March 11, 1952 J. R. BAUMGARTNER 2,589,033

PAPER-CUTTING APPARATUS

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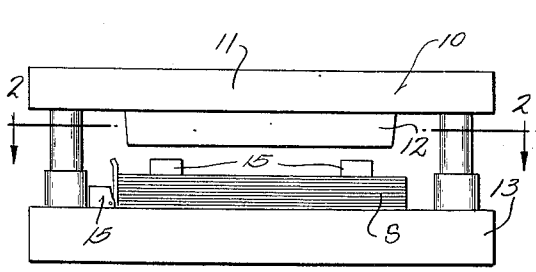


Fig. 1

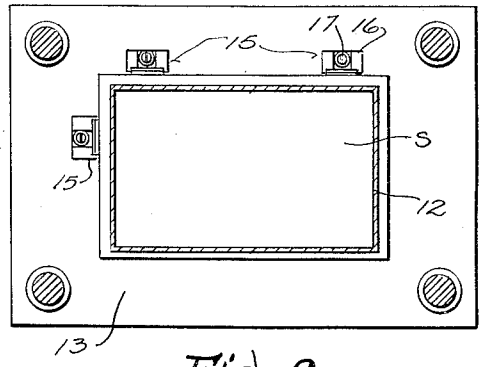


Fig. 2

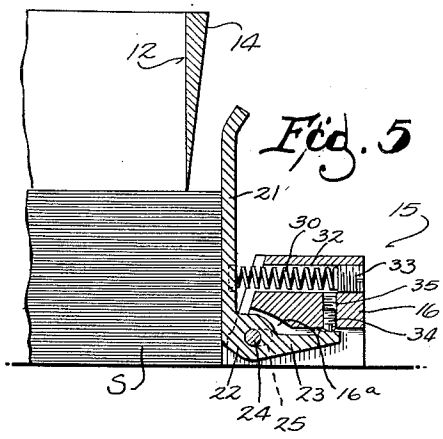


Fig. 5

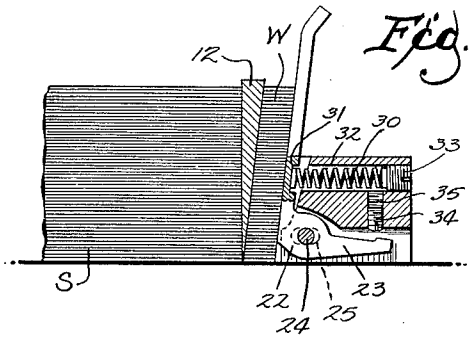


Fig. 6

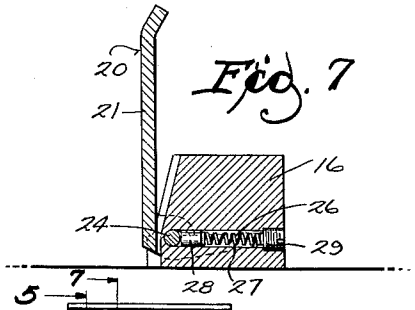


Fig. 7

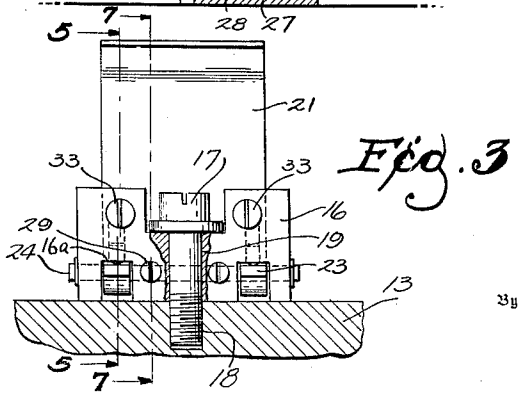


Fig. 3

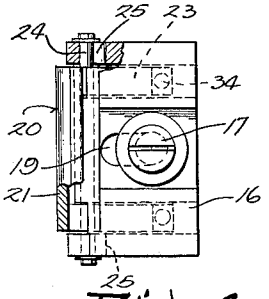


Fig. 4

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PAPER-CUTTING APPARATUS

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3 Claims. (Cl. 164—59)

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The invention relates to paper cutting apparatus and more particularly to a locator or locators used to properly position a stack of paper sheets to be cut before the cutting operation.

The main object of the invention is to provide locator devices by which not only will the sheets be properly located beneath the cutting knife during the beginning of the cut but one which is free to swing outwardly under the action of the waste from the cut and also move bodily outwardly under this action, so that troubles heretofore encountered in the displacement of the locators by the stock being handled are eliminated.

The invention further consists in the several features hereinafter described and more particularly defined by claims at the conclusion hereof.

In the drawings:

Fig. 1 is a side elevation view of cutting apparatus equipped with locators embodying the invention;

Fig. 2 is a detailed horizontal sectional view taken on the line 2—2 of Fig. 1;

Fig. 3 is a rear elevation view of a locator embodying the invention, parts being broken away and parts being shown in section;

Fig. 4 is a plan view of the locator, parts being broken away and parts being shown in section;

Fig. 5 is a vertical sectional view taken on the line 5—5 of Fig. 3, showing the position of the locator at the beginning of the cut;

Fig. 6 is a view similar to Fig. 5 showing the position of the locator at the end of the cut;

Fig. 7 is a detailed vertical sectional view taken on the line 7—7 of Fig. 3.

Referring to Fig. 1, the numeral 10 designates generally a hydraulic press having a movable platen 11 carrying a cutting knife 12 and 13 the bed of the press upon which a stack of paper sheets S are placed to be cut by downward movement of the knife 12 through the sheets. The knife 12, as shown in section in Fig. 2, is of hollow rectangular form, and its edge portion may be formed in various shapes to cut the sheets S into various shapes as will be readily understood but for the purpose of this application a straight edged knife has been shown in which the outer edge 14 of the knife tapers outwardly for strength, as shown in Figs. 5 and 6.

In cutting stacks of sheets in a paper cutting apparatus of the type above described it is important that the sheets be properly located on the bed 13 before the cut, and for this purpose a plurality of locators 15 are used. In the present instance the sheets S are of rectangular form and are located in position by spaced locators engageable with one of the longer sides of said sheets and a locator at right angles to said spaced locators engageable with the adjacent shorter side of the sheet.

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Each locator includes a base member 16 secured to the bed 13 by a clamping screw 17 whose threaded shank is mounted in a threaded hole 18 in said bed, said screw extending through a centrally disposed slot 19 in the base which is preferably elongated, as shown in Fig. 4, so that certain range of adjustment of said base relative to the bed may be had.

A locator member 20 in the form of a bell crank lever having one arm in the form of a broad-faced flat plate 21 with spaced ears 22 connected with spaced angled arms 23 is pivotally mounted on a horizontally disposed pivot shaft 24 which is mounted in elongated slots 25 in the base, so that the shaft may have a limited amount of horizontal movement relative to the base and provide what might be termed a floating pivot for the lever. The base 16 is recessed at 16a to allow free movement of said lever. Normally the shaft 24 is held at the left hand end of the slots 25 as viewed in Fig. 7 by spaced springs 26, each spring being mounted in a bore 27 in said base between a bearing plug 28 engageable with the shaft and a screw plug 29 mounted in said base.

The member 20 is also urged to bring its plate 21 to an upright position relative to the bed 13 by spaced springs 30, each engageable at one of their ends with a recessed portion 31 of the plate, and extending through a bore 32 in said base and engaged at their other end by a screw plug 33 mounted in said base.

For initially adjusting the right angled position of the plate 21 relative to the bottom of the base 16 and the top of the bed 13, a set screw 34 is mounted in a threaded bore 35 adjacent each arm 23, so that under the action of the springs 30 said arms 23 will be held up against said screws 34, and thus the angular position of the plate 21 is limited in one direction, but this does not stop the canting of the member 20 in the opposite direction as indicated in Fig. 6.

With the above construction and with the locating devices arranged as previously pointed out so as to properly position the stack of sheets to be cut as the knife goes through the sheets, as indicated in Fig. 6, the waste W is forced laterally outwardly by the knife against the locators, and this action has heretofore frequently resulted in forcing the locators out of position or alinement. With the pivoted and bodily movable locator 20, however, the plate portion 21 may tilt backwardly

against the yielding action of the springs **30**, and said member **20** with the shaft **24** may also move rearwardly or toward the right, as viewed in Fig. 6, against the yielding action of the springs **26**, so that the base **16** and its anchorage are not subjected to strains imposed by the waste which would tend to displace it from its adjusted position on the bed, and as soon as the knife is retracted, the springs **30** and **26** return the member **20** to its original correctly pre-set position for the cutting of another stack of sheets, thus saving the time and labor which would have to be expended were the locator devices displaced.

I desire it to be understood that this invention is not to be limited to any particular form or arrangement of parts except in so far as such limitations are included in the appended claims.

What I claim as my invention is:

1. In a sheet stack locator for paper cutting apparatus having a paper stack support and a movable cutting knife having an inner side normal to the surface of said support and an outer outwardly tapered side, the combination of a base, means for mounting said base on said support adjacent the outer side of said knife, a broad substantially flat faced locator member adapted to be normally disposed in a plane parallel to said knife, a pivot shaft for said member mounted in said base for straight line lengthwise movement in a plane perpendicular to that of the knife under the action of waste cut off by said knife, spring means mounted in said base engageable with said shaft opposing said lengthwise movement, means for limiting the inward pivotal movement of said member to a plane parallel to that of the inner side of said knife, and spaced springs between said base and member opposing the pivotal movement of said member from its position parallel to the knife by the pressing of the cut waste thereagainst by the tapered side of said knife.

2. A locator for paper cutting apparatus having a sheet stack receiving table and a cutting knife having a side normal to said table and an outer outwardly tapered side, the combination of a base means for mounting said base on said table adjacent the outer side of said knife, a locator comprising a bell crank lever pivotally mounted on said base and having an alinement plate for sheets stacked on said table forming one arm and spaced arms, adjustable fixed stops engageable with said spaced arms for limiting the movement of said lever in one direction for holding said plate normal to the table and in a plane parallel to said knife, and spring means for urging said lever into engagement with said stops and permitting its movement in the opposite direction under the action of the tapered side of the knife on the cut waste.

3. A locator as defined in claim 1, in which the pivot support for said lever is bodily movable in said base outwardly of its initial position relative to the knife under the action of waste cut off by the knife and spring means mounted in said base oppose this outward movement.

JOHN R. BAUMGARTNER.

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