

March 22, 1960

M. W. STEWART
MAIL HANDLING APPARATUS

2,929,490

Filed June 20, 1958

4 Sheets-Sheet 1

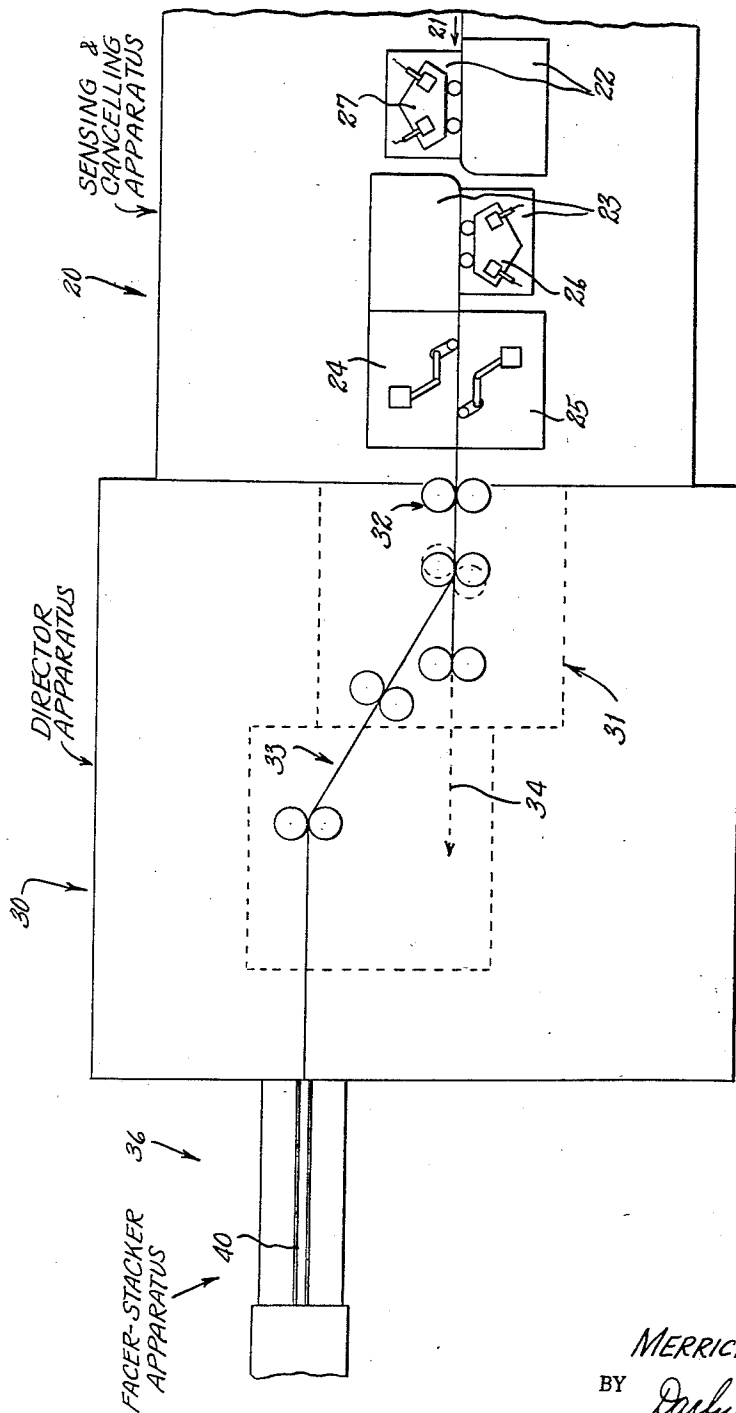


Fig. 1.

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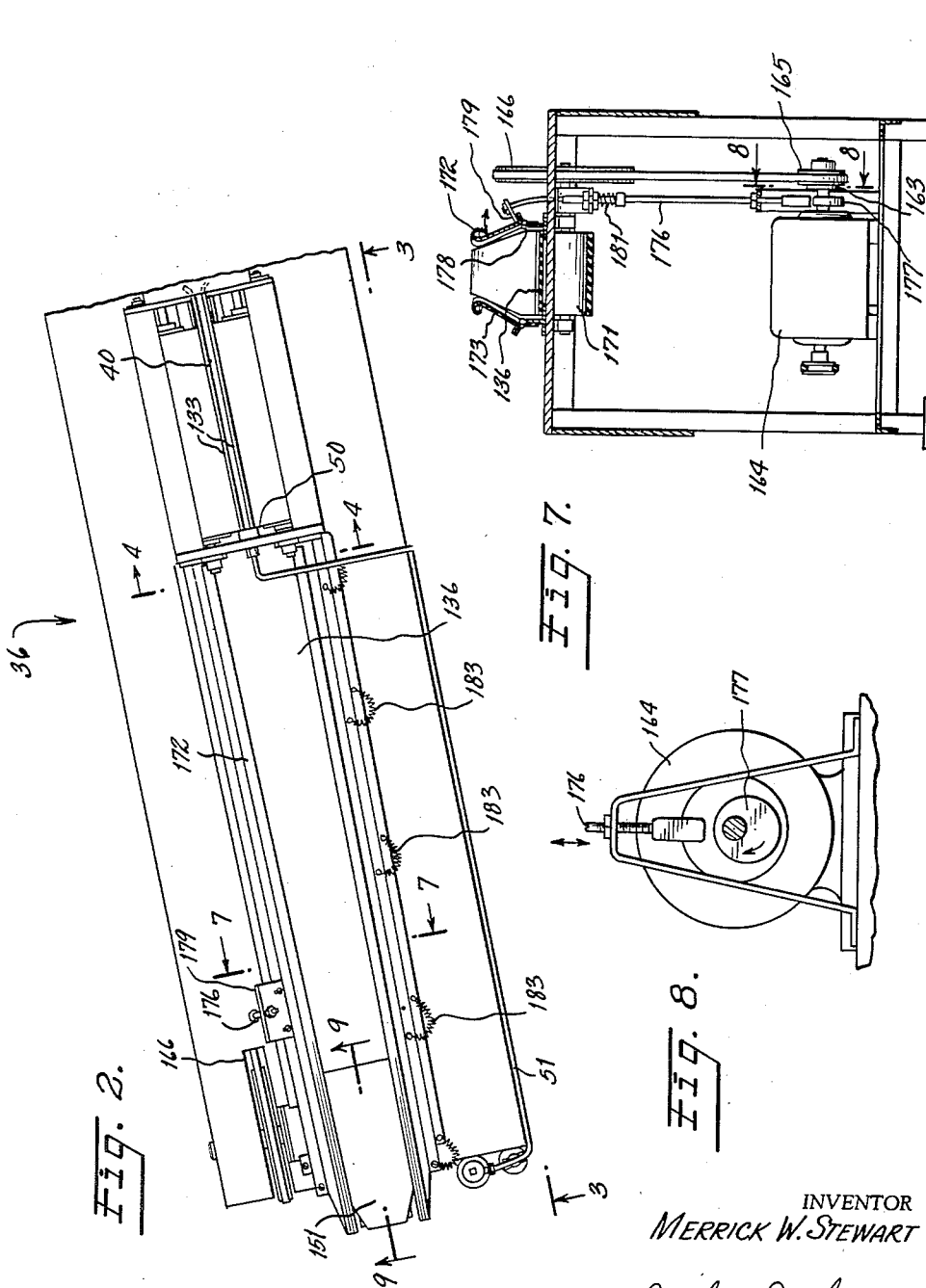
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4 Sheets-Sheet 2



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4 Sheets-Sheet 3

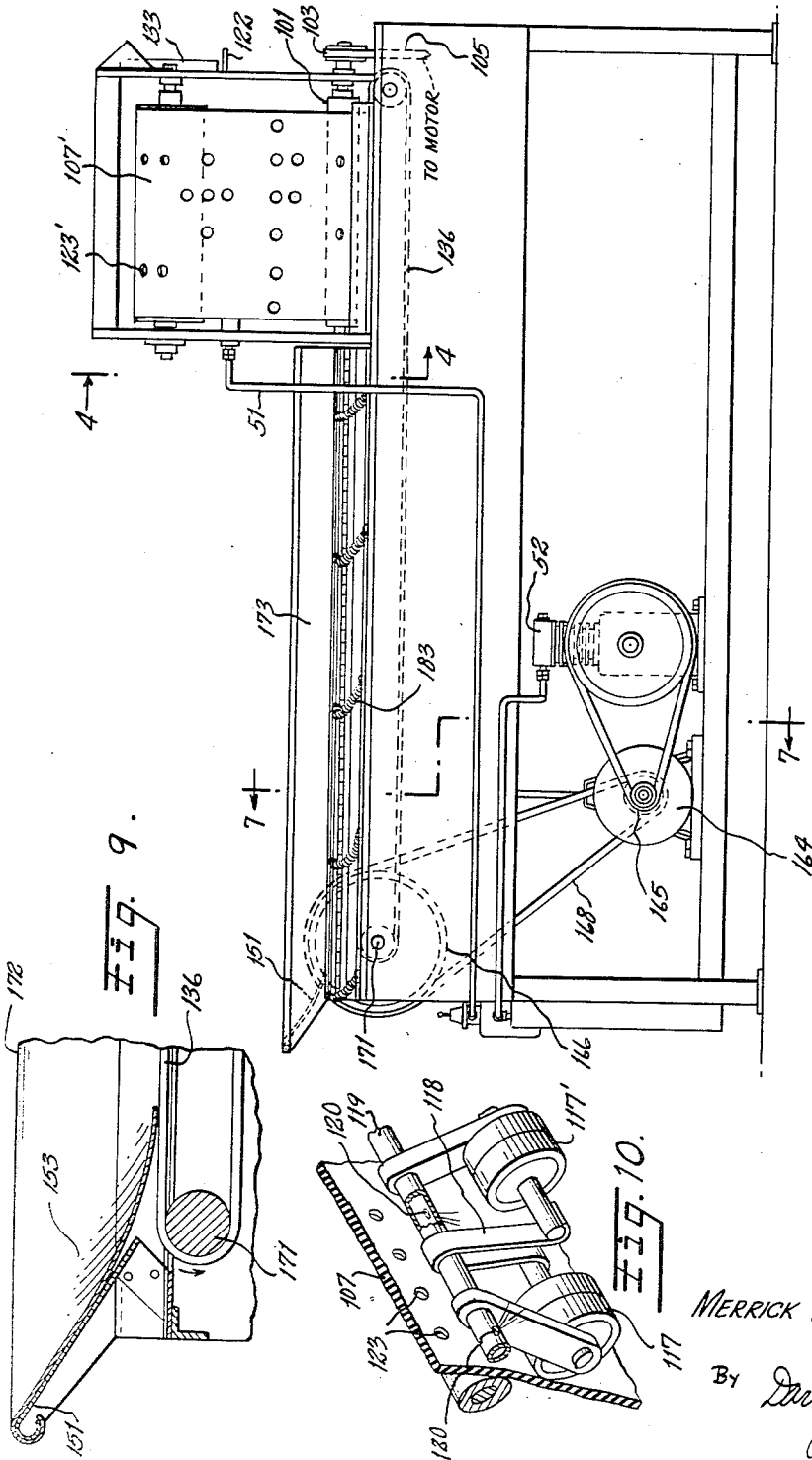


Fig. 3.

Fig. 10.

Fig. 9.

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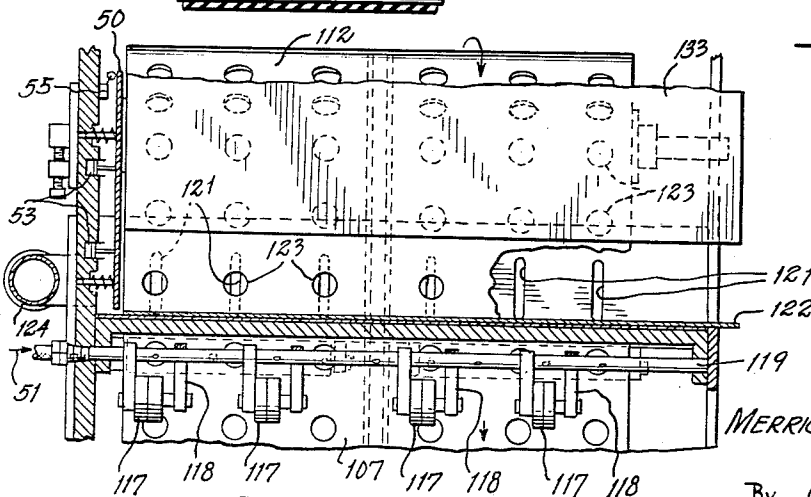
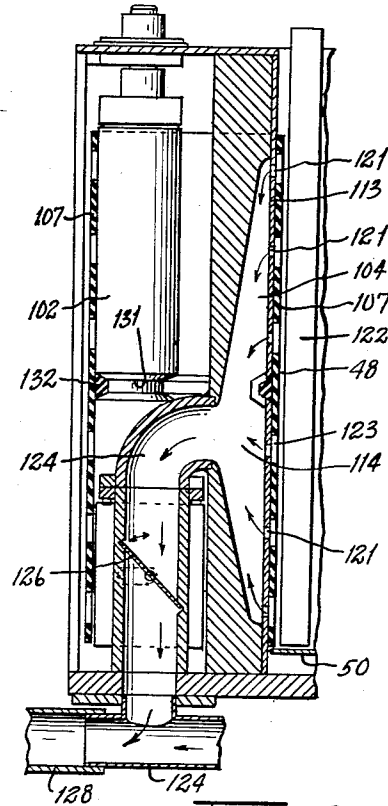
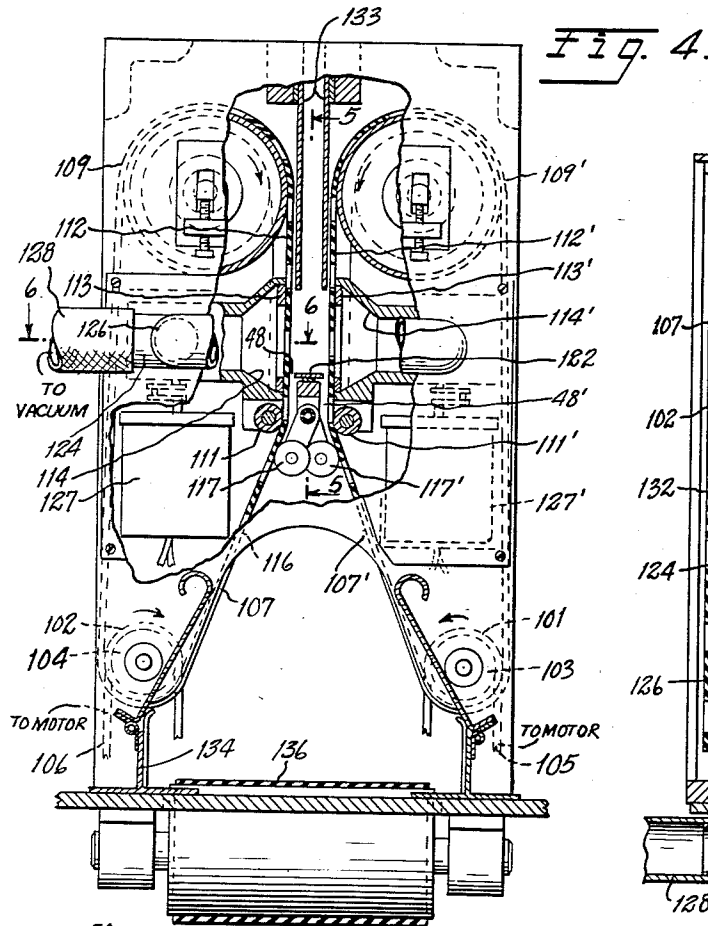
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4 Sheets-Sheet 4



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MAIL HANDLING APPARATUS

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Application June 20, 1958, Serial No. 743,386

20 Claims. (Cl. 198—33)

The present invention relates to apparatus and systems for handling and stacking flat light articles and especially letters.

In our current economy the expeditious handling and processing of mail has become vital to the efficient conduct of business and communication. The volume of mail pieces has become so large as to encumber and literally swamp postal facilities, especially at the metropolitan post offices handling many million pieces of mail daily. The problems of conveying, cancelling, sorting and stacking this great volume of various shapes and sizes of mail pieces have heretofore not been efficiently solved, resulting not only in delays of delivery of mail, but also uneconomic utilization of supplies, equipment and manpower.

The present invention is particularly adapted for use with (but is not limited to) mail handling apparatus described and claimed in the copending application Serial No. 686,529 of R. F. Blake, S. I. Goodman and J. J. Rudigier, for "Automatic Mail Cancelling Apparatus" filed September 26, 1957, copending application Serial No. 724,646, of I. Mathis for "Automatic Mail Handling Apparatus" filed March 22, 1958, and copending application Serial No. 732,330 of S. I. Goodman and J. J. Rudigier, for "Mail Handling Apparatus," filed May 1, 1958, all of which are assigned to the same assignee as the present application.

The apparatus of these prior applications is suitable for accepting a rapid stream of single mail pieces travelling at a high, substantially constant speed of the order of 150 inches per second. The individual pieces of this stream of mail are oriented into a vertical plane with their longer edges horizontal, and may have the stamps carried on the front face or reverse face, at the top or at the bottom, or at the leading edge or trailing edge of the envelope. This single file stream of unfaced letter pieces enters cancelling apparatus which automatically applies a cancellation imprint at the exact position of the stamp on the envelope despite the fact that the stamps may occur at different positions on different letters and despite any unevenness of separation or repetition of letters in the stream. The single file stream of cancelled letter pieces enters a director unit which sorts the stream of letters into groups according to predetermined characteristics in response to electrical signals. The letters in any one group may have their stamps at a similar corresponding position in relation to the length of the envelope, i.e., either adjacent the leading edge or the trailing edge of the envelopes, regardless of whether the stamp is on the front face or rear face.

The present invention is particularly concerned with converting a stream of high speed, irregularly spaced mail pieces into a uniform stack of mail pieces in response to electrical signals which may, for example, correspond to the face of the envelope that the stamp is on.

Another object of the present invention is to convert a vertically oriented, high speed, irregularly spaced

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stream of mail pieces, with the stamps thereon all in the same corresponding position in relation to the length of the envelope, but randomly on the front or rear faces, into a faced and uniform stack in response to electrical signals.

By "faced" mail is meant that all envelopes are arranged the same way with the addresses upright on the front face thereof as viewed, placing the stamps generally in the upper right hand corner of the envelopes.

A further object of the present invention is to provide an apparatus that will accept an intermittent input flow of high speed, flat, light articles, align these articles into a stack where all the articles are similarly positioned, and to allow the removal of the articles from the stack without disturbing the stack and without causing any malfunction of the apparatus.

Still another object of the present invention is to provide means that will convert a fluctuating input flow of flat, light vertically oriented articles with each article having one face with predetermined characteristics thereon, into a uniform stack having the faces of the articles with the characteristics thereon all positioned similarly in response to electrical signals corresponding to the position of the predetermined characteristics.

These and other objects of the present invention will become more fully apparent from consideration of the following description of a preferred embodiment, taken in conjunction with the appended drawings, in which

Fig. 1 is a diagram showing a part of a general mail handling system incorporating the present invention;

Fig. 2 is a plan view of a preferred form of the present invention including both facer and stacker units;

Fig. 3 is a side elevation view of the apparatus of Fig. 2;

Fig. 4 is a rear elevation view partially in cross-section of the facer unit of Figures 2 and 3 viewed along line 4—4 thereof;

Fig. 5 is a fragmentary cross-sectional elevation view of Figure 4 taken along line 5—5;

Fig. 6 is a fragmentary cross-sectional plan view of Figure 4 taken along line 6—6;

Fig. 7 is a cross-sectional elevation view of Figures 2 and 3 taken along line 7—7 thereof;

Fig. 8 is a fragmentary elevation view of Figure 7 taken along line 8—8;

Figure 9 is a fragmentary elevation view of Fig. 2 taken along line 9—9; and

Fig. 10 is a perspective view of the pressure rollers and air jet of Figures 4 and 5.

The present invention receives a high, substantially constant speed input stream of irregularly spaced single mail pieces standing vertically on their long edges. This stream of mail is illustratively derived from the output of a director apparatus indicated generally at 30 in Figure 1, which may be of the form shown in the above mentioned Mathis application.

The director apparatus 30, in turn receives an input of a high and substantially constant speed flow of single mail pieces having a predetermined minimum spacing between the pieces, which is illustratively derived from the output of a sensing and cancelling apparatus, indicated generally at 20 in Figure 1. The sensing and cancelling apparatus 20 may be of the form shown in the above mentioned Blake et al. application.

In the manner described in detail in the above mentioned Blake et al. and Goodman et al. applications, a continuous stream of letter mail in single file enters the sensing and cancelling apparatus 20 travelling in a direction as indicated by arrow 21, and passes two sensing units 22 and 23; unit 23 cooperates with the front face of each letter and unit 22 with the rear face. Each of

these sensing units produces electrical signals corresponding to the presence and position of the stamp appearing on each letter as it passes the sensing unit. These electrical signals are utilized to activate the cancelling units 24 and 25 in the cancelling apparatus to apply a cancellation mark to the envelope and postage stamp at a subsequent point in its travel without interrupting the flow of the letter pieces even though this flow may be at the high rate of 30,000 pieces per hour.

As described more in detail in the Blake et al. application above, the stream of letters passing through the cancelling apparatus has the stamps thereon cancelled regardless of the position of the stamp on the envelope, that is, regardless of whether the stamp is on the front face or rear face of the envelopes and regardless of whether it is at the upper or lower edge of the envelope. In some instances, such as where there have been no stamps on the envelope, or where they have been placed in such positions as not to be sensed by the sensing units 22 or 23, letters will pass through the cancelling apparatus without operation of the cancelling units 24 or 25 at all.

The cancelled mail pieces upon leaving the sensing and cancelling apparatus 20 enter the director apparatus 30 between the driven rollers 32. In the manner described in detail in the above mentioned Mathis application, the director apparatus 30 utilizes suitable electrical signals, obtained in the manner described in the Goodman et al. application, for separating letters of a rapidly flowing stream into predetermined groups without any change of speed. By synchronizing these signals to the passage of letters, the letters corresponding to the electrical signals are diverted and sorted, so that, for example, all letters having their stamps in the same corresponding position can be grouped. Figure 1 shows an illustrative system of operation of the director apparatus 30 whereby letters of the input stream having stamps adjacent the leading edge are segregated from the stream into a group. A single directing unit indicated at 31 accepts a continuous stream of mail at its input rollers 32 and diverts along the channel 33 all letters on which the stamp appears adjacent to the leading edge of the envelope regardless of whether the stamp is located on the front face or the rear face of the envelope. All other envelopes, including those which are to be rejected, continue undiverted along the path 34 for further sorting, as described in the Mathis application and are not further discussed in this application.

It is desirable to be able to face the cancelled envelopes and then stack the faced envelopes preliminary to routing them to their addressed destinations. The present invention permits accomplishment of these results by providing an apparatus responsive to suitable electrical signals for facing the letters and subsequently stacking them. The Goodman et al. application mentioned above describes and claims suitable apparatus for producing electrical signals representative of the stamp location and reference is made to it for a more complete disclosure of that part of the present system. In essence, each envelope produces a signal representative of whether the stamp is positioned on the front or rear face of the envelope and the present invention utilizes that signal to face its corresponding envelope.

The present invention thus receives an irregular stream of cancelled mail, in which the letters have corresponding stamp positions with respect to length (i.e., are all at the leading or all at the trailing envelope edge), faces the stream so that all letters are positioned with their stamps facing the same relative direction (so that the addresses on the letters are all facing the same direction), and then stacks the faced letters in a suitable manner to permit their extraction from the stack for subsequent operations such as routing and dispatching.

Fig. 1 shows an illustrative system incorporating the present invention, with a facer-stacker unit 36 which re-

ceives the output of the final stage of the directing apparatus 30. Facer-stacker unit 36 receives in its input channel 40, vertically oriented letters that have their stamps positioned adjacent the leading edge, either on the front face or rear face. The face-stacker unit 36 then operates to rotate each of the vertically disposed envelopes 90 degrees in a respective required sense so that they assume horizontal positions with the faces having the stamps thereon all facing the same direction, such as upward. Subsequently these envelopes are shingled and stacked. By "shingling" is meant that the mail pieces are successively partially overlapped.

The structure of the facer unit is shown more in detail in Figures 2 to 6. Referring to Figure 4, an input channel 40 for letters is provided by means of vertical side guides 133 and a plate 122 forming a channel floor. The floor 122 is spaced from the lower edges of the guides 133 by a distance slightly less than the minimum width of letters expected or to be accommodated.

A drum or roller 101 is continuously rotated in the sense indicated by the arrow adjacent to it by suitable means, such as a pulley 103 which is rotated by a belt 105, that is driven in turn by a suitable motor and pulley not shown. A similar drum or roller 102 is also continuously rotated as by a pulley 104 which is rotated by a belt 106 driven suitably, as from another or the same motor means. Each of the drums 102 and 101 drives a respective vacuum belt 107 and 107' whose structure is described in more detail below. The arrangement of the two vacuum belts 107 and 107' with their respective vacuum apparatus to be described is symmetrical about the vertical axis of the unit as viewed in Figure 4 and, accordingly, only the left side of the unit as viewed in Figure 4 need be described in detail. Corresponding elements of the right side of the unit are given the same reference numerals as the apparatus to be described hereafter, but are primed.

Belt 107 rotates about an end idler drum or roller 109 and a smaller intermediate idler roller 111 whereby the belt 107 has a straight portion indicated at 112 between rollers 111 and 109. In cooperation with the straight portion 112 of belt 107 and in close juxtaposition thereto is provided a flat face 113 of a manifold 114. The face 113 of manifold 114 is provided with a horizontal row of ports in the form of slots 121 with each slot extending vertically from a bottom surface 122 of the input channel 40 upwardly a distance substantially equal to or the same order of magnitude as the smallest width envelope expected to be handled. As seen most clearly in Figure 5, the belt 107 is provided with corresponding endless vertical rows of holes or apertures 123, and each row of apertures 123 is in register with a corresponding slot 121. The vertical interval between successive apertures 123 in each vertical row of such holes is such that each slot 121 will always communicate with at least one of the holes 123 in its respective row. Each hole 123 has a diameter at least equal to the width of its cooperating slot 121, but considerably smaller than the length of that slot 121.

A vacuum pressure or suction is applied to manifold 114, through an inlet channel 124 from a vacuum line 128, which is connected to a suitable source of vacuum such as an air pump. In inlet channel 124 is located a butterfly valve 126 operatively connected to a solenoid 127. As viewed in Figure 6 and as will be seen below, the valve 126 is normally in a position closing the inlet channel 124 so as to cut off the application of vacuum to the manifold 114.

The lower floor 122 of input channel 40 has a slight gap 48 between it and the belt 107 sufficient to pass the maximum thickness of a letter expected to be used with the present invention.

The belt 107 between the rollers 111 and 102 has an inclined portion 116. At the upper end of the inclined portion of belt 107 are a series of rollers 117 riding thereon and pressed thereagainst,

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As best shown in Figure 10, rollers 117 are pivotally mounted on a horizontal shaft 119 and each adjoining pair of rollers 117 is urged against vacuum belt 107 or its counterpart 107' by action of a leaf-type spring 118. Shaft 119 is hollow and is coupled as by a suitable pipe or tube 51 to a source of air pressure such as a compressor 52, suitably driven, as by a motor 164. Hollow shaft 119 has a series of holes 120 spaced longitudinally along its axis so that a plurality of jets of air are aimed downwardly along belt 107 and similarly along belt 107'.

In order to prevent the belt 107 from shifting axially during rotation, as best seen in Figure 6, a V-belt 132 is formed integral with or is secured to the belt 107, and belt 132 is received in an annular peripheral groove 131 provided in roller 102 substantially at said roller's center. Similarly the other rollers about which belt 107 rotates may have similar annular grooves so placed as to receive V-belt 132.

The arrangement of belt 107, manifold 114, and associated structure thus far described is repeated as a symmetrical mirror-image version for the right side of the apparatus as viewed in Figure 4.

Extending below drums 101 and 102 is a horizontal conveying belt 136 bisected by the longitudinal vertical plane of the facer unit.

The input channel guides 133 are parallel to the straight portions 112 and 112' of the vacuum belts 107 and 107' respectively, and extend downwardly to such a depth as to leave exposed the portions of said vacuum belts abutting the manifold slots 121 and 121'. In addition, guides 133 may extend but partly across the width of belts 107 and 107' if desired. The end wall 50 of input channel 40 is connected to spring biased dashpots 53. The input chamber is therefore defined by the bottom surface 122, the end wall 50 and side walls constituted partly by the guides 133 and partly by the belts 107 and 107'. As the letters enter the input channel 40 they have a high kinetic velocity corresponding to their rate of travel which as indicated above may illustratively be of the order of 150 inches per second. The letters impinge upon the end wall 50 which absorbs substantially all of the kinetic energy of the envelopes to bring the letter to rest without rebounding. As the letter ceases its forward velocity, either solenoid 127 or 127' is energized by its respective electrical signal. The particular solenoid energized depends upon the signal received from the sensing units 22 or 23. As indicated above, the sensing units 22 or 23 will provide signals indicative of the position of the stamp on the envelope. In the manner described in detail in the above mentioned Goodman et al. application, each letter produces a signal, and by suitably circuitry there described, the output facing signal produced will correspond to whether the stamp is on the front face or on the rear face of the envelope. Alternatively, the facing signal for one solenoid may be provided by adding together all the input signals to one set of canceller heads disclosed in Pollak application Serial No. 700,860, filed December 5, 1957 for "Mail Cancelling Apparatus and the Like," and that for the other solenoid may be provided by adding together all the input signals to the other set of canceller heads of that Pollak application. Depending upon whether a front face or a rear face signal is produced, a corresponding butterfly valve 126 or 126' is actuated by its respective solenoid 127 or 127' to supply vacuum to the proper manifold 114 or 114' substantially at the instant the letter that initiated the signal comes to rest.

In operation, a letter illustratively having a stamp positioned on the rear face of its leading edge will be ejected into the input chamber at a high velocity. The letter will slide along the bottom surface 122 of the input chamber between guides 133 due to its kinetic energy, and will impinge on the damping end wall 50. The electrical facing signal produced in response to the passage of the

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stamp on that envelope past the sensors is properly timed by the system of the Goodman et al. application to energize solenoid 127 and rotate the butterfly valve 126 to open, causing a vacuum pressure to be applied to manifold 124 just at the instant that the letter which created that electric signal is brought to a stop. Since a horizontal set of belt apertures 123 is then in register with the slots 121 of the manifold 114, vacuum pressure applied to the manifold 114 is operative to attract the lower portion of the envelope to the vertically moving vacuum belt 107, which transports the envelope past the lower floor 122 of the input chamber through the gap 48 between belt 107 and the floor 122. As the belt 107 travels from the roller 111 toward roller 102, the envelope which is vacuum-held to it then passes between the pressure rollers 117 and the belt 107, which diverts the lower edge of the letter away from the central vertical axis of the apparatus. The letter continues essentially parallel to the slanted portion 116 of the belt 107 under action of the pressure rollers 117. As the upper longitudinal edge of the envelope leaves the influence of the pressure roller 117, the envelope is no longer vacuum-held to the belt, and the interaction of the pull of gravity on the letter and the jets of air pressure applied downwardly along belt 107 through holes 120 in shaft 119 causes the upper edge of the envelope to rotate clockwise, as viewed in Figure 4, away from the belt 107 and to fall to a horizontal position on the horizontal conveyor belt 136 with the stamp and the address on the letter facing in a given sense, such as upwardly. As the vacuum belt rotates about roller 102, a wiping action by the letter deflector 134 prevents any letter that may have adhered to the belt (as by static electricity) from being pulled around roller 102, and the letter deflector 134 also provides a seal for the horizontal conveyor belt 136.

The use of the long slots 121 of the manifold 114 assures that each letter which is attracted to the belt 107 by vacuum pressure remains under positive pressure engagement with the belt for a sufficient distance for it to become engaged with the rollers 117 and to be positively transported from the upper input chamber to the lower exit chamber of the apparatus, defined by the horizontal belt 136 and the slanted surfaces 116, 116' of belts 107, 107'.

In a like manner, a letter entering unit 36 having its stamped positioned on the front face, is sucked against vacuum belt 107', upon actuation of valve 126', and is transported through gap 48 into engagement with roller 117', and caused to rotate counterclockwise, as viewed in Figure 4 away from belt 107' and to fall in a horizontal position on the conveying belt 136 with its stamp and address facing upwardly. The belt 136 traverses a horizontal path and has the successive letters placed thereon in a horizontal position with all the envelopes having the stamps in the same corner and facing the same direction, so that the envelopes are faced.

The conveyor belt 136 does not move at uniform speed but moves stepwise in intermittent fashion a given distance, illustratively of the order of one half inch, in response to the impingement of each input envelope on the end wall 50 in the manner described below. The letters falling on belt 136 are therefore shingled in overlapping relationship.

In Figs. 3 and 5 is illustrated one manner in which the movement of the belt 136 may be controlled by the letter flow. A letter-sensing limit switch 55 is mounted to be actuated by the damping wall 50 in response to impingement of each letter thereon. The limit switch 55 by a suitable circuit actuates a magnetic clutch 163, of any suitable type, interposed between motor 164 and a drive pulley 166 for conveyor belt 136 so as to rotate drive pulley 166 momentarily for moving the belt 136 in this stepwise fashion. Motor 164 is coupled to a pulley 165 which rotates the belt drive pulley 166 by means of belt 168, and pulley 166 is suitably coupled to roller 171 of

conveyor 136. In view of the possibly irregular flow of letters entering each facer-stacker unit, the letter-actuated type of operation has the advantage of preventing operation of the conveyor belt 136 except when letters are actually being placed thereon.

The shingled letters thus produced are conveyed by belt 136 to the far end of the unit where a curved inclined plate 151 is located as shown in Fig. 9. The overlapped, shingle condition of the successive envelopes assures that as each envelope attains the end of the belt 136, it is pushed onto the plate 151 by the belt 136 and by the subsequent letters, so that the entire stream of letters proceeding stepwise on belt 136 becomes stacked on the curved plate 151 suitable for easy removal without any interruption of the flow of mail pieces. Suitable limit means can be provided to sound or exhibit a warning signal when an over-supply of envelopes have been stacked so as to avoid jamming at the facer unit.

In order to avoid undesirable possible jamming of the letters being moved stepwise along belt 136, as shown more clearly in Fig. 7, the sides 172 and 173 of the channel along which letters are conveyed by belt 136 are slanted inwardly to guide the letters into a single stack on the sloping end plate 151. In addition, the side wall 172 is continuously oscillated by means of a pushrod 176 operated by an eccentric cam 177 rotated by motor 164. The side wall 172 is pivotally hinged at 178 and has an arm 179 engaging the rod 176 which is normally urged downwardly by a compression spring 181 which keeps the end of rod 176 against cam 177. Side wall 173 is spring-loaded by means of springs 183 so that in the case of any letter jams it will give in response to any outward pressure but it normally remains in the inwardly slanted position shown.

Due to the intermittent forward movement of the conveyor belt 136, as the conveyor belt 136 receives letters thereon it causes each mail piece to partially overlap the mail piece preceding it, and in turn it is partially overlapped by the mail piece following it. As this "shingled" stream of mail advances on belt 136, the oscillating movement of side wall 172 against the longitudinal edges of the letters, which is transverse to the flow of the "shingled" mail, urges the mail pieces against normally stationary side wall 173 which causes the mail pieces to be properly dressed.

The present invention thus provides an apparatus adapted to accept a high speed, vertically oriented, intermittent flow of letter pieces, or the like, having different stamp orientations, and by the use of facing belts rotating vertically about horizontal transverse axes, the letters are rotated onto a horizontal conveyor belt with the envelopes properly faced and shingled. As the conveyor belt advances, a side wall of the conveyor belt oscillates transversely against the longitudinal sides of the shingled letters on the conveyor to dress the mail pieces. The dressed and faced mail pieces are then collected on an inclined plate in uniform stacks suitable for subsequent operations.

It will be noted that the side wall 172 is oscillated by an eccentric cam and follower attached to the side wall 172 for dressing the mail on the conveyor belt 136. It will be understood that other suitable means for oscillating wall 172 may be used, such as pneumatic or electrical means.

The particular solenoid arrangement shown for operating the butterfly valves 126 and 126' to apply the vacuum is illustrative only and any suitable means for applying vacuum in response to signals indicative of stamp location may be used; also signals other than electrical signals may be used to actuate the vacuum source, so long as the signal is suitably synchronized with the passage of the stamp bearing envelope.

In addition, signals representing characteristics other than stamp location on flat articles to be faced and stacked may also be used, and the apparatus described and claimed

is in no sense limited to use with letters, but can similarly be used with respect to other articles, particularly those which are flat and relatively light.

What is claimed is:

1. An apparatus for facing and stacking a high velocity stream of vertically oriented letters moving longitudinally on edge and having stamps thereon adjacent the same corresponding vertical edge, in response to electrical signals representative of the presence of stamps upon said letters, comprising a damping wall disposed in the path of said letter flow and perpendicular thereto, kinetic-energy-absorbing means coupled to said damping wall for bringing to rest input letters impinging upon said damping wall, a first stationary vacuum manifold on one side of the path of said input letters having a surface substantially perpendicular to said damping wall and adjacent thereto, a second stationary vacuum manifold on the other side of said letter path having a surface perpendicular to said damping wall and adjacent thereto, a first continuous belt sliding against the surface of said first manifold and moving perpendicular to said letter flow, a second continuous belt sliding against the surface of said second manifold and moving similarly perpendicular to said letter flow, each of said belts having a portion similarly inclined at an acute angle from the plane of its respective manifold surface, each of said manifolds having an array of apertures in its said surface abutting said continuous belts and each of said belts having an array of apertures, said respective arrays being adapted to come into registry during movement of said belts relative to said manifold surfaces, the apertures on one of said arrays being elongated and of a length sufficient to encompass at least every successive pair of registerable apertures of the other array, a vacuum pressure supply means for connecting said vacuum pressure supply to said manifolds, first valve means interposed between said vacuum pressure supply and said first manifold, second valve means interposed between said vacuum supply and said second manifold, respective solenoid means coupled to each of said valve means and each responsive to an electrical signal corresponding to a letter for opening one of said valve means for connecting said vacuum pressure supply to one of said manifolds synchronously with the impingement of said letter on said damping wall, whereby vacuum pressure in said manifold is adapted to hold said letter against a respective belt for transport therewith, pressure rollers resiliently urged against each of the inclined portions of said belts adjacent an edge of its respective manifold whereby said letters transported by said belts engage said rollers and are displaced from the plane of the surface of said manifolds, conveying means below said belts, means applying a plurality of jets of air along each inclined portion of each belt in the direction of movement of said belt for rotating the said letters onto said conveying means as said letters are disengaged by said pressure rollers, the letters of one belt being rotated in an opposite direction from the letters of the other belt, so that said letters have the stamps thereon positioned similarly and faced in the same direction, means for periodically advancing said conveying means in timed relation to impingement of said letters on said damping wall for positioning said letters in successive overlapping relation, an oscillatory wall adjacent a longitudinal edge of said conveying means and adjacent a longitudinal edge of said letters thereon, means for oscillating said wall transversely to the flow of said letters, whereby said wall during oscillation is urged periodically against the longitudinal edges of said letters to dress them, and an upwardly inclined surface in the path of said letters adjacent to the end of said conveying means for accumulating said letters in a stack.

2. An apparatus for facing and stacking a high velocity stream of vertically oriented letters moving longitudinally on edge and having stamps thereon adjacent the same corresponding vertical edge, in response to elec-

trical signals representative of the presence of stamps upon said letters, comprising a damping wall disposed in the path of said letter flow and perpendicular thereto, kinetic-energy-absorbing means coupled to said damping wall for bringing to rest input letters impinging upon said damping wall, a first stationary vacuum manifold on one side of the path of said input letters having a surface substantially perpendicular to said damping wall and adjacent thereto, a second stationary vacuum manifold on the other side of said letter path having a surface perpendicular to said damping wall and adjacent thereto, a first continuous belt sliding against the surface of said first manifold, and moving perpendicular to said letter flow, a second continuous belt sliding against the surface of said second manifold and moving similarly perpendicular to said letter flow, each of said belts having a portion similarly inclined at an acute angle from the plane of its respective manifold surface, each of said manifolds having an array of apertures in its said surface abutting said continuous belts and each of said belts having an array of apertures, said respective arrays being adapted to come into registry during movement of said belts relative to said manifold surfaces, the apertures on one of said arrays being elongated and of a length sufficient to encompass at least every successive pair of registerable apertures of the other array, a vacuum pressure supply means for connecting said vacuum pressure supply to said manifolds, first valve means interposed between said vacuum pressure supply and said first manifold, second valve means interposed between said vacuum supply and said second manifold, respective solenoid means coupled to each of said valve means and each responsive to an electrical signal corresponding to a letter for opening one of said valve means for connecting said vacuum pressure supply to one of said manifolds synchronously with the impingement of said letter on said damping wall, whereby vacuum pressure in said manifold is adapted to hold said letter against a respective belt for transport therewith, pressure rollers resiliently urged against each of the inclined portions of said belts adjacent an edge of its respective manifold whereby said letters transported by said belts engage said rollers and are displaced from the plane of the surface of said manifolds, conveying means below said belt for receiving said letters, said conveying means having two longitudinal substantially upright walls adjacent the longitudinal edges thereof, one of said walls being spring-loaded and the other wall being adapted to oscillate transverse to the movement of said conveying means for aligning said letters on said conveying means, means for oscillating said oscillating wall, means applying a plurality of jets of air along each inclined portion of each belt in the direction of movement of said belts for rotating said letters onto the said conveying means as said letters are disengaged by said pressure rollers, the letters of one said belt being rotated in an opposite direction from the letters of the other belt so that the said letters have the stamps thereon positioned similarly and faced in the same direction, means for periodically advancing said conveying means a distance less than the length of said letters in timed relation to impingement of said letters on said damping wall, whereby said letters are positioned in successive overlapping relation, and accumulating means adjacent the end of said conveying means in the path of said letters thereon for receiving said letters in a shingled stack.

3. An apparatus for facing and stacking a high velocity longitudinal flow of letters having stamps thereon adjacent the same corresponding vertical edge in response to electrical signals representative of the face of said letter on which the said stamp thereon is located, comprising: a pair of stationary vacuum manifolds oppositely positioned astride the input letter flow, each of said manifolds having a vertical surface parallel to the plane

in which said letters flow, means for bringing said letters to rest adjacent said manifolds, a first continuous belt sliding against the vertical surface of one of said manifolds and moving perpendicularly to said letter flow, a second continuous belt sliding against the vertical surface of the other of said manifolds and moving similarly perpendicularly to said letter flow, each of said belts having an inclined portion at an acute angle from the plane of its respective manifold face, each of said manifolds having an aperture in their respective surfaces, each of said belts having at least one aperture in registration with said aperture in their respective manifold in one or more predetermined positions of said belt, a vacuum pressure supply, a means for connecting said vacuum pressure supply to each of said manifolds, valve means interposed between said vacuum supply and each of said manifolds, respective means coupled to each of said valve means and each responsive to said electrical signal corresponding to a letter for opening one of said valve means for connecting said vacuum pressure supply to one of said manifolds synchronously as the said letter comes to rest between said manifolds, whereby vacuum pressure in said manifold is adapted to hold the said letter corresponding to said electrical signal against a respective belt for transport therewith, pressure rollers resiliently urged against each of the inclined portions of each of said belts adjacent an edge of its manifold surface, whereby said letters engage said rollers and are displaced from the plane of the surface of said manifold, conveying means below said belts for receiving said letters means applying a plurality of jets of air along each inclined portion of said belt in the direction of movement of said belts for rotating said letters onto said conveying means as said letters are disengaged by said pressure rollers with said letters on the first mentioned belt being rotated in an opposite direction from the said letters of the second mentioned belt, so that said letters falling on said conveying means have stamps thereon positioned similarly and are faced in the same direction, means for periodically advancing said conveying means in timed relation to the placing of each of said letters thereon for positioning said letters in successive overlapping relation, an oscillatory wall adjacent a longitudinal edge of said conveying means and adjacent a longitudinal edge of said letters thereon, means for oscillating said wall transversely to the flow of said letters, whereby said wall during oscillation is urged periodically against the longitudinal edges of said letters to dress them, and an upwardly inclined surface in the path of said letters adjacent to the end of said conveying means for accumulating said letters in a stack.

4. An apparatus for facing and stacking a high velocity longitudinal flow of letters having stamps thereon adjacent the same corresponding vertical edge in response to electrical signals representative of the face of said letter on which the said stamp thereon is located, comprising: a pair of stationary vacuum manifolds oppositely positioned astride the input letter flow, each of said manifolds having a vertical surface parallel to the plane in which said letters flow, means for bringing said letters to rest adjacent said manifolds, a first continuous belt sliding against the vertical surface of one of said manifolds and moving perpendicularly to said letter flow, a second continuous belt sliding against the vertical surface of the other of said manifolds and moving similarly perpendicularly to said letter flow, each of said belts having an inclined portion at an acute angle from the plane of its respective manifold face, each of said manifolds having an aperture in their respective surfaces, each of said belts having at least one aperture in registration with said aperture in their respective manifold in one or more predetermined positions of said belt, a vacuum pressure supply, means for connecting said vacuum pressure supply to each of said manifolds, valve

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means interposed between said vacuum supply and each of said manifolds, respective means coupled to each of said valve means and each responsive to said electrical signal corresponding to a letter for opening one of said valve means for connecting said vacuum pressure supply to one of said manifolds synchronously as the said letter comes to rest between said manifolds, whereby vacuum pressure in said manifold is adapted to hold the said letter corresponding to said electrical signal against a respective belt for transport therewith, pressure rollers resiliently urged against each of the inclined portions of each of said belts adjacent an edge of its manifold surface, whereby said letters engage said rollers and are displaced from the plane of the surface of said manifold, conveying means below said belts for receiving said letters, said conveying means having two longitudinal substantially upright walls adjacent to the edges thereof, one of said walls adapted to oscillate transverse to the movement of said conveying means for aligning said letters on said conveying means, means oscillating said oscillating wall, means applying a plurality of jets of air along each inclined portion of each belt in the direction of movement of said belts for rotating said letters onto said conveying means as said letters are disengaged by said pressure rollers, the letters of said first mentioned belt being rotated in an opposite direction from the letters of the second mentioned belt so that the letters having stamps thereon are positioned similarly and faced in the same direction, and means for periodically advancing said conveying means a distance less than the length of said letters in timed relation to the placing of each of said letters thereon, whereby said letters are positioned in successive overlapping relation.

5. An apparatus for facing and stacking a high velocity planar flow of letters having stamps located similarly thereon in relation to the length of the letters in response to electrical signals representative of the face of said letters on which the said stamp thereon is located, comprising: a pair of stationary vacuum manifolds each having a substantially vertically disposed surface adjacent the plane in which said input letters flow, means for bringing said letters to rest adjacent said manifolds, a first continuous belt sliding against the vertical surface of one of said manifolds, a second continuous belt sliding against the vertical surface of the other of said manifolds, each of said belts having a portion inclined at an angle from the plane of its respective manifold face, a vacuum pressure supply, means for connecting said vacuum pressure supply to said manifolds, means responsive to said electrical signal for connecting said vacuum pressure supply to one of said manifolds synchronously as the said letter corresponding to said electrical signal comes to rest adjacent said manifolds, whereby said letter corresponding to said electrical signal is held by vacuum pressure against the belt abutting the manifold having the vacuum pressure applied thereto so as to transport the said letter therewith, resilient means urged against each of the inclined portion of each of said belts whereby the said letters engaging said means are displaced from the plane of the surface of said manifold, conveying means below said belts, means for rotating the letters from each of said belts substantially 90 degrees from the plane in which the said input letters flow with the letters of the first mentioned belt being rotated in an opposite sense than those of the second mentioned belt, so that the said letters have the stamps thereon positioned similarly and faced in the same direction, means for periodically advancing said conveying means in timed relation to the placing of each of said letters thereon for positioning said letters in successive overlapping relation, an oscillatory wall adjacent a longitudinal edge of said conveyor belt and adjacent a longitudinal edge of said letters thereon, means for oscillating said wall transversely to the flow of said letters, whereby said wall during oscillation is

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urged periodically against the longitudinal edges of said letters to dress them, and an upwardly inclined surface in the path of said letters adjacent to the end of said conveyor belt for accumulating said articles in a stack.

6. An apparatus for facing and stacking a high velocity planar flow of letters having stamps located similarly thereon in relation to the length of the letters in response to electrical signals representative of the face of said letters on which the said stamp thereon is located, comprising: a pair of stationary vacuum manifolds each having a substantially vertically disposed surface adjacent the plane in which said input letters flow, means for bringing said letters to rest adjacent said manifolds, a first continuous belt sliding against the vertical surface of one of said manifolds, a second continuous belt sliding against the vertical edge of the other of said manifolds, each of said belts having a portion inclined at an angle from the plane of its respective manifold face, a vacuum pressure supply, means for connecting said vacuum pressure supply to said manifolds, means responsive to said electrical signal for connecting said vacuum pressure supply to one of said manifolds synchronously as the said letter corresponding to said electrical signal comes to rest adjacent said manifolds, whereby said letter corresponding to said electrical signal is held by vacuum pressure against the belt abutting the manifold having the vacuum pressure applied thereto so as to transport the said letter therewith, resilient means urged against each of the inclined portions of each of said belts whereby the said letters engaging said means are displaced from the plane of the surface of said manifold, conveying means below said belts, means for rotating the letters from each of said belts substantially 90 degrees from the plane in which the said input letters flow with the letters from the first mentioned belt rotated in an opposite sense than those of the second mentioned belt, so that the said letters have the stamps thereon positioned similarly and faced in the same direction, means for periodically advancing said conveying means a distance less than the length of said letters in timed relation to the placing of each of said letters thereon, whereby said letters are positioned in successive overlapping relation, means for dressing said letters as said conveying means advances, collecting means adjacent to the end of the conveying means and in the path of said letters for accumulating said letters in a shingled stack.

7. An apparatus for facing and stacking a planar flow of flat light articles having a predetermined characteristic on one face in response to electrical signals, each signal being representative of the face of a respective article on which said characteristic is located, comprising a plurality of stationary vacuum manifolds, each manifold having a surface adjacent and parallel to the plane in which said articles flow, means for bringing said articles to rest adjacent the surfaces of said manifolds, a plurality of endless belts with each of said belts sliding against the surface of a respective one of said manifolds, a source of subatmospheric pressure, means responsive to each of said electrical signals for applying said pressure to one of said manifolds synchronously with the coming to rest of the article corresponding to said electrical signal adjacent the said one manifold, means applying the pressure of said manifold to said article for holding it positively against the belt abutting the said manifold during movement of said belt whereby said article is transported thereby, conveying means below said belts for receiving said articles, means displacing said articles from the plane parallel to the surfaces of said manifolds and transferring said articles from their respective belts onto said conveying means whereby the face of the said articles having the aforementioned characteristics thereon are similarly positioned, means for periodically advancing said conveying means a distance less than the longitudinal dimension

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of said articles in timed relation to the placing of each of said articles, whereby said articles are positioned in successive overlapping relation, means dressing said articles as said conveying means advances, and collecting means adjacent the end of the conveying means and in the path of said articles for accumulating said articles in a shingled stack.

8. An apparatus for facing and stacking a planar flow of flat light articles having a predetermined characteristic on one face in response to electrical signals, each signal being representative of the face of a respective article on which said characteristic is located, comprising a plurality of stationary vacuum manifolds, each manifold having a surface adjacent and parallel to the plane in which said articles flow, means for bringing said articles to rest adjacent the surfaces of said manifolds, a plurality of endless belts with each of said belts sliding against the surface of a respective one of said manifolds, a source of subatmospheric pressure, means responsive to each of said electrical signals for applying said pressure to one of said manifolds synchronously with the coming to rest of the article corresponding to said electrical signal adjacent the said one manifold, means applying the pressure of said manifold to said article for holding it positively against the belt abutting the said manifold during movement of said belt whereby said articles is transported thereby, conveying means below said belts for receiving said articles, means displacing said articles from the plane parallel to the surfaces of said manifolds and transferring said articles from their respective belts onto said conveying means whereby the face of the said articles having the aforementioned characteristics thereon are similarly positioned, and means for periodically advancing said conveying means a distance less than the longitudinal dimension of said articles in timed relation to the placing of each of said articles whereby said articles are positioned in successive overlapping relation.

9. An apparatus for facing and stacking a high velocity planar flow of flat light articles having a predetermined characteristic on one face in response to electrical signals, each signal being representative of the face of a respective article on which said characteristic is located, comprising a plurality of stationary vacuum manifolds, each manifold having a surface adjacent and parallel to the plane in which said articles flow, means for bringing said articles to rest adjacent the surfaces of said manifolds, a plurality of continuous belts with each of said belts sliding against the surface of a respective one of said manifolds, a source of sub-atmospheric pressure, means responsive to each of said electrical signals for applying said pressure to one of said manifolds synchronously with the coming to rest of the article corresponding to said electrical signal adjacent said one manifold, means applying the pressure of said manifold to said article for holding it positively against the belt abutting the said manifold during movement of said belt whereby said article is transported thereby, conveying means below said belts for receiving said articles, means displacing said articles from the plane parallel to the surfaces of said manifolds and transferring said articles from their respective belts onto said conveying means whereby the face of the said articles having the aforementioned characteristics thereon are similarly positioned, means for periodically advancing said conveying means a distance less than the longitudinal dimension of said articles in timed relation to the placing of each of said articles whereby said articles are positioned in successive overlapping relation, an oscillatory wall adjacent the longitudinal edge of said conveyor belt and adapted to be oscillated transversely to the flow of said articles whereby the said wall during oscillation is urged against the longitudinal edges of said articles and an upwardly inclined surface in the path of said

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articles adjacent to the end of said conveyor belt for accumulating said articles in a stack.

10. An apparatus for facing a high velocity horizontal stream of letters moving longitudinally on edge in a vertical plane and having stamps thereon adjacent the same corresponding vertical edge in response to electrical signals representative of the presence of stamps upon said letters, comprising: a damping wall disposed in the path of said letter flow and perpendicular thereto, kinetic-energy-absorbing means coupled to said damping wall for bringing to rest input letters impinging upon said damping wall, a first stationary vacuum manifold on one side of the path of said input letters having a surface substantially perpendicular to said damping wall and adjacent thereto, a second stationary vacuum manifold on the other side of said letter path having a surface substantially perpendicular to said damping wall and adjacent thereto, a first continuous belt sliding against the surface of said first manifold, and moving perpendicularly to the direction of the said letter flow, a second continuous belt sliding against the surface of said second manifold and moving in the same direction as the said first belt, each of said belts having a similarly inclined portion at an acute angle from the plane of its respective manifold surface, each of said manifolds having an array of apertures in its surface abutting its continuous belt and each of said belts having an array of apertures, said respective arrays being adapted to come into registry during movement of said belt relative to said manifold surface, an aperture on one of said arrays being elongated and of a length sufficient to encompass at least every successive pair of registerable apertures of the other array, a vacuum pressure supply, means for connecting said vacuum pressure supply to said manifolds, first valve means interposed between said vacuum pressure supply and first manifold, second valve means interposed between said vacuum supply and said second manifold, respective solenoid means coupled to each of said valve means and each responsive to an electrical signal corresponding to a letter for opening one of said valve means for connecting said vacuum pressure supply to one of said manifolds synchronously with the impingement of said letter on said damping wall, whereby vacuum pressure in said manifold is adapted to hold the letter corresponding to said electrical signal against a respective belt for transport therewith, pressure rollers resiliently urged against each of the inclined portions of each of said belts adjacent an edge of its respective manifold surface whereby said letters transported by said belts engage said rollers and are displaced from the plane of the surface of said manifolds and means applying a plurality of air jets along each inclined portion of each of said belts in the direction of movement of said belt, for rotating the said letters onto a horizontal plane as said letters are disengaged by said pressure rollers, the letters of one belt being rotated in an opposite direction from the letters of the other belt, so that the said letters have the stamps thereon positioned similarly and faced in the same direction.

11. An apparatus for facing a high velocity longitudinal flow of letters having stamps thereon adjacent the same corresponding vertical edge in response to electrical signals representative of the face of said letter on which the said stamp thereon is located, comprising: a pair of stationary vacuum manifolds oppositely positioned astride the input letter flow, each of said manifolds having a vertical surface parallel to the plane in which said letters flow, means for bringing said letters to rest adjacent said manifolds, a first continuous belt sliding against the vertical surface of one of said manifolds and moving perpendicularly to said letter flow, a second continuous belt sliding against the vertical surface of the other of said manifolds, and moving similarly perpendicularly to said letter flow, each of said belts having an inclined portion at an acute angle from the plane of its respective

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manifold face, each of said manifolds having an aperture in their respective surfaces, each of said belts having at least one aperture in registration with said aperture in their respective manifold in one or more predetermined positions of said belt, a vacuum pressure supply, means for connecting said vacuum pressure supply to each of said manifolds, valve means interposed between said vacuum supply and each of said manifolds, respective means coupled to each of said valve means and each responsive to said electrical signal corresponding to a letter for opening one of said valve means for connecting said vacuum pressure supply to one of said manifolds synchronously as the said letter comes to rest between said manifolds, whereby vacuum pressure in said manifold is adapted to hold the said letter corresponding to said electrical signal against a respective belt for transport therewith, pressure rollers resiliently urged against each of the inclined portions of each of said belts adjacent an edge of its manifold surface, whereby said letters engage said rollers and are displaced from the plane of the surface of said manifold, and means applying a plurality of jets of air along each inclined portion of each of said belts in the direction of movement of said belts, for rotating the said letters onto a horizontal plane as the said letters become disengaged by said pressure rollers, with the said letters of the first mentioned belt being rotated in an opposite direction from the said letters of the second mentioned belt so that the said letters falling on said horizontal plane have the stamps thereon positioned similarly and are faced in the same direction.

12. An apparatus for facing a high velocity planar flow of letters having stamps located similarly thereon in relation to the length of the letters in response to electrical signals representative of the face of said letters on which the said stamp thereon is located, comprising: a pair of stationary vacuum manifolds each having a substantially vertically disposed surface adjacent the plane in which said input letters flow, means for bringing said letters to rest adjacent said manifolds, a first continuous belt sliding against the vertical surface of one of said manifolds, a second continuous belt sliding against the vertical surface of the other of said manifolds, each of said belts having a portion inclined at an angle from the plane of its respective manifold face, a vacuum pressure supply, means for connecting said vacuum pressure supply to said manifolds, means responsive to said electrical signal for connecting said vacuum pressure supply to one of said manifolds synchronously as the said letter corresponding to said electrical signal comes to rest adjacent said manifolds whereby said letter corresponding to said electrical signal is held by vacuum pressure against the belt abutting the manifold having the vacuum pressure applied thereto so as to transport the letter therewith, resilient means urged against each of the inclined portions of each of said belts whereby the said letters engaging said means are displaced from the plane of the surface of said manifold, and means for rotating the letters from each of said belts substantially 90 degrees from the plane in which the said input letters flow, with the letters from the first mentioned belt being rotated in an opposite sense than those of the second mentioned belt, so that said letters have the stamps thereon positioned similarly and faced in the same direction.

13. An apparatus for facing a high velocity planar flow of flat light articles having a predetermined characteristic on one face in response to electrical signals each signal being representative of the face of a respective article on which said characteristic is located, comprising a plurality of stationary vacuum manifolds, each manifold having a surface adjacent and parallel to the plane in which said articles flow, means for bringing said articles to rest adjacent the surfaces of said manifolds, a plurality of endless belts with each of said belts sliding against the surface of a respective one of said manifolds, a source of sub-atmospheric pressure, means re-

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sponsive to each of said electrical signals for applying said pressure to one of said manifolds synchronously with the coming to rest of the article corresponding to said electrical signal adjacent said one manifold, means applying the pressure of said manifold to said article for holding it positively against the belt abutting the said manifold during movement of said belt whereby said article is transported thereby, and means displacing the said articles from the plane parallel to the surfaces of said manifolds and removing the said articles from their respective belts whereby the faces of the said articles having the aforementioned characteristics thereon are similarly positioned.

14. Apparatus for facing a high velocity linear flow of coplanar light flat articles, each having a predetermined characteristic on one face, in response to electrical signals, each signal being representative of the face of a respective article on which said characteristic occurs, comprising a pair of article transporters located on either side of the plane of the said articles and along the path thereof, means for bringing each of said articles to rest between said transporters, means responsive to each of said electrical signals representative of the occurrence of said characteristic on one predetermined face of said articles and operative in timed relation to the halting of an article corresponding to said signal for causing one of said articles transporters to engage said halted articles, means responsive to each of said electrical signals representative of the occurrence of said characteristic on the opposite face of said articles and operative in timed relation to the halting of an article corresponding to said signal for causing the other of said article transporters to engage said latter halted article, each of said transporters comprising means for conveying its engaged articles transversely of and coplanarly with the path of said article flow and means cooperating with each of said transporters for thereafter disengaging said conveyed articles therefrom and for rotating said conveyed articles into a plane at an angle to the plane of said articles in said flow, the directions of rotations for said two transporters being opposite to one another, whereby said conveyed articles are respectively rotated to have their characteristic-bearing faces similarly positioned.

15. Apparatus for facing a high velocity linear flow of coplanar light flat articles, each having a predetermined characteristic on one face, in response to electrical signals, each signal being representative of the face of a respective article on which said characteristic occurs, comprising a pair of article transporters located on either side of the plane of said articles and along the path thereof, means operative synchronously with the arrival of an article between said transporters and responsive to the electrical signal corresponding to said article for causing one or the other of said transporters to engage said article in accordance with which face of said articles bears said characteristic, each of said transporters comprising means for conveying its engaged articles away from the path of said article flow, and means cooperating with each of said transporters for rotating the planes of the articles conveyed thereby through substantially 90 degrees, the directions of rotations for said two transporters being relatively opposite to one another, whereby said conveyed articles are respectively rotated to have their characteristic-bearing faces similarly positioned.

16. Apparatus for correspondingly facing a linear flow of coplanar light flat articles each having a predetermined characteristic on one face or the other thereof, comprising means for selectively engaging articles of said flow having said characteristic on a given face, means for rotating the plane of said engaged articles substantially 90 degrees in a predetermined direction, means for selectively engaging articles of said flow having said characteristic on an opposite face, and means for rotating the plane of said latter engaged articles substantially 90 de-

grees in an opposite direction, whereby said articles are caused to have their characteristic-bearing faces similarly positioned.

17. Apparatus for sorting articles from a stream of light flat articles comprising a vacuum manifold having a surface parallel and adjacent to the plane of said articles, a belt slidable along said manifold surface transversely of said flow, one belt and surface having registerable apertures, and means responsive to occurrence of selected ones of said articles adjacent said surface for causing said articles to be engaged by said belt and transported thereby transversely of said stream.

18. An apparatus for stacking letters of two intermittent irregularly spaced, vertically flowing streams of vertically oriented letters comprising a horizontal conveyor belt in the path of said streams of letters for receiving said letters, means for rotating said letters substantially 90 degrees onto said belt, means for periodically advancing said belt in timed relation to the placement of each of said letters thereon, to position said letters in successive overlapping relation, an oscillatory wall adjacent one longitudinal edge of said conveying means and adjacent a longitudinal edge of the letters thereon, means for oscillating said wall transversely to the flow of said letters, whereby the said wall during oscillation is urged periodically against the longitudinal edges of said letters to dress them, and an upwardly inclined surface in the path of said letters adjacent to the edge of said conveying means for accumulating said letters in a stack.

19. An apparatus for stacking letters of two intermittent, irregularly spaced, vertically flowing streams of vertically oriented letters comprising a horizontal conveyor belt in the path of said streams of letters for receiving said letters, means for rotating said letters substantially 90 degrees onto said belt, and means for periodically advancing said belt in timed relation to the placement of each of said letters thereon, to position said letters in successive overlapping relation, an oscillatory wall adjacent one longitudinal edge of said conveying means and adjacent a longitudinal edge of the letters thereon, means for oscillating said wall transversely to the flow of said letters, whereby the said wall during oscillation is urged periodically against the longitudinal edges of said letters to dress them.

20. An apparatus for facing and stacking a high velocity planar flow of flat light articles having a predetermined characteristic on one face in response to electrical signals, each signal being representative of the face of a respective article on which said characteristic is located, comprising a plurality of stationary vacuum manifolds, each manifold having a surface adjacent and parallel to the plane in which said articles flow, means for bringing said articles to rest adjacent the surfaces of said manifolds, a plurality of continuous belts with each of said belts sliding against the surface of a respective one of said manifolds, a source of sub-atmospheric pressure, means responsive to each of said electric signals for applying said pressure to one of said manifolds synchronously with the coming to rest of the article corresponding to said electrical signal adjacent said one manifold, means applying the pressure of said manifold to said article for holding it positively against the belt abutting the said manifold during movement of said belt whereby said article is transported thereby, conveying means below said belts for receiving said articles, means displacing said articles from the plane parallel to the surfaces of said manifolds and transferring said articles from their respective belts onto said conveying means whereby the face of the said articles having the aforementioned characteristics thereon are similarly positioned, means for periodically advancing said conveying means a distance less than the longitudinal dimension of said articles in timed relation to the placing of each of said articles whereby said articles are positioned in successive overlapping relation, and an oscillatory wall adjacent the longitudinal edge of said conveyor belt and adapted to be oscillated transversely to the flow of said articles whereby the said wall during oscillation is urged against the longitudinal edges of said articles and an upwardly inclined surface in the path of said articles adjacent to the end of said conveyor belt for accumulating said articles in a stack.

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