Sept. 13, 1932. W. D. FORBES 1,876,902

PAPER TRIMMER

Filed June 1, 1929

FIG. 1.

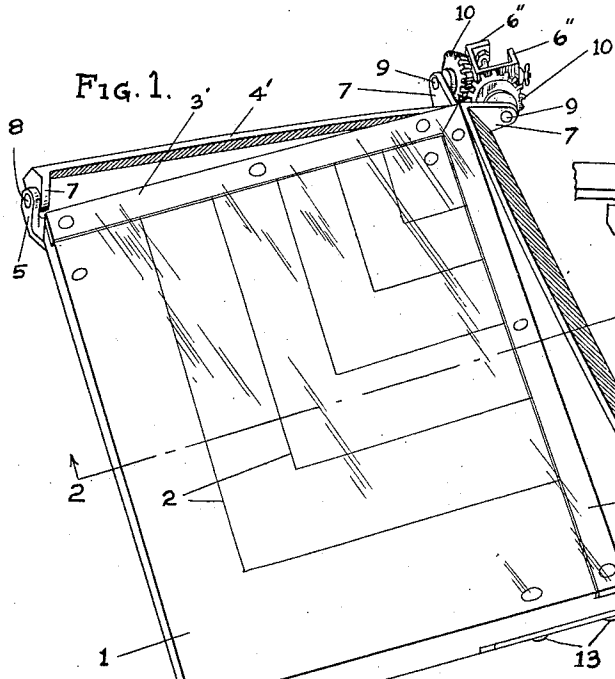


FIG. 3.

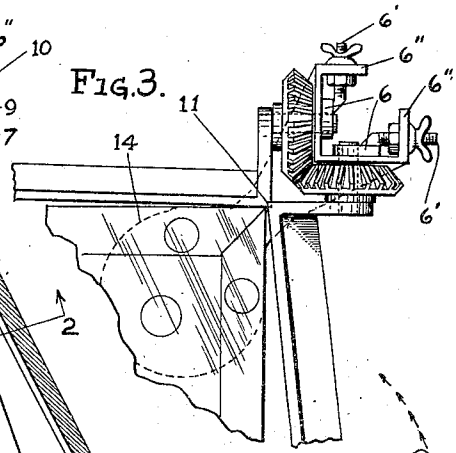


FIG. 2.

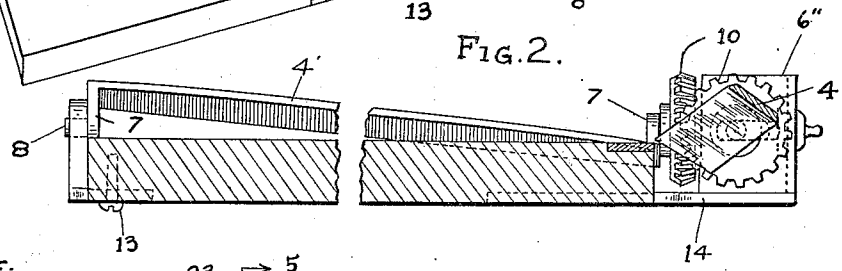


FIG. 4.

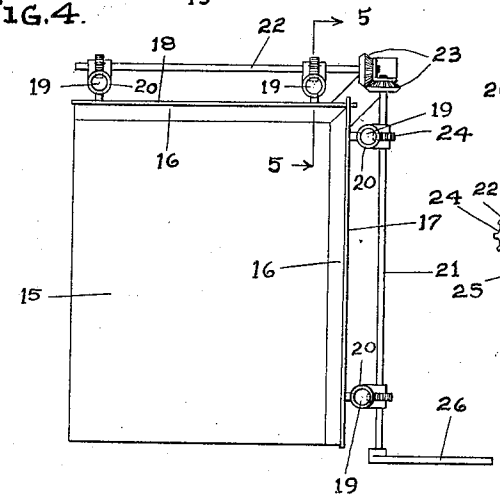
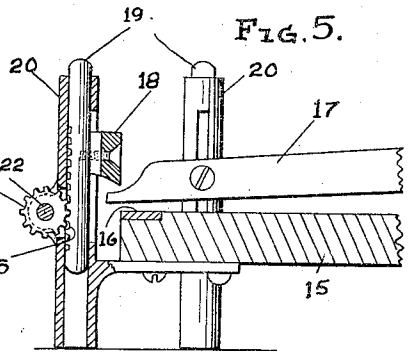


FIG. 5.



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PAPER TRIMMER

Application filed June 1, 1929. Serial No. 367,677.

This invention relates to paper trimmers or cutters, especially the type used for trimming photographic and other prints, though the invention may be incorporated in the larger paper and cardboard cutters used by printers, paper houses, and others, and also in cutters of the same general type used for cutting other sheet material.

The objects of the invention are to provide a cutter or trimming board which will simultaneously cut or trim a plurality of margins of a sheet of paper or other stock simultaneously with separate knives and produce clean cut corners.

Another object is to provide means whereby the knives extend beyond the corner to be cut and operate in a manner so as to overcome interference of the knives at this point.

Other objects will appear in the drawing and in the description to follow.

In the drawing accompanying this application Fig. 1 is a perspective view of a cutter or trimming board made in accordance with my invention and provided with two blades or knives each with cutting edges formed to follow an angular line along a cylindrical surface of revolution operating along two adjacent edges of the board.

Fig. 2 is an enlarged cross section of Fig. 1 taken along the line 2—2 thereof.

Fig. 3 is an enlarged plan view of the corner of the board showing the two knives geared together for simultaneous action and each extending slightly beyond the corner in overlapping arrangement.

Fig. 4 is a plan view of a trimming board showing a modified construction employing two straight guillotine form of knives.

Fig. 5 is a cross section of Fig. 4 taken along the line 5—5 thereof showing the overlapping of the knives at the corner of the board and the mounting of the knives for vertical sliding.

In the construction shown in Figs. 1 to 3 the base or board proper on which the sheet of paper or other material is laid for trimming is designated 1 and it is shown marked off with indicating lines 2 to assist positioning the sheet thereon.

Along the two cutting edges of the board are fixed knives 3—3′ cooperating with revolving knives 4—4′ for trimming two margins of the sheet. The revolving knives are pivotally mounted in bearings 5—6 secured to the board, and are preferably formed from flat bar steel with ends 7 bent at right angles and from which short trunnions 8—9 project to serve as axles for the knives.

The knives may be helicoidal blades as in a common lawn mower, but in the figures I show the run of the blades each as a straight flat bar arranged at an angle to the axis of rotation and with the cutting edge ground off to follow the surface of a cylinder whose axis is that of the trunnions 8—9, so that the cutting edge itself follows what may be termed a helicoidal line though the body of the blade is a flat bar. This makes for simplicity and cheapness of construction.

The knives are geared together at their inner ends by means of miter gears 10 secured to trunnions 9 and the trunnions extend beyond the gears into the bearings 6.

The gears are meshed in a manner to "time" the knives, one slightly in advance of the other, so that their inner ends which overlap or extend slightly beyond the corner of the board as indicated at 11 will not interfere. In Fig. 1 knife 4′ is shown as already descended below the corner and knife 4 about to follow.

To operate the knives any well known form of power application as used in cutters may be used, though in small boards I provide a simple lever 12 secured to the trunnion at the outer end of one of the knives, and which lever is revolved in direction of the arrows to rotate both knives and thus to simultaneously cut both adjacent margins of a sheet laid on the board and projecting beyond the fixed knives 3—3′. It being understood that lever 12 is rotated to the right far enough to lift both knives clear of the inner corner of the board so that the sheet can be projected at its inner corner beyond the fixed knives.

In sharpening knives 4—4′ they will be revolved on their trunnion axes and ground off on a revolving wheel traveling longitudinally of the knife and this will of course reduce their effective diameters slightly, so that an

adjustment must be made either by moving the fixed knives 3—3′ slightly outward, or by moving the revolving knives slightly inward, and I therefore show bearings 5 as inwardly adjustable by means of screws 13 and bearings 6 are provided with threaded extensions 6′ which may be clamped against fixed brackets 6″ carried on a plate 14 rigidly secured to the board. It will be evident that many other forms of adjustment may be provided to accomplish the same purpose.

In the modified form of the invention shown in Figs. 4 and 5 employing the guillotine form of knife, the board is designated 15, fixed knives 16 and guillotine knives 17—18, the latter being slidably mounted on short rods 19 guided in slotted vertical tubular guides 20, and are simultaneously actuated by means of rotatable shafts 21—22 geared together at 23 and provided with pinions 24 extending through slots in the tubular guides 20 and engaging rack teeth 25 cut in rods 19, all in a manner so that upon revolving the shafts by any means such as by the hand lever 26 or by power applied in any desired manner, the pinions will simultaneously slide the rods 19 downward and operate both knives.

The straight knives of this showing also overlap at the inner corner of the board as indicated in the figures and are preferably set at an angle as shown for blade 17 in Fig. 5, also with the inner end of one blade lower than the other so that the overlapping arrangement of the blades at the corner may be secured and which is a desirable feature in avoiding the otherwise extreme nicety of adjustment at this point to insure a clean cut corner.

In considering my invention as above set forth, it should be noted that while I show a trimming board or base plate with two simultaneously actuated knives lying along adjacent edges of the boards, it is manifest that the invention is not limited to two knives, as additional knives may be used at other edges of the board, also that it is immaterial whether the board be rectangular or any other multisided shape.

I claim:

1. A trimmer for sheet material comprising a base plate upon which the sheet is laid including fixed cutting edges, a plurality of trimming knives operatively arranged respectively along the edges of said base plate for trimming the margins of the sheet thereagainst, the cutting edges of said knives extending in overlapping arrangement with respect to a corner of the base plate, and means for operating said knives.

2. A trimmer for sheet material comprising a base plate upon which the sheet is laid including fixed cutting edges, a plurality of trimming knives operatively arranged respectively along the edges of said base plate for trimming the margins of the sheet thereagainst, said knives extending in overlapping arrangement with respect to a corner of the base plate, and means for operating said knives comprising power application means at the end of one knife, and power transmitting mechanism between the opposite end of the knife, and the next adjacent knife.

3. A trimmer for sheet material comprising a rectangular base plate upon which the sheet is laid including fixed cutting edges and a pair of trimming knives operatively arranged respectively along diverging edges of said base plate for trimming the margins of the sheet thereagainst, said knives being set to begin their cuts at the corner formed by the juncture of said diverging edges and one in advance of the other with respect to said corner, and means for operating said knives.

4. A trimmer for sheet material comprising a base plate upon which the sheet is laid including fixed cutting edges and a plurality of trimming knives operatively arranged respectively along the edges of said base plate for trimming the margins of the sheet thereagainst, said knives being formed with cutting edges extending at an angle along a cylindrical surface of revolution, and supported on axes for revolving against said base plate, means on one knife for revolving the same, and transmission means connecting the knives together for simultaneous revolution.

5. A trimmer for sheet material comprising a base plate upon which the sheet is laid, a knife provided with a cutting edge extending along an edge of said base plate and formed to follow an angular line along a cylindrical surface of revolution, and means pivotally mounting the knife whereby it may be revolved against said edge, the body of said knife comprising a substantially straight flat bar extending at an angle to the axis of revolution, the ends of the bar bent to extend in opposite directions at an angle to the run of the bar and provided with projecting axles.

6. A trimmer for sheet material comprising a base plate upon which the sheet is laid including fixed cutting edges and a plurality of trimming knives operatively arranged respectvely along the edges of said base plate for trimming the margins of the sheet thereagainst, said knives being formed with cutting edges extending at an angle along a cylindrical surface of revolution, and supported on axes for revolving against said base plate, and means for applying power to one of said knives, and gear means operatively connecting the knives together.

7. In a structure as specified in claim 6, bearings in which said knives are revolvable secured to the base plate and means for adjusting said bearings to and from said base plate.

8. A trimmer for sheet material compris-

ing a base plate upon which the sheet is laid including fixed cutting edges and a plurality of trimming knives operatively arranged respectively along the edges of said base plate for trimming the margins of the sheet thereagainst, said knives being formed with cutting edges extending at an angle along a cylindrical surface for revolution, and supported on axes for revolving against said base plate, means for applying power to one of said knives, gear means operatively connecting the knives together and means whereby the axes of said knives and base are relatively adjustable.

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