Aug. 28, 1962 KUNIO A. SUMIDA 3,051,083

ADDRESSING MACHINE

Filed Aug. 8, 1960 4 Sheets-Sheet 1

Fig. 1.

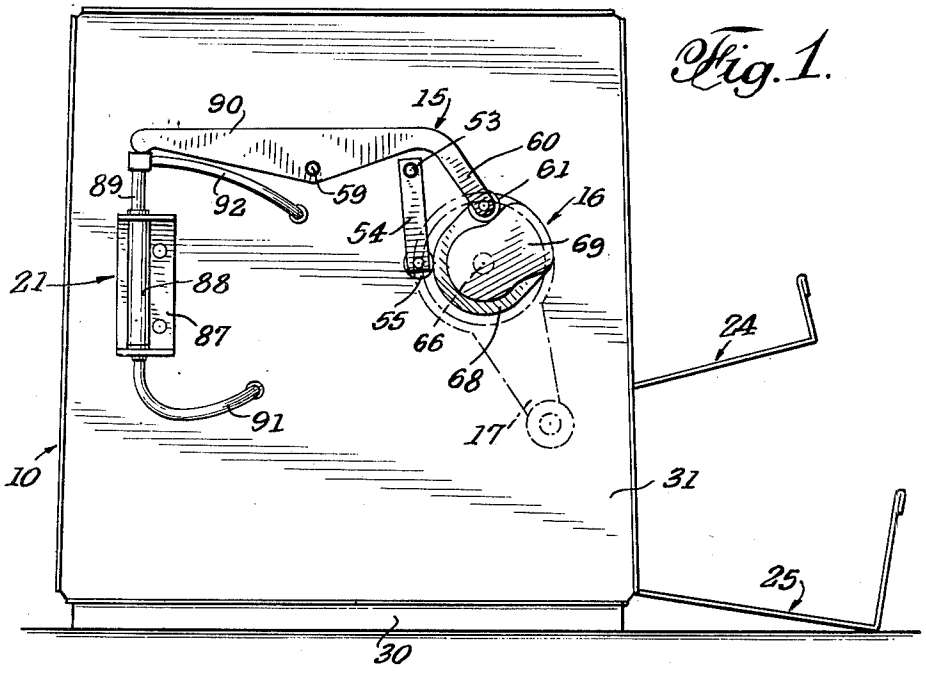
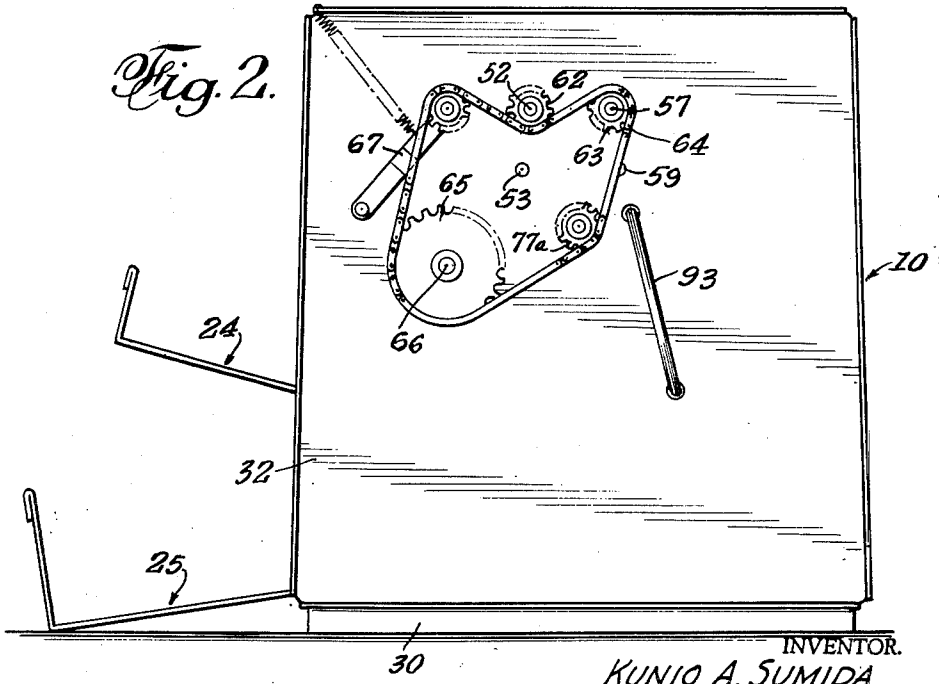



Fig. 2.




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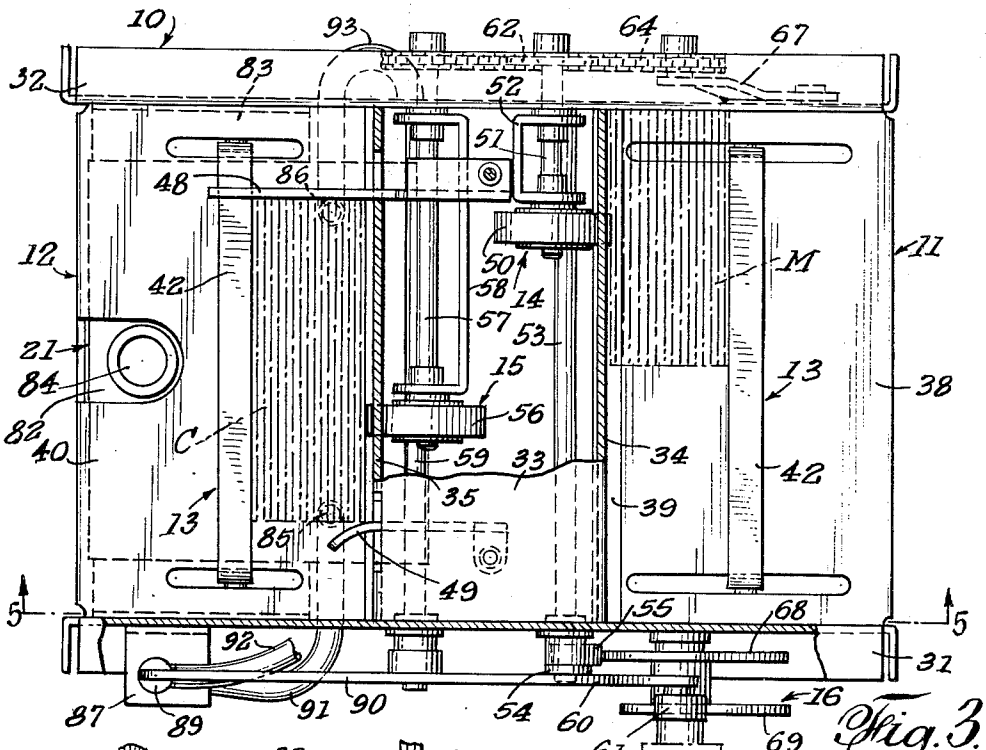


Fig. 3.

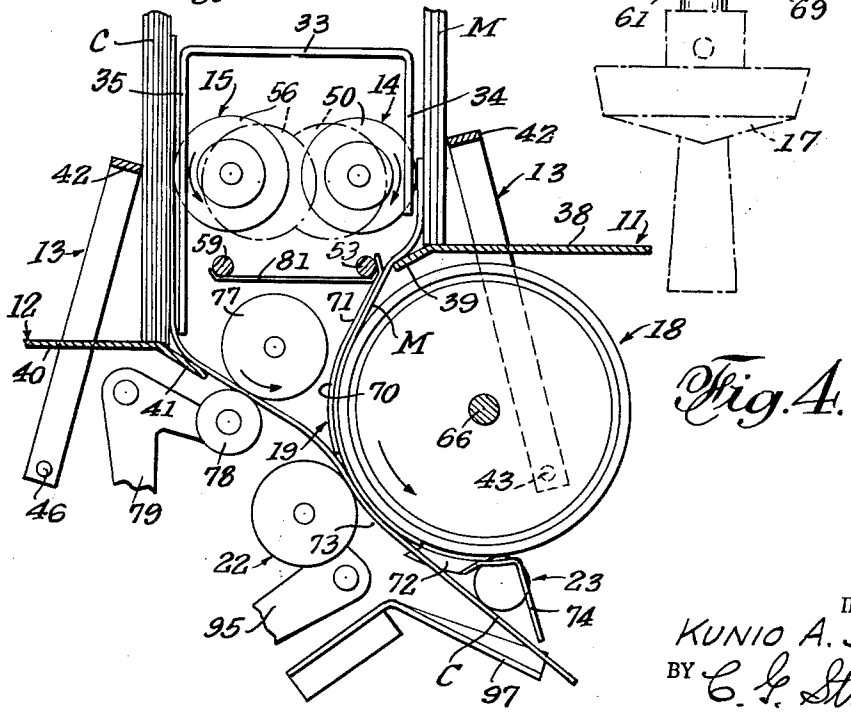


Fig. 4.

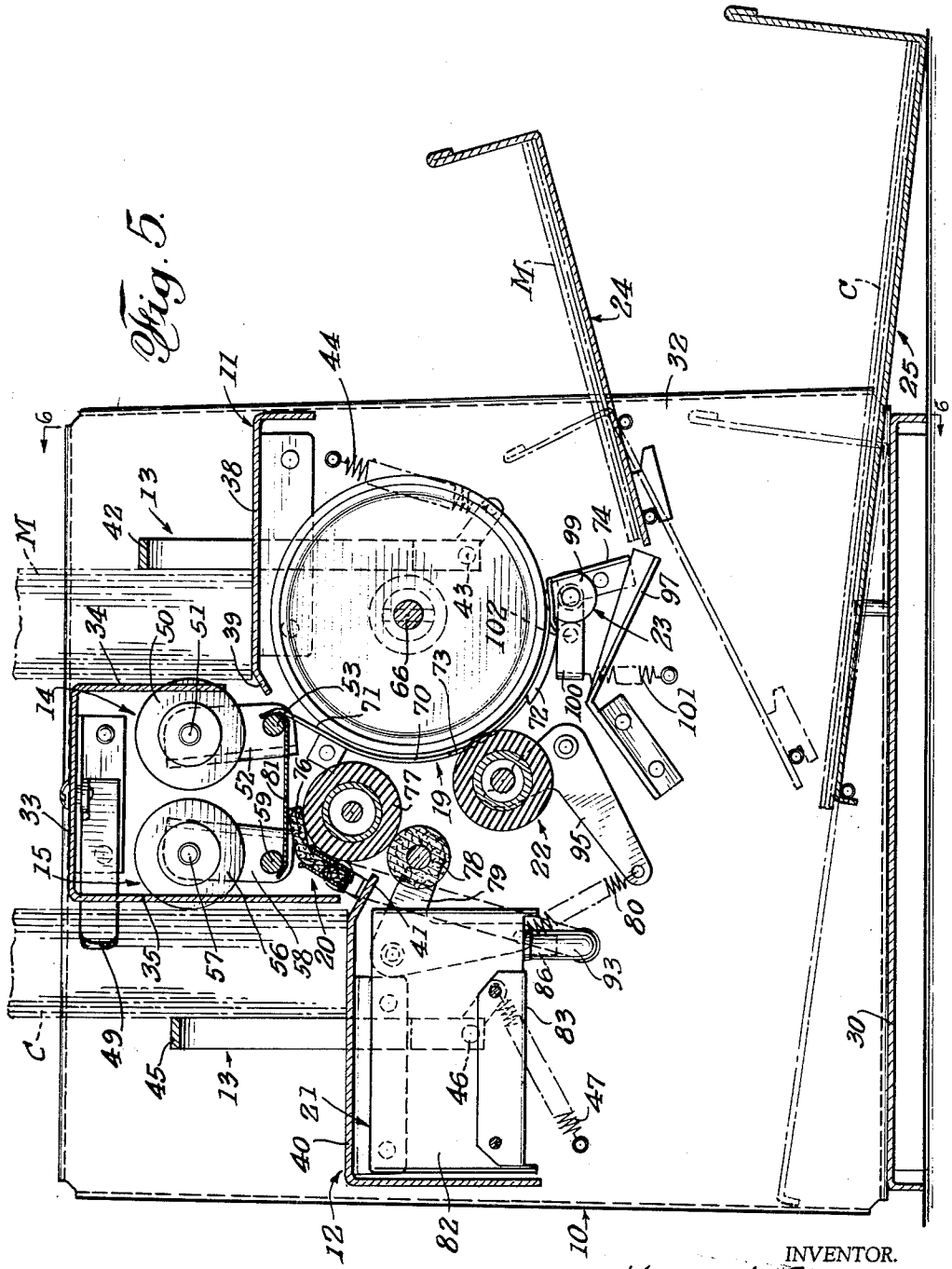
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ADDRESSING MACHINE

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Fig. 5.




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ADDRESSING MACHINE

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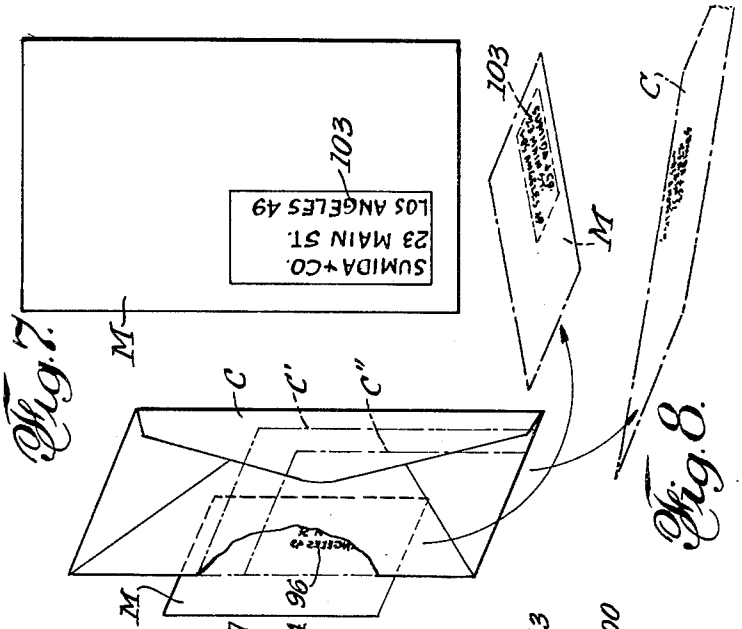



Fig. 7.

Fig. 8.

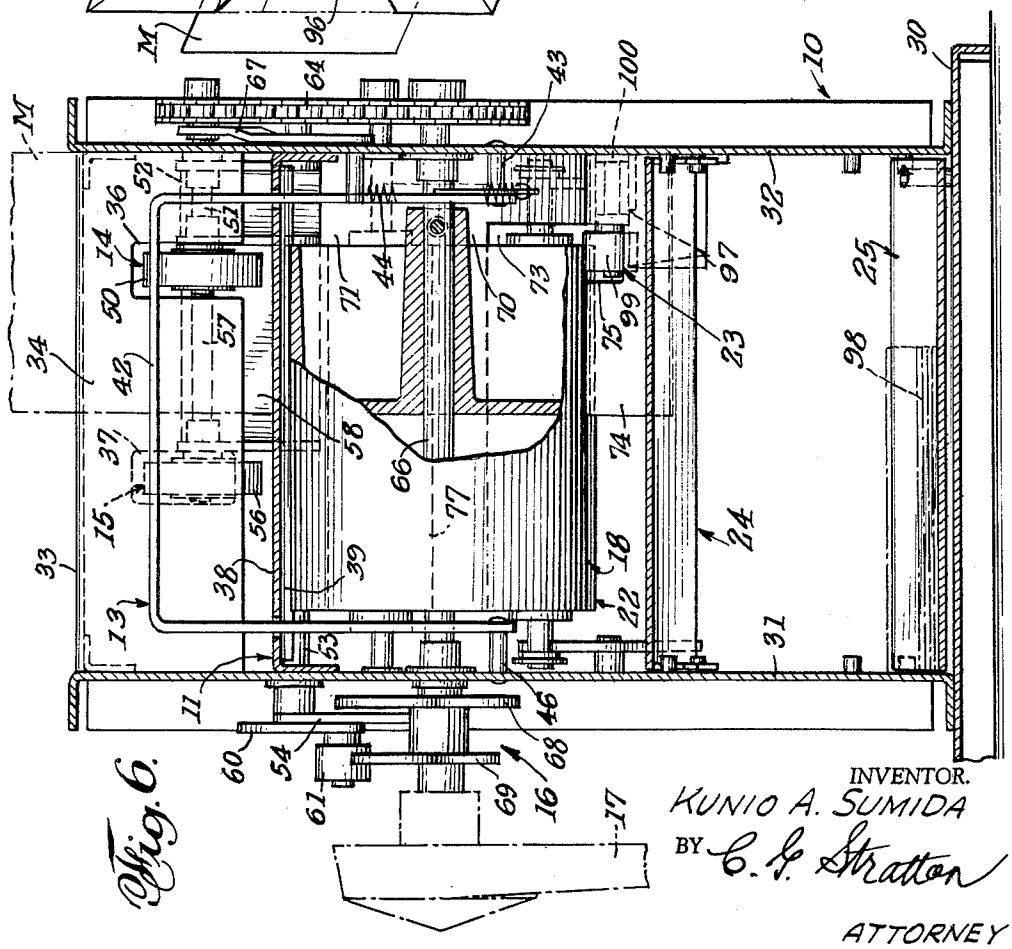



Fig. 6.

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United States Patent Office 3,051,083 Patented Aug. 28, 1962



3,051,083

# ADDRESSING MACHINE

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7 Claims. (Cl. 101—132.5)

This invention relates to a machine for addressing envelopes, post cards or other mailing pieces, as well as imprinting upon rectangular sheets or cards, generally.

Prior addressing machines embody faults and are objectionable for one or more of the following reasons:

Machines that use metal plate master or imprinting elements require noisy and expensive composing and embossing techniques; use bulky, heavy, costly and space-consuming metal plates; and prevent direct keeping of visual records (name, address, etc.) on the metal plate. Machines that use stencils require inking apparatus; stencils that are bulky and expensive, since stencil holders are required; and, as above, visual records cannot be kept on stencils. In machines that use a spirit duplicating process with a spirit master in roll form, changing of the master list is difficult because splicing is entailed for both additions to the list and deletions thereform; and manual feed of both the master and copy sheets or pieces is usually involved. A machine using a spirit master file card, requires a special holder for the master cards and manual feed of the copy material or pieces.

An object of the present invention is to provide an addressing machine that obviates the above listed disadvantages and provides a machine, based on the commonly used spirit duplicating process that expeditiously and with easy facility, simultaneously and automatically feeds the master and copy material to cause the former to imprint on the latter and then effect a separation of the master elements and the imprinted copy elements.

Another object of the invention is to provide a machine of the character referred to, that can be easily set up to handle various types and sizes of mailing pieces, such as post card, combined post and return cards, envelopes ranging from #6 to #10 sizes, and letter size folders.

A further object of the invention is to provide a machine that, in addition to addressing mailing pieces, may imprint other matter on sheets or cards, as well as information on time cards, job cards, etc.

Delivery of a stack of master elements as well as of the imprinted copy, each in proper stacked relationship after addressing or imprinting, is important. Since the stack of master elements is to be used again, it is desirable that the same be delivered by the machine in such order that re-shuffling is not necessary before such subsequent use may be effected. Also, retention of alphabetical sequence, in an A to Z relationship, rather than the reverse, is desired, since inspection and/or additions or deletions in the list may be more readily and accurately effected in such A to Z order. In prior machines, special means is provided for manipulating, as by flipping over either the master elements or the imprinted copies before the same are stacked. The present invention has for another object to provide a machine in which the relationship of the master elements and copy members is so arranged that the same stack in separate receiving trays in proper alphabetical order directly upon discharge or movement past an imprinting area.

Another object of the invention is to provide novel and improved means for feeding master and copy elements together in correctly timed relationship regardless of variations in the size of the copy elements and of change or shift of the location of the imprint on the copy elements.

A still further object of the invention is to provide a simple machine of the type referred to in which feed of the copy and the master elements, is effected on a one-at-a-time basis without resort to special sheet-separating means, as in prior machines.



This invention also has for its objects to provide such means that are positive in operation, convenient in use, easily installed in a working position and easily disconnected therefrom, economical of manufacture, relatively simple, and of general superiority and serviceability.

The invention also comprises novel details of construction and novel combinations and arrangements of parts, which will more fully appear in the course of the following description, which is based on the accompanying drawings. However, said drawings merely show, and the following description merely describes, one embodiment of the present invention, which is given by way of illustration or example only.

FIG. 1 is a side elevational view of an addressing machine according to the present invention.

FIG. 2 is a similar view of the other side.

FIG. 3 is an enlarged plan view, portions of the machine being broken away for clarity of illustration.

FIG. 4 is a simplified and fragmentary side view of the feed and impression portions of the machine showing the paths of movement of the master and copy elements.

FIG. 5 is a vertical sectional view as taken on the line 5—5 of FIG. 3.

FIG. 6 is a vertical sectional view as taken on the line 6—6 of FIG. 5.

FIG. 7 is a face view showing the data-bearing or reverse side of a master element.

FIG. 8, to a smaller scale, schematically shows the relationship of the master and copy elements during imprinting and the separate paths taken by said elements to stacked positions.

The present addressing or imprinting machine comprises, generally, a frame **10** that rigidly includes a support **11** for a pack of master elements M on one side, and a support **12** for a pack of copy elements C on the opposite side, means **13** for locating and holding each pack in feed position, means **14** to feed the master elements, similar means **15** to feed copy elements, cam means **16** to synchronously control the feed means **14** and **15**, a handle **17** to turn said cams to effect successive feeding of the master and copy elements, an impression drum **18** that is rotated by said handle, a stripper member **19** in such relation to the drum as to strip away a copy element C from the related master element M after imprinting by the latter on the former, means **20** in the path of movement of the copy elements to wet the same in advance of imprinting thereon, means **21** providing a supply of wetting agent to the means **20**, an impression roller **22** cooperating with the drum **18** to effect an imprinting operation on elements M and C being synchronously fed, an ejector roller means **23** at the exit end of the stripper member **19**, a tray **24** below and forward of the impression drum **18** to collect and stack the master elements after imprinting, and a tray **25** beneath the tray **24** to collect and stack the imprinted copy elements.

The frame **10** is shown as comprising a base member **30** and two side members **31** and **32** affixed to said base member to form a U-shaped frame that is open at the top and at the ends between the side members **31** and **32**; across said open top and spanning between the side members is provided a member that has a horizontal top **33** from which downwardly extend vertical walls **34** and **35**, the former on the side toward the support **11**, and the latter on the side toward the support **12**. An opening **36** is formed in the wall **34** and a similar opening **37** is formed in wall **35**, the two openings being offset, as can best be seen in FIG. 6. Said spanning member is disposed substantially centrally between the supports **11** and **12**.

The support **11** for the pack of master elements M comprises a horizontal floor **38** that spans between and is

affixed to the frame sides 31 and 32, said floor being provided with a lip 39 that is disposed below and in spaced relation to the lower edge of vertical wall 34. The line of bend of said lip is spaced outwardly from wall 34 and the slope thereof is downward and inward from said line of bend. It will be clear that a master element M of flexible card form, when in flatwise position against the outer face of wall 34, will have its lower edge in contact with the lip 39, while all the other elements M of the pack will be resting on the floor 38. If a force is applied on the innermost element M to move the same in a downward direction, the angle of sloping lip 39 will cause the lower portion of the element to flex inwardly and, thereby, cause the element to move downwardly past the edge of the lip.

The support 12 for the pack of copy elements C also has a horizontal floor 40 and a downwardly and inwardly sloping lip 41 that has the same relationship to the lower edge of vertical wall 35 as has the lip 39 to wall 34. Therefore, upon application of a downward force on an element C in flatwise engagement with wall 35, said element will feed past the inner edge of lip 41 as does element M.

In this instance, the copy elements C are longer than the master elements M and require a longer period of feed to move toward their respective collecting trays 25 and 24. Although the synchrony of the feed may be varied by change in the orientation of the cam means 16, the feed relationship of the elements C and M is more readily adjusted by locating the support 12 at a level lower than support 11, as can be seen in FIGS. 4 and 5.

The locating and holding means 13 for the pack of elements M comprises a bail member 42 that has pivots 43 in the frame sides 31 and 32, and is biased by a spring 44 to press said pack in a direction toward the wall 34. Said means, for the pack of elements C, comprises a bail member 45 on pivots 46, and a biasing spring 47. The pack M, as can be seen from FIG. 3, has a position against the inner face of frame side 32, while pack C may be located between members 48 and 49, both carried by the top 33 and/or the wall 35. Of course, the transverse orientation of the packs M and C may be varied, the one shown in FIG. 3 conforming to the transverse relationship shown in FIG. 8.

The means 14 is shown as a feed wheel 50 that is rotated by a driven shaft 51 carried by a bracket 52 affixed to a rockshaft 53. Said latter shaft extends between the frame sides 31 and 32 and is journalled therein, an extension of said shaft being provided with an arm 54 on which is carried a cam roller 55. Said wheel is disposed in register with opening 36 in wall 34 and, depending on cam bias against roller 55, is either projected to bear against a master element adjacent wall 34, as in FIGS. 3, 4 and 5, or retracted, as suggested by the dot-dash lines in FIG. 4. Rotation of shaft 51 during a projected position of the wheel 50 will frictionally bias such a master element to feed the same downwardly past lip 39, as above described.

The means 15 for feeding copy elements is substantially the same. A feed wheel 56, in register with opening 37 in wall 35 and on a driven shaft 57, engages copy elements C to feed the same past lip 41, as before described. Shaft 57 is carried by a bracket 58 affixed to a rockshaft 59 similar to rockshaft 53. An extension on rockshaft 59 is provided with an arm 60 on which is carried a cam roller 61.

The two shafts 52 and 57 are provided with sprocket wheels 62 and 63, respectively, and are engaged by an endless drive chain 64 that is also engaged around a sprocket wheel 65 on a shaft 66 extending between and having bearing in the frame sides 31 and 32. A chain tightener 67 takes up slack in said chain and responds to projected and retracted positions of the wheels 50 and 56. The handle 17 is provided on shaft 66 and a single turn of said handle will cause a single rotation of shaft 66 and, because of the difference in size between sprocket wheels 62 and 63 and of larger sprocket wheel 65, the wheels 50 and 56 will be turned several rotations to effect feed movement of elements M and C.



These rotations of the wheels 50 and 56 will be effective to feed elements M and C only when the same are projected through the openings 36 and 37. Such projection is effected by the cam means 16 which is here shown as a cam 68 that is engaged by roller 55, and a cam 69 that is engaged by roller 61. Said cams are carried by shaft 66 and may be angularly relatively adjusted to obtain the exact synchrony of feed of elements M and C that is desired.

The impression drum 18 is affixed to shaft 66 and makes a single rotation for each rotation of handle 17. Thus, the one handle simultaneously feeds elements M and C and moves the same in synchronous register past the impression point between drum 18 and impression roller 22. The drum 18 is so placed relative to the elements M and C being fed, that the element M engages the cylindrical face of the drum with the element C on the outside thereof.

The stripper member 19 comprises a sheet metal member that is affixed to the inner face of frame side 32. The same is formed to have an arcuate portion 70 that is transversely coextensive with the drum and spaced therefrom to provide clearance for an element M to move with the drum during rotation of the latter, a straight upper extension 71 that has an upper end located against the rockshaft 53, and inwardly spaced from the edge of lip 39 so that elements M moving past said lip may be guided by said extension between the arcuate portion 70 and the drum, a stripper flange 72 spaced from the lower edge of portion 70, a space 73 being defined between said flange and said edge, thereby exposing an element M trained around the drum, and a terminal flange 74 at the lower forward portion of the stripper member, the same being downwardly directed and having an opening 75 formed therein, as may be seen in FIG. 6.

The means 20 is shown as a wick 76 that extends across the frame between sides 31 and 32, and is carried, as by end brackets, by the lip 41 of copy element support 12. Said wick is spaced from the lip to allow the elements C to move over the lip as above described. An applicator roller 77 receives moisture with which wick 76 is saturated, said roller being rubber covered and driven by chain 64 through a sprocket wheel 77*a* on the shaft of said roller, and a pressure roller 78 is associated with roller 77 to press elements C moving between them into wetting engagement with roller 77. The roller 78 is made of absorbent material and is carried by bell-crank levers 79 at the ends, the same being biased by springs 80 to create the mentioned pressure between rollers 77 and 78. The wick is held in flexed contact with roller 77 by a pressure plate 81 that has a position below and against the rockshafts 53 and 59. Thus, the elements C are wetted on their faces that engage roller 77, these faces being directed toward the drum 18 as the elements move into engagement with the elements M that are being fed and moved between said drum and the stripper member 19.

Water is ordinarily used as the wetting liquid, the same being dircted to saturate the wick by the means 21. Said means is shown as a tank 82 that is disposed beneath the support 12 and carried by a bracket plate 83 spanning between the frame sides 31 and 32. Said tank has a filler cap 84 and is provided with two nipples 85 and 86, as can best be seen in FIG. 3. A bracket 87 on the outer face of frame side 31 mounts a plunger type pump 88, the hollow plunger 89 of which is engaged by an extension 90 of the arm 60. Said plunger, in the usual way, is spring-biased to extended position to draw water from nipple 85, through a tube 91, into the pump barrel. Upon depression of the plunger 89 during operation of the machine by means of handle 17, the water collected in

the pump barrel is displaced through the hollow of the plunger into a flexible conduit **92** which directs water to one end of the wick. To insure against over-supply of water to the wick, the opposite end is connected to a flexible conduit **93** which connects to the other nipple **86**. The conduit provides an overflow line since the same is subject to the same suction that draws water into tube **91** when the pump plunger is extended. The usual check valves are provided in the pump so that same has the single pump action above described, once for each rotation of the handle **17**.

The impression roller **22** is rubber covered, as shown in FIG. 5, and is carried by bellcrank levers **95** that are biased by the mentioned springs **80** to create pressure, forcing two elements C and M into such engagement that spirit-processed indicia **96** on element M (FIG. 8) are impressed on the wetted surface of the copy element just before the stripper flange **72** separates the leading edge of the element C as the two elements progress toward the terminal flange **74** of the stripper member **19**. In this manner, the indicia **96** on the successive master elements M are successively imprinted on the copy elements C.

The leading edges of the copy elements C encounter a deflector member **97** that so engages one side edge portion of each said element as it moves toward the tray **25**, that the same is laterally displaced out of its normal path to a position against the inner face of frame side **31**. FIG. 6 shows this relationship of path (the drum **18**), deflector member **97** and frame side **31** and suggests at **98** how the imprinted elements C are stacked at the left as viewed from the front of the machine.

The ejector roller means **23** comprises a roller **99** on a bracket arm **100** that is biased by a spring **101** on its pivot **102** to impose a light pressure on the master elements M as they exit from the stripper member **19**. Such pressure keeps the elements M in a straight-out position out of contact with the tray **24** therebeneath until the trailing portions of said elements are moved past said roller **99**. Then, the elements C will drop gently into tray **25** being guided by the flange **74** while so doing. The master elements M stack up at the right side of the tray **24**, since they retain their single path movement from beginning to end.

The trays **24** and **25** are both on the same side of the machine and are shown as being capable of shift from forwardly extended receiving positions one beneath the other and positions retracted within the perimeter of the frame **10** (the latter positions being shown in dot-dash lines), to render the machine compact for convenient portability.

It will be noted from FIG. 8, that the elements M and C from vertical positions, when arranged as packs that are edge-supported by the respective supports **38** and **40**, are moved in paths around approximately 90° (a little more than 90° for the elements M, and a little less for elements C), and stacked at the ends of said paths without turning of said elements. In practice, the carbon or imprinting sides **96** of the master elements M are placed on the support **11** facing toward the wall **34**. Since the indicia **96** read backward, the opposite face of each element M is provided with identifying legends or other indicia **103** which, as seen from FIG. 7, can be read easily. Thus, when such elements M are in an "A" to "Z" stacked or pack arrangement, the sides bearing legends **103** are uppermost and any element of the stack or pack can easily be located and the stack or pack added to or reduced, as desired, with easy facility. The pack in this normal condition is placed on support **11**, with the sides **96** thereof toward wall **34**. Thus, the legend sides **103** are faced outwardly and can easily be read so that additions or removals of elements may be easily effected without need for removing the stack from the machine.

When said elements M stack up on tray **24**, they will be in exactly the same relationship as when in the original pack. As a consequence, the stack, without change or shift of the elements thereof, may be replaced on support **11** for another "run."

The elements C, being printed in a "Z" to "A" sequence because the stack of master elements feeds in such sequence, stack up on tray **25**, printed side up, so that the completed pile is in "A" to "Z" sequence from the top down. Thus, it is a simple matter to add or remove elements from the stack and, generally to render inspection thereof easy.

FIG. 8 shows copy elements C′ and C″, which are smaller in size than elements C, and the manner of their orientation with the same master elements M. Only a shift in the position of gauge member **49** is needed to enable the machine to handle such differently sized elements C. As to lengths of elements C, cam adjustments may be made accordingly.

The term "addressing" as used in the following claims is intended to include imprinting on a copy element of addresses or other indicia **96**.

A mixture of water and alcohol instead of water alone may be used for wetting the copy elements before imprinting.

While the foregoing has illustrated and described what is now contemplated to be the best mode of carrying out the inventon, the construction is, of course, subject to modification without departing from the spirit and scope of the invention. Therefore, it is not desired to restrict the invention to the particular form of construction illustrated and described, but to cover all modifications that may fall within the scope of the appended claims.

Having thus described the invention, what is claimed and desired to be secured by Letters Patent is:

1. An addressing machine comprising a horizontal support for the edges of a pack of master elements each having an indicia-imprinting face, a separate support for the edges of a pack of copy elements, means to synchronously move successive pairs of master and copy elements in a transverse direction from said supports together in a common arcuate path of approximately 90°, means to apply pressure to said pairs while the same are so moving to imprint on the copy element the indicia of the imprinting face of the master element, means to separate said elements at the end of said common path, means to receive the master elements in stacked relation at the end of the path thereof, and separate means directly beneath the master element-receiving means to receive the imprinted copy elements in stacked relation at the end of the path thereof.

2. An addressing machine comprising a horizontal support for the edges of a pack of master elements each having an indicia-imprinting face, a separate support for the edges of a pack and for a stack of copy elements, means to synchronously move successive pairs of master and copy elements in a transverse direction from said supports together in a common arcuate path of approximately 90°, means to wet the faces of the copy elements that face the master elements, means to apply pressure to said pairs while the same are so moving to imprint on the copy element the indicia of the imprinting face of the master element, means to separate said elements at the end of said common path, means to receive the master elements in stacked relation at the end of the path thereof, and separate means directly beneath the master element-receiving means to receive the imprinted copy elements in stacked relation at the end of the path thereof.

3. An addressing machine according to claim 2 in which is provided means to regulate the synchronous feeding movement of the pairs of elements before the same are brought to imprinting position.

4. An addressing machine according to claim 2 in which the feed means includes a drum around which the pairs of elements are partly trained during imprinting one by the other, and a stationary stripper member conforming to the curvature of the drum and spaced therefrom to

strip the copy elements from engagement with the master elements thereby permitting passage only of the master elements to the receiving means thereof.

5. An addressing machine according to claim 2 in which the feed means includes a drum around which the pairs of elements are partly trained during imprinting one by the other, and a stationary stripper member conforming to the curvature of the drum and spaced therefrom to strip the copy elements from engagement with the master elements thereby permitting passage only of the master elements to the receiving means thereof, said stripper member having an opening exposing the master elements as they move, the means to apply imprinting pressure being located to press against the copy elements disposed against said exposed portions.

6. An addressing machine comprising, in combination, an impression drum, a first horizontal support above said drum for supporting a pack of printing elements supported on their edges on said support, a second horizontzal support at one side of and spaced from the drum and on a level lower than the level of the first support for supporting a pack of copy elements supported on their edges on said second support with the pack of elements in one support facing the pack of elements on the other support, means to synchronously move successive pairs of printing and copy elements from the two supports into the space between said drum and the second support, means disposed in said space to apply printing pressure on said pairs of elements against said impression drum to imprint on the copy element printing indicia of the printing element, a first tray beneath the drum to receive and stack one of the elements, and a second tray beneath the first tray to receive and stack the other element.



7. An addressing machine according to claim 6 provided with an apertured stripper member conforming to the curvature of the drum and through the aperture of which printing pressure is applied, said stripper member, beyond the aperture thereof, being provided with means to separate said pairs of elements after printing to allow one said element to move to the upper tray and direct the other toward the lower tray.

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