United States Patent

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[54] **BELT ROTARY DIECUTTER**
1 Claim, 2 Drawing Figs.

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[51] **Int. Cl.** **B31b 1/06,** B31b 1/22, B26d 7/20
[50] **Field of Search** ..... 93/1 G, 36 A, 58–58.4, 59 CE, 93 DP; 83/661; 74/233

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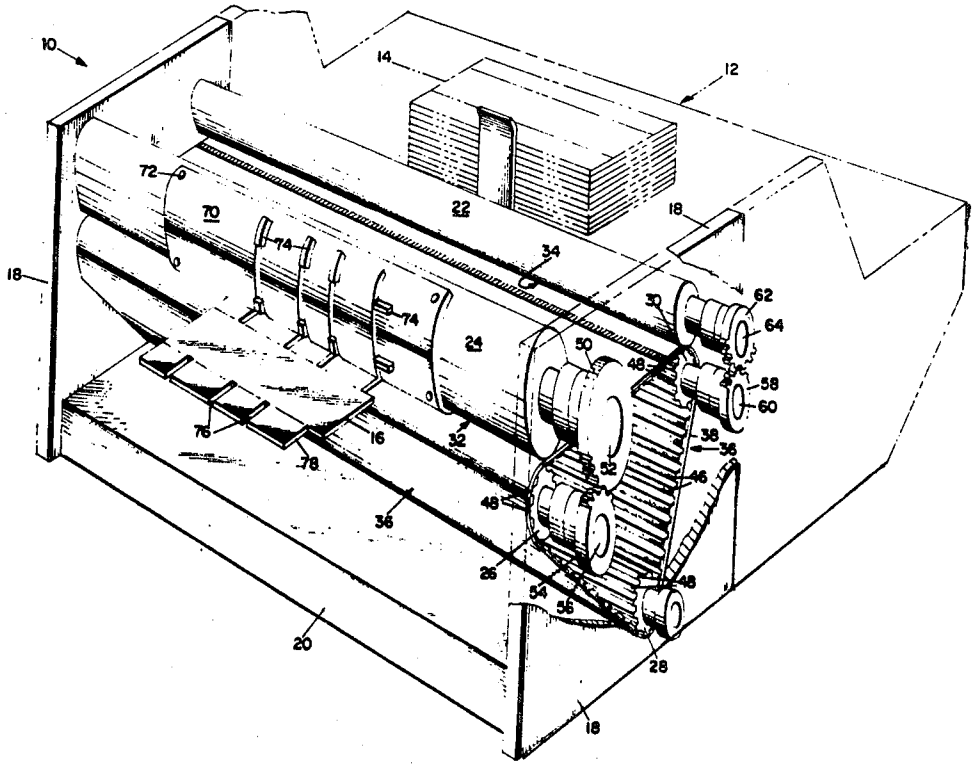
ABSTRACT: Diecutting apparatus for cutting and slotting corrugated carton blanks comprising, a rotatable die-mounting roll carrying a plurality of cutting dies on its periphery, a backup roll defining, with the die-mounting roll, a nip, a resilient endless belt passing through the nip and entrained around the backup roll, and feed means for feeding a carton blank into the nip for the cutting and slotting thereof by the cutting die.



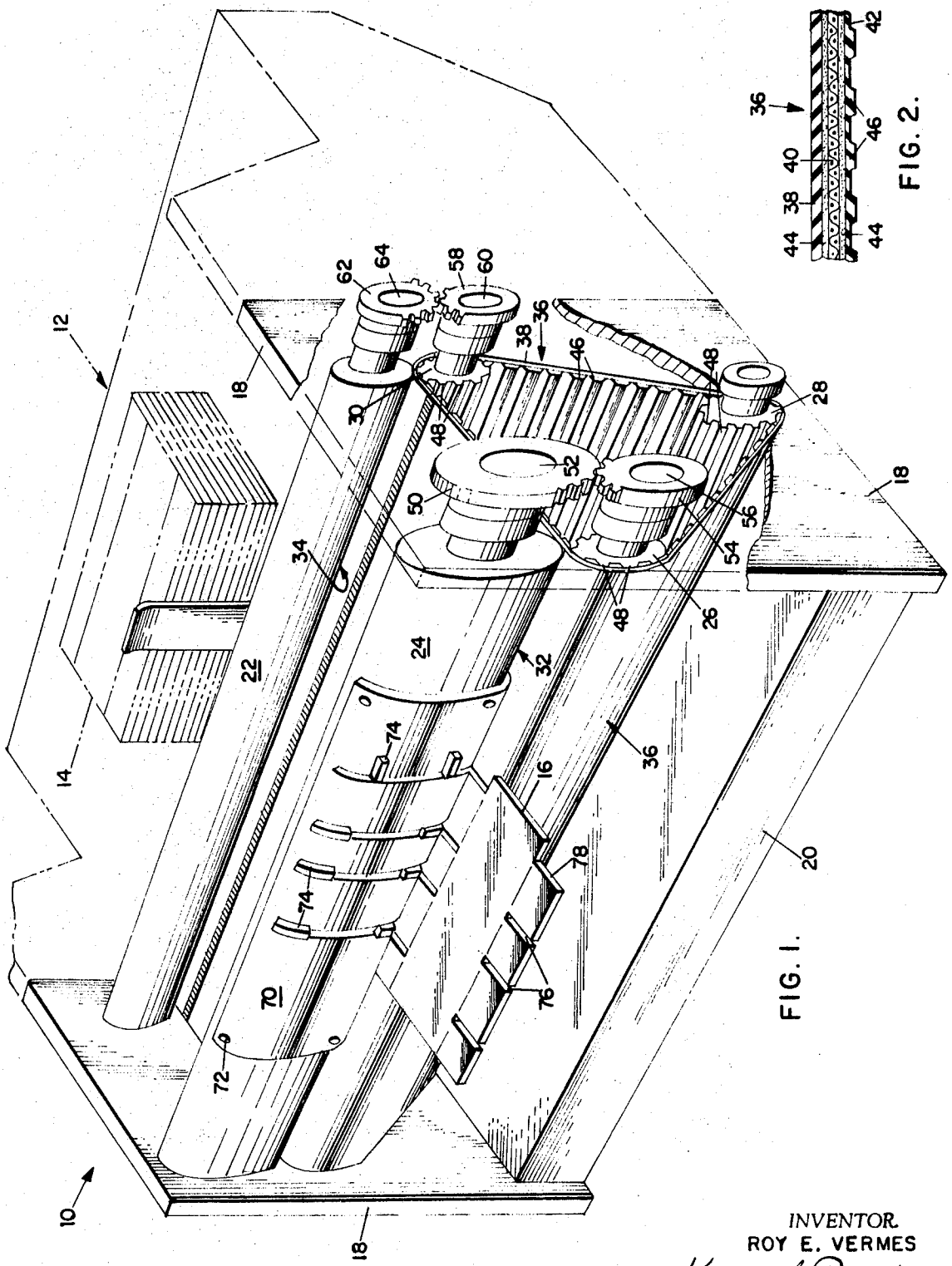


FIG. 1.

FIG. 2.

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BELT ROTARY DIECUTTER

BACKGROUND OF THE INVENTION

1. Field of the Invention

Diecutting apparatus for cutting and scoring corrugated carton blanks.

2. Description of The Prior Art

The prior art diecutters utilize resilient backup rolls or nonresilient steel backup rolls, each having relatively short lives and being quite expensive to maintain and/or replace.

SUMMARY OF THE INVENTION

A primary object of the invention is to replace such nonresilient or resilient rolls with a resilient belt in combination with a nonresilient roll, the belt passing through the nip between a backup roll and a die-mounting roll.

Such a resilient belt offers the advantages that: (a) its length is far greater than the possible circumference of any resilient roll, thereby giving longer life between changes; (b) the smaller diameter permitted to the backup roll provides improved stripping; and (c) the belt can be replaced much more economically than a roll.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a view, in perspective, of diecutting apparatus embodying the invention, with certain parts broken away and others shown in phantom for purposes of clarity; and

FIG. 2 is an enlarged, fragmentary view, in cross section, of the resilient belt of the diecutting apparatus of FIG. 1.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

The diecutter embodying the invention is shown in solid lines and is generally indicated by 10.

A conventional timed feed unit, generally indicated by 12, is shown in phantom in its usual position relative to the diecutter and will be understood to advance corrugated blanks 14 in seriatim from a stack thereof to the diecutter where they are cut and slotted to form cartons blanks such as indicated at 16.

The diecutter includes a pair of spaced upright end frames 18 and 18 interconnected at their lower ends as by a base frame 20.

The end frame on the near side of FIG. 1 has been broken away to better reveal the invention.

A plurality of rolls rotatably mounted between and relative to the end frames includes a pull roll 22, a die-mounting roll 24, a lower backup roll 26, a takeup roll 28 and an idler roll 30, with die-mounting roll 24 and lower backup roll 26 defining a nip 32 therebetween and with pull roll 22 and idler roll 30 defining a nip 34 therebetween.

Rolls 26, 28 and 30 are arranged in triangulate fashion wherefore an endless resilient belt, generally indicated by 36, may be entrained therearound, with the upper horizontal reach of the belt passing through nips 32 and 34.

Belt 36 preferentially is of a laminated three-ply structure comprising an uppermost ply 38 of a suitable resilient material, such, for example, as rubber, an intermediate ply 40 of

such as wire cloth, and a lowermost ply 42 of such as rubber, all of the plies being bonded together by any suitable adhesive 44.

The undersurface of ply 42 is provided with cogs 46 which mesh with peripheral teeth 48 on each of the triangulated rolls 26, 28 and 30.

Die-mounting roll 24 is rotated by a suitable drive means which is not here shown, which means will operate in timed relation with feed unit 12.

A gear 50, mounted on a shaft extension 52 of die-mounting roll 24, meshes with a gear 54, mounted on a shaft extension 56 of lower backup roll 26, wherefore rotation of the die-mounting roll sets up a concomitant rotation of the lower backup roll and therefor of endless belt 36 and idler roll 30.

A gear 58, mounted on a shaft extension 60 of idler roll 30, meshes with a gear 62, mounted on a shaft extension 64 of pull roll 22, wherefore the pull roll rotates in concert with the idler and die-mounting rolls.

A curved die plate 70 is mounted peripherally of die-mounting roll 24 as by screws 72, the die plate carrying outwardly extending cutting dies 74 on its outer face which are so positioned as to cut out slots 76 and 78 at the sides and ends of carton blank 16 upon rotation of the die-mounting roll and as the carton blank passes therepast.

The endless belt serves as a resilient backing to the carton blank and additionally helps to convey the blank from feed unit 12 and nip 34 to nip 32 at the die-mounting roll and lower backup roll.

Herein, the resilient belt, in combination with a nonresilient backup roll, replaces the usual nonresilient or resilient backup rolls.

I claim:

1. Diecutting apparatus for cutting and slotting corrugated carton blanks comprising,

a pair of spaced end frames,

a plurality of rolls rotatably mounted between and relative to the end frames and comprising a pull roll, a die-mounting roll, a nonresilient lower backup roll, a takeup roll, and an idler roll, the pull roll and the idler roll defining a first nip therebetween, and

the die-mounting roll and the lower backup roll defining a second nip therebetween,

a cutting and slotting die on the periphery of the die-mounting roll,

the lower backup roll, takeup roll and idler roll being arranged in triangulate fashion,

an endless resilient belt entrained around the lower backup roll, takeup roll and idler roll,

the upper horizontal reach of the belt passing through said first and second nips,

means for rotating the rolls for setting up a concomitant rotation of the endless belt,

with the belt feeding a corrugated carton blank into and through the nips and serving as a resilient backing for the carton blank as it is cut and slotted by the rotating cutting and slotting die.