

C. H. HARTMAN.
SHEET CUTTER.
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1,306,009.

Patented June 10, 1919.

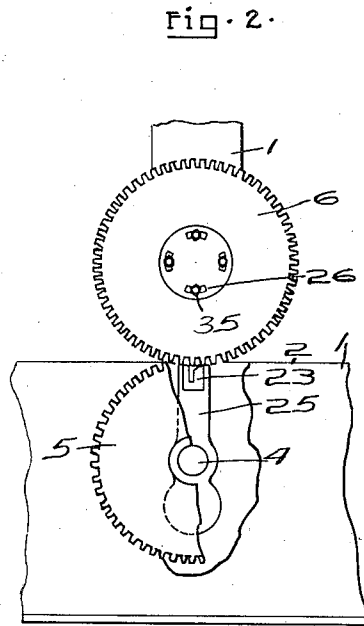
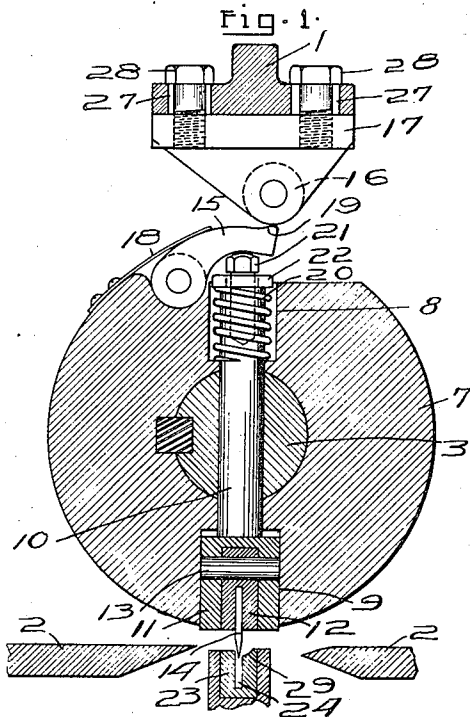
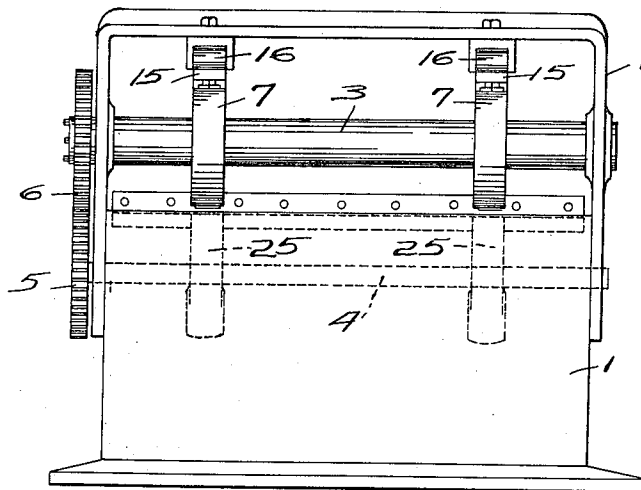


Fig. 3.



INVENTOR.
Carl H. Hartman.
by
Owen, Owen & Crampton.

UNITED STATES PATENT OFFICE.

CARL H. HARTMAN, OF TOLEDO, OHIO.

SHEET-CUTTER.

1,306,009.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, CARL H. HARTMAN, a citizen of the United States, and a resident of Toledo, in the county of Lucas and State of Ohio, have invented a certain new and useful Sheet-Cutter; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

My invention relates to mechanism for cutting material in the form of sheets, such as paper, fabric or articles formed therefrom which may partake of sheet form. The object of the invention is to provide a cutter that will perform the cutting operation with a quick cutting movement. The invention particularly is of value in its use in connection with the cutting of sheet material, where the material is moved over a plane in order that certain operations may be performed on it according to the character and the functions of the machine, and wherein the sheet material is to be cut into certain lengths or at definite points.

In the cutting operation of machine of the general type described, the cutters are timed according to the speed or movement of the sheet material, and so that the blade or other cutting instrument will move with the sheet material while it is performing its operation. By my invention is provided a means whereby the sheet material may be cut at various lengths without the necessary timing of the movement of the cutting blade with reference to the movement of the sheet.

The invention may be contained in various forms of constructions, and such constructions may be used in machines that accomplish a great variety of results. I have selected a construction containing the invention as illustrative of such constructions, and shall describe it hereinafter. The construction selected is illustrated in the accompanying drawings.

Figure 1 of the drawings is a sectional view of a rotative member which operates a cutting blade. Fig. 2 is a side view of the mechanism containing the invention with

parts illustrated as broken away in order that other parts may be shown. Fig. 3 is an end view of the mechanism.

1 is a frame of a machine of any type which operates upon the sheet material. It has a bed plate 2 on which the sheet material is placed and over which it is moved by any suitable means at a requisite speed according to the character of the machine. Above and below the bed 2, are located the shafts 3 and 4 to which are connected the gear wheels 5 and 6. The shafts 3 and 4 may receive their driving power from any suitable source and through any suitable means. If desired, the gear wheel 5 may be driven by a pinion which will in turn drive the rotating elements connected therewith.

A pair of disks or wheels 7 are keyed to the shaft 3. Diametrically disposed sockets 8 and 9 are formed in the edges or sides of the wheels or disks 7. Also openings are formed in the shaft 3 and rods 10 extend through the openings in the shaft 3 and into the sockets 8 and 9. The rods 10 are provided with heads 11 and a cross bar 12 extends through slots formed in the heads 11 of the rods 10. The cross bar 12 may be secured in the heads 11 by suitable pins 13. The blade 14, which is operated to cut the sheet material, is secured in the cross bar 12.

The blade 14 is forced down with a quick snap-like movement by means of the cam members or fingers 15, and the coating rollers 16 located in the brackets 17. The cam members 15 are pivotally connected to the wheels or disks 7 at a point slightly in advance of the sockets 8. Springs 18 are secured to the edges or sides of the wheels or disks 7 and operate to hold the cam members 15 against the centrifugal action due to rotation of the wheels 7.

The cam members 15 operate to move the rods 10 downward when the ends of the cam members 15 pass under the rollers 16, the movement being a quick movement and being performed while the short cam surfaces 19 pass beneath the rollers 16. By this means, the blade 14 will pass through the sheet material without holding the edge of the sheet material back if the sheet material is moving faster than the blade, or without dragging the sheet material if the blade is moving faster than the sheet material.

The return movement of the blade 14 is accomplished by means of the springs 20 located in the sockets 8 and which surround the ends of the rods 10. The springs 20 being compression springs operate between the bottom of the sockets 8 and a suitable washer or flange that may be placed or formed on the ends of the rods 10. For purposes of adjustment, the ends of the rods 10 are provided with bolts 21 that are threaded into the ends of the rods 10, and the cam members or fingers 15 are pressed against the heads of the bolts 21 by the operation of the springs 18 and also by the operation of the rollers 16. Each bolt 21 may be locked in its adjusted position by means of the nut 22. The nut 22 also operates as a means for holding the spring 20 in position and acts as a flange against which the spring presses to cause the return movement of the blade when the cam members have passed the rollers 16.

The blade 14 may be made to coact with a second cutting member, such as the bar 23. The bar 23 is provided with a channel 24 into which the blade 14 may be moved during its cutting operation. The bar 23 is located below the sheet material and is supported on the arms 25 that are keyed to the shaft 4. The shaft 4 being connected to the gear wheel 5, and the gear wheels 5 and 6 being of the same size, the bar 23 and the blade 14 will move together, that is, the channel 24 may be made to register at regular intervals of time in order that the blade may enter the channel to cut the sheet material. In order that the blade 14 may register with considerable accuracy with the channel 24, the finer adjustments may be obtained through the adjustment of the gear 6 on the shaft 3 which may be clamped and secured by the bolts 35 that extend through slots 26 formed in the gear wheel 6 in a manner well known in the art. Also the brackets 17 that support the rollers 16 that operate the cam members 15 may be adjusted on the frame 1 by means of the slots 27 through which the bolts 28, that secure the brackets 17 to the frame extend. By reason of the accuracy of adjustment attainable by the construction illustrated and the quickness of the movement of blade by reason of the sharp nosed cam members that operate the blade, the following edge of the channel bar 23 may coact with the blade 14 to shear the paper or other sheet material that is passed between the rotating blade and the rotating channel bar.

When the blade cuts the sheet material, the severed edge of the sheet material may be turned slightly downward owing to the downward movement of the blade in the performance of the cutting operation. To prevent the turned edge of the sheet material from being caught in the channel 24, particularly when the sheet material is moving

faster than the bar 23, the leading edge of the channel 24 is cut down and rounded as at 29, in order that the edge of the sheet may be guided upward to about the portion of the bed located in advance of the slot in the bed through which the plate 14 operates.

I claim:

1. In a sheet cutter, a pair of wheels, rods extending through the axis of the wheels, a blade supported on the rods, cam members pivotally supported on the wheels and extending over and operating on the ends of the rods, rollers for operating the cam members.

2. In a sheet cutter, a blade, cam members for operating the blade, a coacting cutting bar having a channel, the channel having a sloping surface extending from below the coacting cutting edge of the bar upward.

3. In a sheet cutter, a blade, members for operating the blade, a coacting shearing bar having a channel, one edge of the channel forming a coacting cutting member, the other side of the channel having a beveled edge.

4. In a sheet cutter, a blade, members for operating the blade, a coacting shearing cutting bar having a channel, one edge of the channel forming a coacting cutting member, the other side of the channel having a concave beveled edge.

5. In a sheet cutter, a pair of disks, a shaft for supporting and rotating the disks, a pair of rods extending through the shaft and disks, a blade connected to the ends of the rods, members pivoted in the periphery of the disks and extending over the ends of rods, a pair of rollers for operating on the pivoted members.

6. In a sheet cutter, a blade, a shaft for rotating the blade, a member pivotally connected to the shaft for operating the blade, rollers for operating on the pivoted members as the pivoted members pass the rollers.

7. In a sheet cutter, a blade, a shaft for rotating the blade, a channel bar, a shaft for rotating the channel bar, the channel bar having a shearing edge coacting with the blade on one side of the channel and a beveled edge on the other side of the channel, means for operating the blade when the channel and the blade register.

8. In a sheet cutter, a bed plate, a pair of disks located above the bed plate, a shaft for rotating the disks, rods extending through the disks and shafts, members pivoted near the periphery of the disk and extending over the end of the rods, a blade connected to the ends of the rods, a channel bar located below the bed, a shaft for rotating the channel bar, the channel bar having a cutting edge coacting with the blade and a beveled edge.

9. In a sheet cutter, a bed plate, a pair of disks located above the bed plate, a shaft

for rotating the disks, rods extending through the disks and shafts, members pivoted near the periphery of the disk and extending over the ends of the rods, a blade
5 connected to the leading ends of the rods, a channel bar located below the bed, a shaft for rotating the channel bar, the following

edge of the channel forming a coacting cutting edge, the leading edge of the channel being beveled.

In testimony whereof I have hereunto
signed my name to this specification. 10

CARL H. HARTMAN.