

[54] **EMBOSSING TOOL TAPE CUT-OFF MECHANISM**

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[51] Int. Cl. **B41J 1/30**

[58] Field of Search..... 197/6.7; 101/18

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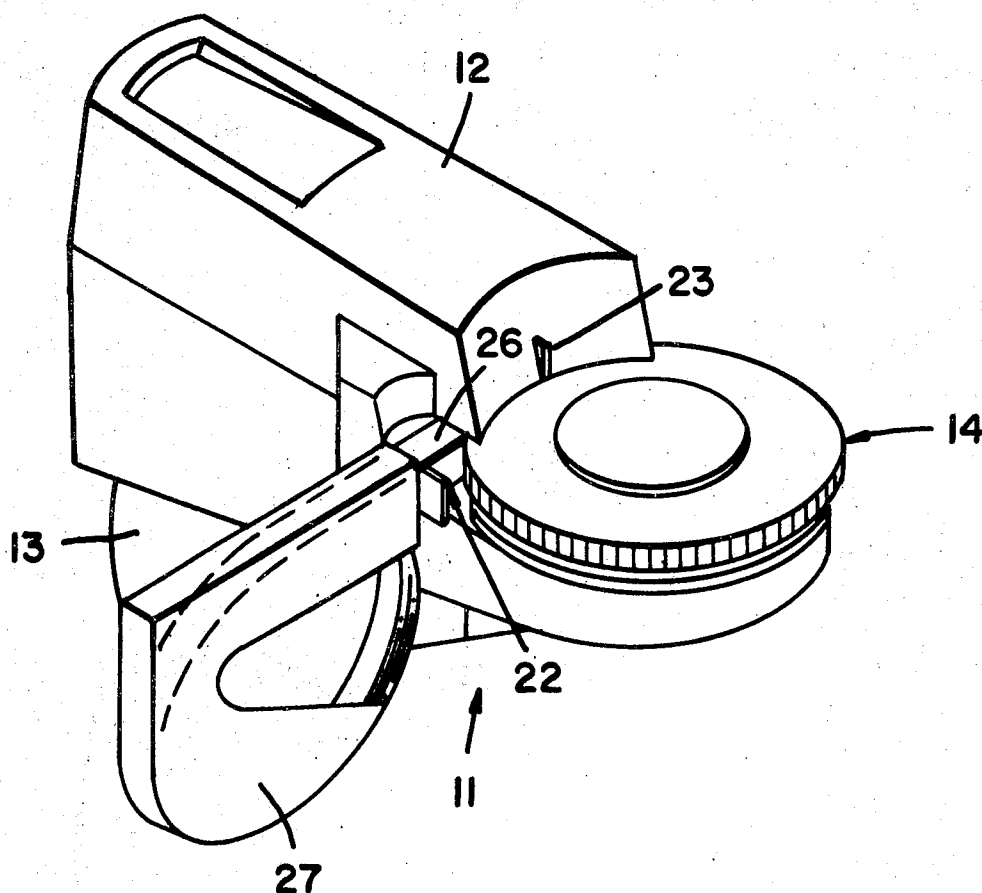
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[57] **ABSTRACT**

A cut-off mechanism incorporated in an embossing tool for applying indicia on a strip of tape-like material and effecting cut-off of the embossed strip to form a la-

bel, which mechanism facilitates a relatively simple, low-cost design of the overall tool. The mechanism features a strip cut-off knife and vertically opposed depressible anvil which are carried by a rotatable embossing die wheel mounted upon the tool body. The knife and anvil are selectively positionable upon rotation of the die wheel to locations upwardly and downwardly disposed relative to a central opening of a transverse tape guide channel formed in a bridge member secured to the body so as to be on opposite sides of a tape fed through the channel. An underlying spring loaded depressible handle pivotally secured to the forward end of the body is provided with an upstanding embossing stud which is aligned with the bridge opening upon depression of the handle and urges the anvil upwardly through the opening towards the knife to cut-off the tape in the channel disposed therebetween. As a principal feature, the bridge member includes a very narrow transversely extending ledge at one longitudinal end of the channel opening to support the tape during embossing and cut-off operations effected by the embossing stud urging dies or the anvil upwardly through the opening. In addition, the opposite ends of the anvil are closely inwardly spaced from the opposite ends of the knife such that the anvil clears the ledge during traversal of the opening. The tape is thereby cut in a central transverse region closely spaced inwardly from the opposite side edges thereof such that the very narrow uncut regions adjacent the side edges still permit severance of the tape upon pulling of same apart.

3 Claims, 8 Drawing Figures



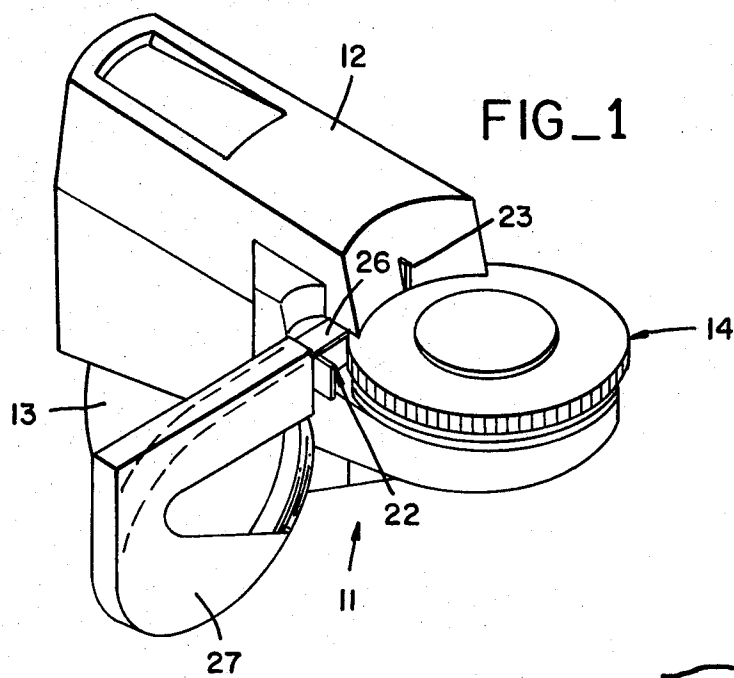
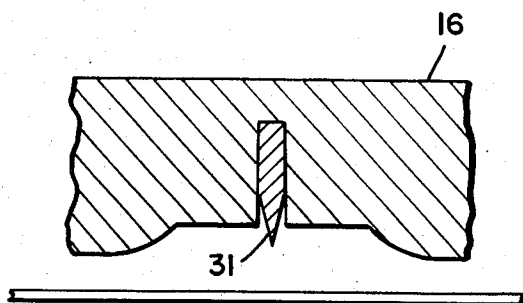
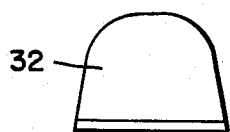


FIG_2

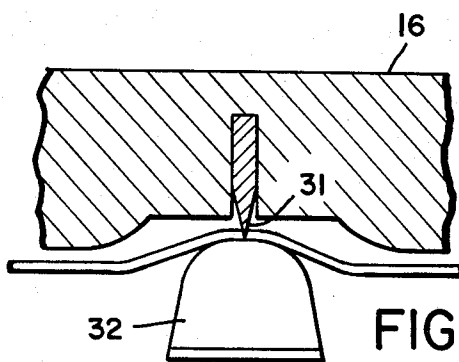


FIG_3

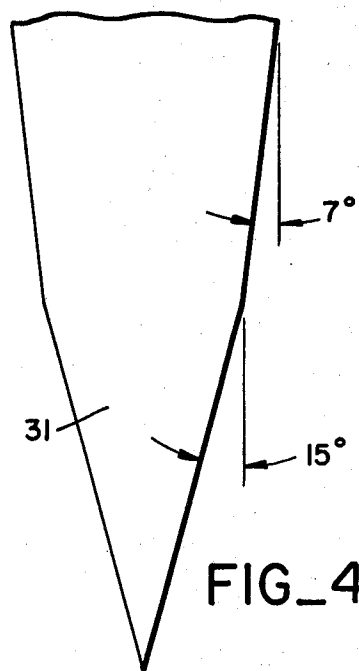


FIG_4

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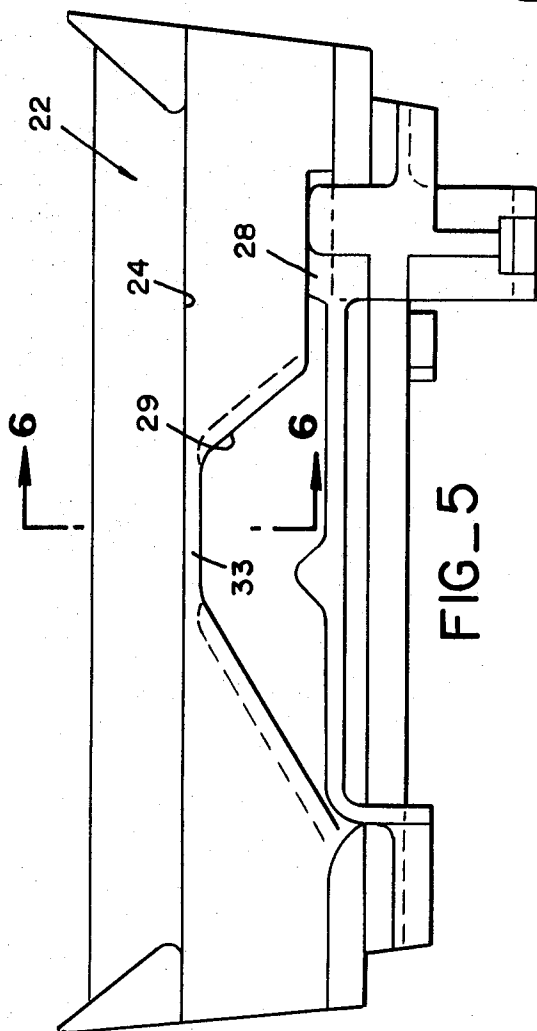


FIG_5

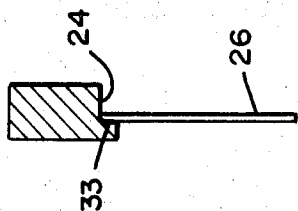


FIG_6

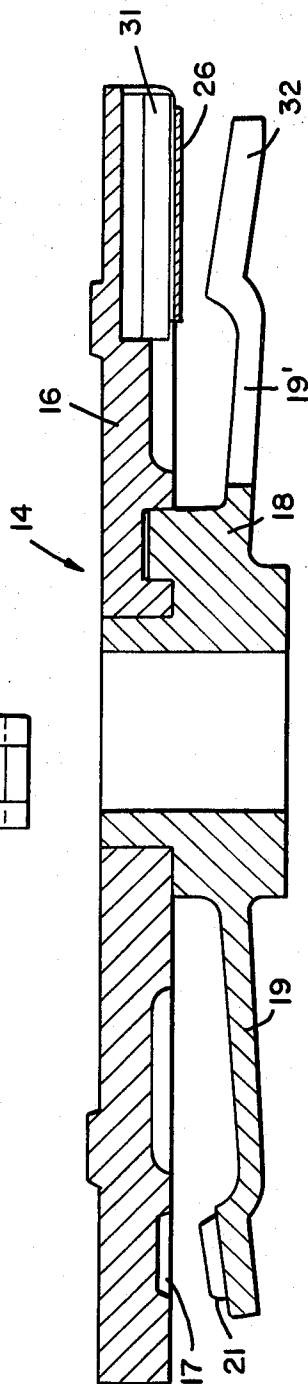


FIG_7

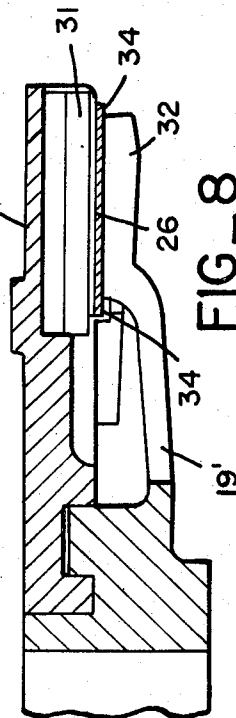


FIG_8

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EMBOSSING TOOL TAPE CUT-OFF MECHANISM

BACKGROUND OF THE INVENTION

Various embossing tools are known for selectively embossing indicia upon a strip of tape-like material and cutting off the embossed strip to provide a label. Typically, such a tool has included a body having a depressible underlying spring loaded handle pivotally secured to the forward end thereof, the handle having an upstanding pawl and embossing stud for upward movement into the body upon depression of the handle. The body is formed with a guide channel for guiding embossing tape therethrough to an embossing position, and a feed wheel is carried by the body with its periphery in the guide channel to incrementally feed the tape therethrough responsive to actuation of an associated ratchet wheel by the pawl upon depression of the handle. An embossing die wheel is rotatably mounted on the body, and such wheel has opposed sets of male and female indicia dies with one die set being rigid and the other die set being provided as depressible resilient radial leaves upwardly movable into embossing engagement with the first die set of the wheel. Upon rotation of the die wheel, opposed pairs of the dies of the male and female sets are selectively disposed in alignment with an opening of the tape guide channel on vertically opposed sides thereof, which opening is disposed at the embossing position of the body and is traversable by the embossing stud upon depression of the handle. Consequently, the pair of dies selectively positioned at the embossing position are disposed on opposite sides of a tape fed through the guide channel, and upon depression the embossing stud engages the depressible die to engage the tape between the die pair and effect an embossing operation. The opening at the embossing position is typically provided with a pair of opposed side lengths to facilitate adequate support of the tape during the embossing operation. In addition, the body has been heretofore provided with a separate tape cut-off position, such cut-off position typically including a transverse slot through the channel into which a cut-off blade can be urged by mechanism associated with the handle or a separate cut-off handle. Because of the narrowness of the slot, good support of the tape is afforded in the channel during the cut-off operation. It would of course be advantageous from the standpoints of simplicity and economy of design if the cut-off mechanism could be incorporated in the die wheel and the cut-off operation be performed at the embossing position of the body. However, problems are posed in this respect in providing adequate support of the tape during the embossing and cut-off operations.

SUMMARY OF THE INVENTION

The present invention relates to a cut-off mechanism for embossing tools, and is more particularly directed to an improved cut-off mechanism which is so arranged that the cut-off knife and anvil of the mechanism may be readily incorporated in the die wheel of the tool to effect cut-off at the embossing position thereof while adequate support of the tape is provided during the embossing and cut-off operations.

A general object of the present invention is to provide a tape embossing tool having a cut-off knife incorporated in the die wheel thereof whereby tape cut-off

is accomplished at the tape embossing position of the tool.

Another object of the invention is the provision of an embossing tool of the class described having a transverse bridge member defining a tape guide channel with a central opening for traversal by a die and cut-off actuating member, the bridge member having a very narrow ledge along one transversely extending side of the opening for support of the tape during the embossing and cut-off operations of the tool effected by the actuating member.

It is a further object of the invention to provide a tape cut-off mechanism of the class outlined hereinbefore wherein the opposite ends of the anvil are spaced inwardly from the opposite ends of the cut-off knife in order to clear the support ledge of the bridge opening upon upward depression of the anvil such that the tape is centrally transversely severed to points very closely spaced to the opposite side edges thereof, the very narrow uncut side portions of the tape still permitting severance of the tape at the cut line upon pulling of the leading end of the tape therefrom.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of an embossing tool embodying a cut-off mechanism in accordance with the present invention.

FIG. 2 is a schematic sectional view of the blade and anvil portion of the cut-off mechanism depicting same in unactuated position relative to a strip of tape-like material to be cut.

FIG. 3 is a view similar to FIG. 2, but depicting the blade and anvil in actuated cut-off position relative to the tape.

FIG. 4 is a plan view on an enlarged scale of a preferred form of the cut-off blade of the mechanism.

FIG. 5 is a plan view of a bridge member of the cut-off mechanism.

FIG. 6 is a sectional view taken at line 6—6 of FIG. 5.

FIG. 7 is a sectional view taken at a diametric plane through an embossing die wheel of the tool further depicting the blade and anvil portion of the cut-off mechanism in unactuated position.

FIG. 8 is a fragmentary sectional view similar to FIG. 7, but depicting the blade and anvil in actuated position.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT OF THE INVENTION

Referring now to FIG. 1 in detail, there is shown a tape embossing tool 11 which includes a body 12 having an underlying spring loaded actuating handle 13 pivotally secured to the forward end thereof. Mounted upon the body 12, there is provided a selectively rotatable embossing die wheel 14 having a relatively rigid upper disk member 16 formed at its lower face with a plurality of circumferentially spaced indicia female dies 17 (see FIG. 7). The die wheel is further provided with a lower disk member 18 defined by a plurality of circumferentially spaced radial upwardly depressible leaves 19 which carry male dies 21 complementary to the female dies 17. The male dies are thus engageable with the female dies upon upward depression of the leaves 19. The upper and lower disk members 16 and 18 define a slot therebetween which is traversed by a transverse bridge member 22 (see FIG. 5) secured to the body

such that rotatably selectable complementary female and male dies 17 and 21 straddle the bridge on the opposite sides thereof when the selected dies are rotated into an embossing position, as generally indicated at 23. More particularly, the bridge member is formed with a tape guide channel 24 longitudinally thereof whereby the guide channel extends transversely of the body to receive a strip of tape 26 from a cartridge 27 laterally secured to the body 12 and transversely guide the tape therethrough to the embossing position 23 whereat the selected complementary female and male dies are on opposite sides of the bridge member 22. Incremental feed of the tape 26 through channel 24 is accomplished in a generally conventional manner by means of a feed wheel 28 (see FIG. 5) having a peripheral portion extending into the channel and having an associated ratchet wheel (not shown) actuable by means of a pawl (not shown) carried by handle 13 upon depression thereof. In addition, bridge member 22 is provided with an opening 29 centrally of guide channel 24 at the embossing position 23 such that the selected dies 17 and 21 are directly disposed on opposite sides of the tape 26 at the opening. An embossing operation is then effected by upward depression of the selected male die towards the complementary female die to thereby engage the tape therebetween, which operation is effected by means of an embossing stud (not shown) carried by handle 13 to upwardly engage the selected depressible male die upon depression of the handle and urge the male die upwardly through the channel opening 29 into embossing engagement with the tape.

Aside from the previously described embossing operation, it is also necessary that the embossing tool 11 include provision for cutting off the embossed tape in order to provide a tape label. Heretofore the general practice has been to provide a tape cut-off position separate from the embossing position and spaced therefrom in the direction of tape feed through the guide channel. At the separate cut-off position it has been the usual practice to provide a cut-off knife selectively engageable with an anvil through a slot formed in the tape guide channel upon actuation of the handle in a selected position thereof, or actuation of a separate cut-off handle. The slot, of course, provides adequate support of the tape during the cut-off operation. However, the separate cut-off position and associated cut-off mechanism actuating means lend considerably to the complexity and expense of the overall embossing tool.

In accordance with the particularly salient aspects of the present invention a cut-off mechanism is provided which is arranged for actuation at the embossing position 23 of tool 11 by the embossing stud upon actuation of the handle 13, thereby resulting in a relatively simple and inexpensive arrangement. More particularly, the rigid upper disk member 16 of die wheel 14 is provided with a downwardly facing radially extending cut-off knife 31 at one of the selectable die positions thereof. When the wheel is rotated to position the knife at the embossing position 23, such knife is disposed transversely of the guide channel 24 in overlying relation to opening 29. The lower disk member 18 of the die wheel is provided with a leaf 19' formed with an anvil 32 in opposition to the knife 31. At the embossing position 23, the anvil is thus disposed subjacent channel opening 29 such that the tape 26 is interposed between the knife and anvil thereat as best shown in FIG. 2. When

the handle 13 is depressed, the embossing stud depresses the anvil upwardly through the channel opening to engage the tape between the anvil and knife, as best shown in FIG. 3, and thereby transversely cut off the tape.

The knife 31 is preferably of a double bevelled configuration as shown in FIG. 4. In this regard, the shank portion of the knife which is embedded in the disk member 16 is best bevelled at an angle of the order of 7° while the tip portion of the shank is bevelled from the shank at an angle of the order of 15°.

It will be appreciated that it is necessary to provide adequate support of the tape 26 at the channel opening 29 during the embossing and cut-off operations. Accordingly, as an important feature of the present invention the forward edge of the opening is formed with a very narrow support ledge 33 as shown in FIGS. 5 and 6. The ledge width is preferably in a range from about one thirty-second inch to about three sixty-fourth inch. In order to clear the ledge while still effecting a clean cut-off action with knife 31, the opposite ends of the anvil 32 are inwardly spaced from the opposite ends of the knife and the edges of the tape by a very small amount of the order of the width of ledge 33, as best shown in FIGS. 7 and 8. Thus, when the tape is engaged between the anvil and knife as shown in FIG. 8, the tape is centrally transversely cut to points closely inwardly spaced from the opposite side edges thereof and very narrow uncut portions 34 remain at the side edges of the order of the width of the support ledge 33. By virtue of the minuteness of the uncut side portions of the tape, complete severance is still readily effected upon pulling the leading end of the tape away from the trailing end thereof.

I claim:

1. In an embossing tool having a body, a depressible actuating handle disposed subjacent said body and pivotally secured to the forward end thereof, and an embossing die wheel rotatably mounted on said body having an upper disk member formed at its lower face with a plurality of circumferentially spaced female dies and a coaxially spaced lower disk member defined by a plurality of circumferentially spaced radial upwardly depressible leaves carrying male dies complementary to said female dies, said die wheel being adapted to receive a strip of tape between said disks at an embossing position of said body with the set of dies selectively rotatably disposed at said embossing position being actuable responsive to depression of said handle and upwardly urged movement of the leaf carrying the male die of said set by an embossing stud projecting upwardly from said handle, the combination comprising a bridge member secured to said body and extending between said upper and lower disk members of said die wheel, said bridge member having a channel for guiding said tape through said body, said channel having an opening at said embossing position for upward movement of the male die of the selected die set there-through, a downwardly facing radially extending cut-off knife secured to said upper disk member at one end of the die positions thereof, and an anvil carried by the leaf of said lower disk member opposed to said knife for cut-off engagement therewith upon upwardly urged movement of said anvil by said stud when said knife and anvil are selectively positioned at said embossing position by rotation of said die wheel, said anvil opposite ends being inwardly spaced from the corresponding

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opposite ends of said knife and the opposite edges of said tape by amounts relatively small with respect to the transverse width of said tape and the length of said knife, so that when said tape is engaged between said anvil and said knife, said tape is centrally transversely cut between points closely inwardly transversely spaced from the opposite side edges thereof and very narrow uncut portions remain at said side edges between said points and said opposite edges respectively, said channel having a very narrow tape support ledge extending along one edge of said opening longitudinally of said channel, said knife having an upper shank portion with opposite faces bevelled toward the knife

major axis at one acute angle, and having a lower tip portion with opposite faces bevelled toward said knife major axis at a larger acute angle.

2. The combination of claim 1, further defined by said one acute angle being of 7° and said larger acute angle being of 15°.

3. The combination of claim 2, further defined by said ledge having a width in a range of from about one thirty-second inch to about three sixty-fourth inch, and the opposite ends of said anvil being inwardly spaced from the opposite ends of said knife by amounts of the order of the width of said ledge.

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