

Dec. 18, 1934.

D. W. HUDSON

1,984,680

WEB CUT-OFF MECHANISM

Filed July 20, 1931

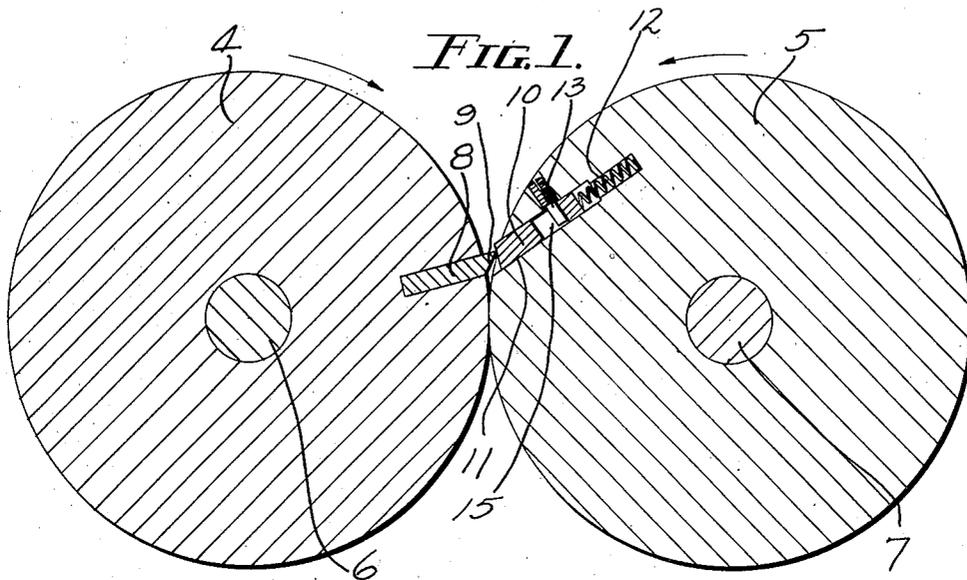


FIG. 2.

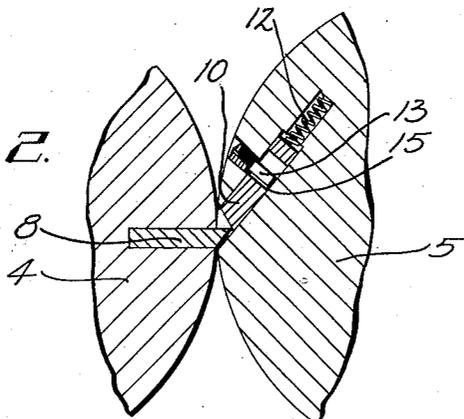
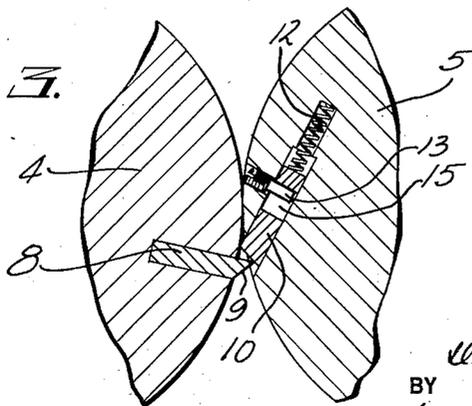


FIG. 3.



INVENTOR
David W. Hudson
BY
Wheeler, Wheeler & Wheeler
ATTORNEYS

UNITED STATES PATENT OFFICE

1,984,680

WEB CUT-OFF MECHANISM

David W. Hudson, Green Bay, Wis.

Application July 20, 1931, Serial No. 551,962

6 Claims. (Cl. 164—66)

This invention relates to improvements in web cut-off mechanism.

It is the object of the invention to provide a cut-off device which will function effectively and over long periods of use to make a smooth uniform cut transversely of a web of paper or other material without requiring the use of any sharpened knives or other parts requiring frequent replacement.

More specifically stated, it is my purpose to provide a web cut-off device in which the web is severed by the rubbing engagement of two parts, one of which is yieldable with reference to the other and is mounted to yield in a direction inclined with reference to the direction of pressure upon it, so that a portion of the resistance to its yielding movement is afforded by frictional contact with this guide and consequently a relatively light spring may be employed to maintain the parts in operative engagement.

In the drawing:

Figure 1 is a diagrammatic view in transverse section through a pair of severing rolls including web severing means embodying the invention.

Figure 2 is a fragmentary detail view similar to Figure 1 but showing the severing parts as they appear when rotated toward the "line of bite" between the rolls.

Figure 3 is a view similar to Figure 2 illustrating the severing parts as they appear in their position of release.

Like parts are identified by the same reference characters throughout the several views.

The rolls 4 and 5 are illustrated merely as a convenient means of diagrammatically showing a support for the web severing mechanism. The respective rolls are mounted on shafts 6 and 7 to turn in opposite directions for the delivery of a web therebetween. In practice they are, of course, synchronized by the usual driving gearing (not shown).

Supported from shaft 6 is a relatively non-yieldable blade member 8 beveled at 9 to produce a relatively blunt but well defined severing margin. The general disposition of this blade is substantially radial with respect to shaft 6.

Co-acting with blade 8 is a yieldable guide blade 10 guided in surfaces of roll 5 which provide a guide slot or way at 11. Behind the blade is a compression spring 12. A pin 13 threaded into an opening countersunk in the periphery of roll 5 has a portion interlocked in a hole 15 in the die blade 10 to limit the reciprocation of the blade. The disposition of the guideway 11 and

blade 10 is on a minor chord of roll 5 tangent to a circle about shaft 7 only slightly smaller in radius than said roll. This disposition of the parts leaves the direction of yielding movement of the die blade 10 at a considerable angle to the direction of thrust thereon by the severing blade 8. Hence, a considerable component of the thrust is absorbed in friction between the die blade 10 and the guideway 11, and the spring 12 may be much smaller than would otherwise be required.

It will be observed from a comparison of Figs. 1, 2 and 3, that the two blades establish contact before reaching the plane common to the axes of the shafts 6 and 7. It will also be apparent that blade 8 wipes with a rubbing frictional contact across almost the entire width of the face of blade 10 as the two blades meet, pass, and separate between the positions shown in Figs. 1 and 3. This rubbing or wiping action will readily sever a web of paper, or of many other materials, which is engaged between the two blades in the course of the rubbing interaction. The line upon which the web will be severed will be the rather well defined line represented by the acute margin of blade 8 which, however, is not required to be sharpened to produce the necessary result. It is subject to very little wear because of the fact that the web to be severed is interposed throughout all or most of the operation described. The disposition of blade 10 at an acute angle to the radius of shaft 7 through its face will be found to contribute substantially to the desired result.

I claim:

1. In a web severing device, the combination with a pair of rotatable supports, a blade member carried by one of said supports and provided with a web severing margin, an anvil carried by the other of said supports with which said margin is adapted to interact, and a guideway on said last mentioned support in which said die member is rotatable and reciprocable in a direction at an acute angle to a radius from the axis of said last mentioned support to the operative face of said die member, together with means for limiting the reciprocation of said die member.

2. In a web cutting device, a web cutting blade in combination with a reciprocable web cutting die, said blade and die being synchronized for rotation in opposite directions and said die being reciprocable on a chord of its path of rotation and presenting to said blade a face across which the blade is adapted to wipe during their mutual web cutting relation, whereby the cutting of said web is the result of said wiping action.

3. In a web cutting device, a web cutting roll having a web cutting blade projecting radially therefrom, in combination with a second web cutting roll having a guideway disposed on a chord
 5 relative to the periphery of said second roll, a web cutting die reciprocably mounted in said guideway and presenting to said blade a face across which the blade is adapted to wipe during cutting action, resilient means in said guideway
 10 actuating said die toward the periphery of the second roll, said die being provided with a slot extending longitudinally of its path of reciprocation, and a pin extending through the periphery of the second roll and into said slot, whereby the
 15 extent of reciprocation of die toward the periphery of the second roll is defined.

4. In a web severing device, the combination with a pair of movable supports, one of said supports providing a slot inclined to a direction of
 20 movement thereof, of a die member slidable in said slot, and a blade member carried by the other support, means for yieldably urging said die member toward said blade member, and said die member providing a web engaging face transverse to
 25 its direction of movement in said slot, and means for relatively moving said supports to cause said blade member to wipe across said web engaging face while pressing thereagainst in a direction at
 30 an angle to the direction of yielding movement of said die member, whereby resistance to dis-

placement of said die by said blade is furnished by the friction resulting from the side pressure of said die against the walls of said slot caused by said blade, as well as the resistance of said yieldable means.

5. The combination with a pair of rotatable die rolls having peripheral portions substantially engageable to feed a web therebetween, a fixed die projecting from the face of one of said rolls, a complementary die yieldable within the other
 10 roll and provided with a terminal face across which said first mentioned die must wipe in the revolution of said roll, together with means holding said yieldable die in a position to be engaged by said first mentioned die in advance of
 15 the common diameter of said rolls, whereby said yieldable die may yield in the wiping of the first mentioned die across said face as said dies pass said common diameter.

6. In a web cutting device, the combination
 20 with a rotor across which a web may be fed, of a die having a wiping face exposed in the path of such a web periodically in the rotation of said rotor, a second die adapted to co-act with
 25 said first die to rub through said web, and means for moving said second die not only with respect to said rotor but also across the rubbing face of the first mentioned die, whereby to sever a web interposed between said dies.

DAVID W. HUDSON. 30