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FAN FOLD PAPER CUTTER

Filed March 21, 1922

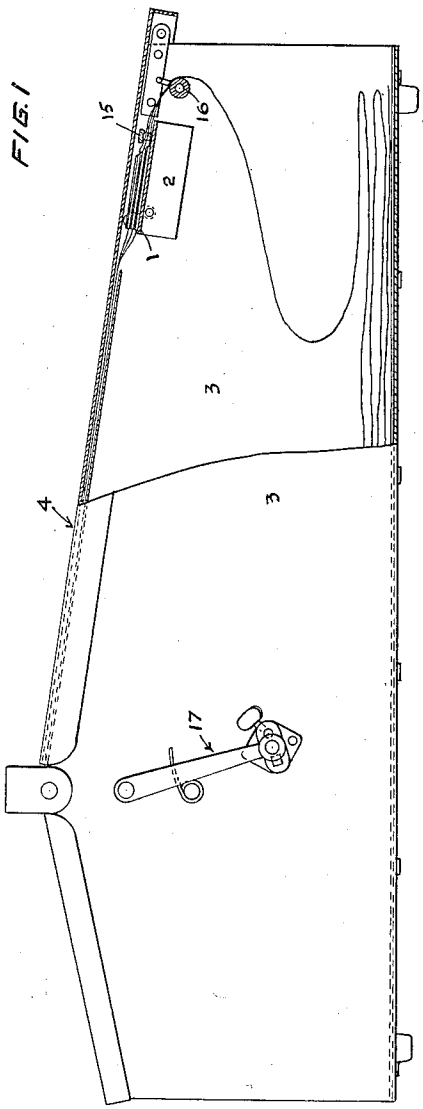


FIG. 1

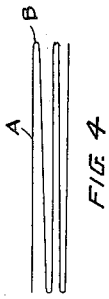


FIG. 4

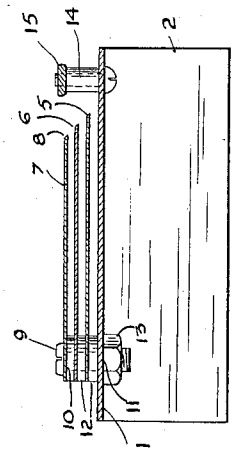


FIG. 3

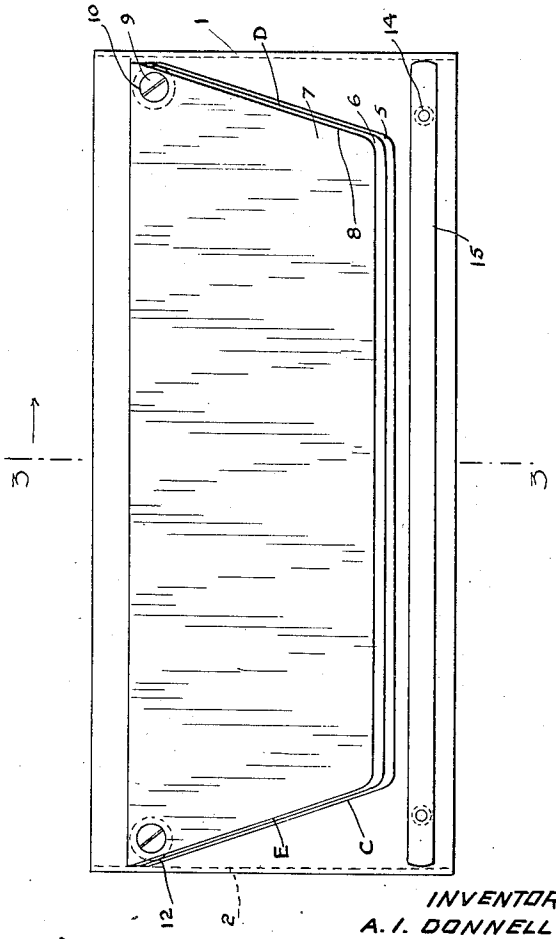


FIG. 2

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UNITED STATES PATENT OFFICE.

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FAN-FOLD PAPER CUTTER.

Application filed March 21, 1922. Serial No. 545,528.

To all whom it may concern:

Be it known that we, ANDREW I. DONNELL and HENRY F. WRUCK, citizens of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented new and useful Improvements in Fan-Fold Paper Cutters, of which the following is a specification.

This invention relates to improvements in devices for cutting or separating fan fold paper. Fan fold paper is mostly used in connection with manifolding machines and the like and generally consists of three or more folds of paper separated by lines of weakness such as perforated lines.

The primary object of the present invention is to provide a simply constructed, inexpensive and highly efficient device for cutting or separating fan fold paper in manifolding machines, the device being so constructed that it will evenly cut or separate the folds of the paper without moving the folds out of alinement or buckling the paper, or tearing or forming ragged edges.

A further object is to provide a cutter of the character described which may be readily and easily rearranged to cut the paper regardless of the number of folds, and which may be easily attached to manifolding machines and other devices using fan fold paper, without necessitating changing the construction of the machines.

The invention possesses other advantages and features some of which, with the foregoing will be set forth at length in the following description where we shall outline in full that form of the invention which we have selected for illustration in the drawings accompanying and forming a part of the present specification. In said drawings we have shown one form of the construction of our invention, but it is to be understood that we do not limit ourselves to such form since the invention as expressed in the claims may be embodied in a plurality of forms.

Referring to the drawings:

Fig. 1 represents a side elevation of a manifolding machine employing fan fold paper, one part of the machine being broken away and showing in section the device of this invention as it would appear when in use.

Fig. 2 represents an enlarged top plan view of the cutter or knife of the invention.

Fig. 3 represents a sectional view taken on line 3—3 of Fig. 2.

Fig. 4 represents a cross sectional view of fourfold fan fold paper.

Referring to the embodiment of the invention shown in the accompanying drawings, the device consists primarily of a body plate 1, which is preferably of rectangular form and provided at its end with down turned flanges 2 which permit of the attachment of the device in any suitable manner between the walls 3 of a fan fold register, generally designated 4. Mounted upon the upper side of the body 1 are a plurality of blades (in this instance three), designated 5, 6 and 7 respectively. Any number of blades may be used dependent upon the number of folds of fan fold paper employed in the machine. In this instance, as the machine employs fourfold paper, as shown at A in Fig. 4, there are three blades, each blade being of substantially rectangular outline and in the form of a flat, comparatively thin, metal plate, the ends of which are inclined in convergent directions or bevelled so as to provide cutting edges 8. These cutting edges may be formed or disposed at any angle relative to the longitudinal edges of the blades, provided that the cutting edges will intersect the lines of perforations B, which join the folds of the fan fold paper. These edges instead of being sharp such as would actually cut the paper, are comparatively dull but sufficiently sharp to sever the paper at the lines of the perforations. The blades are mounted in spaced parallel relation, one above the other, and are so held by means of screw bolts 9 which are inserted thru apertures 10 near the ends of the blades and likewise inserted thru openings 11 provided in the body. Spacing members 12 in the nature of washers are mounted upon the screw bolts 9 and serve to separate and space the blades from one another. Nuts 13 are turned upon the lower threaded ends of the screw bolts so as to engage the under side of the body 1 and

thereby hold the bolts and blades in place. It will be apparent that with this arrangement it will be possible to readily add a blade or blades, or to remove a blade, as the case may be, depending upon the requirements of the cutter with relation to the number of folds of paper to be cut.

To facilitate the insertion of the paper between the blades said blades are arranged so that their forward edges are in staggered relation, the blade 6 being spaced inwardly along its forward edge for a fraction of an inch from the forward edge of the blade 5 and the blade 7 being correspondingly spaced inwardly from the corresponding edge of the blade 6. By this arrangement the folds of paper may be readily threaded between the blades. As means for guiding the paper, there is provided, near each end of the body 1, an upstanding member 14 against which member the side edges of the paper are adapted to engage as the paper is fed to the blades. A cross bar 15 is mounted upon the upright members 14 so as to retain the paper in place and prevent the paper from buckling upwardly as it passes the blades.

As shown in Fig. 1, the fan fold paper is mounted in the machine 4 in a folded sheaf, altho it may be in roll form, and passes from the sheaf over the guide roll 16 and from thence between the guide members 14 to the blades 5, 6 and 7. In setting the paper it is severed at the perforated lines for a short distance, so that the folds of the paper are separated and the fourfolds may be threaded thru the cutter. The lowermost fold is directed so as to pass between the blade 5 and the body plate, the next or second fold is directed so as to pass between the blades 5 and 6, the third fold is arranged to pass between the blades 6 and 7, whereas the fourth fold will pass over the blade 7.

With the arrangement shown and herein described, the edge C of the blade 5 will sever the first and second folds along the first perforated line, the opposite edge D of the blade 6 will separate the second and third folds at the second perforated line, and the edge E of the blade 7 will separate the third and fourth folds at the third perforated line. Thus as the mechanism, generally designated 17, is operated to feed the paper to the register, said paper is drawn so that the perforated lines joining the folds, move against the inclined cutting edges of the blades, said inclined cutting edges intersecting the edges of the paper. The wide, flat blades will keep the paper in flat alined relation so as to prevent buckling thereof during the advancing of the paper and the members 12 and 14 will guide the paper. In this way the separating of the folds is provided for so that the perforated lines will be comparatively smooth and evenly cut and the paper will advance into the machine with the folds properly alined.

The longitudinal edges of the paper are inwardly spaced from the ends of the blades at the points of greatest width of the latter. Since the cutting edges are inwardly converged and intersect the fold lines of the paper the said edges effect a cutting or ripping action outwardly from points between the folds. This insures a clean cut and prevents tearing of the folds proper. By having the blades rigidly fastened and held at their ends and providing for the cutting or ripping to take place between these points of securing or fastening the blades, the rigidity provided insures a proper and clean cutting action.

We claim:

1. A device for separating the folds of fan fold paper, which folds are joined by lines of weakness, comprising a plurality of superimposed members between which certain of which folds of the paper are adapted to extend, each of said members being provided at its ends with cutting edges extending so as to intersect the fold lines of the paper.

2. A fan fold paper cutter comprising a support, a plurality of blades mounted in spaced relation one above the other and spaced from said support, means for securing the said blades to the support, each of said blades having at its ends edges disposed so as to extend across the fold lines of fan fold paper which is drawn between said blades.

3. A fan fold paper cutter comprising a support, a plurality of blades mounted in spaced relation one above the other and spaced from said support, means for securing the said blades to the support, each of said blades having at its ends edges disposed so as to extend across the fold lines of fan fold paper which is drawn between said blades and means for rigidly supporting said members at their ends and between which means the paper extends.

4. A device for separating the folds of fan fold paper comprising a supporting member, a blade secured at spaced points to said supporting member between which points of securing the blade the fan fold paper is adapted to be drawn and cutting edges at spaced points on the blade, which edges are arranged to intersect the fold lines of the paper.

5. A fan fold paper cutter comprising a support, a plurality of elongated double edged blades mounted in spaced relation one above the other on the support, securing members extending through said blades adjacent the ends thereof between which securing members fan fold paper is adapted to be drawn, each blade having cutting edges disposed adjacent the ends of the blade and

extending so as to intersect the fold lines of the paper as the latter is drawn between the securing means.

6. A device for supporting the folds of multi-fold paper comprising a support relative to which support the paper is adapted to be moved, blades mounted on the support extending across and beyond the path of the paper, each of said blades having cutting edges adjacent its ends, which edges intersect the path of movement of the fold lines of the paper.

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