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J. J. SCANLON

2,179,732

CHANNEL CUTTER

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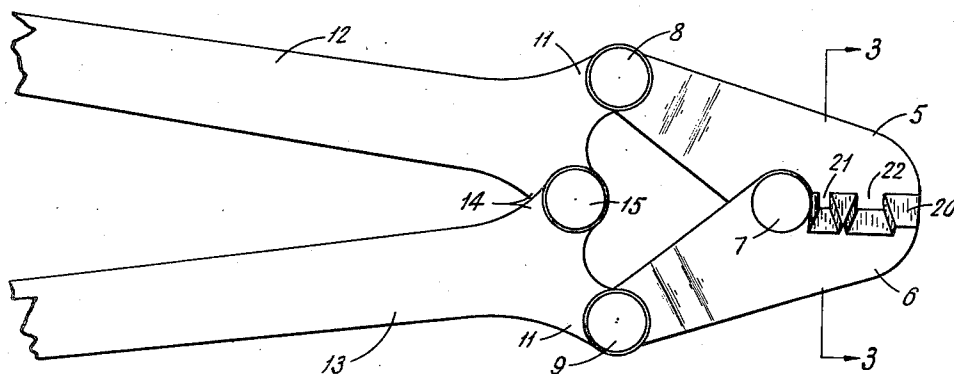


Fig. 1.

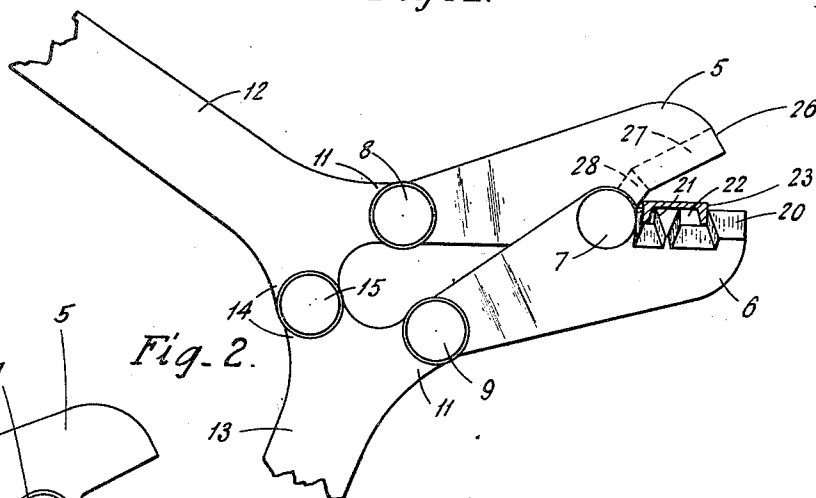


Fig. 2.

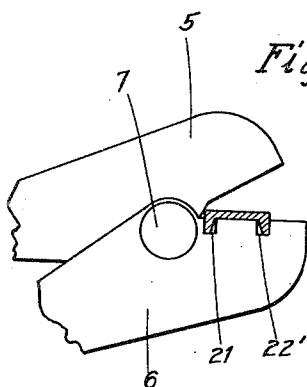


Fig. 5.

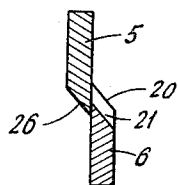


Fig. 3.

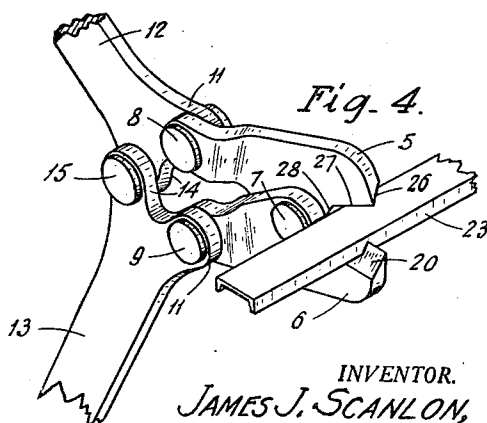


Fig. 4.

INVENTOR.
JAMES J. SCANLON,
BY Philip H. Allen.
ATTORNEY.

UNITED STATES PATENT OFFICE

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CHANNEL CUTTER

James J. Scanlon, Berkeley, Calif.

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5 Claims. (Cl. 30—252)

The present invention relates to channel cutters and more particularly to small hand operated channel cutters of the type adapted for cutting light channel iron used for partition walls and suspended ceilings in buildings or as framing channel in other types of construction.

To my knowledge it has been the universal practice with lath workers to employ a bolt cutter or clipper of the type having opposed jaws which are aligned and which in effect pinch the latch channel in two. It has been my experience that a complete cut is not effected by such bolt cutters, particularly with the larger size channels, and it is practically always necessary to break the web of the channels to complete the separation thereof. Such cutters not only require a large amount of effort on the part of the user, and a complicated adjusting structure for maintaining the proper spacing of the jaws, but also deform and flatten out the flanges of the channel so that the cut ends are rendered unfit for splicing by interlocking adjacent ends of channel pieces so as to save short ends of the channels. Often, where splicing is necessary, the flattened channel flanges are hammered back into shape. The above disadvantageous features result in wasting both time and material, as well as being fatiguing to the lath worker. Other types of cutters used with larger sized channel iron have been found to have substantially the same disadvantageous type of operation.

The channel cutter of my invention is constructed to eliminate the above noted disadvantages and employs shearing blades having means to support and reinforce the web and flanges of the channel while providing a progressive shearing cut by a substantially uniform pressure. The operation of my cutter is such that the channel is cut completely in one operation with greatly reduced effort and the cut pieces are released gently by the cutter without any snapping or throwing action. This results in a saving in the amount of labor required and, with hand cutters, is less fatiguing to the worker. The cutting is effected also without deforming the flanges or web of the cut pieces so that short pieces can be interlocked and used with the consequent saving in material. In addition, the blade operating handles and the connections between such handles and the blades are simplified materially so that economy of manufacture results.

It is an object of my invention, therefore, to provide a new type of cutter for channel iron

which cuts channels easily and without deforming the flanges or web thereof.

Another object of the invention is to provide a cutter of the character described which enables a progressive shearing cut.

Another object of the invention is to provide a cutter of the character described which is portable and can be carried by workers, such as lath workers, on the job.

Another object of the invention is to provide a cutter of the character described which cuts the channel evenly and with no resulting deformation.

Another object of the invention is to provide a cutter of the character described which requires less effort and less time in performing a cutting operation.

Another object of the invention is to provide a cutter of the character described which is constructed to promote economy of manufacture.

Other objects and advantages will appear from the following description of my invention as embodied in a preferred form thereof illustrated in the accompanying drawing.

In the drawing:

Figure 1 is a side elevation of a preferred form of the cutter of my invention, the blades being shown in closed position. The drawing is one-half size.

Figure 2 is a view similar to Figure 1, but the blades are shown in open position with a lath channel shown in section as positioned for the cutting operation.

Figure 3 is a sectional view taken in a plane indicated by the line 3—3 in Figure 1.

Figure 4 is a perspective view of the cutter and channel piece shown on a reduced scale.

Figure 5 is a schematic fragmentary elevation of cutter for use with one size of channel iron.

Generally, the cutter of my invention includes a pair of cooperating shearing blades which are designed to support and reinforce the flanges and web of the channel while providing a progressive shearing cut without deformation of the ends of the cut channel pieces.

More specifically, my new and improved cutter comprises cooperating shearing blades, one of which is provided with spaced notches, defined by cutting edges, to receive the flanges of the channel to be cut. Preferably, the cutter is made in the form of a hand tool which can be carried by the lath worker on the job.

In a preferred embodiment of my invention which is selected for the purposes of illustration,

the cutting elements comprise shearing blades 5, 6 pivotally connected intermediate their ends by pin 7, which may be threaded in one of the blades and be journaled in the other. At their rear ends, respective upper and lower blades 5, 6 are offset oppositely and are connected by respective pivot pins 8, 9 with respective outer-extensions 11 of the bifurcated ends of symmetrical operating handles 12, 13. Inner extensions 14 of the bifurcated ends of handles 12, 13 are pivotally connected by pin 15. The above arrangement of parts provides a compound lever connection from the handles to the shear blades to promote easy cutting, and to provide a simple structure which does not require adjustment.

The shearing blades are of special construction to provide an effective and easily operated progressive shearing cut action. The construction is such that both blades are effective in cutting and so that only a small part of the channel is being cut at one time. One of such blades is formed to receive channels of varying width and to provide support for the web and the flanges thereof during the cutting operation. Lower blade 6 has its outer face bevelled as at 20 to provide cutting edges along the upper edge thereof and has spaced transverse grooves 21, 22 formed by respective side walls which diverge outwardly from the inner face of blade 6 and a bottom wall which is parallel to bevelled face 20. Thus, at the inner face of blade 6, the channel receiving grooves 21, 22 are defined by cutting edges. Inner groove 21 is formed closely adjacent pivot 7 and is preferably of sufficient width to accommodate a flange of a channel 23 placed in the cutter. Outer groove 22 is wider than groove 21 so that varying widths of channels can be cut by one tool. Channel 23 shown in Figures 2 and 4 is one of the largest sizes of metal furring channel now in use. If a smaller channel is cut, the outer flange thereof is positioned closer to groove 21 than with the channel 23 as shown. As shown, groove 22 is of a width to enable the use of the cutter with the usual range of light furring channels from 3/4" channels weighing 40 pounds per hundred linear feet to 1" channels weighing 70 pounds per hundred lineal feet. Obviously, the spacing between the grooves can be selected in accordance with the width of channel which is to be cut. If the cutter is only to be used with one size of channel groove 22 is made of substantially the same width as groove 21 and spaced the proper distance therefrom as shown schematically in Figure 5.

Upper blade 5 (Figs. 2 and 3) is provided with a cutting edge at its lower edge by bevelled outer face 26. The cutting edge preferably includes long outer portion 27 and short inner portion 28 which lie in the same plane but are formed at an angle to each other to facilitate the progressive cutting action and to reduce the extent of opening of blades 5, 6 to receive a channel. The angular relation of cutting edge portions is so selected that at the beginning of the cutting operation the channel flange in groove 21 is substantially cut through before cutting edge portion 27 begins to cut the web of the channel.

In the cutting operation, the channel flange in groove 21 is cut first by the cooperative action of cutting edge portion 28 of blade 5 and the cutting edges on blade 6 defining groove 21. Thereafter, the channel web is cut by cutting edge portion 27 of blade 5 and the cooperating cutting edges of blade 6, and lastly, the channel flange in groove 22 is cut by the cooperating cutting

edges of blades 5 and 6 between which it is positioned.

From the above description, it is seen that the cutter of my invention has a simple and economical construction and enables a progressive shearing cut with a minimum of effort and in a minimum time. It is to be noted that the flanges and web of the channel are supported and braced at all times either at or closely adjacent the part thereof which is being subjected to the cutting action of the blades.

While I have shown my invention in a preferred embodiment as a hand tool of a size that can be carried in a mechanic's tool kit, it is to be understood that the invention can be embodied in other forms, such as in a small bench tool or in a cutter for large structural channel iron, therefore, the scope of the invention is to be limited only by the proper scope and interpretation of the claims appended hereto.

I, therefore, claim as my invention:

1. A cutter for lath channel and the like comprising a pair of cooperating shearing blades having relative pivotal movement, one of said blades having a pair of spaced grooves of rectangular contour and defined by cutting edges, said grooves being adapted to receive the flanges of a channel with the web thereof supported by the blade portion lying between said grooves and with a flange of said channel operatively related to one side edge of said grooves; and the other of said blades having its cutting edge free of grooves.

2. A cutter for lath channel and the like comprising a pair of cooperating shearing blades having relative pivotal movement; one of said blades having a pair of spaced grooves of rectangular contour and defined by cutting edges, said grooves being adapted to receive the flanges of a channel with the web thereof supported by the blade portion lying between said grooves and with a flange of said channel operatively related to one side edge of said grooves, one of said grooves being formed closely adjacent the pivotal axis of said blades; and the other of said blades having two cutting edge portions defining an angle therebetween with the portion adjacent said pivotal axis including a larger angle with said grooved blade in the opened position of said blades than the remote cutting edge portion.

3. A cutter for lath channel and the like comprising a pair of cooperating shearing blades having relative pivotal movement; one of said blades having a pair of spaced grooves of rectangular contour and defined by cutting edges, said grooves being adapted to receive the flanges of a channel with the web thereof supported by the blade portion lying between said grooves and with a flange of said channel operatively related to one side edge of said grooves, one of said grooves being formed closely adjacent the pivotal axis of said blades and being of a size to receive a channel flange in close cooperative relation with the cutting edges defining said one groove, and the other of said grooves being wider than said one groove to adapt the cutter for use with channels of varying width; and the other of said blades having its cutting edge free of grooves.

4. A cutter for lath channel and the like comprising a pair of cooperating shearing blades having relative pivotal movement; one of said blades having a pair of spaced grooves of rectangular contour and defined by cutting edges, said grooves being adapted to receive the flanges

of a channel with the web thereof supported by the blade portion lying between said grooves and with a flange of said channel operatively related to one side edge of said grooves, one of said
5 grooves being formed closely adjacent the pivotal axis of said blades and being of a size to receive a channel flange in close cooperative relation with the cutting edges defining said one
10 groove, and the other of said grooves being wider than said one groove to adapt the cutter for use with channels of varying width; and the other of said blades having two cutting edge portions defining an angle therebetween with the portion adjacent said pivotal axis including a larger
15 angle with said grooved blade in the opened position of said blades than the remote cutting edge portion.

5. A cutter for lath channel and the like comprising a pair of cooperating shearing blades having relative pivotal movement; one of said blades having groove means of rectangular contour and defined by cutting edges, said groove
5 means being adapted to receive the flange of a channel with the web thereof supported by the blade portion adjacent said groove means and with a flange of said channel operatively related to one side edge of said groove means, and
10 the other of said blades having two cutting edge portions defining an angle therebetween with the portion adjacent said pivotal axis including a larger angle with said grooved blade in the
15 opened position of said blades than the remote cutting edge portion.

JAMES J. SCANLON.