May 1, 1951 T. E. PIAZZE 2,551,335

WEB CUTTING MECHANISM

Filed March 29, 1946

Fig. 1.

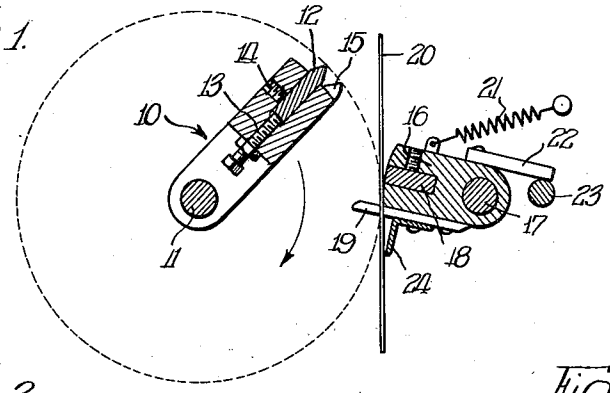


Fig. 2.

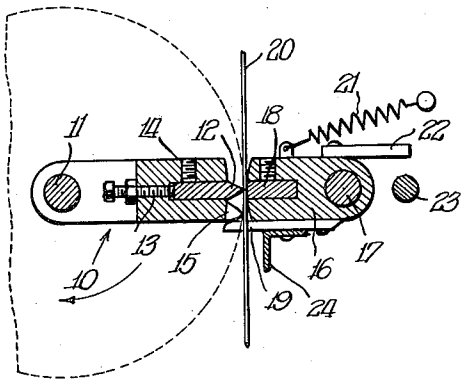


Fig. 3.

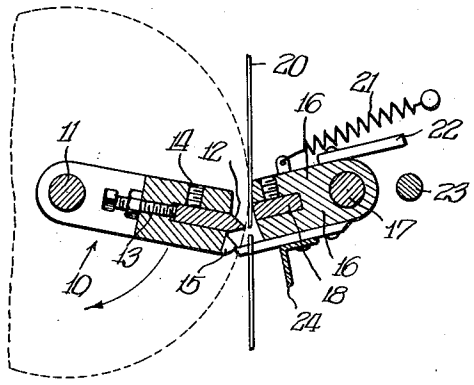
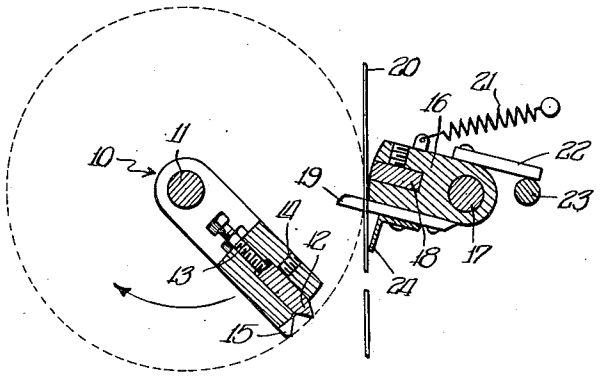


Fig. 4.



INVENTOR.
Thomas E. Piazze,
BY
Cromwell, Greist & Warden
Attys.

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WEB CUTTING MECHANISM

Thomas E. Piazze, Mount Vernon, Ohio, assignor to Shellmar Products Corporation, Mount Vernon, Ohio, a corporation of Delaware

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9 Claims. (Cl. 164—66)

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This invention relates to improvements in web cutting mechanism. More particularly, it pertains to a web cutting mechanism having a rotating cutting blade and an oscillating anvil cooperatively associated therewith, and the provision of such a device is a principal object of the invention.

Heretofore it was customary to utilize a rotatable cutting blade, or chisel knife, mounted in a roller operating in conjunction with an anvil which consisted merely of a roller of either an idler or controlled type. One of the difficulties encountered in such types of anvil roller is the eccentricities of its peripheral surface. The variations in the peripheral surface as a rule are so great as to vary the accuracy of pressure needed to be exerted by the chisel knife in order to cut or sever webs passing between such a knife and anvil roller. This often resulted in failure properly to cut or sever light web materials, and was especially conducive to wear and tear because of the great pressure needed to accommodate the cutting blade edge to variants in the peripheral surface of the anvil roller. Furthermore, because of the bulk and diameters of such anvil rollers it was impossible to bring guide members, conventionally utilized in guiding the cut webs in a linear direction, sufficiently close to the anvil member in the cutting region to cause the guide members to function with maximum efficiency.

Generally, it is an object of the invention to overcome the foregoing difficulties and disadvantages and to provide a web cutting mechanism which is sturdy and durable of construction, economic of manufacture, and which will operate with relative freedom from wear and tear and other mechanical difficulties.

More specifically, it is an object of the invention to provide a web cutting mechanism comprising in combination a rotatable knife holder and a knife carried thereby, an oscillatable anvil holder and an anvil mounted therein, and means for actuating the anvil holder in timed relation with the knife holder, whereby the knife will cut a web against the anvil as the web passes therebetween.

Other objects of the invention will in part be obvious and will in part appear hereinafter.

The invention accordingly comprises the features of construction, combination of elements, and arrangement of parts, which will be exemplified in the construction hereinafter set forth and the scope of the application of which will be indicated in the claims.

For a fuller understanding of the nature and

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objects of the invention reference should be had to the following detailed description taken in connection with the accompanying drawing, in which:

Fig. 1 is an end view, partly in section, illustrating a preferred embodiment of the invention showing an initial position of the operation of the device;

Fig. 2 illustrates an advanced position of the operation of the device depicted in Fig. 1, namely the cutting action;

Fig. 3 illustrates a further advanced position of the operation of the device immediately following the cutting action; and

Fig. 4 shows still a further position of the device following the cutting action.

Referring more particularly to the drawing there is illustrated generally at 10 a rotatable knife holder, mounted upon a shaft 11, and carrying a knife 12 mounted in the holder. The holder preferably constitutes a bar which is substantially rectangular in cross section as illustrated, although it will be understood that the knife can be mounted in a roller instead of the bar. However, because the roller necessitates the use of a surplus amount of stock material it is not considered necessary that such a conventional element be used. Furthermore, the utilization of the bar member permits of more ready adjustment of the cutting blade. For example, the holder may be constructed in such a manner that adjusting screws 13 can be backed against the rear of the cutting blade 12 so as to permit of ready adjustment of the blade. The blade may additionally be secured by screws such as depicted at 14.

Projecting from the front face of the knife holder is a contacting finger, or tooth, 15, the function of which will appear as the description proceeds.

Mounted to cooperate with the rotatable holder 10 is an oscillatable anvil holder 16 pivotally mounted on a member 17. The anvil holder carries an anvil 18. This anvil should be of comparatively hard material which can be replaced when necessary. Projecting from the anvil holder is another contacting member, or finger, 19, directly in the path of the finger, or tooth, 15, on the rotating knife holder but out of the path of a traveling web 20 to be cut as it passes between the cutting blade and the anvil.

As the knife 12 is rotated the contacting member 15 will strike the contacting member 19 and cause the anvil holder 16 to be moved around its pivot point 17. At the same time the anvil

18 is brought into alignment with the edge of the cutting blade 12 providing in effect a toggle arrangement whereby pressure is generated between the anvil and the knife to enhance the cutting action against the web 20. Immediately after the web has been cut, the knife holder continues to rotate and the finger, or tooth, 15 by-passes the projecting member 19. Relieved of its pressure the anvil holder 16 is moved in the opposite direction, around its pivot point 17, preferably by means of a spring member 21 secured thereto.

Preferably secured to the anvil holder is a projecting member 22 which contacts a stop member 23 to limit the direction of travel of the oscillatable anvil member.

During the restoration of the anvil member from its cutting position back to its initial position, it is desirable to guide the incoming portion of the web in a linear direction. For this purpose there is provided a guide member 24 preferably secured to the under side of the anvil member which brushes one incoming surface of the web to guide it in a linear direction.

It should be observed that while the web being cut is illustrated as traveling in a downwardly vertical direction it is also contemplated that, in machines for handling such webs for cutting, the webs can be made to travel in a horizontal or other suitable direction and that the members constituting the cutting mechanism will be disposed in a proper operative position to accommodate such direction of travel of the web. In any event the web is likely to adhere to the face of the anvil member because of static which is generated during the cutting operation. The influence of static is overcome by the guide finger 24 which contacts the web in such a manner that the web will maintain its linear direction of travel.

It will thus be seen that the objects hereinbefore set forth may readily and efficiently be attained and since certain changes may be made in the above construction and different embodiments of the invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all of the generic and specific features of the invention herein described, and all statements of the scope of the invention which, as a matter of language might be said to fall therebetween.

Having described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a web cutting mechanism, the combination comprising a rotatable knife holder and a chisel knife carried thereby, an oscillatable anvil holder and an anvil mounted therein, and cooperating intermittently contacting elements on said holders for actuating said anvil holder in timed relation with said knife holder when said knife holder is rotated, whereby said knife will sever a web simultaneously across against said anvil as the web passes therebetween.

2. In a web cutting mechanism, the combination comprising a rotatable knife holder, a knife arranged on said holder substantially parallel to the axis of rotation of said holder, an oscillatable anvil holder, an anvil mounted thereon, and cooperating abutment formations on said holders arranged to intermittently contact each other for actuating said anvil holder in timed relation with respect to said knife holder upon rotative movement of said knife holder, whereby a web will be severed by said knife as it passes between said knife and said anvil.

3. In a web cutting mechanism, the combination comprising a rotatable knife holder and a chisel knife carried thereby, an oscillatable anvil holder and an anvil mounted therein, means, including cooperating contacting fingers connected to said holders to actuate said anvil holder in one direction in timed relation with said knife holder, whereby said knife will sever a web simultaneously across against said anvil as the web passes therebetween, and means to restore the anvil holder to its initial position after the web has been cut.

4. In a web cutting mechanism, the combination comprising a rotatable knife holder and a chisel knife carried thereby, an oscillatable anvil holder and an anvil mounted therein, means, including cooperating contacting fingers connected to said holders to actuate said anvil holder in one direction in timed relation with said knife holder, whereby said knife will sever a web simultaneously across against said anvil as the web passes therebetween, and means, including a spring member connected to said anvil holder, to restore the anvil holder to its initial position after the web has been cut.

5. In a web cutting mechanism, the combination comprising a rotatable knife holder and a chisel knife carried thereby, an oscillatable anvil holder and an anvil mounted therein, means, including cooperating contacting fingers connected to said holders to actuate said anvil holder in one direction in timed relation with said knife holder, whereby said knife will sever a web simultaneously across against said anvil as the web passes therebetween, and means, including a stop element, to control the action of said anvil member in restoring the same to initial position after the web has been cut.

6. In a web cutting mechanism, the combination comprising a rotatable knife holder and a chisel knife carried thereby, an oscillatable anvil holder and an anvil mounted therein, means for actuating said anvil holder in timed relation with said knife holder whereby said knife will sever a web simultaneously across against said anvil as the web passes therebetween, and means including a movable projecting plate to guide the web in a linear direction.

7. In a web cutting mechanism, the combination comprising a rotatable knife holder and a chisel knife carried thereby, an oscillatable anvil holder and an anvil mounted therein, means for actuating said anvil holder in timed relation with said knife holder whereby said knife will sever a web simultaneously across against said anvil as the web passes therebetween, and means, including a projecting guide plate connected to said anvil holder, to guide said web in a linear direction.

8. In a web cutting mechanism, the combination comprising a rotatable knife holder, a knife arranged on said holder generally parallel to the axis of rotation, an oscillatable anvil holder, an anvil mounted thereon, cooperating contacting fingers mounted on said holders to actuate said anvil holder in one direction in timed relation with the rotation of said knife holder, whereby said knife will sever a web against said anvil as it passes between said holders, and means to restore the said anvil holder to its initial position after each successive cutting operation.

9. In a web cutting mechanism, a rotatably mounted knife holder, a knife on said holder

arranged substantially parallel to the axis of rotation thereof, an anvil holder mounted for oscillation on an axis substantially parallel to the axis of rotation of said knife holder, an anvil mounted on said anvil holder for cooperation with said knife to transversely sever a web as it passes between said knife and said anvil, intermittently contacting abutment formations on said holders for oscillating said anvil holder in one direction in timed relation with the movement of said knife holder upon rotation of said knife holder, and means for oscillating said anvil holder in the

opposite direction after each successive cutting operation.

THOMAS E. PIAZZE.

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