April 14, 1964 M. HENNEQUIN 3,128,698

STAMPING MACHINES

Filed Feb. 23, 1961 4 Sheets-Sheet 1

FIG. 2

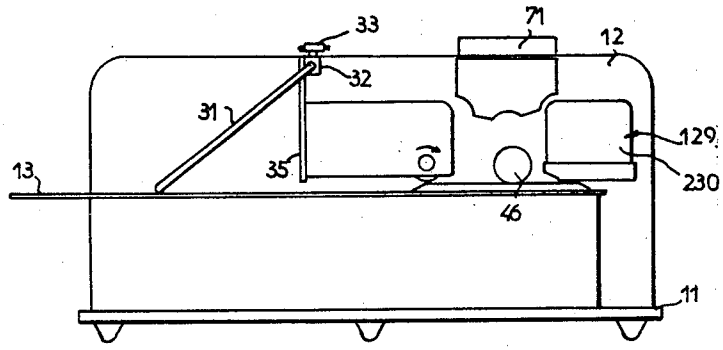


FIG. 3

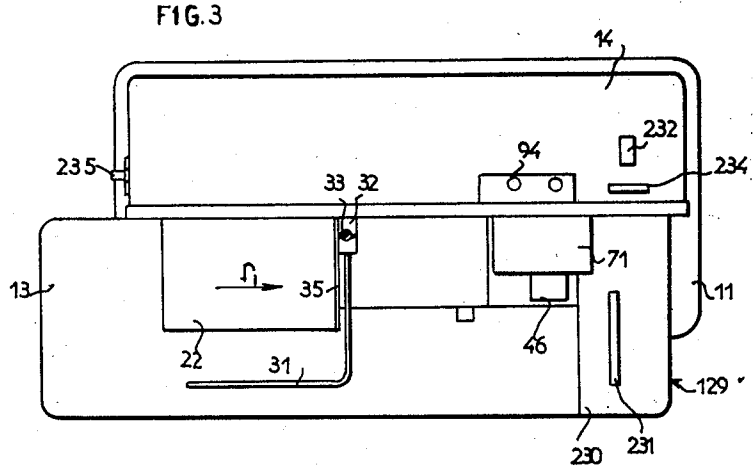
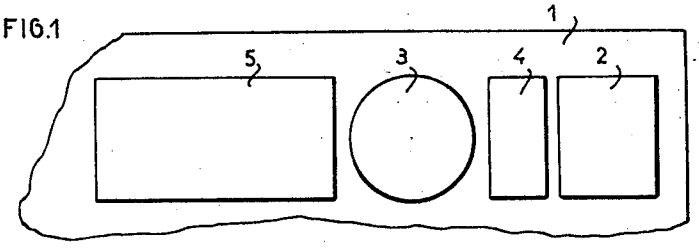


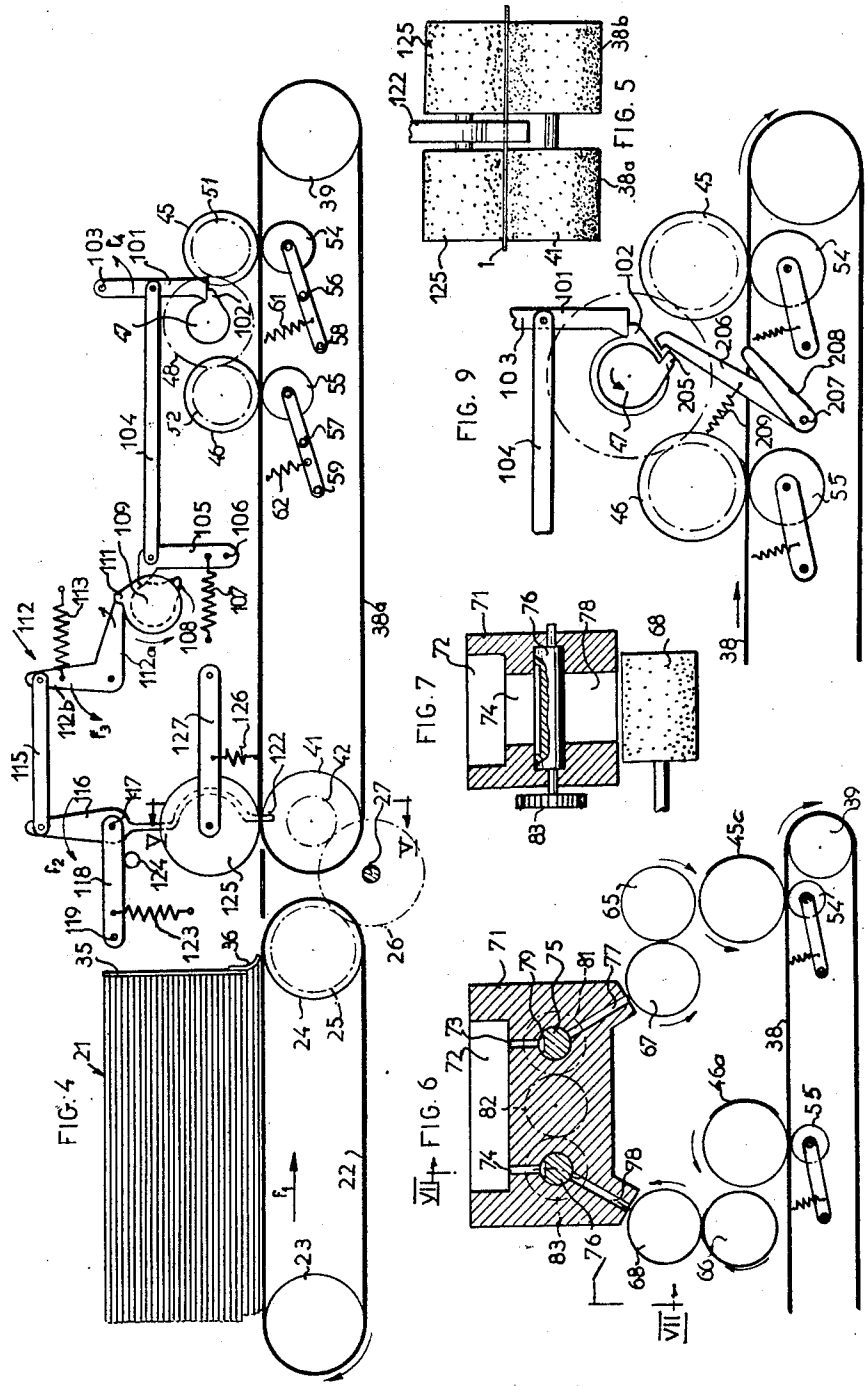
FIG. 1



April 14, 1964 M. HENNEQUIN 3,128,698

STAMPING MACHINES

Filed Feb. 23, 1961 4 Sheets-Sheet 2



April 14, 1964 M. HENNEQUIN 3,128,698

STAMPING MACHINES

Filed Feb. 23, 1961 4 Sheets-Sheet 3

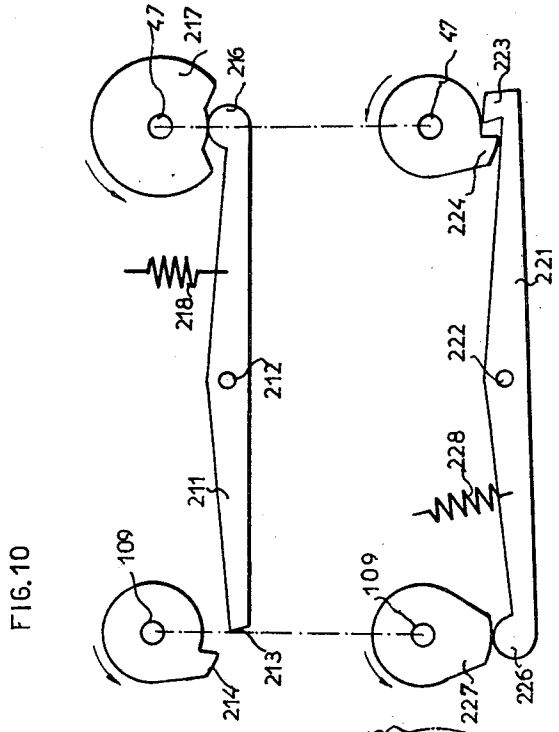


FIG. 10

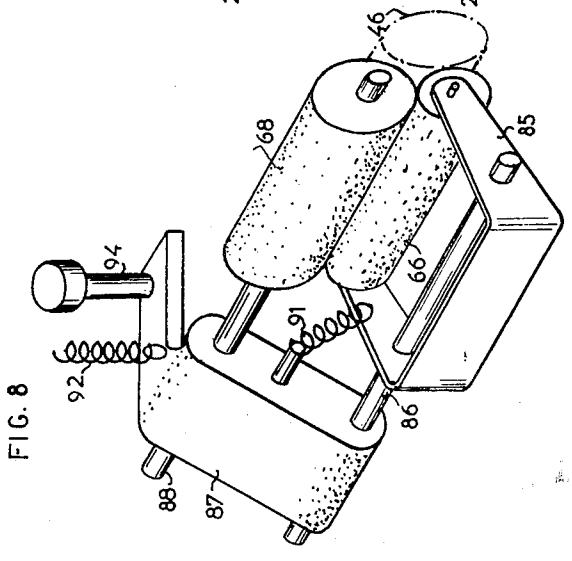


FIG. 8

April 14, 1964 M. HENNEQUIN 3,128,698

STAMPING MACHINES

Filed Feb. 23, 1961 4 Sheets-Sheet 4

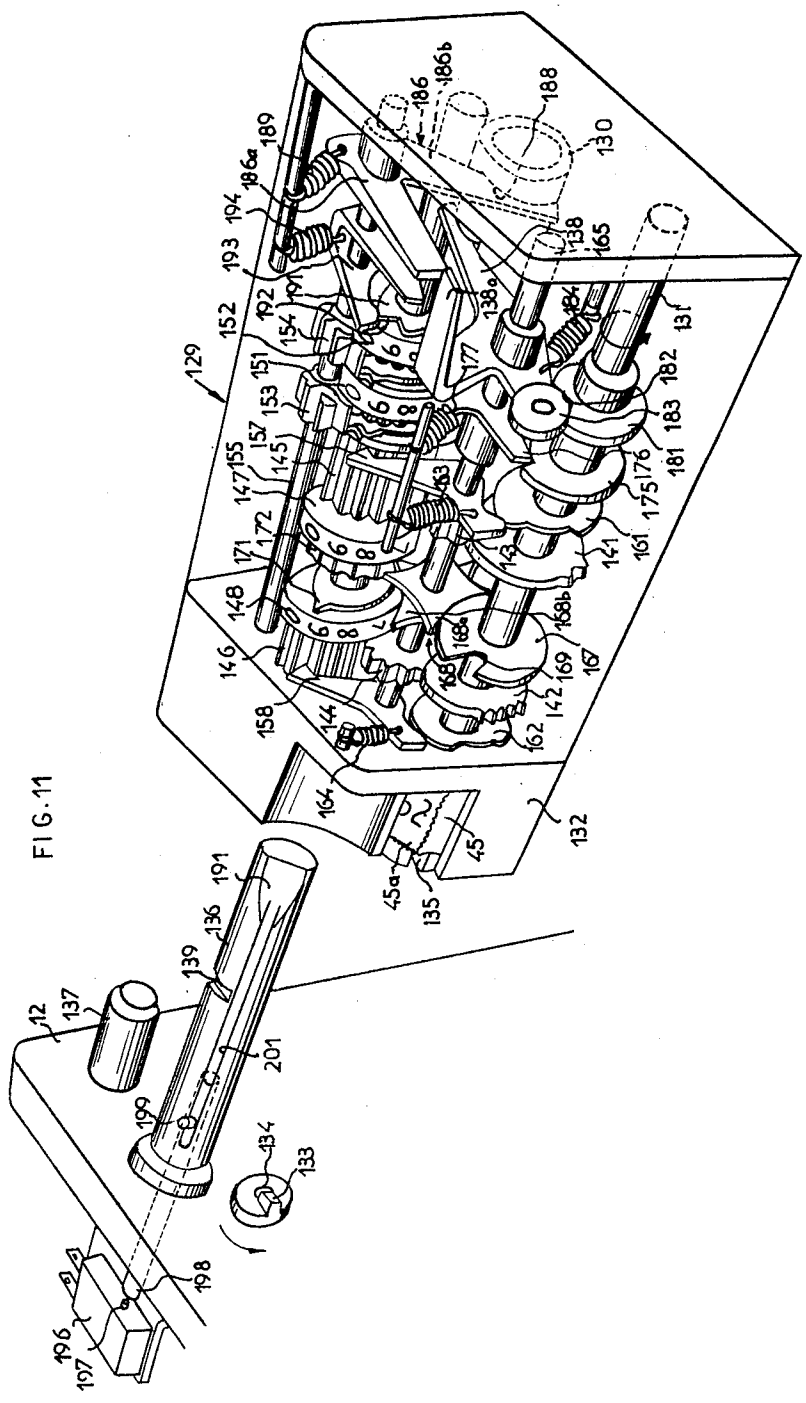


FIG. 11

United States Patent Office 3,128,698 Patented Apr. 14, 1964

3,128,698

STAMPING MACHINES

Maurice Hennequin, 1 bis, Rue St. Augustin, Asnieres, Seine, France

Filed Feb. 23, 1961, Ser. No. 90,999
Claims priority, application France Mar. 9, 1960
6 Claims. (Cl. 101—235)

This invention relates to letter stamping machines, and more especially though not exclusively to stamping machines of the type including a separate tamper-proof attachment in which the sum total of equal postage fees stamped on a series of letters at a stamping station of the machine is adapted to be automatically registered.

A broad object of the invention is to provide an improved letter stamping machine in which the rate of stamping operations may be considerably increased over what is possible in conventional machines. To attain such an object it is, of course, not sufficient merely to increase the rate at which a series of letters can be individually fed past the stamping station, unless the stamping or printing mechanism provided at said station is itself capable of positively and reliably stamping each of the letters fed past it at the increased rate.

One reason that has heretofore limited the rate at which the printing mechanism of a stamping machine could operate successfully, is the comparatively large diameter of the printing cylinders that have been required. The printed matter that is required to be stamped on a letter generally includes at least two, and often more items: one of these items of course is the postage fee, while another usually includes the datemark. Usually, the type comprising both the postage and the datemark information has been provided in the form of separate printing elements or blocks around the circumference of a common printing cylinder mounted for rotation about an axis transverse to the path of feed of the letters past the printing station; an additional segment of the cylinder periphery had to be kept blank to allow for insertion of the letters under the cylinder. In view of these requirements the circumference and diameter of the printing cylinder used were large, its developed circumferential length being usually longer than the length of the letters to be stamped. This in turn has entailed the unavoidable presence of a considerable idle space from the trailing edge of each previously stamped letter to the leading edge of the next, with a corresponding idle period during which the rotation of the printing cylinder had to be arrested between two successive revolutions.

A specific object of the invention, then, is to reduce the diameter of the printing cylinder means required to stamp prescribed information on letters fed past it and thereby to increase the stamping rate. This object is attained by providing at the printing station two printing cylinders instead of one, so that the diameter of each cylinder can be correspondingly reduced.

The invention (in this aspect) therefore comprises a letter stamping machine which comprises means for feeding letters serially past a printing station, a first and a second printing cylinder at said station longitudinally spaced along said path and rotatable about axes transverse to it, type indicative of a postage fee on the periphery of one cylinder and type indicative of other matter, e.g. a datemark, on the periphery of the other cylinder, and drive means for rotating both cylinders to print the related indications on each of a series of letters fed therepast.

Further to increase the operating rate and reliability, the printing cylinders are preferably arranged to be rotated (for one revolution) from permanently revolving power means, through friction coupling means or the like, automatically in response to the approach of each letter towards the printing station as sensed by a suitable feeler

element, thereby reducing inertia effects at the start and end of each printing operation. According to a related feature, improved inking means are preferably provided which are operated in synchronism with the rotation of the printing cylinders to transfer metered amounts of ink to the printing cylinders at each revolution of them.

In a preferred embodiment of the invention, as earlier mentioned, the machine embodies a separate attachment which contains counter means adapted to register the sum total of equal postage fees stamped on a series of letters, and which is tamper-proof, yet relatively small and lightweight; such an attachment may incorporate at least the postage-fee printing cylinder therein, together with means whereby such cylinder will automatically be inserted into operative driven relationship at the printing station of the stationary section of the machine, on engagement of the register attachment with the stationary section.

Other objects lie in the provision of improved safety means and/or interlocks for enhancing the reliability of stamping operations, as by positively preventing the stamping of the same information on one and the same letter, and preventing a letter from being stamped until it has attained its prescribed position at the printing or stamping station. It is also an object to provide an improved letter feeding arrangement in a stamping machine.

The objects, features and advantages of the invention will be made clear from the ensuing disclosure of a preferred embodiment thereof given by way of illustration but not of limitation with reference to the accompanying drawings, wherein:

FIG. 1 is an exemplary and diagrammatic view of various items of printed matter to be stamped on each letter with the machine of the invention;

FIG. 2 is a simplified side elevational view of the stamping machine;

FIG. 3 is a corresponding view in plan;

FIG. 4 is a simplified view in side elevation, on a scale enlarged over that of FIGS. 2 and 3, illustrating the letter-feeding and -spacing means and the stamping station of the machine together with related mechanism;

FIG. 5 is a partial section on line V—V of FIG. 4;

FIG. 6 shows the inking mechanism on a further enlarged scale;

FIG. 7 is a partial section on line VII—VII of FIG. 6;

FIG. 8 is a perspective view showing the supporting arrangement for an inking roller and cylinder;

FIG. 9 illustrates an additional latching mechanism optionally used;

FIG. 10 schematically illustrates an interlock arrangement; and

FIG. 11 is a perspective view of the separable register attachment with the counter mechanism contained therein, and also shows the cooperating means for engaging said attachment with the stationary section of the machine.

The embodiment of the invention to be described serves to impress upon the envelopes to be stamped (such as 1, FIG. 1), a number of different marks or imprints as schematically indicated by way of example in FIG. 1, viz.: a postage fee stamp 2, a datemark 3, as well as various optional markings such as a corporate name or seal at 4, and advertising text or other matter at 5.

The machine illustrated generally in FIGS. 2 and 3 comprises a frame including a baseplate 11 having a vertical wall 12 upstanding from it substantially along a central longitudinal plane of the generally rectangular baseplate. Projecting from one side of the vertical wall 12 is a horizontal shelf or table 13 spaced above the baseplate 11. The other side of wall 12 serves to support a number of mechanical components to be later described, all of which mechanism is covered by a hood 14 having edges removably secured to the baseplate and the vertical wall 12.

A batch of letters to be stamped is adapted to be placed in a stack **21** (also see FIG. 4) upon the upper surface of an endless feeder belt **22** which is so supported from the frame wall **12** that the upper leaf surface of the belt lies substantially flush with the upper surface of the shelf **13**. The belt is driven through means to be described so that its upper run is advanced in a horizontal direction parallel to the vertical plane of wall **12** as indicated by arrow *f*1 in FIGS. 3 and 4. The belt **22** is trained around a freely rotatable pulley **23** at one end and a drive pulley **24** at its other end both pulleys mounted on shafts supported from wall **12**. The drive pulley **24** has a gear **25** coaxially secured to it which meshes with a gear **26** carried on a drive shaft **27** driven from any suitable source of power, not shown, preferably an electric motor.

The stack of letters **21** piled on the upper run of belt is retained against lateral displacement on one side by the adjacent surface of vertical wall **12**, and on the other side by a bent guide rod **31** having one end secured in a support **32** which is provided with a blocking screw **33** for adjusting the position of the guide rod in accordance with the over-all width dimension (normally to the projection plane of FIG. 2) of the stack of letters being handled.

The leading end of the stack **21**, in the direction of feed of feeder belt **22**, is abutted against a vertical plate element **35** which has its lower end spaced somewhat above the upper surface of belt **22** and a strip **36** of flexible material such as rubber projecting from said lower end of the plate into frictional engagement with the belt surface as shown in FIG. 4. In this way only the lowermost letter positioned at any time in the stack **21** is allowed to be discharged from the belt **22** while the overlying letters are retained by the strip **36**, and the letters thus issue one by one from the front end of feeder belt **22**.

Positioned beyond and in alignment with the feeder belt **22** is another endless belt device **38** which may be termed the spacer belt for reasons that will presently appear. Belt **38** is mounted around the two end pulleys **39** and **41**, pulley **39** being freely rotatable and drive pulley **41** being secured to a coaxial gear **42** which is driven from the same drive gear **26** as that driving the gear **25** of feed belt **22**, but gear **42** being smaller in radius than gear **25** so that the linear velocity of the spacer belt **38** is substantially higher than the linear velocity of feeder belt **22**. In this way each letter as it is discharged from the front end of feed belt **22**, and taken up by the spacer belt **38**, is subjected to a sudden acceleration and as a result the letters advance upon the upper surface of belt **38** in a longitudinally spaced array. Such spacing between the adjacent letters is necessary for the proper operation of the printing mechanism now to be described, and towards which the letters are advanced by the spacer belt **38**.

The printing means include two separate printing cylinders **45**, **46**, also suitably supported from frame wall **12**. Each printing cylinder **45**, **46** carries a printing element or block **45***a*, **46***a* respectively, extending over part of its periphery as illustrated in FIG. 6. Printing block **45***a* carries a print of the postage stamp **2** (and optionally other markings such as the corporate name or seal **4** as previously indicated), while printing block **46***a* carries the datemark **3** (and optionally other markings such as the advertising matter **5**).

The printing cylinders **45**, **46** are driven in synchronism with one another from a shaft **47** journalled in frame wall **12**, through gearing including gear **48** secured on shaft **47** and gears **51**, **52** respectively secured to the printing cylinders **45**, **46**.

Means are provided for resiliently pressing upwardly the upper run of spacer belt **38** against the under surface of each printing cylinder **45**, **46**, and these means comprise as shown the two similar pivoted presser roller assemblies including the arms **56** or **57** pivoted on the fixed pivots **58**, **59** and biassed by springs **61**, **62** in a direction to move rollers **54**, **55** carried at the ends of said arms into engagement with the underside of the upper leaf of belt **38** in substantially tangent relation with the respective drums **45**, **46** at the lowermost points thereof. The printing cylinder drive shaft **47** is driven from the afore-mentioned electric motor or other central power source through a friction coupling, not shown. Shaft **47** may be termed the primary drive shaft of the machine.

FIG. 6 illustrates inking mechanism for the printing cylinders. In this figure the cylinders are shown in the positions assumed by them in the so-called waiting position after having completed one intermittent revolution as later described. In this position the printing elements **45***a*, **46***a* are positioned clear of the surface of belt **38** shortly after having swept said surface on rotation of the cylinders **45**, **46** in the counterclockwise directions of the arcuate arrows shown. A pair of inking rollers **65**, **66** are mounted adjacent the respective printing cylinders **45**, **46** so as to be clear of the printing elements **45***a*, **46***a* thereof in this waiting position of the cylinders. The inking rollers may be lined with felt or similar absorbent lining and are arranged to be in permanent surface engagement with respective inking cylinders **67**, **68** which may be made of steel or other material and are permanently rotated from the central drive motor through means not shown. As will later appear, the inking rollers **65**, **66** in contrast are only rotated intermittently one revolution every time a letter is passed through the printing mechanism.

Mounted above the inking cylinders **67**, **68** is an ink reservoir-and-feeder unit **71**. The upper part of unit **71** is recessed to provide an ink reservoir **72** and this communicates through the ducts **73**, **74** respectively with two bores formed in the body of unit **71** in which bores a pair of similar cylindrical distributor cores **75**, **76** are rotatable. Each distributor core has an axial groove **79**, **79** formed in its periphery. Further ducts **77**, **78** connect the respective distributor bores with the spaced bottom outlets of the inking structure **71** which deliver adjacent to the upper part of the peripheral surfaces of inking cylinders **67**, **68**. The distributor cores **75**, **76** are driven in rotation through gears **81**, **83** secured to the respective cores and meshing with a common drive gear **82** which, through an intermittent drive connection not shown, is adapted to have one revolution imparted to it from primary drive shaft **47** every time a letter is passed through the printing mechanism. In this way a metered amount of ink from reservoir **72** is transferred by means of the grooves **79** in distributor cores **75**, **76** to each of the ducts **77**, **78** for delivery to the surface of the continuously revolving inking cylinders **67**, **68**.

Both felt-lined inking rollers **65**, **66** are mounted by way of similar means arranged to impart suitable drive thereto and also to permit of adjusting the rollers for wear compensation. FIG. 8 illustrates the arrangement relating to inking roller **66**. As shown the inking roller is journalled across the ends of a two-armed clevis member **85** which is pivotable about a shaft **86** carried at one end of a bell-crank lever **87** which in turn is pivoted around a shaft **88** which carries the relating inking cylinder **68**. A spring **91** biasses the clevis support **85** in a direction to apply the roller **66** against inking cylinder **68**, while another spring **92** biasses the lever **87** so as to swing the assembly bodily in a direction to apply the inking roller **66** against the printing cylinder **46**. An adjustable stop screw **94** limits the rotation of the assembly about the shaft **88** under the influence of spring **92** so that the felt lined inking roller **66**, will only engage the larger-radius surface of printing element **46***a* but not the smaller-radius remaining surface of the printing cylinder **46** during rotation of the latter.

Rotation of the shaft **47** driving the printing cylinders is arrested, as permitted by the frictional character of the drive coupling thereof (not shown), for so long as no letter is passing through the printing mechanism, by means of a swingable member or pawl **101** (see FIGS. 4 and 9) adapted to engage a nose **102** projecting radial-

ly from the primary shaft 47. Latch 101 is pivoted on a fixed pivot 103 and is connected by a link 104 with a further lever arm 105 having its lower end pivoted at 106 to the frame and its other end having a projection applied by a biassing spring 107 attached to arm 105 into engagement with a latching cam 108 secured on a secondary shaft 109 driven from the central drive motor of the machine through a friction clutch. The secondary shaft 109 (or cam 108) has a projection 111 engageable by one end of a bellcrank lever 112 pivoted to the frame and biassed by a spring 113 for engagement of the tip of lever arm 112*a* into the rotational path of projection 111. The other arm 112*b* of the bellcrank lever 112 is connected by a link 115 to a lever 116 pivoted at an intermediate point of its length on a pivot 117 carried by one end of a further lever 118 having its other end pivoted at 119 to the frame. The lever 116 has a crooked arm extending from its lower end and having an extremity or finger 122 projecting somewhat below the plane on which the letters are travelling over the upper surface of belt 38. For this purpose the belt 38 is actually constituted as two parallel transversely spaced belt portions 38*a* and 38*b* (FIG. 5) and the finger 122 projects into the space therebetween in such a way as to be actuated by the leading edge of a letter issuing from the first feeder belt 22.

Lever 118 is biased in a clockwise direction by gravity aided by a spring 123 and its rotation in that direction is limited by a stop 124 which thus serves to determine with accuracy the vertical position of the finger 122.

It will be understood that the mechanism just described serves to cause the printing cylinders to be rotated one revolution every time a letter is passed through the machine as will be explained in fuller details later. To ensure that the finger 122 shall be positively actuated by the leading edge of an advancing letter, it will be noted that said finger is positioned susbstantially above and in vertical alignment with the axis of the drive pulley 41 of the belt 38 and a presser roller 125 is carried by a pivoted arm 127 biassed counterclockwise by a spring 126 so as to press the letters firmly against the belt surface.

In the embodiment shown the datemark printing cylinder 46 is fixedly mounted on the machine frame. The stamp printing cylinder 45 on the other hand is supported from a stamping register assembly or counter 129 (see FIGS. 2, 3 and 11) which is arranged as a separate unit or attachment removably connectable with the machine frame. Referring to the perspective view of FIG. 11 which illustrates the stamp register attachment in detail, it will be seen that the stamp printing cylinder 45 is secured on a shaft 131 which is journalled in the frame 132 of said register. The register frame 132 is attachable to the general frame of the machine by means of a tubular sleeve 130 extending through the register frame 132 and insertable around a specially shaped spindle 136 fixedly projecting from the upstanding frame wall 12. The register frame is blocked against rotation on spindle 136 by means of a pin 137 projecting from the wall 12 in parallel spaced relation to spindle 136 and insertable into a corresponding hole in register frame 132, and said register frame is blocked against axial displacement on spindle 136 by means of a latch arm 138 pivoted on a shaft 165 of frame 132 and engageable in a transverse notch 139 formed in the mounting spindle 136 as will be more fully explained.

With the register attachment mounted on the machine frame in the manner just described, the stamp printing cylinder 45 is adapted to be driven from the drive mechanism of the machine by way of gear 51 as earlier indicated. While in the earlier description gear 51 was considered to be coaxially secured with the cylinder 45, this is not actually the case in the exemplary embodiment now being described. In fact, gear 51 is secured on a shaft 134 journalled in the frame wall 12 and driven from the general drive of the machine. Shaft 134 carries an asymmetrically shaped radial driver element 133 which, in the mounted condition of the register attachment, engages with a complementary radial notch 135 formed in the stamp printing cylinder 45.

The stamp register mechanism will now be described. Removably secured on shaft 131 for rotation therewith are two axially spaced gear sectors 141, 142. Assuming for descriptive purposes that the postage fee to be stamped is 25 monetary units (e.g. centimes), the gear sectors 141 and 142 are respectively provided with two and five teeth. Secured on the afore-mentioned shaft 165 of the register frame are two pinions 143, 144 positioned for meshing engagement with the sectors 141, 142 respectively, and the pinions 143, 144 in turn are in meshing engagement with respective gears 145, 146 rotatably mounted on another shaft of the register attachment. Gear 145 has integrally secured to it a tens counter wheel 147 and gear 146 has integrally secured to it a units counter wheel 148, each counter wheel being marked with the digits 0 through 9 around its periphery as shown. Rotatably mounted on the counter shaft in alignment with the counter wheels 147 and 148 are further counter wheels and attached gears, including a hundreds counter wheel 151 and a thousands counter wheel 152, additional counter wheels and attached gears being provided if desired. For the transfer of carries from one counter gear to the next, there are provided in the conventional manner the carry transfer pinions 153, 154, which are mounted on a shaft 155 of the register frame for automatically effecting transfer of carries from the tens to the hundreds digital positions and from the hundreds to the thousands positions respectively, every time the counter wheel of the lower digital position has completed a revolution, in a manner well-known in mechanical counter machinery.

Except during the periods where the gear teeth of sectors 141 and 142 are in engagement with the related intermediate gears 143, 144 for advancing the related counter wheels, said counter wheels are latched against rotation thereby preventing rotation of the wheels by inertia. The latching means for this purpose comprise latch pawls 157, 158 respectively, pivoted about shaft 165 and cooperating with cams 161, 162 secured on shaft 131. The pawls 157, 158 are biassed by springs 163, 164 in a direction to engage the related counter wheels and thereby block them against rotation, while the cams 161, 162 act to disengage the pawls against their spring bias to release the counter wheels during the appropriate periods of the rotation of shaft 131.

Transfer of carries from the units to the tens wheel is provided for by means of a cam 167 secured on shaft 131 and cooperating with an intermittent drive arrangement comprising two axially juxtaposed elements 168*a* and 169*b* freely rotatable as a unit around shaft 165 and each in the form of a four-branched star in angularly-displaced relation with each other to constitute a kind of dual Maltese cross arrangement. The star element 168*a* cooperates directly with a cutout 169 in cam 167 while element 168*b* cooperates with a projection 171 of the units counter wheel 148.

The units carry transfer system thus described is of a well-known type and operates as follows. As the units counter wheel 148 is shifted from the 9 to the 0 digital position, the projection 171 actuates a point of the star-shaped element 168*b* to a position in which the other star element 168*a* presents one of its points to the cutout 169 of cam 167 which in turn actuates said last-named point so that the opposite point of element 168*a* engages and actuates one of a set of teeth 172 formed on one side of the tens wheel 147, thereby advancing said wheel by one digital increment or step. To permit this movement it is obviously necessary that the latch pawl 157 has released the gear 145 secured to the tens wheel; to ensure this effect the cam 161 is provided with a cutout as shown. The timing of the system is such that the

carry transfer operation is effected after the units and tens digits have been registered.

The counter-and-register attachment described further includes means for preventing unauthorized tampering as well as for reducing likelihood of error in use.

The tamper-proofing means are intended to prevent manipulation of the register attachment after the attachment has been separated from the machine. For this purpose the shaft **131** carries a ratchet wheel **175** cooperating with a pawl **176** pivoted on shaft **165** and biassed into engagement with the ratchet by a spring **177**, thereby preventing reverse operation of the counter, as for deliberately reducing the sum total of registered postage fees. To prevent unauthorized rotation of the counter when the attachment is separated from the machine with the object of rotating it past its zero or reset condition for a similar unauthorized purpose, the shaft **131** carries another cam **181** formed with a notch **182** adapted to engage with a roller **183** carried by an extension of lever **138** and biassed into engagement with the cam **181** by a spring **184** so as to engage said cutout therein in the waiting or ready position. Thus, with the attachment removed from the machine, should it be attempted to rotate shaft **131** in the normal or forward direction, the roller **183** would be actuated by cam **181** and would tend to cause a rotation of lever **138**, but such rotation is then prevented by the action of a bent arm **138***a* extending from lever **138** and adapted to engage an arm **186***a* of a blocking bellcrank lever **186** mounted on the shift pinion shaft **155**, the other arm **186***b* of which lever engages a transverse slot **188** formed in the sleeve **130** serving to mount and guide the attachment with respect to the machine frame. A spring **189** biasses lever **186** to its locking position. At the time the counter attachment is positioned on the machine frame, an incline **191** formed near the outer end of mounting spindle **136** actuates the lever arm **186***b* and displaces it thereby to rotate the bellcrank lever **186** and its other arm **186***a* is thus moved clear of the path of arm **138***a* of locking lever **138**. Thus the stamping mechanism is now rendered operable in the forward or normal direction.

As a further precautionary measure, matters are so arranged that with the shaft **131** in its waiting or ready position which it necessarily assumes when the counter attachment is removed from the machine, the printing element **45***a* is inaccessible from the exterior, i.e. the printing cylinder **45** is at a tamper-proof angular position.

Means are provided for positively preventing the counter from exceeding its maximum capacity in normal operation since otherwise it would again start counting from zero. For this purpose the highest-order digital counter wheel, in this instance the thousands wheel **152**, has a cam **191** integral with it, the cam being formed with a notch **192** so positioned that as the said thousands wheel is shifted from the 9 to the 0 position, the free end of one arm of a U-shaped lever **193** pivoted on shaft **155** and biassed by a spring **194** into engagement with the cam, engages the cam recess **192**, at which time the other arm of the U-shaped lever is displaced into the path of movement of the afore-mentioned locking lever arm **138***a*. In this condition the totalizing counter or register mechanism is therefore blocked and the postage-printing cylinder is prevented from rotation. Damage to the mechanical parts in this condition is prevented by the provision of the friction clutch previously referred to.

Means are further provided to prevent operation of any part of the machine unless the register attachment is correctly positioned thereon. For this purpose the mounting spindle **136** has a plunger rod **198** slidable in a bore of the spindle and having a stop **199** projecting from the rod **198** through a longitudinal slot **201** in a side of the mounting spindle, so as to be actuated by the frame of the register attachment when the latter is inserted in position around spindle **136** as earlier described. When the stop **199** is moved to its rearward end position as the register frame **132** is pushed home, the free end of rod **198** actuates a contact plunger **197** projecting from a switch **196** suitably mounted on the machine frame and electrically connected in the energizing circuit of the motor (not shown) which provides the central drive for the machine assembly.

Summarizing the general operation of the machine, a mobile counter **129** in which the printing block element **45***a* is marked with appropriate postage value and the gear sectors **141**, **142** are correspondingly selected, is bodily mounted on the machine frame by inserting it around the spindle **136**. Then a stack **21** of letters to be cancelled is placed on the table **13** of the machine the letters being all oriented in a common and appropriate position to receive the cancelling marks in an appropriate corner of each of them. The machine is started in operation by actuating a starting switch **235** (FIG. 3) to energize the drive motor, or by engaging a clutch. Now the bottommost letter of the stack **21** is driven by feeder belt **22** in the direction shown by arrow *f*1 while the overlying letters are prevented from advancing by the rubber strip **36** and wall **35**. Said bottom letter is transferred to the spacer belt **38** and as explained the higher linear velocity of belt **38** over that of belt **22** acts to displace the letters one by one into a spaced array. As each letter is transferred from belt **22** to belt **38** its leading edge actuates the finger **122** which rotates lever **116** counterclockwise (arrow *f*2). Link **115** is thus pulled leftward (as shown in FIG. 4) and rotates lever **112** as indicated by arrow *f*3. The arm **112***a* of lever **112** is raised and releases projection **111** of cam-shaft **109**, permitting rotation of the shaft. Cam **108** secured to said shaft thereafter rocks lever **105** rightward and said lever thereupon acts through link **104** to swing member **101** as shown by arrow *f*4, releasing the latching projection **102** of shaft **47**. Shaft **47** is now permitted to rotate and imparts one revolution to the printing drums **45** and **46** as well as the inking cylinders **67**, **68** to impress the desired markings on the letter positioned under the printing cylinders. At the same time one revolution is imparted to the register drive shaft **131**, thereby registering the postage fee value just printed, and correspondingly increasing the sum total value indicated by the counter wheels **148**, **147**, **151**, **152**.

It should be noted that after the foremost letter has actuated finger **122** on being transferred to belt **38**, said finger **122** is promptly restored by the biassing action of spring **113** acting through linkage **112**, **115**, **116**, to a position in which the tip of finger **122** is resting on the upper surface of the letter passing under it, instead of said finger **122** penetrating into the space between belt elements **38***a*, **38***b* as is the case in the absence of a letter. Hence, the arm **112***a* of lever **112** has been restored into the path of travel of the nose **111** projecting from shaft **109** and said shaft will be arrested after having completed one revolution.

The swingable member **101** is returned to its latching position immediately after actuation of the printing device, so that no matter how long the letter just stamped may be, there is no risk of the same letter being stamped twice since member **101** is shifted to latching position as soon as the printing device is started in operation, and since said pawl cannot be unlatched from that position so long as shaft **109** does not have another revolution imparted to it; this however can only occur on the finger **122** being actuated by the leading edge of the next letter of the series as such next letter is transferred from belt **22** to belt **38**. This is true because it is only after a letter has moved completely past the finger **122** that said finger is enabled to move down by the action of spring **123**.

The embodiment described may further desirably include means for preventing premature printing, i.e. before a letter has effectively reached its correct position at the printing station. The means, shown in FIG. 9, comprises a nose **205** projecting from printing drive shaft **47**, and

adapted for latching engagement by a latching pawl **206** pivoted about a fixed shaft **207**, said pawl having an extension **208** which normally projects into the path of the letters between the two belt elements **38***a*, **38***b*. Pawl **206** is biassed by a spring **209** towards shaft **47**. It will be apparent that with this arrangement the printing means cannot be actuated unless both projections **102** and **205** have been released by their related pawls under the combined actions of finger **122** and finger **208**, as said fingers are successively displaced by the leading edge of an advancing letter. When projection **102** is engaging member **101** a certain amount of clearance is present between projection **205** and pawl **206**.

Thus, in normal operation the leading edge of a letter actuates finger **208** to release pawl **206** before member **101** has been disengaged from projection **102** and has released shaft **47**. However, should for example the finger **122** be accidentally retained due to frictional contact with belt **38**, or should a letter become jammed and its progress arrested after its leading edge has actuated finger **122**, then the finger **208** will not be actuated by the letter and pawl **206** will remain in engagement with projection **205**, so that as the swingable member **101** releases projection **102** in response to the actuation of finger **122**, the printing device remains inoperative.

FIG. 10 illustrates a further optional safety device serving to avert the objectionable consequences that would otherwise arise due to breakage or damage of the pawls and/or springs, which would be liable to result in irregular stamping operations. The device shown constitutes an interlock means between primary shaft **47** and secondary shaft **109**, and comprises a lever **211** pivoted at an intermediate point on a fixed pivot **212** and having one end formed as a pawl or hook **213** engageable with a stop **214** of shaft **109**, while its other end has a rounded nose **216** cooperating with a cam **217** secured on shaft **47**. Lever **211** is biassed by a spring **218** in a direction to disengage pawl **213** from the projection **214** of shaft **109**. The device includes a further lever **221** pivoted on a fixed intermediate pivot **222** and formed at one end with a pawl shaped projection **223** for engagement with a nose **224** carried by shaft **47**, while its other end is formed with a rounded nose **226** cooperating with a cam **227** secured to shaft **109**. Lever **221** is biassed by a spring **228** in the direction to disengage pawl **223** from nose **224** of shaft **47**. With this arrangement it will be apparent that secondary shaft **109** cannot be rotated in response to the passing of a letter unless the primary shaft **47** has been restored to its waiting position, while on the other hand primary shaft **47** commanding the printing operations cannot rotate unless secondary shaft **109** has been moved away from its waiting position.

Turning to minor features of the embodiment described, it is noted that the register-counter unit is provided with a cover or hood **230** (see FIGS. 2 and 3) formed with a window **231** through which the registered total can be read. The hood **230** is normally sealed when in the user's possession and when the register unit is presented to the postal authorities for payment of the postage fees registered therein, the postal official breaks open the seal, removes the hood **230**, releases blocking lever **193** and resets the counter to zero, and then puts back the hood and apposes a new seal thereon.

Shown at **232** in FIG. 3 is a counter provided with reset means **234** serving to indicate the number of letters stamped, and switch **235** for starting the electric motor is also shown.

It will be apparent that a great many departures may be made from the single embodiment illustrated and described. Thus various of the features may be omitted or combined in a variety of ways, depending on the particular requirements. Thus, the datemark printing cylinder, instead of being mounted in the stationary part of the machine, might well be incorporated in the mobile counter together with the postage stamp printing cylinder. Also, the mobile counter may be simplified by constructing it so as to indicate merely the number of revolutions effected by the printing cylinder or cylinders, i.e. the number of stamping operations performed, rather than including mechanism for totalizing the postage fee values in monetary units.

What is claimed is:

1. In a mail marking machine, the combination with two parallel rotary printing drums one of which is a stamp printing drum, conveyor means for advancing mail matter successively from a starting point towards and past said drums to receive impressions therefrom, a mobile counter carrying said one drum and operated from said one drum once for each rotation thereof, a first continuously frictionally driven shaft positioned between said drums and having a driving connection with said drums for revolving them simultaneously, and arresting means including a swingable member for arresting said first shaft at each revolution thereof, of a trip mechanism comprising a second continuously frictionally driven shaft positioned between said starting point and said drums, a stop and a cam projecting from said second shaft, said cam being axially and circumferentially spaced from said stop, movable lock means cooperating with said stop and movable between a stop engaging position and a stop releasing position, resilient means for urging said lock means into said stop engaging position thereof, a trip finger at said starting point adapted to be engaged by the leading end of each successive mail matter, said trip finger being connected to said lock means to move the latter against the action of said resilient means to said stop releasing position as the trip finger is moved by said leading end, said resilient means being effective to move said lock means into said stop engaging position thereof as soon as said trip finger is disengaged from said leading end to thereby lock said second shaft against rotation when the same has made one revolution, and means operable by said cam after release of said second shaft to move said swingable member of the arresting means for the first shaft so as to release the same for one revolution.

2. In the machine claimed in claim 1, a store of ink, rotatable inking roller means positioned for transferring ink from said store to said respective printing cylinders, and means rotated in synchronism with said cylinders for rotating said inking roller means to transfer a metered amount of ink from said store to said printing cylinders.

3. In a mail marking machine, the combination with two parallel rotary printing drums one of which is a stamp printing drum, conveyor means for advancing mail matter successively from a starting point towards and past said drums to receive impressions therefrom simultaneously on different regions of the individual mail matter, a mobile counter carrying said one drum and bodily removable from and replaceable in the machine adjacent the other drum, said counter being operated from said one drum once for each rotation thereof, a first continuously frictionally driven shaft positioned between said drums and having a driving connection therewith for revolving them simultaneously, and releasable arresting means for arresting said first shaft at each revolution thereof, of a trip mechanism comprising a second continuously frictionally driven shaft positioned between said starting point and said drums, a stop and a cam projecting from said second shaft, said cam being axially and circumferentially spaced from said stop, a bell crank lever pivotable between an operative position in which one of its arms engages said stop and an inoperative position in which said one arm releases said stop, resilient means for urging said bell crank lever towards said operative position thereof, trip mechanism including a pivotally mounted trip lever having one of its ends positioned at least adjacent said starting point so as to be engageable by the leading end of each successive mail matter, a link connecting the other end of said trip lever with the other arm of said bell crank lever whereby to pivot said

bell crank lever against the action of said resilient means into its inoperative position as said trip lever is pivoted by the leading end of an advancing mail matter from its initial rest position, said resilient means being effective upon disengagement of said one end of the trip lever from said leading end of an advancing mail matter to simultaneously return said bell crank lever into its operative position to stop the second shaft when the same has made one revolution and to return the trip lever into said initial position thereof, and means operable by said cam after release of said stop by said crank bell lever for releasing said arresting means for the first shaft each time said second shaft is caused to make one revolution for each mail matter passing said starting point.

4. A mail marking machine according to claim 3, in which said trip mechanism further comprises a swingable arm having one end articulated to a fixed point of the machine and its other end articulated to a point of said strip lever intermediate both ends thereof, a fixed abutment member positioned so as to support said swingable arm in a substantially horizontal position thereof, and a spring for urging said arm towards said abutment member.

5. In a machine as claimed in claim 3, mutual interlock means interconnecting said primary and secondary shafts.

6. In a machine as claimed in claim 3, additional latch means associated with said primary shaft to prevent rotation thereof, and an additional feeler element displaceable by a letter on reaching a prescribed position at said station for releasing said additional latch means.

References Cited in the file of this patent

UNITED STATES PATENTS

1,273,793	Pitney	July 23, 1918
1,370,668	Pitney	Mar. 8, 1921
1,633,245	Eskholme	June 21, 1927
1,647,560	Chisholm et al.	Nov. 1, 1927
1,954,367	Smith	Apr. 10, 1934
1,955,066	Hiller	Apr. 17, 1934
2,005,778	Finfrock	June 25, 1935
2,377,523	Ryan et al.	June 5, 1945
2,389,551	Ryan	Nov. 20, 1945
2,690,710	Aurbach	Oct. 5, 1954
2,846,945	Uthenwoldt et al.	Aug. 12, 1958
2,976,803	Van Marle	Mar. 28, 1961