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This application Sept. 9, 1969, Ser. No. 875,601

to Dymo M- 55 B Tapewriter, Form No. 300(Rev. 2) Copyright 1964.

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[54] **HAND-OPERATED EMBOSsing MACHINE**
28 Claims, 9 Drawing Figs.

[52] U.S. Cl. **197/6.7**
[51] Int. Cl. **B41J 1/30**
[50] Field of Search **197/6.7**

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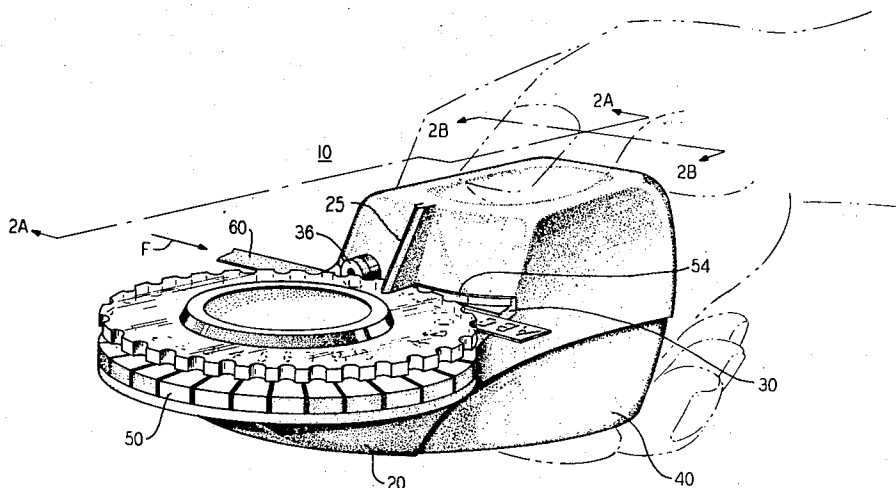
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ABSTRACT: A miniaturized embossing machine formed by a housing which carries a dialable embossing wheel assembly and a guide assembly for a material that is to be embossed. In addition, a spring-loaded actuator is pivotally mounted with respect to the lower portion of the housing. When the actuator is depressed it brings about the desired embossment; when the actuator is subsequently released the material is controllably advanced along the guide assembly.

The lower portion of the guide assembly includes a shaft-mounted ratchet assembly with a ratchet wheel that is operated by the same spring used with the actuator. The other end of the assembly ratchet, beyond the ratchet wheel, is serrated for securely holding a drive tire that extends through an opening in the guide assembly into contact with the lower surface of the material to be embossed. The upper surface of the material is in contact with a feed wheel, also attached to the guide assembly. An integral extension of the guide assembly serves as a control detent for the ratchet wheel.

As the actuator is depressed and the material embossed, the spring is carried over the ratchet wheel to an operating position. Undesired movement of the ratchet wheel is forestalled by a shoulder that is integral with the detent. When the actuator is released, the end of the spring which operates the ratchet wheel causes the latter to rotate by a prescribed amount that is regulated by the detent. This in turn causes the strip to be advanced by the drive tire so that the next interval of the strip is at the embossing station.



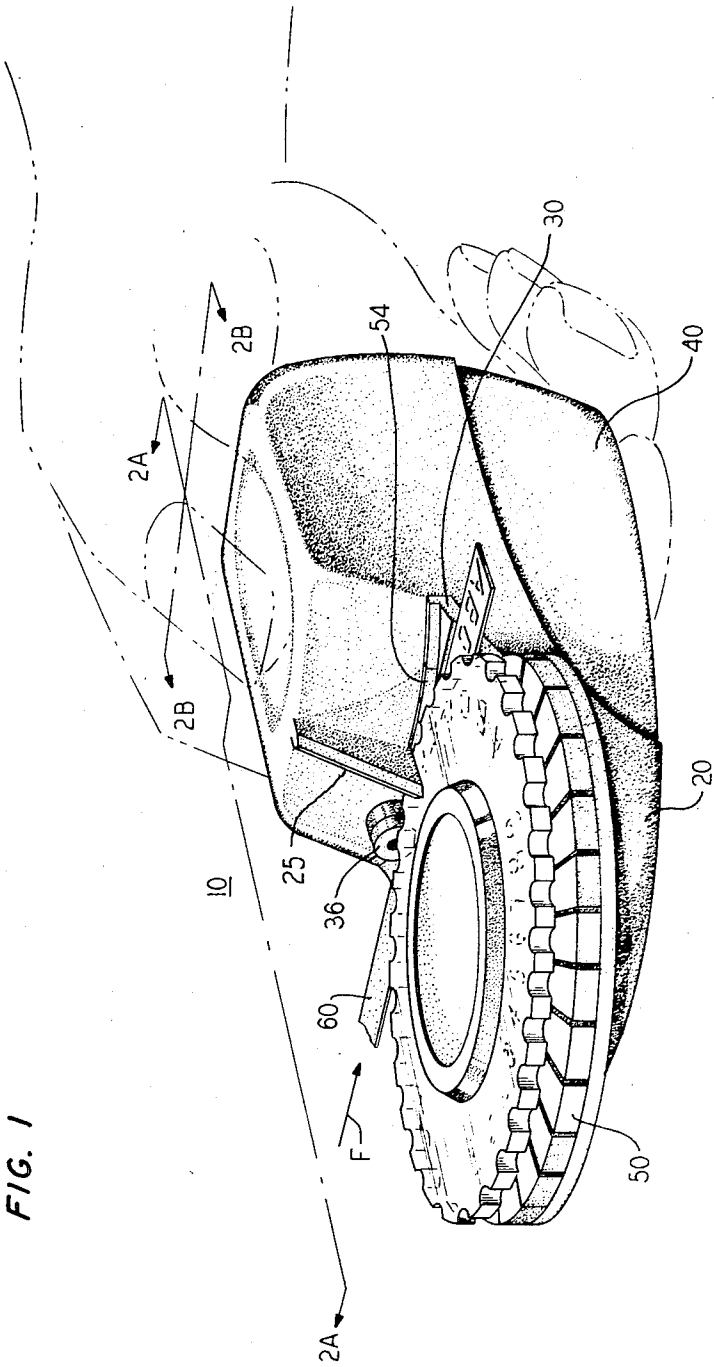


FIG. 1

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FIG. 2A

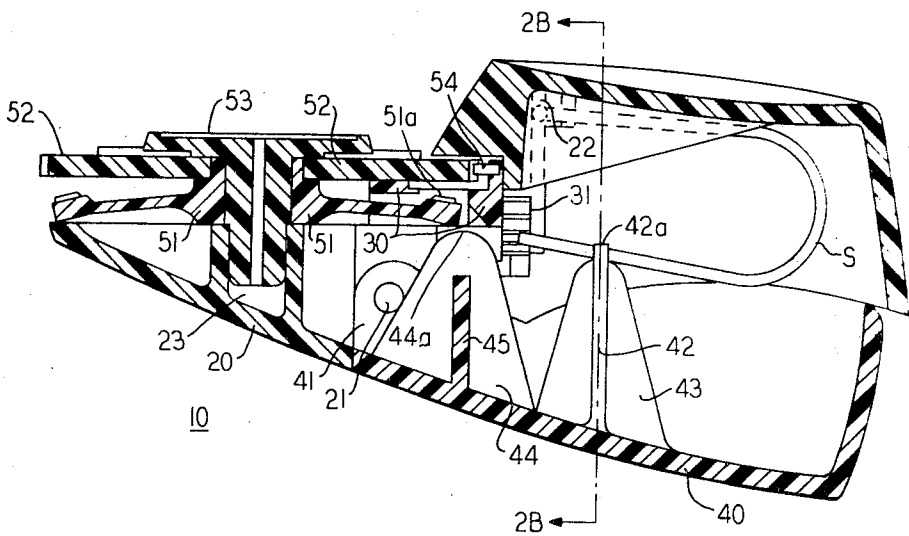


FIG. 2B

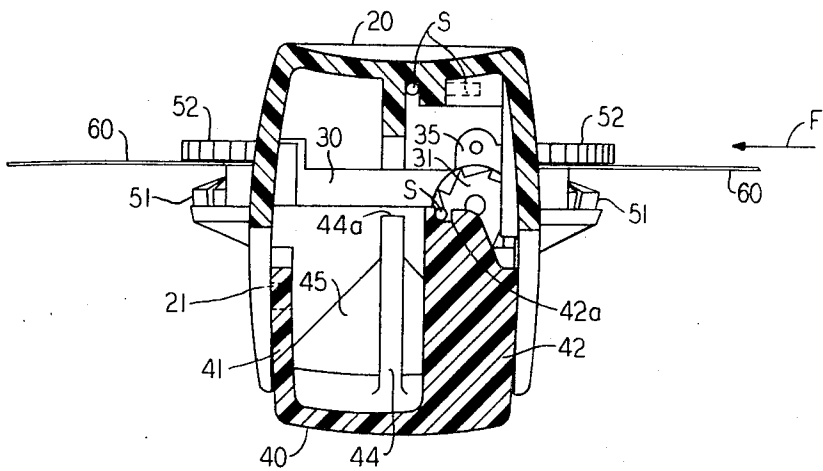


FIG. 3A

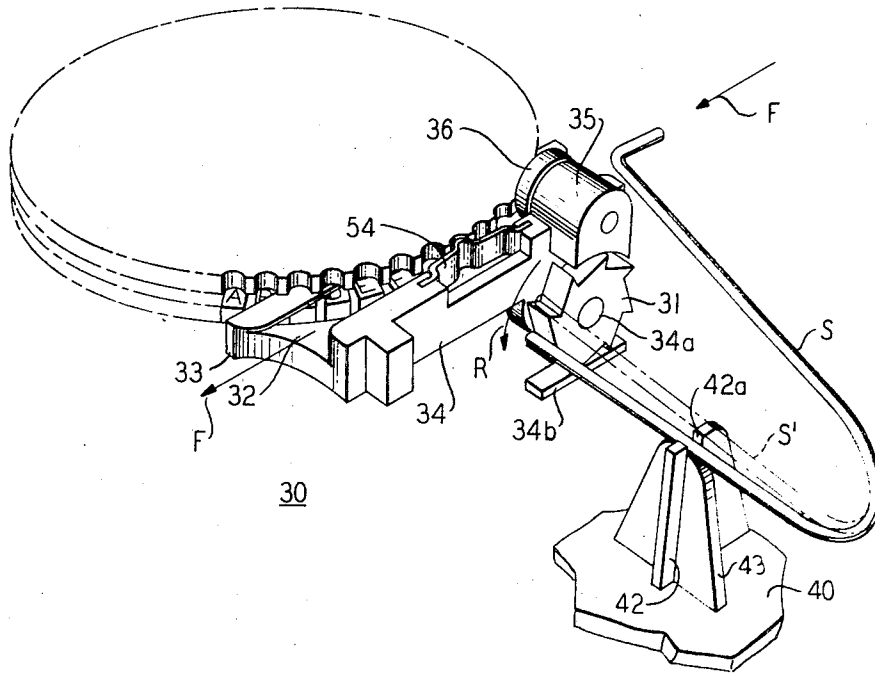


FIG. 3B

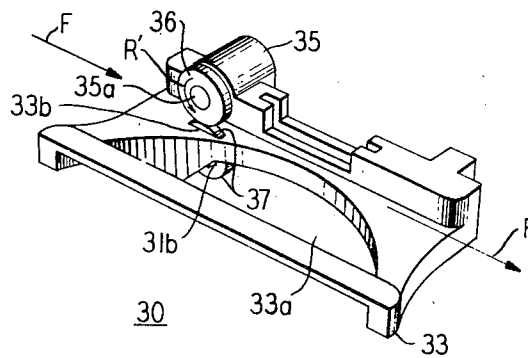


FIG. 3C

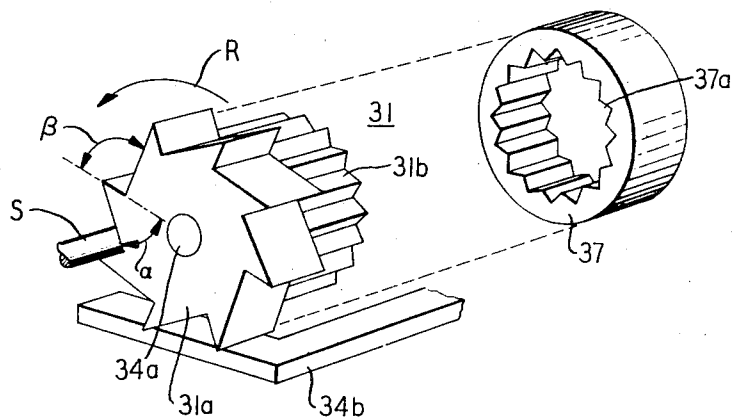


FIG. 4A

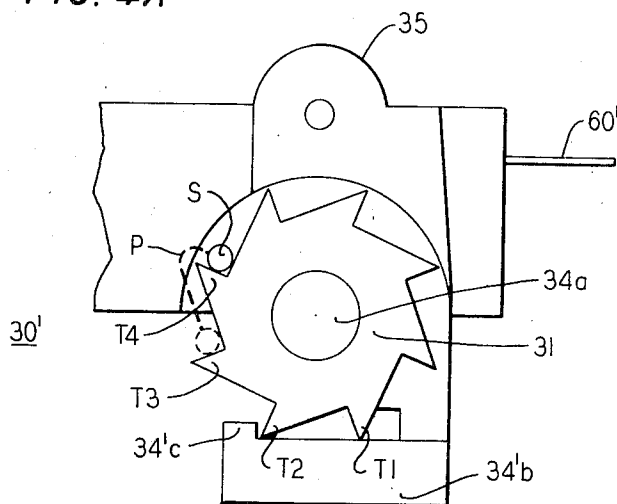


FIG. 4B

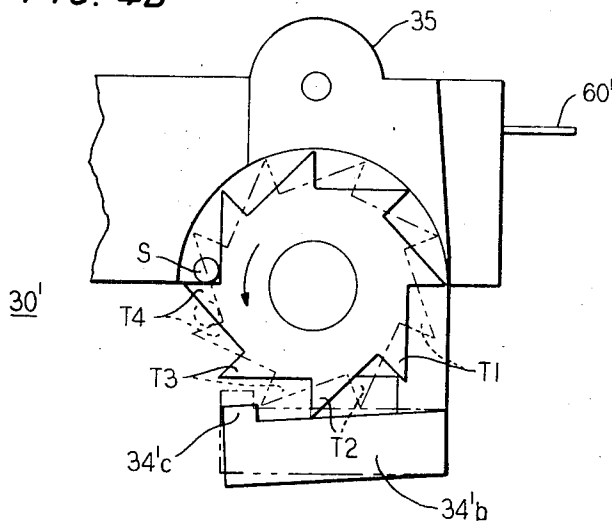
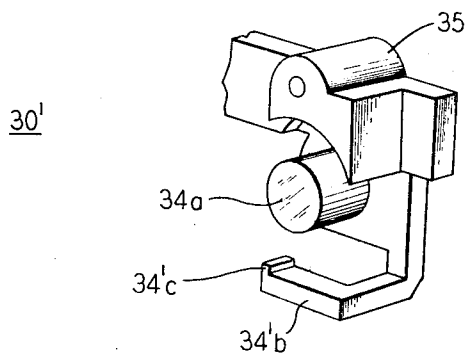


FIG. 4C



HAND-OPERATED EMBOSsing MACHINE

BACKGROUND OF THE INVENTION

This is a continuation-in-part of application Ser. No. 830,009, filed June 3, 1969, now abandoned.

The invention relates to the embossing of materials and more particularly to the embossing of materials in strip form by hand-operated machines.

In the usual embossing machine, a strip of material, such as of plastic or metal, is acted upon by a selectively positioned die and punch arrangement, generally provided by a dialable embossing wheel assembly with a distinctive time for each character that is to be embossed upon the material. When a time bearing a raised character is depressed into a corresponding die of the embossing wheel, with the strip in between, the result is an embossment of the strip in accordance with the dial setting.

Typical embossing machines are somewhat cumbersome. They are not conveniently carried on the person of the user. They are also somewhat awkward. For example, in many cases the punch of the embossing wheel assembly is acted upon through a triggerlike control lever that is difficult to operate for a person with small hands or a relatively weak grip.

Accordingly, it is an object of the invention to realize an embossing machine that can be operated readily and without difficulty. Another object is to provide an embossing machine that can be easily carried and stored.

A further characteristic of many embossing machines is that they contain numerous parts, some of which are of intricate design. This can give rise to difficulties in manufacture and assembly. Thus, the mechanism used to advance the material being embossed is usually a rubber-tired drive wheel that operates in conjunction with a roller and is ratchet driven by a set of spring-loaded, pivoted members. An additional member is used with the ratchet to prevent inadvertent operation. The manufacturing and assembly difficulties associated with the advance mechanism are increased to the extent that an attempt is made to reduce the size of an embossing machine. The tolerances on the parts become more critical; parts embedded in the housing become more difficult to position with precision and rapidity; and with each reduction in size there is an increased tendency for slippage between the tire and its drive wheel.

It is still another object of the invention to facilitate the manufacture and assembly of embossing machines. A related object is to reduce the number of parts and the design intricacy of such machines. An associated object is to achieve the multifunction use of parts. Another associated object is to simplify the advance mechanism and associated components of small-scale embossing machines. A further associated object is to achieve high precision performance in small-scale embossing machines.

An advantageous characteristic of embossing machines is flexibility of components, either to facilitate repair or to permit alternative kinds of operation. It is also desirable for the user to know the precise location on the material where embossing has taken place. Otherwise, if the user is interrupted or if the dial setting is inadvertently changed, the identity of the last character may be forgotten, with a consequent wastage of material. Moreover, it becomes difficult to obtain the spacing that is desired between ensuring groups of characters.

Consequently, it is yet another object of the invention to provide an embossing machine which can be adapted for the ready substitution of alternative constituents, either to facilitate repair or provide additional flexibility in use. A further object is to provide sufficient embossing station visibility that the identity of the last character embossed on the material can be easily established.

SUMMARY OF THE INVENTION

In accomplishing the foregoing and related objects, the invention provides for the advance of material to a processing

station under the control of a unitary mechanism which also controls an actuator for initiating the processing. For an embossing machine the processing entails the embossment, by operation of an actuator, of selected characters upon material guided to an embossing station. The control mechanism spring loads the actuator and simultaneously controls the advance mechanism. Consequently, the control mechanism serves a dual function, reduces the number of parts in the embosser and thus facilitates a reduction in scale of the embosser.

In accordance with one aspect of the invention, the embossing machine can be formed by a plurality of separate assemblies. This permits the machine to be easily adapted for the substitution of alternative assemblies, either to facilitate repair or provide added flexibility in use. Such constituent assemblies are (1) an apertured housing, (2) an actuator pivotally attached to the housing in one of the apertures, (3) an embossing wheel assembly rotationally mounted on the housing, (4) a guide assembly for the material to be embossed, including an advance mechanism, and (5) a control spring disposed between the housing and the actuator, and in contact with the advance mechanism.

A representative guide assembly for a strip of material to be embossed is positioned to guide the strip transversely with respect to the longest axis of the housing. The guide assembly includes a channel for the material and an advance mechanism formed by a ratchet assembly. The latter is axially mounted below the channel of the guide with one end extending into the channel to engage the material and the other end being operated by the control spring.

In accordance with another aspect of the invention, the ratchet assembly carries a drive tire which extends into the channel of the guide assembly to engage the material to be advanced. To assure that the drive tire is secured to the ratchet assembly without slippage, even in a small-scale machine, numerous indentations are provided on mating surfaces of the tire and the associated ratchet assembly. The guide assembly desirably includes a feed wheel rotationally mounted above the drive tire and in contact with it.

In accordance with still another aspect of the invention, the advance mechanism includes an element for regulating its operation. This element is advantageously a cantilever that is integral with the guide assembly and in contact with two teeth of a multitoothed ratchet wheel. In addition the cantilever can include an integral shoulder in the vicinity of one of the teeth to guard against undesired operation of the wheel as the control spring is moved into position to operate the ratchet wheel. To resist breakage of the cantilever, the guide assembly is molded using an acetal resin. For an illustrative embodiment of the invention each tooth of the ratchet wheel had a root angle of substantially 90° and an apex angle of substantially 45°.

In accordance with yet another aspect of the invention, the embossing wheel assembly is mounted on the housing with a die wheel partly overlying the guide assembly and a punch-tine wheel, to which the die wheel is keyed, partly underlying the guide assembly. When the die wheel is transparent, coupled with the transverse feed of material by the guide assembly, the extent of embossment of the material is readily viewable.

In accordance with a further aspect of the invention, the control spring is disposed with one end in the housing, the other end in contact with the ratchet wheel and an intermediate portion in engagement with the actuator. The extension of the spring from the actuator to the ratchet desirably is approximately perpendicular to the plane of rotation of the ratchet wheel.

BRIEF DESCRIPTION OF THE DRAWINGS

Other aspects of the invention will become apparent after considering several illustrative embodiments, taken in conjunction with the drawings in which:

FIG. 1 is a perspective view of an embossing machine in accordance with the invention;

FIG. 2A is a representation of a side sectional view of the embossing machine of FIG. 1;

FIG. 2B is a representation of a transverse sectional view from the rear of the embossing machine of FIG. 1;

FIG. 3A is a partial perspective view showing a guide assembly in relation to a spring mechanism and a portion of an actuator for the embossing machine of FIG. 1;

FIG. 3B is a perspective view of the guide assembly shown in FIG. 3A as viewed from the front;

FIG. 3C is an exploded perspective view of a ratchet assembly for the guide assembly of FIGS. 3A and 3B shown in conjunction with portions of an associated detent and spring;

FIG. 4A is a partial side view of an alternative guide assembly for the embossing machine of FIG. 1, showing the spring mechanism in its operating position;

FIG. 4B is a further view of the alternative guide assembly of FIG. 4A, showing the ratchet assembly being operated; and

FIG. 4C is a partial perspective view of the alternative guide assembly shown in FIGS. 4A and 4B.

DESCRIPTION OF AN ILLUSTRATIVE EMBODIMENT

Turning to FIG. 1 of the drawings, an illustrative embossing machine in accordance with the invention is formed by a housing 20 which carries a guide assembly 30, an actuator 40 and an embossing wheel assembly 50.

The guide assembly 30 is positioned as an insert in the upper central portion of the housing 20. Included with the guide assembly are constituents, such as a feed wheel 36, by which the material 60 to be embossed is advanced in a direction of feed indicated by the solid line arrow F. Operation of the advance mechanism of the guide assembly 30, as subsequently described in detail, is through the actuator 40, which is spring loaded and pivotally mounted with respect to the lower portion of the housing 20.

The embossing wheel assembly 50 is rotationally mounted at the front of the housing with constituent die punch wheels straddling that portion of the guide assembly 30 underlying the material 60. The particular character to be embossed on the material, such as a letter of the alphabet or a specified mark, is selected by rotating, i.e., "dialing" the wheel assembly 50 until the character is aligned with a pointer 25 of the housing, where the assembly is held in position by a detent spring 54 mounted on the guide assembly 30.

When the actuator 40 is depressed into the housing 20, as for example, by grasping the machine 10 in the manner indicated in phantom and bringing the thumb and fingers together, the actuator 40 forces a tine of the assembly 50, at the marking position under the pointer 25, into the corresponding die portion to make the desired embossment of the material 60. The upward movement of the tine into the die of the assembly 50 is limited by contact with the base of the pointer 25. Where the die wheel of the assembly 50 is transparent, the exact position of the embossment on the material 60 is readily apparent.

As the actuator 40 is released, there is an effect on the advance mechanism of the guide assembly 30 so that the material 60 is advanced to the next embossable position.

The embossable material 60 is advantageously a conventional strip of vinyl plastic which becomes whitened in those regions that are subjected to deformation by the punch-die action of the wheel assembly 50. The strip additionally can bear a layer of pressure sensitive adhesive that is protected by a backing sheet (not shown). It will be apparent that other types of embossable materials may be employed, including metallic sheets and multilayer plastics.

For the embodiment of FIG. 1 the material 60 is desirably a precut strip of tape. Where the tape is multilayered it can be provided with a precut tab, in conventional fashion, to facilitate the removal of any protective backing. When a precut strip of tape is employed, it is moved along the guide assembly 30 until it contacts the guide wheel 36, after which further feed along the guide assembly 30 takes place by operation of the actuator 40. It will be apparent that the machine 10

of FIG. 1 may be adapted to include a holder for a magazine of coiled tape, in which case a cutter may be mounted in the wheel assembly 50 in order to sever the tape from its source.

Referring to the representative cross-sectional details of FIGS. 2A and 2B for the illustrative embossing machine 10, the actuator 40 is pivotally connected to the housing 20 by studs 21 in respective side walls. Only the stud in the right-hand wall of the housing appears in FIG. 2A, while only the stud in the left-hand wall is indicated in FIG. 2B. The studs 21 extend into corresponding apertures in sidewalls 41 of the actuator 40.

The actuator 40 is under pressure with respect to the housing 20 by virtue of a generally U-shaped spring S that sits in a slot 42a of a support 42, as reinforced by a support 43. The upper part of the spring S extends along the upper interior of the housing 20 and fits into a recess 22.

Besides biasing the actuator 40 with respect to the housing 20, the spring S also is in contact with a ratchet assembly 31 that is axially mounted on the tape guide assembly 30. Details of the tape guide assembly 30 and associated elements are shown in FIGS. 3A through 3C.

A further constituent of the actuator 40 is a hammer 44, as strengthened by a transverse support 45. When the actuator 40 is depressed, the tip end 44a of the hammer 44 is forced against an embossing tine of a lower embossing wheel 51. This moves the raised character 51a of the tine into a corresponding die on an upper embossing wheel 52, with the tape (not shown in FIG. 2A) in between.

Taken together, the lower wheel 51 and the upper wheel 52 form the wheel assembly 50 of FIG. 1. The individual wheels 51 and 52 are keyed together in standard fashion so that they rotate together. The lower wheel 51 is in the form of a hub with individual spokelike tines for the various embossing characters. These characters are generally the capital letters of the alphabet, the arabic numerals and such commonly employed symbols as punctuation marks. Since the tines are subjected to a great deal of flexing, the wheel 51 is desirably made of wear resistant substance, for example, an acetal resin of the kind sold and marketed under the trade name "Delrin" by E. I. du Pont de Nemours & Company of Wilmington, Delaware.

The upper wheel 52 is in the form of a disk. Its underside has a die recess for each character of the character set. On the upper side of the disk there is a set of raised or hot-stamped characters (not shown) that serve as indicators with respect to the pointer 25 (FIG. 1). Because of the way the wheel assembly 50 is disposed with respect to the guide assembly 30, embossing of the material 60 takes place directly under the pointer 25. Consequently, aside from an offset, the indicating characters have the same orientation as the corresponding embossing dies. The wheel 52 therefore can be transparent in order to make it apparent where embossing is taking place without having interference between the indicating and die characters, as in ordinary embossing machines where the indicating characters have different circumferential positions than the die characters. A suitable substance for the upper wheel 52 is an acrylic butylated styrene of the kind sold and marketed under the trade name "cyclocac" by Borg Warner Corporation of Chicago, Ill.

The resulting wheel assembly 50 is rotatably positioned on the housing 20 by a center pin 52 which, for the embodiment of FIG. 2A, is press-fit into a recess 23. The top of the pin has a depression which can be used for a replaceable name plate insert. It will be apparent that the wheel assembly 50 could, in the alternative, be removably mounted on the housing 20 in order to permit the use of different kinds of embossing wheel assemblies.

As can be seen from FIGS. 3A and 3B, the guide assembly 30 has a channel 52, an apron 33 extending between the upper and lower constituents of the wheel assembly and a backwall 34. The latter is inserted into the upper central part of the housing 20 (FIG. 1) so that the direction of feed along the guide assembly 30 is in a transverse direction indicated by the arrow F with respect to the longest body axis of the housing.

That portion of the apron 33 in the tape channel 32 between the constituents of the wheel assembly is interrupted by a cord aperture 33a (FIG. 3B) to allow the hammer 44 (FIG. 2A) to act on the tines of the lower wheel 51.

The ratchet assembly 31 is mounted on a spindle 34a that is integral with the backwall 34 of the guide assembly 30. A housing 35 on the backwall 34 carries the feed wheel 36 which is rotationally positioned by a pin 35a.

Below the ratchet assembly 31 is a finger 34b which extends as a cantilever from the front wall 34 of the guide assembly. The latter is desirably molded from a plastic with a grain orientation that gives strength to the finger and permits it to be repeatedly flexed without breakage. In a tested embodiment of the invention the guide assembly was made of an acetal resin plastic sold and marketed by du Pont under the trade name "Delrin."

In operation, when the actuator 40 is depressed, the spring S slides over one of the ratchet teeth to the next position S'. This upward movement of the spring S, when suitably aligned, does not cause any rotation of the ratchet wheel 31a because of the way that the detent 34b is in contact with two of the ratchet teeth. Not only is there an effective lever arm of small magnitude, but also the orientation of the contacting ratchet tooth nearest the stem opposes clockwise motion (as viewed from the rear) of the ratchet wheel. In the upper position S' there is an increased lever arm and the other contacting tooth, which is further away from the stem, is oriented to facilitate counterclockwise rotation indicated by the curved arrows R in FIGS. 3A and 3C.

As illustrated in FIGS. 3B and 3C, the forward part of the ratchet assembly 31 carries a drive tire 37, desirably molded of rubber, which extends through a second aperture 33b in the apron 33 of the tape guide assembly 30. The tire 37 acts with and contacts the drive wheel 36, the latter rotating as indicated by the curved arrow R' in FIG. 3B as the tape (not shown) is advanced.

The ratchet assembly 31 is detailed in FIG. 3C. It has a ratchet part 31a and a serrated hub 31b. The latter provides positive gripping contact with mating teeth 37a of the drive tire 37. As a result, the amount of friction and the nature of the contact between the hub 31b and the tire 37 is increased over what would be present if the hub were smooth. This prevents slippage of the tire on the hub when a small-scale device is produced. The teeth of the ratchet wheel are disposed to facilitate operation of the embosser, with root and apex angles β and α . In an illustrative embodiment of the invention an advantageous apex angle α was found to be 45° and the corresponding root angle β was 90°.

A further embodiment of the invention is shown in FIGS. 4A thru 4C, in which the cantilever detent 34'b of the guide assembly 30' is an adaptation of the detent 34b in FIGS. 3A and 3C. To forestall undesired movement of the ratchet assembly 31 as the control spring S is moved to its operating position, the cantilever detent 34'b is provided with an integral shoulder 34'c.

As can be seen from the partial perspective view of FIG. 4C (with the ratchet assembly 31 of FIGS. 4A and 4B removed), the shoulder 34'c is at the free end of the extension from the elbow of the cantilever detent 34'b.

When the ratchet assembly 31 is in place (FIGS. 4A and 4B), the detent 34'b is contacted by two teeth T1 and T2, with the second tooth T2 being in the vicinity of the shoulder 34'c. Before the actuator 40 (FIG. 1) of the assembled embosser containing the guide assembly 30' is depressed into the housing 20, the spring S is against a third tooth T3, as indicated in phantom in FIG. 4A. As the actuator 40 is depressed, the end of the spring S in contact with the assembly 31 moves along a path P until it rests against an upper tooth T4. The spring is then in position to operate the assembly 31 when the actuator is released.

During movement of the spring S along the path P, there will be no undesired movement of the assembly, to cause a backup of the precut strip of tape 60', if either the detent 34'b

provides a sufficiently strong spring effect, or if the spring S is aligned to limit the side thrust against the ratchet assembly 31.

In any event, with the shoulder 34'c present, any undesired clockwise movement (viewing FIGS. 4A and 4B) is arrested by contact of the nearby ratchet tooth, e.g., the second tooth T2, with the inner edge of the shoulder 34'c. Consequently, the precut strip of tape 60' remains in position until the spring S is released in order to bring about the desired advance of the tape to the next embossing station.

One result is that there can be a greater tolerance in the alignment of the spring S within the housing of the embosser. Another result is that the required spring effect of the detent is not as great. This enhances the suitability of a plastic material such as "Delrin," identified above, which has desirable properties from the standpoint of wear, but tends to exhibit a relaxation of spring tension because of the "cold-flow" of the material when subjected to constant loading, such as by having the ratchet inadvertently left with one of its teeth at a high point. It is a property of "Delrin" that it recovers its spring tension when the loading is relieved. During this period of recovery, the shoulder 34'c promotes proper operation of the embosser.

The effect of the spring S, when allowed to move from its operating position against the upper tooth T4 of FIG. 4A, is illustrated by FIG. 4B. As the actuator 40 (FIG. 1) is released, the spring S drives the ratchet rotatably in a counterclockwise direction as indicated by the arrow. The particular position shown in FIG. 2B is with the ratchet moved to the high point of the tooth T2 to cause the detent 34'b to pivot. At this point the strip of tape 60' is partially advanced to the next embossing position. When the stroke of the spring S is completed, the ratchet is as shown in phantom, with the tooth T2 occupying the position formerly occupied by the tooth T1, and each other tooth similarly advanced to the position of the next tooth.

It will be appreciated that the shoulder 34'c can occupy other positions, such as by being on the detent 34'b in the vicinity of the first tooth T1 in FIG. 4A.

In a working model of the embossing machine 10, the overall length was about 4.0 inches and the embossing wheel assembly 50 had a diameter of about 2.0 inches. The height and width of the housing 20 in the vicinity of the guide assembly 30 or 30' were approximately 1.6 inch and 1.3 inch, respectively.

The housing 20, the actuator 40 and the upper wheel 52 were of "cycloc" plastic as identified above, while the guide assemblies 30 and 30' and associated parts (excluding the tire 37), lower wheel 51, and the pin 53 were of "Delrin" plastic as identified above.

For the various other constituents of the working model, the spring S was of music wire about 0.05 inch in diameter and 1 13/32 inch overall, with a free opening of approximately 1 inch deflecting to five-eighths inch under tension. The outer diameter of the ratchet assembly 31 was less than 0.4 inch with a hub 31b of less than 0.3 inch. The drive tire 37, of natural rubber, had twenty-four teeth, each with an apex angle of 86°; the feed wheel 36, also of "Delrin" was less than 0.2 inch in diameter.

The detents 34b and 34'b were approximately 0.3 inch from their elbows to their free ends. In a tested embodiment employing a detent 34'b with a raised shoulder 34'c, the latter was approximately 0.02 inch in height, 0.05 inch in width and 0.1 inch in depth.

While various aspects of the invention have been set forth by the drawings and the specification, it is to be understood that the foregoing detailed description is for illustration only and that various changes in parts, as well as the substitution of equivalent elements and constituents for those shown and described, may be made without departing from the spirit and scope of the invention as set forth in the appended claims.

What is claimed is:

1. A machine for embossing materials with characters selected from a prescribed set of characters, comprising a housing;

an insertable guide assembly, for said housing and inserted therein, for the material to be embossed, said guide assembly including a detent spring and material advancing means;

an embossing wheel assembly rotationally mounted upon said housing for retaining said guide assembly in position and in engagement with the detent spring thereof for selecting a particular character to be embossed, said detent spring fixing the rotational position of said embossing wheel assembly with respect to said housing;

actuating means for embossing the selected character upon said material;

means for biasing said actuating means toward an equilibrium position;

and means for operating said advancing means.

2. An embossing machine as defined in claim 1 wherein said advancing means includes a ratchet wheel and the biasing and operating means comprise a spring, having a first portion engaging said actuating means and a second portion engaging said ratchet wheel.

3. An embossing machine as defined in claim 2 wherein said second portion of said spring extends from said actuating means to said ratchet wheel and is substantially perpendicular to the plane of rotation of said ratchet wheel.

4. An embossing machine as defined in claim 2 wherein said biasing and operating means comprise means having a first portion for biasing the actuating means, formed by that part of a spring which is disposed with one end in said housing and has an intermediate section engaging said actuating means, and a second portion for simultaneously operating the advancing means, formed by the remainder of said spring which extends from said intermediate section into contact with said ratchet wheel.

5. A machine as defined in claim 1 for embossing a strip of material wherein said housing has a major axis and a transversely disposed minor axis, said major axis being longer than said minor axis; and said guide assembly is positioned in said housing for transversely guiding said strip of material with respect to said major axis.

6. A machine as defined in claim 1 for embossing materials wherein said guide assembly includes a channel having at least one opening therein at one side thereof and said advancing means includes a ratchet assembly mounted on a spindle below the channel of said guide assembly, with one end of said ratchet assembly extending through said opening into said channel for engaging said material and the other end of said ratchet assembly is operated by the means for operating said advancing means.

7. An embossing machine as defined in claim 6 wherein said one end of said ratchet assembly carries a drive wheel which extends through said opening in said guide assembly into said channel for engaging said strip of material.

8. An embossing machine as defined in claim 7 wherein said drive wheel is secured to said ratchet assembly by a plurality of regularly spaced serrated indentations on mating surfaces thereof, thereby to enhance the firmness with which said wheel is held by ratchet assembly and prevent slippage thereof.

9. An embossing machine as defined in claim 7 wherein said guide assembly includes a feed wheel rotationally positioned thereon above said channel in contact with said drive wheel.

10. An embossing machine as defined in claim 7 further including means fixedly attached to said guide assembly for regulating the operation of said advancing means comprising a cantilever member having a portion thereof in contact with said ratchet assembly; thereby to serve as a detent and regulate the movement of said ratchet assembly.

11. An embossing machine as defined in claim 10 wherein said cantilever member includes a shoulder for guarding against undesired movement of said ratchet assembly.

12. An embossing machine as defined in claim 10 wherein said ratchet assembly includes a multitoothed ratchet wheel and said cantilever member, when in its equilibrium position, rests against two teeth of said ratchet assembly.

13. An embossing machine as defined in claim 12 wherein said cantilever member includes a squared shoulder for engaging one of said teeth for guarding against undesired movement of said ratchet assembly.

14. An embossing machine as defined in claim 10 wherein said cantilever member of said guide assembly is molded using an acetal resin thereby to provide a detent cantilever with a grain orientation that permits repeated flexing without breakage.

15. An embossing machine as defined in claim 6 wherein said ratchet assembly includes a multitoothed ratchet wheel in contact with the operating means, each tooth having a root angle of substantially 90° and an apex angle of substantially 45°.

16. An embossing machine as defined in claim 1 wherein said embossing wheel assembly includes a first wheel partly underlying said guide assembly and having tines that individually bear the selectable characters and a second wheel, mated with the first, partly overlying said guide assembly and having individual die counterparts for the characters of said tines and said housing includes a member extending outwardly therefrom and overlying the selection position of the characters for limiting the die and tine movement during embossment of said material with the selected character.

17. An embossing machine as defined in claim 16 wherein said embossing wheel assembly is rotationally mounted upon said housing by a pin which is press-fit therein.

18. An embossing machine as defined in claim 1 which is readily assembled and disassembled wherein said housing constitutes a first unit of said machine and has a plurality of apertures therein; said actuating means constitutes a second unit of said machine and is pivotally attached to said housing to occupy one of said apertures; said guide assembly constitutes a third unit of said machine and is inserted into another aperture of said housing; said embossing wheel assembly constitutes a fourth unit of said machine and is rotationally mounted upon said housing; the biasing means constitutes a first flexible member extending from within said housing into contact with said actuating means and the operating means constitutes a second flexible member extending within said housing from said actuating means into direct contact with said advancing means.

19. A machine as defined in claim 18 for embossing a strip of material wherein said guide assembly includes a channel, with an opening in the base thereof, for guiding said strip of material, a ratchet mechanism positioned on a spindle below said channel, mounting a drive wheel at one end, extending into said channel, and having a ratchet at the other end operable by said operating means, said drive wheel being secured to said ratchet assembly by a plurality of serrations on mating surfaces thereof, a feed wheel rotationally positioned on said guide assembly above said channel in contact with said drive wheel, and a finger projecting outwardly from said guide assembly into contact with said ratchet for regulating the movement thereof; said embossing wheel assembly is positioned on said housing by a pin which is press-fit therein and comprises a first wheel partly underlying said guide assembly beneath the opening in the base thereof and having tines that individually bear the selectable characters, and a second wheel, mated with the first, partly overlying said guide assembly above said opening and having individual die counterparts for the characters of said tines; said actuating means includes a hammer for pressing the tine of said embossing wheel assembly, in embossing position, through the opening in said guide assembly and into its die counterpart, and a support for said biasing means and said operating means; and said biasing and operating means comprise a spring with a first section extending from said housing to a bend, a second section extending from said bend, in the opposite direction, to the support in said actuating means, and a third section extending from said second section into the root of a tooth of said ratchet; whereby the pivotal movement of said actuating means into said housing causes (1) said strip of material to be embossed by the ac-

tion of the hammer of said actuating means against said selecting means, and (2) said spring to be moved to the root position of an adjoining tooth of said ratchet and the release of said actuating means causes said ratchet, and thereby said drive wheel, to rotate to advance said strip to the next embossable position thereof.

20. A machine as defined in claim 5 for embossing a strip of material wherein the means for operating said advancing means is a flexible cantilever member extending within said housing from said actuating means into direct contact with said advancing means.

21. A machine as defined in claim 20 for embossing a strip of material wherein said guide assembly includes a channel for said strip of material; and said advancing means includes a ratchet assembly, mounted on an axle below the channel of said guide assembly, with one end extending into said channel for engaging said strip of material and the other end being operable by the operating means for said advancing means.

22. An embossing machine as defined in claim 21 wherein said one end of said ratchet assembly carries a drive wheel extending into said channel for providing flexible engagement with said strip of material.

23. An embossing machine as defined in claim 22 wherein said guide assembly includes means positioned thereon above said channel in contact with said drive wheel.

24. An embossing machine as defined in claim 21 further including means fixedly attached to said guide assembly for regulating the operation of said advancing means, comprising a cantilever member in contact with said ratchet assembly; thereby to serve as a detent and regulate the movement of said ratchet assembly.

25. An embossing machine as defined in claim 24 wherein said cantilever member of said guide assembly is molded using an acetal resin, thereby to provide a detent cantilever with a grain orientation that permits repeated flexing without breakage because of repeated operation.

26. An embossing machine as defined in claim 20 wherein said embossing wheel assembly includes a first wheel partly underlying said guide assembly and having tines that individually bear the selectable characters and a second wheel, mated with the first, partly overlying said guide assembly and having individual die counterparts for the characters of said

tines and said housing includes a member extending outwardly therefrom and overlying the selection position of the characters for limiting the die and tine movement during the embossment of said material.

27. An embossing machine as defined in claim 20 which can be readily assembled and disassembled wherein said housing constitutes a first unit of said machine and has a plurality of apertures therein; said actuating means constitutes a second unit of said machine, is spring-loaded by the biasing means and is pivotally attached to said housing to occupy one of said apertures in abutting relationship to an edge thereof; said guide assembly constitutes a third unit of said machine and is inserted into another aperture of said housing; and said embossing wheel assembly constitutes a fourth unit of said machine.

28. A machine as defined in claim 27 for embossing a strip of material wherein said guide assembly includes a channel, with an opening in the base thereof, for guiding said strip of material, a ratchet mechanism positioned on a spindle below said channel, mounting a drive wheel at one end, extending into said channel, and having a ratchet at the other end operable by the operating means, a member positioned on said guide above said channel in contact with said drive wheel, and a finger projecting from said guide assembly into contact with said ratchet for regulating the movement thereof; said embossing wheel assembly comprises a first wheel partly underlying said guide assembly beneath the opening in the base thereof and having tines that individually bear the selectable characters, and a second wheel, mated with the first, partly overlying said guide assembly above the opening in the base thereof and having individual die counterparts for the characters of said tines; and said actuating means has a hammer for pressing the tine of said selecting means, in embossing position, through the opening in said guide assembly and into its die counterpart, and said operating means extends from said actuating means to said ratchet; whereby the pivotal movement of said actuating means into said housing causes said strip of material to be embossed by the action of the hammer of said actuating means against said embossing wheel assembly and the release of said actuating means causes said ratchet, and thereby said drive wheel, to rotate to advance said strip to the next embossable position thereof.

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