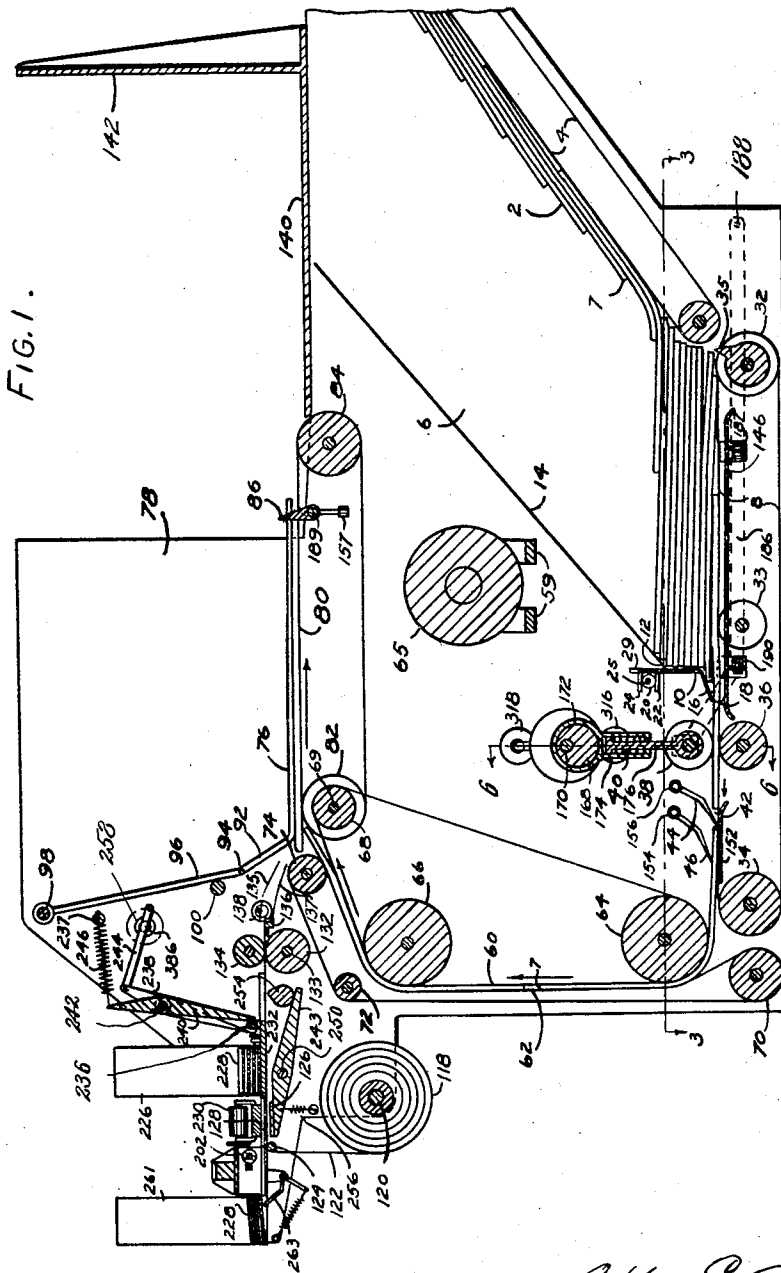


Oct. 11, 1938.

O. E. WOLFF
MACHINE FOR SEPARATING, COUNTING, DELIVERING,
WRAPPING, AND ADDRESSING SHEET MATERIAL
Filed Aug. 16, 1937

2,133,261

13 Sheets-Sheet 1



BY

INVENTOR
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BY
David R. Rues

ATTORNEY

Oct. 11, 1938.

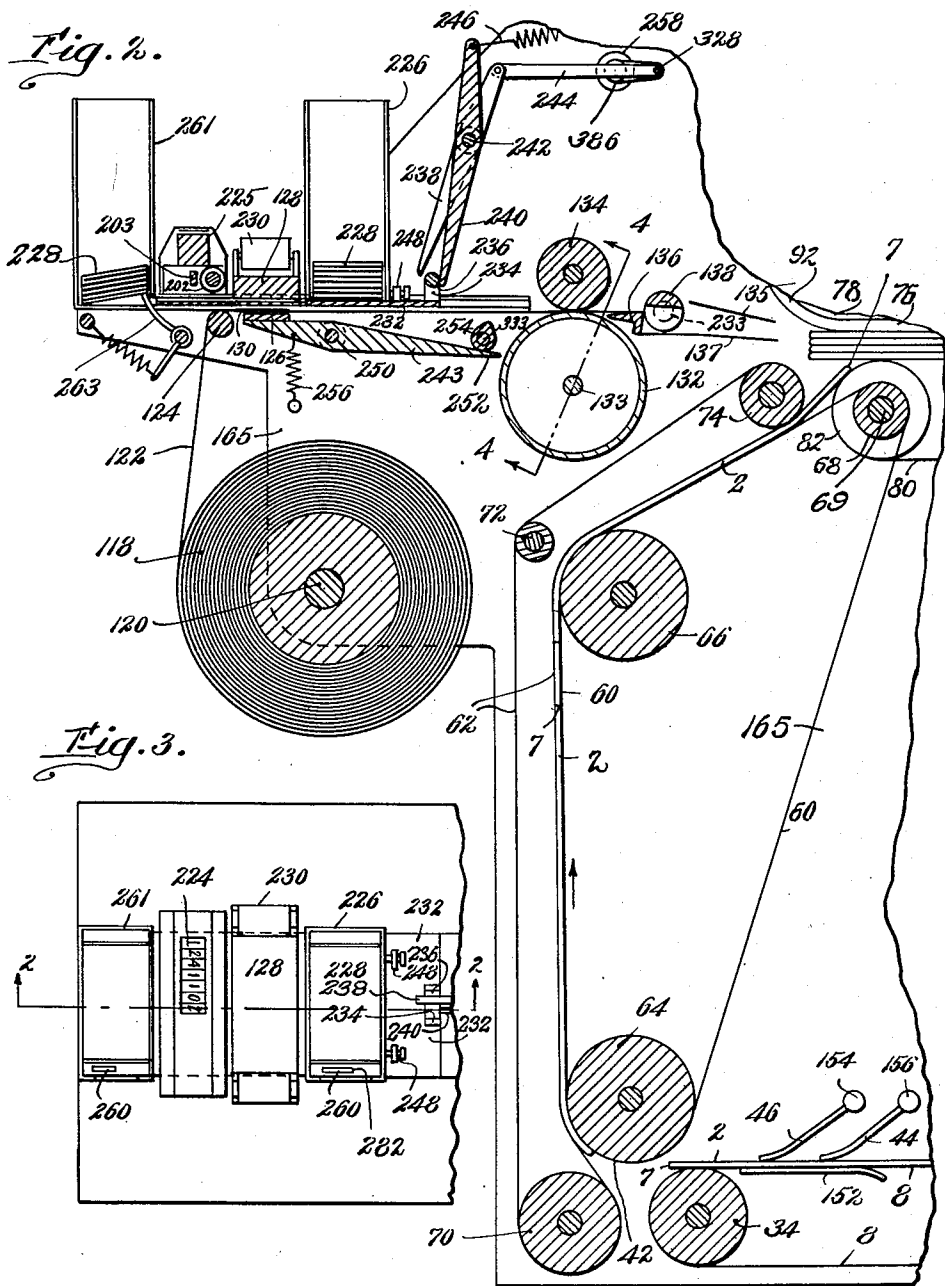
O. E. WOLFF

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MACHINE FOR SEPARATING, COUNTING, DELIVERING,
WRAPPING, AND ADDRESSING SHEET MATERIAL

Filed Aug. 16, 1937

13 Sheets-Sheet 2



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Hand Rules

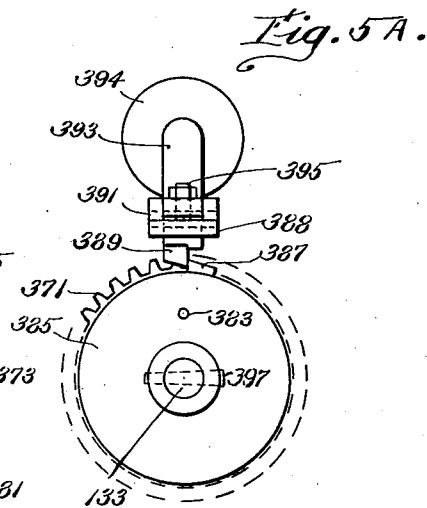
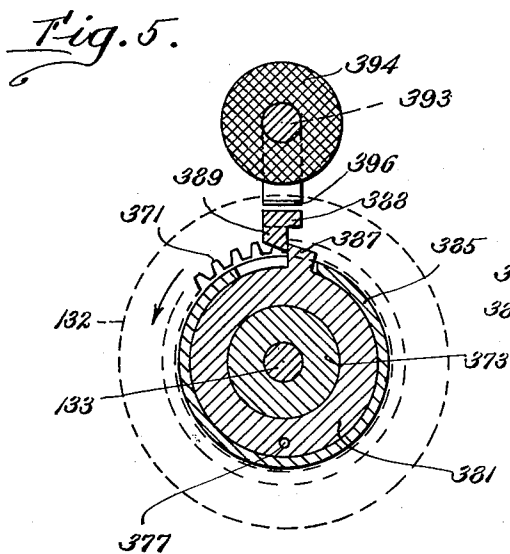
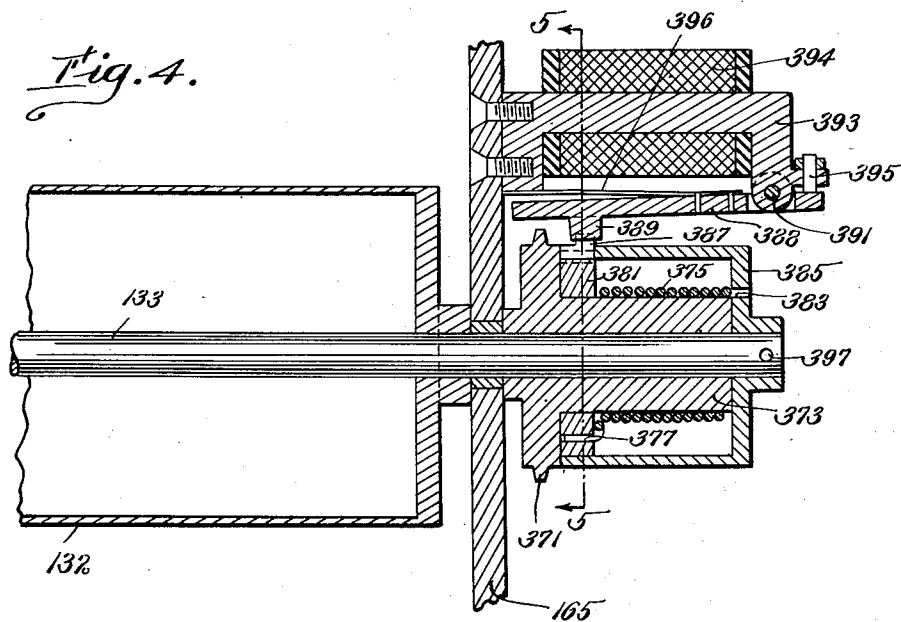
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MACHINE FOR SEPARATING, COUNTING, DELIVERING,
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Filed Aug. 16, 1937

2,133,261

13 Sheets-Sheet 3



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MACHINE FOR SEPARATING, COUNTING, DELIVERING,
WRAPPING, AND ADDRESSING SHEET MATERIAL
Filed Aug. 16, 1937

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13 Sheets-Sheet 4

FIG. 7

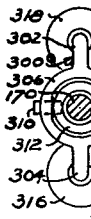


FIG. 6

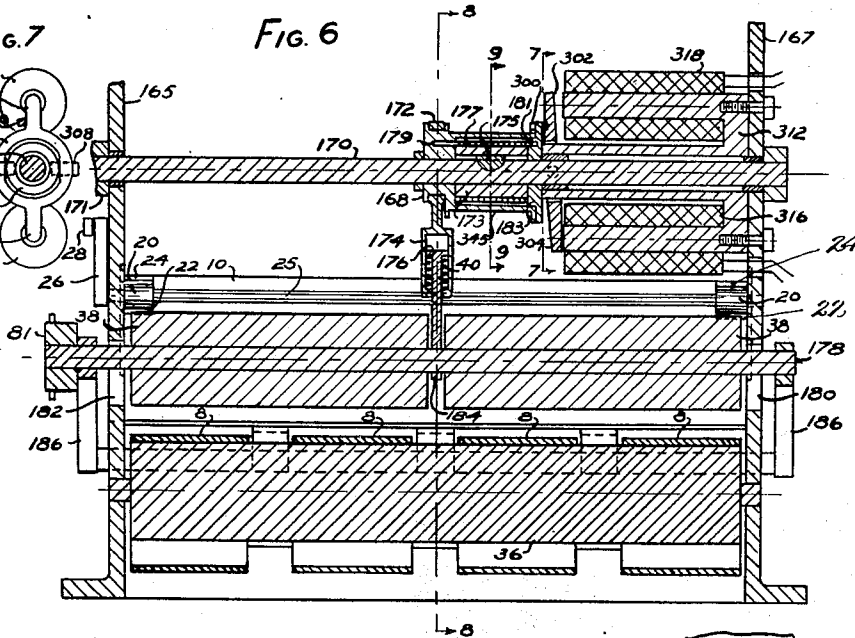


FIG. 8

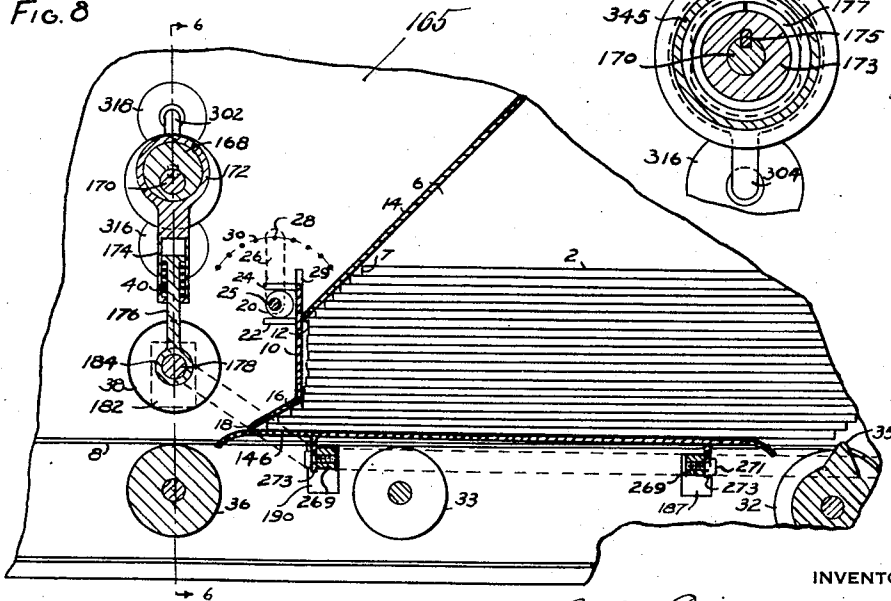
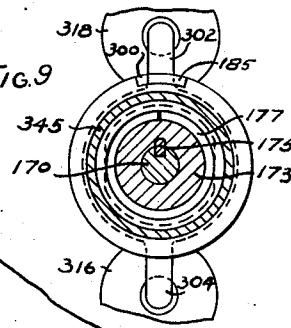


FIG. 9



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O. E. WOLFF
MACHINE FOR SEPARATING, COUNTING, DELIVERING,
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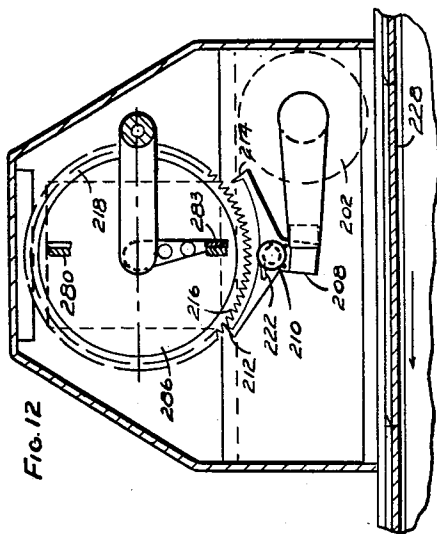


FIG. 12

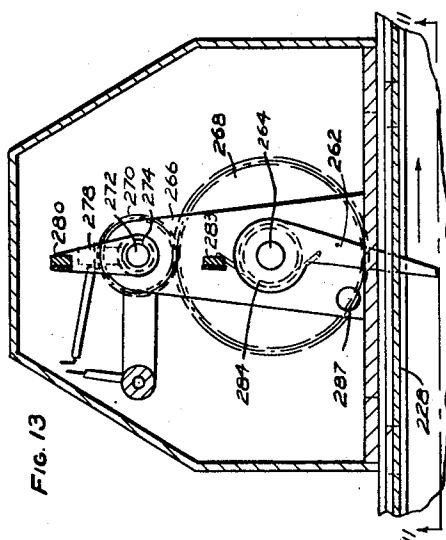


FIG. 13

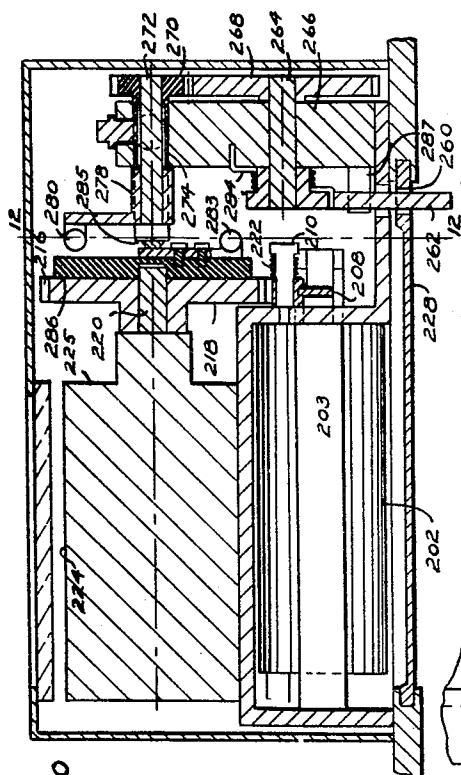
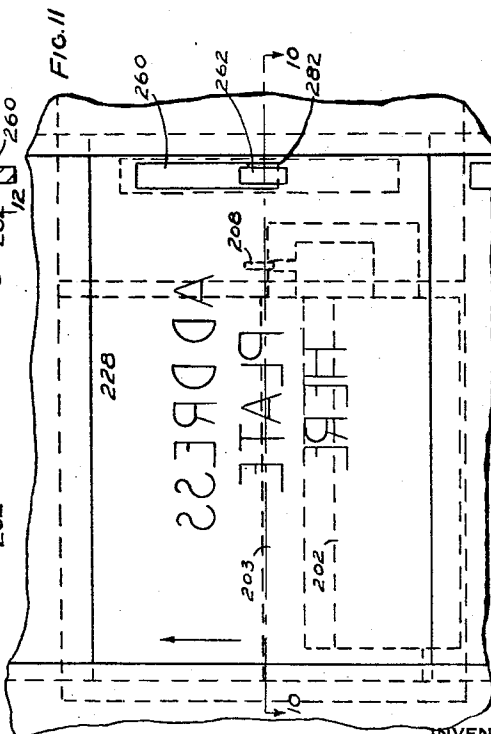


FIG. 10

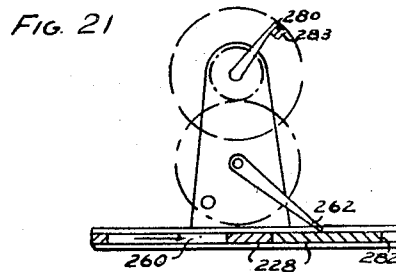
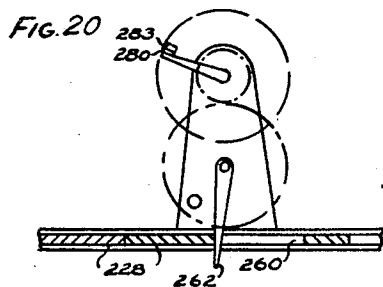
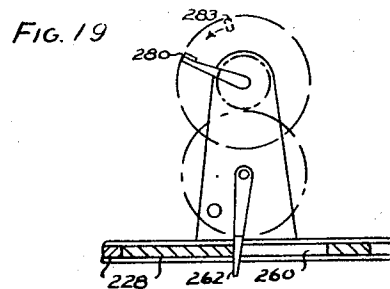
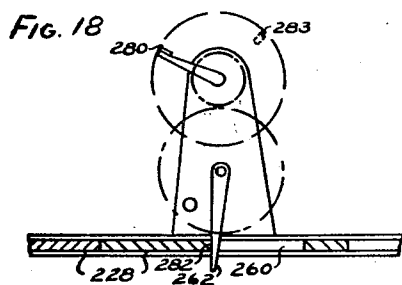
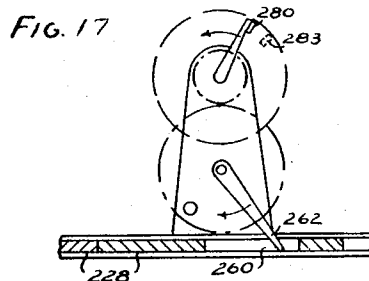
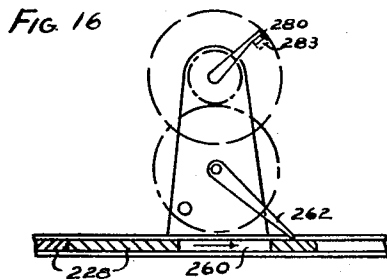
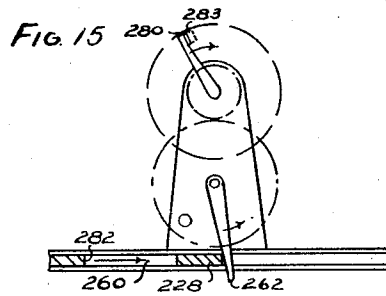
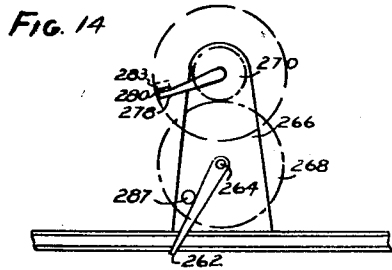


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MACHINE FOR SEPARATING, COUNTING, DELIVERING,
WRAPPING, AND ADDRESSING SHEET MATERIAL
Filed Aug. 16, 1937 13 Sheets

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13 Sheets-Sheet 6



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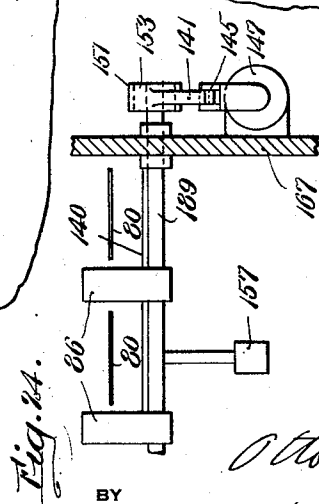
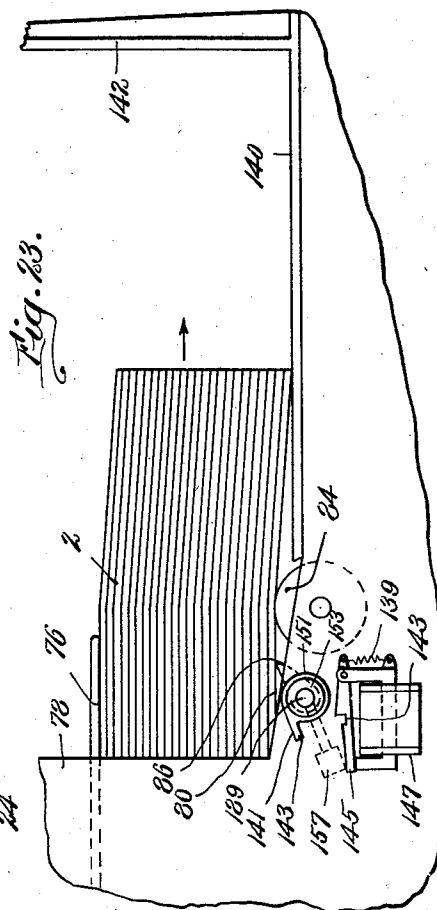
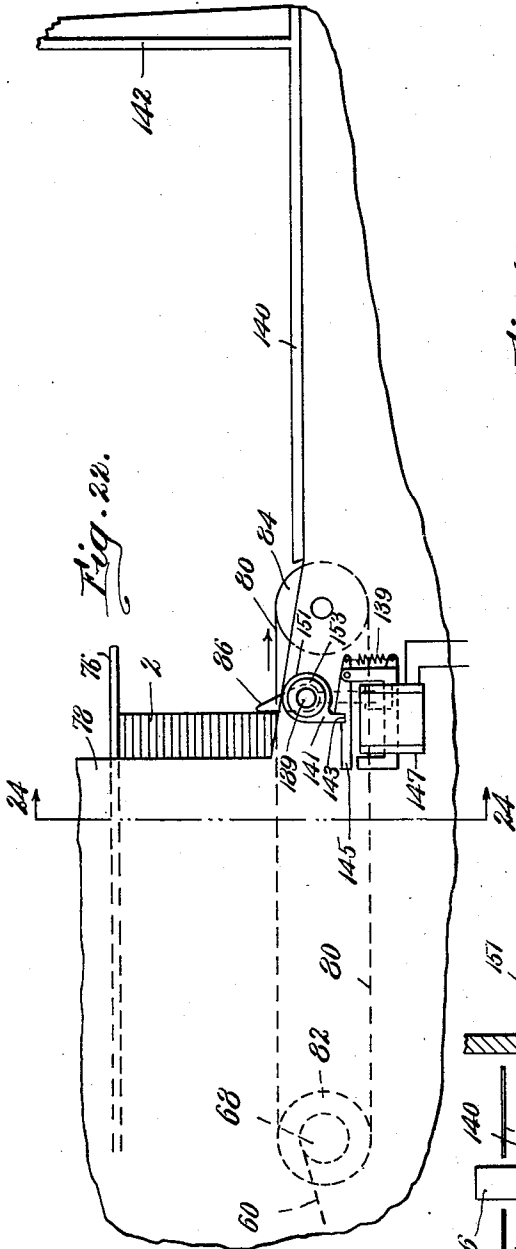
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Filed Aug. 16, 1937

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13 Sheets-Sheet 7



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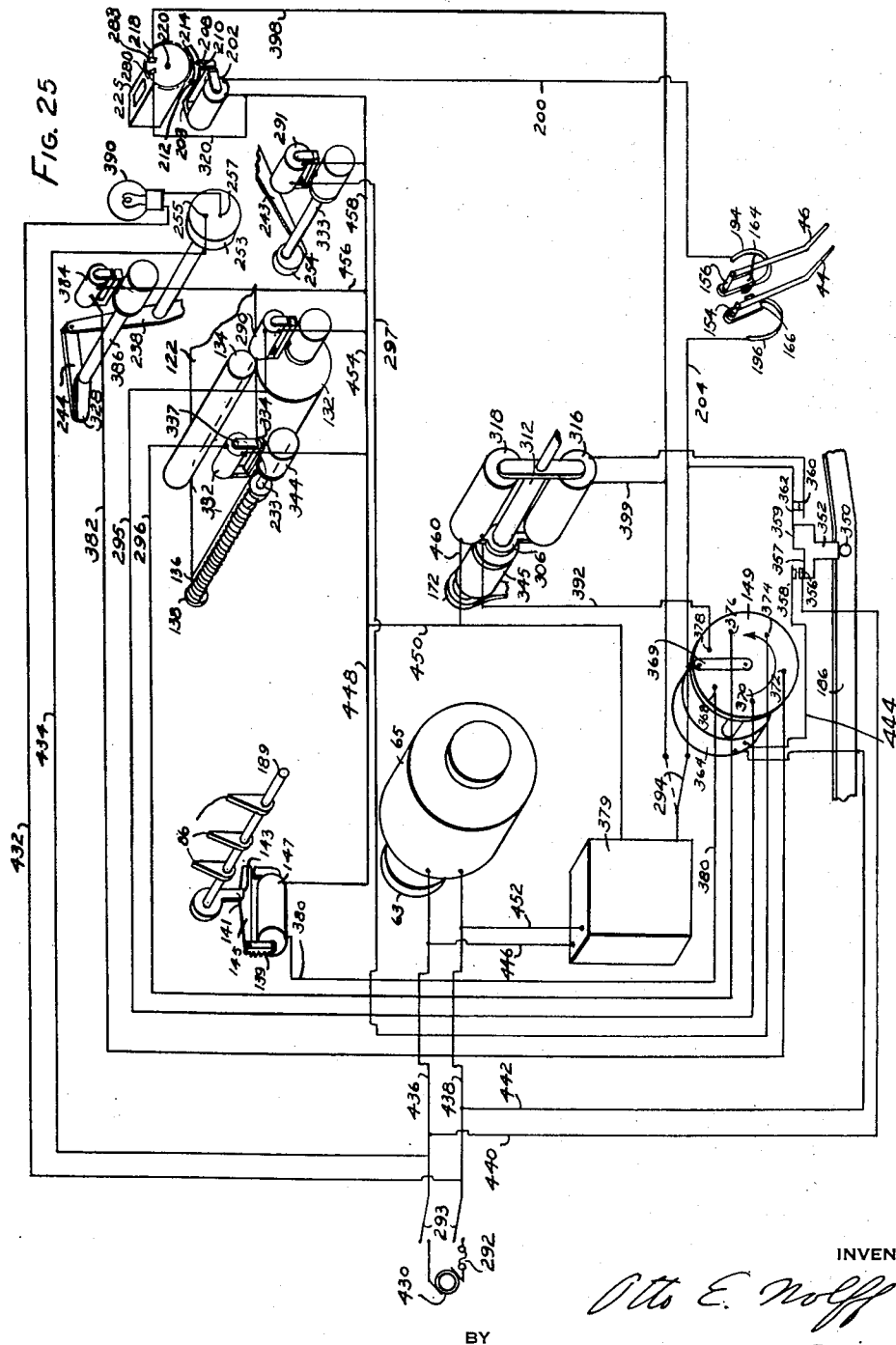
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Filed Aug. 16, 1937

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13 Sheets-Sheet 8



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Oct. 11, 1938.

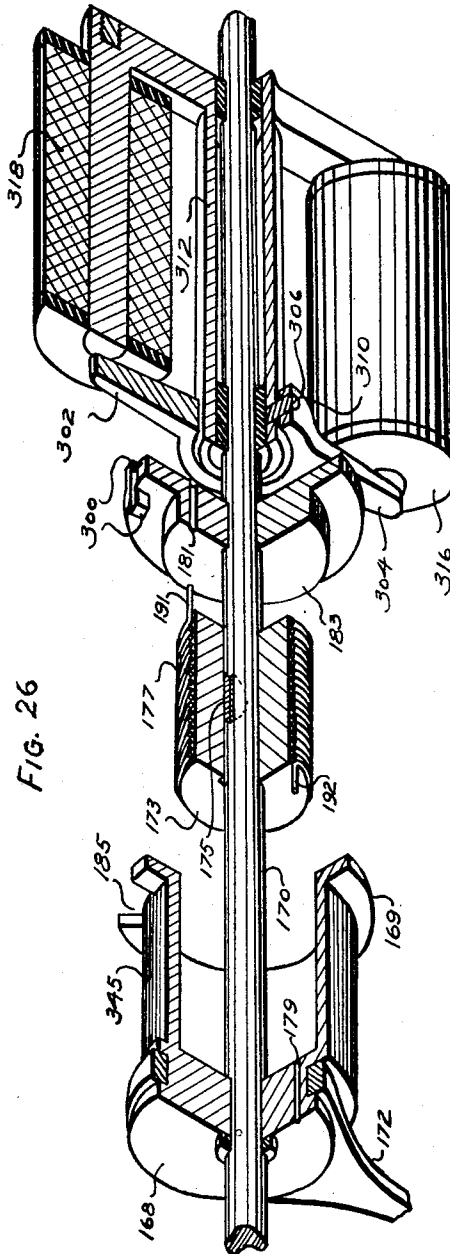
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MACHINE FOR SEPARATING, COUNTING, DELIVERING,
WRAPPING, AND ADDRESSING SHEET MATERIAL
Filed Aug. 16, 1937 13 Sh

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13 Sheets-Sheet 9



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Oct. 11, 1938.

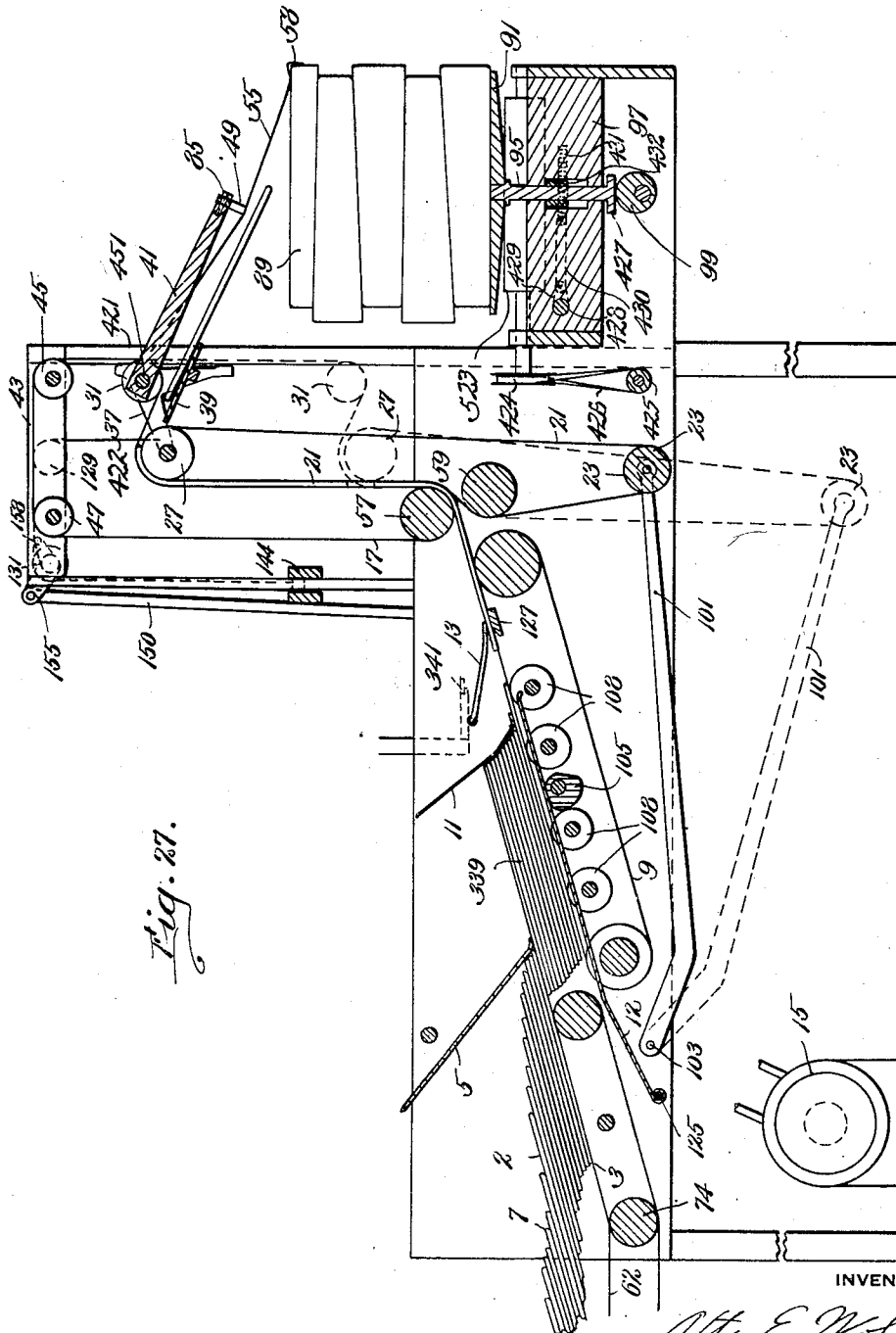
O. E. WOLFF

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MACHINE FOR SEPARATING, COUNTING, DELIVERING,
WRAPPING, AND ADDRESSING SHEET MATERIAL
Filed Aug. 16, 1937 13 Sh

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13 Sheets-Sheet 10



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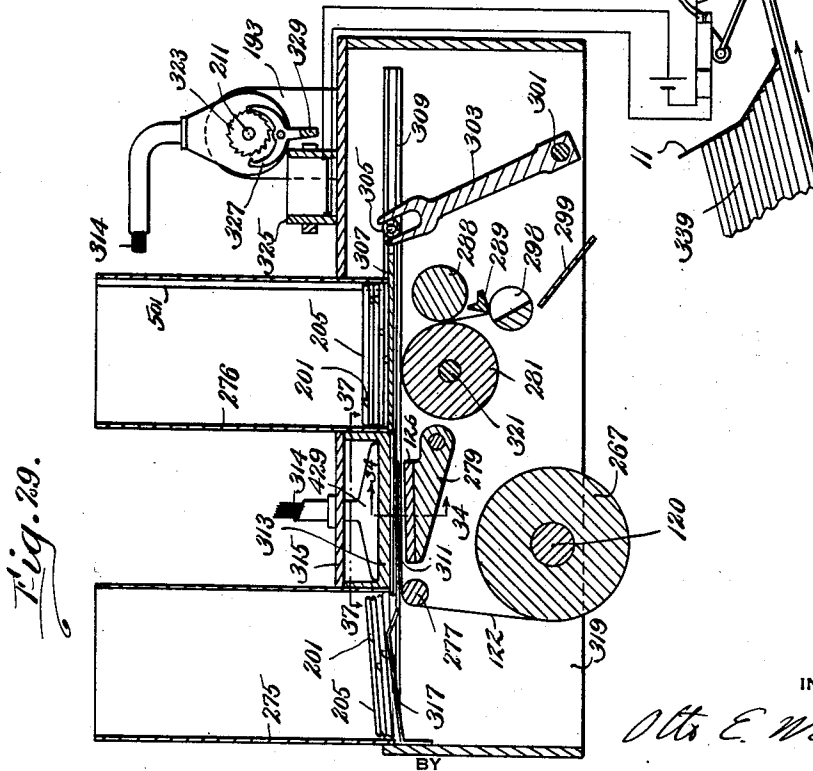
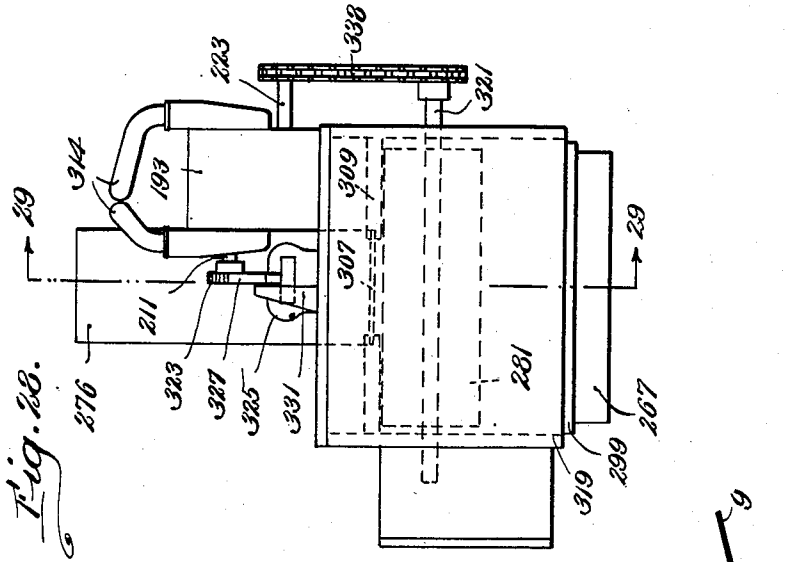
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13 Sheets-Sheet 11



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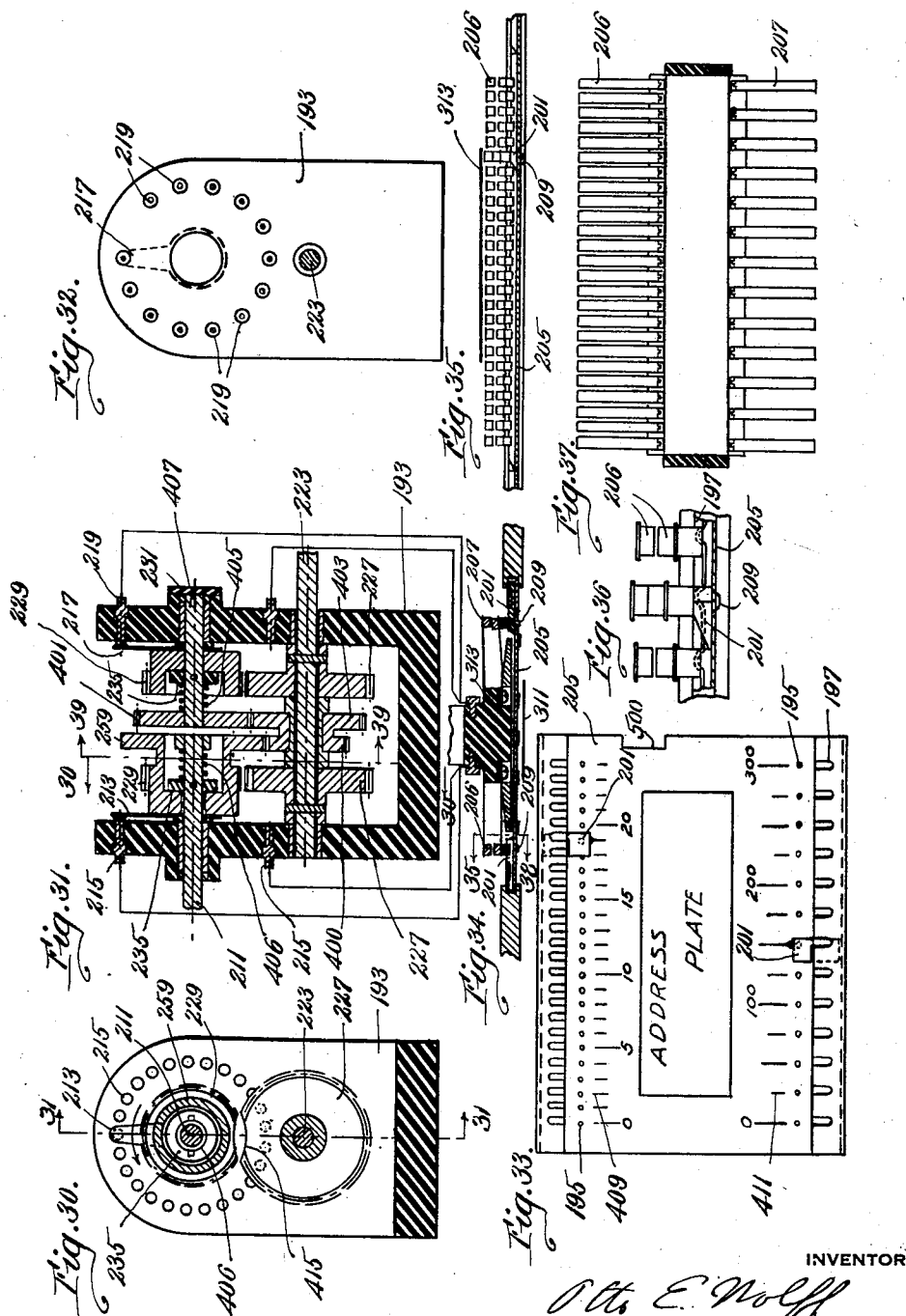
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Oct. 11, 1938.

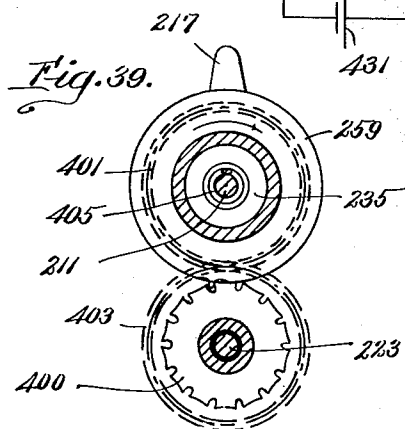
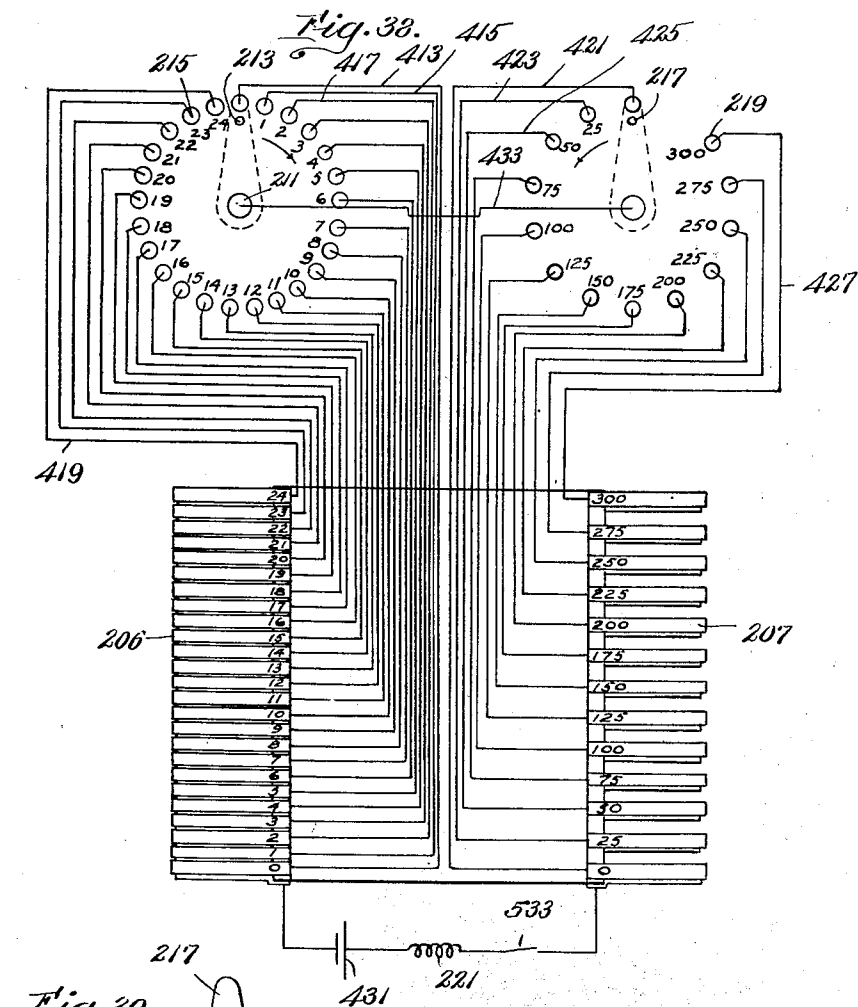
O. E. WOLFF

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MACHINE FOR SEPARATING, COUNTING, DELIVERING
WRAPPING, AND ADDRESSING SHEET MATERIAL

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13 Sheets-Sheet 13



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UNITED STATES PATENT OFFICE

2,133,261

MACHINE FOR SEPARATING, COUNTING,
DELIVERING, WRAPPING, AND ADDRESS-
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Paul S. Bauer, Belmont, Mass., trustee of the
R. S. Bauer Trust

Application August 16, 1937, Serial No. 159,332

74 Claims. (Cl. 270-2)

The present invention relates to means for handling sheet material, and more particularly to such sheet material as newspapers and periodicals.

As newspapers, for example, are delivered from the press, they are collected into bundles containing the proper number to be forwarded to the various newsdealers, and the bundles are then usually wrapped in pre-addressed wrappers. These operations have heretofore been performed partly or wholly by hand.

An object of the present invention is to provide a new machine for automatically performing several or all of the various operations of separating the newspapers or other sheet material, counting them out, delivering the counted objects to a wrapper, and addressing the wrapper.

A further object is to provide novel mechanism for performing any or all of the above-described operations.

Another object is to provide a novel addressing machine, in combination with a selecting device, the purpose of which is to permit the grouping or stacking of a predetermined number of the objects to be shipped.

A further object is to vary the said predetermined number.

A further object is to provide a novel addressing-and-selecting device arranged to place automatically on the wrapper or container the name, address and such other insignia as may be desired, such as the number of objects contained in that wrapper.

Still another object is to provide a counter in conjunction with the selecting device, so as to register the total number of objects passing through the machine.

Another object is to provide a novel mechanism for accumulating a stack of sheets from below the stack.

Other and further objects will be explained hereinafter, and will be particularly pointed out in the appended claims.

The invention will now be explained in connection with the accompanying drawings, in which Fig. 1 is a longitudinal vertical section of a machine embodying the present invention in its preferred form; Fig. 2 is a similar vertical section, taken upon the line 2-2 of Fig. 3, looking in the direction of the arrows; Fig. 3 is a plan of the left-hand side of the machine shown in Fig. 2; Fig. 4 is an enlarged section taken upon the line 4-4 of Fig. 2, looking in the direction of the arrows; Fig. 5 is a section taken upon the line 5-5 of Fig. 4, looking in the direction of

the arrows; Fig. 5a is a corresponding end view, looking toward the left in Fig. 4; Fig. 6 is a vertical section, taken upon the line 6-6 of Fig. 1 or Fig. 8, looking in the direction of the arrows; Fig. 7 is a vertical section, taken upon the line 7-7 of Fig. 6, looking in the direction of the arrows; Fig. 8 is a vertical section, taken upon the line 8-8 of Fig. 6, looking in the direction of the arrows; Fig. 9 is a vertical section, taken upon the line 9-9 of Fig. 6, looking in the direction of the arrows; Fig. 10 is a vertical section, taken upon the line 10-10 of Fig. 11, looking in the direction of the arrows; Fig. 11 is a horizontal section, underneath the mechanism, taken upon the line 11-11 of Fig. 13, looking upward in the direction of the arrows; Fig. 12 is a section, taken upon the line 12-12 of Fig. 10, looking toward the left; Fig. 13 is a similar section, looking toward the right; Fig. 14 is a diagrammatic view corresponding to Fig. 13, but upon a small scale; Figs. 15 to 21, inclusive, are similar views, showing the parts in different positions; Fig. 22 is a fragmentary elevation of the upper right-hand, or the discharge, portion of the machine shown in Fig. 1; Fig. 23 is a similar view, showing the stack of sheets as it is being released; Fig. 24 is a vertical section taken upon the line 24-24 of Fig. 22, looking in the direction of the arrows; Fig. 25 is a wiring diagram with the parts of the machine positioned in their approximate locations on the machine; Fig. 26 is an exploded perspective, upon a larger scale, of parts of the mechanism shown at the right of Fig. 6; Fig. 27 is a section similar to Fig. 1 of a modification in which the sheets are stacked from above instead of from below; Fig. 28 is an end view of the selector-and-address mechanism embodied in the modification of Fig. 27; Fig. 29 is a vertical section similar to Fig. 2, but on a larger scale, the section being taken upon the line 29-29 of Fig. 28, looking in the direction of the arrows; Fig. 30 is a vertical section of a modified selector mechanism, taken upon the line 30-30 of Fig. 31, looking to the left, in the direction of the arrows; Fig. 31 is a vertical section taken upon the line 31-31 of Fig. 30, looking in the direction of the arrows; Fig. 32 is a corresponding end view, looking from the right of Fig. 31; Fig. 33 is a plan of a modified address plate; Fig. 34 is a vertical section taken upon the line 34-34 of Fig. 29, but upon a larger scale, looking in the direction of the arrows; Fig. 35 is a vertical section taken upon the line 35-35 of Fig. 34, looking in the direction of the arrows; Fig. 36 is a detail view of the mechanism shown in Fig. 35, but upon a

larger scale; Fig. 37 is a horizontal section taken upon the line 37—37 of Fig. 29, but upon a larger scale, looking downward in the direction of the arrows; Fig. 38 is a circuit diagram of the modified selector; and Fig. 39 is a section taken upon the line 39—39 of Fig. 31, looking to the right, in the direction of the arrows.

A plurality of newspapers 2 are shown in Fig. 1 in lapped relation, upon inclined conveyor belts 4 by which they are delivered into a hopper 6, where they become temporarily stacked. The right-hand ends (as shown in Fig. 1) of the inclined conveyor belts 4 may be disposed adjacent to a newspaper press (not shown), or a stack of newspapers (not shown), another conveyor (not shown), or any other source of supply of newspapers. Though the machine is shown in connection with newspapers, preferably fed with one of the folded edges 7 forward, it will be understood that other sheet material, such as magazines and other periodicals, may also be treated in this machine, or parts thereof; and the terms "newspaper", "sheet" and the like will, therefore, to avoid circumlocution of language, be often employed in the specification and the claims, in this generic sense, except where the context or the state of the art requires otherwise.

Referring, first, to the modification shown in Figs. 1 to 26, the left-hand end of the conveyor belts 4 are shown in Fig. 1 disposed at the right-hand end of the bottom of the hopper 6. As the first newspaper 2 is delivered by the conveyor belts 4 into the hopper 6, therefore, it is carried by horizontally disposed, continuously traveling belts 8, at the bottom of the hopper 6, forward, or toward the left, as viewed in Figs. 1, 2 and 8. The second newspaper 2 is similarly carried forward, to the left, on top of the first newspaper 2. The third newspaper 2 is similarly carried forward, to the left, on top of the second newspaper, and so on.

The forward, or left-hand (as viewed in the said Figs. 1, 2 and 8) ends of those newspapers 2 that are disposed above the lowermost newspaper or newspapers soon engage a vertically disposed, shield wall 10 that prevents their further progress. The newspapers 2 thus become accumulated in the hopper 6, each on top of its next-lower neighbor, in the form of a stack, the weight of which serves to press the lowermost newspaper 2 against the said horizontally disposed belts 8, at the bottom of the hopper 6.

It is desirable that the pressure of the newspapers against the conveyor belts 8 caused by their own weight be not too great; particularly as it is desired to lift this stack from time to time, as will be explained more fully hereinafter. To relieve the pressure, therefore, only part of the newspapers in the hopper 6, above a predetermined height, are permitted to exert their full weight upon the newspapers beneath. This result may be effected in any desired way. According to the illustrated embodiment, the left-hand end 12 (as viewed in Figs. 1 and 8) of a wall 14 is disposed near the upper end of the vertically disposed, shield wall 10, at a point a little higher than the lowest point of the inclined conveyor belts 4. The wall 14 is shown inclining toward the right, substantially parallel, and oppositely disposed, to the said inclined conveyor belts 4. Above the point 12, therefore, the newspapers will become collected in the hopper 6 in an inclined stack between the wall 14 of the hopper 6 and the inclined belts 4.

The lower terminal portion of the vertically disposed, shield wall 10 terminates in a finger 16, disposed very close to the horizontally disposed conveyor belts 8, but raised slightly thereabove, so as to provide a space through which the conveyor belts 8 may feed the lowermost newspaper 2 out of the hopper 6, into the space outside, to the left of the hopper, as shown in Fig. 1. The finger 16 may be constituted of an integral portion of the vertically disposed shield wall 10, extending continuously downward, and bent or inclined smoothly forward in the direction of travel of the conveyor belts 8. The shield wall 10 is vertically adjustable to regulate the said space between the finger 16 and the belt 8. It is usually preferred to have only one newspaper at a time pass under the extremity 18 of the finger 16. To effect this result, the space near the belt conveyor 8, under the extremity 18 of the finger 16, should be adjusted so as to be less than the thickness of two newspapers, so that the second newspaper from the bottom shall be caught by the sloping, inner wall of the inclined finger 16, as illustrated more particularly in Fig. 1. If desired, of course, the position of the finger 16 may be adjusted high enough so as to permit more than one paper to pass its extremity 18, particularly where it is desired to feed the papers overlapped. The belts 8 and the projecting finger 16 of the shield 10, or either of them, are sufficiently flexible to accommodate themselves to the papers 2 as these papers are carried between them.

The adjustability of the finger 16 to control the separate feeding of the papers passing thereunder, or their number so passing, may be effected in any desired manner. As illustrated more particularly in Figs. 1 and 8, the preferred mechanism for adjusting the position of the finger 16 comprises two eccentrics 20 disposed between two pairs of lugs 22 and 24 that extend horizontally out from the vertically disposed, shield wall 10, at the extreme ends thereof, though they may extend throughout the length of the shield. The eccentrics 20 are pivoted about a shaft 25 to which is fastened an adjusting handle 26 that is positioned outside the side frame 165 of the machine. By turning the handle 26, therefore, about the axis of the shaft 25, the eccentrics 20 will be caused to turn, engaging the lugs 22 and 24, and thus raising and lowering the vertically disposed shield wall 10 and the finger 16 at its lower end. The shield wall 10 will be guided in such vertical movement by ways 29 in the side frames 165 and 167 of the machine. The eccentric 20 may be maintained in adjusted position by means of a spring-pressed pin 28 on the handle 26, that may be caused to enter any of a plurality of index openings 30 (Fig. 8) disposed for different settings of the shield 10, along a circular arc about the axis of the shaft 25. The shield 10 need not, of course, be a continuous wall; it may be replaced by suitably arranged fingers or guides.

The newspaper or newspapers are passed out of the hopper 6, under the finger 16, by the same conveyor belts 8 before described; and to this end, they extend forward, to the left of the vertically disposed shield wall 10, a considerable distance beyond the confines of the hopper 6. Because of the higher coefficient of friction between newspaper stock and the material of which the belts 8 are constituted, than between the newspapers 2 themselves, the belts have no difficulty in moving the lowest paper 2 in the hopper 6 out from under the others. The belts pass over pulleys 32 and 75

34, the former adjacent to the lower end of the inclined conveyor belts 4, at the right-hand end of the hopper 6, and the latter far to the left of the hopper 6. They pass also over an idler roll 33, shown just to the right of the shield 10. The number of belts 8 passing over the pulleys 32 and 34 may be four, with spaces between them through which are visible the hereinafter-mentioned table supports 146. The right-hand pulley 32 is provided with a plurality of projections 35 for agitating the rear ends of the papers 2 in the hopper 6, as it revolves, thus eliminating the tendency of the papers 2 sticking together in the hopper 6, and also tending to drive the lowest paper 2 to the left, toward the shield 10. The agitator 35 need not, however, be attached to one of the conveyor pulleys, since it may be separately driven.

If more than one paper (or the desired other number of papers) should tend to feed past the shield 10, they will become separated by a separating roll 38 under which the belts 8 pass at an intermediate point, a little to the left of the finger 16. This is effected by flexibly pressing the separating roll 38 against the belts 8 and an idler roll 36 under the belts 8. The advancing, forward end of each newspaper, just after the paper travels out of the hopper 6, is thus pressed between the spring-pressed roll 38 and the roll 36 and the belts 8, and the newspaper continues to be so engaged as it continues its forward travel, to the left. The sheets thus travel between the conveyor 8 and the roll 36 below and the roll 38 above, as they leave the hopper. By operating the separating roll 38 in the same direction as the direction of travel of the belts 8, but at a surface speed lower than the speed of travel of the feed belts 8, and by suitably adjusting the pressure of its spring 40, the papers will become slowed down and dragged back, effecting their separation, and ensuring that the front edge of any particular paper 2 shall be behind the front edge of the next preceding paper 2 a sufficient distance to permit separate counting of the papers by a counting finger 44 or counting fingers 44 and 46, as hereinafter explained. They may be entirely separated from each other, with a space 42 between each two newspapers 2, as illustrated in Fig. 1, or they may become overlapped, depending upon the adjustment and the drive.

If the papers 2 were all of equal thickness, and if there were no irregularities or other sources of like error, and particularly if the papers 2 were not overlapped, one counting finger 44 would ordinarily suffice. In the illustrated machine, the counting fingers 44 and 46 are not laterally separated, in a direction at right angles to the line of feed, but are substantially exactly aligned with each other in the line of feed, between two adjacent belts 8.

If the shield 10 itself operates effectively to separate the papers 2, the roll 38 may either run idly, or it may be driven at the same speed as the feed belts 8. In that event, as the sheets at the bottom of the hopper 6 are separated from the stack and carried by the conveyor belts 8 through the space under the inclined finger 16 of the shield 10, the roll 38 will merely hold the paper 2 under it against the belts 8 and the roll 36 to insure its being drawn out. A deflector or guide plate (not shown) may be used to prevent the upper sheets, if overlapped, from becoming lifted by the roll 38.

When the newspapers 2 have an extraordinary tendency to stick together, as when under the influence of static electricity, they may be sep-

arated by the use of horizontally disposed belts or a series of rolls (not shown), as explained in a copending application, Serial No. 43,928, filed October 7, 1935, of which the present application is a continuation-in-part.

After the papers have thus been caused to travel from the conveyor belts 4 into the hopper 6, and from the hopper 6 between the rolls 36 and 38, they are next counted. To this end, the counting finger 44 is illustrated in Fig. 1, above the left-hand portion of the belts 8, and to the left of the roll 38. As the newspaper 2 advances from between the rolls 36 and 38 in Fig. 1, its forward, folded edge 7 engages this counting finger 44. As soon as the paper has traveled beyond the position occupied by the counting finger 44, it falls into the space 42 between the successive papers 2. Each raising and lowering of the counting finger 44 will result in registering a count, as will be hereinafter explained, to indicate that another newspaper 2 has been conveyed by the conveyor belts 8 from the hopper 6 to outside the hopper. A similar operation takes place when the sheets traveling under the counting finger 44 are overlapped, as before described; though there is no space 42 into which the counting finger 44 may drop, there is a difference in height between different parts of the overlapped papers that produces the same raising and lowering of the counting finger 44. The additional counting finger 46, spaced from the counting finger 44 in the line of feed, may, however, be employed, particularly with overlapped newspapers, the operation of one counting finger following upon the operation of the other. When the additional counting finger 46 is employed, it operates, like the counting finger 44, to engage the sheets that travel under it; but the count is registered in response to the differential, up-and-down movement of both counting fingers 44 and 46 together, and not in response to the movement of one counting finger only, as is explained in the said application, thus effecting a more accurate control of the counter mechanism.

The belt conveyor 8, the shield wall 10, the separating member 38, and the counting fingers 44 and 46, are disposed at the bottom of the machine, the newspapers 2 traveling therethrough from right to left, as viewed in Fig. 1. The papers 2 are then transferred to the upper portion of the machine by means of vertically disposed, continuously traveling, lift, conveyor belts 60 and 62. The conveyors 8 and 60 may, of course, be in the form of a single conveyor. After the papers 2 have been thus raised by the belts 60 and 62, they are again carried through the machine, but from left to right. This enables lapped papers to be in the correct position to be stacked from beneath. The forward edges 7 of the newspapers are practically parallel at all times, the papers 2 being fed quite regularly in this machine.

The conveyor belts 60 pass over two large pulleys 64 and 66 and a smaller pulley 68. The pulley 66 is disposed vertically above the pulley 64. The conveyor belts 62 pass over three pulleys 70, 72 and 74. The lower surface of the pulley 64 is disposed substantially on the same level as the upper reach of the conveyor belts 8, and the pulley 70 is disposed below and to one side of the pulley 64. The newspapers 2 thus travel horizontally into the bite between the conveyor belts 60 and 62, and are turned upward, around the large pulley 64, toward the pulleys 66 and 72. The pulleys 68 and 74, however, are situated to the right of, and above, the pulleys 66 and 72, the pulley 74 being

disposed a little to the left of the pulley 68. The upper portions of the belt conveyors 60 and 62, therefore, are disposed below, and at an upward incline to, the bottom of a magazine 78, so as to convey the newspapers successively to the right, after they leave the pulley 66, at an upward incline, toward the pulleys 68 and 74.

Horizontally disposed, continuously traveling, conveyor stacker belts 80 at the bottom of the magazine 78 pass over horizontally aligned pulleys 82 and 84 at the bottom of the magazine 78. The pulley 82 is disposed on the same shaft as, so as to be coaxial with, the pulley 68, under the magazine 78. It is not essential that the belts 8 or 80 be horizontal,—they may be inclined under the hopper 6 or the magazine 78 at an angle.

The papers are thus carried toward a predetermined point of the bottom of the magazine 78, just above the pulley 82, and under the bent portions 92 at the left of a hold-down weight or weights 76, or under the rearward projecting ends of the newspapers 2 in the magazine 78, as illustrated in Fig. 1.

The function of the weight 76 is to press the lowest paper 2 against the conveyor belts 80. This function is not needed in the hopper 6, because of the weight of the papers 2 that are fed in from above the stack. In the magazine 78, however, the papers are fed in by the conveyors 60 and 62 from below.

As the first paper 2 is delivered by the conveyor belts 60 and 62, between the pulleys 74 and 82, it travels at the said upward incline, above the said pulleys 68 and 82, the pulley 82 thus serving as a guide roll.

The front edge 7 of the first newspaper 2 is first gripped between the body portion of the hold-down weight 76, at the point where it joins the bent portion 92, and the portions of the belts 80 immediately beneath. The said front edge 7 is then dragged in by the conveyor belts 80, under the said bent end 92 of the hold-down weight 76. The pulley 84 is disposed beyond the magazine 78, to the right thereof, as viewed in Fig. 1, so that the belt conveyor 80 would carry the papers in the magazine 78 beyond, and to the right of, the magazine 78, on to a table 140, were it not for stops 86 that project upward between the stacker belts 80 to engage the forward end of the lower paper or papers 2 in the magazine 78 and limit its or their further progress. The stops 86 need not project very high, since it is quite sufficient to restrain the travel of only the bottom paper 2 in the magazine 78.

As the newspapers 2 continue to be successively advanced by the belt conveyors 60 and 62, the forward end 7 of each next-following newspaper, as it leaves between the pulleys 74 and 82, enters into the magazine 78 at a point between the pulley 82 and under the rear end of the newspaper already at the bottom of this magazine 78, overhanging, or projecting rearwardly over, the pulley 82, providing a small space for the entering paper 2 to pass between the bottom of the stack of papers and the upper reach of the belts 80. After the first newspaper 2 has been fed into the magazine 78, it will itself serve as such guide for the next-following newspaper, provided that the distance of the stop 86 from the uppermost point of the pulley 82, at the receiving end of the conveyor 78, is less than the length of the newspapers. It need not, however, be a great deal less. The remaining papers in the magazine, above the bottom paper 2, will remain in the magazine, because they are protected from the feed-

ing action of the belts 80 by the lowermost paper in the stack, which is alone in contact with the belts 80, and they are held in the magazine 78 by the hold-down weight 76.

The newspapers 2 are thus fed into the magazine 78 by the combined movements of the lift belts 60 and 62 and the stacker belts 80. The bends in the newspapers during such feeding are influenced by both these sets of belts. It is possible to control the bends, therefore, by different arrangements of the belts, and also to have the newspapers leave the belt conveyors 60 and 62 at a downward incline, as explained in the said application.

The belt conveyors 60 and 62 may be modified by raising the central belts of one of them, and correspondingly lowering the central belts of the other, with respect to the side belts. The papers 2 will then be fed into the magazine 78 concaved or convexed and, therefore, stiffer than when fed into the magazine flat. Such stiffness will prevent the possibility of the unrestrained sections of the papers buckling in the space between the guide roll 82 and the bent portions 92 of the hold-down weight 74 or the rearwardly projecting, tail ends of the sheets in the magazine. The convexity or the concavity need extend only part way under the stack at this point.

It is desirable to have the horizontally disposed conveyor belts 8 travel at a higher speed than the inclined conveyor belts 4, but at a slower speed than that of the lift belts 60 and 62 which, in turn, should travel more slowly than the stack belts 80. The papers 2 will then separate out more rapidly in the hopper 6, and congestion and buckling of the papers 2, that might be caused by slippage between the belts and the papers 2, is avoided. Such slippage is particularly possible in the magazine 78, caused by the drag of the upper papers 2 therein on the lowermost paper 2 as it is fed into the magazine 78. The desired relative speeds may be produced in any desired manner, as explained in the said application, from a motor 65 that is supported in a cradle 59. As shown in Fig. 1, the pulleys 32, 66, 72, 74 and 84 are idler pulleys. The desired speeds of the various conveyors may be attained by suitably proportioning the driven pulleys.

The newspapers 2 thus become stacked on the conveyor 80, and the stack in the magazine 78 thus rises higher and higher as the newspapers 2 are thus successively conveyed to the bottom of the magazine and successively fed thereinto, until the desired number of newspapers, as determined by the count of the counting finger 44 or the counting fingers 44 and 46, has been collected in the magazine 78. The weight 76 rises higher and higher during this accumulation of the papers in the magazine 78, so as always to press down upon the top newspaper in the magazine, thus to press the bottom newspaper in the magazine against the conveyor belts 80 during its feeding into the magazine.

To permit such raising of the weight 76, it is shown, in Figs. 1 and 22, as constituted of one or more flat bars, having the integral, angularly bent portion 92 at the left, pivoted at 94 to the lower end of a link 96, the upper end of which is pivoted to the frame of the machine at 98, above and to the left of the newspaper stack in the magazine 78. In the lowermost position of the weight 76, the link 96 engages a stop 100 to limit the degree of movement of the link 96 and, therefore, the weight 76, to the left. The weight 76 is thus prevented from swinging to the left, out

of the magazine 18, when it drops to the bottom of the magazine after the stack of newspapers therein has been delivered on to the delivery table 140. In this position, the bent portion 92 serves as a guide for guiding the first newspaper 2, as it is received from the conveyors 60 and 62, in under the holddown weight 76 and above the conveyor 80. As the stack of papers 2 in the magazine rises, the weight 76 also rises and, at the same time, moves to the right, as illustrated in Figs. 22 and 23, actuating the link 96 also to the right, away from the stop 100. The link joint enables the holddown weight 76 to lie flat on the top paper 2 of the stack no matter what the height of the stack.

It may be desirable to stack the newspapers 2 so that each group of twenty-five or fifty, or any other desired number of papers, shall have the folded edges reversed; that is, so that the top twenty five papers, for example, in a stack shall have their end and side folded edges facing north and east, respectively, and the next twenty five papers shall have those edges facing south and west, the next twenty five, north and east again, etc. Alternating the papers in this manner is desirable for some purposes; for example, to facilitate their being counted by the persons receiving them, and also to make a more stable stack. This may be effected, according to the present invention, as described and illustrated in the said application. It is preferred, however, to employ the mechanism illustrated in Fig. 27.

The papers 2 are delivered, before counting, from the left, as viewed in Fig. 27, to a belt conveyor 3. If no papers are in a hopper 339, they are conveyed by the conveyor 3 under a shield wall 5 disposed in the path of travel of the sheets from the conveyor 3, and on to a belt conveyor 9, which travels at a higher speed than the belt 3. Rolls 108 serve a function similar to that of the rolls 33. The conveyor 9 continues to receive the papers 2, as they are fed by the conveyor 3, in superposed relation, until the level of the stack of papers in the hopper 339 is high enough to touch the shield 5, as shown. As soon as the superposed sheets accumulate to the number predetermined by the position of the lower end of the shield 5, no more sheets will be fed past the shield 5 until a sheet or sheets has been fed under the shield 11 by the conveyor 9. Further accumulation of the sheets in the hopper 339 beyond the said predetermined number is thus prevented at any one time.

So long as there is a supply of papers on the belt 3, therefore, the level in the hopper 339 will be practically constant, and so long as this level is maintained, the papers that are separated under the shield wall 11 will be spaced uniformly. The shield 11 is disposed in the path of travel of the sheets 2 conveyed out of the hopper 339 by the conveyor 9, and may be adjusted so as to pass the papers 2 out of the hopper 339 one by one, or in groups. The number of sheets so passed under the shield 11 is determined by the space of the opening separating the lower end of the shield above the conveyor 9. A slight separation will suffice to pass the sheets singly, so that the lower wall of the shield wall 11 of the hopper 339 may be disposed very close to the conveyor 9. A table 12, constituted of a plurality of supports disposed between the plurality of belts of the conveyor 9, is pivoted at 125, so that it may be raised from its normally ineffective position, by a half revolution of a cam 105, to the effective position, to close the said opening, or block the said space, and to lift the sheets 2 off the belts 9, thus to pre-

vent the further feed of the papers under the shield 11 by the conveyor 9. The cam 105, which thus controls the feed of the papers below the shield 11, is controlled by an electromagnetic coil 221 (shown diagrammatically in Fig. 38) that may be operated in the same manner as the other electromagnetic coils illustrated herein, the operation of which is described at considerable length herein and in the said application. As will hereinafter appear, the circuit of the coil 221 is controlled in accordance with a modified counting-and-selector mechanism, illustrated in Figs. 28 to 39, so as to effect the upward pivotal movement of the table 12, thereby to stop the further feed of the papers 2 out of the hopper 339, after a predetermined number of the papers 2 have been stacked on a table 91.

With the table below the surface of the belt conveyor 9, as shown, the conveyor 9 feeds the papers vertically upward through the space of the opening under the shield 11, one by one, or in any other desired number, between vertically disposed belts 17 and 21, over a roll 27 disposed at a level above the topmost sheet 2 of the stack, over a guide 39, and on top of a stack 89 on a table 91, under a downwardly inclined guide 55, until it strikes an integral bent portion 58 at the end of the downwardly inclined guide 55. The discharge pulleys or rolls 27 and a roll 31 are attached to the ends of arm members 37.

The guide 55 may be constituted of two guide arms or members, one on each side of the center of the sheets stacked on the table 91, separated by a yoke 49, pivoted at 85 to an arm 41, so as to equalize the pressure exerted by them on the uppermost sheet of the stack engaged by the two guide members of the guide 55, and each provided with the bent end 58. The bent ends 58 constitute a stop, positioned to the right (as viewed in Fig. 27) and above the predetermined position occupied by the stack of papers on the table 91.

The papers 2 are fed on to the table 91 from above the table 91, at a downward incline, toward and against the stops 58, which stop their further movement, and thus cause them to become stacked on the table 91, in engagement with the stops. The sheets are guided, during their feeding movement, on to the stack on the table 91, by the guide arms of the guide 55. The impact of the papers, passing under the guide arms of the guide 55, automatically raises them vertically, in accordance with the height of the stack, and, with them, through the yoke 49 and the arm 41, that connects them to the guide 55, the rolls 27 and 31 and the arm members by which they are carried. The upper portions of the conveyors 17 and 21 are thus automatically raised vertically, in accordance with the height of the stack, to raise the point of delivery of the sheets 2 to the stack of sheets on the table 91. The lower pulleys 57 and 59 of the belts 17 and 21, however, do not change positions during the vertical movement of the rolls 27 and 31. The belt 23 extends also over fixed pulleys 45 and 47.

The arm members 37 are provided with wheels (not shown) adapted to roll on a vertical track of a supporting column 421, thus to guide their vertical movement and the vertical movement of the freely movable rolls 27 and 31 by and against the force of gravity. To maintain tension in the belts 21, an idler pulley 23 is free to move in a vertically disposed arc at the end of arms 101 pivoted to the frame of the machine at 103. The guide members are maintained on the top-most sheet of the stack by gravity, and to reduce the up-

ward force which the papers must exert in order to lift the guides 55, a counterweight 144 is connected by a cord 422, running over pulleys 131 and 129 and attached to the member 37. The lowermost positions of the pulleys 27 and 31 and the arm 101 with the pulley 23 are indicated by dotted lines.

If the papers are fed forward with a folded end leading, they naturally arrive on the table 91 in the same way. When the correct number of papers, twenty-five as an illustration, have been so fed and stacked on the table 91, the table 12 is raised to stop the feed of additional papers, the guide 55 is likewise raised, and the table and the stack thereon turned a half revolution, in order to alternate the folded edges, by means of a shaft 95 on which the table 91 is supported. The guides 55 are then dropped, so as to become restored in effective position, the table 12 is lowered and the feed of the papers is resumed, resulting in a reversed position of the newspapers on the stack.

To effect the raising of the guide 55, a lug 158 on one arm of a bell crank 155 is moved up against the cord 422 upon the downward movement of the connecting rod 150 that is connected to the other arm of the bell crank. The lug 158 is provided with frictional material that binds frictionally against the cord 422 as the lug 158 is moved upward, thus pulling the cord 422 upward and to the left, thereby causing the raising of the guides 55 and the parts attached thereto.

It is now in order to describe the wrapper-feeding, addressing and severing mechanism.

Referring, first, more particularly to Figs. 1 to 26, the wrapping paper is fed intermittently from a roll or reel of wrapping paper 118 that is mounted to turn upon a spindle or rod 120, disposed at the left-hand side of the machine, and a little below the magazine 78. From the roll 118, the wrapping-paper web 122 rises substantially vertically to a guide roll 124, over which it passes to the right, over a platen 126 and under a backing plate 128 of the addressing mechanism. As will be explained hereinafter, the platen 126 is intermittently moved upward to force the interposed wrapping-paper web 122 against a type-backed ribbon 130 between the web 122 and an address plate 228. Different address plates 228 will thus produce different addresses and other insignia upon the web 122.

At a suitable moment, the portion of the web 122 thus addressed is fed forward, to the right, between feed rolls 132 and 134, the former of which is larger than the latter, and may be constituted of rubber, while the latter may be constituted of metal. One revolution of the feed roll 132 about its shaft 133 results in feeding the required length of wrapper from the reel 118. Such revolution of the feed roll 132 will be produced after a predetermined degree of rotation of the shaft 386, as will be explained later. The web 122 is fed between a cutter bed 136 and a cutter roll 138, and, through guides 135 and 137 (Figs. 1 and 2), over to the stacker belts 80, which grips the web under the hold-down weight 76 and carrying it forward to the right, stretching it taut. The cutter roll 138 is mounted upon a shaft 233. At the completion of the revolution of the feed roll 132, the cutter roll 138 is actuated, in synchronism with the other movements of the machine parts, to make one revolution, thereby severing the addressed portion of the web 122 from the remainder of the web. The severed portion of the web constitutes a wrapper; in the industry, it is often called a "snipe".

Referring, now, to Figs. 27 to 29, the wrapping paper is fed intermittently from a roll or reel of wrapping paper 267 that is mounted to turn upon a spindle or rod 120, disposed at the left-hand side of the machine, and a little below the hopper 339. From the roll 267, the wrapping-paper web 122 rises substantially vertically to a guide roll 277, over which it passes to the right, over a platen 126 and under a backing plate 313 of the addressing mechanism. As will be explained hereinafter, the platen 126 is intermittently moved upward to force the interposed wrapping-paper web 122 against a type-backed ribbon 311 between the web 122 and an address plate 205. Different address plates 205 will thus produce different addresses and other insignia upon the web 122.

At a suitable moment, the portion of the web 122 thus addressed is fed forward, to the right, between feed rolls 281 and 288, the former of which is larger than the latter, and may be constituted of rubber, while the latter may be constituted of metal. One revolution of the feed roll 281 about its shaft 321 results in feeding the required length of wrapper from the reel 267. Such revolution of the feed roll 281 will be produced after a predetermined degree of rotation of the shaft 386, as will be explained later. The web 122 is fed between a cutter bed 289 and a cutter roll 298; and, over a guide 299 (Fig. 29), to the belts 3. The cutter roll 138 is mounted upon a shaft 233. At the completion of the revolution of the feed roll 281, the cutter roll 298 is actuated, in synchronism with the other movements of the machine parts, to make one revolution, thereby severing the addressed wrapper or "snipe" from the remainder of the web 122.

In the modification of Figs. 1 to 26, the wrapper, thus severed, is thereupon pulled into the magazine 78 by the belts 80, into engagement with the stops 86, and remains there until the first newspaper 2 enters the magazine 78 under the wrapper. The next-following newspapers are then fed in under this first newspaper, as before described, the wrapper remaining always at the top of the stack, under the hold-down weight 76. The name, address and other information relating to the dealer for whom the stack of newspapers 2 in the magazine 78 is about to be collected have previously been printed, as before described, on the upper side of the wrapper.

If desired, a secondary wrapper, perhaps of old newspaper, may be placed on the table 140 before the stack is released from the magazine, in order to cover the portions of the stack not covered by the printed wrapper. The stack, with the printed wrapper thereon, would then be delivered on to the secondary wrapper on the table 140, in the manner presently to be described. The secondary wrapper may be deposited on the table 140 by some other mechanism than the belts 80, and this may be effected from a point in front or back of the table 140, instead of from the left thereof, as viewed in Fig. 1. Such modified arrangement may have preferences in cases where the sizes of the stacks intended for different dealers vary so greatly that different-length wrappers are desirable, in order that the wrappers may go completely around the sides and the top of the stack of newspapers. The illustrated embodiment of the invention provides but a single-size wrapper, but it may be desirable to have an intercoordination between the size of the stack and the length of wrapper feed desired. The table 140 is provided with a vertically dis-

posed, stop wall 142 for limiting the forward movement of the newspapers.

After a predetermined number of newspapers 2 have been accumulated in the magazine 78, as determined by the counting finger 44, or the counting fingers 44 and 46, further feeding of the newspapers into the magazine 78 will automatically be stopped, as hereinafter described. The stops 86 will thereupon be freed, whereupon the conveyor 80 will carry the stack of newspapers accumulated in the magazine 78, as a unit, out of the magazine 78 and on to the table 140, or the said secondary or other wrapper resting thereon. The hold-down weight 76, of course, then falls by gravity once more to the bottom of the magazine 78.

The mechanism for freeing the stops 86 is illustrated more particularly in Figs. 22 to 25. These stops are rigidly attached to a rock shaft 189 upon which is mounted a catch 141 that is normally retained in a recess 143 of an armature 145 of an electromagnet 147, by a spring 139 that normally maintains the armature 145 raised, but it may be released in opposition to the action of the spring 139, by thus energizing the electromagnet 147. The catch 141 normally, therefore, maintains the rock shaft in such position that the stops 86 occupy their effective positions, illustrated by full lines in Fig. 22; but the catch 141 becomes released when the armature 145 is attracted downward by the electromagnet 147. The belts 80 are then free to move the stacked papers 2 in the magazine 78 on to the receiving table 140, and the thrust of the stack of newspapers 2 on the moving belts 80 will then actuate the stops 86 from the position of Fig. 22 to the position of Fig. 23, in opposition to the force exerted by a counterweight 157. The counterweight 157 later returns the stops 86 to their normal positions, illustrated in Fig. 22. In order to absorb the shocks of the moving papers that strike the stops 86, as they are fed into the magazine 78, at high speed, the mounting of the catch 141 on the rock shaft 189 is rendered yielding or resilient, through the medium of a resilient insert 153, interposed between the shaft 189 and a collar 151 that surrounds the shaft 189. The electromagnet is energized by the closing of a brush contact member (not shown) and a contact member 368 of a multiple-switch master controller 149, as hereinafter explained.

During the travel of the wrapper through the magazine 78, of course, there should be no further delivery of newspapers to the conveyor belts 80.

So long as the conveyor belts 8 continue to engage the lowermost newspaper in the hopper 6, the belts 60 and 62 will continue to deliver newspapers to the magazine 78. Provision is, therefore, made for lifting the stack of newspapers in the hopper 6 up, out of contact with the belts 8, in synchronism with the movements of the other parts of the machine, when it is desired to stop the further feed of the newspapers 2.

To this end, a plurality of bar supports 146, rigidly connected together upon a common frame, are normally disposed below, and between, the belts 8, as shown more particularly in Fig. 1. In such normal disposition of the supports 146, they are ineffective, and do not interfere with the feeding of the newspapers 2 out of the hopper 6 by the belts 8. The supports 146 may, however, become raised, as a unit, up between the belts 8, into an effective position, as shown in Figs. 6 and 8, thus performing a double function:

first, they lift the newspapers 2 up above the belts, where they constitute a table for supporting the newspapers, so that the belts can not, further, convey the newspapers out of the hopper 6; and secondly, they close up the space under the finger 16, so that the newspapers could not any longer be fed under the finger 16, even if the belts could, otherwise, be capable of doing so.

This raising of the table supports 146 is automatically effected, immediately after every feeding of the desired, predetermined number of papers 2 out of the hopper 6, by means of long, parallelly disposed, side rods 186. The separating roll 38 is raised simultaneously with the raising of the table 146, as is also illustrated in Fig. 8, to reduce the friction upon any newspaper 2 that may happen to become clamped, part way out of the hopper 6, between the table 146 and the finger 16 at the bottom of the shield 10, thus to prevent damaging the clamped newspapers.

The cycle of operations is controlled by the counting finger or fingers. As a newspaper 2 travels from right to left, its forward, folded end 7 first engages the counting finger 44, thus pivotally actuating it about a pivot 156 toward the left and raising it above a plate 152, upon which it and the finger 46 normally rests. As the newspaper 2 continues its travel toward the left, as viewed in Fig. 1, its forward, folded end 7 engages, the next moment, the counting finger 46, raising it pivotally about a pivot 154. Though two pivots 154 and 156 are illustrated, the counting fingers 44 and 46 may be pivoted about a common axis (not shown) by which the counting fingers may be carried. When the rear end of the paper 2 rides further forward, away from the contact finger 44, the latter again drops off the rear edge of the paper 2, into the space 42 between successive papers 2; and when the paper 2 travels still further forward, away from under the counting finger 46, the latter then also falls into the said space 42. The same result takes place when the newspapers travel overlapped. This operation results in counting the papers, as described in the said application, by means of contact members 164 and 166, shown in Fig. 25.

One function of the plate 152 is to prevent sagging of the belts 8 that travel over the plate 152 and under the counting fingers 44 and 46. It serves also as a stop for the counting fingers.

The movement of the contact fingers 44 and 46 serves to close an electric circuit for actuating a counter. Each time that the circuit is closed, the counter is actuated to register a count. The counting fingers 44 and 46 are thus pivotally moved, in succession, by the newspapers 2, to control the actuation of the counter.

The contact members 164 and 166 are connected to the outside circuit through metal springs 194 and 196, respectively, which also serve to hold the counting fingers 46 and 44, respectively, in their lowest positions. The spring 194 is fastened at one end to the contact arm 164 and one end of the spring 196 is similarly fastened to the contact arm 166.

The circuit connections will be understood from the circuit diagram of Fig. 25 taken in conjunction with the apparatus illustrated more particularly in Figs. 10 and 12. The contact member 164 is connected by way of the spring 194 and a conductor 200 to one side of the coil of the counter magnet 202, and the contact member 166 is similarly connected by way of the spring 196 and a conductor 204, by way of other connections that will be described hereinafter, to the other

side of the counter-magnet coil 202. The magnet coil 202 is mounted upon a magnet core 203, between the north and south poles of which a pawl 208 is intermediately pivoted, at 210. The pawl 208 is provided at its ends, on opposite sides of its pivot 210, with two pawl teeth 212 and 214 for engaging the slightly offset ratchet teeth 216 of a ratchet counter wheel 218 that is mounted upon a counter shaft 220. The counter wheel 218 is fixed to the shaft 220 of any suitable, dial-operating mechanism 225, so that the successive movements of the counter 218, tooth by tooth, are registered on a dial 224, as shown more particularly in Fig. 3, which registers the total count.

The tooth 212 is held normally in engagement with a ratchet tooth 216 of the counter wheel 218 by a spring 222 mounted about the pivot 210. It is adapted to be rocked, in one direction, out of contact therewith, in opposition to the action of the spring 222, by the magnetic field of the coil 202. The tooth 214 will, at the same time, become moved into engagement with another tooth 216 of the counter 218, thereby effecting one step of movement of the counter 218. Upon the opening of the circuit of the coil 202, the spring 222 will rock the pawl 208 in the opposite direction, to cause the tooth 214 to disengage the ratchet wheel, and the tooth 212 to reengage the ratchet wheel, thereby effecting a further step of movement of the ratchet wheel. The pawl 208 thus moves like an ordinary escapement, the teeth 212 and 214 engaging the teeth 216 of the ratchet 218 alternately to effect step-by-step movement of the ratchet wheel 218.

At each closing of the contact members 164 and 166, in response to the actuation of the counting fingers 44 and 46, therefore, the counter 218 will be actuated to the extent of one of the teeth 216, to register an additional count; and the spring 220 will return the tooth 212 into engagement with the teeth 216 at each opening movement of the contact members 164 and 166.

A counter of this description is operable at extremely high speeds.

It is necessary, however, to do more than merely count the sheets. As before stated, it is desired to count them up to a predetermined number, which number is different for each individual newsdealer, and then to wrap the predetermined number so counted. This feature of the invention will be explained more fully hereinafter.

It is at the end of the counting of the predetermined number of newspapers in the magazine 78 that the stops 86 are released, the stack of sheets in the magazine 78 is delivered on to the delivery table 140, and the table 146 becomes raised.

One of the side members 186, that raises the table 146 to stop the feed of the papers 2 out of the hopper 6, is provided with a projection 350, shown more particularly in Fig. 25, that is adapted to engage a plunger 352 to raise it. The plunger 352 is secured to the underside of two insulating, contact-engaging members 357 and 359, that are secured together at different levels. The contact-engaging member 357 engages under a contact member 356 and the contact-engaging member 359 engages under a contact member 362.

The contact members 356 and 362 are disposed at correspondingly different levels. The raising of the plunger 352, therefore, will effect the raising of the two contact members 356 and 362. A contact member 358 is normally out of contact with the contact member 356 and a contact member

360 normally engages the contact member 362. The raising of the projection 352, therefore, results in the opening of the contact members 360 and 362, and the closing of the contact members 356 and 358. The opening of the contact members 360 and 362 effects the breaking of the circuit just previously closed to effect the raising of the table 146. The closing of the contact members 356 and 358 effects the closing of the circuit of a commutator-drive motor 364. The electrical connections are shown diagrammatically in Fig. 25. Suitable speed reducers keep down the speed of the shaft of the motor 364 to a desired, low speed.

As soon as the table 146 becomes thus raised, therefore, the motor 364 is operated throughout a complete revolution to control the rotation of a multiple-switch master controller 149. The master controller, in turn, effects a sequence of operations, as follows: First, it releases the stops 86 to permit feeding the papers 2 stacked in the magazine 78 on to the delivery table 140, as just described. Secondly, it actuates the feed rolls 132 and 134, thus effecting the advance of the wrapping-paper web 122 into the bottom of the magazine 78, through the guides 135 and 137. Thirdly, it advances an address slide 232 into position, to advance an address plate 228 under the address mechanism 230. Fourthly, a platen-lever 243 is then actuated about its intermediate pivot 250 to move the bed 126 against the backing plate 128, thus to print the address and other insignia on the next-succeeding portion of the wrapper web, under the address plate 228 already advanced in position, as previously described. Fifthly, it actuates the cutter knife 138 to sever the wrapper from the web 122, to enable the conveyor 80 to feed the wrapper into the magazine 78. Sixthly, and finally, it returns the table 146 from its effective position, illustrated in Fig. 8, to its ineffective position, illustrated in Fig. 1, whereupon the feeding of the papers 2 out of the hopper 6 recommences. Thereupon, the motor 364 is stopped by the breaking of its circuit through separation of the contact members 356 and 358, and the machine is ready for another cycle of operations. It will be understood, however, that this sequence of events controlled by the master switch 149 may be varied to some degree; for example, the address plate may be fed forward after the wrapper is cut. This might, however, result in some loss of time, since the address plate, in order to control the quantity, must be in position under the selector.

These operations are effected, in succession, upon the closing of the motor circuit, by a brush contact member (not shown) that is attached to the motor shaft, and that is adapted to make contact successively, during its cycle of revolution, with contact members 368, 370, 372, 374, 376, and 378. These contacts are made and broken almost instantaneously, in order to effect the above-described sequence of operations rapidly. Each of these operations is brought about by the said contact members successively closing and opening the circuits of actuating magnets.

The operation of raising and lowering the table 146 will be described first, to complete the description above.

When the brush contact member (not shown) engages the contact member 378, a circuit is established, by way of a conductor 392, to the magnet coil 318, which effects the lowering of the table 146. After the side members 186 of the table frame 146 drop, thus again opening the cir-

cult of the commutator motor 364, the motor stops running, but not until after a predetermined time interval, for the motor 364 has sufficient momentum so that it is carried away from the last-named commutating point, where it engages the contact member 378, to its ineffective position, between the contact members 378 and 368, before coming to rest.

The raising of the table 146 is effected by means of an eccentric 168 that is rotatably mounted upon a shaft 170 that is journaled in the front and rear frame plates 165 and 167, and that is constantly rotated, at constant speed, from a sprocket 171 at one end of the shaft 170 (Fig. 6). The only part, in addition to the sprocket 171, that is positively connected with the shaft 170 is a drum 173 that is locked thereto by a Woodruff key 175. The drum 173, therefore, is constantly rotated with the shaft 170.

An eccentric strap 172, that is mounted over the eccentric 168, is integral with a depending hollow, connecting rod 174, in which is mounted a stem or plunger 176, to the lower projecting end of which the separating roll 38 is pivoted. The spring 40, before referred to, is mounted in the hollow of the rod 174, in coiled form, about the upper end of the stem 176. The connecting rod 174 is thus extensible against the spring-loaded plunger 176, to compensate for the different positions to which the frame 146 is free to rise, against various thicknesses of paper and against different settings of the shield 10. The roll 38 is shown in Fig. 6 as in the form of two rolls, mounted to turn about a spindle or rod 178 that extends through vertically elongated openings 180 and 182 in the front and rear walls 167 and 165 of the machine frame. The spindle 178 is rotatably mounted in a bearing 184 at the lower end of the stem 176, as shown more particularly in Figs. 6 and 8. When the roll or rolls 38 are raised, as before described, this is effected by raising the spindle 178 in the openings 180 and 182.

The side rods 186 are provided with bent, forward ends (shown by dotted lines in Fig. 8) that are pivoted at the ends of the spindle 178, outside the front and rear plates 165 and 167 of the machine, and the rear ends of the rods 186 are pivoted at 188, under the conveyor 4, as is more particularly illustrated in Figs. 1 and 6. The side rods 186 are thus adapted to rock up and down slightly about the pivot 188. The table supports 146 are secured to cross bars 269 that transversely connect the side rods 186, through openings 187 and 190 in the side plates 165 and 167 of the machine frame, by means of screws 271 that enter the cross bars 269 through underhanging flanges 273 of the table supports 146. The openings 187 and 190 permit the cross members 269 to become raised and lowered. The table supports 146 are thus carried by the side rods 186 and are raised and lowered as the side rods 186 are rocked up and down about the pivots 188.

A half-revolution of the eccentric 168, from the position illustrated in Fig. 1 to that illustrated in Fig. 8, will result in raising the roll 38, as before described, and a further half-revolution of the eccentric 168 will restore the roll 38 to the position shown in Fig. 1. Such movement of the roll 38, and the spindle 178 upon which it is mounted, will effect the raising or lowering of the table 146, by means of the side rods 186.

A coiled spring 177 is wound around the outside of the drum 173. One end 192 of the spring

177 is held in a hole 179 in the eccentric 168, and the other end 191 in a hole 181 of a disc 183 that is free to turn on the shaft 170, as is illustrated more particularly in Figs. 6 and 26. Near the circumference, a lug 300 extends through both faces of the disc 183. The right-hand end of the lug 300 is adapted to be engaged either by an upper armature 302 or a lower armature 304, the former cooperating with an upper magnet coil 318 and the latter with a lower magnet coil 316. If the lug 300 is not held by either armature, the spring 177 will engage and wind itself tight on the constantly rotating drum 173, so as to become tensioned thereagainst. The friction of the spring 177 against the drum 173 will thus effect the rotation of the spring 177, the disc 183 and the eccentric 168, until the lug 300 comes into contact with one or the other armature 302 or 304. Restraining the disc 183 will, therefore, effect unwinding of the spring 177 from the drum 173 and interrupt the rotary movement of the spring 177, the disc 183 and the eccentric 168. The eccentric is thus intermittently clutched to the constantly rotating shaft 170, so as intermittently to be actuated thereby, to effect intermittent actuation of the table 146, up and down, in its two positions.

In Figs. 6 and 7, it is the upper armature 302 that is shown engaging the lug 300, the lower armature 304 having been pulled to the magnet 316. The armatures 302 and 304 are carried on the upper and lower ends of a yoke 306 that is pivoted to move to the right and to the left, as viewed in Fig. 6, about pivots 308 and 310 that enter suitable journals in the central common core 312 of the magnets 316 and 318.

As before stated, the upper ends of the side members 186 are rockingly mounted about the spindle 178. The half-revolution of the eccentric 168, which effects the lowering of the table 146, is brought about through the closing of contact member 378. The one-half revolution which raises the table 146 is brought about by the contact members 280 and 283 in the selector coming together, or throwing an emergency switch 294.

Contact members 280 and 283 in the selector will close the circuit of the lower magnet coil 316. The contact member 283 is shown in Fig. 25 connected by conductors 398 and 399 with one end of the coil 316; and the contact member 280 by a conductor 320 and other connections, as will be hereinafter explained, to the other end of the coil 316. The closing of this circuit will cause this lower coil 316 to attract the lower armature 304, as illustrated in Figs. 6 and 26, thus causing the lug 300 to become engaged by the upper armature 302.

As the drum 173 rotates with the shaft 170 to which it is keyed, the spring 177 tends to drag the eccentric 168 with it, and will do so as long as the disc end 191 of the spring 177 is not restrained. If, however, the disc end 191 is held, in response to the lug 300 engaging one of the armatures 302 and 304, the rotating movement of the drum 173 will tend to unwind the spring 177, until it leaves the drum 173, releasing the tension of the spring 177 on the drum 173, and the latter alone will then rotate, without the spring 177. This stops the movement of the eccentric 168, as well as of the spring 177. This stopping of the disc end 191 of the spring is accomplished by pulling one of the armatures 302 and 304 against its corresponding electromagnet 318 or 316. The first-named armature thereupon

releases the lug 300, so that the other end comes into the path of the lug 300 on one side of the disc 183. When the other electromagnet is energized, the other armature is pulled over, releasing the disc 183 and allowing the spring 177 to tighten on the drum 173, and thus rotate the eccentric with it, until the lug 300 strikes the other armature, half a revolution beyond. Energizing the lower magnet 316 thus raises the connecting rod 174, and energizing the upper magnet 318 lowers it.

To control the amount of unwinding of the spring 177, so that the eccentric 168 shall stop at the same point each time, the portion of the lug 300 on the left-hand side of the disc 183 engages the end wall of a slot 185 cut in the flange 169 of a cylindrical barrel 345 which is part of the eccentric, and which also serves as a case for the spring 177, as illustrated more particularly in Figs. 6 and 26.

The lug 300 may thus be held by either armature 302 or 304. If it is held by the upper armature 302, the eccentric 168 will be stopped in its upper position. If it is held by the lower armature 304, the eccentric 168 will be stopped in its lower position. The low position of the eccentric 168, as already explained, corresponds to the low position of the table 146, permitting the conveyor 8 to feed the papers 2 out of the hopper 6. The high position of the eccentric 168, as has also been explained, corresponds to the high position of the table 146, in which the papers 2 cannot be fed out of the hopper 6.

It has already been explained that the circuit of the magnet coil 316 is controlled by the contact members 280 and 283. The current of the magnet coil 318 is controlled by the said brush contact member (not shown) and the contact member 378 of the contact switch 149, or by the emergency switch 294.

When the brush contact member (not shown) makes contact with the contact member 368, as previously described, a circuit is established, by way of a conductor 380, to the electromagnet 147 that controls the catch 141 for releasing the stops 86 (see particularly Figs. 22 to 25) thus to release the stack of papers in the magazine 78, after which the wrapper is fed into the magazine 78. After the stack of newspapers in the magazine 78 has, in consequence, been delivered to the delivery table 140, as already explained, the next operation controlled by the commutator 149 is to advance the address plate or stencil 228, and to feed the wrapper web 122 into the magazine 78. This plate 228 is provided with means for determining beforehand the correct number of newspapers that shall be stacked in the magazine 78 for the particular dealer corresponding to that particular address plate. The addressing is accomplished when the said brush contact member (not shown) moves from the contact member 368 to the contact member 370.

The circuit of an electromagnet 384 is next closed, when the said brush contact member (not shown) engages the contact member 372, by way of a conductor 382. The electromagnet 384 is illustrated more particularly in Figs. 1 and 2 as operating a shaft 386, supported in a member 258, through a single revolution to permit a spring 246 to effect the actuation of a link 244 and, therefore, a cycle of movement of an address slide 232. The link 244 is actuated by a crank 328 on the shaft 386. The slide 232 is returned by a spring-loaded arm 238.

To the right of the counter, as viewed in Figs.

1 and 2, and to the left of the magazine 78, there is shown a vertically-disposed container 226 for a large number of plates 228, one corresponding to each newsdealer to whom the newspapers stacked in the magazine 78 are to be shipped.

In Figs. 1 and 2, the slide 232 is shown under the container 226, so that the lowermost plate 228 in the container rests thereon. The plates 228 are successively moved to the left, from underneath the addressing device 128, to a position underneath the counter and selector, at the same time that the lowermost plate 228 in the container 226 is moved under the addressing device 128, shown between the counter and the container 226. The plate 228 previously under the addressing device 128 is moved into the selector to control the counting off of the proper number of papers to be fed under the wrapper now in position in the magazine 78. After it has been used, the plate 228 is moved into the container 261, under a spring-pressed finger 263. The plates 228 are later removed from the container 261 for new use.

Each address plate 228 has an opening 260 (Figs. 10 and 11) through which, at the suitable time, a selector arm 262 extends. The openings 260 are of different length in different address plates 228, and it is the lengths of these openings that determine the number of papers 2 that will be stacked in the magazine 78. By means of this slot-type selector, therefore, the number of papers that shall be delivered to the magazine 78 is determined automatically by the length of the openings 260 on the address plate 228. The length of the opening 260, as will hereinafter appear, determines the arcuate distance between two contact members 280 and 283. This arcuate distance is adjusted in accordance with different-sized openings 260, so that the contact member 283 will be actuated by the counter through different arcuate distances to stop the feeding of the papers 2 in the magazine 78 after different predetermined numbers of papers have been stacked therein. As the address plate 228 is moved into position from left to right, as viewed in Fig. 13, therefore, the wall 282 of the slot 260 will bear against the lower portion of the selector arm 262, forcing it to pivot to the right, about the axis of the shaft 264, thus causing turning of the gears 268 and 270, with consequent arcuate movement of the contact member 280, to the initial position determined by the length of the opening or slot 260.

The rocking shaft 264 to which the selector arm 262 is fixed extends through a bearing 266, as shown more particularly in Fig. 10. On the other side of the bearing 266, the shaft 264 carries the gear 268 that meshes with the gear 270. The purpose of the gears 268 and 270 is to amplify the range of possible count. The gear 270 is mounted upon a shaft 272 that extends through a bearing 274; and, on the other side of the bearing 274, it is provided with an arm 278, carrying the contact member 280. The contact member 280 is thus traced through an arc by the gears 268 and 270.

The lower end of the selector arm 262 rides on the upper surface of each address plate 228, as it is moved into position in the selector. At the same time, the contact member 280 is carried through the said arc into engagement with the contact member 283 which is disposed in fixed relation to an insulating friction disc 286. The disc 286 is rotatably mounted upon the shaft 75

220, but is frictionally clutched against the counting ratchet wheel 218 by a flexible spring 285.

As the contact member 280 is thus turned through the said arc, therefore, it pushes the counting-wheel contact member 283 ahead of it, through the same arc, against the friction of the disc clutch on the counting wheel 218, from the position of Fig. 15 to that of Fig. 21; and, later, that of Fig. 16. It is assumed that, in Fig. 15, the parts are in the position occupied at the moment when the plate 228 enters the selector, Fig. 14 representing the position of the parts when the machine is first commenced operating. The spring 285 serves also to connect the contact member 283 into circuit. The circuit connects with the other contact member 280 through the journal of its shaft 272, the arm that carries it being conducting. A stop 287 is provided to keep the selecting arm 262 from coming back beyond a limiting point when no plate 228 is in place. The arm 262 comes to rest against the stop 287 in such a position that the plate 228, which enters, will engage the arm 262 and make the selection.

The two contact members 280 and 283 are thus moved to the same initial position by every plate 282, since the selecting-arm contact member 280 is positively driven by the selecting arm 262 through the gears 268 and 270.

When the former plate 228 has been almost finally moved out of position, into the container 261, under the spring-pressed finger 263, and the new address plate 228 is almost at its correct position in the selector, the selecting arm 262 will be actuated into the slot or opening 260 in the plate 228, from the position of Fig. 16 to that of Fig. 17. This may be effected by a spiral spring 284, coiled about the shaft 264 on the left-hand side of the bearing 266, as viewed in Fig. 10. The spring will exert a clockwise torque on the shaft 264 and the arm 262 mounted thereon, as viewed in Fig. 13. The contact member 280, therefore, will again move away from the contact member 283. As before stated, the length of the arc through which the contact members 280 and 283 will thus become separated will depend upon the position of the wall 282 in the slot 260 of the new address plate 228. The selector arm 262 will come to rest, under the action of the spring 284, against the rear edge 282 of the slot, as illustrated in Fig. 18. In dropping into this slot, the selecting-arm contact member 280 is moved back, away from the counting-wheel contact member 283, through a definite arc, this arc being determined by the length of the slot or opening 260, as before stated. The longer the slot 260, the greater the arc through which the selecting-arm contact member 280 moves back from the counting-wheel contact member 283. Whether more or less papers 2 will be fed into the magazine 78 corresponding to any particular address plate 228, thus depends upon the position of the wall 282 on that address plate. The cycle of previous events above described, prior to the advance of the new plate 228, had left these contact members 280 and 283 apart, and the completion of the cycle brings them together again.

As the papers 2 start feeding to the magazine 78, and close and open the circuit to the electromagnet 202 at the counter, by means of the contact members 164 and 166, the counting wheel 218 is driven by the pawl 208, which moves one tooth for each paper in such a direction that the contact member 283, which is driven, step by

step, by the counting wheel 218, through the friction disc 286, moves back toward the selecting-arm contact member 280. The greater the length of the slot 260 in the plate, the greater the arc through which the contact member 283 will travel before it engages the contact member 280; and hence, the greater the number of papers entering the magazine 78 before these contact members 280 and 283 come together and close the circuit to the mechanism which stops the feeding of additional papers. It is when these contact members 280 and 283 finally make contact, as illustrated in Figs. 19 and 20, that a circuit will be closed for effecting the raising of the table 146.

At a later time, as the plate 228 is expelled into the container 261, to make way for the next plate 228, the arm 262 will ride over the wall 282 all the way on to the upper surface of the plate 228, as it is expelled, so as to leave the slot 260.

The number of oscillatory movements of the pawl 208, with its teeth 212, 214, necessary to effect engagement of the contact members 280 and 283 will, therefore, depend solely on the length of the openings 260 in the various address plates 228; and this, in turn, will determine the number of papers 2 stacked in the magazine 78 by stopping the feed of the papers out of the hopper 6, through the raising of the table 146.

An additional selector arm (not shown) may be provided which, in cooperation with the selector arm 262, will increase the number of papers that may be counted in the magazine 78. An additional opening (not shown) would correspondingly be provided, similar to the slot 260, for receiving such additional selector arm. One of the slots, in cooperation with its selector arm, would then count units, and the other tens. The number of selector arms and cooperating slots may further be increased to count hundreds, thousands, and so on. Further modifications may involve the use of lugs or pivoted arms, in place of slots, for adjustment purposes. One such modification is described hereinafter. A dial, or a plate with a lug, may be employed, adjustable by turning the dial or moving the lug.

It is now in order to describe the mechanism for actuating the address plates 228. The slide 232 is provided with an upward projection 234 having an antifriction roll 236 that may be engaged by an arm 238. The arms 238 and 240 are pivoted about a pivotal shaft 242. The arm 238 is positively actuated about the pivot 242 by means of the connecting rod 244, through mechanisms hereinafter described. The arm 240 is maintained in engagement with the anti-friction roll 236, during such actuation of the arm 238, by the spring 246, one end of which is fastened to the arm 240 and the other end to a cross brace of the machine 237. During this positive actuation of the arm 238 by the connecting rod 244, it will positively move the slide 232 away from under the container 226 to the right, as viewed in Figs. 1 and 2, and to the left. This spring 246 serves to return the slide 232 to the position of Figs. 1 and 2, by the arm 240 engaging the anti-friction roll 236.

It is preferred thus to spring-load the arm 240 against the positively driven arm 238, as it releases the pressure of the arm 238 upon the anti-friction roll 236, and thus prevent possible destruction of the plates 228 or parts of the machine, in the event that there should be an obstruction to the smooth passage of the plates during the actuation of the slide 232 to the position of Figs. 1 and 2. If a jam occurs during the feed-

ing of the address plates 228, the spring-loaded arm 240, together with the slide 232 controlled thereby, will, because of the unusual resistance, stop short midway in its passage, tensioned by the spring 246, and the crank-driven arm 238 will continue throughout its cycle of movement, until it reaches the end of its stroke, thus preventing such damaging of the plates, or of the machine. If this occurs, the resultant change in angle between the two arms 238 and 240 will result in closing a circuit of a warning alarm lamp 390, as explained in the said application, thus to warn the operator that the machine is out of order. Brushes (not shown) are connected by conductors 432 and 434 to the outside source of power 430 (Fig. 25).

An adjustable stop or stops 248 limits the return movement of the slide 232 by engaging the outside of the right-hand wall of the container 226, as viewed in Figs. 2, 4 and 5. By means of this stop or stops 248, the plates 228 will be caused to stop in the same position in the selector each time, thus preventing any discrepancy in the count.

The above operations have taken place in response to the said brush contact member (not shown) engaging the contact member 372. When the said brush contact member (not shown) becomes moved into contact with the contact member 374, a circuit becomes established, by way of a conductor 297 (Fig. 25), for printing the next portion of the wrapper web; and when it becomes moved into contact with the contact member 376, a circuit will be established, by way of a conductor 296, for operating the cutter 138.

The plate 228 having now been advanced under the addressing mechanism, it is ready to be used for the purpose of printing the address on the wrapping-paper web 122 by actuating the platen 126 upward against the interposed wrapping paper web 122. This printing may be effected at any time after the web 122 and the plate 228 have been moved into position and stopped. The platen 126 is at the left-hand end (as viewed in Fig. 2) of the intermediately pivoted platen lever 243, the right-hand end 252 of which is adapted to be actuated by a cam 254. When the riser of the cam 254, which is actuated by the shaft 333 prior to feeding, engages the right-hand end 252 of the lever 243, the platen 126 lifts the wrapping-paper web 122 against the type-backed ribbon 130, the ribbon 130 being forced against an address plate 228 backed by the plate 128. A spring 256 returns the plate 126 to its illustrated position.

The cutter comprises a longitudinally cut-away cylinder, and its periphery is provided with sharp-pointed grooves, forming teeth that align with similarly spaced serrations in the fixed cutter bar 136, as disclosed in the said application. The cutting action will be progressive across the knife, reducing the driving load. The paper passes under the rotating cutter 138 until the proper length is fed out. The knife then begins to rotate. The sharp points on both edges of the cutters 136 and 138 cut into the paper and rip the paper apart between these points, leaving a serrated edge. The knife continues to rotate, pushing the cut-off section along, until it is drawn off by the belts 80. The mechanism for driving the rotating cutter 138 is similar to that for driving the wrapper feed roll 132, the printing plate and the address-plate feed, and that for lifting and lowering the table 146. It differs from the last-

named in several particulars, including the fact that there is but one electromagnet 332, and the movement is through a full revolution, rather than a half-revolution, of the floating ring.

When the circuit of the electromagnetic coil 332 becomes closed by the commutator 149, the armature 334 becomes attracted by the core 337 of the coil 332 (see Fig. 25) against the force of a flat spring (not shown). Further operation is the same as described above in connection with the magnets 316 and 318 and their armatures 302 and 304, illustrated more particularly in Figs. 6 to 9 and 26. The case 344 of Fig. 25 corresponds to the cylindrical barrel 345 of Figs. 6 and 29, and the magnets 290 and 291, respectively, that control the feed of the wrapper and the printer, serve the same purpose, to their parts, as the magnet 332 serves to the cutter. As similar mechanisms each controlled by one or two electromagnets and cooperating armatures control the shafts 133, 333 and 386, it will be unnecessary to describe in detail these other mechanisms also, as none of the others is any more complicated, and the operation of the other mechanisms will be understood from the above description of this one mechanism, illustrated more particularly in Figs. 6 to 8 and 26.

The mechanism for operating the feed-roll shaft 133 of the feed roll 132 will be understood from Figs. 4, 5 and 5A. It is very similar to that described above in connection with Figs. 6 to 8 and 26. The coil 394, which corresponds to the coil 318, is wound about the core 393, which corresponds to the core 312. The core 393 is held fixed by screws to the side plate 165 of the frame of the machine, and carries a pivot 391 about which is pivoted an armature 388 carrying a catch 389 adapted to engage a stop 387 of a collar 381 in a casing 385. A leaf spring 396 tends to maintain the catch 389 against the stop 387, but it may be moved up out of engagement with the stop 389, about the pivot 391, in opposition to the force exerted by the spring 396. The pivotal movement of the armature 388 about the pivot 391 is guided by a pin 395 in a guiding slot provided upon the core 393.

Within the casing 385 is disposed a drum 373 similar to the drum 173, and coiled thereabout is a spring 375 corresponding to the spring 177. The ends 377 and 383 of the spring 375 are respectively held in a recess of the collar 381 and an end plate of the casing 385 corresponding to the elements 183 and 345. The drum 373 and a sprocket 371 integral therewith are mounted upon a portion of the feed shaft 133 extending beyond the feed roll 132. The casing 385 is secured to the free end of the shaft 133 by a pin 397.

It is now in order to describe the wiring diagram of Fig. 25. A main switch 293 controls the circuit between the source of current 430 and the machine. A fuse 292 is inserted outside of the main switch.

A source 430 of non-pulsating, direct current is preferred for operating the various electromagnets, particularly the counter. If an alternating-current source is available, instead, a rectifier 379 may be provided, and a filter may be employed to smooth out the ripples.

Current to the main motor 65, the master-switch motor 364, and the warning-lamp circuit, however, is taken directly from the line by way of conductors 436, 438, conductors 440, 442, and conductors 432, 434, respectively.

Assuming that the rods 186 and the attached table 146 are raised and that the said main or

master brush contact member (not shown) occupies a position between the commutating points 368 and 378 at the time that the switch 293 is closed, the circuit to the master-switch motor will then be closed, by reason of the contact member 356 having been lifted into contact with the contact member 358. The circuit of the master-switch motor is from the source 430, by way of the conductor 440, through the contact members 356 and 358, by way of a conductor 444, to the motor 364; and, by way of the conductor 442, back to the source 430. Rotation of this motor will cause a comparatively slow rotation of the master-contact member (not shown).

When this contact member (not shown) reaches the point 368, a circuit to the stack release magnet 147 will be closed through the conductor 380, as before described. The circuit may be traced from the conductor 436, by way of a conductor 446, through the rectifier 379, the switch 294, and the spring 369, to the brush contact member (not shown). From the contact member 368, the circuit continues, by way of the conductor 380, to the coil 147; from the coil 147, by way of conductors 448 and 450, back to the rectifier 379; and from the rectifier 379, by way of a conductor 452, to the conductor 438. Any papers that happen to be in the magazine 78 will push the stops 86 over, by reason of the armature 145 having been pulled away from the catch 141, and these papers will then pass out of the magazine.

Further rotation of the said main contact member (not shown) will result in breaking this circuit; and then, when it reaches the contact member 370, it will close a circuit to the magnet 290 through the conductor 295 allowing the rolls 132 and 134 to turn and feed out a given length of wrapper into the magazine. The circuit to the main contact member is the same as before, by way of the elements 436, 446 and 294; and from the contact member 370, it proceeds by way of the conductor 295 to the coil 290, and from the coil 290, by way of a conductor 454, and the conductor 450, to the rectifier 379 and the conductors 452 and 438.

Next, the main contact member (not shown) reaches the point 372 and, through the conductor 382, energizes the magnet 384 to effect the rotation of the shaft 386 and, with it, the feeding of the address plates 228, so that the bottom plate in the holder 226 is fed into the printer while the plate in the printer is fed into the selector. The circuit of the coil 384 continues, by way of a conductor 456 and the conductors 454 and 450, back to the rectifier 379.

When the main contact member (not shown) reaches the point 374, the magnet 291 controlling the printing of the address on the wrapper web 122 is energized through the conductor 297, the other terminal of the coil 291 being connected to the conductor 454 by a conductor 458.

When the main contact member (not shown) reaches the point 376, the mechanism of the cutter 136 is operated by closing the circuit to the magnet 332 through the conductor 296. This cuts off the wrapper which had previously been fed part way into the magazine by the rolls 132 and 134.

Now that the wrapper is in position in the magazine and the address plate corresponding to that wrapper is alined in the selector, the way is cleared for the papers to start feeding into the magazine 78 from the hopper 6. This is accomplished when the main contact member (not

shown) reaches the point 378, closing the circuit to the magnet 318 through the conductor 392, the circuit continuing from the coil 318 by way of a conductor 460. This results in the dropping of the table 146, lowering the papers in the hopper 6 on to the feed belts 8, and also dropping the rods 186. Dropping of these rods allows the contact member 356 to come out of contact with the contact member 358, thus stopping the control motor 264. The momentum of the motor will carry the main contact member (not shown) away from the contact member 378, and part way to the contact member 368. As the separated papers feed under the counting arms 44 and 46, the resultant successive contacts of the contact members 166 and 164 will cause intermittent rotation of the counting wheel 218 and, with it, the contact member 283, frictionally mounted on it, through the movements of the pawl 208, induced by the current in the magnet 202 through the conductor 200. The number of contacts of the contact members 166 and 164 necessary before the contact member 283 reaches the contact member 280 depends on the distance they were separated by the selecting arm 262. When the correct number of papers called for by the plate has passed the arms 44 and 46, the contact member 283 will contact the contact member 280. When the contact members 283 and 280 of the selector come together, a circuit will be closed to the magnet 316, which effects the raising of the table 146 and, with it, the rods 186, stopping the feed of papers from the hopper 6. This circuit may be traced from one side of the rectifier 379, by way of the switch 294, in the dotted-line position of Fig. 25, and by way of the conductor 398, to the contact members 283 and 280, and by way of the conductors 320, 458, 454 and 450, to the other side of the rectifier 379. The member 352 is raised again, opening the contact members 360 and 362 to open the circuit to the magnet 316, to prevent overheating, and also closing the contact members 356 and 358, to start the control motor 364 and, with it, the series of events previously described. If it is desired to stop the feed of the papers before the correct number has entered the magazine 78, the switch 294 may be thrown to the position shown in dotted lines in Fig. 25; this will result in closing the circuit to the magnet 316 to raise the table 146 and open the circuit to any of the other relays if they happen to be closed.

According to the modification of Figs. 28 to 39, illustrating an improved selector-and-addressing device, by means of which the predetermination of the count is effected by suitable lugs 201 on the address plates 205, the papers passing under a finger 13 (Fig. 29) close contact members 341 to make a circuit which energizes an electromagnet 325 to turn a ratchet wheel 323 one tooth for each paper. The ratchet wheel 323 is fixed to a shaft 211, which extends into the frame of the improved selector 193. The electromagnet 325 actuates an armature 329 connected with a double pawl 327, spring-controlled like the pawl 208, for actuating the counter ratchet wheel 323, in the same manner as before described, to count the sheets fed by the conveyor 9 out of the hopper 339. The shaft 211 rotates a contact arm 213 (Figs. 30 to 32) over a circular row of contact members 215, so as to engage these contact members 215 successively. The connection of the arm 213 to the shaft 211 is through a disc clutch 235, which is pressed, 75

by a spring 406, against an intermittent gear member 259 (Fig. 39) that is fixed to the contact arm 213. The gear member 259 is so arranged with reference to a train of gears 400, 403 and 401 that it moves a contact arm 217 from one contact point 219 of a circular row of contact members 215 to the next as the arm 213 completes each revolution. The gears 400 and 403 are integrally connected together, the former meshing with the gear member 259 and the latter with the gear 401. The gear 401 is mounted upon a shaft 407 that drives the contact arm 217 frictionally in the same manner that the shaft 211 drives the contact arm 213 frictionally through the same kind of clutch 235, pressed by a spring 405 against an intermittent gear member 229 to which the contact arm 217 is fixed.

With twenty-five contact members 215, numbered 0 to 24 in Fig. 38, and all of which may be successively closed in the course of one revolution of the arm 213, the movement of the shaft 211 between any two contact members 215,—the 24th and 25th contact members, for example,—will cause the aforesaid movement of the contact arm 217 from one contact member 219 to the next contact member 219. Thirteen contact members 219 are shown in Fig. 38, marked 0, 25, 50, 75, 100, 125, 150, 175, 200, 225, 250, 275 and 300.

The circuits of the contact members 215 and 219, respectively, are further controlled by previously closed pairs of contact members 206, 207 under the control of lugs 201 on an address plate 205.

As shown arbitrarily, there are twenty-five pairs of contact members 206, numbered 0 to 24 in Fig. 38, and thirteen pairs of contact members 207, marked 0, 25, 50, 75, 100, 125, 150, 175, 200, 225, 250, 275 and 300 in the same Fig. 38. The maximum count of the unit row 206, therefore, is 24, the 25th and its multiples being counted off on the group row 207. Of course, any number may be applied to each row, but in the case of newspapers, 25 is convenient as they are turned in groups of 25 or multiples of 25.

Two rows of contact members 206 and 207 are shown because, for the quantity to be covered, accuracy and convenience could not be obtained by placing 300 contacts in one row. The contact arm 213 constitutes a units counter, cooperating with the contact members 206, and the contact arm 217 constitutes a multiple counter, in multiples of 25, cooperating with the contact members 207. If a greater count were needed, however, it would be possible to extend the number of scales 409 and 411.

Each of the contact members 215 is wired to one of the sets of contact members 206 (Fig. 38) and each of the contact members 219 is wired to one of the sets of contact members 207. For example, the first or 0 contact member 215 is connected by a conductor 413 with the first or 0 pair of contact members 206; the second or 1 contact member 215 by a conductor 415 with the second or 1 pair of contact members 206; the third or 2 contact member 215 by a conductor 417 with the third or 2 pair of contact members 206; and so on; the last or 24 contact member 215 being connected by a conductor 419 with the last or 24 pair of contact member 206. The first or 0 contact member 217 is similarly connected by a conductor 421 with the first or 0 pair of contact members 207; the second or 25 contact member 213 by a conductor 423 with the second or 25 pair of contact members 207; the third or

50 contact member 217 by a conductor 425 with the third or 50 pair of contact members 207; and so on; the last or 300 contact member 219 being connected by a conductor 427 with the last or 300 pair of contact members 207.

There are two lugs 201 on each address plate 205, one on each side (Fig. 33). They are manually adjustable to any of a plurality of positions along scales 409 and 411 at the sides of the address plate for the purpose of closing any desired pair of contact members 206 and any desired pair of contact members 207, thus to count out a desired number of papers, as will presently be explained. The divisions of the lower scale 411 are units of 25, and the divisions of the upper scale 409 correspond to individual counts. These lugs 201 are so arranged on the plate 205 that, when the plate 205 is moved into position under the two rows of contact members 206, 207, one of the lugs 201 will close a pair of contact members 206 and the other lug 201 a pair of contact members 207. Which two contact members 206 or 207 will be closed by the respective lugs 201 depends on the position of the lugs 201 on the address plate 205, and the lugs 201 are manually actuatable selectively to any desired position.

The position of the lugs 201 on the address plate determines, therefore, the place on the rows of contact members 215 and 219 where the simultaneous contacts of the arms 213 and 217 will effect a closing of the circuit. This circuit, as before stated, is through the electromagnetic mechanism 221, which stops the feed of the papers past the shield 11, thereby rendering the feeding means 9 ineffective at the end of the feeding of a predetermined number of the sheets 2.

The electric system is normally ineffective to energize the coil 221, though the lower contact members 206 and 207 are continuously connected into circuit, in series with a source of energy, such as a battery 431. The circuit extends from the battery 431, through the coil 221, and the lower contact members 207 marked 0, 25, 50, . . . to the pair of contact members 207 that are closed by one of the lugs 201; thence, by way of one of the conductors, some of which are indicated at 421, 423, 425 and 427, to the corresponding contact member 219; thence through the contact arm 217, and by way of a conductor 433, to the contact arm 213 and one of the contact members 215; thence, by way of one of the conductors, some of which are indicated at 413, 415, 417 and 419, to that pair of contact members 206 that are closed by the other lug 201 and that are connected to the said contact member 215; and thence through the lower contact members 206 below the said pair of closed contact members 206, as viewed in Fig. 38, back to the other side of the battery 431. The closing of this circuit by the said closed pairs of contact members 206 and 207 and the said contact members 215 and 219 at the end of a predetermined count of the counter, determined by the positions of the lugs 201, will effect the energization of the coil 221, thus rendering the circuit effective to actuate the cam 105, as before described, and thus stop the feed of the papers 2 out of the hopper 339 below the shield 11. It will be noted that the arms 213 and 217 can not, in themselves, effect this result; they must cooperate with the pairs of contact members 206 and 207 that have previously been closed by the lugs 201, and, at a predetermined point of their rotation, this they do by controlling those contact members 215 and 217 that are con-

nected into circuit with the said closed contact members 206 and 207. The circuit is under the control of a switch 533.

The selector arms 213 and 217 must be reset to the starting position as a new plate 205 is moved into place. This is effected by mechanism now to be described.

At the completion of the count, a wrapper or label, with the address thereon, is fed on the stack, or to some other suitable place, from the roll of paper 267, by a single rotation of the feed roll 281 driven by the shaft 321 (Figs. 28 and 29). This shaft 321, as illustrated more particularly in Fig. 28, drives also, through the medium of a chain 338, the shaft 223 of the selector that shifts the address plates 205. Pinned or otherwise fixed to the shaft 223 are gears 227, cut away at 415, as shown more particularly in Figs. 30 and 31. Two similar but smaller gears 229, on the same shafts 211 and 407 that respectively hold the contact arms 213 and 217, are also cut away, as shown in Figs. 30 and 31.

If the arms 213 and 217 are not in the starting positions, the rotation of the gears 227 will bring them into mesh with the gears 229, and rotate them, against the friction of the clutches 235, until the cut-away sections are brought into the position shown in Figs. 30 and 31, when the gears 227 and 229 will no longer mesh, and the arms 213 and 217 will then have been brought to the starting positions. The shaft 223 and the gears 227 will continue turning until returned to the positions shown in Figs. 30 and 31. In this position, the gears 229 cannot mesh with the gears 227 when the counting begins.

The closing of the stop-feed circuit is effected as follows: The shaft 211 is driven from the counter 323, which makes a 25th of a revolution for each article counted. This serves to move the contact arm 213 from one contact member 215 to the next contact member 215 over the circle of 25 contacts. As the arm passes from the 24 contact member to the 0 contact member 215, the contact arm 217 is moved through the above-described intermittent gearing $\frac{1}{4}$ th of a revolution from one contact member 219 to the next contact member 219. When each arm 213 or 217 is in engagement with the contact member 215 or 217 that is in circuit with the contact members 206 or 207 that have been closed by the address plate 205, the circuit through the stop-feed mechanism relay 221 is closed, causing actuation of the cam 105, and thus preventing the feed of further sheets 2 out of the hopper 339 by the conveyor 9. The arms 213 and 217 are then moved to their initial positions by a single rotation of the shaft 223. As the cut-away gears 227 are fixed to the shaft 223, they rotate from their ineffective positions to engage the cut-away gears 229, rotating with them, through the above-described friction clutches 235, the respective arms 213 or 217, assuming that these do not already happen to be in the starting positions. This also returns the intermittent gear 259 to its initial position, so that it will not turn the arm 217 until the 25th paper has been counted off.

In addition to the address and other desired insignia from the plate 205, two scales (not shown) corresponding to the scales 409 and 411 on the plate 205, may be printed on the label, wrapper or tag that goes with the stack, along with the address and other data. Holes 195 in the plate 205 accommodate a projection 209 on the bottom of each lug 201. These projections 209 extend through the address plate to a posi-

tion below the bottom thereof. As these projections indicate, by their position on the plate 205, the number of papers counted, they are utilized to print or otherwise make marks on the label, wrapper or tag opposite the said scales (not shown) to indicate what quantity is contained in that group.

The plates are initially stacked in the magazine 276. A cut-out 500 in the plate slides over a vertical slide 501. This insures that no plate will be placed in the magazine in the reversed position.

A fork 303, oscillating about a pivot 301, engages an anti-friction lug 305 to operate a slide 307 in ways 309. The slide 307 thus moves the lowermost plate 205 from under the magazine 276 to a definite position underneath the backing plate 313, at the same time, moving the previous plate 205 into the receptacle 275, over a spring 317. In this position of the plate 205 under the backing plate 313, the lugs 201 will be under the contact members indicated on the address plate. The plate remains in this position while the papers are being counted off and, at the same time, the name and address and other insignia is printed from the plate on to the wrapper label. Above the backing plate 313, a member 429 carries the wiring 314 through a cover plate 315.

The machine illustrated in Figs. 1 to 26 and that illustrated in Figs. 27 to 39, as will now be understood, have many features in common.

To summarize, the illustrative machine comprises feed belts 8, as shown more particularly in Fig. 1, with an agitator 35, juxtaposed with conveyor belts 4 that may feed the newspapers 2 from a press. The shield 10, and the rolls 38 serve to separate the newspapers 2 as they are fed out of the hopper 6. The sheets are then counted by a single counting finger 13, or double contact fingers 44 and 46. The count is predetermined by peculiarities on the address plates, which are adapted to print addresses on wrappers that go with the sheets, and there is a correlation between the predetermining means and the addressing of the stack. The count may be varied, and there is provision for adjustment on the plate to correspond to different counts.

Separate belts 60, 62 then transfer the newspapers to the magazine 78 though, as before stated, the belts 60 may be integral with the belts 8. The newspapers are held in the magazine 78 by a stop 86, and are held down by various hold-down weights. At the end of a predetermined count, the feed of the papers 2 out of the hopper 6 is stopped, this being effected by raising the table 146 from under the belts 8 at the bottom of the hopper 6, so as to close the gap under the finger 16 of the shield 10. The rolls 38 are raised at the same time. The resiliency of the finger 16 and the yielding nature of the belts 8 prevents injury to such paper or papers as may be caught between the finger 16 and the raised table 146. The stop 86 is then released to permit the belts 80 to feed the marked stack of the counted number of papers in the magazine 78 on to the receiving table 140, the movement of the papers on the table 140 being limited by the wall 142. A new stack of papers, corresponding to a new address plate, is then counted off. The resilient construction of the fingers of the stop 86 and the novel clutch mechanism have been described above. As illustrated in Fig. 27, provision may be made for keeping

the stack of newspapers level, by rotating it at intervals.

A full description has been given of the automatically operating, illustrative selector, in conjunction with the addressing device, but it will be understood that the preselection could be effected in other ways. The quantity setting of the address plates may be adjustably changed by means of the movable lugs described hereinabove, or by means of any equivalent mechanism. A preferred mechanism for handling the wrappers has also been described for feeding, printing, cutting, and moving into the magazine 78 and, later, with the stack of newspapers, on to the delivery table 140. It will be understood that the wrappers may be fed on to the table from the front or the rear of the machine, as well as from the side.

All the operations are under the control of a master-control unit for synchronizing the operations of the machine.

Further modifications will occur to persons skilled in the art, and all such are considered to fall within the spirit and scope of the invention, as defined in the appended claims.

What is claimed is:

1. Apparatus of the character described comprising means for collecting a plurality of groups of articles, means whereby the collecting means collects the articles at times when the supplying means is not supplying the wrappers, means for supplying a separate wrapper for the articles of each group, and means for marking the wrapper of each group with a symbol corresponding to the number of articles collected in the corresponding group.

2. Apparatus of the character described comprising means for collecting a plurality of groups of articles, means for supplying a separate wrapper for the articles of each group, a plurality of elements for varying from group to group the number of articles collected in the various groups, each element corresponding to a different number of articles, and means controlled by the elements for marking the groups.

3. Apparatus of the character described comprising means for collecting a plurality of articles, a plurality of normally ineffective means, means for rendering the plurality of means individually and successively effective in point of time to vary the number of articles collected, and means controlled by one of the plurality of means for marking the collected articles with a symbol corresponding to the number of articles collected.

4. Apparatus of the character described comprising means for stacking a plurality of multiple-sheet objects, means for supplying a separate wrapper for each stack, and means for addressing the wrappers.

5. Apparatus of the character described comprising means for stacking a plurality of sheets, a selector for selecting a predetermined number of sheets to be stacked, and means for addressing the stack prior to the completion of the stack.

6. Apparatus of the character described comprising means for stacking a plurality of sheets, means for controlling the number of sheets in the stack, means for addressing the stack, and a plurality of controlling elements each corresponding to the number of sheets in a stack to be particularly addressed and each controlling both the said controlling and addressing means.

7. Apparatus of the character described comprising means for feeding a plurality of sheets,

means for advancing a wrapper prior to feeding the sheets, means for marking the wrapper, means for moving the sheets successively to the wrapper, and means for maintaining the wrapper stationary during the moving of the sheets to the wrapper.

8. Apparatus of the character described comprising a belt conveyor for feeding a plurality of sheets, means for advancing a wrapper, means for marking the wrapper, means for moving the sheets successively to the wrapper, and means for moving the wrapper and the sheets as a unit when a predetermined number of sheets has been fed.

9. Apparatus of the character described comprising means for feeding a plurality of sheets, means for advancing a plurality of wrappers, means for advancing the sheets successively to one of the wrappers before advancing the next-following wrapper, and means for thereafter marking the next-following wrapper before advancing sheets to the next-following wrapper.

10. Apparatus of the character described comprising means for feeding a plurality of sheets, means for advancing a plurality of wrappers in successive order, means for advancing the sheets to one of the wrappers after a predetermined number of the sheets has been fed to a preceding wrapper, and means for marking the next-following wrapper.

11. Apparatus of the character described comprising means for separating sheets from under a stack of sheets, means for counting the sheets, means for conveying the counted sheets, means for wrapping the conveyed sheets, and means for addressing the conveyed sheets.

12. Apparatus of the character described comprising means for counting sheets, means for wrapping the counted sheets, means for addressing the counted sheets, and means for controlling the addressing means from the counting means.

13. Apparatus of the character described comprising means for counting multiple-sheet objects, means for wrapping the counted objects, and means for addressing the counted objects.

14. Apparatus of the character described comprising a support, means for stacking a plurality of sheets, means for moving the stacked sheets as a unit on to the support when a predetermined number of the sheets has been stacked, and means for addressing the stacked sheets.

15. Apparatus of the character described comprising means for stacking a plurality of sheets, means for controlling the number of sheets stacked, and means separate from the controlling means and controlled by the controlling means for addressing the stacked sheets.

16. Apparatus of the character described comprising means for stacking a plurality of sheets, a plurality of successively operable means for controlling the number of sheets stacked, means for rendering the plurality of means successively effective, and means controlled by one of the plurality of means for addressing the stacked sheets.

17. Apparatus of the character described comprising means for counting sheets, means for addressing the counted sheets, and means for correlating the addressing means and the counting means.

18. Apparatus of the character described comprising a receptacle for holding a plurality of units, means for determining an insignia, means for determining the quantity corresponding to the insignia, means for marking the insignia from a

unit, and means for controlling the quantity associated with that insignia from the unit.

19. Apparatus of the character described comprising a receptacle for holding a plurality of units, means for determining an insignia, means for determining the quantity corresponding to the insignia, means for marking the insignia from a unit, means for controlling the quantity associated with that insignia from the unit, and means for adjusting the unit so as to vary the quantity-controlling means.

20. Apparatus of the character described comprising means for stacking a plurality of sheets, means for counting the sheets as they are stacked, adjustable controlling means, a plurality of successively operable means controlled by the adjustable controlling means and by the counting means for controlling the number of sheets stacked, and means controlled by the adjustable controlling means for addressing the stacked sheets.

21. Apparatus of the character described comprising a plurality of belts constituting a conveyor for feeding a plurality of sheets, a plurality of supports disposed between the belts and constituting a table adapted to occupy an ineffective position, means for actuating the table to an effective position to cause it to move the sheets off the belts when a predetermined number of sheets has been fed, and means for commencing a series of events which allows the sheets as a unit to feed into or against a wrapper.

22. Apparatus of the character described comprising a plurality of belts constituting a conveyor for feeding a plurality of sheets, a plurality of supports disposed between the belts and constituting a table adapted to occupy an ineffective position, means for actuating the table to an effective position to cause it to move the sheets off the belts when a predetermined number of sheets has been fed, a motor, means for setting the motor into operation upon the actuation of the table, means controlled by the motor for advancing a wrapper, advancing the sheets as a unit into the wrapper and then returning the table to the ineffective position, and means for thereupon stopping the motor.

23. Apparatus of the character described comprising means for feeding a plurality of multi-sheet objects, means for advancing a wrapper, and means for moving the objects successively to the wrapper.

24. Apparatus of the character described comprising a belt conveyor for feeding a plurality of sheets, means for cutting a predetermined portion of a web to form a wrapper, means for advancing the wrapper, and means for moving the sheets successively to the wrapper.

25. Apparatus of the character described comprising means for feeding a plurality of sheets, means for cutting a predetermined portion of a web to form a wrapper, means for advancing the wrapper, means for moving the sheets successively to the wrapper, and means for moving the wrapper and the sheets as a unit when a predetermined number of the sheets has been fed.

26. Apparatus of the character described comprising means for receiving a wrapper, and common means for feeding the wrapper to the said means and for thereafter feeding articles on to or under the wrapper.

27. Apparatus of the character described comprising means for receiving a wrapper, and common means for feeding the wrapper to the said means, accumulating a plurality of articles, and

for feeding the accumulated articles and the wrapper.

28. Apparatus of the character described comprising a table for receiving a wrapper, a stop for preventing feeding the wrapper on to the table, means for feeding articles to the wrapper, means for removing the stop to permit the feeding means to feed the wrapper and the articles on to the table, and means for restoring the stop.

29. Apparatus of the character described comprising a magazine for receiving articles, means on one side of the magazine for feeding a wrapper to the magazine, a table on another side of the magazine, a conveyor in the magazine for receiving the wrapper from the feeding means, means for feeding articles to the wrapper received by the conveyor to permit the conveyor to feed the articles into and accumulate the articles in the magazine, and means whereby the conveyor feeds the accumulated articles and the wrapper on to the table.

30. Apparatus of the character described comprising a magazine, means on one side of the magazine for feeding a wrapper to the magazine, means on the said side of the magazine for conveying sheets successively to the magazine, a table on another side of the magazine, a conveyor at the bottom of the magazine adapted to receive the wrapper and the sheets and to feed them forward through the magazine and on to the table, means for first actuating the wrapper-feeding means to feed a wrapper to the conveyor to enable the conveyor to feed the wrapper into the magazine, a stop between the magazine and the table, the conveying means being adapted to convey the sheets to the conveyor to enable the conveyor to feed the sheets into the magazine as far as the stop, whereby the sheets will become stacked in the magazine, and means for removing the stop after a predetermined number of sheets has been stacked in the magazine to enable the conveyor to feed the stacked sheets and the wrapper.

31. Apparatus of the character described comprising means for conveying sheets in one direction, means for counting the sheets during their travel in the said direction, means for thereafter conveying the sheets in the opposite direction, and means for thereafter wrapping a predetermined number of the counted sheets.

32. Apparatus of the character described comprising means for conveying sheets, means for counting the sheets, means for conveying a wrapper, and means acting continuously to engage the counted sheets in order to convey the counted sheets to the wrapper.

33. Apparatus of the character described comprising means for separating sheets from under a stack of sheets, means for stacking the separated sheets, and means for supplying the stacked sheets with a distinguishing element.

34. Apparatus of the character described comprising means for feeding a plurality of sheets, means for advancing a wrapper, means for moving the sheets successively to the wrapper, means for moving the wrapper and the sheets as a unit when a predetermined number of the sheets has been fed, and means for interrupting the feeding of the sheets during the moving of the wrapper and the sheets as a unit.

35. Apparatus of the character described comprising a conveyor for feeding a plurality of sheets, means for rendering the conveyor ineffective to feed further sheets when a predetermined

number of sheets has been fed by the conveyor, and means for commencing a series of events which allows the sheets as a unit to feed to a wrapper.

36. Apparatus of the character described comprising a conveyor for feeding a plurality of sheets, means for rendering the conveyor ineffective to feed further sheets when a predetermined number of sheets has been fed by the conveyor, and means operable upon the conveyor being rendered ineffective for advancing a wrapper, advancing the sheets as a unit to the wrapper and then again rendering the conveyor effective.

37. Apparatus of the character described comprising means for receiving sheets from a continuous source of supply and continuously feeding them, means for stacking the sheets as they are fed into stacks each having a predetermined number of sheets, means for stopping further feeding of the sheets upon the completion of each stack, and means for marking each stack of sheets.

38. Apparatus of the character described comprising means for advancing wrappers, means for feeding sheets to one of the wrappers, a plurality of separate elements each corresponding to a predetermined number of sheets, means for rendering the elements successively effective to control the number of sheets fed to the wrapper, and means operable upon the completion of the feeding of the said number for addressing one of the wrappers and rendering another of the elements effective.

39. Apparatus of the character described comprising a counter for counting articles, means for marking the counted articles, and means controlled by the marking means for rendering the counter ineffective at the end of a predetermined count by the counter.

40. Apparatus of the character described comprising means for collecting a plurality of articles, a plurality of adjustable controlling means for selectively controlling the number of articles collected, means cooperative with the adjustable controlling means for counting the number of articles collected, and means controlled by the counting means for marking the collected articles with a symbol corresponding to the number of articles collected.

41. Apparatus of the character described comprising means for feeding a plurality of sheets, means for stacking the fed sheets, a selector, a plurality of adjustable controlling means cooperative with the selector to selectively control the number of sheets stacked, and means controlled by the selector for marking the stacked sheets with a symbol corresponding to the number of sheets stacked.

42. Apparatus of the character described comprising means for feeding sheets, means for stacking the sheets, a counter for counting the sheets as they are fed, means for actuating the counter from an initial position to a position corresponding to the number of sheets counted, means for feeding a wrapper for wrapping the sheets, and means controlled by the counter for controlling the wrapper-feeding means and the sheet-feeding means and for returning the counter to the initial position.

43. Apparatus of the character described comprising means for advancing a wrapper, means for feeding sheets successively to the wrapper, and means for stopping the feed and advancing a further wrapper when a predetermined number of sheets has been fed.

44. Apparatus of the character described comprising means for advancing a web from which wrappers may be severed, means for feeding sheets to one of the wrappers, and means for marking and severing the web to produce a wrapper upon the completion of the feeding of a predetermined number of sheets to the said one wrapper.

45. Apparatus of the character described comprising means for advancing a plurality of wrappers in successive order, means for advancing sheets to one of the wrappers before advancing sheets to the next-following wrapper, and means for marking the next-following wrapper before advancing sheets thereto.

46. Apparatus of the character described comprising means for advancing a plurality of wrappers, means for feeding sheets to one of the wrappers, and means for stopping the feed and marking another wrapper after a predetermined number of the sheets has been fed to the said one wrapper.

47. Apparatus of the character described comprising means for advancing a web from which wrappers may be severed, means for feeding sheets to one of the wrappers, and means operable upon the feeding of a predetermined number of sheets to the said one wrapper for severing the web to produce another wrapper.

48. Apparatus of the character described comprising means for advancing a web from which wrappers may be severed, means for feeding sheets to one of the wrappers, a plurality of separate elements each corresponding to a predetermined number of sheets, means for rendering the elements successively effective to control the number of sheets fed to the said one wrapper, and means operable upon the completion of the feeding of the said number for severing the web to produce a wrapper.

49. Apparatus of the character described comprising means for separating sheets from under a stack of sheets, means for conveying the separated sheets, and means for addressing the conveyed sheets.

50. Apparatus of the character described comprising means for separating multi-sheet objects from a stack of multi-stacked objects, means for wrapping the separated multi-sheet objects in a wrapper, and means for addressing the wrapper.

51. Apparatus of the character described comprising means for separating sheets from under a stack of sheets, means for counting the separated sheets, means for supplying a wrapper, and means controlled by the counting means for conveying the sheets to the wrapper.

52. Apparatus of the character described comprising means for separating sheets from under a stack of sheets, means for counting the separated sheets, means for stacking the counted sheets, and means controlled by the counting means for addressing the stacked sheets.

53. Apparatus of the character described comprising means for separating multi-sheet objects from a stack of multi-stacked objects, means for supplying a wrapper, and means for conveying the multi-sheet objects to the wrapper.

54. Apparatus of the character described comprising means for separating multi-sheet objects from a stack of multi-stacked objects, means for supplying a wrapper, means for conveying the multi-sheet objects to the wrapper, and means for addressing the wrapper.

55. Apparatus of the character described com-

prising a hopper, means for feeding sheets into the hopper to stack them, means for separating the sheets from the stack and feeding them further, means for supplying a wrapper, and means for conveying the separated sheets to the wrapper.

56. Apparatus of the character described comprising a hopper, means for feeding sheets into the hopper to stack them, means for separating the sheets from the stack and feeding them further, means for counting the separated sheets, and means for marking the counted sheets with a symbol corresponding to the number of sheets counted.

57. Apparatus of the character described comprising a hopper, means for feeding sheets into the hopper to stack them, means for separating the sheets from the stack and feeding them further, means for supplying a wrapper, means for conveying the separated sheets to the wrapper, and means for moving the wrapper and the sheets conveyed thereto as a unit.

58. Apparatus of the character described comprising a conveyor having a portion extending always from one point to a second point in a predetermined direction, means for actuating the conveyor to cause a portion thereof to travel always from the said one point to the second point in the predetermined direction, the conveyor being adapted, during its actuation, first to engage the head of a sheet at the said one point and thereafter progressively to engage other portions of the sheet to convey the engaged sheet from the said one point in the predetermined direction toward the second point, means for advancing a wrapper, means for moving the sheets from the second point successively to the wrapper, and means for moving the wrapper and the sheets as a unit when a predetermined number of the sheets has been fed.

59. Apparatus of the character described comprising means for counting sheets, means for addressing the counted sheets, and means for controlling the addressing means from the counting means.

60. Apparatus of the character described comprising a receptacle for holding a plurality of units, means for determining an insignia, means for determining the quantity corresponding to the insignia, and means for controlling the quantity associated with that insignia from the corresponding unit.

61. Apparatus of the character described comprising means for advancing wrappers, means for feeding sheets to one of the wrappers, a plurality of separate elements each corresponding to a predetermined number of sheets, and means for rendering the elements successively effective to control the number of sheets fed to the wrapper.

62. Apparatus of the character described comprising means for advancing wrappers, means for feeding sheets to one of the wrappers, a plurality of separate elements each corresponding to a predetermined number of sheets, means for rendering the elements successively effective to control the number of sheets fed to the wrapper, and means operable upon the completion of the feeding of the said number for addressing one of the wrappers.

63. Apparatus of the character described comprising means for feeding a plurality of sheets, means for stacking the fed sheets, a selector, means controlled by the selector for predetermining the number of sheets stacked, and means controlled by the selector for marking the stacked

sheets with a symbol corresponding to the number of sheets stacked.

64. Apparatus of the character described comprising a conveyor, means for feeding a wrapper and sheets to the conveyor, the conveyor being constructed to receive the wrapper and the sheets successively from the feeding means and to feed the wrapper and the sheets further, means whereby the wrapper and the successively received sheets are retained on the conveyor during their feeding by the conveyor, and a stop for limiting the travel of the wrapper and the sheets fed by the conveyor notwithstanding that the conveyor continues its feeding movement, whereby the sheets become stacked with the wrapper on the conveyor.

65. Apparatus of the character described comprising a conveyor for feeding a plurality of sheets, means for actuating the conveyor always in the same direction, means for advancing a distinguishing element, and means for relatively moving the sheets and the distinguishing element toward each other.

66. Apparatus of the character described comprising a continuously acting conveyor for feeding a plurality of sheets in contact therewith in the path of travel to the conveyor, means for cutting a predetermined portion of a web to form a distinguishing element, means for advancing the distinguishing element, and means for relatively moving the sheets and the distinguishing element toward each other.

67. Apparatus of the character described comprising means for feeding a plurality of sheets, means for advancing a distinguishing element, means for relatively moving the sheets and the distinguishing element toward each other, and means for moving the distinguishing element and the sheets as a unit upon the completion of the relative movement of a predetermined number of the sheets.

68. Apparatus of the character described comprising a support for supporting a distinguishing element, means for feeding a plurality of sheets to the distinguishing element on the support, and means for marking the distinguishing element.

69. Apparatus of the character described comprising means for separating sheets from under a stack of sheets, means for supplying a plurality of the separated sheets with a distinguishing element, and means for marking the distinguishing element.

70. Apparatus of the character described comprising means for counting multi-sheet objects, means for supplying the counted multi-sheet objects with a distinguishing element, and means controlled by the counting means for marking the distinguishing element.

71. Apparatus of the character described comprising a support on a predetermined portion of which sheets may be stacked, means for successively stacking a plurality of stacks of sheets on the said predetermined portion of the support, means for supplying each stack on the support with a distinguishing element, and means for marking the distinguishing elements.

72. Apparatus of the character described comprising means for receiving a wrapper, and common means for feeding the wrapper to the said means and for thereafter feeding an article on to or under the wrapper.

73. Apparatus of the character described comprising means for receiving a wrapper, and common means for feeding the wrapper to the said means, feeding an article to the said means, and

for thereafter feeding the article and the wrapper as a unit.

5 74. Apparatus of the character described comprising a stop, a conveyor for feeding a wrapper to the stop and for feeding sheets to the wrapper and to the stop, the stop being positioned to limit the travel of the sheets before they have been

conveyed beyond the conveyor, whereby the sheets become stacked with the wrapper on the conveyor, and means for removing the stop to permit the conveyor to feed the wrapper and the stacked sheets beyond the conveyor.

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