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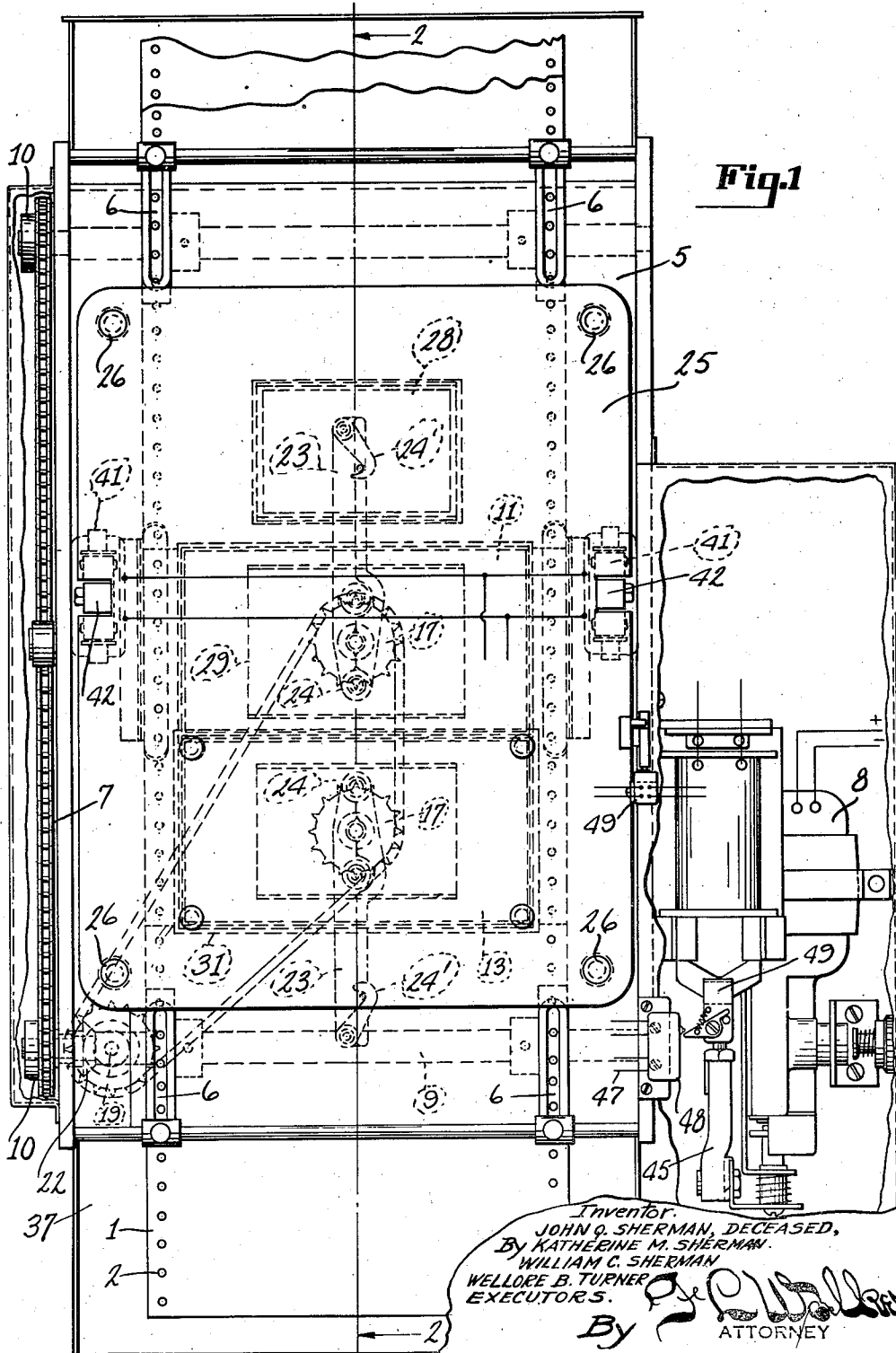
J. Q. SHERMAN

2,264,339

LABELING MACHINE

Filed Sept. 9, 1939

4 Sheets-Sheet 1



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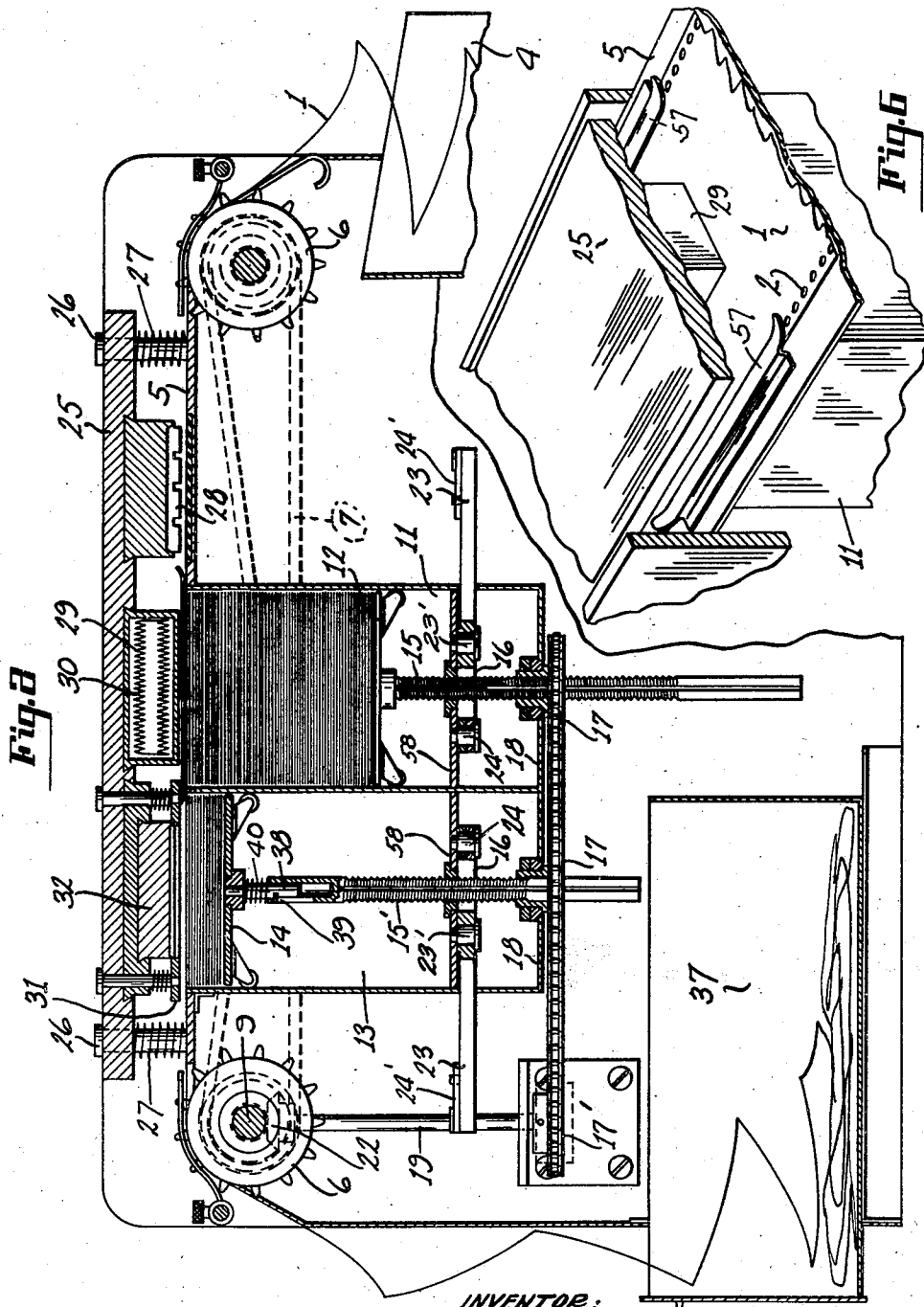
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4 Sheets-Sheet 2



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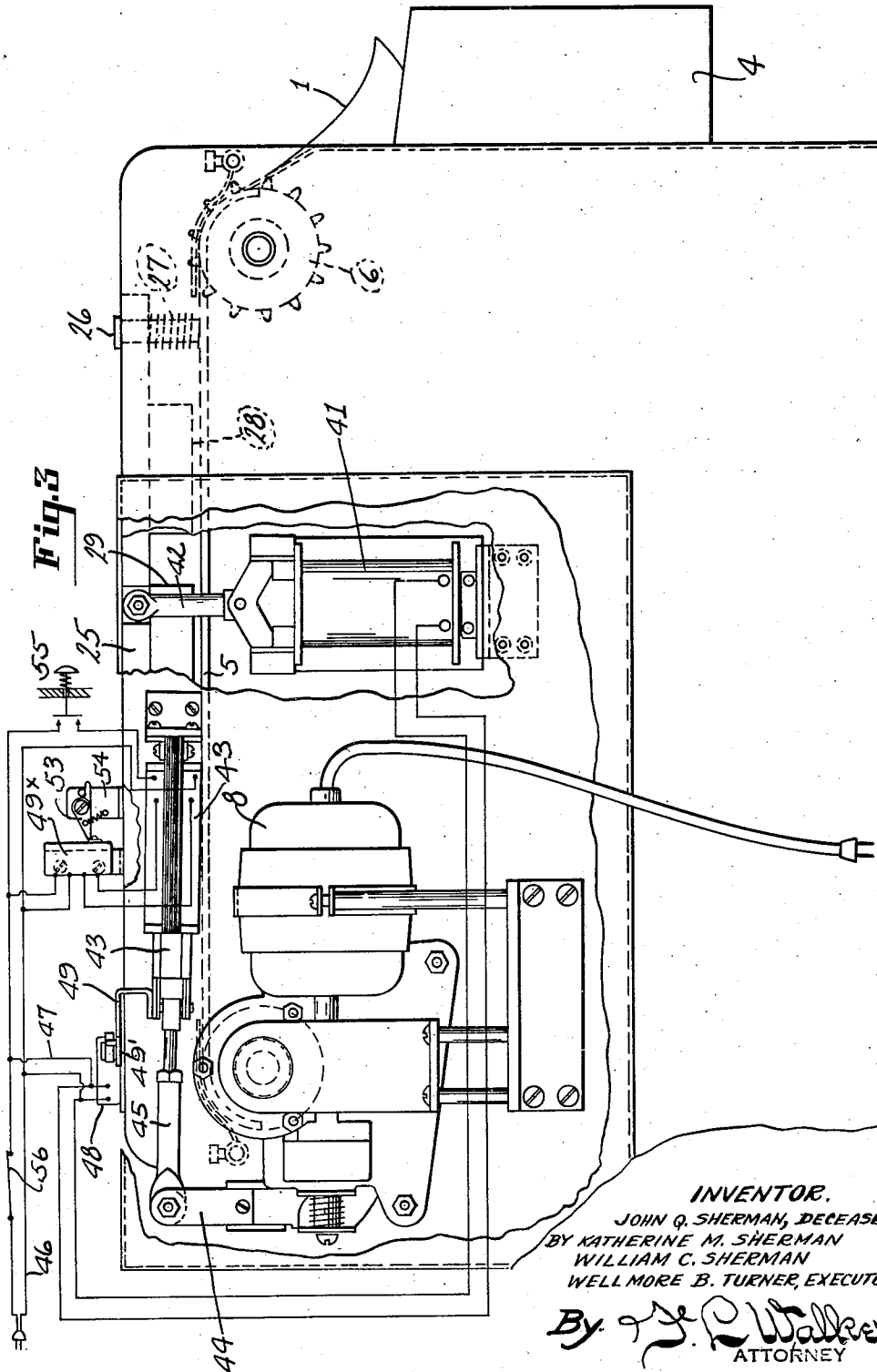
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LABELING MACHINE

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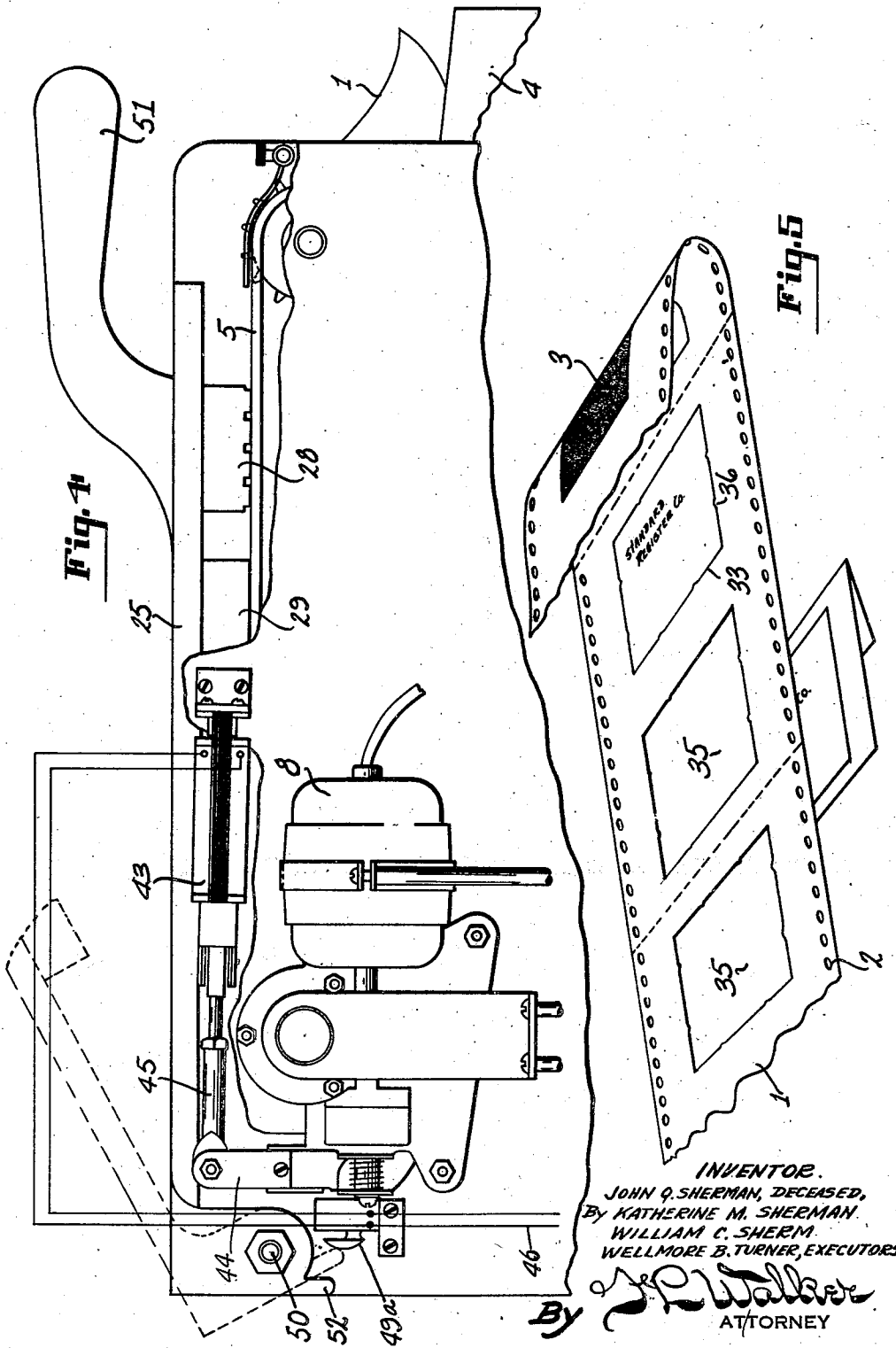
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4 Sheets-Sheet 4



UNITED STATES PATENT OFFICE

2,264,339

LABELING MACHINE

John Quirk Sherman, deceased, late of Dayton, Ohio, by Katherine M. Sherman, William C. Sherman, and Wellmore B. Turner, executors, Dayton, Ohio

Application September 9, 1939, Serial No. 294,197

20 Claims. (Cl. 216—28)

This invention pertains to envelope and package addressing apparatus, and more particularly to a means and method of rapidly and accurately applying imprinted indicia or legend-bearing labels to separate envelopes and small packages in a continuing succession.

In addressing envelopes and small packages it is highly desirable that successive imprinted legends be accurately positioned in identical relation with different units. It is equally desirable that such inscribed matter be written or imprinted in a conventional typewriting or imprinting apparatus. It is, however, a tedious and laborious operation to feed such units singly through a typewriting or imprinting machine.

In the present development, designed to enable rapid, accurate imprint identification of envelopes and small packages, it is contemplated that a continuous strip of record material will have been fed through a writing or imprinting apparatus by which indicia or legends are imprinted thereon at accurately spaced longitudinal intervals. Such imprinted strip bearing a succession of legends will then be progressively fed through the present apparatus in such timed sequence as to present the imprinted legends successively in registry with succeeding envelopes or packages of a series to which legend bearing portions severed from the supply strip are adhesively affixed. The use of positive feeding devices makes it possible to advance the legend bearing strip through measured distances and arrest the strip with each succeeding imprinted legend in registry with the strip severing and label applying positions.

Thus, instead of imprinting the desired indicia directly upon a series of separately fed envelopes or packages, the operation is greatly facilitated, and increased accuracy of registration and speed of operation is assured by initially imprinting the strip and subsequently adhesively applying detached imprinted areas thereof to the units.

The object of the invention is to improve the construction as well as the means and mode of operation of addressing and labeling apparatus whereby it may not only be economically manufactured and operated, but will be more efficient in use, automatic in operation, uniform in action, having relatively few operating parts, and unlikely to get out of repair.

A further object of the invention is to provide means enabling identification legends to be inscribed in repetitious series upon continuous record strips in conventional typewriting and imprinting apparatus and subsequently automati-

cally severed therefrom and accurately applied to each of a succession of units.

A further object of the invention is to provide positive feeding and arresting means cooperative with label detaching and applying devices for advancing the legend-bearing strips measured distances and arresting them with succeeding legends in predetermined relation with individual units to be labeled.

A further object of the invention is to provide improved severing and applicator means for detaching legend-bearing portions of the continuous supply strips and adherently affixing them to the succeeding units.

A further object of the invention is to provide improved strip severing apparatus for removing from the supply strip inscribed areas of predetermined size and form.

A further object of the invention is to provide automatic control means of improved character governing the sequence of operation.

A further object of the invention is to provide an envelope and package labeling apparatus embodying the advantageous structural features and the inherent meritorious characteristics herein mentioned.

With the above primary and other incidental objects in view as will more fully appear in the specification, the invention intended to be protected by Letters Patent consists of the features of construction, the parts and combinations thereof, and the mode of operation, or their equivalents, as hereinafter described or illustrated in the accompanying drawings.

In the drawings, wherein is shown the preferred but obviously not necessarily the only form of embodiment of the invention, Fig. 1 is a top plan view of an assembled automatic apparatus embodying the present invention.

Fig. 2 is a longitudinal sectional view thereof.

Fig. 3 is a side elevation with the housing partly broken away.

Fig. 4 is a side elevation illustrating a manually operated apparatus.

Fig. 5 is a perspective view of a portion of a legend-bearing strip illustrating portions thereof before and after passing the severing and label applicator point and an associated unit to which a detached portion of the strip has been applied.

Fig. 6 is a detail perspective view.

Like parts are indicated by similar characters of reference throughout the several views.

In the present development it is contemplated that a continuous strip of record material, illustrated in Fig. 5, shall have been passed through a typewriting machine or an imprinting apparatus

such as a conventional addressograph machine, by which a succession of address legends, or other identification indicia, shall have been imprinted thereon. The strip 1 is provided with marginal configurations for operative engagement of positive strip feeding means, which for illustrative purposes are shown as a series of longitudinally spaced feed holes 2 for engagement of a traveling pin type feeding device. The strip 1 of record material is preferably previously gummed on its reverse side, either throughout or in localized areas 3 coincident with the legend-bearing areas of the strip. Obviously a conventional glue spotting device may be arranged in advance of the present apparatus, or incorporated therein, so that the strip shall receive its adhesive coating as it is being advanced to the label detaching and applicator positions of the present machine. Such glue spotting device, being well known and not forming, per se, any part of the present invention, is not illustrated in the drawings.

The previously inscribed and, preferably but not necessarily, previously adhesively coated strip 1 is advanced through the present apparatus from a supply compartment 4 over a bed or table 5, by intermittently operative relatively spaced pin wheel feeding devices 6-6 located at opposite ends of the apparatus.

The pin type feeding devices 6 are interconnected for unison operation by a chain belt 7. They are periodically actuated to advance the strip measured distances in timed sequence with other steps of the process by a single operation electric motor 8 with power stop control of the general type shown and described in Letters Patent No. 1,741,442. Such motor is provided with control mechanism by which, after being set in operation, it continues through a predetermined cycle of operation, at the end of which it is automatically arrested. The motor 8 of the present apparatus is connected to a transverse shaft 9 which carries the pin wheels 6. The shaft 9 also carries a sprocket 10 which drives the chain belt 7 interconnecting the respective pin wheel feed devices 6 for unison operation. Each operative cycle of the motor 8 advances the strip 1 only a predetermined measured distance, in accordance with the relative spacing of the imprinted legends on the strip. The legend-bearing strip having been initially advanced through the imprinting apparatus through like measured distances by a similar positive feed device having engagement in the marginal holes 2, the imprinted legends will have been correspondingly spaced. Its subsequent like measured feeding movements over the table 5 of the present apparatus progressively presents the successive imprinted legends in accurate registry with the several operating points.

Disposed in the path of the strip and beneath the table 5 is a magazine 11 to contain a supply of envelopes or small packages to be labeled. A follower bottom 12 is provided in the magazine, actuated upwardly by suitable feed means to present the uppermost face of the top envelope or package substantially in the plane of the path of travel of the strip. Closely adjacent to the supply magazine 11 is a receiving compartment 13 for the labeled envelopes or packages, which also is provided with a follower bottom 14, which, however, is operated in reverse of that of the supply magazine. That is to say, the traveling bottom 14 of the receiving compartment 13 is gradually lowered as envelopes or packages are

transferred from the magazine to the receiving compartment. The traveling bottom 14 of the latter is, however, yielding, but strongly resistant to pressure upon the stack of units therein.

Each of the traveling compartment bottoms 12 and 14 is provided with a screw threaded stem 15 having threaded engagement in split nut devices 16 supported on fixed false bottoms or diaphragms 58 in the supply and receiving compartments. Upon each of the threaded stems 15 is splined a sprocket wheel 17, thus connected to transmit rotation to the threaded stem 15, which is, however, longitudinally adjustable relative to its driving sprocket. The latter are revolvably mounted in the bottoms 18 of the respective compartments 11 and 13. The sprocket wheels 17 are driven in unison by a chain belt 20 actuated by corresponding sprocket wheels 17' on a shaft 19. The latter is driven from the pin wheel shaft 9 by bevel pinions 22.

The screw stems 15 and 15' of the respective traveling compartment bottoms 12 and 14 are reversely threaded whereby rotation in the same direction effects elevation of one stem and traveling compartment bottom and descent of the other, in unison, but at slightly different rates of speed sufficient to compensate for the accumulation of label sections upon the units in the receiving compartment 13. To enable the respective traveling bottoms of compartments 11 and 13 to be quickly retracted after each run of envelopes preparatory to the operation on the next lot, the split nuts 16 are opened to free the threaded stems 15. The half faces of the threaded female member are formed in inter pivoted levers 23 pivoted and secured at 24 and 23' respectively to the false bottom 58, which levers project beyond the walls of the respective compartments and are normally held together and in engagement with the threaded stems 15 by suitable fastening devices, such as the hooks 24'.

Disposed over the table 5 of the apparatus and above the path of travel of the legend-bearing strip 1 is a vertically movable presser head 25 mounted on guide studs 26 and yieldingly supported in elevated position on compression springs 27. This presser head carries in relatively spaced relation a cutting die 28, beneath which the strip passes before reaching the envelope supply magazine. In registry with the supply magazine 11 the vibratory presser head carries a heating unit 29 having therein electrical or other heating elements 30, and finally, in registry with the receiving compartment 13, the presser head carries a yieldingly mounted holding frame 31 and a punch head 32 cooperating therewith. These several elements and the supply magazine and receiving compartment are relatively spaced in accordance with the spacing of succeeding legends on the record strip. At each depression of the presser head several operations are simultaneously performed. The cutting die 28 scores or cuts, but does not entirely detach a legend bearing area of the strip of predetermined size and outline as shown at 33 in Fig. 5. Such scored outline defines the proportion of the label bearing the inscribed matter to be subsequently attached to an envelope or package. At the same time, the legend-bearing area of the strip previously outlined by the cutting die 28, and which is then positioned in registry with the supply magazine, is subjected to the heating influence of the heater unit 29. The descent of the presser head by forcing the heater member

29 against the previously outlined legend-bearing area of the strip, forcibly projects the adhesive coated side of such area of the strip against the uppermost envelope of the supply. Such legend-bearing area although partially severed, however still remains attached to the supply strip. The adhesive material previously applied to the reverse side of the legend-bearing area of the strip is preferably of a thermo-responsive character which is rendered soft and adhesive by application of heat. There are at present several forms of such adhesive commercially available, the preferred form of which is of synthetic resinous character, somewhat analogous to the materials used for plastic molding operations. Otherwise, if the adhesive is but freshly applied to the strip, the heater element serves to dry the adhesive in contact with the topmost envelope of the magazine, against which it is pressed by the heater member 29. The legend-bearing area of the strip is thus firmly attached to the topmost envelope of the supply in the magazine 11. The succeeding advance movement of the strip then carries with it the attached envelope from the magazine 11 into registry with the receiving compartment 13. The same descent of the presser head initially projects the yielding holding frame 31 into pressure contact with the portions of the strip bordering the outlined legend-bearing area, which at such stage is adhesively affixed to the envelope or package. The continued descent of the presser head projects the punch head 32 carried thereby through the holding frame 31 and against the attached legend-bearing area of the strip, thus breaking its remaining points of attachment to the strip and completing its separation.

The size of the label or legend-bearing area being less than the width of the strip, there remain in the machine for continued advancement therefrom the punched marginal feeding areas 35, and if the label portions are not severed on common lines, but are relatively spaced along the strip, the marginal punched areas will be connected at spaced intervals by transverse ties 36. Such remaining portions are discharged from the machine into a box 37 as waste. To afford sufficient yielding resistance of the labeled envelopes to the pressure of the punch head 32, the traveling bottom 14 of the receiving compartment is supported upon a stub extension 38 of the screw shaft 15 with which it has telescopic adjustment. The stub shaft 38 extends within a bore in the end of the screw stem 15 and is connected for unison rotation by a pin and slot coupling 39. A helical spring 40 surrounding the stub shaft 38 intermediate the end of the screw stem 15 and the traveling bottom 14 of the compartment yieldingly resists the pressure of the punch head 32. The presser head and the cutting die, heater member and punch head carried thereby are operated in alternating sequence with the pin wheel feed devices.

Various forms of mechanical actuating devices may be employed for this purpose. However, there is illustrated in the drawings an electrically controlled system wherein the operation of either set of devices induces the operation of the other in continuous sequence.

In the present instance the presser head 25 is actuated by plural solenoids 41 located at opposite sides of the apparatus, the reciprocatory cores of which are connected to the presser head 25 by links 42. The tripping mechanism for the motor 8 is also electrically controlled by a sole-

noid 43, the reciprocatory core of which is connected with the trip arm 44 of the motor control mechanism by a link 45. Electrical energizing current is supplied to the respective solenoids 41 and 43 from a power line 46 having a branch circuit 47 leading to the presser head actuating solenoids 41 in which is located a make and break switch 48. Carried by the reciprocatory core of the motor control solenoid 43 is a bracket 49 on which is pivotally mounted a one-way pawl or finger 49' which, upon return movement of the core and link 45 after tripping the motor 8, contacts the switch 48 controlling the presser head solenoids 41 to close the energizing circuit 47 thereto. The presser head is drawn downwardly by the several solenoids 41 against the yielding resistance of the springs effecting simultaneously the outlining of a label portion by the scoring die 28, the adhesive application of a previously outlined label portion to a receiving unit, and the detachment from the strip of a previously labeled unit and the adhesive label attached thereto. Upon the return stroke of the presser head under influence of the retractile springs 27, a one-way pawl 53 mounted on a bracket 54 carried by the head 25 actuates a make-break switch 49, thereby closing the electrical circuit through the motor control solenoid 43, which by retraction of its core and the link 45 trips the motor 8 for a single operation by which the feeding devices are actuated to advance the strip a predetermined distance, sufficient to present the succeeding label area in operative position.

In lieu of automatic electrically actuated mechanism, there is shown in Fig. 4 a manually operated apparatus wherein the presser head 25 is pivoted at 50 for vertical swinging motion manually effected by the handle 51. Adjacent to its pivotal point the swinging presser head is provided with a finger 52 which engages a make and break switch 49a corresponding to the switch 49 and which controls the energizing current to the motor tripping solenoid 43 as before described. At each manual depression of the head 25 one label area is outlined, the previously outlined label area is adhesively applied and the previously applied label area and attached unit is detached from the strip. Upon the return motion of the head, the finger 52 by its engagement with the switch 49a causes the motor to advance the strip one label distance and come to rest, whereupon the head is again depressed. Thus the outlining, applying and detaching operations are performed alternately with the feeding operation.

A manual circuit closer 55 in the circuit of the motor control solenoid 43 enables the sequence of operation to be initiated. The cycle of operation is arrested by opening a second manual switch 56 in the supply circuit.

In its passage beneath the head 25 and over the magazine and receiving compartments the margins of the strip are guided and held down by guides 57 as shown in Fig. 6.

From the above description it will be apparent that there is thus provided a device of the character described possessing the particular features of advantage before enumerated as desirable, but which obviously is susceptible of modification in its form, proportions, detail construction and arrangement of parts without departing from the principle involved or sacrificing any of its advantages.

While in order to comply with the statute the invention has been described in language more

or less specific as to structural features, it is to be understood that the invention is not limited to the specific features shown, but that the means and construction herein disclosed comprise the preferred form of several modes of putting the invention into effect, and the invention is therefore claimed in any of its forms or modifications within the legitimate and valid scope of the appended claims.

Having thus described the invention, what is claimed:

1. In a label applying apparatus, strip feeding means for advancing a legend bearing strip through successive step-by-step movements, a unit supply magazine and a unit depository over which the strip is advanced, a scoring die past which the strip is advanced for outlining by weakened division lines succeeding legend bearing portions of the strip to be detached therefrom, an applicator in registry with the unit supply magazine operative to adhesively attach an outlined legend bearing portion of the strip to the uppermost unit in the magazine, and a detaching device in registry with the unit depository and into registry with which the attached legend bearing portion of the strip and the unit to which it is attached is advanced by the advancement of the strip and operative to detach from the supply strip the legend bearing portion thereof attached to the unit.

2. In a label applying apparatus, strip feeding means for progressively advancing past a stationary supply of individual units by successive step-by-step movements a continuous legend bearing strip, applicator means for adhesively attaching succeeding legend bearing portions of the strip to different individual units prior to their separation from the supply strip, and strip severing means for detaching from the supply strip succeeding legend bearing portions thereof subsequent to their attachment to individual units.

3. A label applying apparatus, including means for progressively feeding a continuous legend bearing strip, scoring means for defining by weakened division lines succeeding portions of the strip to be detached, applicator means for adhesively attaching the previously defined portions of the strip to different individual units prior to detachment of said portions from the strip, and strip severing means for subsequently dividing from the strip on the previously defined weakened lines those legend bearing portions attached to individual units and thereby freeing the units.

4. The herein described method of applying identifying labels to a succession of individual units, including advancing through a successive step-by-step movement a previously inscribed record strip having thereon a succession of longitudinally spaced legends, scoring the strip relative to succeeding legends, adhesively attaching a legend bearing strip portion to an individual unit, advancing the strip and attached unit, and detaching from the strip the portion thereof attached to the unit, thereby freeing the unit with the legend bearing portion being carried thereby.

5. The herein described method of applying legend bearing labels to a succession of individual units, including advancing relative to a stationary supply of individual units by successive step-by-step movements a continuous strip of material having thereon a longitudinal succession of legends, attaching succeeding legend

bearing portions of the strip to succeeding individual units of the series and progressively advancing and detaching from the strip the legend bearing portions of the strip then attached to individual units.

6. The herein described method of applying legend bearing labels to a succession of individual units including advancing relative to a stationary supply of individual units a continuous strip of material having thereon a longitudinal succession of legends, progressively attaching succeeding legend bearing portions of the strip to succeeding individual units of the supply, advancing the strip and attached units in unison and separating from the strip the attached legend bearing portions thereof, thereby freeing the units.

7. The herein described method of labeling units, including attaching connected portions of a strip comprising a continuous succession of detachable labels to succeeding individual stationary units prior to detachment of the label portion from the strip positively advancing the strip and attached unit to a severing position and thereafter detaching the attached units from the strip by dividing the strip, leaving the attached label portion united with the unit.

8. In an apparatus of the character described, strip feeding means for advancing a continuous strip bearing longitudinally spaced legends relative to a stationary supply of units, a scoring device for weakening the strip adjacent to succeeding units to facilitate subsequent detachment thereof, applicator means for adhesively applying succeeding legend bearing portions of the strip to individual units, and strip severing means for detaching from the strip the legend bearing portions defined by the scoring device then attached to individual units.

9. In a strip feeding and severing apparatus wherein a continuous marginally punched legend bearing strip is progressively advanced past a severing position wherein the strip is severed to produce a succession of individual labels, a series of traveling feeding pins having progressive engagement in the marginal perforations of the strip for positively advancing the strip over a stationary supply of label receiving units, means for attaching successive unsevered legend bearing portions of the strip to successive units of said supply whereby the strip and a unit attached thereto are advanced in unison to the severing position, and arresting the strip with successive legend bearing portions in registry with the severing position, and a severing device operative to remove from the strip successive longitudinally spaced legend bearing portions and attached label receiving units, the legend bearing portions being of predetermined shape and size of less width than the strip, leaving continuous marginal portions of the initial strip transversely interconnected by tie portions intermediate successive removed areas of the strip.

10. In a strip feeding and severing apparatus wherein a continuous marginally punched legend bearing strip is progressively advanced past a severing position, a series of traveling feeding pins having progressive engagement in the marginal perforations of the strip for positively advancing the strip past a severing position and arresting the strip with successive legend bearing portions in registry therewith, strip severing means operative to remove from the legend bearing portions of the strip the marginally punched areas thereof and for separating succeeding

legend bearing portions one from another, and applicator means for adhesively applying the severed legend bearing portions of the strip to succeeding individual label receiving units of a series.

11. In a strip feeding and severing apparatus wherein a continuous strip of record material bearing longitudinally spaced legends is progressively advanced past a strip severing position, strip feeding means having feeding engagement with marginal areas only of the strip for advancing the strip progressively past a strip severing position, and strip severing means for removing from the strip successive legend bearing portions of the strip independently of the marginal strip feeding areas, applicator means for adhesively applying such legend bearing portions of the strip onto individual label receiving units of a series.

12. In a label applying apparatus, strip feeding means for advancing a continuous legend bearing strip past a label applying position, applicator means for attaching succeeding legend bearing portions of the strip to different individual units, strip severing means for detaching from the strip the unit attached portions thereof, and actuating means for operation of the strip attaching and severing means alternately with the operation of the strip feeding means.

13. In a label applying apparatus, strip feeding means for advancing a continuous legend bearing strip past a label applying position, applicator means for attaching succeeding legend bearing portions of the strip to different individual units, strip severing means for detaching from the strip the unit attached portions thereof, independently operable actuating means for the strip feeding means and for the strip attaching and severing means, and an interengaging device by which the operation of either of said means initiates the operation of the other in alternating sequence.

14. In a label applying apparatus, a supply magazine for individual units to which legend bearing labels are to be applied, and a depository for label bearing units, means for advancing a continuous legend bearing strip over the supply magazine and thence over the depository, attaching means for fixedly attaching a legend bearing portion of the strip to a unit in said magazine, which by the further advancement of the strip is transported to a position relative to the depository, and detaching means for separating from the strip for deposit in said depository the unit and attached legend bearing portion.

15. In a label applying apparatus, a supply magazine for individual units to which legend bearing labels are to be applied, and a depository for label bearing units, strip feeding means for advancing a continuous legend bearing strip relative to the magazine and depository, attaching means for affixing succeeding portions of the strip to individual units in the magazine, and means for depositing the units bearing affixed portions of the strip in the depository, and a progressively advancing support for the remaining units in the magazine, and a progressively retractive support for the legend bearing units in the depository, and actuating means for the units supports operative in synchronism with the strip feeding means.

16. In a label applying apparatus wherein a continuous legend bearing strip having therein longitudinally spaced configurations is progres-

sively advanced past label applying and strip severing positions, a strip feeding device having positive engagement with the longitudinally spaced configurations of the strip for progressively advancing the strip measured distances to present succeeding legends in label applying position, applicator means for fixedly attaching succeeding legend bearing portions of the strip to individual units, said strip feeding means then advancing the strip and attached unit to a strip severing position, and severing means for separating the legend bearing portions of the strip from that portion having therein the longitudinally spaced feeding configurations.

17. In a label applying apparatus wherein a continuous legend bearing strip having therein a succession of marginally punched holes is advanced past label applying and strip severing positions, a pin type feeding device having progressive engagement in the marginal holes for advancing the strip and arresting it with succeeding legend bearing portions in label applying and strip severing positions, applicator means for fixedly attaching legend bearing portions of the strip to different individual units, and strip severing means for dividing the legend bearing portions of the strip from the marginally punched area thereof.

18. The herein described method of applying legends to a succession of individual units, including advancing a continuous legend bearing strip having marginal feeding configurations for engagement of a positive strip feeding device to succeeding label applying and strip severing positions, attaching the advanced legend bearing portion of the strip to an individual unit at the label applying position, advancing the legend bearing strip and attached unit to the strip severing position, and removing from the strip the longitudinally spaced portion thereof attached to the unit which is of less width than the strip, leaving intact the marginal feeding area and transverse portions of the strip between the removed areas.

19. The herein described method of applying labels in continuous sequence, including scoring a continuous supply strip of label material at succeeding longitudinal positions to define thereon by weakened lines a label area, attaching the portion of the continuous strip comprising the defined label area to an article to be labeled, advancing the attached strip and article to a severing position and detaching the defined label area on the pre-weakened score lines and with it the attached article from the supply strip.

20. The herein described method of applying labels to separate articles in continuous sequence, including the steps of scoring a continuous supply strip of label material to define thereon a succession of label areas, adherently applying the succeeding defined label areas to separate articles and subsequently detaching the adherent label portions and attached articles from the supply strip all in synchronized steps, wherein the initial scoring prepares the strip for subsequent operations and the application of the defined area of the strip to an article prepares the assembly for the subsequent detachment in a continuous operation.

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