

Sept. 1, 1936.

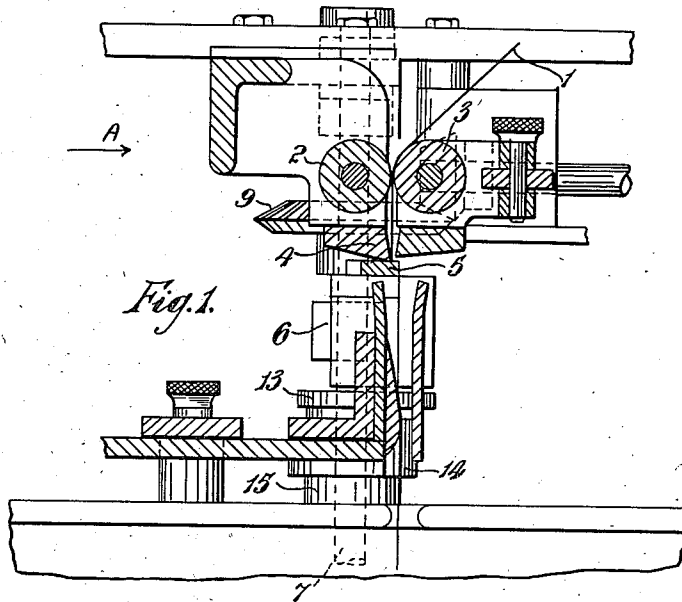
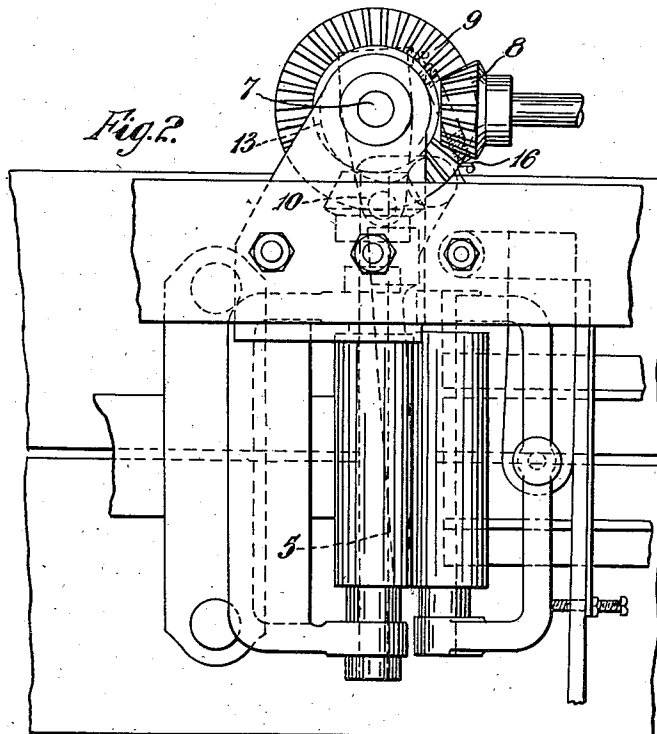
C. T. HALL

2,053,030

APPARATUS FOR SEVERING SHEETS FROM CONTINUOUS WEBS

Filed June 28, 1935

2 Sheets-Sheet 1



INVENTOR

Charles Thomas Hall,
By Watson, Coih. Moore & Grindle
ATTYS.

Sept. 1, 1936.

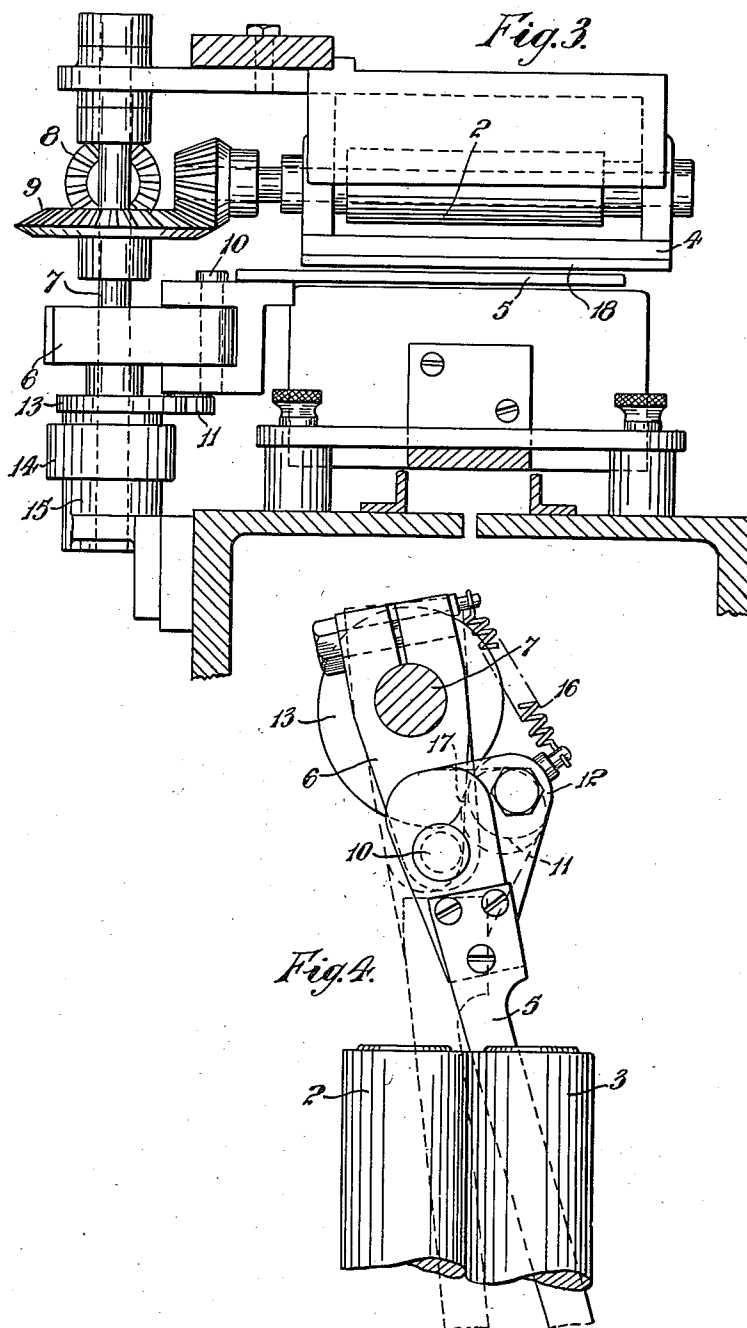
C. T. HALL

2,053,030

APPARATUS FOR SEVERING SHEETS FROM CONTINUOUS WEBS

Filed June 28, 1935

2 Sheets-Sheet 2



INVENTOR
Charles Thomas Hall,
By *Nelson, Coit, Moore & Gindli,*
ATTYS.

UNITED STATES PATENT OFFICE

2,053,030

APPARATUS FOR SEVERING SHEETS FROM
CONTINUOUS WEBSCharles Thomas Hall, Deptford, London, Eng-
land, assignor to Molins Machine Company,
Limited, London, EnglandApplication June 28, 1935, Serial No. 28,968
In Great Britain July 25, 1934

3 Claims. (Cl. 164—68)

This invention is for improvements in or relating to apparatus for severing sheets from continuous webs, and it is an object of the invention to provide a cutting apparatus which severs the web at regular intervals.

It has previously been proposed to provide cutting mechanism for severing moving webs of material such for example as tin or similar foil, which apparatus comprises a rotatable knife arranged to co-operate with a fixed knife in order to sever the web. The rotary knife has usually been mounted on an arm attached to a rotatable spindle and is fixed to the arm by means of a pivot which is offset from the spindle about which the knife is rotated, and the knife is held in position by a suitable spring. Whilst the knife is approaching the cutting point, means have been provided to load the spring and cause the forward movement of the knife to be retarded, and at a suitable time just prior to the moment at which the web is to be severed, the spring is released so that the knife springs forward with a snap action and co-operates with a fixed knife to sever the web with a quick movement.

According to the present invention there is provided a cutting apparatus for severing lengths from a continuous web of material, which comprises in combination a rotary knife arranged to co-operate with a further cutting element (for example, a fixed knife) said rotary knife being pivotally mounted upon an arm rotatable in timed relationship with a driven element and a cam follower connected with said pivoted portion of the knife and arranged to co-operate with a cam, said cam being shaped to augment the movement of the rotary knife in the direction of movement thereof whereby the web is severed whilst the rotatable knife is moving at a speed greater than its normal speed of movement.

The invention will be more particularly described with reference to the accompanying drawings in which:—

Figure 1 is a sectional side elevation of a web severing apparatus.

Figure 2 is a plan of Figure 1.

Figure 3 is a view of Figure 1 looking in the direction of the arrow A, Figure 1.

Figure 4 is a plan view showing the operation of a portion of the apparatus.

Like references refer to like parts throughout the specification and drawings.

Referring to the drawings, a continuous web 1 of material from which lengths are to be severed is fed between a pair of feeding rollers 2 and 3 which are operative to feed the web between the

cutting elements. The cutting elements comprise a fixed knife 4 and a rotatable knife 5, and the rotatable knife is pivotally mounted on an arm 6 which is fixed to a rotatable shaft 7 driven through bevel gears 8 and 9 from the main drive of the machine.

The pin 10 about which the rotatable knife 5 is pivoted is offset from the shaft 7, and a cam follower 11 is attached to an extension 12 of the knife portion and is arranged to co-operate with a fixed cam 13. As shown in the drawings, the cam 13 is formed about the shaft 7 and is held in a fixed position by being secured to the boss 14 of the bracket 15. A spring 16 is provided to ensure that the cam follower is always in contact with the cam face.

The operation of the apparatus is as follows:—The rotatable knife 5 is rotated about the axis of the driven shaft 7, and as the cam follower 11 runs round the cam 13, the knife 5 rotates at the speed at which the shaft 7 is driven until the cam follower 11 engages with the eccentric portion of lead 17 formed on the cam. Whilst the cam follower is in engagement with the lead 17 the arm 6 rotates at the speed of the shaft 7 and the knife 5 is caused to pivot about the pin 10 in the same direction as that in which the arm 6 is moving but at a greater speed. The cam 13 is arranged so that when the cutting operation is to be performed the follower 11 is against the lead 17 so that the speed of movement of the knife 5 is augmented during the cutting operation. It will be appreciated that the form of the eccentric portion 17 of the cam may be varied as conditions require.

It will be seen from Figure 4 that the cutting edge 18 of the knife 5 is arranged to co-operate with the fixed knife 4 so that the web is severed in a manner similar to the cutting action of a pair of scissors.

What I claim as my invention and desire to secure by Letters Patent is:—

1. In apparatus for severing lengths from a continuous web of material, the combination with a cutting element, of a positively driven rotatable shaft, a knife carrier rotatable in timed relationship with said shaft, a knife pivotally mounted upon said carrier, a cam having an abrupt eccentricity in its contour at a point in advance of the point at which said knife is operable to sever said web, and a cam follower secured to said knife carrier and adapted to cooperate with said cam to augment the speed of said knife during the severing of the web.

2. In apparatus for severing lengths from a

continuous web of material, the combination with a cutting element, of a positively driven rotatable shaft, a knife carrier secured to and rotatable with said shaft, a knife pivotally mounted on said carrier, a stationary cam having an abrupt eccentricity in its contour at a point in advance of the point at which said knife is operable to sever said web, and a cam follower secured to said knife carrier and adapted to cooperate with said cam to augment the speed of said knife during the severing of the web.

3. In apparatus for severing lengths from a continuous web of material, the combination with a cutting element, of a positively driven rotatable shaft, a knife carrier secured to and rotatable with said shaft, a knife pivotally mounted on said carrier for rotation with the carrier, a stationary cam having an abrupt eccentricity in its contour at a point in advance of the point at which said knife is operable to sever said web, and a cam follower secured to said knife carrier and adapted to cooperate with said cam to move said knife about its pivot in the direction of movement of the carrier, whereby the speed of the knife is augmented during the severing of the web.

CHARLES THOMAS HALL.