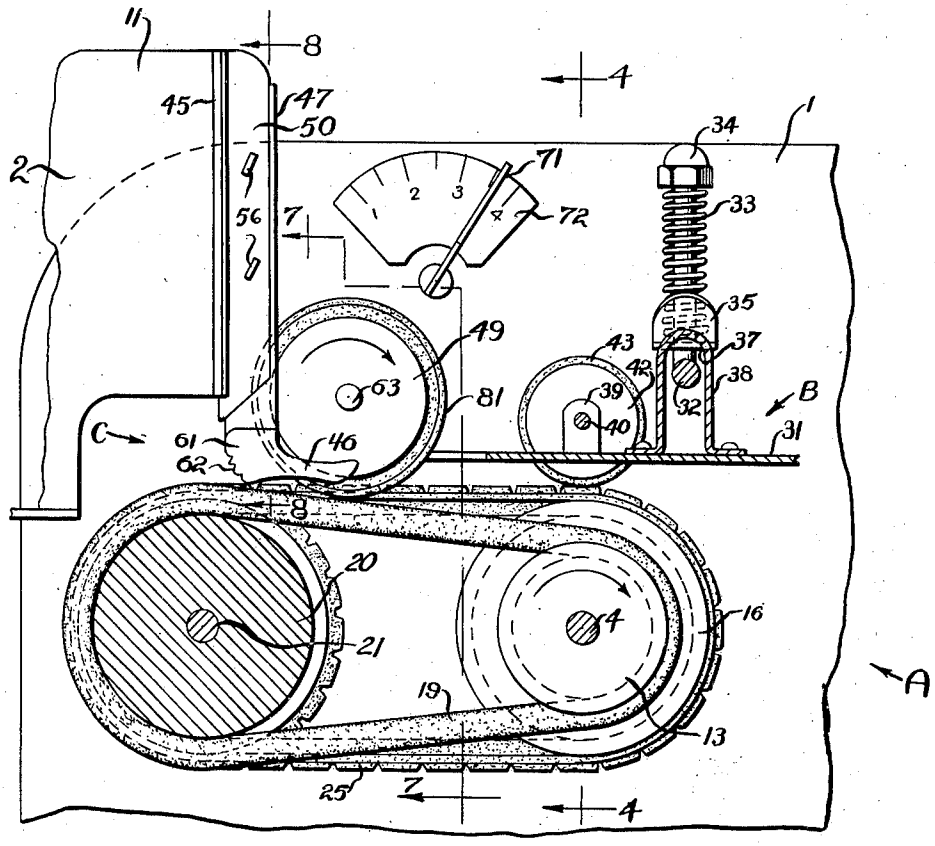


Fig. 2

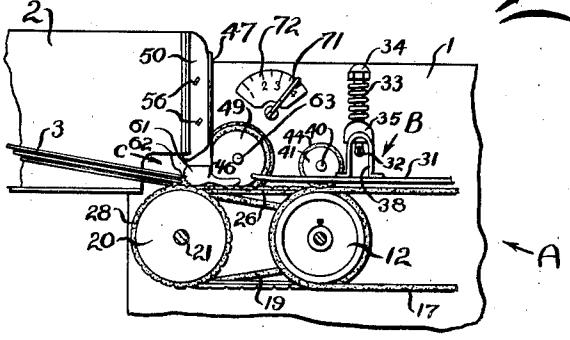


Fig. 1

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STRIPPER AND FEEDER FOR POSTAL MACHINES

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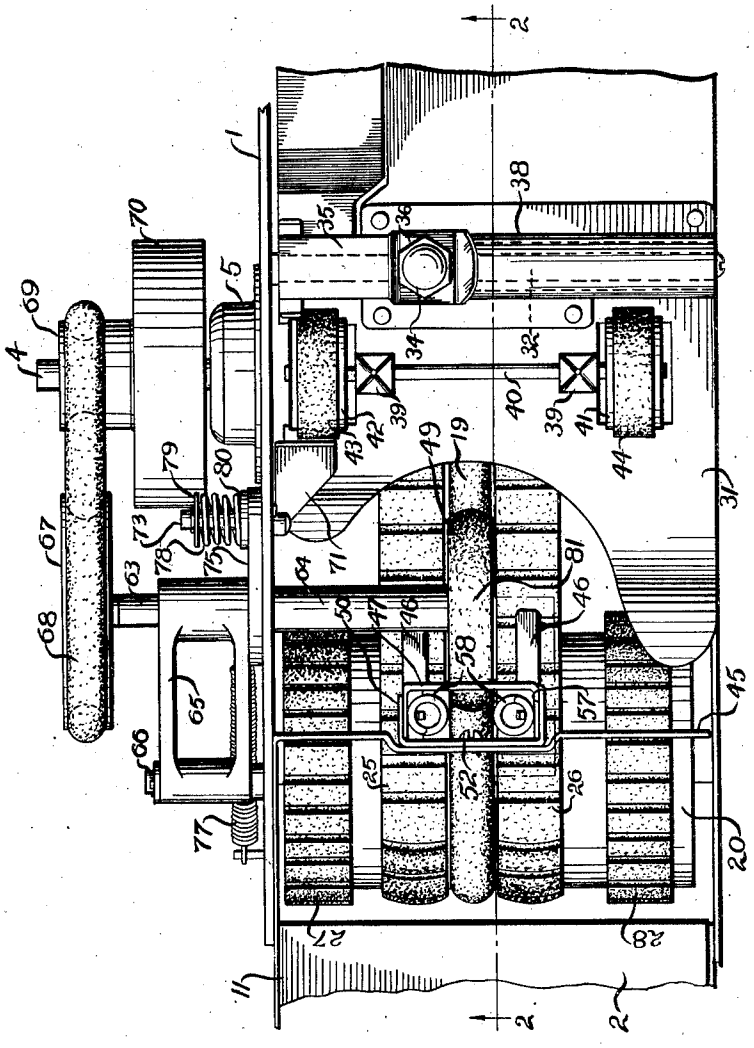


Fig. 3

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STRIPPER AND FEEDER FOR POSTAL MACHINES

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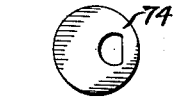


Fig. 6

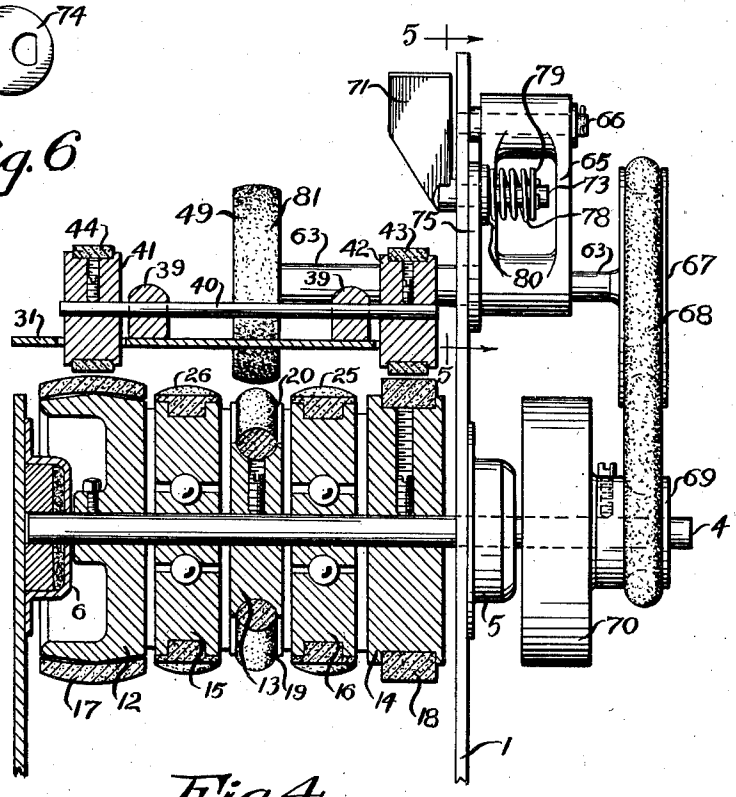


Fig. 4

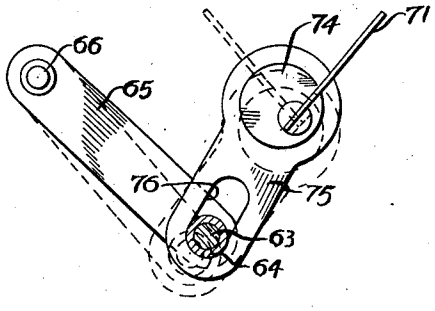


Fig. 5

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STRIPPER AND FEEDER FOR POSTAL MACHINES

Filed Jan. 18, 1933 4 Sheets-Sheet 4

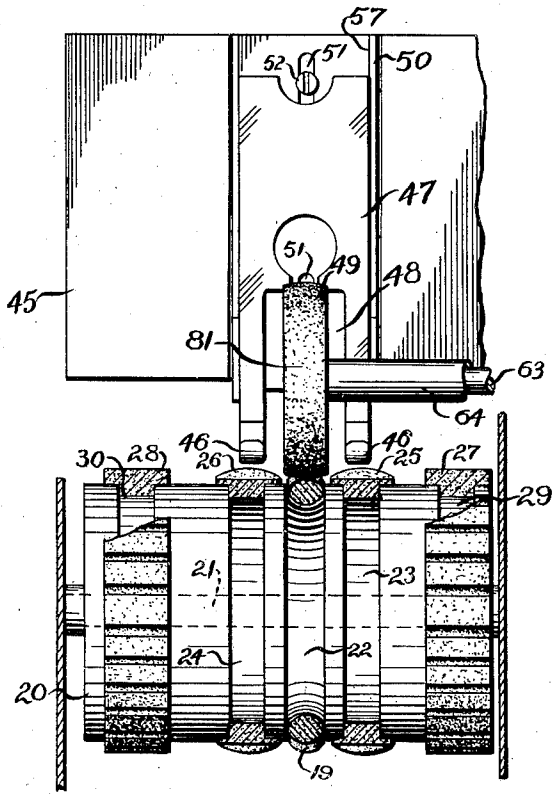


Fig. 7

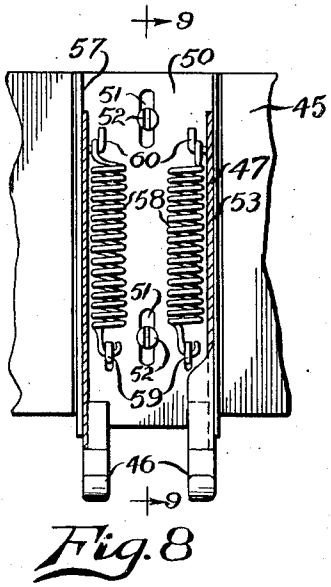


Fig. 8

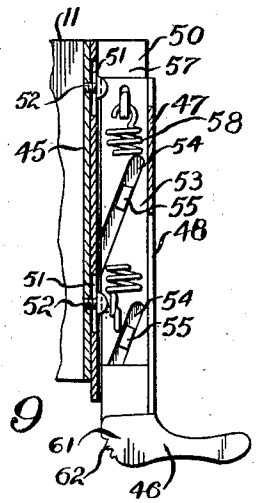


Fig. 9

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Patented Apr. 17, 1934 1,955,066

UNITED STATES PATENT OFFICE

1,955,066

STRIPPER AND FEEDER FOR POSTAL MACHINES

George Hiller, Inglewood, Calif., assignor to National Postal Meter Company, Los Angeles, Calif., a corporation of California

Application January 18, 1933, Serial No. 652,326

7 Claims. (Cl. 271—35)

This invention relates to novel stripper and feeding mechanisms for postal machines, and comprises a means for controlling the delivery of mail matter in a postal machine, such as envelopes, to the conveyor, allowing, at one time, only one piece of mail matter to leave the feeding hopper, and spacing one from the other each of such pieces as they leave the hopper for the purposes required in such a machine.

An object of this invention is to provide a stripper and feeder mechanism which will satisfactorily operate at high speed and which will operate accurately and efficiently under all conditions, whether at high or low speeds and also automatically adapt itself to mail pieces of varying thicknesses.

An object is to provide novel means for applying a predetermined pressure to mail pieces which are separated from a stack of mail pieces in order to provide an efficient feed of such mail pieces to the conveyor means.

Another object is to provide novel means whereby mail pieces may be efficiently and effectively separated from a stack of mail pieces, so as to be fed one at a time to conveyor means, and to be spaced along said conveyor means with a desired space between adjacent ends of such separated mail pieces.

Another object is to provide novel means whereby the stripping mechanism may be easily, quickly, and effectively adjusted relative to the feeding means so as to adapt the invention to the separation of mail pieces of different thicknesses.

The invention comprises the parts and combinations of parts hereinafter more fully described and claimed.

Other objects, advantages, and features of invention may appear from the accompanying drawings, (4 sheets) the subjoined detail description and the appended claims.

The accompanying drawings illustrate the invention in a form I, at present, deem preferable.

Figure 1 is a reduced front elevation of a fragment of a postal machine having my novel stripper and feeding mechanism installed therein. A plurality of envelopes are shown in place in the feed hopper.

Fig. 2 is a front elevation, on an enlarged scale, analogous to Fig. 1 but taken on a plane indicated by irregular line 2—2, Fig. 3.

Fig. 3 is a plan view of the device on the same scale as Fig. 2 and showing my invention as installed in a postal machine, a fragment of which is shown.

Fig. 4 is a transverse sectional view, taken on line 4—4, of Fig. 2.

Fig. 5 is a detailed view of the stripper wheel adjustment as viewed on a plane indicated by line 5—5, Fig. 4, looking in the direction of the arrows and with the casing of the postal machine omitted.

Fig. 6 is a detailed view of the eccentric for the stripper wheel adjustment.

Fig. 7 is a transverse sectional view on irregular line 7—7, Fig. 2, showing the relation of the stripping wheel and presser foot to the feed roll.

Fig. 8 is a detailed view of the presser foot assembly as viewed on line 8—8, Fig. 2.

Fig. 9 is a sectional view of the presser foot taken on line 9—9, Fig. 8.

My invention is shown as associated with a postal machine A, only so much of which is shown (Figs. 1 and 2) as to illustrate the parts thereof that cooperate with my novel device. The postal machine comprises a casing 1 having fixed thereto a hopper 2 that is adapted to receive mail matter to be acted upon, such as envelopes 3.

Mail matter feeding means B comprises a drive shaft 4 mounted in bearings 5, 6 on casing 1 and upright extension member 11 that extends forwardly and upwardly from casing 1. Pulley wheels 12, 13, 14 are fixed to shaft 4 and idler wheels 15, 16 are rotatably mounted on shaft 4. A conveyor belt 17 is trained over pulley wheel 12 and is operated thereby; and pulley wheel 14 is provided with a serrated peripheral tire 18 that provides, with other serrated belts and tires, tractive elements that have an uneven surface whereby a greater tractive surface is obtained, and glazing of such surface from contact with the paper mail pieces is prevented.

Grooved pulley wheel 13 is fitted with a drive belt 19 that is trained therearound and over a grooved pulley 20 that is fixed to a shaft 21 supported by casing 1 and extension member 11. The track or groove 22 in pulley 20 is of larger diameter than the drive pulley 13 so as to operate the pulley 20, fixed to shaft 21, at a lower speed than the drive pulleys and wheels, thereby decreasing the speed of travel of that portion of the conveyor mechanism. Formed in the pulley 20 adjacent opposite sides of the groove 22 are tracks 23, 24 in which serrated belts 25, 26 ride and said belts 25, 26 are trained over idler wheels 15, 16 on shaft 4. Serrated tires 27, 28 are fitted in tracks 29, 30 that are disposed on each side of pulley 20 and adjacent tracks 23, 24.

A guide plate 31 is rockably mounted on a supporting arm 32 that is rigidly fixed to and extends from casing 1 over the upper surface of the conveyor belts. Guide plate 31 is tensioned on its support by a spring 33 operating between head 34 and guide plate retaining catch 35 that has a depression 36 adapted to fit in recess 37 formed in upright 38 that extends upwardly from plate 31 to thereby retain said plate 31 against accidental displacement. Plate 31 is provided with bearings 39 in which shaft 40 is mounted. Tractive rollers 41, 42 respectively provided with rubber tires 43, 44, provide additional tractive force and act to hold the mail pieces in a straight line.

The feeding means B partially extends under the hopper 2 that is provided with an end section 45 that is elevated at its lower end from belts, 25, 26 so as to form a throat C through which mail pieces are fed from hopper 2 to the conveyor belt 17.

Presser feet 46 are adjustably and spring tensionally mounted on end section 45, and said feet 46 are arranged so that each foot is disposed over belts 25, 26 and at a predetermined distance therefrom depending upon the adjustment thereof.

The presser feet 46 are formed as an extension of a carriage 47 that is bifurcated as at 48 to receive a power driven reversely operative retarding element such as stripper wheel 49. A supporting member 50, in which carriage 47 is slidably mounted, is adjustably secured to end section 45 by means of the slots 51 and screws 52 that are threaded into section 45 and when screwed home secure member 50 in adjusted position. Carriage 47 is provided with uprights 53 that have a plurality of angularly disposed slots 54 formed therein that are adapted to receive projections 55 which are formed by elongate angular indentations 56 in the guide rails 57 of supporting member 50. Springs 58, operating between lugs 59 struck up from supporting member 50, and lugs 60 struck up from uprights 53, normally urge the presser feet 46 toward the belts 25, 26 and against mail pieces during feeding operation.

The presser feet 46 have rounded heel sections 61 which are provided with a roughened surface or serrations 62 which tend to feather the stack of envelopes 3 that are placed in the hopper 2. The serrations 62 tend to separate the envelopes, one from the other, as well as to provide notches into which the ends of the superimposed envelopes are received to thereby tend to prevent accidental feeding of such superimposed envelopes and to facilitate the feeding of the lowermost envelopes when contacted by the conveying elements which operate to move such lowermost envelopes toward the conveying mechanism.

The stripper wheel 49 is mounted on a shaft 63 which rotates in a shaft housing 64 that in turn is mounted in an adjusting arm 65 which is pivoted at 66 to casing 1. A pulley 67 is fixed to the inner end of shaft 63 and rotated by a belt 68 that is trained around pulley 67 and pulley 69, the latter being fixed to the inner end of conveyor drive shaft 4 that in turn is driven by a clutch element 70 that is connected to a suitable drive of the postal machine in such manner that the stripper wheel 49 is rotated in a reverse direction to that of the conveyor.

Means are provided whereby the stripper wheel 49 may be adjusted toward or away from belts 25, 26 and such means comprises a handle 71 which operates above an indicator plate 72. Said handle 71 is fixed to a shaft 73 which is journaled in and supported by the casing 1. An eccentric 74 is non-rotatably fixed to the inner end of shaft 73 and an adjusting bar 75 is rotatably mounted on eccentric 74 and said bar 75 is provided with a slotted opening 76 through which the shaft housing 64 extends. The lower end of slot 76 forms a stop means for the shaft housing 64. A spring 77 as shown in Fig. 3 connected to adjusting arm 65 and casing 1 normally urges shaft housing 64 against the lower end of slot 76. Shaft 63 extends through adjusting arm 65 and from the foregoing construction it will be seen that the stripper wheel 49 has a floating mounting which will ordinarily compensate for uneven surfaces in the mail pieces which are fed from the hopper 2 to the conveying means and upon which the stripper wheel operates.

A spring 78 on shaft 73 operates between washers 79 and 80 and maintains eccentric 74 in its bearing formed in adjusting bar 75.

A rubber tire 81 is provided around the periphery of stripper wheel 49 to aid in obtaining the necessary friction to prevent superimposed envelopes in the stack of envelopes from being fed to the conveying means before such feeding is desired.

In operation a stack of envelopes or pieces of mail matter 3 will be placed lengthwise in hopper 2 so that one end of said envelopes will abut the end section 45 and presser feet 36 and overlie pulley 20, belts 25, 26 and tires 27, 28. On rotation of clutch element 70, by any suitable means, it will be seen that the belts 25, 26 and tires 27, 28 will be rotated at a slower speed than the conveyor belt 17 that is trained over pulley wheel 12.

Clutch element 70 is so rotated that it will receive its driving power to rotate shaft 63 in a direction reverse to that of conveyor drive shaft 4 so that stripper wheel 49 will rotate in a reverse direction to the path of travel of belts 25, 26 and conveyor belt 17 and to the path of movement of envelopes carried by said belts. As wheels 15, 16 are loosely mounted on shaft 14, the belts 25, 26 may be operated at a slower speed than conveyor belt 17.

Handle 71, being adjusted to the desired position over indicator 77, will position the periphery of stripper wheel 49 at a predetermined distance above or below belts 25, 26 so as to supply a predetermined pressure on pieces of mail matter which pass between stripper wheel 49 and said belts 25, 26. With the parts in the above position, the lowermost envelope of the stock of envelopes in hopper 2 will be engaged by belts 25, 26 and tires 27, 28 and drawn underneath presser feet 46 which tend to urge said envelopes toward belts 25, 26 with a predetermined yieldable pressure obtained by springs 58 and adjustment of the pressure foot carriage toward or away from belts 25, 26.

The envelopes, in the stack of envelopes that are above the lowermost envelope, are retarded in their movement through the feeding means according to their position in such stack, some of said upper envelopes being retarded by the heel sections 61 of presser feet 46 and others by the end section 45 of hopper 2. As the lowermost envelope is moved toward the conveyor belt 17 the envelopes immediately above such lowermost envelope, that may not be retarded by the heel sections 61 or serrations 62 of presser feet 46 and

which move under the presser feet with the lowermost envelope, are engaged by the stripper wheel 49 and the reverse movement of such stripper wheel will retain such envelopes above the lowermost envelope from tractive action of belts 25, 26 until the lowermost envelope has been moved toward the conveyor belt a sufficient distance to be withdrawn from the stack of envelopes. The presser feet 46 exert a yielding pressure upon the lowermost envelope, as it passes underneath said feet, so as to insure sufficient tractive relation to the treads and tires of the feeding mechanism to insure proper forward movement of such lowermost envelope. Such pressure and momentum obtained by the envelope before it reaches wheel 49 is sufficient to overcome the reverse action of the stripper wheel 49 and the envelopes above the lowermost envelope, being out of contact with the forwardly moving feeding elements, will be easily retarded by the action of the stripper wheel and the lowermost envelope will pass on toward the machine. The stripper wheel 49 thereupon engages the next following envelopes above the lowermost envelope and through its reverse movement retains all envelopes above the lowermost envelope until the lowermost envelope has passed from under the presser feet 46, whereupon the next envelope is engaged by the treads of the pulleys 25, 26 and the steps repeated.

By reason of the resilient mounting of the presser feet 46 and the resilient mounting of stripper wheel 49 if any unevenness or unusual thickness is presented in the pieces of mail matter passing thereunder such presser feet or stripper wheel, or both as the case may be, may automatically yield upwardly to accommodate such extra thickness. Belts 25, 26 being more or less resilient also provide means for accommodation of unevenness in mail pieces and to insure proper tractive action upon such mail pieces.

Proper spacing of the envelopes, one from the other, upon the conveyor, and which spacing is required for the proper operation of the postal machine, is accomplished by the variation of speed in those portions of the conveyor comprising the feeding mechanism and stripping mechanism. It will be apparent that when an envelope has been delivered by belts 25, 26 to conveyor belt 17, that such envelope immediately upon being acted upon by conveyor belt 17 will be moved forwardly at a greater speed than the next succeeding envelope that is acted upon by belts 25, 26 and such increase in conveying speed will provide the requisite space between adjacent ends of succeeding pieces of mail matter to permit operation of trip mechanism (not shown) normally provided in postal machines illustrated in the co-pending applications hereinbefore referred to. The variation of speed of the feeding mechanism and the conveying mechanism is accomplished by drive belt 19 riding over pulleys of different diameters.

When the envelope is acted upon by conveyor belt 17 the guide plate 31 provides sufficient tractive pressure through rollers 41 and 42 to continue the feeding operation of the envelope through the machine.

What I claim is:

1. In a feeding mechanism for mailing machines, the combination of: means for supporting a stack of envelopes; a horizontal conveyor adapted to frictionally remove envelopes from said supporting means, said conveyor including a pair of vertically yieldable belts; a power driven rubber-tired wheel positioned over said belts, said wheel being reversely rotatable relative to said belts, the lowermost point of said wheel being positioned below the upper surface of the upper flights of said belts; and a retaining member disposed over said conveyor between said wheel and said supporting means, said retaining member allowing relatively few envelopes to be fed from said stack to said wheel by said conveyor.

2. In a feeding mechanism for mailing machines, the combination of: means for supporting a stack of envelopes; a horizontal conveyor adapted to frictionally remove envelopes from said supporting means, said conveyor including a pair of vertically yieldable belts; a power driven rubber-tired wheel positioned over said belts, said wheel being reversely rotatable relative to said belts, the lowermost point of said wheel being positioned below the upper surface of the upper flights of said belts; and a retaining member disposed over said conveyor between said wheel and said supporting means, said retaining member having a pair of shoes on the lower end thereof, said shoes being disposed in vertical alignment with said conveyor belts and extending horizontally along opposite sides of the lowermost portion of said wheel, said shoes retaining superimposed envelopes so as to allow relatively few envelopes to pass between said belts and said shoes to said wheel.

3. A combination as in claim 2 in which said shoes and said wheel are yieldable upward and in the direction of the travel of said conveyor so as to allow passage of relatively thick envelopes.

4. In a feeding mechanism for mailing machines, the combination of: a conveyor adapted to frictionally convey relatively flat mail matter; and a rotatable stripper element positioned partially in the path of said mail matter, said stripper comprising a rubber-tired wheel reversely rotatable relative to said conveyor, said wheel contacting forward edges and surfaces of mail matter and retaining superimposed pieces while the lowermost piece is stripped from the balance by said conveyor; and said stripper wheel is yieldable relative to said conveyor so as to compensate for pieces of mail matter of different thicknesses.

5. In a feeding mechanism for mailing machines, the combination of: means for supporting a stack of envelopes; a horizontal conveyor adapted to frictionally remove envelopes from said supporting means; a power driven rubber-tired wheel positioned over said conveyor, said wheel being reversely rotatable relative to said conveyor so as to retain superimposed envelopes allowing said conveyor to strip the lowermost envelope from under the balance; a retaining member disposed over said conveyor between said supporting means and said wheel, said retaining member allowing relatively few envelopes to be fed from said stack to said wheel by said conveyor; and said retaining member is yieldable away from said conveyor so as to accommodate envelopes of different thicknesses.

6. In a feeding mechanism for mailing machines, the combination of: means for supporting a stack of envelopes; a horizontal conveyor adapted to frictionally remove envelopes from said supporting means; a power driven rubber-tired wheel positioned over said conveyor, said wheel being reversely rotatable relative to said conveyor so as to retain superimposed envelopes allowing said conveyor to strip the lowermost envelope from under the balance; a retaining, member disposed over said conveyor between said supporting means and said wheel, said retaining

member allowing relatively few envelopes to be fed from said stack to said wheel by said conveyor; and said wheel and said retaining member being yieldable away from said conveyor, said wheel being adjustable as to its lowermost position.

7. In a feeding mechanism for mailing machines, the combination of: means for supporting a stack of envelopes; a horizontal conveyor adapted to frictionally remove envelopes from said supporting means; a power driven rubber-tired wheel positioned over said conveyor, said wheel being reversely rotatable relative to said conveyor so as to retain superimposed envelopes allowing said conveyor to strip the lowermost envelope from under the balance; a retaining member disposed over said conveyor between said supporting means and said wheel, said retaining member having a pair of shoes on the lower end thereof, said shoes extending horizontally along opposite sides of the lowermost portion of said wheel, said shoe retaining superimposed envelopes so as to allow relatively few envelopes to pass thereunder to said wheel; and said retaining member and said wheel being yieldable upward and in a direction of travel of said conveyor so as to allow passage of relatively thick envelopes.

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