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PAPER-CUTTING MACHINE

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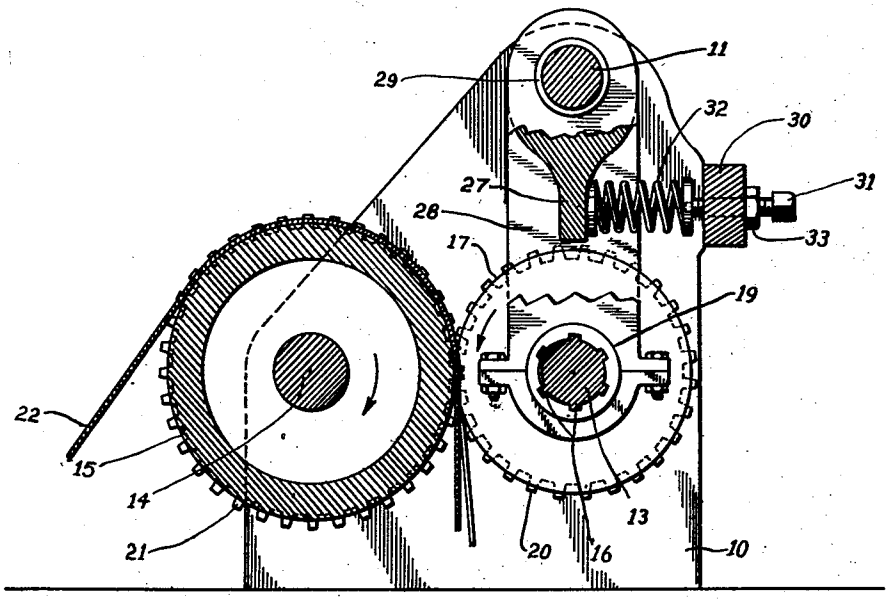


FIG. 1

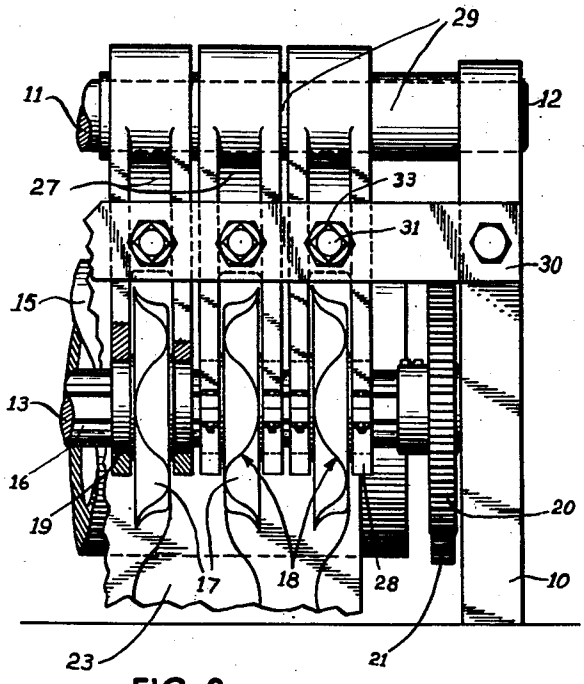


FIG. 2

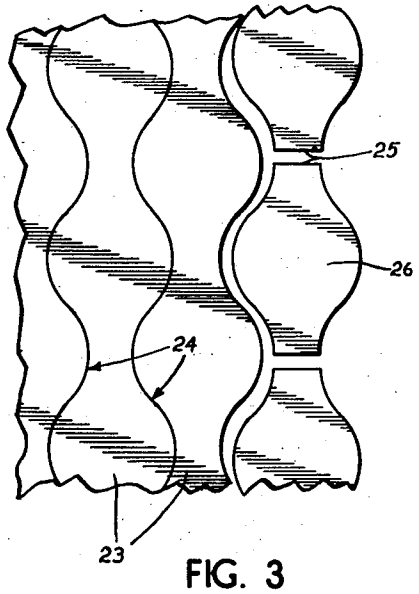


FIG. 3

INVENTOR:
IRVIN L. YOUNG
BY Stevens & Batchelor
ATTORNEYS.

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PAPER-CUTTING MACHINE

Irvin L. Young, Chicago, Ill.

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8 Claims. (Cl. 164—28)

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My invention relates to the cutting of paper stock into seals or stickers for packages, wrappers and the like, and more particularly to means for cutting the units on a quantity basis, and one object of the invention is to provide a machine for the above purpose which operates on a high speed rotary principle.

A further object is to devise a machine of the above character which cuts a series of longitudinal units from which the seals are made, such units being grouped in a manner to leave no paper waste between them.

Another object is to design the novel machine with a cutting unit which operates under spring pressure and insures the full application of the cutting blades to the paper stock.

An important object is to construct the machine along lines of compactness and simplicity.

With the above objects in view and any others which may suggest themselves from the description to follow, a better understanding of the invention may be had by reference to the accompanying drawing, in which—

Fig. 1 is a vertical section of the machine;

Fig. 2 is an elevation as seen from the right-hand side of Fig. 1; and

Fig. 3 is a plan view of a fragment of the paper stock after it has been cut and formed in part into stickers.

Referring specifically to the drawing, 10 denotes a pair of side walls forming the frame of the machine. The walls 10 are spaced at the top by a shaft 11 whose ends 12 are tightly driven or otherwise rigidly secured to the walls; and the walls journal front and rear shafts 13 and 14 in the lower portion of the frame.

The rear shaft 14 is designed to receive motion from a suitable power source (not shown), and carries a hard-surfaced roller 15. The shaft 13 is made with a series of longitudinal splines 16, and carries a set of circular cutter discs 17 formed with serpentine peripheral blades 18. Each disc 17 has a hub 19; and the latter fits the splines 16 with a small amount of radial play.

Generally, the spacing of the shafts 13 and 14 is such that the cutter blades 18 meet the surface of the roller 15; and the shafts carry meshing gears 20 and 21 to render the roller and cutter blades movable in unison, as indicated by arrows in Fig. 1. Thus, when the paper web 22 is fed over the roller 15 it descends in the zone of contact between the blades and the surface of the roller, causing the web to be cut into ribbon units 23 having wavy edges 24. With the undulations of the blades regular, the formations of the units

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23 intermesh, as seen in Fig. 3, leaving no stock waste between the units. When the units are separated, as shown in the right-hand portion of the same figure, each may be cut into lengths as indicated at 25 to form the stickers 26.

Means are provided for utilizing the radial play in the cutter discs 17 to apply their blades 18 with spring pressure to the paper web 22 and thus take up possible failure of blade contact caused by depressions or wear in the blades. Thus, the shaft 11 journals a series of pendent arms 27 at points above the respective cutter discs 17. The arms are divided with sections 28 straddling the related cutter discs and journaling their hubs 19; and a series of collars 29 space the arms 27 along the shaft 11.

Fig. 1 shows that the frame of the machine has a fixed frontal cross-bar 30; and that set-screws 31 are directed through the latter to urge a spring 32 against each arm 27, the set-screws receiving locking nuts 33. The same figure shows that the spring pressure has urged the disc hubs 19 toward the left, so that the full and continuous cutting contact of the blades 18 is thus insured.

It will now be evident that the novel machine secures the continuous and geared application of the cutter blades to the moving paper web; that the design of the cutters is such as to form a series of ribbon units which leaves no paper waste between them; that the blade pressure is independent of the rotary running gear and secures the thorough application of the cutter blades to the work; that the blades are yieldable to pass irregularities or abnormalities in the zone of blade contact; and that the machine is built compactly and with the fewest number of parts consistent with efficient operation.

While I have described the invention along specific lines, various minor changes or refinements may be made therein without departing from its principle, and I desire to consider such changes and refinements as coming within the scope and spirit of the appended claims.

I claim:

1. Means for cutting a web into units comprising a rotatable roller receiving the web, a series of discs arranged in parallelism to the roller, means to jointly rotate the discs in a direction to advance the web through a contacting zone between them and the roller, and blades carried peripherally by said discs to cut the web in said contacting zone, a shaft carrying the series of discs and having a series of longitudinal splines, means in the discs to engage the splines and allow the discs a small amount of radial play,

and other means utilizing such play to urge said blades into engagement with the web.

2. Means for cutting a web into units comprising a rotatable roller receiving the web, a series of discs arranged in parallelism to the roller, means to jointly rotate the discs in a direction to advance the web through a contacting zone between them and the roller, and blades carried peripherally by said discs to cut the web in said contacting zone, a shaft carrying the series of discs and having a series of longitudinal splines, coacting splines in the discs and allowing the same a small amount of radial play, and other means utilizing such play to urge said blades into engagement with the web.

3. Means for cutting a web into units comprising a rotatable roller receiving the web, a series of discs arranged in parallelism to the roller, means to jointly rotate the discs in a direction to advance the web through a contacting zone between them and the roller, and blades carried peripherally by said discs to cut the web in said contacting zone, a shaft carrying the series of discs, means to rotatably join the discs to the shaft with a small amount of radial play, a carrier pivoting each disc for movement toward and away from the web, and means to urge the carrier toward the web to keep said blades in engagement therewith.

4. Means for cutting a web into units comprising a rotatable roller receiving the web, a series of discs arranged in parallelism to the roller, means to jointly rotate the discs in a direction to advance the web through a contacting zone between them and the roller, and blades carried peripherally by said discs to cut the web in said contacting zone, a shaft carrying the series of discs, means to rotatably join the discs to the shaft with a small amount of radial play, a carrier pivoting each disc for movement toward and away from the web, and yieldable means to urge the carrier toward the web to keep said blades in engagement therewith.

5. Means for cutting a web into units comprising a rotatable roller receiving the web, a series of discs arranged in parallelism to the roller, means to jointly rotate the discs in a direction to advance the web through a contacting zone between them and the roller, and blades carried peripherally by said discs to cut the web in said contacting zone, a shaft carrying the series of discs, means to rotatably join the discs to the shaft with a small amount of radial play, a carrier pivoting each disc for movement toward and away from the web, and an adjustable spring to urge the carrier toward the web to keep said blades in engagement therewith.

6. Means for cutting a web into units comprising a rotatable roller receiving the web, a series of discs arranged in parallelism to the roller, means to jointly rotate the discs in a direction to advance the web through a contacting zone between them and the roller, and blades carried peripherally by said discs to cut the web in said contacting zone, a shaft carrying the series of discs, means to rotatably join the discs to the shaft with a small amount of radial play, a carrier journaling each disc and pivoting the same for movement toward and away from the web, and means to urge the carrier toward the web to keep said blades in engagement therewith.

7. Means for cutting a web into units comprising a rotatable roller receiving the web, a series of discs arranged in parallelism to the roller, means to jointly rotate the discs in a direction to advance the web through a contacting zone between them and the roller, and blades carried peripherally by said discs to cut the web in said contacting zone, a shaft carrying the series of discs, each of these having outward hub sections, means to rotatably join the discs to the shaft with a small amount of radial play, a carrier forked to straddle each disc, the legs of such carrier journaling the hub sections of each disc and pivoting the latter for movement toward and away from the web, and means to urge the carrier toward the web to keep said blades in engagement therewith.

8. A mechanism for cutting a web into sections comprising a rotatable roller receiving the web, a series of discs arranged in parallelism to the roller, means to jointly rotate the discs in a direction to advance the web through a contacting zone between them and the roller, blades carried peripherally by said discs to cut the web in said contacting zone, means for providing radial play to each disc, yieldable means for utilizing said play to take up possible failure of blade contact caused by depressions or wear in the blades, and said radial play means including a shaft carrying the discs and provided with longitudinal splines.

IRVIN L. YOUNG.

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