

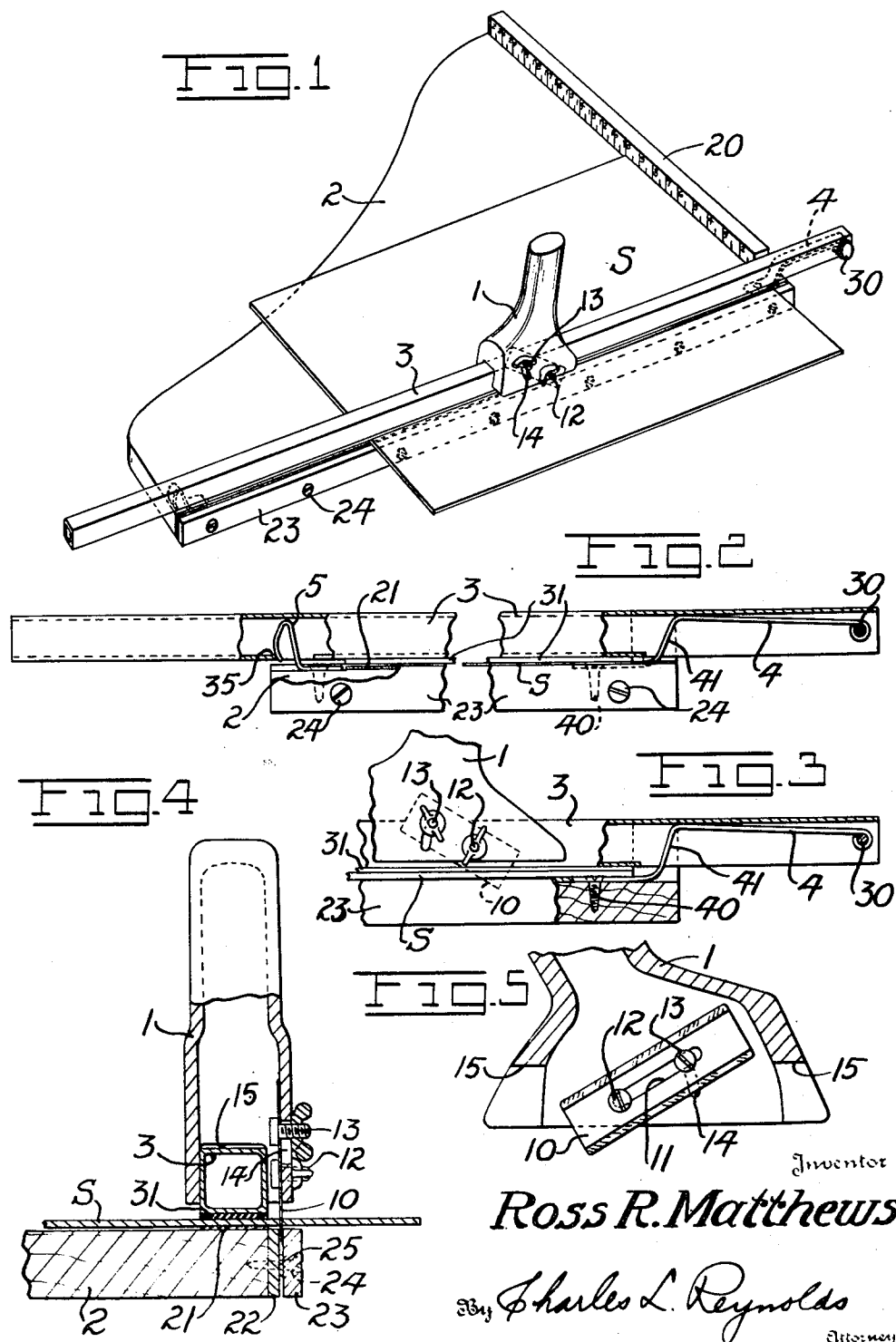
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R. R. MATTHEWS

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CUTTER FOR PAPER AND BOARD STOCK

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## CUTTER FOR PAPER AND BOARD STOCK

Ross E. Matthews, Seattle, Wash., assignor of  
one-half to Isaac P. Matthews, Seattle, Wash.

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6 Claims. (Cl. 164—73)

My invention relates to cutters such as are used by printers, sign shops, photographers, schools, and the like for cutting paper or board stock, trimming the edges thereof, and for squaring up stock.

Usually a shear is employed for such purposes, but the shears available are expensive, and it is difficult to keep them sharp and true. Furthermore, they will not operate satisfactorily on heavy stock, having a tendency to crush it. It is an object of my invention to provide a device which will serve such a purpose, which will operate satisfactorily for stock of different thicknesses, and which can be manufactured and sold at a low price, and one in which the cutting elements consist of an ordinary razor blade which can be purchased cheaply anywhere and which can be sharpened or easily replaced.

Such razor blades are quite flexible, hence it is a further object to devise such a cutter adapted to the use of razor blades, and wherein are provided means to guide the cutting element independently of the razor blade, yet also to guide and hold the razor blade to prevent its flexing during the cutting operation.

I have discovered that such a cutting element will not operate satisfactorily on both paper stock and board stock except as the angle of the razor blade is changed for each type of work, and it is a further object, therefore, to devise a cutting element for use in such a device, wherein the angle of the blade may be readily and quickly changed and set at the proper angle without the necessity of measurement or careful adjustment by the operator.

Since such a device must be capable of clamping and holding stock of various thicknesses, from a single sheet of thin paper to a piece of wall board, it is a further object to provide self-adjusting means which will permit the clamping element which I employ to accommodate itself naturally and automatically to the different thicknesses, yet to hold each securely.

Since a clamping arm is employed in my device, and it should be of light material for ease in handling and for cheapness, it is a further object to so mount the two ends thereof and to hold these two ends in place against any movement laterally of the clamping arm, so that the latter may serve as a guide for the cutting element, and will be positioned exactly parallel to the groove which I employ as a guide and support for the razor blade.

Other objects, particularly such as pertain to

mechanical details, will become apparent as this specification progresses.

My invention comprises the novel parts, and the novel combination and arrangement thereof relatively to one another, as shown in the accompanying drawing, described in this specification, and as will be more particularly pointed out by the claims which terminate the same.

In the accompanying drawing I have shown my invention embodied in a form which is at present preferred by me, it being understood that various changes may be made from the form illustrated, within the scope of the claims.

Figure 1 is a perspective view of the device in operation.

Figure 2 is an end view of the device, parts being broken away.

Figure 3 is a fragmentary view similar to Figure 2, showing the cutting element in operative position, and showing how the device accommodates itself to different thicknesses of stock.

Figure 4 is a transverse section through the cutting element, board and clamping arm, showing the operative relationship of the parts.

Figure 5 is a longitudinal section through the slide forming part of the cutting element, showing the razor blade supported thereon.

The device comprises essentially a board 2, along one edge of which may be secured a ruler 20, a clamping arm 3 which is placed at right angles to the ruler 20 and which is hinged at 30 from a support secured to the board to cooperate with the board in clamping and holding stock S placed upon the board, and a slide 1 movable along the clamping arm 3 and carrying a blade 10 projecting below the slide and past the plane of the board's surface to cut through the stock held between the clamping arm and the board.

For cheapness and convenience of manufacture, and because it is light and easy to handle, the clamping arm 3 may be formed as a tube of rectangular cross section. At one end, preferably adjacent the ruler 20, if the latter is employed, a supporting arm 4 is mounted, this being preferably in the form of a flat spring suitably secured, as by a screw 40, to the board 1, and projecting thence upwardly, as indicated at 41, and then outwardly. The tube is recessed, as is best seen in Figures 2 and 3, and the supporting arm 4, or at least the upwardly extending portion 41 thereof, is made of a width to exactly fill the recess within the tubular arm 3, which is hingedly connected to the outer end of the supporting arm 4 by the pivot pin 30. Thus when the clamping arm 3 is swung downwardly towards the board 2 the sup-

porting arm 4, fitting exactly within its recess, will prevent movement of the clamping arm 3 relative to the board transversely of the clamping arm, so that while the structure may be simple and light, no movement of this end of the clamping arm other than a swinging movement about the pivot pin 30 may be permitted. By making the supporting arm 4 of spring material it permits the clamping arm to yield vertically relatively to the surface of the board to accommodate different thicknesses of stock, as may be seen by comparison of Figures 2 and 3.

Adjacent the swinging end of the clamping arm a catch 5 is provided, this being secured to the upper surface of the board and projecting into a recess in the tubular clamping arm, this catch being of a width to fill the recess and being formed preferably of a piece of flat metal bent upon itself, hence it prevents transverse movement of this end of the clamping arm in the same way that the supporting arm 4 prevents such movement at the other end. The catch 5 may be somewhat spring-like, and so positioned and formed as to engage an edge 35 of the recess in the clamping arm to hold this swinging end of the clamping arm down against the board or against stock which may be placed upon the board. For the purpose of obtaining a better grip the under surface of the clamping arm may be faced with a strip of rubber, as indicated at 31, and immediately beneath this, upon the surface of the board 2, may be placed a strip 21 of sandpaper.

The slide 1 is preferably bifurcated to closely embrace the arm 3, so that it may be guided by this arm while moving therealong. On one of the legs of the slide 1 the razor blade 10 is secured. Preferably this is the outer leg, and the razor blade is secured on the inner face of this leg, where it will be closely adjacent the clamping arm 3, yet it acts outside the clamping arm, and any failure to cut properly may be immediately observed. As seen in Figure 5, the razor blade is of a type readily available on the market, having a longitudinal slit 11. A bolt 12 may be passed through one end of this slit 11 and through a hole provided therefor in the leg of the slide 1, and a complementary bolt 13 may be passed through the other end of the slot 11 and through an arcuate slot 14 in the slide. It has been discovered that the blade should form a reasonably acute angle to the guide surfaces 15 of the slide which rest upon the top of the clamping arm 3 when paper is to be cut, but that the angle should be greater when board stock is to be cut, hence by providing the arcuate slot 14, or the equivalent, two spaced holes, the angle of the blade may be readily adjusted in accordance with the character of the stock to be cut, and the operator may change the adjustment and know that he has the correct angle without measurement or special care.

A portion of the blade 10 thus projects below its support at 12 and 13 upon the slide. Such blades must be thin so that they will readily pass through the stock to be cut, and will not cause too much resistance, yet being thin they are quite flexible. They cannot of themselves serve as a proper guide for the slide, but rather I have found it is essential to guide the blade beneath the stock in addition to the guide afforded by the mounting of the slide 1 upon the clamping arm 3. Accordingly at the end of the board 2, adjacent the clamping arm 3 and parallel to it, I provide two metallic strips 22 and 23, suitably secured to the board as by the screws 24, and slightly spaced

by washers 25 (see Figure 4), and the groove thus formed between these two metal strips receives the projecting part of the blade 10, and these strips are spaced only sufficiently to receive the blade, and therefore closely embrace, support and guide the blade, and prevent its flexing. Thus the slide is guided mainly by the clamping arm 3, yet the blade is additionally guided and supported so that it will not run off along a curve or at an angle to the arm 3, by the groove between the strips 22 and 23.

It is believed the manner of use of the device will be self-evident from the above description, and from the accompanying drawing, as will also the advantages attained by its use.

What I claim as my invention is:

1. A cutter of the character described, comprising a board, a tubular clamping arm, means hingedly supporting one end of said arm from the board, a catch upon the board distant from said hinge means, comprising a flat metallic piece folded upon itself, the tubular arm being apertured to receive said catch, the sides of said aperture engaging the ends of the catch, to prevent transverse movement of the arm, and one end edge engaging the catch to hold the arm down to the board to clamp stock placed upon the board, and a blade-carrying slide movable along the arm to cut stock thus clamped.

2. A cutter of the character described, comprising a board, a tubular clamping arm, means hingedly supporting one end of said arm from the board, a catch upon the board distant from said hinge means, comprising a flat metallic piece folded upon itself, the tubular arm being apertured to receive said catch, the sides of said aperture engaging the ends of the catch to prevent transverse movement of the arm, and one end edge engaging the catch to hold the arm down to the board to clamp stock placed upon the board, the board having a groove adjacent and parallel to the arm, and a slide having a downwardly projecting blade movable along the arm, the blade being then closely received in the groove to be held therein against flexing.

3. A slide for cutters of the character described, comprising a body bifurcated to be guided for movement along a longitudinal guide, a razor blade having an elongated slot, a hole in one leg of said body adapted to register with one end of the razor blade's slot, and a bolt extending through both, thereby to hold the razor blade projecting below the body, a second bolt passing through the opposite end of said slot, and the body having an arcuate slot to receive said second bolt for adjustment of the angle of the blade about the first bolt, according to the thickness of the material to be cut.

4. A cutter of the character described, comprising a board, a tubular clamping arm, a flat spring arm mounted at one end upon the board, and extending thence upwardly and then outwardly, a hinge support for the clamping arm at the outer end of said spring arm, the clamping arm being recessed to receive and closely embrace the upwardly extending portion of the spring arm, when in clamping position, to prevent relative movement between this end of the clamping arm and the board, transversely of the clamping arm, means interengageable between the board and the swinging end of the clamping arm to hold the clamping arm down to the board to clamp stock placed upon the board, and to prevent relative movement between this end of the clamping arm and the board, transversely of the clamp-

ing arm, and a blade-carrying slide movable along the clamping arm to cut stock clamped thereby.

5 5. A cutter of the character described, comprising a board, a clamping arm formed of hollow rectangular tubing, means to hold said arm down to the board to clamp stock placed upon the board, said means projecting within the hollow arm and spanning the cavity to engage both sides thereof, 10 thus to prevent its displacement transversely, a slide guided for movement lengthwise of said arm, and a cutting blade carried by and projecting below said slide.

6. A cutter of the character described, com-

prising a board, a clamping arm, means hingedly supporting one end of said arm from the board, means interengageable between the board and the swinging end of the arm to hold the arm down to clamp stock placed upon the board, said 5 hinge means being yieldable towards and from the board to accommodate stock of widely varying thicknesses and incorporating means to press the arm against the stock with substantially the same pressure irrespective of its thickness, and 10 a blade-carrying slide movable along the arm to cut stock thus clamped.

ROSS R. MATTHEWS.