March 7, 1961 J. FREEDSON 2,973,853

EMBOSSING MACHINES

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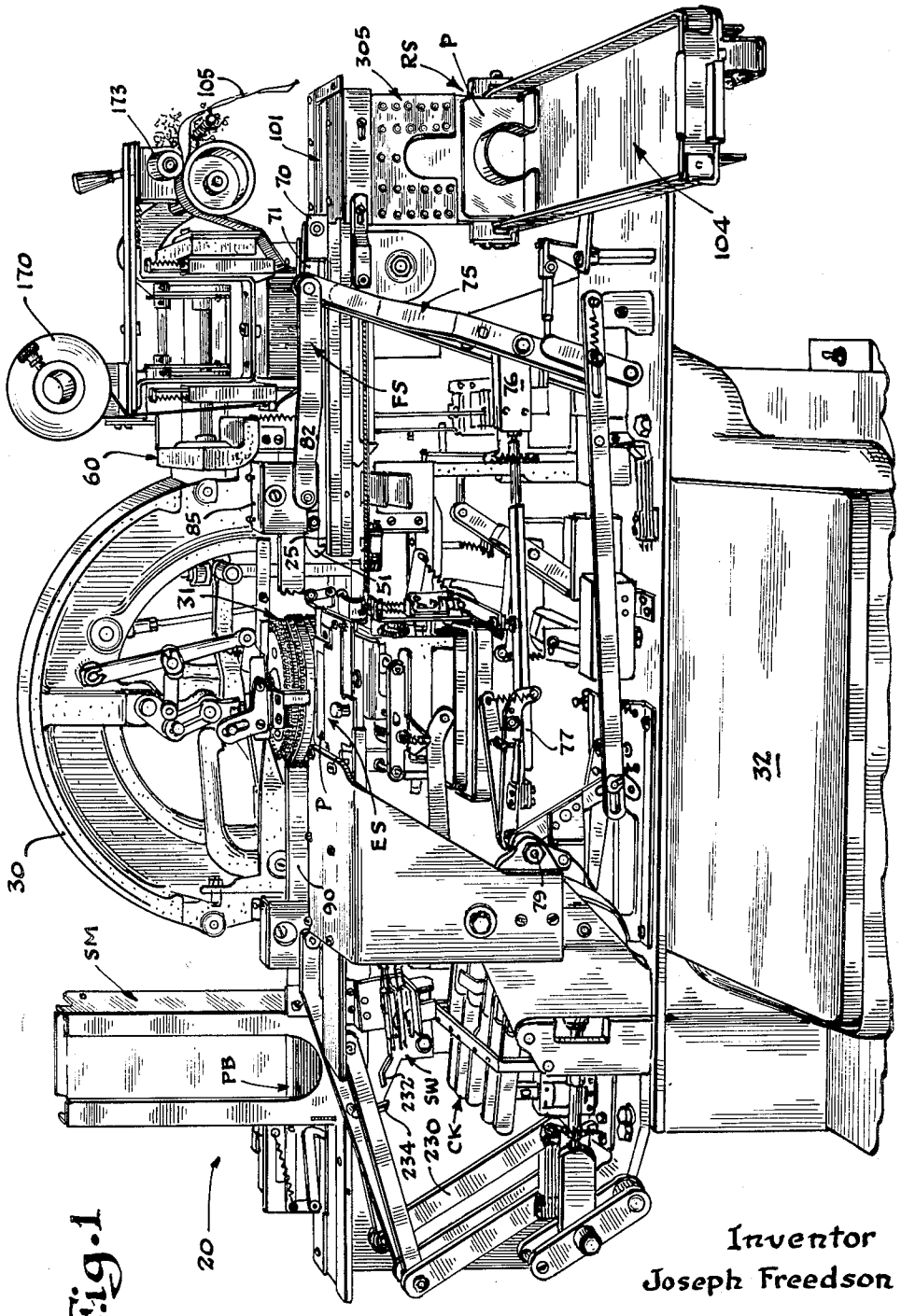


Fig. 1

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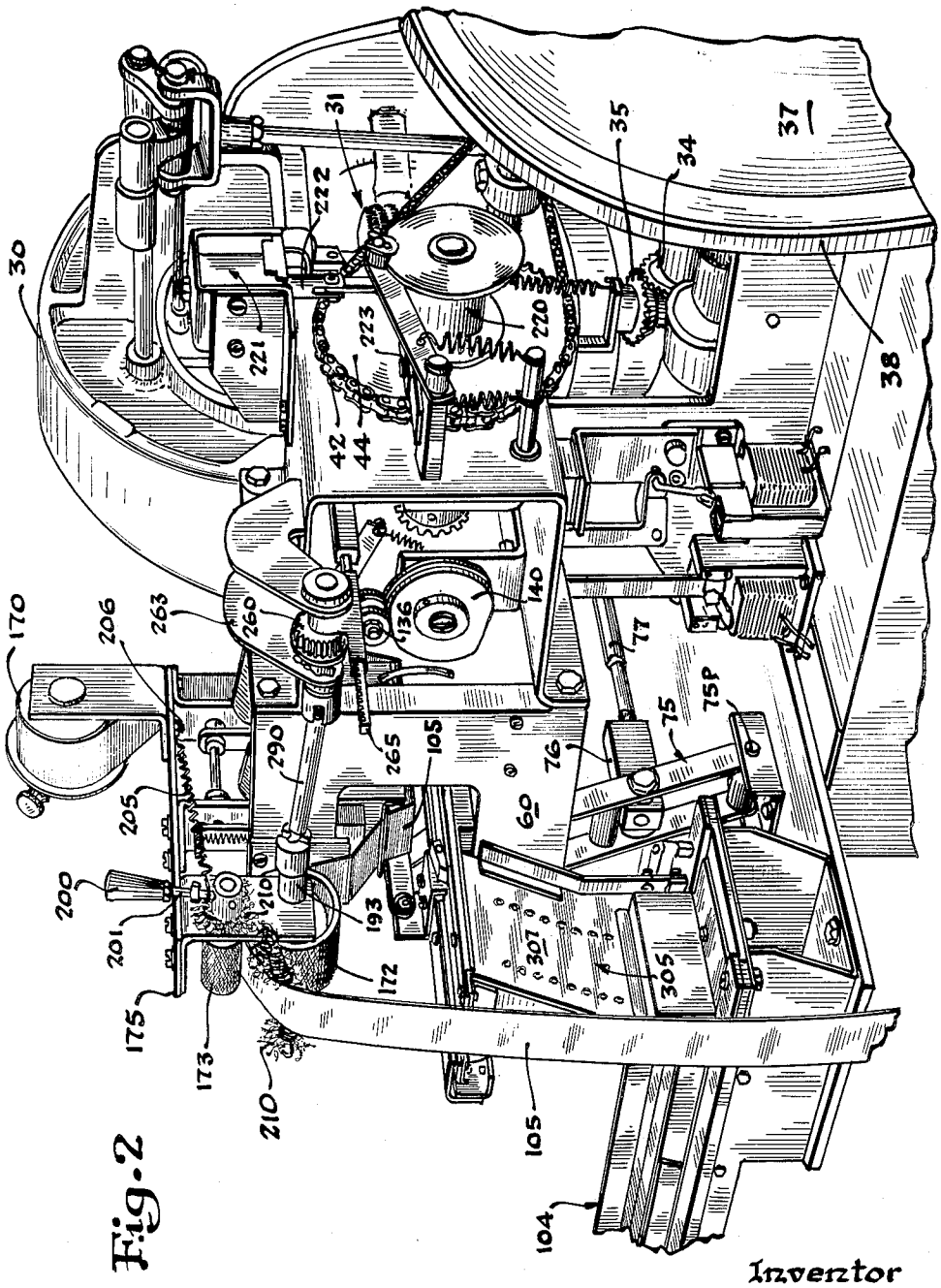


Fig. 2

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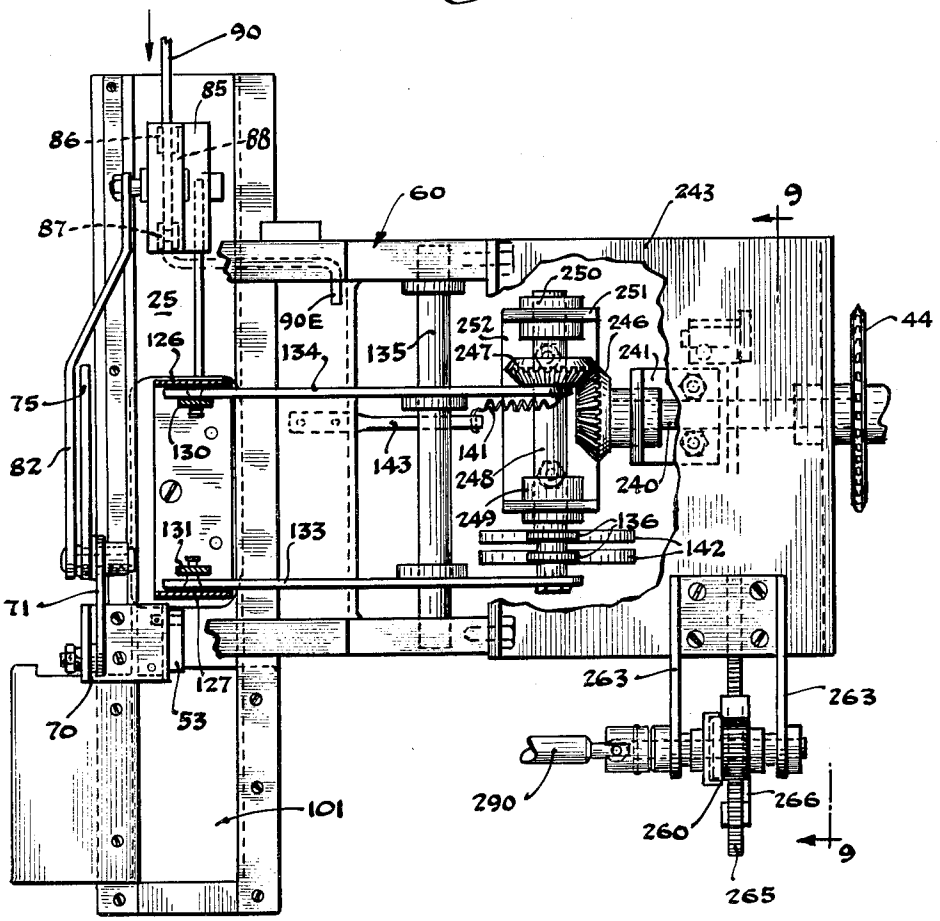
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Fig. 3



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Fig. 4

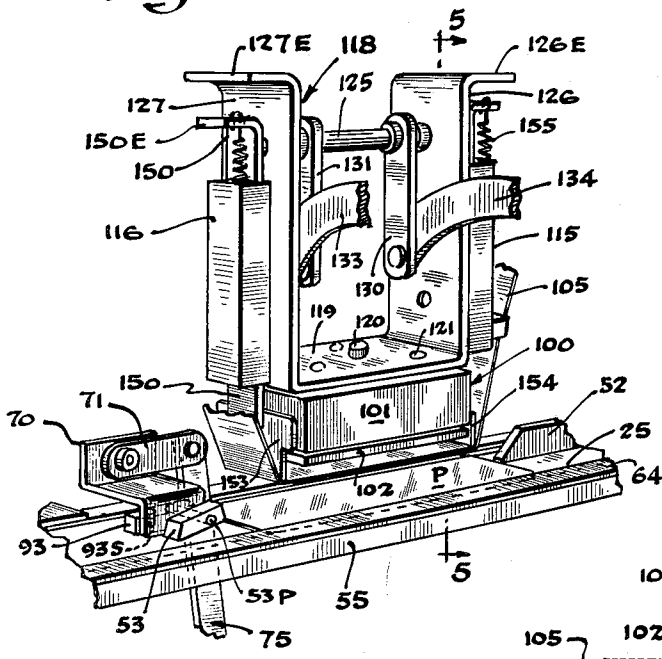


Fig. 5

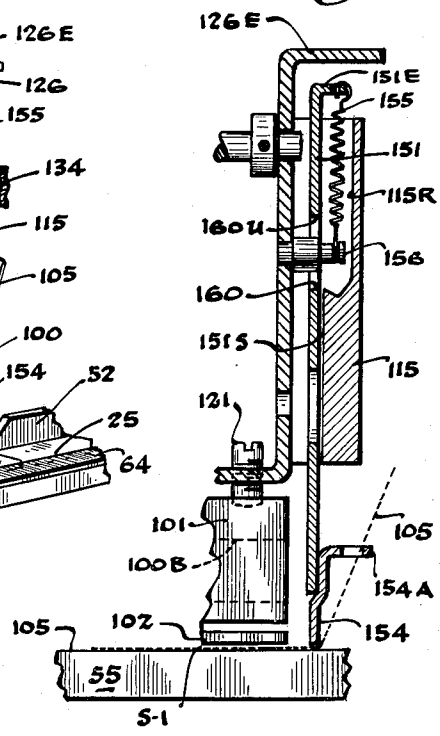


Fig. 4A

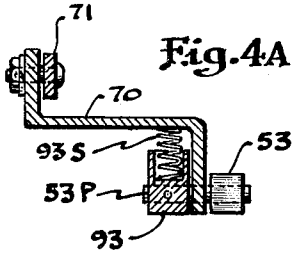


Fig. 6

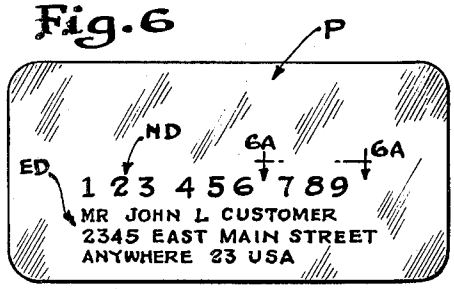
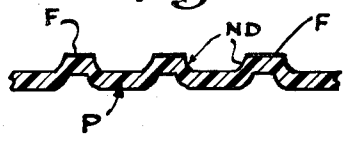


Fig. 6A



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Fig. 7A

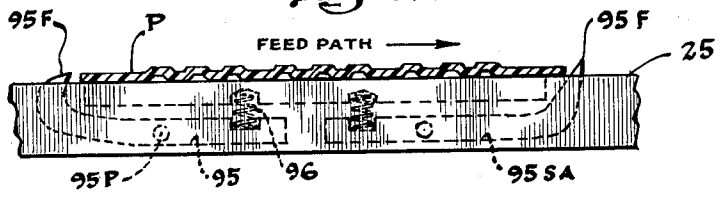
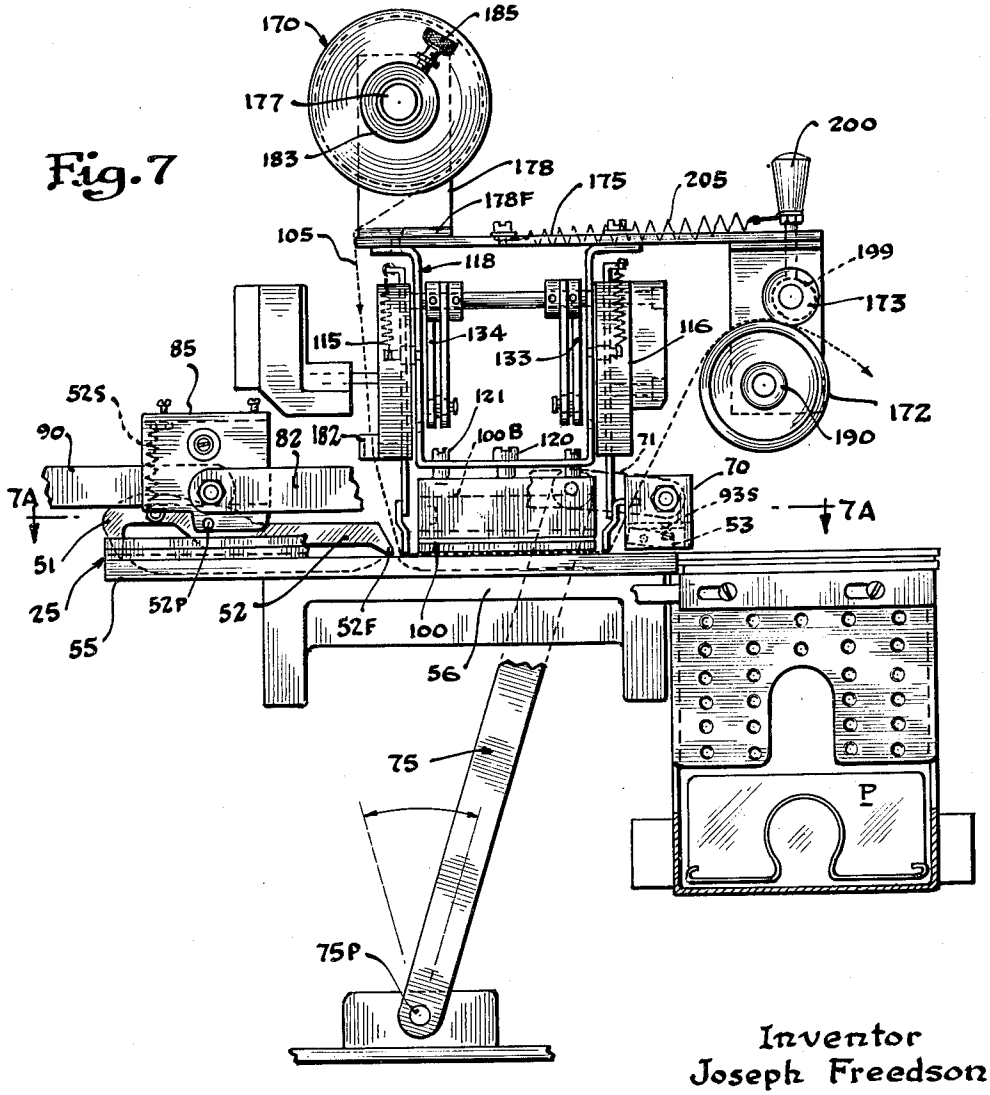


Fig. 7



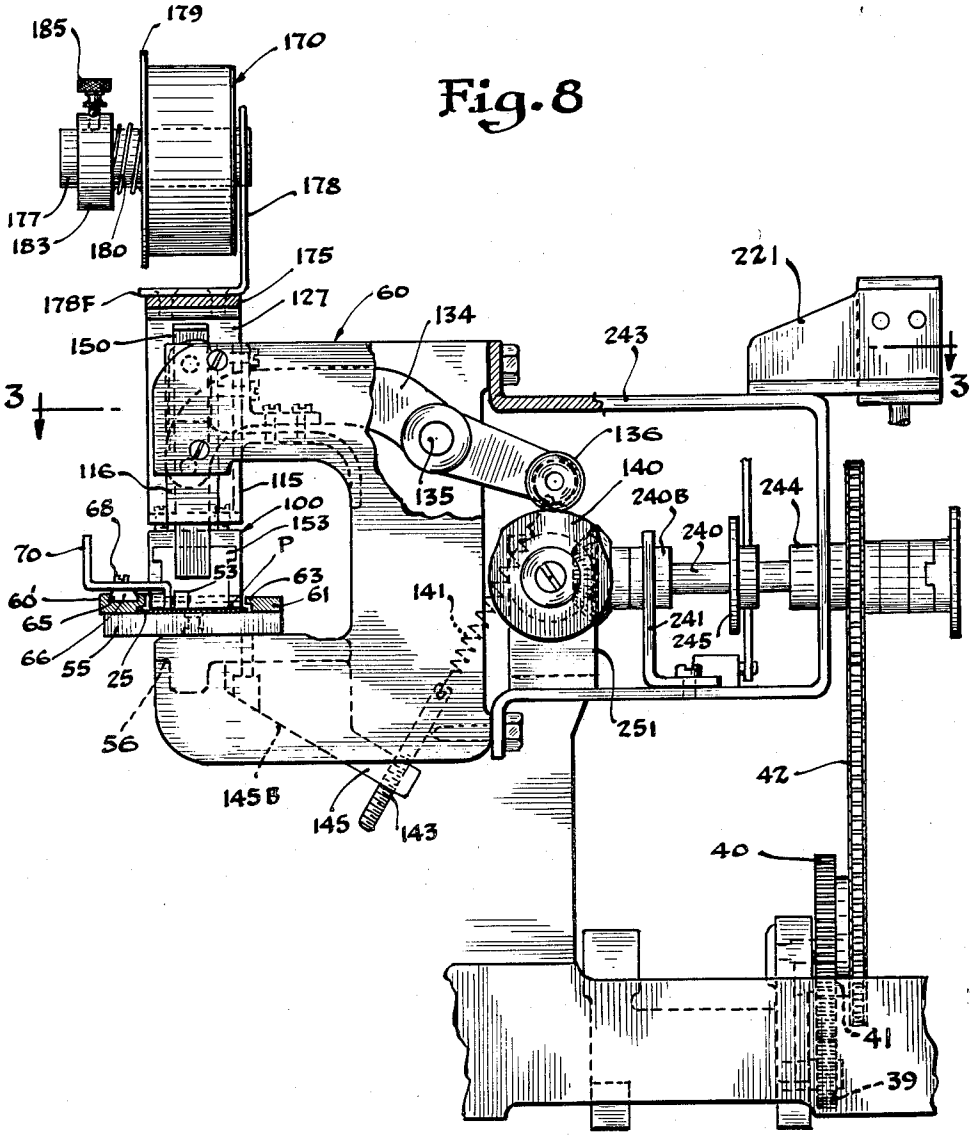
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Fig. 8



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Fig. 9

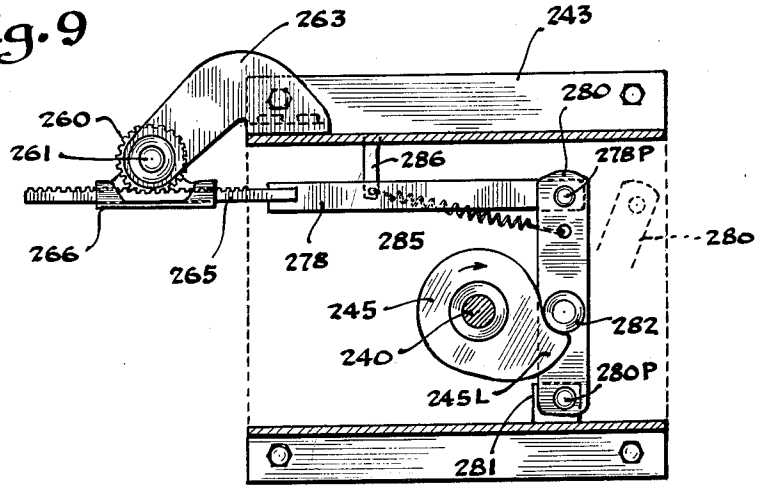
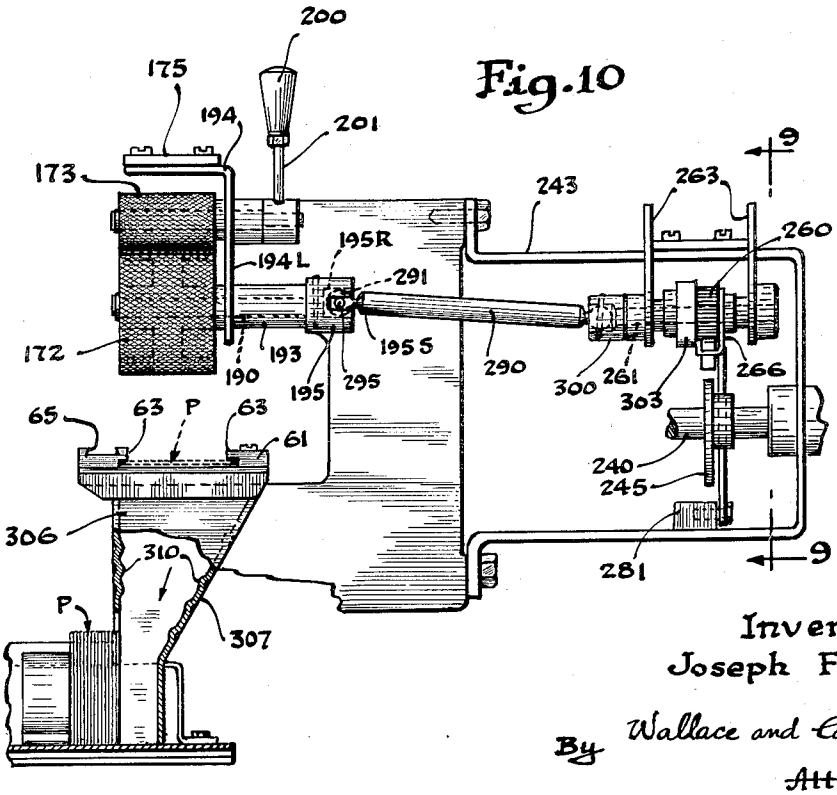


Fig. 10



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EMBOSSING MACHINES

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Filed Aug. 28, 1956, Ser. No. 606,756

15 Claims. (Cl. 197—6.6)

This invention relates to machines for producing plates or the like bearing embossed characters thereon, and in particular to the provision of facings of distinctive color on the raised or embossed characters provided on plates of the aforesaid kind. Embossed plates contemplated by the present invention are made of dielectric material such as plastic, and the present invention is particularly concerned with plates of this nature.

Plates embossed with customer or personalized identification data represent a widely known form of instrument for conducting transactions such as commercial credit transactions, billings, and services such that instruments of this character have been rather widely adopted for department store credit sales, commercial services, record keeping and the like. Heretofore, the more common form of an embossed plate of the foregoing kind has been of light-weight metal of relatively small size, and in the production of such plates these are embossed with the name, address or other identifying data pertaining to an individual who has qualified or otherwise been approved as entitled to such an instrument.

It has been proposed to utilize plastic for producing personalized instruments of the foregoing kind, and inasmuch as the characters embossed on a plastic plate will more or less conform in appearance to the background color of the plate it is desirable to render the characters distinctive in appearance for easy recognition or readability, and the accomplishment of this in a practical and economical manner is the primary object of the present invention. Specifically, it is an object of the present invention to face the raised characters on an embossed plate by bringing about pressure contact between such characters and a sheet, strip or the like bearing heat softenable pigmented material so as to transfer such pigmented material as facings on to the raised characters of the embossed plate. In the present instance, this is accomplished in an embossing machine wherein the plates are first embossed with personalized data such as a name, address or code at an embossing station, and after this initial operation each plate is transferred to a tipping or facing station where a heated platen is effective in cooperation with the aforesaid strip to produce the desired distinctive facings or tippings on the raised characters of each embossed plate. From the tipping station, the embossed plates are forcefully transferred one by one in successive cycles of the machine to the receiving station where the plates are collected in a stack. Inasmuch as the plates are of plastic which is dielectric in nature, electric charges are produced on the plates as an incident to movement of the plates through the machine. As a consequence of this, there is a tendency for the plates to be attracted and held to metal parts adjacent the receiving station and there is interference with proper stacking of the plates. Accordingly, another object of the present invention is to eliminate such charges as the plates approach the receiving station. In specific form, the plates are dropped down a chute to a receiving tray, and specifically it is an object of the

invention to provide protuberances on a wall of the chute enabling charges built up on the plate to be readily discharged through such protuberances.

The machine of the present invention is adapted for production of plates of the foregoing kind in relatively large numbers, and this entails the need for a continuous supply of material used to face the characters at the facing station of the machine. This is conveniently attained by resorting to a strip coated with heat softenable pigmented material as was mentioned above, and a further object of the present invention is to enable the strip to be fed through the facing station in successive predetermined lengths such that the portion of the strip that was used in facing the characters of a particular embossed plate is withdrawn from the facing station and a fresh or new portion of the strip fed thereto prior to the arrival of the next plate that is to have its characters faced.

Inasmuch as the transfer of coloring material from the strip to the raised characters of an embossed plate requires the use of a heated platen, a further object of the present invention is to yieldably associate with the platen a guide which normally spaces the strip from the platen. This is attained in such a way that during initial movement of the platen preliminary to the platen being effective to press the strip against raised characters of an embossed plate, the guide for the strip advances forwardly with the platen to maintain the aforesaid normal spacing. Then, when the guide has effectively disposed the strip in close proximity to the raised characters to be faced, the platen advances independently of the guide for the strip, and the accomplishment of this in a practical and advantageous manner is another object of the present invention. Feeding movement of the strip through the facing station to present successive fresh or new areas of the strip for successive facing operations is accomplished by means of a driven feed roller and a cooperating pressure roller, and these rollers are effective intervally at predetermined times to withdraw predetermined lengths of the strip from a supply spool or reel as will be described. Accordingly, at the time when the actuating means for the platen is effective to advance the platen and the afore-mentioned strip guide toward a support or anvil on which the plate having embossed characters to be faced is disposed, the strip is subjected to tension, and in order that the strip will not be broken as a consequence of this, another object of the present invention is to so mount the supply and feed means for the strip that these will move with the platen.

It will be seen from the foregoing that among the sequence of operations entailed in the present instance is the transfer of an embossed plate from the embossing station of the machine toward the facing station, actuation of the platen at the facing station to effect facing of the characters on an embossed plate at the facing station, feeding of the strip which bears the transfer material for facing embossed characters, and delivery of the plate having its characters so faced to a receiving station. For high production rates, the foregoing sequence of operations requires accurate and controlled timing, and a further object of the present invention is to enable this to be accomplished in an expeditious manner.

Other and further objects of the present invention will be apparent from the following description and claims and are illustrated in the accompanying drawings which, by way of illustration, show a preferred embodiment of the present invention and the principle thereof and what I now consider to be the best mode in which I have contemplated applying that principle. Other embodiments of the invention embodying the same or equivalent principle may be used and structural changes may be made

as desired by those skilled in the art without departing from the present invention and the purview of the appended claims.

In the drawings:

Fig. 1 is a front perspective of a machine constructed in accordance with the present invention;

Fig. 2 is a partial perspective of the machine looking into the back of the facing and receiving stations;

Fig. 3 is a top plan view of a portion of the machine with certain parts being broken away and being taken substantially on the line 3—3 of Fig. 8;

Fig. 4 is a perspective view at the back of the facing station showing the platen and associated structure;

Fig. 4A is a detail sectional view of mounting structure for one of the feed pawls;

Fig. 5 is a detail sectional view taken substantially on the line 5—5 of Fig. 4;

Fig. 6 is a top plan view of an embossed plate of the kind contemplated by the present invention;

Fig. 6A is a fragmentary sectional view on an enlarged scale taken substantially on the line 6A—6A of Fig. 6;

Fig. 7 is a front elevation of a portion of the machine showing the facing and receiving stations;

Fig. 7A is a detail sectional view of a portion of the guideway;

Fig. 8 is a side elevation of a portion of the machine;

Fig. 9 is a sectional view taken substantially on the line 9—9 of Fig. 10; and

Fig. 10 is a side elevation showing the drive for the strip feed means.

Insofar as embossing and related operations such as carriage control, magazine feed and the like are concerned, the embossing machine **20** illustrated in Fig. 1 hereof embodies basic structural details of the embossing machines disclosed in U.S. Patents Nos. 2,643,690, 2,498,038 and 2,576,596. It may be briefly mentioned for purposes of the present disclosure, however, that the machine **20** is adapted to produce embossed data shown at ED in Fig. 6 on a relatively thin rectangular plate P of plastic material. In the form illustrated, the plate P is adapted to be carried as a business instrument on the person, and hence the embossed data ED are in the form of the name and address of the person to whom the instrument P has been allocated. In the event that code data are required for bookkeeping purposes, code data in the form of numerical data ND, Fig. 6, may also be embossed on the plate, and usually an instrument of this kind will be printed on one or both sides with auxiliary data pertaining to factual matters such as outlets where the instrument or plate P is valid, the term for which the instrument is valid and the like. As will be observed in Fig. 6A, the data as ED and ND represent raised type characters, and this is so in order that the instrument can be used for printing operations. Thus, if the instrument P is one entitling the owner to credit on the purchase of good or services, the instrument is presented to the sales person as evidence of credit entitlement, and the plate is disposed in a printing machine of a well-known kind in position to print the related memorandum sales slip, thereby providing an accurate record for bookkeeping purposes. This is but illustrative of but one kind of transaction in which an instrument as the plate P bearing embossed identifying data is used.

Blank plates PB, Fig. 1, that are to be embossed in the machine **20** to provide a plate as P and to have the embossed characters thereof faced in a way to be described below, are stacked in a supply magazine SM at one side of the machine as shown in Fig. 1. Selectively operable feed means of the kind described in Patent No. 2,498,038 when actuated are effective to advance blank plates PB individually one by one from the bottom of the magazine SM to the embossing station ES, Fig. 1, and after a particular plate has been embossed, other plate feed means to be described herein below are then actuated so as to transfer the embossed plate from the embossing station ES to one end of a guideway **25**, Figs. 1 to 7, leading to the facing station FS of the machine where the raised characters on the embossed plate are to be distinctively faced so that the raised characters will contrast with the background color of the plastic of which the plate is composed. After the plate has had its characters faced in this manner, the plate is then ejected from the other end of the guideway **25** to the receiving station RS, Fig. 1, where the plates are arranged in a horizontal stack.

The embossing machine **20** embodies an upstanding frame **30**, Figs. 1 and 2, and within this frame there is mounted a rotatable punch and die mechanism **31** adapted to be constantly rotated by a vertical mounting shaft, not shown, as described in the aforesaid patents, and this mechanism embodies opposed punch and die pairs to be advanced toward each other to form an embossed type character on a blank plate as PB disposed in embossing position between such selected pair of punches and dies at the embossing station. Selection of a punch and die is performed at a keyboard as described in the aforesaid patents, and in the present instance this keyboard is under the cover **32** shown in Fig. 1. Depression of such a key stops the punch and die mechanism in its rotation, and thereupon the selected punch and die is operated to form an embossure as described particularly in Patent No. 2,498,038.

The aforesaid shaft which carries the rotatable punch and die mechanism **31** is driven (Fig. 2) by bevel gearing **34** and **35**. The arrangement is similar to that shown in U.S. Patent No. 2,463,690, the shaft for gear **34** having a gear driven by a gear mounted on a drive shaft which carries a fly wheel **37**, Fig. 2 hereof. The fly wheel **37** is driven by a belt **38** in turn driven by a suitable motor, not shown. The shaft of the fly wheel drives a gear **39**, Fig. 8, and this gear is meshed with a gear **40**, Fig. 8, which drives a sprocket **41**. A chain **42** is arranged on the sprocket **41** so as to drive a sprocket **44**, Fig. 2, associated with the in-put to a one-revolution clutch which will be described herein below.

The guideway **25** referred to above as the one to which an embossed plate is transferred from the embossing station is in alignment with the plane in which an embossed plate reposes at the embossing station. The plate feed means that operates in the guideway **25** includes a transfer pawl or feed dog **51**, Figs. 1 and 7, an intermediate pawl **52** and a discharge pawl **53**. The guideway **25** is afforded by the upper surface of an elongated plate **55**, Figs. 7 and 8, which is anchored to a bed **56** afforded by a generally C-shaped frame **60**, and as will be apparent from Figs. 1 and 2, the frame **60** is bolted to the main frame **30** of the machine on one side thereof. A pair of front and rear longitudinal bars **60'** and **61**, Fig. 8, are secured to the front and rear marginal portions of the plate **55**, and these bars are provided with overhanging flanges as **63**, Figs. 8 and 10, that define a relatively shallow channel serving to guide an embossed plate disposed in the guideway **25**.

The front bar **60'** mentioned above is formed with a track **65**, Figs. 8 and 10, serving as a guide for a complementary slide **66**. The slide **66** is fastened as by a screw **68** to a bracket **70** that overlies the track **65** as will be observed in Figs. 4 and 8 and the feed pawl **53** mentioned above is secured to the downwardly bent inner end of the bracket **70** disposed above the guideway **25**. The other or outer end of the bracket **70** is bent upwardly as shown in Figs. 4 and 8, and this portion of the bracket **70** is secured to a relatively short link **71** pivotally mounted to the upper end of a drive arm assembly **75** as shown in Fig. 1. The drive arm assembly extends downwardly at the front of the machine, and the lower end thereof is mounted pivotally at **75P**, Fig. 7, for oscillation. Spaced above the pivotal mounting for the drive arm **75** is a block **76** that is secured to an inter-

mediate portion of the drive arm 75. An elongated drive link 77, Fig. 1, is secured at one end to the block 76, and this drive link is adapted to be driven by an eccentric mounted on a shaft 79, Fig. 1, that extends from the rear of the machine, this arrangement being similar to that described in Patent No. 2,498,038. Thus, several different eccentrics like the eccentric used to drive the link 77 are associated with shaft 79, and each such eccentric including the eccentric for the drive link 77 is adapted to be clutched to shaft 79 to be driven thereby upon manual actuation of the proper one of a set of control keys CK, Fig. 1, as explained in Patent No. 2,498,038. When the control key for the eccentric associated with the drive link 77 is actuated, this eccentric is rotated through one revolution causing a complete oscillation of the drive arm 75.

Connected to the upper end of the drive arm 75 and extending in a direction opposite that of the drive link 71 is a second, relatively long link 82, Figs. 1, 3 and 7. The opposite end of this link is pivotally connected to a mounting bracket 85 which supports pawls 51 and 52 as shown in Fig. 7. Thus, during oscillation of the drive arm 75, the brackets 70 and 85 which carry the feed pawls 51, 52 and 53 are reciprocated relative to the guideway 25, and it will be recalled that the bracket 70 is guided by its slide 66 disposed in the track 65. In order that the bracket 85 will likewise be guided in its reciprocation, a pair of guide rollers 86 and 87, Fig. 3, are rotatably supported by a mounting plate 88 secured within the bracket 85, and these rollers are adapted to ride on an elongated rail 90 which, as shown in Fig. 1, extends from the guideway 25 across the embossing station ES. The end of the guide rail 90 adjacent the guideway 25 is bent inwardly as shown in Fig. 3 and an ear 90E thereof is anchored to the frame 60.

The feed pawl 51 when the drive arm 75 has oscillated to the left as viewed in Fig. 1 engages the end of the plate P shown in Fig. 1 that is nearer the supply magazine SM, and upon return or clockwise movement of the drive arm 75 this pawl is effective to transfer the embossed plate from the embossing station ES to the intermediate position on the guideway 25, that is, to an intermediate position removed from the facing station FS. In the next oscillation of the drive arm 75, the embossed plate disposed in the aforesaid intermediate position in the guideway 25 is picked up by the feed pawl 52 and is advanced into position directly beneath a platen 100, Fig. 7, in position to be faced as will be described. In the next or third oscillation of the drive arm 75, the embossed plate that was faced is picked up by the pawl 53 and is ejected from the guideway 25 into the throat 101, Figs. 1 and 3, of a discharge chute which opens into a collecting tray 104, as will be described.

The pawls 51, 52 and 53 are spring urged toward engagement with the guideway 25. Thus, as shown in Fig. 7, a spring 52S is anchored to the end of the pawl 52 opposite the finger end 52F that serves to advance an embossed plate into the facing station. The pawl 52 is pivoted at 52P on the bracket 85, and the opposite or upper end of the spring 52S is anchored within the bracket 85. A like yieldable attachment of the pawl 51 to the bracket 85 is afforded.

The ejector or discharge pawl 53 is pivotally associated with the depending arm of the bracket 70, and to this end is carried on the inner end of a pin 53P journalled in the depending arm of bracket 70. The opposite or outer end of the pin 53P carries a retainer block 93, and a compression spring 93S is under compression between the underside of the horizontal arm of the bracket 70 and a recess formed in the upper face of the retainer block 93. As viewed in Fig. 7, the spring 93S acts on the side of the pin 53P opposite the feed pawl 52 so as to urge the assembled pawl 53, pin 53P and retainer 93 clockwise to urge the feed or right hand end of the pawl 53 against the guideway 25.

Means are afforded in the guideway 25 to hold embossed plates therein against retrograde movement when the feed carriage represented by the brackets 70 and 85 shifts to the left as viewed in Fig. 7. Such holding means are conveniently afforded by spring detents as 95 mounted on pivots 95P beneath the guideway 25. Each such detent includes a holding finger 95F that normally projects above the plane of the guideway 25. Such projecting relation of the finger 95F is sufficient to hold an edge of a plate as P, and is assured by compression springs 96 acting on ends of the detents 95 disposed beneath the guideway 25. It will be observed that the relation and arrangement of the detents 95 is such as to enable a feed pawl as 51 or 52 to feed a plate past a projecting hold finger as 95F, causing depression of the related detent, but when the feed motion of the pawl as 51 or 52 is completed the trailing edge of the embossed plate is free of the detent and the detent recovers disposing its hold finger opposite the trailing edge of the embossed plate thus fed past a detent 95. Accordingly, the hold finger 95F at the trailing edge of an embossed plate on the guideway 25 is effective to hold that plate against retrograde movement during shifting of the feed carriage and the pawls 52 and 53 to the left as viewed in Fig. 7 incidental to its next feeding movement to the right. Detents of this kind are arranged at the facing station FS and at the intermediate position in the guideway 25, embraced by the feed pawls 51 and 52, and preferably a safety detent 95SA is utilized for the leading end of a plate to guard against over-travel of a plate.

As best shown, in Figs. 4 and 7, the platen 100 embodies a block 101 and a platen plate 102. The platen block is bored at 100B so as to receive an electrical resistance element of a known kind for maintaining the platen in a relatively hot condition as will be explained in greater detail herein below, and when an embossed plate is in position at the facing station with its raised characters facing toward platen plate 102 means are then effective to actuate and guide the platen downwardly from its released or retracted position so as to cause the platen plate to press a strip 105 lightly and uniformly against the raised characters on the embossed plate. Normally, the platen plate is disposed above the embossed plate that is to be faced, and the embossed plate is supported for the entailed light facing contact on an anvil afforded by the aforementioned guide plate 55 and bed 56.

The platen is guided in its vertical movement by a pair of spaced apart vertically disposed guide blocks 115 and 116, Figs. 4 and 7, which are rigidly secured to related parts of the frame 60. A U-shaped slide or platen head 118, Fig. 4, has the web or bight portion 119 thereof secured to the upper face of the platen block 101 as by a screw 120, and a plurality of adjustable studs 121 are so arranged in the head 118 in association with the screw 120 as to enable lower ends thereof disposed in corresponding pockets in the upper face of the block 101 to be adjusted to produce desired leveling of the platen plate 102 with respect to the aforesaid anvil on which is disposed the embossed plate at the facing station.

As shown in Fig. 4, a platen cross shaft 125 is supported by and disposed transversally between the vertical legs 126 and 127 of the platen head 118, ends of the shaft being disposed in mounting openings formed in the legs 126 and 127. A pair of links 130 and 131 are journalled at the upper ends thereof in spaced relation on the shaft 125 to depend therefrom, and actuating arms 133 and 134 have ends thereof pivotally connected to the lower ends of the links 130 and 131 as shown in Figs. 3, 4, 7 and 8. The arms 133 and 134 are secured to a rock shaft 135, Figs. 3 and 8, which is supported in the opposed side members of the frame 60 rearwardly of shaft 125, and extend rearwardly of the shaft 135. A double follower as 136, Fig. 8, is carried at the end of arm 133 and is held in engagement with a platen actu-

ating double cam 140 by a return spring 141 having the upper end thereof anchored to the rear or inner end of the arm 134. The lower end of the spring 141 is anchored to an elongated stud 143 which is threadedly mounted adjustably in an ear 145E on a bracket 145B anchored to the bed 56 of the frame 60 as shown in Fig. 8. The spring 141 is normally effective to urge the arms 133 and 134 clockwise as viewed in Fig. 8, and when the followers 136 are on the dwell of the double cam 140 the platen head 118 is disposed in the retracted position shown in Fig. 4, with the platen plate 102 spaced above the embossed plate P at the facing station. The individual members of the cam 140 can be adjusted to determine the effective lobe length and thereby time the operative platen dwell on a plate P to be faced, and the way in which the cam 140 is driven will be described herein below.

As was mentioned above, a facing strip 105 is normally spaced from the platen plate 102 when the platen is in its retracted or elevated position, and this condition is to prevail until contact is established between the lower face of the strip 105 and the type characters on an embossed plate at the facing station. The strip 105 is composed of dielectric material coated on one side with heat softenable pigmented transfer material used to provide distinctive facings F, Fig. 6A, on the raised characters of a plate P as shown in Fig. 6A. Inasmuch as the transfer of coloring material from the strip 105 to the raised characters of the embossed plate at the facing station is one induced thermally by engagement of the hot platen plate 102 forcefully pressing the strip 105 with its coated side against the raised characters of the embossed plate at the facing station, it is necessary to normally maintain the strip 105 spaced from the heated platen so that no premature softening or bleeding of the transfer material will occur. Such normal spacing is attained by guide means which are yieldably associated with the platen and so arranged that the strip 105 will advance with the platen 100 during actuation thereof to maintain the aforesaid normal spacing until the strip 105 is brought to bear against the embossed plate at the facing station. Thus, as shown particularly in Figs. 4, 5, and 7, left and right hand ribbon guide slides 150 and 151 are disposed for vertical movement in corresponding guide slots as 151S formed in the platen guide blocks 115 and 116, and it will be observed that the upper and lower ends of the slides 150 and 151 extend beyond the upper and lower ends of the guide blocks 115 and 116. Spot welded to the lower projecting ends of the slides 150 and 151 are respective strip guides 153 and 154, and the strip 105 is arranged as will be described so as to span the guides 153 and 154 in contact with the lower edges thereof. The way in which the strip 105 is fed past the guides beneath the platen plate 102 will be described in more complete detail herein below.

The upper ends of the slides 150 and 151 are bent outwardly to afford respective ears 150E and 151E, and as shown particularly in Figs. 4 and 5, coil springs as 155 have the upper ends thereof fastened to the ears 150E and 151E. Each guide as 115 and 116 is formed with a recess as 115R, Fig. 5, and the springs 155 are disposed therein. The respective legs 126 and 127 of the platen head 118 are provided with studs 156, Fig. 5, which project outwardly from the outer faces thereof. The studs 156 extend through enlarged slots 160 formed in the slides 150 and 151, and the lower ends of the springs 155 are anchored to ends of the studs within the recesses 115R.

Normally, that is, when the platen is retracted as shown in Fig. 4, the studs 156 are engaged with the upper edges 160U of the slots as viewed in Fig. 5, and the arrangement is such that when the platen is actuated in an advancing direction toward an embossed plate at the facing station, the studs 156 are effective through the intermediary of the springs 155 to advance the slides 150 and 151 and the associated guides 153 and 154 with the platen 100 to maintain the normal spacing shown in Fig. 4. This spacing between the platen 100 and the strip 105 prevails until the guides 153 and 154 in effect are stopped in their advancing movement upon engagement with either a projecting edge of the plate P or the guideway plate 55. Then, continued application of forces (to be described herein below) effective to advance the platen 100 cause the platen to advance independently of the strip guide 153—154 so that eventually the heated platen plate 102 is effective to press the strip 105 against the raised characters of the embossed plate at the facing station thereupon bringing about a slight pressure contact between the strip 105 and the embossed characters sufficient to cause a thermal transfer of coloring material from the strip 105 as permanent facings F, Fig. 6A, on to the embossed characters of the embossed plate P. Such independent movement of the platen 100 occurs in opposition to the springs 155, causing the springs 155 to expand as shown in Fig. 5, and the studs 156 are then displaced in the slots 160 below the upper edges 160U thereof. The parts are so adjusted that when the platen 100 is in its fully advanced position shown in Fig. 5, the spacing S–1, Fig. 5, between the lower surface of the platen plate 102 and the anvil at the facing station on which an embossed plate as P is supported is sufficient to produce the aforesaid slight pressure contact incidental to facing of embossed characters.

When the platen 100 is retracted by the spring 141 after completion of a facing operation, the springs 155 contract until the studs 156 engage the upper edges 160U of the slots 160 in the slides 150 and 151, and the slides 150 and 151 are then returned by the studs 156 to normal position incidental to further upward retraction of the platen 100.

Inasmuch as the guides 153 and 154 for the strip 105 advance with the platen as described above, it is advantageous to so support the supply and feed or advancing means for the strip 105 as to prevent rupture or tearing of the strip 105. The strip 105 is supplied from a spool 170, Figs. 1, 2, 7 and 8, and pre-determined lengths of the strip 105 are withdrawn from the spool intervally in a way to be described below by strip advancing means including a driven feed roller 172 and a cooperative pressure roller 173 engaged therewith. Inasmuch as the guide for the strip 105 including the guide plates 153 and 154 advance with the platen during actuation thereof, it is advantageous for the foregoing reason to support the spool 170 and the aforementioned strip feed means for movement with the platen, and to this end a horizontal mounting plate 175, Fig. 7, is supported on flat ears 126E and 127E formed by bending outwardly the upper ends of the respective legs 126 and 127 of the platen head or bracket 118. The spool 170 is carried by a stub shaft 177, Fig. 8, supported by a bracket 178, and the flange 178F of the bracket 178 is in turn fastened to the mounting plate 175. A spool retainer plate 179 is mounted on the outer end of the shaft 177, and a coil spring 180 serving as a means for adjusting the tension exerted on the strip 105 by the feed rollers 172 and 173 is arranged concentric on the shaft 177 so as to press against the outer face of the spool retainer plate 179 with a predetermined force. Thus, the degree of compression of the spring 180 is regulated by a collar 183 adapted to be held in an adjusted position on the shaft 177 by a thumb screw 185.

As shown in Fig. 7, the strip 105 is directed from the supply spool 170 downwardly past a guide afforded by the outer edges of the mounting plate 175 and the flange 178F of the bracket 178, Fig. 7, and from there downwardly to a guide 182, Fig. 7, fastened to the outer face of the left hand platen guide block 115. From the guide 182, the strip is then directed to the guide plate 153, across the facing station beneath the platen plate 102 to the guide plate 154, and from the guide plate 154 upwardly to an auxiliary guide 154A, Fig. 5, formed as an ear on the guide plate 154. The free end

of the strip 105 is then passed between the bight of the engaged feed rollers 172 and 173.

The driven feed roller 172 is preferably knurled as shown in Fig. 2, and is locked to a driven shaft 190, Figs. 2, 7 and 10, driven in a way to be described below. The shaft 190 is supported rotatably in a bushing 193 carried by the leg 194L of a bracket 194 which has the flange thereof secured to the end of the mounting plate 175 opposite the end on which the bracket 178 is mounted. The bushing 193 extends rearwardly from the bracket 194 as will be observed in Fig. 10, and the rear end of the drive shaft 190 projects rearwardly beyond the bushing 193. A collar 195 is pinned to such projecting end of the shaft 190, and constitutes part of a universal drive coupling for the shaft 190 as will be described.

The pressure roller 173, Figs. 2 and 10, is rotatably supported by the bracket 194 above the driven feed roller 172, and as indicated in Fig. 7 an eccentric 199 for the pressure roller 173 is normally effective to hold the pressure roller 173 firmly in position so that the strip 105 is gripped tightly between the engaged rollers 172 and 173. The eccentric 199 is adapted to be positioned by an operating handle 200 having a shaft 201, Fig. 2, having a connection to the eccentric. A spring 205 is tensioned between the shaft 201 and a lug 206 secured to the rear edge of the mounting plate 175 so as to be yieldably biased in the normal position shown in Fig. 7. By turning the handle 200 clockwise as viewed in Fig. 7 against the return action of the spring 205, the eccentric is relocated causing retraction of the pressure feed roller 173 from the driven feed roller 172.

As was noted above, the strip 105 is of dielectric material, and as a consequence of advancing movement thereof through the aforesaid guide means electric charges tend to accumulate thereon. Such charges have a tendency to cause the free end of the strip shown in Fig. 2 to be attracted to parts of the machine adjacent thereto. This would tend to cause fouling of the strip 105 on the machine, and in order to eliminate the disadvantageous effects of this discharge means are associated with the free end of the strip 105 in order to dissipate the charges produced thereon in the aforesaid manner. In the present instance, this discharge means takes the form of metallic "tinsel" 210 coiled at one end about a bushing to which the shaft 201 of the handle 200 is connected as shown in Fig. 2, and the other end portion of the tinsel 210 is supported beneath the portion of the strip 105 passing from the feed rollers 172 and 173. Thus, the strip 105 is grounded on the machine so that the strip 105 as it passes from the feed rollers 172 and 173 engages the discharge means 210 causing charges to flow off the strip 105.

The platen 100 is to be operated after an embossed plate transferred from the embossing station ES on to the guideway 25 has been positioned at the facing station beneath the platen 100, and the strip 105 is to be fed forwardly subsequent to a facing operation produced by operation of the platen to thereby dispose a fresh or unused portion of the strip 105 in position beneath the platen plate 102 for facing the next embossed plate advanced to the facing station. These operations are timed accurately in a way to be described below by cams including the cam 140 for the platen, and the cams in turn are driven by means including a one revolution clutch 220, Fig. 2. This clutch is of the kind described in U.S. Patent No. 2,265,133, and hence the details thereof will not be described herein. It suffices to point out that the clutch 220 is controlled by a solenoid 221 having an armature 222 adapted to release an arm 223 which normally maintains the clutch 220 disengaged. Thus, when the solenoid 221 is energized, clutch 220 is engaged and drives a cam shaft to be described herein below through one revolution.

Energizing of the solenoid 221 is timed in accordance with feed operations performed on the embossed plates, and the relation is such that after an embossed plate has been positioned at the facing station solenoid 221 is energized to enable the clutch 220 to drive. In the present instance, such timing is accomplished in part by a lever 230, Fig. 1, which is associated with the plate feed means used to advance a blank plate as PB from the supply magazine SM toward the embossing station ES. Thus, the lever 230 oscillates to the right as viewed in Fig. 1 when a blank plate is to be fed out of the supply magazine SM, this operation being similar to that described in U.S. Patent No. 2,498,038. Inwardly of the lever 230 is a normally open switch SW having a switch trip 232, and this switch controls circuit to the solenoid 221. A dog 234 moves with the lever 230 and is in position to engage the switch trip 232. This dog has a one-way action such that upon movement of the lever 230 to the right as viewed in Fig. 1 the dog 234 upon engaging the switch trip 232 is merely pivoted without being effective to close the switch SW, but upon return movement of the lever 230 after a blank plate as PB has been fed out of the supply magazine SM the dog 234 upon its return movement to the left is effective forcefully on the trip 232 to close switch SW thereby energizing solenoid 221 and enabling the clutch 220 to engage. The lever 230 is driven by means including an eccentric (not shown) on shaft 79 in a manner similar to the way in which link 77 is driven, and the timing is such that switch SW is not closed until after the embossed plate to be faced has been positioned at the facing station.

The cam shaft which is driven by the clutch 220 is best shown at 240 in Figs. 3 and 8 as being carried in a suitable bearing 240B supported by the upright flange of bracket 241 so as to be at right angles to the rock shaft 135 for the platen, the bracket 241 in turn being supported on a relatively large U-shaped mounting bracket 243 fastened to the back of frame 60. The opposite end of the cam shaft 240 is supported by a bearing 244 mounted in the vertical web portion of the bracket 243 as shown in Fig. 8, and a cam 245 is carried on the cam shaft 240 intermediate the bearings 240B and 244. This cam controls operation of the strip feed means as will be described herein below.

The end of the cam shaft 240 opposite the end driven by the clutch 220 projects beyond the bracket 241 as will be seen in Figs. 3 and 8, and a bevel gear 246 is secured thereto so as to mesh with a bevel gear 247 adapted to drive the cam 140 that controls operation of the platen 100. Thus, the bevel gear 247 is mounted on a cam shaft 248 on which the cam 140 is mounted. The cam shaft 248 is arranged parallel to the rock shaft 135 and is rotatably supported by bearings 249 and 250 mounted in spaced apart vertical arms 251 of a bracket 252 secured to the lower leg of the aforementioned bracket 243.

It will thus be seen that means are effective to actuate the platen upon engagement of clutch 220. The platen 100 is shown in its actuated position in Fig. 8, that is, its lowered position at the time a transfer of facing material is to be effected from the strip 105 on to the embossed characters of a plate at the facing station. This of course, occurred as an incident to presentation of the lobe of cam 140 to the follower 136 carried by the operating arm 134 for the platen 100, and after the lobe of the cam 140 has passed the follower 136 during the entailed cycle of operation of the clutch 220 to present its dwell to the follower 136, the spring 141 is then effective to retract the platen in the manner described above. The lobe of the cam 140 is effective to lower the platen 100 approximately ninety degrees after commencement of rotation thereof instituted by the clutch 220, as will be apparent from the normal or idle position of the cam 140 shown in Fig. 2.

The cam 245 which is effective to control operation of the strip feed means does so by operating a rack and pinion drive best shown in Figs. 2, 3, 9 and 10. Thus, a

pinion gear 260, Fig. 9, is journaled on a shaft 261 carried outwardly of the bracket 243 by a pair of spaced apart mounting arms 263, secured to the upper leg of the bracket 243. A rack 265 having the teeth thereof engaged with the pinion 260 is disposed beneath the pinion 260 slidably on a guide 266, and the guide 266 is suspended from the shaft 261. At its inner end, the rack 265 is secured to a link 278, Fig. 9, and the end of the link 278 opposite the rack 265 is pivotally mounted on a pin 278P carried at the upper end of the vertical operating lever 280. The lower end of the operating lever 280 is pivotally mounted on a pin 280P supported by a lug 281 which in turn is fastened to the lower leg of the bracket 243. At an intermediate portion, the operating lever 280 is provided with a cam follower 282 which is disposed in the path of cam 245 as shown in Fig. 9. The normal relation of the cam 245 to the parts driven thereby is shown in Fig. 9, and a tension spring 285, secured at one end to the operating lever 280 and at the other end to a stud 286 depending from the bracket 243, is normally effective to position the operating lever 280 so that the follower 282 thereof is urged against the cam 245. The cam 245 includes a lobe 245L which is presented to the follower 282 relatively late in a cycle of operation of the cam shaft 240, and when this occurs the rack 265 is shifted to the right as viewed in Fig. 9 driving the pinion counterclockwise as viewed in Fig. 9, and referring to Fig. 2 it will be realized that such counter clockwise motion of the pinion 260 corresponds to the required rotation of the driven feed roller 172 for feeding forward the transfer strip 105.

Motion of the drive pinion 260 described above is transmitted to the shaft 190, Fig. 10, of the feed roller 172 through a propeller shaft 290. Inasmuch as the shaft 190 for the feed roller 172 will necessarily rise and fall as viewed in Fig. 2 during advancement and retraction of the platen 100, universal couplings are afforded at either end of the propeller shaft 290 and since clockwise or return movement of the pinion 260 as viewed in Fig. 9 would correspond to a back feed of the strip 105 a one-way drive coupling is afforded between the pinion 260 and the propeller shaft 290.

Thus, referring to Fig. 10, the collar 195 mentioned above as pinned to the shaft 190 that drives the feed roller 172 is formed with an internal recess 195R, and the outer wall of the collar 195 is slotted at 195S at diametrically opposite positions. The propeller shaft 290 is formed at the end corresponding to the collar 195 with a ball 291 which fits in the recess 195R of the collar 195. Projecting from diametrically opposed points on the ball 291 are a pair of drive pins as 295 which fit in the slots 195S of the collar 195 so as to impart rotation of the shaft 290 to shaft 190. Fig. 10 illustrates the condition prevailing when the clutch 220 is not driving, that is, when the platen 100 and the mounting plate 175 are disposed in a normal elevated position above the guideway 25. Under this circumstance, the propeller shaft 290 is inclined downwardly in a direction toward pinion 260 as viewed in Fig. 10, and when the platen is actuated the shaft 290 at the end universally coupled to the collar 195 in the foregoing manner is lowered. The end of the propeller shaft 290 opposite the collar 195 is coupled in an identical manner to a drive collar 300 pinned to the corresponding end of the shaft 261.

In achieving the desired one-way action for the pinion 260 relative to the shaft 261, resort is had to a pawl housing 303 which is secured concentrically on the shaft 261 intermediate the pinion 260 and the drive collar 300. A spring urged pawl (not shown) is associated with the pawl housing 303 so that the tooth thereof engages the pinion 260, the pinion serving as a ratchet, and as is well known in one-way couplings of this kind the pawl in the pawl housing is driven by the pinion or ratchet 260 when the latter rotates counterclockwise as viewed in Fig. 9, thereby transmitting rotary motion to the shaft 261, which in turn drives shaft 290 in the desired direction, but when the pinion 260 is rotated clockwise as viewed in Fig. 9, upon return movement of the operating lever 280 from its dotted to full line position in Fig. 9 the aforementioned pawl merely slips on the pinion and the pawl housing 303 remains stationary.

As was mentioned above, the embossed plate that was faced at the facing station is ejected or discharged through the throat 101, Fig. 1, of a discharge chute 305, Figs. 1 and 2, into a receiving tray 104 next following the operation of the plate feed means subsequent to the operation of the plate feed means wherein this plate was advanced to the facing station. Thus, the guideway 25 terminates at the throat 101 as will be observed in Fig. 1. The discharge chute 305 is best shown in Fig. 10 as comprising a front wall 306 and a rear wall 307. The front wall 306 is disposed in a true vertical plane, and the rear wall 307 is tapered inwardly in a downward direction toward the front wall 306 to assure that an embossed plate dropping down the chute 305 will properly right itself as it enters the receiving tray. As described in U.S. Patent Nos. 2,463,690 and 2,498,038 packing means are effective at the rear of the receiving tray to maintain the embossed plates discharged thereto in a relatively tight pack as shown in Figs. 1 and 10. Because of movement of the embossed plates through the machine, these plates by virtue of the dielectric material of which they are composed tend to accumulate electric charges thereon. Such charges if allowed to exist would interfere with proper stacking and orientation at the receiving station represented by the receiving tray 104, and in accordance with the present invention the inner faces of the walls 306 and 307 that define the discharge chute 305 are formed with randomly distributed metal protuberances 310, Fig. 10, formed by appropriately stamping the metal sheets affording the walls 306 and 307. Accordingly, during the time that a faced plate is dropping through the chute 305, such plate will be grounded on the protuberances 310 which dissipate or eliminate charges accumulated thereon incidental to movement of the plate through the machine.

The off-setting of facing material from the strip 105 to the embossed characters of a plate at the facing station is a function of the degree of heat emanating from the platen plate 102, the length of dwell of the platen in its actuated or operative position, and the pressure with which the platen holds the strip 105 against the embossed characters. Under most circumstances, the platen plate 102 will be heated to an operating temperature of 325° F. (plus or minus 1° F.) and the desired temperature state is regulated externally of the platen 100 in a known manner. As to the length of dwell of the platen in its operative or lowered position, this is determined of course by the effective length of the lobe of the double or conjugated cam 140, and the effective length of this cam can be pre-determined by adjusting the two cam members to displace the lobes of the two cam members relative one to the other. Preferably, it is desired that the cam 140 be adjusted for a one second dwell of the platen 100 in its operative position. The pressure exerted by the platen in its operative position is just slight enough to produce in the art what is known as a kiss contact, and this slight pressure contact is pre-determined in designing the platen and its actuating structure.

It will be seen from the foregoing that under the present invention facing of raised characters as on an embossed plate to be used for printing is efficiently performed by a heated platen and a cooperating transfer strip, operation of the platen actuating structure and the feed means for the strip being accurately controlled and timed. Means to discharge electric charges accumulated on the facing strip are afforded, thereby preventing tangling or fouling of the strip on the machine, and like discharge means are afforded for electric charges on the

embossed plates prior to these being collected at the receiving station of the machine.

Hence, while I have illustrated and described the preferred embodiment of my invention it is to be understood that this is capable of variation and modification, and I therefore do not wish to be limited to the precise details set forth, but desire to avail myself of such changes and alterations as fall within the purview of the following claims.

I claim:

1. In a machine of the kind described for facing raised characters provided on individual plates or the like of dielectric material, means affording a support on which said plates are individually to be disposed stationarily, pressure applying means at a facing station normally spaced from said support, means to feed said plates along a guideway to said facing station, means to dispose opposite the characters of a plate disposed as aforesaid a strip bearing transferable coloring material for facing said characters, actuating means to bring about relative movement between said support and said pressure applying means and to press said strip against the characters of a plate disposed as aforesaid to transfer coloring material as facings on to said characters, means to feed from said support to a receiving station a plate having its characters faced, means to time operation of said actuating means and said plate feed means whereby a plate to be faced is fed to the facing station and faced while stationary at the facing station and then is fed therefrom to said receiving station, and means adjacent said receiving station to eliminate electric charges on said plates produced as an incident to movement of the plates through the machine.

2. In a machine of the kind described for facing raised characters provided on individual plates or the like of dielectric material, means affording a support at a facing station and on which said plates are individually to be disposed stationarily, pressure applying means normally spaced from said support, means to step-wise advance past the characters of a plate disposed as aforesaid a dielectric strip bearing thermally transferable coloring material for facing said characters, guide means attached to said pressure supplying means to normally space said strip from said pressure applying means, the attachment between said guide means and said pressure applying means enabling the pressure applying means to move independently of the guide means when the guide means encounters resistance actuating means to bring about relative movement between said support and said pressure applying means having said guide means attached thereto to engage the guide means with said support and to press said strip against the characters of a plate disposed as aforesaid to transfer coloring material as facings on to said characters, means to heat said strip at the time such transfer is made, means to eliminate electric charges on said strip produced as an incident to feeding movement thereof, means to feed to said support a plate to be faced and to feed from said support to a receiving station a plate having its characters faced, means to time operation of said actuating means and said plate feed means whereby a plate to be faced is fed to the facing station and faced while stationary at the facing station and then is fed therefrom to said receiving station, and means adjacent said receiving station to eliminate electric charges on said plates produced as an incident to movement of the plates through the machine.

3. In a machine of the kind described for facing raised characters provided on individual plates or the like of dielectric material, means affording a support at a facing station and on which said plates are individually to be disposed stationarily, pressure applying means normally spaced from said support, means to dispose opposite the characters of a plate disposed as aforesaid a dielectric strip bearing transferable coloring material for facing said characters, actuating means to bring about relative movement between said support and said pressure applying means and to press said strip against the characters of a plate disposed as aforesaid to transfer coloring material as facings on to said characters, means to step-wise advance said strip, means to eliminate electric charges on said strip produced as an incident to advancing movement thereof, means to feed a plate to be faced to said support and to feed from said support to a receiving station a plate having its characters faced, means to time operation of said actuating means and said plate feed means whereby a plate to be faced is fed to the facing station and faced while stationary at the facing station and then is fed therefrom to said receiving station, and means adjacent said receiving station to eliminate electric charges on said plates produced as an incident to movement of the plates through the machine.

4. In a machine of the kind described for facing raised characters provided on individual plates or the like of dielectric material, means affording a support on which said plates are individually to be disposed stationarily, a platen normally spaced from said support and adapted to be heated, cam operated strip advancing means to step-wise advance past the characters of a plate disposed as aforesaid a strip bearing thermally transferable coloring material for facing said characters, guide means movable with said platen to normally space said strip from said platen, cam operated means effective to actuate the platen to press said strip against the characters of a plate disposed as aforesaid to transfer coloring material as facings on to said characters, means to maintain normal spacing between the platen and the strip as aforesaid substantially until the strip contacts the characters of a plate during platen actuation, plate feed means to feed to support a plate to be faced and to feed from said support to a receiving station a plate having its characters faced, means adjacent said receiving station to eliminate electric charges on said plates produced as an incident to movement of the plates through the machine, and a common gear drive for said cam operated means.

5. In an embossing machine of the kind described, means at an embossing station affording punch and die mechanism adapted to emboss characters on plates or the like of dielectric material, means affording a support at a facing station on which said plates are adapted to be disposed individually to have the embossed characters thereof distinctively faced with coloring material, pressure applying means normally spaced from said support, means to feed and guide a strip bearing transferable coloring material opposite the characters of a plate disposed on said support as aforesaid, means to actuate said pressure applying means so as to press said strip against the characters of a plate disposed as aforesaid and cause a transfer of coloring material as facings on to said characters, means to power the punch and die mechanism, means for transmitting such power to a one-revolution clutch adapted to impart drive to the feed means for said strip and the actuating means for said pressure applying means, feed means for said plates adapted to transfer the plates individually from the embossing station to the facing station and from the facing station to a receiving station, and means adjacent said receiving station to eliminate charges on said plates produced as an incident to movement of the plates through the machine.

6. In an embossing machine of the kind described, means at an embossing station affording punch and die mechanism adapted to emboss characters on plates or the like of dielectric material, means affording a support at a facing station on which said plates are adapted to be disposed individually to have the embossed characters thereof distinctively faced with coloring material, pressure applying means normally spaced from said support, means to heat said pressure applying means, means to feed a strip bearing thermally transferable coloring material opposite the characters of a plate disposed on said

support as aforesaid, guide means for said strip effective normally to space the strip from said pressure applying means, means to actuate said pressure applying means so as to press said strip against the characters of a plate disposed as aforesaid and cause a transfer of coloring material as facings on to said characters, means to power the punch and die mechanism, means for transmitting such power to a one-revolution clutch adapted to impart drive to the feed means for said strip and the actuating means for said pressure applying means, means to eliminate from said strip charges thereon produced as an incident to feeding movement of the strip, feed means for said plates adapted to transfer the plates individually from the embossing station to the facing station and from the facing station to a receiving station, and means adjacent said receiving station to eliminate charges on said plates produced as an incident to movement of the plates through the machine.

7. In an embossing machine of the kind described, means at an embossing station affording punch and die mechanism adapted to emboss characters on plates or the like of dielectric material, means affording a support at a facing station on which said plates are adapted to be disposed individually to have the embossed characters thereof distinctively faced with coloring material, a platen normally spaced from said support, means to heat said platen, strip advancing means to advance a strip bearing transferable coloring material opposite the characters of a plate disposed on said support as aforesaid, means to actuate and advance said platen toward said support, guide means effective normally to space said strip from said platen, a yieldable connection between said platen and said guide means effective to enable the guide means to advance with the platen until the guide means engages said support and to then allow the platen to advance independently toward said support so as to press said strip against the characters of a plate disposed as aforesaid and cause a transfer of coloring material as facings on to said characters, feed means for said plates adapted to transfer the plates individually from the embossing station to the facing station and from the facing station to a receiving station, means to time operation of said actuating means and said plate feed means whereby a plate to be faced is fed to the facing station and faced while stationary at the facing station and then is fed therefrom to said receiving station, and means adjacent said receiving station to eliminate charges on said plates produced as an incident to movement of the plates through the machine.

8. In an embossing machine of the kind described, means at an embossing station affording punch and die mechanism adapted to emboss characters on plates or the like of dielectric material, means affording a support at a facing station on which said plates are adapted to be disposed individually to have the embossed characters thereof distinctively faced with coloring material, a platen normally spaced from said support, a feed roller to feed a strip bearing transferable coloring material opposite the characters of a plate disposed on said support as aforesaid, means to actuate said pressure applying means so as to press said strip against the characters of a plate disposed as aforesaid and cause a transfer of coloring material as facings on to said characters and including an arm supporting said platen for movement toward and away from said support, a cam for operating said arm, gearing for driving said feed roller, means to power the punch and die mechanism, means for transmitting such power to a one-revolution clutch, a drive shaft for said cam and said gearing and adapted to be driven through said one-revolution clutch, feed means for said plates adapted to transfer the plates individually from the embossing station to the facing station and from the facing station to a receiving station, and means adjacent said receiving station to eliminate charges on said plates produced as an incident to movement of the plates through the machine.

9. Apparatus for facing embossed characters on a plate or the like and distinctive coloring material comprising, a movable platen, a bracket connected to said platen for movement therewith, means for actuating said platen including an operating arm connected to said bracket for imparting to said platen reciprocal movements toward and away from a stationary support on which such a plate is adapted to be disposed with its characters facing toward said platen, means carried by and movable with said platen affording a guide for a strip bearing transferable coloring material, supply means for said strip mounted on said bracket, a feed roller for the strip mounted on said bracket, means for driving said feed roller including a drive shaft coupled universally thereto and a drive gear coupled universally to said drive shaft, said universal couplings enabling said feed roller to move with the platen toward and away from said support, a cam for operating said platen operating arm, and means to drive said cam and gear.

10. In apparatus of the kind described for facing embossed characters on a plate or the like of dielectric material with distinctive coloring material, a facing station whereat the characters on said plates are to be faced, means affording a receiving station for the plates, a guideway between said stations and along which the plates are to be slid, means for feeding the plates one by one from the facing station to the receiving station, and means adjacent said receiving station for eliminating from said plates charges produced thereon incidental to sliding movement of the plates toward said receiving station.

11. In apparatus of the kind described for facing embossed characters on a plate or the like of dielectric material with distinctive coloring material, a facing station whereat the characters on said plates are to be faced, means affording a receiving station for the plates, a guideway between said stations and along which the plates are to be slid and above said receiving station, a chute for guiding the plates from the guideway to said receiving station, means for feeding the plates one by one from the facing station to said chute, and means in said chute for eliminating from said plates charges produced thereon incidental to sliding movement of the plates toward said chute.

12. In apparatus of the kind described for facing embossed characters on a plate or the like of dielectric material with distinctive coloring material, a facing station whereat the characters on said plates are to be faced, means affording a receiving station for the plates, a guideway between said stations and disposed above said receiving station, walls affording a chute for guiding the plates from the guideway to said receiving station, means for feeding the plates one by one from the facing station to said chute, and protuberances on a wall of said chute engageable with said plates for eliminating from said plates charges produced thereon incidental to movement of the plates toward said chute.

13. In apparatus of the kind described for facing embossed characters on a plate or the like of dielectric material with distinctive coloring material, a facing station whereat the characters on said plates are to be faced, means for supplying a dielectric strip bearing coloring material to be used to face said characters, means for step-wise advancing said strip, means to eliminate from said strip charges produced thereon as an incident to advancing movement of the strip, means affording a receiving station for the plates, a guideway between said stations and along which the plates are to be slid, means for feeding the plates one by one along said guideway from the facing station to the receiving station, and means adjacent said receiving station for eliminating from said plates charges produced thereon incidental to sliding movement of the plates along said guideway.

14. In an embossing machine of the kind described, means at an embossing station affording punch and die mechanism adapted to emboss characters on plates, means

affording a support at a facing station on which said plates are adapted to be disposed individually to have the embossed characters thereof distinctively faced with coloring material, pressure applying means normally spaced from said support, means to advance and guide a strip bearing transferable coloring material opposite the characters of a plate disposed on said support as aforesaid, means to actuate said pressure applying means so as to press said strip against the characters of a plate disposed as aforesaid and cause a transfer of coloring material as facings on to said characters, means to power the punch and die mechanism, means for transmitting such power to the feed means for said strip and the actuating means for said pressure applying means, feed means for said plates adapted to transfer the plates individually from the embossing station to the facing station and from the facing station to a receiving station, and means to time operation of said actuating means and said plate feed means whereby a plate to be faced is fed to the facing station and faced while stationary at the facing station and then is fed therefrom to said receiving station.

15. A method of producing embossed printing plates and comprising, embossing a plastic plate of dielectric material to produce raised type characters thereon, sliding the embossed plate along a guideway and positioning the embossed plate stationarily on a support with the raised characters uppermost, disposing over the plate on

said support a strip bearing a coating of heat and pressure transferable coloring material on one side thereof, establishing heat and pressure contact between said side of said strip and said raised characters to thereby face the latter with distinctive color, sliding the plate so faced along a guide and into a receiving station, and, before the plate reaches the receiving station, discharging electric charges thereon produced as an incident to the operations performed on said plate.

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