

Oct. 25, 1966

G. F. BREMER ETAL

3,280,954

DESK MODEL EMBOSSER HAVING FULL CYCLE MEANS

Filed Feb. 8, 1965

4 Sheets-Sheet 1

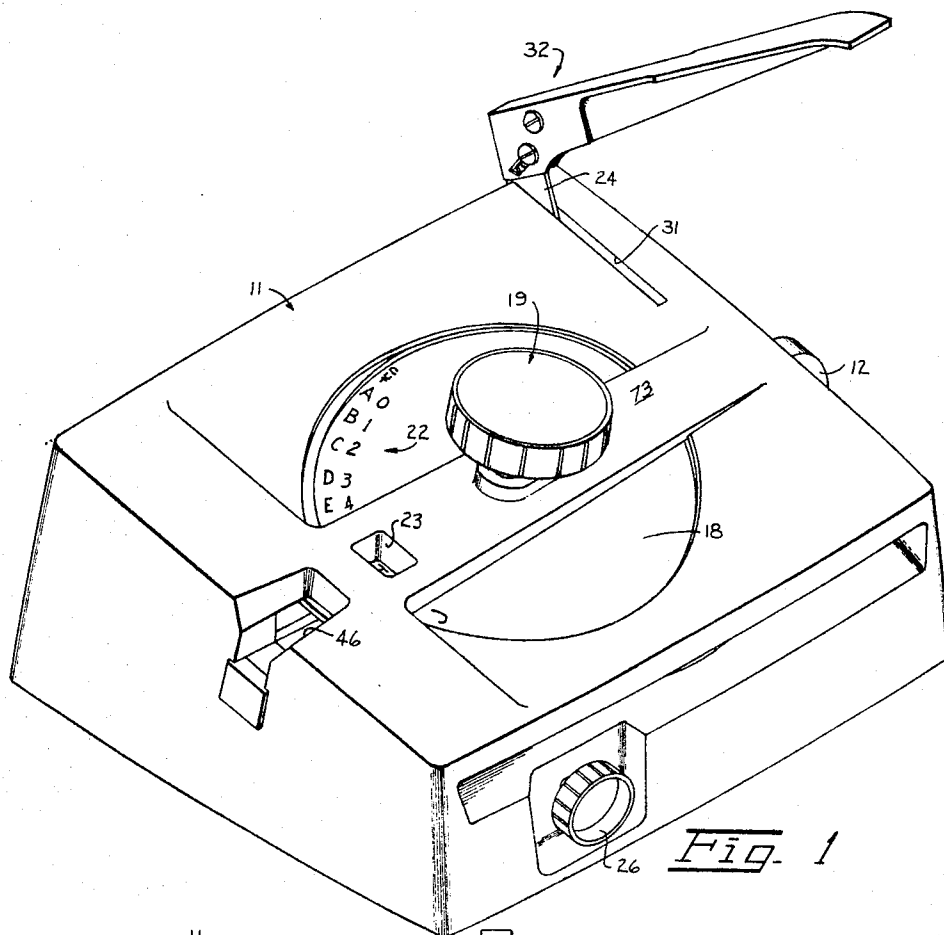


Fig. 1

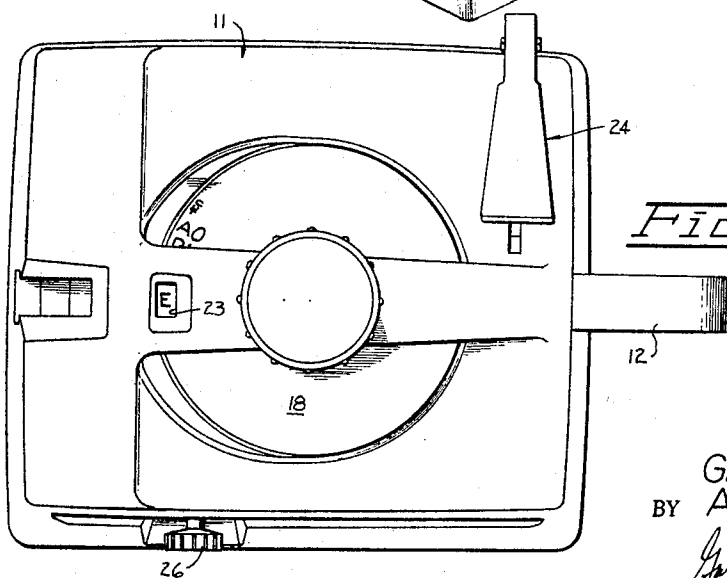


Fig. 2

INVENTORS.
GEORG F. BREMER
ARMAND MASSEN
BY *Garner & Zimmerman*
ATTORNEYS

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4 Sheets-Sheet 2

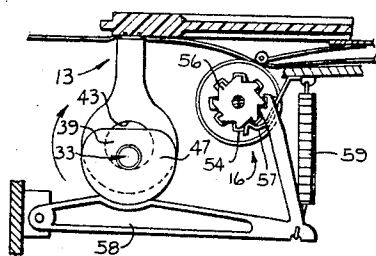
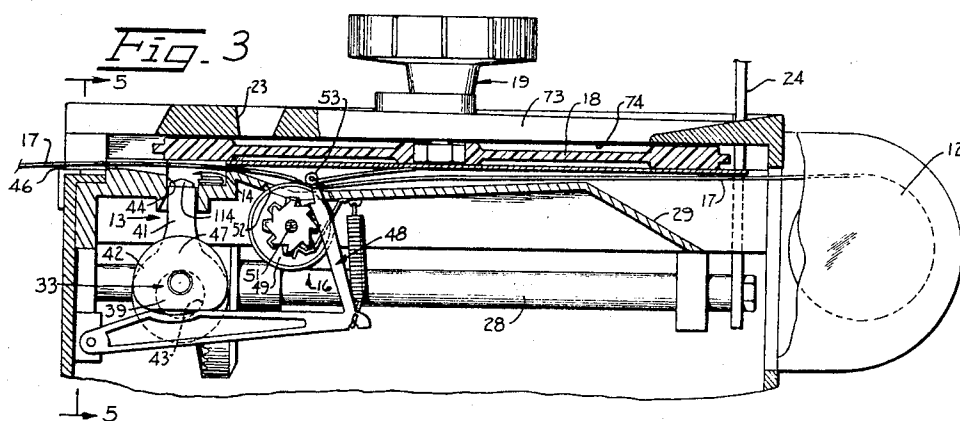


Fig. 4

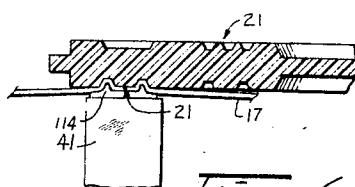


Fig. 6

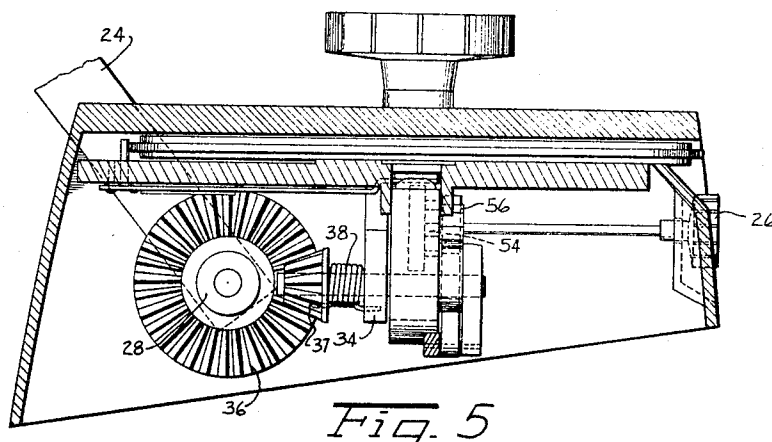


Fig. 5

INVENTORS.
GEORG F. BREMER
BY ARMAND MASSEN
Harder & Zimmerman
ATTORNEYS

Oct. 25, 1966

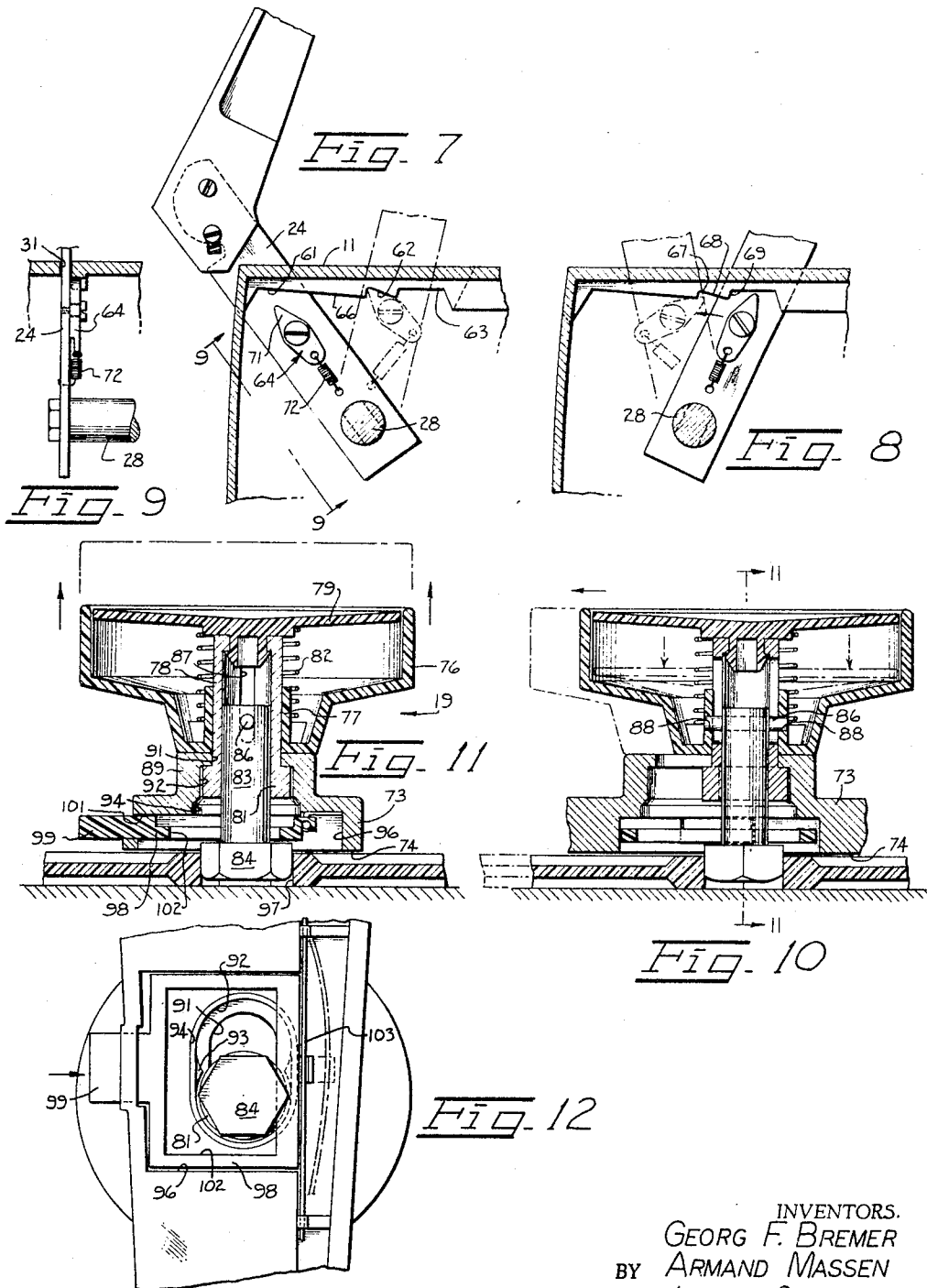
G. F. BREMER ETAL

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DESK MODEL EMBOSSER HAVING FULL CYCLE MEANS

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4 Sheets-Sheet 3



INVENTORS.
GEORG F. BREMER
BY ARMAND MASSEN
Harder + Zimmerman
ATTORNEYS

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G. F. BREMER ETAL

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4 Sheets-Sheet 4

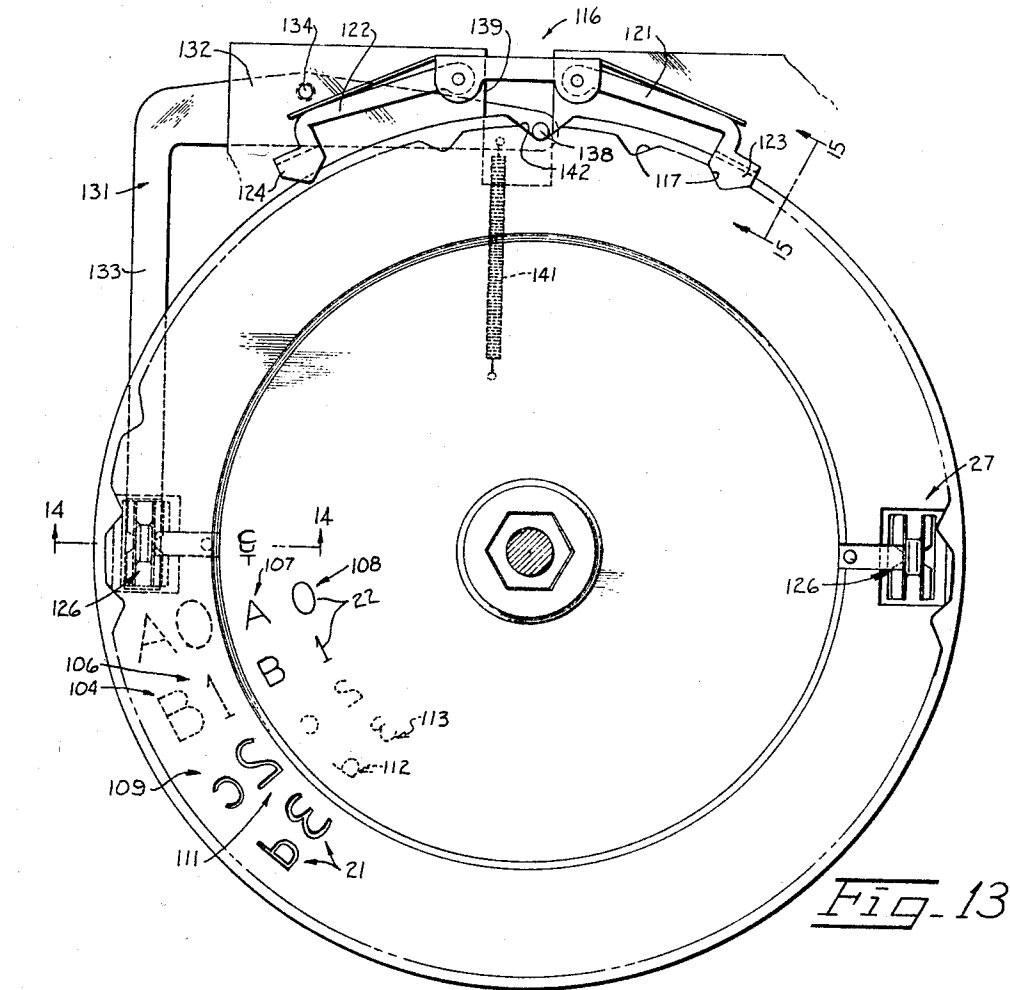


Fig. 13

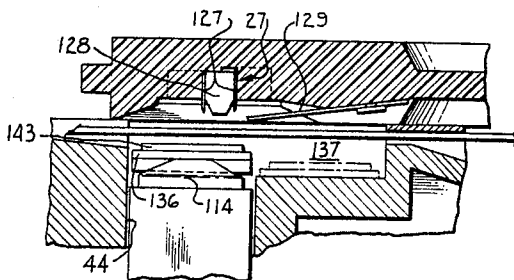


Fig. 14

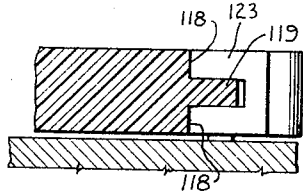


Fig. 15

INVENTORS.
GEORG F. BREMER
BY ARMAND MASSEN
Gardner + Zimmerman
ATTORNEYS

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2

3,280,954

DESK MODEL EMBOSSEY HAVING FULL CYCLE MEANS

Georg F. Bremer, Albany, and Armand Massen, San Raphael, Calif., assignors to Dymo Industries, Inc., Emeryville, Calif., a corporation of California
Filed Feb. 8, 1965, Ser. No. 430,825
16 Claims. (Cl. 197—6.7)

This invention relates to hand operated machines for embossing selected indicia on a strip of embossable material, and is more specifically directed towards a desk model embosser for performing this function.

It is an object of the present invention to provide a desk model embosser which is arranged such that upon initiation of a cycle of operation, the cycle must be carried through to completion prior to the initiation of a subsequent operating cycle. As a result the strip of embossable material cannot be inadvertently advanced without the embossment of a character thereon nor is incomplete embossment of a character possible. Likewise, embossing of one character on top of another is prevented. Excellent quality of the embossed characters on the strip without the appearance of inadvertent spaces therebetween is thus insured.

Another object of the invention is the provision of a desk model embosser having a relatively large quantity of different characters for selective embossment. In this regard the embosser features mechanism by which a character selector disc having pluralities of different indicia dies on the opposite faces thereof may be readily selectively released from the machine. Thereafter the disc may be turned over and replaced in operative position in the embosser to thereby enable the dies on both sides of the disc to be selectively presented to the embossable strip at the embossing station of the embosser. In addition, the disc may be provided with several sets of dies at different radii and the embosser arranged for selective shifting of the disc to operatively position the respective sets of dies at the embossing station for embossment of the strip.

It is a further object of the invention to provide a desk model embosser of the character described having an improved synchronized embossing and strip feed actuating mechanism.

A still further feature of the invention resides in the provision of an embossing machine of the character described having a selector disk with different indicia dies and cut-off and stripper blades on at least one face thereof, together with a resilient deformable element which is movable toward the disk to engage the tape against the dies or blades to effect embossment or cut-off of the tape. In this regard, it will be appreciated that the resilient deformable element would normally be mutilated by the blades in effecting the cut-off operation. Therefore as a particularly important feature of the invention the embossing machine includes means for interposing a layer of firm material between the deformable element and disk when the cut-off operation is to be performed and thereby protect the element from damage.

The invention possesses other objects and features of advantage, some of which, with the foregoing, will be set forth in the following description of the preferred form of the invention which is illustrated in the drawings accompanying and forming part of the specification. It is to be understood, however, that variations in the showing made by the said drawings and description may be adopted within the scope of the invention as set forth in the claims.

FIGURE 1 is a perspective view of a desk model embosser in accordance with the present invention.

FIGURE 2 is a plan view of the embosser.

FIGURE 3 is a fragmentary vertical longitudinal section medially through the embosser, particularly illustrating the embossing and strip feeding mechanism thereof, the mechanism being depicted in unactuated position.

FIGURE 4 is a view similar to FIGURE 3, but illustrating the embossing and strip feeding mechanism in actuated position.

FIGURE 5 is a sectional view taken at line 5—5 of FIGURE 3.

FIGURE 6 is an enlarged fragmentary view of preferred die means of the embosser.

FIGURE 7 is a fragmentary vertical sectional view through the embosser taken in a plane parallel and adjacent to an actuating handle thereof, particularly illustrating full cycling means of the embosser for insuring that once an operating cycle is initiated, the cycle must be carried through to completion before initiation of a subsequent cycle.

FIGURE 8 is a view similar to FIGURE 7, but illustrating the actuating handle of the embosser moving in an opposite direction to that depicted in FIGURE 7.

FIGURE 9 is a sectional view taken at line 9—9 of FIGURE 7.

FIGURE 10 is a fragmentary vertical sectional view taken at a central longitudinal plane through a character selector knob assembly of the embosser, illustrating particularly the manner in which the die carrying selector disc may be selectively radially shifted to position different sets of dies in operative relation to the embossing station of the embosser.

FIGURE 11 is a sectional view taken at line 11—11 of FIGURE 10, illustrating particularly the manner in which the selector disc may be selectively released from the embosser.

FIGURE 12 is a bottom plan view of the knob assembly with the selector disc removed.

FIGURE 13 is a top plan view of the selector disc with portions of the housing omitted, illustrating particularly details of strip cut-off and stripper means of the embosser and of means for indexing the disc in several radially shifted positions thereof.

FIGURE 14 is a sectional view taken at line 14—14 of FIGURE 13.

FIGURE 15 is a sectional view taken at line 15—15 of FIGURE 13.

The desk model embosser of the present invention generally includes a housing 11 for support upon a desk, or the like, and which is arranged to receive a tape magazine 12, or equivalent supply of embossable strip material, at one end thereof. The housing is provided with tape embossing means 13 at an embossing station 14 adjacent the opposite end thereof and tape feed means 16 for advancing the tape 17 longitudinally of the housing from the magazine to the embossing station. A character selector disk 18 is mounted upon the top of the housing, and a selector knob assembly 19 is operatively associated with the disk for rotating same to selectively present different indicia die means 21 carried by the disk to the tape at the embossing station. The disk is lettered with characters, as indicated at 22, such that when the various indicia die means are positioned at the embossing station, the corresponding characters are viewed through a selection window 23. In addition, an actuating handle or lever 24 is mounted in the housing in operative connection with the embossing means 13 and feed means 16. An end of the lever protrudes from the housing, and the lever is so arranged that upon movement thereof from an unactuated to actuated position, the embossing means 13 urges the tape and die means positioned at the embossing station 14 into embossing engagement. The char-

acter appearing in the selection window 23 is thus embossed on the tape. The lever is further arranged such that upon return movement thereof from actuated to unactuated position, the feed means responsively advances the tape through the housing a predetermined amount to provide uniform spacing between successive characters embossed on the tape. The embosser further includes a thumb wheel 26 mounted on a side of the housing and operatively connected to the feed means such that upon turning of the wheel the tape is advanced without embossment to provide spacing between words, etc., and at the beginning and end of the embossed copy on the tape. The embosser also includes cut-off means 27 arranged for selective actuation to cut-off the embossed copy from the remainder of the tape.

It will be thus appreciated that the desk model embosser facilitates the printing of preselected embossed copy on a strip of tape or the like to thereby form a label, for example, in a highly expeditious manner. The thumb wheel 26 may be turned to advance the tape and provide a space at the leading end of the label. The selector knob assembly 19 may be rotated to position the desired characters in the selection window 23 and the actuating lever 24 manipulated to effect embossment of the corresponding characters on the tape and to effect tape advance. Thereafter, the thumb wheel may be turned to provide a space at the trailing end of the label, and the cut-off means 27 actuated to cut the embossed label from the tape.

The general combination of elements and mode of operation of the embosser as described thus far are not new. However, various advantageous features are incorporated in the embosser of the present invention serving to overcome disadvantages and limitations of conventional machines of this general type. As noted previously, it is possible with conventional embossers to inadvertently advance the tape and form a space between successive embossed characters when such a space is not desired. It is also possible to incompletely emboss a character and to emboss one character over another. All of the foregoing difficulties arise from a tape feeding and embossing cycle of operation being incomplete, and would normally occur, for example, upon movement of the actuating lever to a position short of the actuated position thereof. The present invention overcomes these difficulties by providing an improved drive mechanism operatively connected between the actuating lever and embossing and tape feed means to insure synchronous actuations thereof in response to manipulation of the actuating lever, together with full cycling means associated with the lever to prevent return of the lever to its unactuated position unless movement to the actuated position is complete. As a result movement of the embossing and tape feed means by the drive mechanism through a complete cycle is assured. As a further feature of the invention, the selector knob assembly 19 is arranged to selectively shift the selector disk 18 relative to the embossing station 14 and to selectively release the disk from the embosser. As a result, the disk 18 may be advantageously of a type which has several radial spaced groups of circumferentially spaced indicia dies on each face of the disk. By shifting the disk relative to the embossing station the respective groups of dies on either face of the disk may be positioned for selective presentation to the tape and embossing means. Upon releasing the disk and removing same from the machine, the disk may be turned-over and replaced in the embosser such that the groups of dies on the opposite face of the disk may be similarly operatively positioned at the embossing station. As a result, a substantial number of different characters of varied sizes are embossable by the desk model embosser with a single selector disk.

Considering now the drive mechanism and full cycling means of the embosser in detail as to preferred structure, it is to be noted, as best shown in FIGURE 3, that the

drive mechanism includes a shaft 28 journaled within housing 11 for rotation about an axis longitudinally thereof. In this regard, an inverted cup-shaped bridge member 29 is preferably mounted within the housing with its upper surface in close spaced relation to the top of the housing, the shaft being then journaled between longitudinally spaced depending portions of the bridge member. The actuating lever 24 is in turn perpendicularly secured in fixed relation to one end of the shaft and extends upwardly through a transverse slot 31 provided in the top of housing 11. The protruding end of the lever may be provided with a handle 32 as shown to facilitate easy movement of the lever between the opposite ends of the slot which are determinative of the unactuated and actuated positions of the lever. Upon movement of the lever between the opposite ends of the slot, the shaft is of course rotated through a predetermined angle. Shaft 28 serves to drive an eccentric pin 33 which is journaled within the housing on, for example, a depending bracket 34 of the bridge member, for rotation about a transverse axis subjacent the embossing station 14. Coupling between the shaft and pin is facilitated as by means of bevel gears 36, 37 respectively secured thereto. In addition, a coil spring 38 is concentrically disposed on the pin and secured at its opposite ends to the bevel gear 37 and bracket 34 to normally rotate the pin and shaft in directions to urge the actuating lever to the end of slot 31 corresponding to unactuated position. Moreover, the ratio between the gears 36, 37 is chosen such that the pin 33 is rotated through 180° in response to the lever being moved from unactuated to actuated position between the ends of the slot, the pin being contra-rotated 180° upon return of the lever to unactuated position by the action of spring 38. In one position of the pin corresponding to the unactuated position of the lever, the cylindrical eccentric portion 39 of the pin depends from the rotational axis thereof, as shown in FIGURE 3. In a second position of the pin corresponding to the actuated position of the lever, the eccentric is turned over so as to project vertically upward from the rotational axis of the pin, as shown in FIGURE 4. The embossing means 13 then includes a plunger 41 having an enlarged portion 42 with a cylindrical bore 43 extending therethrough concentrically receiving the eccentric portion 39 of the pin. The plunger extends vertically upward into a guide bore 44 provided in the bridge member 29 and top of the housing at a point of intersection with a tape guide channel through the housing which extends longitudinally from the magazine 12 to a tape outlet opening 46 at the opposite end of the housing therefrom. The bore 44 is located at the embossing station 14 in alignment with die means 21 of the selector disk 18 selectively positioned thereat. It will be thus appreciated that when the lever is in unactuated position the eccentric portion of the pin is positioned such that the plunger 41 is retracted within the guide bore 44 out of contact with the disk, as shown in FIGURE 3. When the lever is moved to actuated position, the eccentric portion of the pin urges the plunger upwardly in the guide bore to a fully extended position of engagement with the disk, as shown in FIGURE 4, wherein embossment of the tape is effected.

Synchronous actuation of the feed means 16 is likewise effected by rotation of the pin 33. In this regard, a substantially cardioid shaped cam 47 is secured to the pin with opposite eccentricity to that of eccentric portion 39. The cam serves to effect actuation of a feed pawl 48 of the feed means which in turn rotates a feed roll 49 through a predetermined angular increment. More particularly, the feed roll is mounted upon a shaft 51 journaled upon a depending portion of the bridge member 29 for rotation about a transverse axis, and the shaft extends exteriorly of the housing into connection with the thumb wheel 26. The roll projects upwardly through a slot 52 in the bridge member into the tape guide channel. A press roll 53 resiliently mounted upon the inner surface of the top of

5

the housing urges the tape into tractive engagement with the feed roll. The feed roll is provided with integral juxtaposed ratchet wheels 54, 56, respectively engaged by a spring detent 57 depending from the bridge member and engageable by the feed pawl 48. The detent serves to index advance of the tape under the control of the thumb wheel 26 to provide uniform spacing increments. The feed pawl includes an angularly extending crank arm 58 pivotally connected at its free end to the bridge member. A spring 59 resiliently retains the crank arm 58 of the pawl in engagement with the cam 47, and when the cam is positioned with its smallest radius edge engaging the arm, the pawl is in a relatively elevated unactuated position with respect to ratchet wheel 56 as shown in FIGURE 3. The cam is in this position when the actuating lever 24 is unactuated. In response to rotation of the pin 33 180° by movement of the actuating lever to its actuated position, the cam is turned over to engage edge portions thereof of increasing radial distance from the pin's rotational axis with the arm and thereby depress same. The pawl is thereby pivoted downwardly to an actuated position of engagement with the ratchet wheel 56, as shown in FIGURE 4. Upon return of the lever to unactuated position, and contra-rotation of the pin to its original position, the pawl returns to its unactuated position under the influence of the spring 59. Such return movement of the pawl effects incremental rotation of the feed roll 49 to thereby advance the tape an incremental distance for the next embossing operation.

The full cycling means in accordance with the present invention may be variously provided as any means for preventing return of the hereinbefore described drive mechanism to its unactuated position before its actuated position is reached. However, in the instant embodiment the full cycling means may be most expeditiously provided as illustrated in FIGURES 7-9. In this regard there is preferably provided a ridge which depends from the undersurface of the top of the housing in parallel laterally adjacent relation to the slot 31. The ridge is formed with a plurality of notches 61, 62, 63 which are engageable by a dog 64 carried upon the lever. The notches are so arranged that the dog in engaging the notches during movement of the lever from unactuated towards actuated position is pivoted from a neutral position in a direction to lockingly engage the notches and prevent return movement of the lever to unactuated position. However, the notches are such as to permit return of the dog to neutral position when the lever reaches its actuated position. Thereafter, the dog in engaging the notches during return movement of the lever is pivoted from neutral position in the opposite direction and overrides the notches to permit such return movement of the lever to unactuated position. More particularly, the notch 61 includes a gently sloped edge 66 downwardly inclined in the direction of the actuated position of the lever. Edge 66 terminates abruptly in a sharply sloped upwardly inclined edge 67 of notch 62 which is of saw tooth configuration and includes a relatively gently sloped edge 68 downwardly inclined from edge 67. The edge 68 terminates abruptly in a sharply sloped upwardly inclined edge 69 of notch 63 which is of substantially square configuration. The dog 64 is pivotally mounted upon one side of the lever 24 substantially centrally of the dog, and is provided with a wedge shaped point 71 at one end. A spring 72 is secured between the opposite end of the dog and a point of the lever downwardly spaced therefrom in the direction of shaft 28. The spring is aligned with the longitudinal axis of the lever and normally resiliently retains the dog in a neutral position of longitudinal alignment with the lever, the point 71 extending upwardly. When the lever is in unactuated position, the dog is in neutral position with the point closely spaced to, but disengaged from the edge 66 of notch 61. When the lever is moved in the direction of the actuated position, the point of the dog engages the edge 66 and in so doing pivots

6

the dog against the loading of spring 72 counterclockwise as viewed in FIGURE 7. During the continued movement of the lever towards actuated position, the dog remains displaced counterclockwise from its neutral position. Consequently, if the lever is released at an intermediate position, such as indicated in phantom line in FIGURE 7, the point of the dog engages the notch 62 and prevents return of the lever to unactuated position. When the lever is in actuated position, the dog clears the edges of notch 63 such that the spring 72 returns the dog to its neutral position, as shown in full line in FIGURE 8. Now when the lever is released for return to unactuated position, the dog is displaced clockwise from its neutral position in engaging the notch edges. With the dog thus positioned, as indicated in phantom line in FIGURE 8, the dog overrides the notches and permits the lever to return to unactuated position. It will be thus appreciated that once a cycle of the embossing and tape feed operations is initiated by manipulation of the lever, the cycle must be carried through to completion before another cycle is initiated.

As noted previously, certain advantages accrue where provisions are made to shift the selector disk 18 relative to the embossing station and to selectively release the disk from the housing. Such functions are herein accomplished by means of the selector knob assembly 19. Such assembly is mounted upon a longitudinally extending bridge portion 73 of the top of housing 11 which is spaced from the top proper to define a slot 74 for receiving the disk 18. The slot extends beyond the embossing station 14 and the embossing plunger guide bore 44 extends through the base of the slot. The selector window 23 extends through bridge portion 73 to facilitate viewing of selected indicia provided on the exposed face of a disk extending through the slot.

Considering now the knob assembly 19 in detail with particular reference to FIGURES 10-12, it is to be noted that the assembly includes a hollow selector knob 76 open at its upper end and provided with a reentrant bushing 77 at its lower end. Extending through the bushing there is provided a sleeve 78 secured at its upper end to a knob cover 79 disposed within the open upper end portion of the knob, and provided at its lower end with an outwardly stepped enlarged cylindrical head 81. The sleeve is movably coaxially through the bushing and a coil spring 82 coaxially disposed upon the bushing acts between the interior base of the knob and the cover to resiliently support same at the upper end of the knob, as shown in full line in FIGURE 10. The sleeve in turn receives a bolt 83 having an enlarged head 84 at its lower end, preferably of polygonal configuration. The upper end of the bolt is provided with a pin 86 extending diametrically there-through, or equivalent means defining radial projections which extend through longitudinally extending slots 87 of the sleeve and are received in apertures 88 in the bushing, or are otherwise fixedly secured thereto. The bolt is thus fixed relative to the knob, whereas the cover is depressible to the phantom line position indicated in FIGURE 10 to thereby move the sleeve downwardly through the knob bushing.

Mounting of the knob assembly 19 upon the bridge portion 73 of the top of housing 11 is facilitated by means of a boss 89 provided substantially centrally of the bridge. A slot 91 extends into the top of the boss, and such slot is of elongated rectangular configuration with semi-circular end portions. The slot has a width substantially equal to the diameter of the shank portion of sleeve 78 and terminates downwardly in an enlarged slot portion 92 defined in plan view by two intersecting circles each having a diameter substantially equal to that of the head 81 of the sleeve. The enlarged slot portion is thus comprised of two cylindrical recesses separated by opposed cusp shaped stops 93, as shown in FIGURE 12. The enlarged slot portion 92 extends downwardly into an enlarged undercut channel 94 of elongated rectangular con-

figuration having semi-circular end portions. The channel extends beneath the stops 93 and in turn opens downwardly into a rectangular recess 96 extending upwardly into the base of bridge portion 73 from the slot 74. The knob assembly is disposed with the lower end of the knob 76 supported upon the upper surface of the boss 89 and the sleeve 78 and bolt 83 depending into the slot 91. More particularly, the shank portion of the sleeve is disposed in slidable relation to the slot 91 and the head 81 is disposed in one of the cylindrical recesses of enlarged slot portion 92. The bolt extends downwardly through the channel 94 and recess 96 to a position wherein the bolt head 84 engages a conformed aperture 97 provided centrally of the disk 18. By virtue of the polygonal configuration of the bolt head and disk aperture, the disk is keyed to the bolt so as to be rotatable and translatable therewith. There is additionally provided a rectangular latch plate 98 slidably mounted within recess 96 and having an actuating tab 99 extending through a slot 101 in the side of bridge portion 73. The latch plate has a rectangular window 102 traversed by the shank of bolt 83 and the latch plate is loaded by means of a spring 103 to a normal position wherein the tab 99 is extended from the slot 101. In this normal position of the latch plate, a portion of the bolt head underlies a marginal portion of the plate, as shown in FIGURES 11 and 12, and is thereby prevented from upward movement relative to the disk 18. The actuating tab 99, however, may be depressed to move the latch plate to an actuated position, as depicted in phantom line in FIGURE 12, wherein the entire bolt head is subjacent the window 102 and upward movement of the bolt is unobstructed.

Considering now the operation of the knob assembly 19, it will be appreciated that with the bolt head 84 engaging the disk aperture 97, the disk is rotated upon rotation of knob 76, the bolt being keyed to the knob. If it is desired to shift the disk relative to the embossing station 14 so as to present a different circumferentially arrayed group of dies to the embossing means 13, the knob cover 79 is depressed to the phantom line position depicted in FIGURE 10. This effects movement of the sleeve 78 downwardly to position the head 81 in the channel 94, clear of the stops 93. With the cover depressed, the knob is translated longitudinally of the bridge portion 73 to, for example, the knob position depicted in phantom line in FIGURE 10. As a result, the sleeve head is translated through channel 94 beneath the stops 93, and the bolt 83 correspondingly translates the disk relative to the embossing station. The knob cover is then released whereupon the sleeve moves upwardly to position the head thereof in the other cylindrical portion of slot enlargement 92 and lock the knob assembly in this alternative position. The disk may be similarly rotated in this alternative position by rotating the knob 76 to thereby selectively present different indicia dies to the tape at the embossing station. To shift the disk to its original position, the knob cover is again depressed and the knob is translated in the reverse direction. In response to release of the knob, the sleeve head is disposed in the first cylindrical portion of slot enlargement 92, thus locking the knob assembly in its original position.

To release the disk 18 for removal from the embossing machine, the tab 99 is depressed to its actuated position such that the latch plate 98 is unobstructive to upward movement of the bolt head 84. The knob 76 may then be moved upwardly to the phantom line position depicted in FIGURE 11 to in turn move the bolt upward, relative movement between the knob and bolt assembly and the sleeve 78 being facilitated by the ends of the pin 86 sliding in slots 78. The bolt head 84 is thus withdrawn from the disk aperture 97 to release the disk for removal from the slot 74. The disk may be again operatively positioned in the machine by inserting the disk into the slot 74 with the knob in its elevated position. With the latch plate tab 99 depressed, the knob is then pushed downward

to engage the bolt head in the disk aperture and the tab is released whereby the latch plate obstructs movement of the bolt head out of engagement with the disk.

As noted hereinbefore, the selective disk shifting and release functions provided by the knob assembly 19 facilitate the convenient use in the embosser of a disk of a type which is arranged to carry a relatively large number of different indicia dies. In this regard, the disk 18 is preferably provided on a first face thereof with a plurality of groups 104, 106 of circumferentially spaced die means 21, the respective groups being at different radii. A plurality of groups 107, 108 of circumferentially spaced characters 22 are imprinted, or otherwise provided, on the second face of the disk at different radii. The characters of groups 107, 108 respectively correspond to the characters which are embossable by the die means of groups 104, 106 in radial alignment therewith. With the disk operatively positioned relative to the knob assembly 19, the group 104 of die means 21 and group 107 of corresponding characters 22 may be selectively presented to the embossing station 14 and selector window 23 in one of the shiftable positions of the knob assembly upon rotation of the knob. In the second shiftable position of the knob assembly, the group 106 of die means and group 108 of corresponding characters may be similarly selectively presented to the embossing station and selector window upon rotation of the knob. The quantity of embossable characters is preferably even further increased by the provision of a plurality of groups 109, 111 of circumferentially spaced die means on the second face of the disk and a plurality of groups 112, 113 of corresponding circumferentially spaced characters on the first face of the disk. The knob assembly may thus be actuated to release the disk whereupon same may be removed, inverted, and reinserted into operative relation to the knob assembly. Now, in one shiftable position of the knob assembly, the group 109 of die means on the second face of the disk and group 112 of characters on the first face of the disk may be selectively presented to the embossing station and selector window upon rotation of the knob. When the knob assembly is shifted to its second position, the group 111 of die means and corresponding group 113 of characters may be selectively presented to the embossing station and selector window in response to knob rotation.

The die means 21 carried by disk 18 may be variously provided, however in the preferred arrangement of the embosser where die means are provided on both sides of the disk, the die means are advantageously of the type illustrated in FIGURE 6. In this regard the die means carried by the disk are female dies formed in the faces of the disk in the configuration of the desired indicia. The embossing plunger 41 is then provided its free end with a plug 114 of resilient deformable material such as rubber. Upon actuation of the plunger, the plug engages the tape 17 against the particular female die at the embossing station. Portions of the tape are urged into the female die by the plug which is resiliently deformed to provide a male die complement as indicated in FIGURE 6. The indicia of the female die is thereby embossed on the tape. Upon retraction of the plunger and disengagement of the plug from the disk, the plug is resiliently restored to its original form. In this manner, the plug 114 functions as a male die complement to each of the varied indicia female dies.

In order to index the positions of the respective die means 21 carried by the disk at the embossing station, spring detent means 116 are provided for resilient engagement with circumferentially spaced notches 117 provided in the disk at appropriate positions such that when respective ones of the notches are engaged by the detent means, respective ones of the die means are positioned at the embossing station. In the present instance, the disk is formed with peripheral shoulders 118 in the opposite faces thereof terminating at a central outwardly

flared annular flange 119. A set of notches 117 are then formed in each shoulder, and the detent means 116 includes a pair of resilient arms 121, 122 mounted in the housing 11 and provided with bifurcate teeth 123, 124 at their free ends for engagement with the notches. The split portions of each bifurcate tooth are arranged to straddle the flange 119 and respectively engage the sets of notches 117 in the shoulders 118 as best shown in FIGURE 15. One arm 121 is positioned to engage the sets of notches in one of the shiftable positions of the disk which may be effected by the knob assembly 19, whereas the other arm 122 is positioned to engage the sets of notches in the other shiftable position thereof. In this manner, indexing of the disk is provided for every one of the die means 21 of the respective groups 104, 106, 109, 111.

As previously noted, the embosser also includes tape cut-off and stripper means 27. Such means may be provided in a number of ways known in the art. For example, the disk 18 may carry a tape cut-off and stripper die 126 at one die position thereof arranged to cooperate with the embossing plunger 41 in effecting cut-off and stripping of the tape when such die is located at the embossing station. Where the disk is of the preferred type previously described, having dies on both faces thereof a cut-off and stripper die 126 is carried on each face of the disk at diametrically opposed positions thereof. Each die includes a pair of knife blades 127 on opposite sides of a central stop 128, and a resilient stripper blade 129 extending into close proximity to the trailing knife blade. Thus, when one of these dies is positioned at the embossing station and the embossing plunger is actuated to engage the tape therewith, the leading embossed copy of tape is cut-off and the free end of tape remaining in the embosser is scored to facilitate stripping of a protective backing from subsequently embossed copy.

It will be appreciated that where the disk 18 is of the type having female dies and the embossing plunger 41 is provided with the resilient deformable plug 114, the plug would normally be rapidly mutilated in engaging the tape with the knife blades and stripper blade of the cut-off and stripper die 126. To obviate this problem, the embosser of the present invention is arranged to interpose a protective layer of firm material between the plug and tape when the cut-off and stripper die 126 is disposed at the embossing station. The firm layer thus shields the plug from the detrimental effects of the knife and stripper blades of the die. To the foregoing end, there is provided a substantially L-shaped lever 131 of firm flexible material having right angularly related arm portions 132, 133. Arm portion 132 is pivotally mounted at an intermediate point thereof within the housing 11, as indicated at 134. The free end of arm portion 133 is formed with an offset 136 which is disposed within an enlarged upper end portion 137 (see FIGURE 14) of the embossing plunger guide bore 44. Upon pivoting of the lever about the pivot point 134, the offset 136 of arm portion 133 is moved in the enlarged bore portion 137 between an unobstructing position laterally adjacent the path of plunger travel, as indicated in phantom line in FIGURE 14, and a position intercepting plunger travel, as indicated in full line. Controlled movement of the lever between these positions is effected by means of a pin 138 projecting from the free end of arm portion 132 through an opening 139 in the top of housing 11 for engagement with the periphery of the flange 119 of disk 18. In this regard, a spring 141 secured between the free end of arm portion 132 and the housing functions to resiliently urge the pin against the flange periphery. The disk 18 is then provided with a notch 142 which extends into the flange 119 as well as the shoulders 118 on opposite sides thereof. The notch 142 is positioned relative to the cut-off and stripper dies 126 to receive the pin 138 when either of these dies is at the embossing station. Thus when a cut-off and

stripper die is positioned at the embossing station, the pin 138 enters the notch 142 with the spring 141 in turn pivoting the lever to position the offset 136 of arm portion 133 in intercepting relation to the path of plunger travel. The firm offset is thus interposed between the plug 114 and tape when the plunger is actuated to engage the tape against the cut-off and stripper die, the plug being thus protected by the offset. In order to preserve the sharpness of the cut-off and stripper knives, a cushion 143 of resilient material is preferably secured to the upper surface of the off-set to receive the cutting edges of the blades. It will be appreciated that in any other rotary position of the disk wherein one of the female indicia dies is at the embossing station, the pin 138 engages the periphery of flange 119 to thereby position the lever such that the offset is laterally adjacent the path of plunger travel in unobstructing relation thereto. Thus upon actuation of the embossing plunger, the plug 114 is directly engaged with the female die at the embossing station.

What is claimed is:

1. An embossing machine comprising a housing including means for guiding a strip of embossable material longitudinally therethrough, an embossing die actuating plunger mounted within said housing for reciprocal movement normal to the guided path of said strip at an embossing station of the housing, said plunger having an enlarged end with a cylindrical bore there-through transversely of said housing, a feed roll journaled for rotation in said housing about a transverse axis and having a peripheral tractive portion extending into said guided path of said strip, said feed roll having an associated ratchet wheel rotatable therewith, a feed pawl engaged with said ratchet wheel and having an angularly extending crank arm pivotally mounted at its free end within said housing, an eccentric pin journaled for rotation about a transverse axis within said housing, said pin having an enlarged cylindrical portion eccentric to the pin axis rotatably concentrically disposed in said bore of said plunger, a cam eccentrically secured to said pin with an eccentricity to the pin axis opposite that of said enlarged pin portion, means resiliently urging said crank arm of said pawl into engagement with said cam, a drive shaft journaled for rotation about a longitudinal axis within said housing, an actuating lever secured to said drive shaft and extending upwardly through a transverse slot in the top of said housing, said actuating lever movable between the first and second ends of said slot to rotate said drive shaft through a predetermined angle, bevel gear means coupling said drive shaft to said pin and having a ratio to rotate the latter through 180° in response to rotation of the former through said predetermined angle, means spring loading said actuating lever to a normal unactuated position at said first end of said slot, and full cycling means operatively associated with said actuating lever to prevent movement thereof to said unactuated position until said actuating lever is moved to an actuated position at said second end of said slot.

2. An embossing machine according to claim 1, wherein said full cycling means includes a ridge depending from the top of said housing in parallel laterally adjacent relation to said slot, said ridge having a succession of saw-tooth notches and a substantially rectangular terminal notch adjacent said second end of said slot, said saw-tooth notches defined by gently sloped edge portions downwardly inclined in the direction of said second end of said slot and sharply sloped edge portions upwardly inclined in the direction of said second end of said slot, and a dog pivotally mounted on one side of said lever and resiliently maintained in a neutral position of alignment with said lever, said dog having a point engageable with said sloped edge portions of said notches and unengageable with the base edge of said terminal slot.

3. An embossing machine according to claim 1, further

defined by a character selector disk having different indicia die means at circumferentially spaced positions thereof and disposed on said housing for rotation to selectively position said die means at said embossing station for actuating engagement by said plunger to emboss said strip, and a selector knob assembly mounted upon said housing and coupled to said disk to rotate same, said knob assembly having shift means selectively operable to radially shift said disk relative to said embossing station, said knob assembly having release means selectively operable to release said disk for removal from said housing.

4. An embossing machine according to claim 3, further defined by said housing having a bridge portion on the top thereof defining a subjacent slot for receiving said disk, said bridge portion having a slot therethrough including an enlarged undercut portion having stops projecting thereinto and a second undercut portion subjacent said stops, and by said selector knob assembly including a hollow selector knob having an open upper end, a knob cover disposed within said knob having a depending sleeve extending through the lower end of said knob in slidable relation thereto, said knob cover and sleeve being thereby moveable coaxially of said knob, said sleeve having an enlarged head at its lower end, said knob disposed on said bridge portion with said sleeve depending into said slot therethrough, means spring loading said cover to a normal position at the open upper end of said knob and wherein said head is disposed in said first undercut portion of said slot through said bridge portion, said head engaging said stops and preventing translation of said sleeve in said slot through said bridge portion, said cover being depressible against the spring loading thereof to position said head in said second undercut portion wherein said head is unobstructed by said stops and translation of said sleeve in said slot through said bridge portion is permitted, a bolt slidably received in said sleeve and having a head at its lower end engageable in a conformed central opening of said disk, and means keying said knob, said sleeve, and said bolt to prevent relative rotation therebetween while permitting axial movement of said sleeve relative to said knob and said bolt.

5. An embossing machine according to claim 4, further defined by said knob and bolt being fixedly secured together, and a latch plate slidably mounted in a side of said bridge portion in close overlying relation to said disk, said plate having a window traversed by said bolt, said plate spring loaded to a normal position wherein a portion of the plate bordering the window overlies the bolt head to prevent disengagement thereof from said disk, said plate depressible to a position wherein said bolt head is aligned with said window and may be translated therethrough upon upward movement of said knob to thereby disengage the bolt head from said disk.

6. An embossing machine comprising a housing including means for guiding a strip of embossable material therethrough, said housing having a bridge portion on the top thereof defining a subjacent disk receiving slot, said bridge portion having a guide slot elongated longitudinally thereof and extending therethrough to intersect said disk receiving slot, said guide slot including an enlarged undercut portion having stops projecting thereinto and a second undercut portion subjacent said stops, an embossing actuating plunger mounted within said housing for reciprocal movement normal to the guided path of said strip at an embossing station of the housing adjacent one end of said disk receiving slot, feed means carried by said housing for advancing said strip an incremental distance along said guided path, drive means carried by said housing and coupled to said plunger and feed means to selectively effect actuation thereof, a character selector disk having different indicia die means at circumferentially spaced positions thereof and disposed on said housing in said disk receiving slot for rotation to selectively position said die means at said embossing station for actuating engagement by said plunger to emboss said strip, a hollow selector

knob having an open upper end, a knob cover disposed within said knob having a depending sleeve extending through the lower end of said knob in slidable relation thereto, said knob cover and sleeve being thereby moveable coaxially of said knob, said sleeve having an enlarged head at its lower end, said knob disposed on said bridge portion with said sleeve depending into said guide slot, means spring loading said cover to a normal position at the open upper end of said knob and wherein said head is disposed in said first undercut portion of said guide slot in engagement with said stops to prevent translation of said sleeve longitudinally through said guide slot, said cover being depressible against the spring loading thereof to position said head in said second undercut portion of said guide slot wherein said head is unobstructed by said stops and translation of said sleeve longitudinally through said guide slot is permitted, a bolt slidably received in said sleeve and having a polygonal head at its lower end engageable in a conformed central opening of said disk, and means keying said knob, said sleeve, and said bolt to prevent relative rotation therebetween while permitting axial movement of said sleeve relative to said knob and said bolt.

7. An embossing machine according to claim 6, further defined by said knob and bolt being fixedly secured together, and a latch plate slidably mounted in a side of said bridge portion in close overlying relation to said disk, said plate having a window traversed by said bolt, said plate spring loaded to a normal position wherein a portion of the plate bordering the window overlies the bolt head to prevent disengagement thereof from said disk, said plate depressible to a position wherein said bolt head is aligned with said window and may be translated therethrough upon upward movement of said knob to thereby disengage the bolt head from said disk.

8. An embossing machine according to claim 6, wherein said die means carried by said disk comprise pluralities of radial spaced groups of circumferentially spaced different indicia female dies formed in both faces of said disk, different ones of said groups being respectively positioned at said embossing station in response to said sleeve being disposed at different longitudinal positions of said guide slot, and a resilient deformable plug is secured to the free end of said plunger to urge said strip into embossing engagement with one of said female dies at said embossing station.

9. An embossing machine according to claim 8, further defined by said disk having a pair of diametrically opposed cut-off and stripper dies on opposite faces thereof, and means for interposing a layer of firm material between said plug and disk in response to said disk being positioned to disposed said cut-off and stripper dies at said embossing station.

10. An embossing machine according to claim 8, further defined by said disk having peripheral shoulders in the opposite faces thereof terminating at an intermediate outwardly flared annular flange, said shoulders having corresponding circumferentially spaced die indexing notches formed therein, a pair of resilient detent arms mounted in said housing and respectively having bifurcate teeth at their free ends, said teeth of one detent arm engageable with said indexing notches in response to said sleeve being disposed at a second longitudinal position of said guide slot, a substantially L-shaped lever of firm flexible material having first and second right angularly related arm portions, said first arm portion pivotally mounted at an intermediate point thereof within said housing with the free end of said first arm portion having a pin adjacent the periphery of said disk, said L-shaped lever spring loaded to resiliently urge said pin against the periphery of said disk flange, said second arm portion having an offset free end, and a pair of cut-off and stripper dies mounted on opposite faces of said disk at diametrically opposed positions thereof, said disk having a cut-off indexing notch extending into said flange

13

and shoulders of said disk, said pin of said L-shaped lever engaging said cut-off indexing notch when said cut-off and stripper dies are positioned at said embossing station, said L-shaped lever having first and second pivotal positions respectively determined by said pin thereof engaging the periphery of said disk flange and said cut-off indexing notch, said offset end of said second arm portion disposed at said embossing station laterally adjacent the path of travel of said plunger in said first pivotal position of said L-shaped lever and in intercepting relation to said path of travel of said plunger in said second pivotal position of said L-shaped lever.

11. An embossing machine comprising a housing including means for guiding a strip of embossing material therethrough, a disk rotatably carried by said housing having on at least one surface thereof a plurality of different indicia dies and a strip cut-off blade, a resilient deformable element disposed in opposed relation to said surface and sequentially aligned with a selected one of said dies and blade upon rotation of said disk and movable toward said disk to engage said strip thereagainst and thereby effect either an embossment or cut-off of said strip, and means interposing a protective layer of material between said element and said disk when said disk is rotated to position said blade over said element.

12. An embossing machine according to claim 11, further defined by said means for interposing a layer of material between said deformable element and disk including means for moving said layer of firm material from a position unobstructing to movement of the element toward said disk to a second position intercepting said movement in response to rotation of said disk to a position wherein said cut-off blade is opposite said deformable element.

13. An embossing machine comprising a housing including means for guiding a strip of embossing material therethrough, a disk having on at least one surface thereof a plurality of different indicia dies and a pair of cut-off and stripper blades, means rotatably mounting said disk on said housing whereby said dies and blades may be selectively positioned at an embossing station of said housing in response to disk rotation, a resilient deformable element disposed at said embossing station and movable toward said disk to engage said strip against one of said dies or blades positioned at said embossing station and thereby effect either embossment or cut-off of said strip, an arm of resilient firm material mounted on said housing for movement between a first position interposed between said deformable element and said disk and a second position unobstructing to movement of said element and follower means carried by said arm bearing inwardly against the periphery of said disk, said arm being disposed in said second position in response to said follower means bearing against the disk periphery and being disposed in said first position in response to said follower means engaging an indexing notch in the disk periphery positioned for engagement by the follower means when said cut-off and stripper blades are disposed at said embossing station.

14. An embossing machine comprising a housing including means for guiding a strip of embossing material therethrough, an embossing actuating plunger mounted in said housing for reciprocal movement normal to the guided path of said strip at an embossing station of the housing and having a resilient deformable plug at its end, a disk having on at least one surface thereof a plurality of different indicia dies and a pair of cut-off and stripper blades at circumferentially spaced positions of said disk, said disk mounted on said housing for rotation to selectively position said dies and blades at said embossing station for actuating engagement by said plug at the end of said plunger, said disk having peripheral shoulders in the opposite faces thereof terminating at an intermediate outwardly flared annular flange, said shoulders having corresponding circumferentially spaced die indexing

14

notches formed therein, at least one resilient detent arm mounted in said housing and having bifurcate teeth at its free end engaging said indexing notches as said dies are selectively positioned at said embossing station, and a substantially L-shaped lever of firm flexible material having first and second right angularly related arm portions, said first arm portion pivotally mounted at an intermediate point thereof in said housing with the free end of said first arm portion having a pin adjacent the periphery of said disk, said lever spring loaded to resiliently urge said pin against the periphery of said disk flange, said second arm portion having an offset free end, said disk having a cut-off indexing notch extending into said flange and shoulders thereof, said pin engaging said cut-off indexing notch when said blades are positioned at said embossing station, said lever having first and second pivotal positions respectively determined by said pin engaging the periphery of said disk flange and said cut-off indexing notch, said off-set end of said second arm portion disposed at said embossing station laterally adjacent the path of travel of said plunger in said first pivotal position of said lever and in intercepting relation to said path of travel of said plunger in said second pivotal position of said lever.

15. An embossing machine comprising a housing including means for guiding a strip of embossable material therethrough, embossing means carried by said housing for embossing selectable indicia on said strip in response to actuation of said embossing means, feed means carried by said housing for advancing said strip an incremental distance in response to actuation of said feed means, drive means carried by said housing and coupled to said embossing means and to said feed means for effecting said actuations thereof, said drive means being selectively movable between unactuated and actuated positions and operable to effect said actuation of said embossing means in response to movement of the drive means for said unactuated to actuated position thereof and operable to effect said actuation of said feed means in response to return movement from said actuated to unactuated position, full cycling means associated with said drive means for preventing said return movement of said drive means and resulting actuation of said feed means until said actuated position thereof is attained with resulting actuation of said embossing means, said drive means including a shaft, a lever secured to and extending outwardly from said shaft, and said fully cycling means including means on said lever engageable with portions of said housing whereby said lever may be freely moved in one direction to rotate said shaft while releasably restrained against movement in a contra-direction until the lever has been moved a predetermined distance in said one direction.

16. An embossing machine comprising a housing including means for guiding a strip of embossable material therethrough, embossing means carried by said housing for embossing selectable indicia on said strip in response to actuation of said embossing means, feed means carried by said housing for advancing said strip an incremental distance in response to actuation of said feed means, drive means carried by said housing and coupled to said embossing means and to said feed means for effecting said actuations thereof, said drive means being selectively movable between unactuated and actuated positions and operable to effect said actuation of said embossing means in response to movement of the drive means from said unactuated to actuated position thereof and operable to effect said actuation of said feed means in response to return movement from said actuated to unactuated position, fully cycling means associated with said drive means for preventing said return movement of said drive means and resulting actuation of said feed means until said actuated position thereof is attained with resulting actuation of said embossing means, said drive means including an actuating lever extending

15

through and moveable between the opposite ends of a slot in said housing, said unactuated position of said drive means being determined by said lever positioned at one end of said slot and said actuated position being determined by said lever positioned at the second end of said slot, said full cycling means comprising a ridge projecting into said housing in parallel laterally adjacent relation to said slot, said ridge having a succession of notches defined by gently sloped edge portions inclined in directions outwardly of said housing and towards said first end of said slot and sharply sloped edge portions inclined in directions outwardly of said housing and towards said second end of said slot, said ridge having a terminal notch with a substantially level base edge adjacent said second end of said slot, and a dog pivotally mounted on one side of said lever and resiliently maintained in a neutral position of alignment with said lever, said dog having a point engageable with said sloped edge portions of said notches and unengageable with said base edge of said terminal slot.

16

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ROBERT E. PULFREY, *Primary Examiner.*DAVID KLEIN, *Examiner.*20 E. S. BURR, *Assistant Examiner.*