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Continuation-in-part of Ser. No. 501,747, October 22, 1965, now abandoned.

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[54] **MULTIPLE ANVIL STRUCTURE FOR ROTARY DIE CUTTING**  
 2 Claims, Drawing Figs.

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 93/1, 83/659, 83/678

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 B26d 7/26, B26d 9/00

[50] Field of Search ..... 93/1(G), 58  
 58.2, 58.4; 83/659, 678

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**ABSTRACT:** Rotary anvil construction for rotary die cutting of carton blanks across open spaces including a shaft, two spaced rotary slotting anvils slidably mounted on said shaft with the slots remote, each having a resilient cover, rotary anvils between said two slotting anvils having resilient covers spaced from each other and from the slotting anvils, said spaced anvil covers adapted to support a carton blank for a continuous rotary cut thereacross and across the intervening spaces.

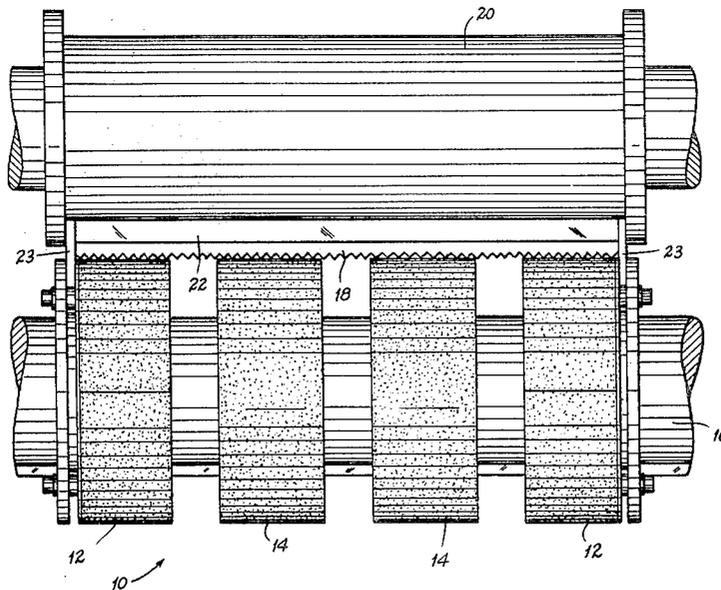


Fig. 1.

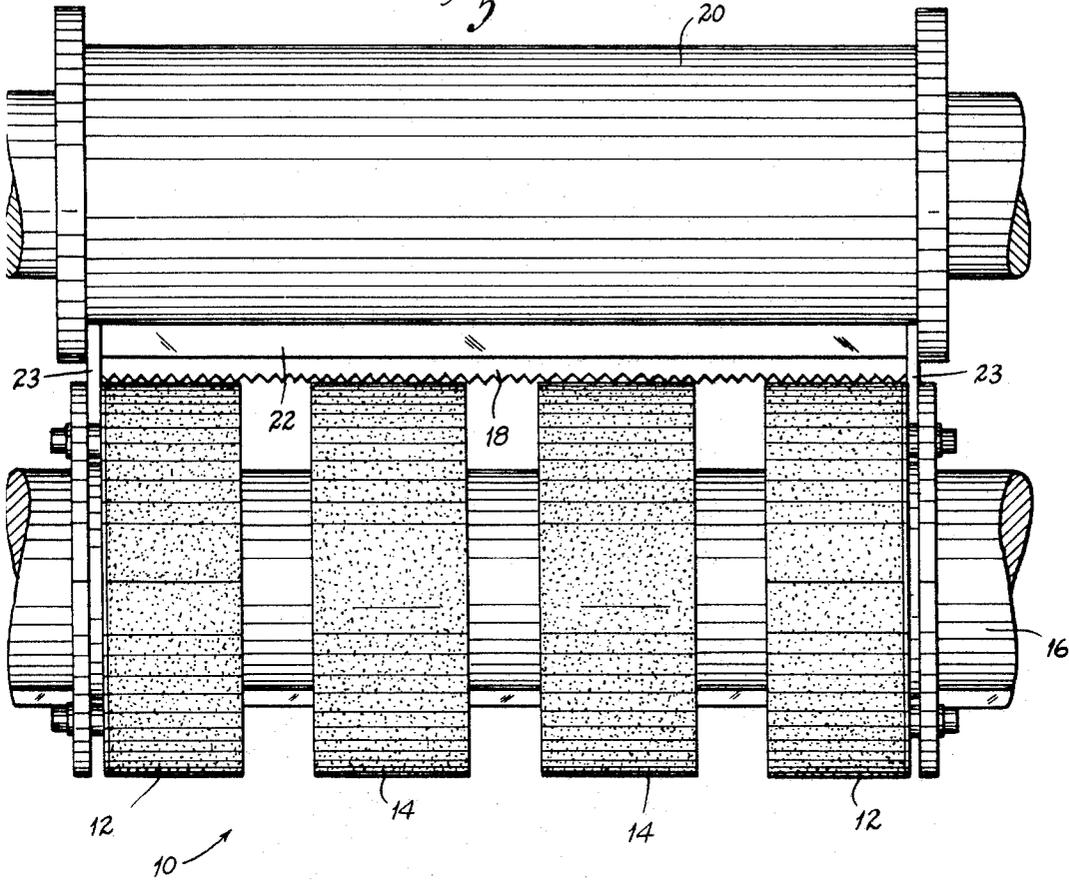
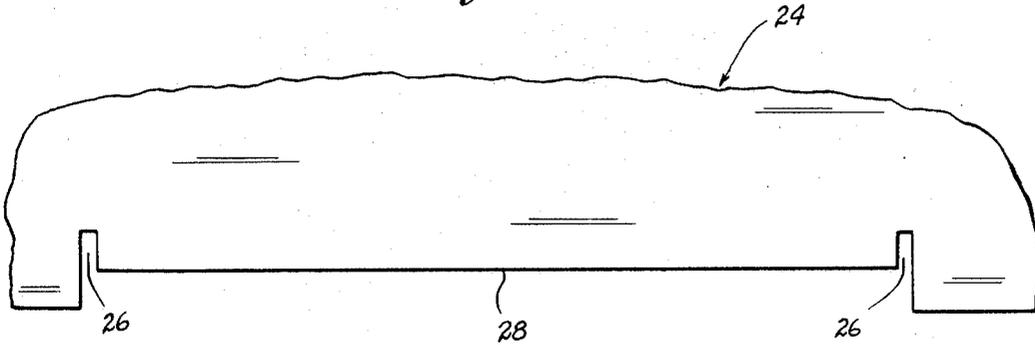


Fig. 2.



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Fig. 3.

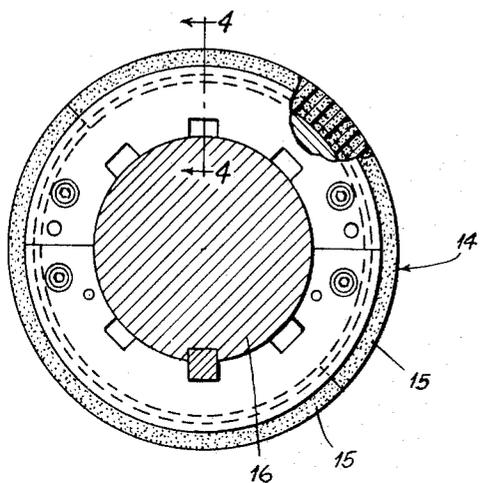


Fig. 4.

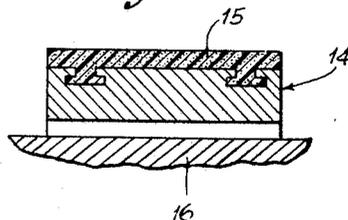


Fig. 5.

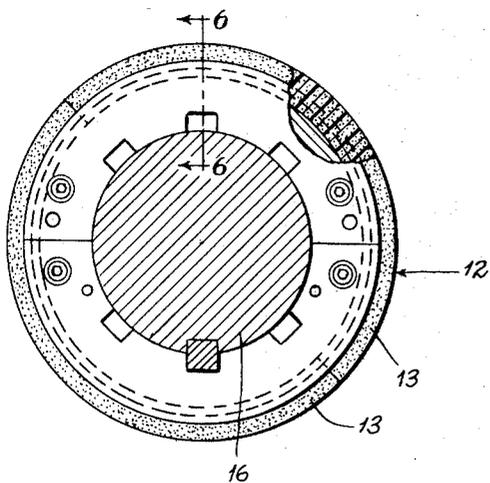
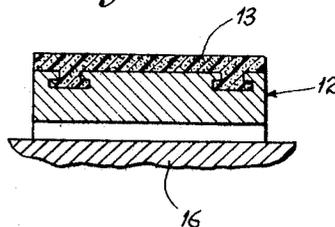


Fig. 6.



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U.S. PATENT 3,522,762  
**MULTIPLE ANVIL STRUCTURE FOR ROTARY DIE  
 CUTTING**

The present application is a continuation in part of Sauer application Serial No. 501,747, filed October 22, 1965, now abandoned.

The present invention relates generally to rotary die cutting, and more specifically to a novel rotary anvil structure and method finding particular application in notching or slotting and cutting box flaps, and the like, having different distances between notches or slots.

There has long existed the need for an adjustable rotary anvil structure for slotting and cutting box flaps, and the like, in which the width of the straight line cut between the slots may vary. Presently, it is necessary to provide separate rotary anvil structures, one for each width of straight cut. This is expensive in cost of equipment, downtime and labor.

Therefore, an object of the present invention is to provide a novel rotary anvil structure which supplies the long existing need.

In brief, in a preferred embodiment, the present novel rotary anvil structure includes on a common shaft two rotary slot anvils between which are disposed none, one, or more, rotary anvils which are spaced as required to give an initial maximum predetermined space between each anvil and the slot anvils, providing gaps or spaces therebetween depending upon the overall length from the slot in one slot anvil to the slot in the other slot anvil.

Hence, other objects are to provide a novel rotary anvil structure which provides an adjustable support to accommodate straight line cuts of varying lengths between predetermined maximum and minimum limits, which reduces downtime to a minimum, which is of simple construction making it usable at maximum efficiency with minimum instruction, which is relatively inexpensive, and which otherwise fulfills the objects and advantages sought therefor.

The foregoing and other objects and advantages are apparent from the following description taken with the accompanying drawing in which:

**FIGURE 1** is a diagrammatic view of a rotary anvil structure constructed to include the principles of the present invention, illustrated in operative relation with a rotary die;

**FIGURE 2** is a fragmentary plan view of flaps and side of a carton cut with the structure of **FIGURE 1**;

**FIGURE 3** is a transverse vertical cross-sectional view taken through the lower shaft of **FIGURE 1** between the right hand rotary slot anvil and the right hand rotary anvil, looking at the right side of the latter, a portion of the rotary anvil being broken away for illustration of detail;

**FIGURE 4** is an axial vertical cross-sectional view taken on substantially the line 4-4 of **FIGURE 3**;

**FIGURE 5** is a transverse vertical cross-sectional view taken through the lower shaft of **FIGURE 1** between the left hand rotary slot anvil and the left hand rotary anvil, looking at the right side of the former, a portion of the rotary slot anvil being broken away for illustration of detail; and

**FIGURE 6** is an axial vertical cross-sectional view taken on substantially the line 6-6 of **FIGURE 5**.

Referring to the drawing more particularly by reference numerals, **10** indicates generally a rotary anvil structure incorporating the teachings of the present invention, which includes two rotary slot anvils **12** having resilient covers **13** and two intermediate rotary anvils **14** having resilient covers **15**, all adjustably mounted upon a shaft **16** in spaced relation for movement therealong, as shown in **FIGURES 1, 3 and 5**. Illustrated in cutting relation with the anvils **12** and **14** in bridging relation therewith is a straight continuous rule or knife **18** mounted upon a cylinder **20** through an arcuate support **22**. At each end of the rule **18** is a slotting punch **23**. Consistent with issued Sauer patents, anvils **12** and **14** and covers **13** and **15** are illustrated as of two halves.

In **FIGURE 2** there is shown a fragment of a carton **24** which has been slotted at **26** and cut along the straight line **28** on the structure **10**. The paperboard or cardboard of the blank from which the carton **24** is formed bridges the spaces between the anvils **12** and **14**, yet is cleanly and accurately cut by the rule **18**. It is clear that the structure **10** permits slotting and cutting of cartons having a cut **28** of predetermined maximum and minimum widths between slots.

It is apparent that there has been provided a novel anvil structure which fulfills the objects and advantages sought therefor.

It is to be understood that the foregoing description and the accompanying drawings have been given by way of illustration and example. It is also to be understood that changes in form of the elements or steps, rearrangement of parts or steps, and substitution of equivalent elements or steps, which will be obvious to those skilled in the art, are contemplated as within the scope of the present invention which is limited only by the claims which follow.

I claim:

1. In combination, a rotary anvil structure comprising a support, at least two rotary anvils on said support, each anvil having a resilient cover, said anvils being spaceable apart a predetermined maximum distance and being either fixed or adjustable axially along said support between maximum spaced positions and positions in which said anvils are contiguous, said anvils being adapted to receive thereon paperboard and the like blanks spanning said distance for cutting by a rotary die across said distance between said anvils, said predetermined maximum distance being substantially equal to the free span of paperboard adapted to be effectively severed by an axial rotary die knife spanning the distance, a rotary die mounted in operative relation to said anvils, said die including at least one generally axially oriented knife spanning the distance between said anvils for cutting thereacross, said two rotary anvils comprising rotary slot anvils, each slot anvil including a slot and an adjacent resilient cover, said slot anvils being disposed with the slots in remote positions, said slot anvils being adapted to support blanks of paperboard material and the like for spaced slots therethrough and for cuts therethrough between such slots spanning the distance between said anvils, the axial adjustment of said slot anvils permitting carton slotting of different widths between slots.

2. In combination, a rotary anvil structure comprising a support, at least two rotary anvils on said support, each anvil having a resilient cover, said anvils being spaceable apart a predetermined maximum distance and being either fixed or adjustable axially along said support between said maximum spaced positions and positions in which said anvils are contiguous, said anvils receiving thereon paperboard and the like blanks spanning said spaced positions for cutting by a rotary die across said distance between said anvils, said predetermined maximum distance being substantially equal to the free span of paperboard effectively severed by an axial rotary die knife spanning said distance, a rotary die mounted in operative relation to said anvils, said die including at least one generally axially oriented knife spanning the distances between said anvils for cutting thereacross, said two rotary anvils comprising rotary slot anvils, each slot anvil including a slot and an adjacent resilient cover, said slot anvils being disposed with the slots in remote positions, said slot anvils supporting blanks of paperboard material and the like for spaced slots therethrough and for cuts therethrough between such slots spanning the distance between said anvils, the axial adjustment of said slot anvils permitting carton slotting of different widths between slots, and including at least one rotary anvil having a resilient cover on said support between and spaceable from said slot anvils predetermined distances to provide predetermined gaps to be spanned by paperboard blanks for cuts thereacross.