

July 2, 1940.

H. P. ELLIOTT

2,206,743

ADDRESSING MACHINE FOR MULTISECTION BILLS

Filed Nov. 26, 1937

6 Sheets-Sheet 1

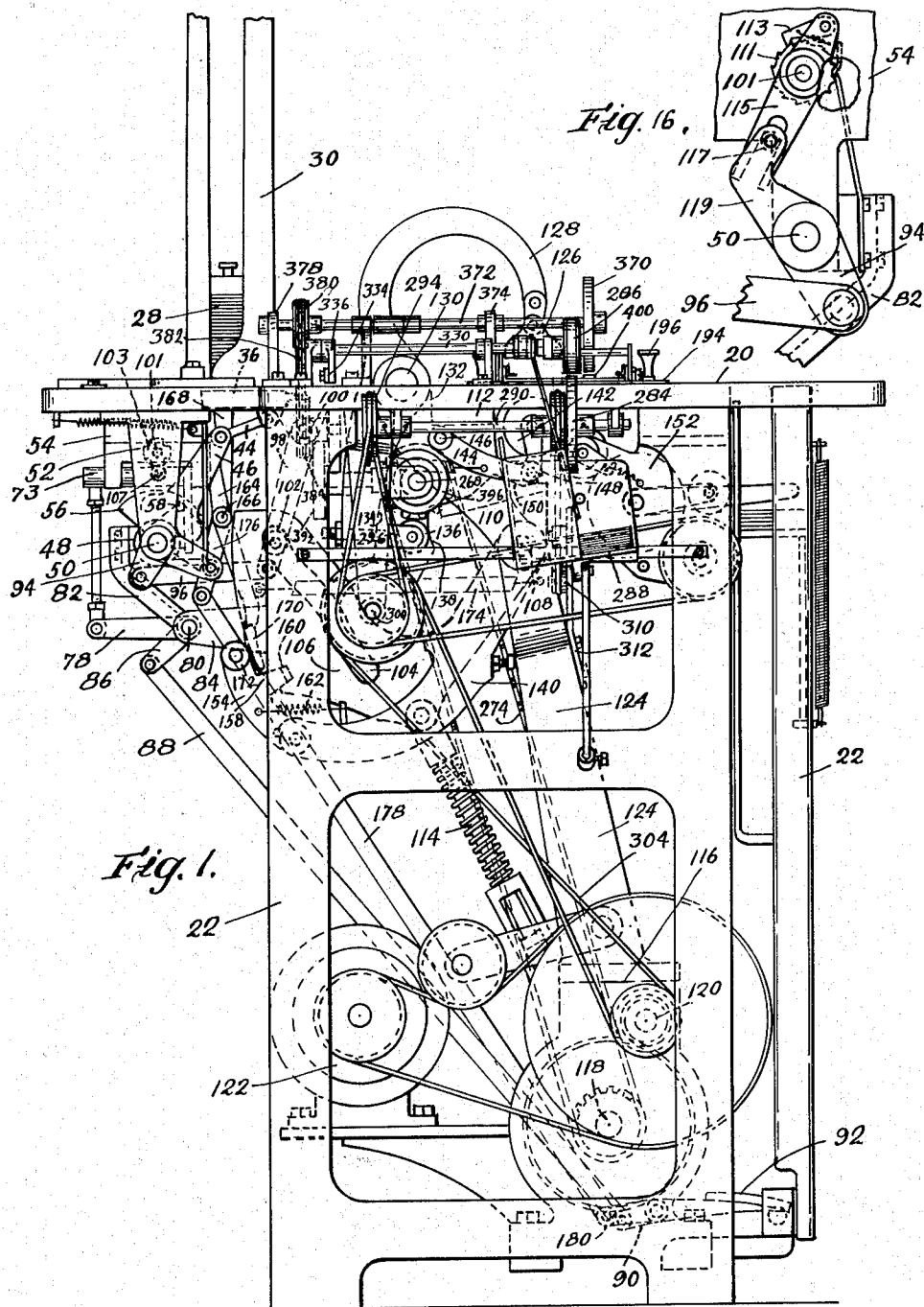


Fig. 16.

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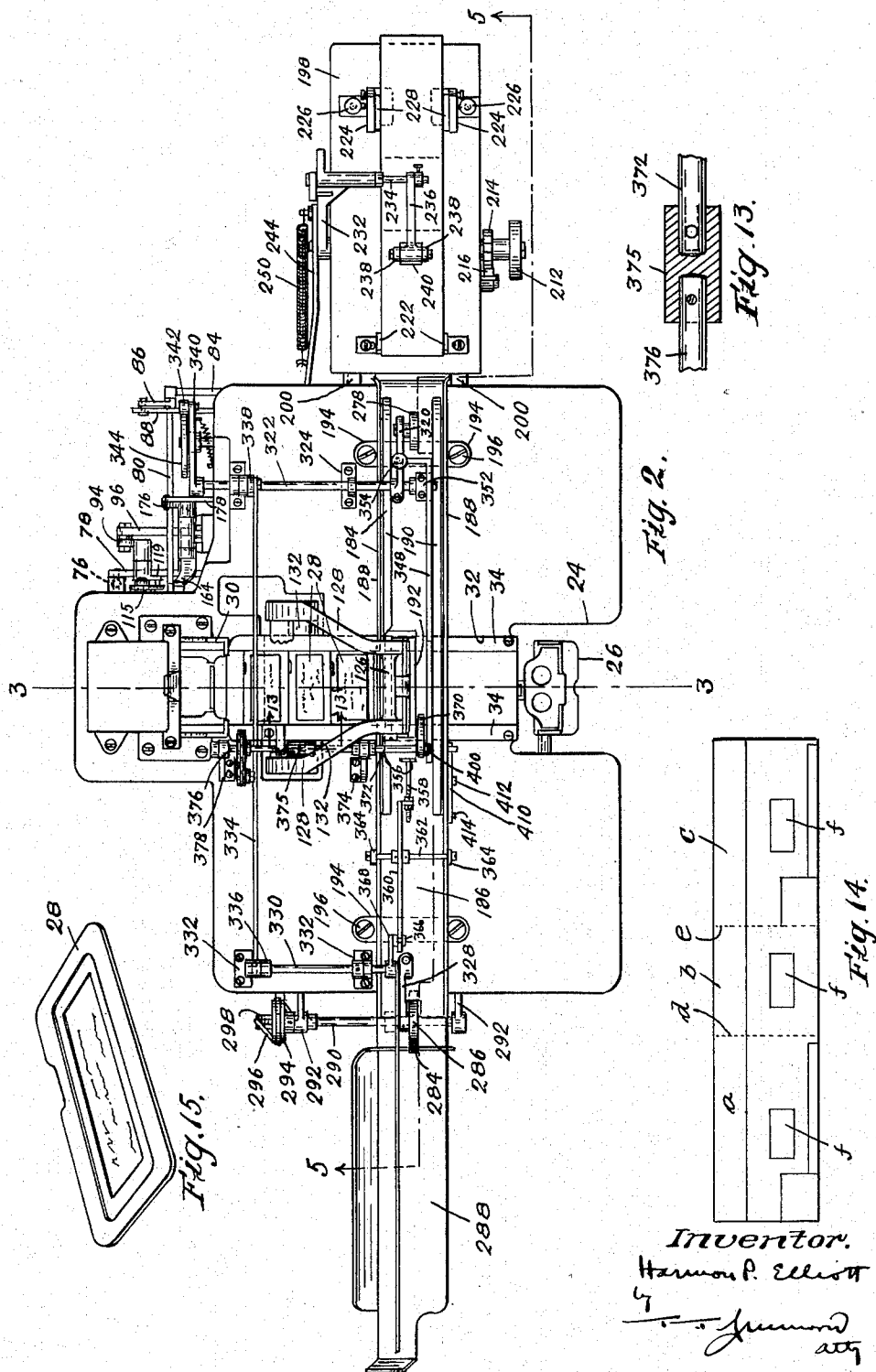
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ADDRESSING MACHINE FOR MULTISECTION BILLS

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6 Sheets-Sheet 2



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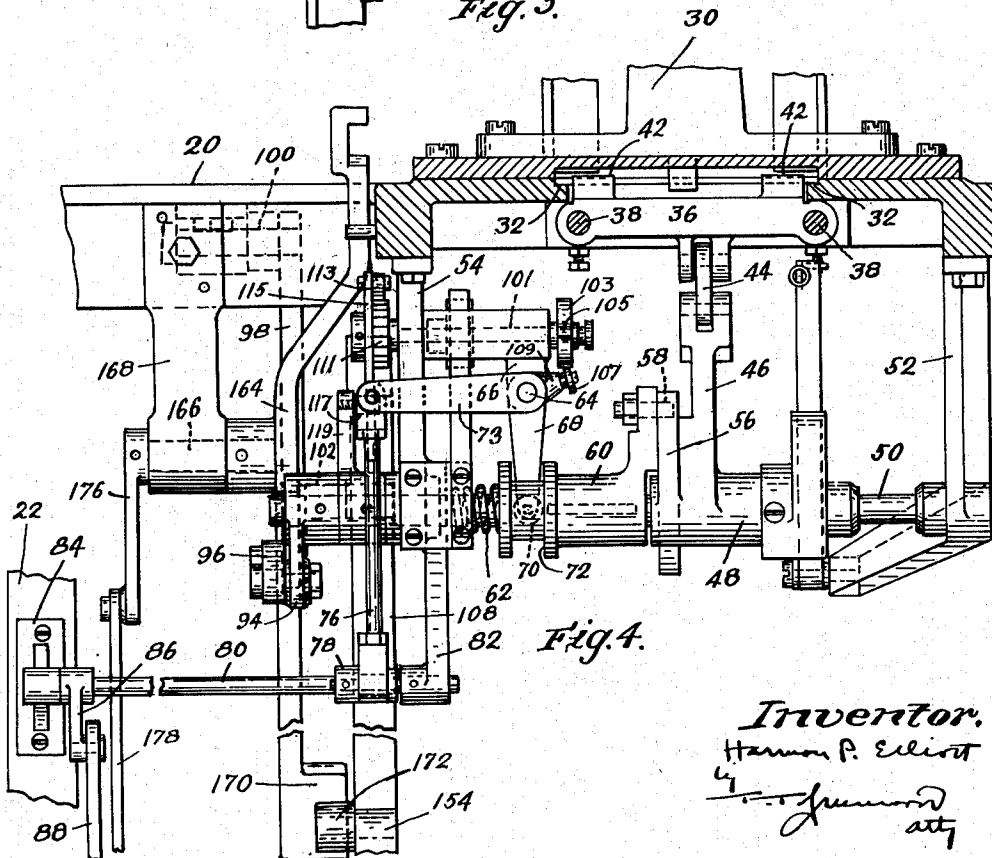
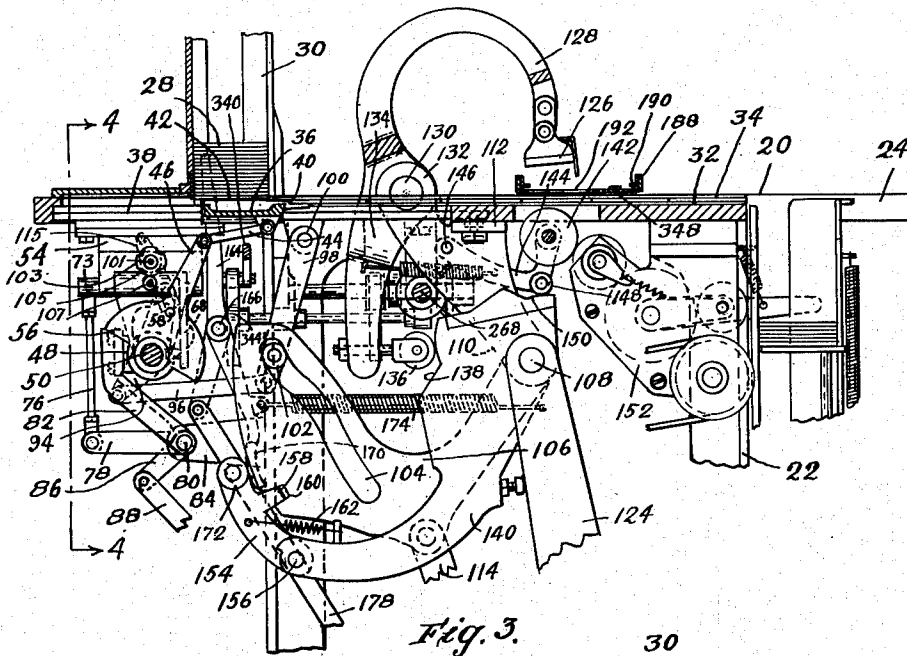
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ADDRESSING MACHINE FOR MULTISECTION BILLS

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6 Sheets-Sheet 3



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ADDRESSING MACHINE FOR MULTISECTION BILLS

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6 Sheets-Sheet 4

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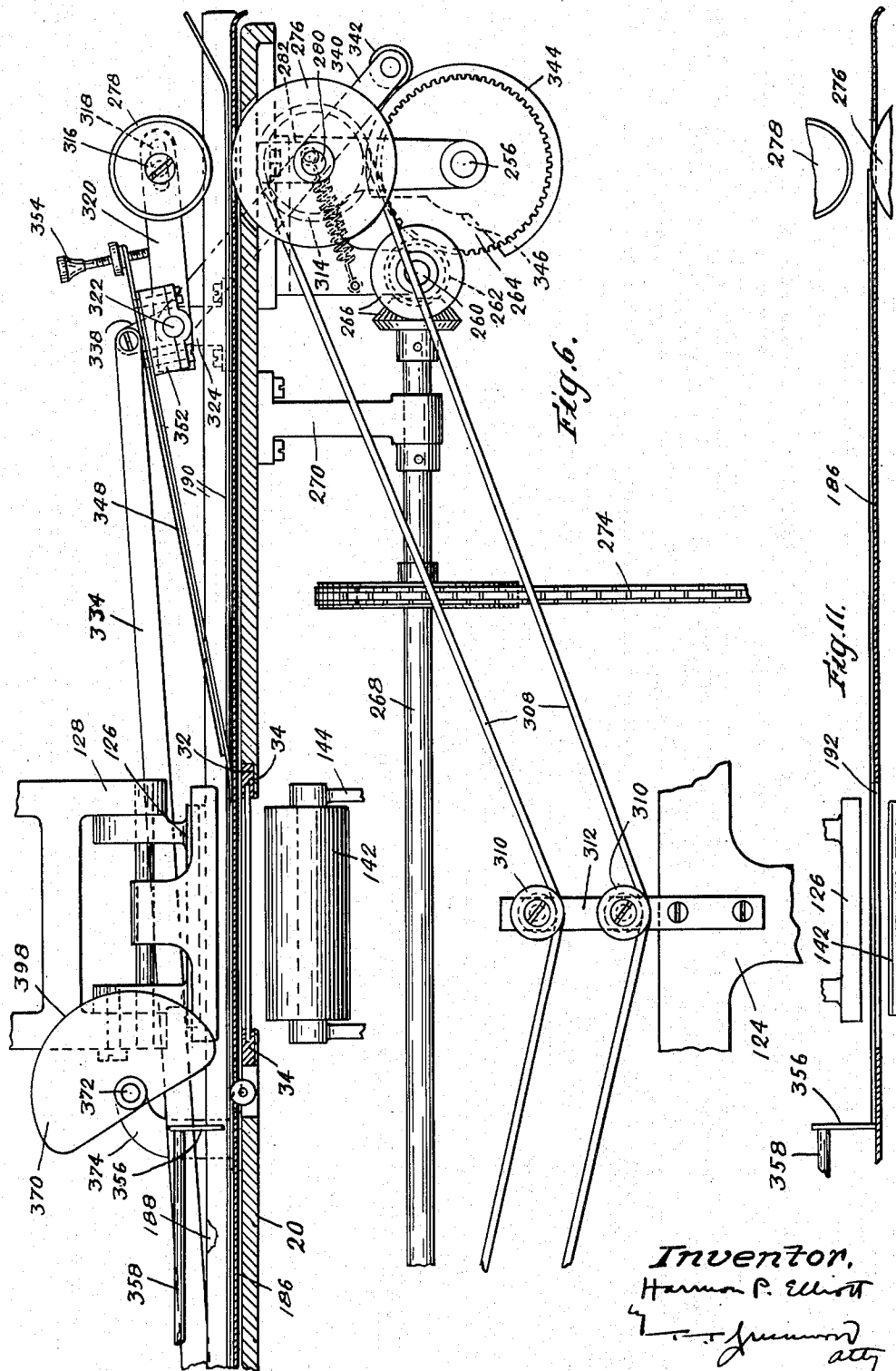
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ADDRESSING MACHINE FOR MULTISECTION BILLS

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6 Sheets-Sheet 5



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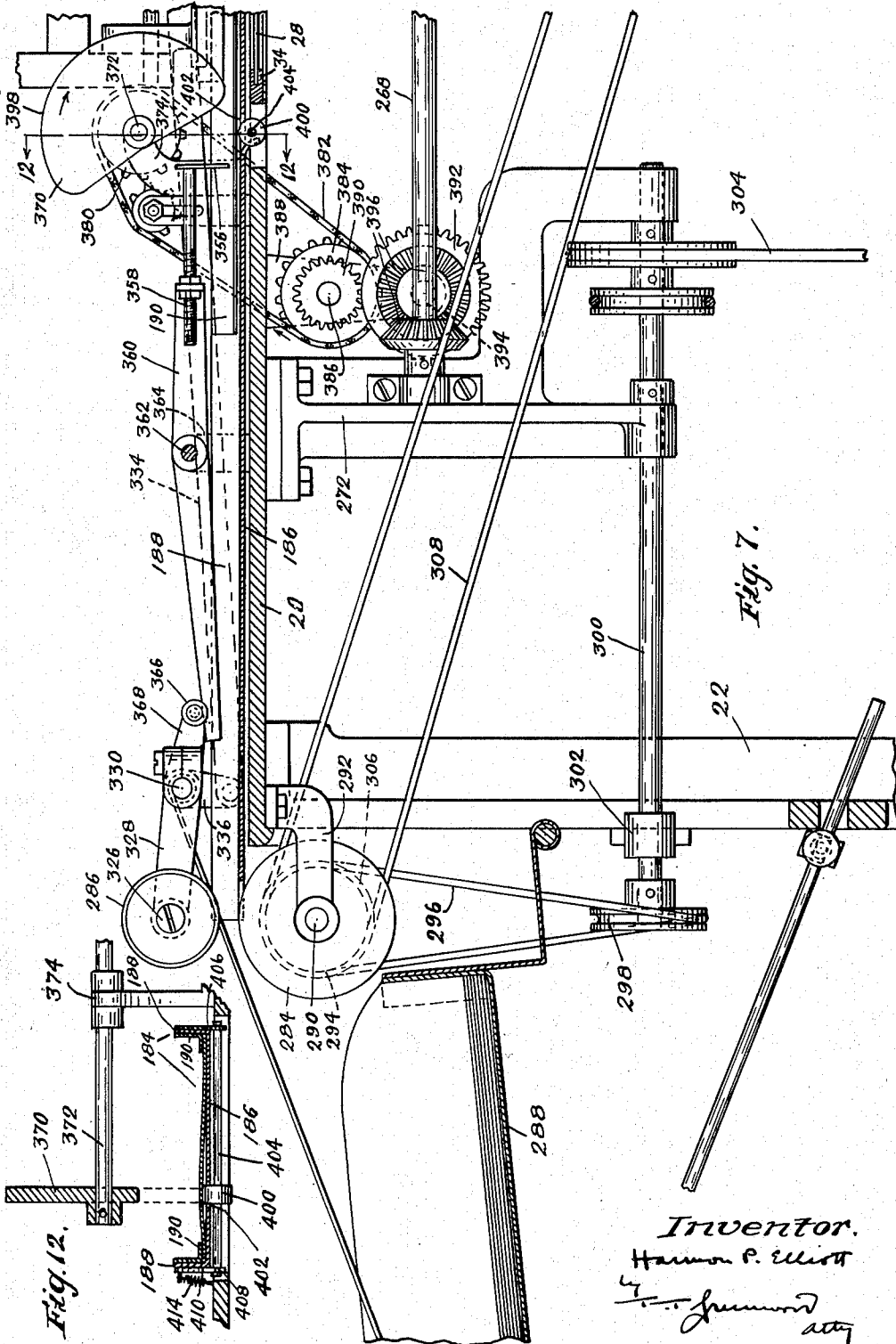
H. P. ELLIOTT

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ADDRESSING MACHINE FOR MULTISECTION BILLS

Filed Nov. 26, 1937

6 Sheets-Sheet 6



UNITED STATES PATENT OFFICE

2,206,743

ADDRESSING MACHINE FOR MULTISECTION
BILLS

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Application November 26, 1937, Serial No. 176,436

15 Claims. (Cl. 101—57)

This invention relates to a machine for addressing multisection sheets, such as the bills of many public utilities, which bills consists of a main section and one or more detachable sections, each of which sections is intended to receive the same address.

The various sections contain printed matter and the present machine is intended to apply the addresses to the preprinted bills.

One of the objects of the present invention is the provision of an addressing machine adapted to receive a series of individual bill forms, introduced into the machine either manually or automatically, the machine having mechanism for advancing the separate bills intermittently by steps of predetermined length, the address printing mechanism of the machine being such that the same address can be printed repeatedly in different predetermined positions on the bill form or on the different sections thereof.

A further and more specific object of the invention is the provision of bill advancing mechanism including a driving sector having a bill engaging and driving peripheral portion of predetermined length equal to the space between consecutive addresses and mechanism for rotating the driving member between addressing operations to advance the bill by the length of the driving periphery so as to position a different part of the bill in address receiving position.

Another object of the invention is the provision of a bill addressing machine having mechanism for advancing the successive bills in a position to receive the first address and mechanism for advancing the bill by steps of predetermined extent for receiving repetitions of the same address and for ultimately delivering the bill into a second bill advancing mechanism which rapidly extracts the addressed bill from the machine.

A further feature of the invention is the provision of a bill addressing machine having an improved form of mechanism for transferring successive bills from a stack of such bills and advancing the successive bills through the machine.

Another object of the invention is the provision of bill addressing and feeding mechanism having bill guiding and feeding parts which can be removed to permit the machine to operate as a versatile addressing machine.

A yet further object of the invention is generally to improve upon addressing machines and addressing methods.

Fig. 1 is an end elevation of the machine em-

bodiment the present invention viewed from the left hand or bill delivery end of the machine.

Fig. 2 is a plan view of the machine of Fig. 1.

Fig. 3 is a transverse section taken along line 3—3 of Fig. 2.

Fig. 4 is an end detail of the stencil advancing mechanism taken along line 4—4 of Fig. 3.

Figs. 5, 6 and 7 are sequent views taken along line 5—5 of Fig. 2, Fig. 5 illustrating particularly the mechanism for advancing successive preprinted bills to the action of the machine, Fig. 6 illustrating the mechanism for advancing the bills into and through the addressing elements of the machine, and Fig. 7 illustrating the mechanism for delivering the addressed bill.

Fig. 8 is a sectional detail of a bill retaining pad of Fig. 5 taken along line 8—8 of Fig. 5.

Fig. 9 is an elevation on the pad of Fig. 8.

Fig. 10 is a sectional detail of the bill guideway taken along line 10—10 of Fig. 5.

Fig. 11 is a diagrammatic view taken lengthwise of the bill sheet and illustrating the position of the bill with respect to the stop finger and the in-feeding rolls for the first address.

Fig. 12 is a sectional detail of the idler roll of the intermittent bill advancing mechanism taken along line 12—12 of Fig. 7.

Fig. 13 is a sectional detail of the disconnectible connection between the bill advancing sector and the driving mechanism therefor taken along line 13—13 of Fig. 2.

Fig. 14 is a plan view of a pre-printed multisection public service bill adapted to be addressed by the present machine.

Fig. 15 is a perspective view of an address bearing stencil used in connection with the present machine.

Fig. 16 is an end detail of the machine for automatically disabling the pusher, looking from the left hand end of Fig. 4.

The machine embodying the present invention includes a flat bed or table 20 supported upon the top of a suitable frame 22. The table is provided in the middle of the front edge thereof with a recess 24 in which the upper end of a vertical stencil receiver 26 of suitable construction is located.

The machine is adapted to operate upon a series of address-bearing printing devices, which specifically are stencils 28 of suitable well known construction, see Fig. 15, a vertical stack of which stencils is contained in a holder 30 rising from the rear portion of the table 20. The table is provided with a groove 32 leading from the stencil holder of the stencil receiver. A pair of

spaced parallel rails or guides 34 having opposed grooves in their confronting faces are located in the groove 32 and provides a stencil track or guideway along which the stencils are moved in succession from the stencil holder 30 to the receiver 26.

The mechanism for moving the successive lowermost stencils from the holder 30 into and along the guideway includes a pusher 36, see especially Figs. 3 and 4, disposed below the holder 30 and reciprocable on a pair of parallel guide rods 38 from a position in the rear of the stack of stencils to a position where the rear edge of the lowermost stencil is advanced into the guideway.

The pusher is provided with a pair of abutments 40 at each side thereof in proximity to the guide rods 38 which are adapted to be located behind and engage the rearmost edge of the lowermost stencil to advance it forwardly of the stack and into the stencil guideway. The pusher is also provided with rear elevated portions 42 which support the stack of stencils while the lowermost one is being advanced thereby to remove the weight of the stack from the advancing stencil.

The pusher is reciprocated by means of a link 44 which is pivotally connected at its forward end to the pusher and its rear end to an upstanding arm 46 integral with a hub 48 loosely supported upon an oscillating shaft 50 located below the rear end of the table and supported therefrom by depending brackets 52 and 54, see especially Fig. 4. The hub 48 carries an arcuate sector 56 having a radial face provided with an aperture adapted removably to receive a clutch pin 58 carried by a hub 60 which is movable axially on the shaft 50 but is keyed thereto for conjoint rotation therewith. Thus the hub 60 oscillates with the shaft 50 and when the pin 58 is engaged with the sector 56 the pusher is also reciprocated but when the pin is free from the sector the pusher is stationary. The hub 60 is urged in a direction to maintain it in driving engagement with the sector 56 by means of a compression spring 62 which encircles the shaft 50 and bears against the hub and the bearing bracket 54.

The hub 60 is connected with and is disconnected from the sector 56 periodically to obtain a predetermined number of repetitions of the address of a stencil as will presently appear and also by means under control of the operative. Said operative-controlled means includes a rod 64 journaled in an ear 66 of the bearing bracket 54 and having fixed thereto a depending arm 68 carrying a roller 70 located in an annular groove 72 of the hub. Thus when the arm 68 is swung in a clockwise direction, Fig. 4, the hub 60 is moved axially against the action of the spring 62 to disengage the hub from driving engagement with the sector 56. The arm 68 is operated by an arm 73 fixed to the pin 66 and pivotally connected at its free end with a vertical connecting rod 76, the lower end of which is pivoted to the outer end of an arm 78 fixed to a shaft 80 journaled in an extension 82 of the bearing bracket 54 at one end and in a bearing bracket 84 at the other end. The shaft 80 has an arm 86 fixed thereto which is pivotally connected to the upper end of a rod 88 extended downwardly to the lower front part of the frame 22 and pivotally connected to the rear end of a "repeat" pedal 90.

The present machine is provided with three pedals 92, but one of which is shown in Fig. 1. These pedals are known, respectively, as the

"print," the "repeat" and the "skip" pedals, and can be singly or conjointly depressed by the operative to effect control of the machine to start the machine in operation to repeat the printing of the address of any selected stencil or to skip or pass the selected stencil through the printing mechanism without effecting a printing operation thereof. Thus by a depression of the repeat pedal the pusher can be disabled so that a stencil that is in addressing position stays therein during the next printing operation or for any number of printing operations until the repeat pedal is raised to restore the connection between the hub 60 and the sector 56.

The oscillable shaft 56 is oscillated or rocked by means of an arm 94, see Figs. 1, 3 and 4, fixed thereto and pivotally connected to the rear end of a link 96, the forward end of which is pivotally connected to the lower end of an upwardly extended link 98 pivoted at 100 to a suitable support beneath the table 20. The swinging link 98 is provided with a lateral roller 102 which operates in a cam slot 104 of a cam 106 pivoted on a shaft 108 fixed between arms 110 of a bracket 112 secured to the under face of the table 20. The configuration of the cam slot 104 is such as to effect oscillation of the shaft 50 and hence reciprocation of the pusher 36 in the proper manner. The arm 106 is reciprocated by a connecting rod 114 driven by a power mechanism 116, now well known in the art and unnecessary to describe in detail.

The power mechanism includes an intermittently rotating shaft 118 which is under control of the start pedal, not shown, and makes one complete rotation for an operating cycle of the machine following the depression of the start pedal. The shaft 118 operates the connecting rod 114.

The power mechanism also includes a continuously rotating shaft 120 which delivers power into the mechanism from the driving motor 122. The power mechanism 116 is tied rigidly with the bracket 112 by means of a rigid tie member 124 which is bolted to the housing of the power mechanism and connected to the shaft 108, see Figs. 1 and 3.

The printing mechanism includes an anvil or platen 126 located above the stencil track forwardly of the stencil holders and fixed to the lower ends of a pair of connected arcuate arms 128 journaled on a shaft 130 disposed in the rear of the platen and carried by upstanding ears 132 of the bracket 112. The arms have an integral depending projection 134 below said shaft 130, which projection is provided with a roller 136 which cooperates with the cam face 138 of an operating arm 140 pivoted to the shaft 108. Reciprocation of said arm effects consequent reciprocation of the arms 128 and the movement of the platen toward and away from the stencils.

Cooperating with the platen is a resilient printing roll 142 disposed beneath the stencil track and the platen and journaled in a frame 144 pivoted at 146 to the bracket 112. The frame 144 carries a cam roller 148 which cooperates with a cam face 150 of said operating arm 140 so that reciprocation of the arm 140 moves the printing roll 142 into and out of engagement with the stencils thereabove.

The printing roll 142 receives ink on its periphery from an inking mechanism 152 which need not be described in further detail.

The operating arm 140 for the printing mechanism

nism is normally reciprocated by the cam arm 106 through a latch 154 pivoted at 156 to the end of the operating arm and having a latch projection 158 which is normally held in a notch 160 of the cam arm 106 by means of a spring 162, thereby to effect the driving engagement between the arms 106 and 140.

The latch can be disconnected from the cam arm 106 thereby to disable the printing mechanism so as to skip a stencil selected visually by the operative. To this end a generally vertical lever 164 is fixed to a pin 166 journaled in a bracket 168, see Fig. 4, depending from the rear edge of the table 20. The upper end of said lever is adapted for cooperation with stencil control selector mechanism, forming no part of the present invention and not herein illustrated. The lower end of the lever is provided with a cam face 170 that cooperates with a cam roll 172 of the latch 154. Thus by swinging the lower end of the lever in a clockwise direction, Fig. 3, the latch can be removed from engagement with the cam arm or sector 106 to disable the printing mechanism. The lever 164 is normally retained in an unoperated position by a tensile spring 174. The lever 164 is operated manually by means of an arm 176 fixed to the pin 166 and pivoted to the upper end of a pedal operated rod 178 the lower end of which is pivotally connected to the rear end of a repeat pedal 180. Thus by depressing the repeat pedal the latch 154 is disconnected from the cam sector 106 and the printing mechanism is disabled so that selected stencils can be passed through the printing position without being operated upon by the platen and printing roll. This skip feature, however, while useful when the machine is operated for general purposes, is not employed in applying addresses to bill forms.

Since for the purpose of the present invention, plural and specifically three repetitions of the same address are to be recorded on the same bill form, means are provided to retain each desired stencil in addressing position during three operations of the addressing machine. Said means includes mechanism in control of the movable clutch member 60 of the stencil pusher, see Figs. 3, 4 and 16.

A shaft 101 is journaled in the bracket 54 for the oscillable shaft 50 and has fixed on one end thereof a disc 103 having four equi-angularly spaced notches 105 in its periphery which cooperate with a roller 107 journaled on an arm 109 movable with the clutch operating arm 68 and so arranged that when the roller is on a smooth part of the disc-periphery the clutch 60 is held disengaged from the pusher and hence the pusher is held inoperative. When, however, the pusher drops into a notch 105 the clutch is engaged and the pusher is caused to operate. The disc is so rotated that the pusher remains in a notch only for one machine operation. Three machine operations are required to advance the disc under the roller to the next notch.

The disc is advanced in a step by step manner by means including a twelve-tooth ratchet wheel 111 fixed to the opposite end of the shaft and engaged by a pawl 113 carried by an arm 115 pivoted on said shaft 101 and having a bifurcated lower end engaged by a pin 117 fixed to an arm 119 carried by and oscillable with the aforesaid shaft 50. Thus three oscillations of the arm 119 and shaft are required to advance the disc 103 over the roller 107 from one notch to the next

so that the pusher is operated to change stencils after every third addressing operation.

The bill form 182 adapted to be addressed by the machine of the present invention is illustrated in Fig. 14 and comprises a plurality of pre-printed sections, *a*, *b*, *c*, detachable from each other along the lines *d* and *e*, and each adapted to receive an address *f*, the addresses being equidistant. While the bill herein illustrated has the section *b* shorter than the sections *a* and *c*, neither the length nor the number of the sections is important so far as the principle of the present invention is concerned except that the machine is designed to operate upon a bill of certain dimensions and number of sections.

The successive bills are adapted to be moved through the printing mechanism along a removable guideway 184, see especially Figs. 2, 5, 6, 7 and 10. The guideway consists of a bottom wall 186 and upstanding side walls 188 spaced apart by the width of the bill form. The side walls are provided with plates 190 which overlie the side edges of the bottom wall to provide between them and the bottom wall a track for the bill forms. The guideway 184 overlies the stencil track and is disposed between it and the printing anvil 126, the bottom wall 186 of the bill guideway having an opening 192 therein under the anvil to permit pressure engagement between the bills and the underlying stencils. The bill guideway is provided with laterally extending ears 194 through which clamping screws 196 are passed and are screw-threaded into the table 20 to secure the guideway removably in position.

The bill forms are adapted to be automatically fed into the bill guideway by the mechanism best illustrated in Figs. 2 and 5. A stack of bill forms is disposed face down upon a supporting table 198 disposed at the right hand end of the table 20. The table is pivotally connected at its right hand end to the upper end of a pair of brace members 200 which at their lower end are secured to the frame 22 of the machine. The intermediate portion of the table is supported by a vertical rack 202, the upper end of which is pivoted at 204 to the under side of the table. A shaft 206 is rotatably supported in bearings 208 carried by the brace members 200 beside the rack 202. The shaft 206 has fixed thereto a gear 210 which meshes with the rack. The knob 212 is fixed to the shaft so that the shaft can be rotated manually to raise and lower the rack and thus raise and lower the front end of the table. A ratchet wheel 214 is fixed to the shaft and engages a spring pressed detent 216 which normally holds the ratchet wheel against rotation due to the weight of the table and thus holds the table in any adjusted position. By moving the detent 216 away from the ratchet wheel the table is caused to drop by its weight upon a support 218 carried by the table 20. A spring 220 normally holds the rack 202 in engagement with the gear 210.

With this arrangement the top of the stack of bill forms can be adjusted to the level of the entrance of the bill guideway in proportion as the height of the stack diminishes due to the removal of the bill forms therefrom.

The front end of the stack of bill forms is disposed between a pair of vertical fingers 222 by which the stack is held in line with the guideway. The rear end of the stack is disposed between a pair of vertical plates 224 secured releasably to the table 198 by screws 226. The inner faces of plates 224 have pads 228 of sponge

rubber or the like secured thereto by means including screws 230, see Figs. 5 and 9. Said sponge rubber pads are engaged with the side edges of the bills of the stack with sufficient 5 firmness to hold the lower bills from the stack against forward movement while the uppermost bill of the stack is being advanced.

The advancing mechanism for the uppermost bill of the stack includes an arm 232, see Figs. 2 10 and 5, disposed at one side of the table and pivoted at its lower end on the aforesaid shaft 206. A rod 234 is journaled in the upper end of said arm and overlies the bill stack. An arm 236 is 15 fixed removably to said rod 234 and projects forwardly or to the left therefrom. At its forward end it is provided with a pair of links 238 preferably clamped securely to the arm and having a soft rubber feed roll 240 pivoted between their 20 lower ends. The weight of the arm 236 and associated parts is such as to press the feed roll 240 firmly upon the topmost bill of the stack irrespective of the height of the stack within the limits of the machine and reciprocation of the arm 232 causes the roll to be reciprocated length- 25 wise of the stack and in engagement with the uppermost bill thereof.

The roll 240 is arranged to roll freely between the links 238 during retracting movement of the roll but to be held from rotation during the forward 30 movement of the roll and thereby to be in sufficient frictional engagement with the uppermost bill of the stack to move it lengthwise off the stack and into the bill guideway. To this end the arm 236 is provided with a clutch plate 242 35 which depends from the arm and terminates behind the roll 240 and in close proximity thereto and at an angle to the periphery thereof.

As thus arranged when the roll is advanced toward the left, Fig. 5, the plate 242 due to its 40 angle of engagement with the roll and the compressibility of the roll is caused to dig therein and hold the roll from rotating. Thus as the roll advances it acts as a stationary friction pad that engages the uppermost bill sufficiently firmly 45 to surely advance it off the stack and into the bill guideway. On the retraction movement of the roll the relation between the roll and the clutch plate is such that the roll can rotate freely in contact with the uppermost bill and hence exerts 50 no driving tendency thereon.

The roll is reciprocated by means of a connecting rod 244 having a longitudinally elongated slot 246 in one end thereof in which a pin 248 fixed 55 to the roller operating arm 232 is located. A relatively strong tension spring 250 is connected with the pin 248 and with a part of the connecting rod 244 and serves to hold the pin 248 normally in the left hand end of the slot. The other end of the connecting rod is pivoted on a crank pin 252 60 of a crank arm 254 fixed to a shaft 256 journaled in a bracket 258 secured to the underside of the machine table 20. Thus rotation of the shaft 256 effects reciprocation of the connecting rod 244 and hence of the feed roll 240, the force for advancing the feed roll being transmitted through the spring 250. If there is some obstruction in the way of the feed roll the spring 250 yields and thus prevents damage to the associated parts.

The shaft 256 is driven from a shaft 260 journaled in the bracket 258 through small and large 70 spur gears 262 and 264 fixed respectively to the shafts 260 and 256, the shaft 260 making three revolutions to one revolution of the shaft 256 for advancing the three section bill herein shown. 75 The shaft 260 is driven through miter gears 266

from a drive shaft 268 which extends longitudinally of the machine beneath the machine table 20 and is journaled at one end in a bracket 270 secured to the machine table, see Fig. 6, and a bracket 272, also secured to the machine table, see Fig. 7. Said shaft is driven positively from the intermittently operated shaft 118 of the power mechanism 106, see Fig. 1, and at equal speed with said shaft 118, by means including the chain 274. Said shaft 268 operates both the bill feeding 10 mechanism above described and the bill advancing mechanism to be described.

The successive bills from the stack are delivered into the bill guideway a sufficient distance to be engaged by a pair of cooperating driving and idler 15 rolls 276 and 278, respectively. The driving roll 276 is fixed to a shaft 280 journaled in a bracket 282, see Fig. 11, and the upper peripheral portion thereof is located in aligned slots of the machine table 20 and the bottom of the bill guideway and 20 projects into the guideway so as to be overlaid by the bill. The idler roll 278 is adapted to be moved downwardly to press the bill into driving engagement with the driving roll 276 thereby to cause the bill to be advanced to the printing 25 mechanism at the other or discharge end of the guideway, see Fig. 7.

Another pair of driving and idler rolls 284 and 286, respectively, is located in position, and function, to remove the addressed bill from the 30 guideway and deliver it into a hopper 288. The upper peripheral portion of the driving roll 284 projects slightly into the upper part of the bill guideway to be overlaid with the bill. Said roll is fixed to a shaft 290 journaled in brackets 292 35 fixed to the under side of the machine table, see Figs. 1 and 7. The idler roll 286 is adapted to be reciprocated toward and away from the driving roll so as to cause the bill at the proper time to be driven by the driving roll and advanced out of 40 the bill guideway.

The driving roll 284 is driven by means including a pulley 294 fixed to the roll shaft 290 about which is passed a half-turn belt 296 that is passed about a pulley 298 fixed to a counter-shaft 300 45 journaled in a bracket 302 secured to the machine frame 22 and also journaled in the aforesaid bracket 272. The shaft 300 is driven by means including a cross belt 304 from the continuously operating shaft 120 of the power mechanism 106. 50

The in-feeding roll 276 is driven concurrently with and at the same peripheral speed as the out-feeding roll 284. For this purpose the shaft 290 of the roll 284 has a pulley 306 fixed thereto 55 about which a belt 308 is passed. Said belt is passed about idler rolls 310 carried by a bracket 312 secured to the tile member 124, see Figs. 1 and 11, and thence about a pulley 314 fixed to the shaft 280 that carries the in-feeding roll 276. 60

The idler rolls 278 and 286 are adapted to be reciprocated conjointly. To this end the idler roll 278, see Figs. 2 and 6, is journaled on a shoulder bolt 316 adjustably secured in the slot 318 of an arm 320 clamped to a shaft 322 journaled in brackets 324 detachably fixed to and rising from the top of the machine table 20. The out-feeding idler roll 286, see Figs. 2 and 7, is journaled on a bolt 326 fixed in an arm 328 clamped to a shaft 330 journaled in brackets 70 332 detachably secured to and rising from the table 20. The two shafts 330 and 322 are connected together for conjoint rotation in opposite directions through a connecting link 334 one end of which is pivotally connected to a depending 75

arm 336 fixed to the shaft 330 and the other end of which is pivotally connected to an upstanding arm 338 fixed to the shaft 322. With this mechanism both the in-feeding out-feeding idler rolls are movable simultaneously toward and away from their cooperating driving rolls.

The idler rolls are oscillated by means of an arm 340 which is fixed to the rear end of the shaft 322 and has a laterally projecting roller 342 at its lower end which overlies and rides upon a cam 344 fixed to the shaft 256 that operates the mechanism for feeding the successive bills into the action of the in-feeding rolls. The cam 344 has a circular part which holds the idler rolls in elevated unoperated position and also has a recessed portion 346 which permits the idler rolls to drop down into engagement with the underlying bills to advance the bills. The peripheral extent of the recessed portion 346 of the cam is sufficient to cause the bills to be advanced from the in-feeding roll into position to receive the first address and to cause the out-feeding roll to extract the addressed bill from the machine.

The in-feeding bill is held frictionally in addressing position during the addressing operation by a spring finger or strip 348, see Figs. 2 and 6, which is disposed above and extends parallel with the bill guideway and has a flat end portion 350 which passes the bill against the bottom wall of the guideway at the addressing position thereof at the time an address is being made. The resilient strip 348 is carried by a block 352 which is clamped onto the shaft 322 sufficiently firmly so that it oscillates with the shaft although it can slip on the shaft by turning the adjusting screw 354 carried by the block 352 and bearing on the arm 320 so as to change its angular position with respect to the shaft and thus the degree of spring pressure exerted on the bill strip. When the idler rolls descend to advance the bill the strip 348 rises away from the bill to permit the free feeding thereof.

The bill is advanced by the in-feeding rolls a predetermined distance as determined by the setting of a stop plate 356 which, when in operative position is located in the path of movement of the bill and constitutes an abutment against which the leading edge of the bill impinges to restrict further advance of the bill and to define the position of the first address. The plate 356 is carried by a rod 358, see Figs. 2, 6 and 7, which is secured in a longitudinally adjustable manner in one end of a lever 360 fixed to a rod 362 journaled in upstanding brackets 364 of the bill guideway. The other end of the lever is located below and is adapted to be engaged by a laterally projecting roll 366 carried by an arm 368 fixed to the shaft 330 of the out-feeding idler roll. Thus as the out-feeding idler roll 286 is caused to descend the arm 368 is elevated thereby permitting the heavier end of the lever 360 to drop and to position the stop plate 356 in a position to be engaged by the incoming bill.

The bill sheet is advanced successively between the printing mechanism the distance between consecutive addresses by means including a driving sector 370, see Figs. 1, 2, 6 and 7. Said sector is disposed above the bill guideway at one side of the printing anvil and is fixed to a horizontal shaft 372 journaled in a bearing 374 removably secured to and upstanding above the machine table 20 and having a detachable connection 375, see especially Fig. 13, with an aligned drive shaft 376 journaled in bearings 378. Said

shaft 376 has a sprocket 380 fixed thereto and driven by means of a chain 382 from a sprocket 384 of the same pitch diameter fixed to a shaft 386 journaled in a bracket 388. Said shaft 386 has a mutilated gear 390 fixed thereto which is in mesh with a corresponding mutilated gear 392 of twice the diameter fixed to the shaft 394 and driven by means of miter gears 396 from the drive shaft 268. With this arrangement the driving sector 320, when rotated, is rotated at twice the speed of the drive shaft 268 and the gears 390 and 392 are so arranged that the sector is held stationary during one revolution of the shaft 268. Thus the sector can advance the bill between consecutive addressing positions during the time between consecutive printing operations of the printing mechanism.

The driving sector 370 is provided with a circumferential driving face 398, the driving length of which in engagement with the bill sheet is equal to the distance between the successive addresses. The sector cooperates with an idler roll 400 which is disposed beneath the bill form and supports the bill when the driving sector is in pressure engagement therewith. Said roller 400, see especially Figs. 2, 7 and 12, is located in a recess 402 of the bottom wall of the track so as to project slightly above the bottom wall and is journaled on a shaft 404 located close under the track and having one end thereof loosely received in an ear 406 of the track. The other end of the shaft is located in a notch 408 formed in one end of a lever 410 pivoted at 412 to a side wall of the track, the other and free end of the lever being acted upon by a spring coil 414 in a direction to hold the roll 402 yieldingly in elevated position and thus maintain the bill form in driving engagement with the sector.

The operation of the machine is essentially as follows:

The uppermost bill sheet of the stack is advanced from the stack sufficiently far so that the leading edge is disposed between the in-feeding rolls 276 and 278. These rolls are brought into engagement with the bill and advance it into the printing mechanism. The distance from the in-feeding rolls to the printing mechanism is adapted to be such that the bill is in proper position to receive the first address at or prior to the time the trailing edge of the bill leaves the bite of the rolls, as indicated in Fig. 11. The leading edge of the bill comes up against the stop plate 356 which at this time has been in the lowered position. Thus the position of the first address is accurately predetermined. The bill need not have passed completely out from the bite of the in-feeding rolls at the time the leading edge thereof engages the stop plate as the bill can bulge between the rolls and the stop plate since the bulge will flatten out by backward movement of the rear portion of the bill when the idler roll is elevated. As the idler roll moves upwardly the spring finger 348 exerts pressure upon the bill in the vicinity of the printing mechanism to hold the bill against rearward movement. The printing mechanism then operates to imprint an address on the first bill section. During this time the driving sector 398 has remained in the unoperated position illustrated in Figs. 6 and 7. When the idler rolls are moved into elevated position the stop plate has also been moved into elevated position so that the bill is free to be advanced by the sector 398. The sector now rotates and pinches the bill between itself and the cooperating roll 402 and advances the bill by the

length of the circumferential driving face thereof and positions the second section of the bill into position to receive the address. The printing mechanism then operates and imprints a repetition of the same address. The sector again rotates and advances the bill to position the third section between the elements of the addressing mechanism which then operate to imprint the third repetition of the address. The leading edge of the bill at this time is positioned between the out-feeding rolls which then engage the bill and advance it out of the machine into the hopper 288. At the same time a new bill has been fed into position between the in-feeding rolls which advance the second bill into the first printing position. After the last address on a bill is printed the stencil pusher operates to advance a new stencil into printing position to operate on a new bill form.

The bill guideway and the various feed rolls associated with the bill addressing mechanism that is above the machine table 28 can be removed to condition the machine for general addressing purposes.

I claim:

1. In a machine for addressing a series of separate multi-section bills, bill addressing mechanism, means defining a guideway along which the successive separate bills are adapted to move through the addressing mechanism, a stop engageable with the leading edges of the successive bills and positioned a predetermined distance from said addressing mechanism to define the position of the first address on the successive bills, bill advancing mechanism disposed between said stop and said addressing mechanism and arranged for driving engagement with the successive bills to move them through said addressing mechanism, and means advancing the successive bills into said advancing mechanism free from driving engagement therewith and against said stop.

2. In a machine for addressing multi-section bills, addressing mechanism, means having an intermittent engagement with the bill for advancing it in a step by step manner through said addressing mechanism, means for holding said bill stationary in addressing position when said advancing means is disengaged therefrom, means for feeding successive bills to said advancing means, and means for removing said holding means from holding position during the in-feeding of a bill.

3. In a machine for addressing multi-section bills, addressing mechanism, means for advancing successive parts of said bills to said addressing mechanism by intermittent steps equal to the distance between addresses on the successive bill sections, bill in-feeding mechanism arranged to move successive bills into said addressing mechanism in position to receive the first address and into said advancing mechanism, a stop engageable with the leading edges of the successive bills and disposed in position to define the position of the first address on the bill, bill out-feeding mechanism arranged to receive the addressed bills and move them away from said advancing mechanism, means to remove said stop from holding engagement with a bill in addressing position at least during the time that said advancing mechanism is advancing the bill, and means to operate said in and out feeding mechanisms to feed in a bill only after a completely addressed bill is out of said addressing mechanism.

4. In a machine for addressing multi-section bills, addressing mechanism, in-feeding mechanism arranged to move a bill into said addressing mechanism in position to receive the first address, bill advancing mechanism positioned to operate on the bill in said address receiving position having an intermittent driving contact with the bill in said first address position and arranged to advance it intermittently by repeated steps equal to the distance between consecutive addresses on the bill, means to position said advancing mechanism out of contact with the bill during the introduction of a bill into said addressing mechanism, and bill out-feeding mechanism, positioned to receive the addressed bill from said advancing mechanism and having means to move said bill away from said advancing mechanism.

5. In a machine for addressing multi-section bills, addressing mechanism, bill in-feeding mechanism arranged to advance successive bills toward said addressing mechanism, bill out-feeding mechanism arranged to advance successive addressed bills away from said addressing mechanism, and means having intermittent driving engagement with the bill for advancing the bill in a step by step manner through said addressing mechanism, and means for rendering said in-feeding and out-feeding mechanism inoperative while said advancing mechanism is in driving engagement with a bill.

6. In a machine for addressing multi-section bills, addressing mechanism, means having an intermittent driving engagement with a bill for advancing it in a step by step manner through said addressing mechanism, in-feeding mechanism disposed approximately one bill length from said advancing mechanism for advancing a bill into the action of said mechanism, out-feeding mechanism disposed approximately one bill length from said advancing mechanism for receiving the addressed bill and removing it from said advancing mechanism, and means rendering said in-feeding and out-feeding mechanisms inoperative when said bill advancing mechanism is conditioned for driving engagement with a bill.

7. In a machine for addressing multi-section bills, addressing mechanism, mechanism having an intermittent driving contact with a bill for advancing it in a step by step manner through said addressing mechanism, intermittently acting in-feeding rolls operative to advance a bill into position to be gripped by said advancing mechanism at the time said advancing mechanism is out of contact with the bill, and intermittently acting out-feeding rolls disposed in position to receive an addressed bill from said advancing mechanism and to remove the bill from the action of said advancing mechanism following the delivery of the bill to said out-feeding rolls when said driving mechanism is out of contact with the bill.

8. In a machine for addressing multi-section bills, addressing mechanism, bill in-feeding mechanism for advancing a bill toward said addressing mechanism comprising a driven roll and a cooperating swinging idler roll, bill out-feeding mechanism for moving the addressed bill away from said addressing mechanism comprising a driving roll and a cooperating swinging idler roll, advancing mechanism between the aforesaid mechanisms for advancing the bill in a step by step manner through said addressing mechanism and into the action of said out-feeding mechanism, and means for swinging said

idler rolls conjointly into and away from cooperative relation with their associated driving rolls.

9. In a machine for addressing multi-section bills, addressing mechanism, bill in-feeding mechanism for advancing a bill toward said addressing mechanism comprising a driven roll and a cooperating swinging idler roll, bill out-feeding mechanism for moving the addressed bill away from said addressing mechanism comprising a driving roll and a cooperating swinging idler roll, advancing mechanism for advancing the bill in a step by step manner through said addressing mechanism and into the action of said out-feeding mechanism, a stop engageable with the leading edge of a bill to define its initial address receiving position in said addressing mechanism, and means to swing said idler rolls into and away from cooperative relation with their associated driving rolls and also to move said stop out of and into the path of advance of the bill.

10. In a machine for addressing multi-section bills, addressing mechanism, in-feeding mechanism disposed on one side of said addressing mechanism and comprising a driving roll and a cooperating swinging idler roll, out-feeding mechanism disposed on the other side of said addressing mechanism and comprising a cooperating swinging idler roll, mechanism interconnecting said swinging idler rolls for effecting conjoint movement thereof into and away from cooperative relation with their associated driving rolls, and advancing mechanism having an intermittent driving engagement with a bill for advancing the bill through said addressing mechanism in a step by step manner and presenting the bill to the action of said out-feeding mechanism.

11. In a machine for addressing multi-section bills, addressing mechanism, a stop removably disposed in the path of advance of a bill through said addressing mechanism and in position to define the location of the initial address on the bill, bill in-feeding mechanism disposed on one side of said addressing mechanism and approximately one bill length away from said stop and comprising a driving roll and a cooperating swinging idler roll, a rotatable bill advancing sector having a length of bill engaging periphery equal to the distance between successive addresses on the bill for advancing the bill in a step by step manner through said addressing mechanism, bill out-feeding mechanism disposed on the other side of said addressing mechanism and comprising a driving roll and a cooperating swinging idler roll located approximately one bill length away from said bill advancing sector and operative to receive the addressed bill and move it away from said sector, mechanism interconnecting said swinging rolls to effect conjoint movement thereof into and out of bill driving cooperation with their respective driving rolls, and means associated with said mechanism

for also moving said stop out of and into the path of advance of the bill.

12. In a machine as defined in claim 11 the addition of means adapted to engage the bill at times it is in addressing position and is free from driving engagement with a feeding mechanism for holding said bill stationary in addressing position during the time said sector is free from engagement with the bill, and means for moving said holding means out of bill holding position at the time said in-feeding mechanism is operative.

13. In a bill addressing machine, addressing mechanism, a table, a bill guideway removably positioned on said table extended through said mechanism having a bottom wall and upstanding side walls, and means for advancing bills in a step by step manner along said guideway including a rotatable driving member located above said guideway and a cooperating idler roll journaled in said guideway beneath said bottom wall and having a peripheral part thereof extended through the bottom wall.

14. In a machine for addressing the several sections of multi-section bills, a driving member repeatedly movable into and out of driving engagement with a bill and having a bill engaging part of the effective bill engaging and feeding length of which is equal only to the distance between successive address positions on the bill, means for operating said driving member to bring said bill engaging part into successive engagements with successive parts of said bills to advance the bill by a succession of intermittent steps from an initial addressing position distances equal to the spacing between successive address positions, and means for advancing the successive bills into the initial addressing position and into position to be engaged by said driving member when it moves into driving engagement with the bill.

15. In a machine for addressing multi-section bills, addressing mechanism, means for advancing successive bills in a step by step manner through said addressing mechanism including a rotatable driving member having a driving face the effective circumferential bill engaging and driving length of which is equal only to the distance between successive address positions on the bill, means for rotating said driving member repeatedly to move said driving face repeatedly into and out of engagement with a bill for advancing it intermittently by steps equal to the length of the driving face with intervening stationary periods of the bill, means for advancing a following bill into initial addressing position and also into position to be operatively engaged by said driving face at a time when the driving member is out of contact with the bill, and means for operating said addressing mechanism at times when the bill is stationary therein.

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