

April 16, 1940.

F. M. PICKETT
GUIDE FOR PAPER CUTTERS

2,197,260

Filed Sept. 1, 1939

2 Sheets-Sheet 1

Fig. 1.

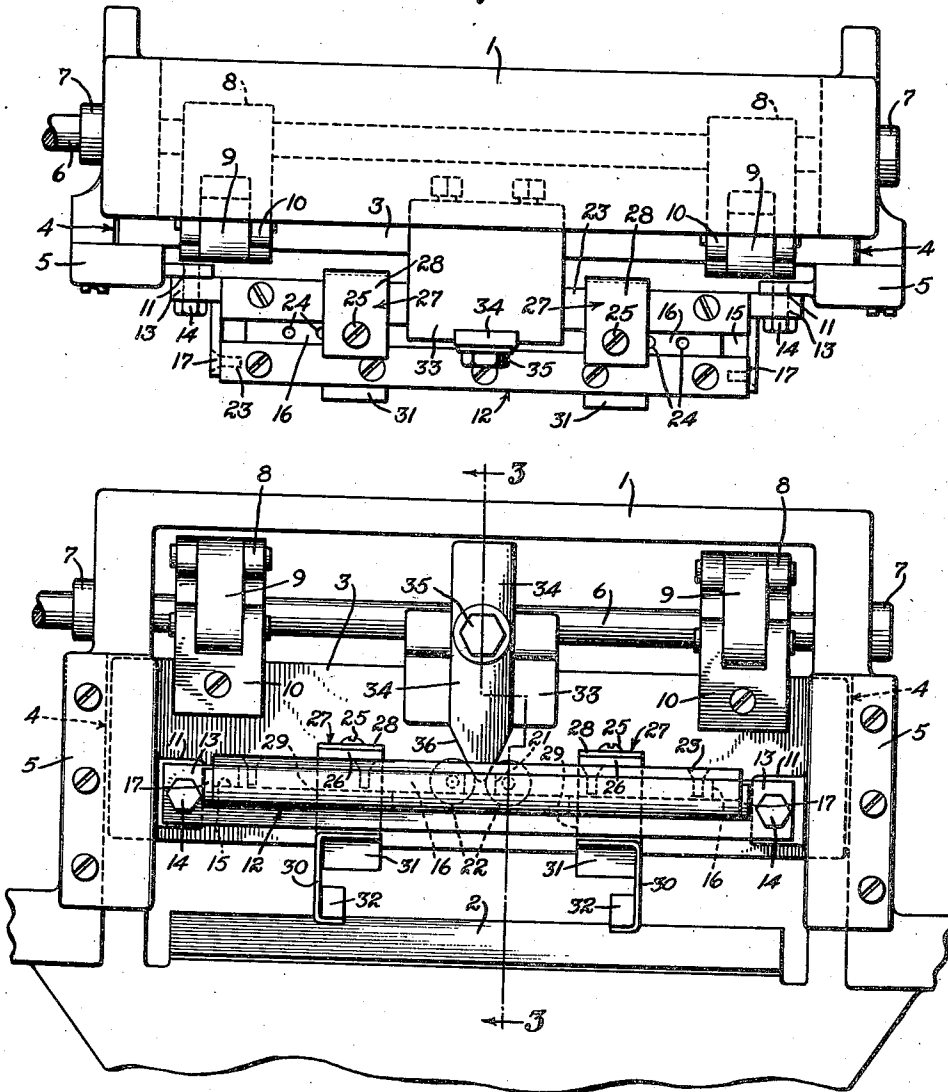


Fig. 2

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2 Sheets-Sheet 2

Fig. 3.

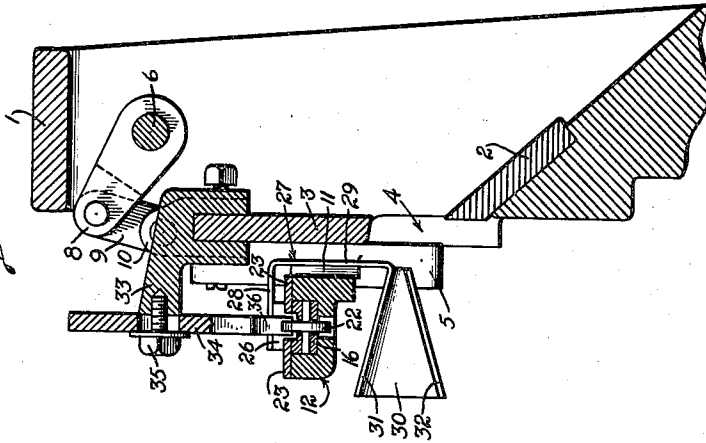


Fig. 4.

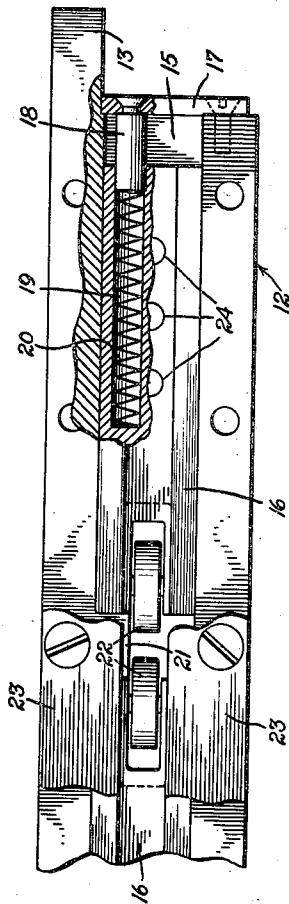
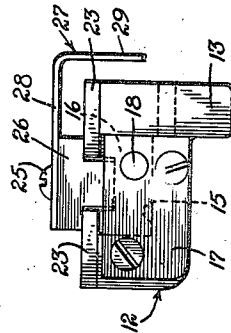


Fig. 5.



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2,197,260

GUIDE FOR PAPER CUTTERS

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Application September 1, 1939, Serial No. 293,011

6 Claims. (Cl. 164—47)

This invention relates to a guide for paper cutting machines.

The invention provides a guiding mechanism for attachment to a paper cutting machine for cutting paper or other sheet material, arranged to receive the end of a paper strip being fed and guide it between the separated cutters.

The invention is particularly applicable to paper cutting devices having a pair of spaced cutting mechanisms arranged for adjustment relative to each other for cutting sheets to desired size.

As the cutter mechanisms of conventional cutters operate simultaneously to cut sheet material into sections of a length equal to the distance between the cutters, it is customary to feed the end of the sheet from the first cutter through the second cutter for the next cutting operation. It is found that sheet material has a tendency to curve downwardly in this feeding operation, particularly paper sheets, so that they frequently fail to pass between the cutters of the second or rear cutter mechanism and result in the improper cutting of the sheet.

The present invention provides a means to receive the end of the paper sheet in advance of the second cutter mechanism to prevent it from curling and feed it between the cutter blades of said second cutter mechanism so that when the cutters operate, the sheet will be cut to the proper size. The guide means is operated to disengage from the sheet just previous to the actual cutting so that as soon as the portion of the sheet cut to size has been completed, it will drop down between the cutters for removal from the cutting mechanism in the usual manner.

The invention further comprises a guide mechanism that is readily adapted for attachment to the rear cutter mechanism in which a pair of guide fingers are normally held in position to receive the end of sheet material being fed to the rear cutter blade with suitable means operated by the rear cutter blade for moving the fingers apart to disengage them from the sheet just prior to cutting of the sheet material.

In the drawings:

Fig. 1 is a plan view of the rear cutter structure of a double knife cutting mechanism showing the guide for sheet material mounted thereon.

Fig. 2 is a front elevation of the structure shown in Fig. 1.

Fig. 3 is a cross section taken on line 3—3 of Fig. 2.

Fig. 4 is an enlarged fragmentary plan view with portions broken away and shown in section

illustrating the construction of the supporting member.

Fig. 5 is an end view of the supporting member as shown in Fig. 4.

Paper cutters and cutters for similar types of sheet material using two sets of knives arranged to operate simultaneously for cutting cards and the like, where the knives are arranged so that one is adjustable with respect to the other to change the size of the card or sheet being cut from a strip or larger sheet, are well known in the art.

In cutting cards and other paper sheet material it has been found that the sheet material frequently curls downwardly during its feeding between the two cutters preparatory to cutting, the downward bending or curling of the end being sufficient that it will not pass between the rear knives, thereby interfering with the efficient operation of the cutter mechanism. It is also customary with cutters of this character for the cut sheet or card to be discharged downwardly between the front and rear cutters.

The paper guide forming the present invention provides a support and guide for the end of the sheet material, such as paper or the like, as it is fed between the front and rear cutters in order to positively guide the end of the sheet between the rear cutter blades and prevent it from curling downwardly.

The frame of the rear cutter structure is indicated at 1 and is of generally rectangular open form having the stationary cutter blade 2 mounted thereon and extending across the lower portion of the opening in said frame at the front edge. The reciprocating cutter blade 3 extends across the opening in the frame and is mounted for vertical reciprocating movement on the front edge of frame 1 with opposite ends slidably mounted in guides generally indicated at 4 on the sides of frame 1. Removable guide plates 5 forming part of the guides 4 are secured to the sides of frame 1 for detachably retaining reciprocating cutter blade 3 on the frame.

An operating shaft 6 is rotatably mounted in bearings 7 formed on the side portions of frame 1 and driven from a suitable source of power, not shown. Operating arms 8 are mounted on shaft 6 connected by links 9 with bearing brackets 10 mounted on the upper edge of reciprocating cutter blade 3 so that in the oscillation of shaft 6 by suitable means, not shown, cutter blade 3 will be reciprocated in guides 4 to cooperate with stationary cutter blade 2 for the usual cutting operation.

Guide plates 5 are formed with projections 11. A supporting member 12 is formed with ears 13 at opposite ends arranged to seat on projections 11 and to receive bolts 14 for suitably securing supporting member 12 to projections 11.

Supporting member 12 is formed with a longitudinal channel 15 having a pair of slide bars 16 mounted therein for longitudinal sliding movement. End plates 17 are detachably mounted on the ends of supporting member 12 for closing the open ends of channel 15. Projections 18 are mounted one on each end plate 17 and extend into bores 19 formed to extend inwardly from the outer ends of each slide bar 16. A coil spring 20 is housed in each bore 19 and engages the end of projection 18 for normally moving each slide bar 16 inwardly toward the other to their inner limit of movement against stop block 21 located in the center of guideway 15 and on one side thereof. The inner ends of slide bars 16 are bifurcated to rotatably receive rollers 22. Retaining plates 23 are detachably mounted on the top face of supporting member 12 for slidably retaining slide bars 16 in channel 15.

Slide bars 16 are each formed with a plurality of transversely extending threaded openings 24 adapted to receive screws 25, extending one through each supporting block 26 mounted one on top of each slide bar 16 and extending between retaining plates 23 for supporting, in connection with screws 25, guide fingers 27.

Guide fingers 27 are formed of suitable sheet metal or the like having an upper straight end portion 28 secured by screw 25 to the top of supporting block 26 at the free end while the opposite end portion of upper end 28 terminates in a downwardly extending portion 29 connected at the lower end to guide section 30. Guide section 30 extends forwardly from downwardly extending portion 29 and is of U-shape in cross section. The upper and lower flanges 31 and 32 of guide section 30 are inclined relative to one another to provide an opening at the rear end in advance of the cutter blades of relatively narrow dimension adjacent to lower end of portion 29, while the opening formed at the front end of flanges 31 and 32 is relatively wide, as clearly shown in Fig. 3. Guide sections 30 of fingers 27 are formed in opposite relation to each other to cooperate with opposite side edges of a sheet being fed toward the rear cutter blades 2 and 3.

As a sheet is fed toward rear cutter blades 2 and 3, the end of the sheet at opposite side edges thereof will engage in the wide end of section 30 and be guided by flanges 31 and 32 of the pair of guide fingers through the small end and between reciprocating and stationary cutter blades 2 and 3 in a manner that can be clearly determined from the drawings.

In order that the sheet or card after being cut by the cutter blades can drop downwardly or discharge from the cutter mechanism, guide fingers 27 are mounted on slide bars 16 for movement apart to disengage from the side edges of the sheet guided thereby. For this purpose a bracket 33 is mounted on the upper edge of reciprocating cutter blade 3, as clearly shown in Fig. 3, which carries cam strip 34 adjustably mounted on the free end thereof by means of bolt 35. Cam strip 34 has angular cam faces 36 on the lower end thereof as shown in Fig. 2.

Cam strip 34 moves downwardly as reciprocating cutter blade 3 moves downwardly in the operation thereof for cutting a sheet in cooperation with stationary cutter blade 2. Cam faces

36 of cam strip 34 engage between rollers 22 in downward movement as indicated in Fig. 2, producing endwise movement of slide bars 16 in guides 15 in opposite directions away from each other against the tension of coil springs 20. As guide fingers 27 are mounted on slide bars 16, they move apart with the movement of the slide bars to a sufficient extent that flanges 31 and 32 will move outwardly beyond the side edges of the paper strip or sheet guided thereby so that as the cutters complete their cutting operation, the cut card or sheet will immediately drop downwardly from the cutter mechanism.

As reciprocating cutter blade 3 moves upwardly to its upper position, it carries cam strip 34 with it until the lower end moves upwardly to the position of Fig. 2 wherein it is located above supporting member 12 and slide bars 16 so that coil springs 20 will slidably move slide bars 16 toward each other until they engage stop 21, whereupon guide fingers 27 will be in position to guide the next sheet between cutters 2 and 3.

The plurality of openings 24 provides for the mounting of supporting block 26 and guide fingers 27 in different positions on slide bars 16 in order to take different widths of sheets for guiding and cutting in the cutter mechanism.

Cam strip 34 is provided with a vertical slot to receive securing bolt 35 allowing vertical adjustment of cam strip 34 so that its operation can be timed in connection with the operation of reciprocating cutter blade 3 to operate guide fingers 27 in a desired timed relation with the operation of the cutter mechanism.

The invention claimed is:

1. In a cutter having a frame carrying a stationary cutter blade and a reciprocating cutter blade for cooperation with said stationary cutter blade in cutting sheet material, a guide for the material to be cut comprising a pair of guide fingers formed in opposed relation to receive opposite side edges of sheet material in advance of the cutter blades for supporting and guiding said sheet material between said cutter blades in advance of the cutting stroke of said reciprocating cutter blade, means mounted on said frame slidably carrying said guide fingers for sliding movement in a plane parallel with said cutter blades, means normally moving said guide fingers toward each other into sheet guiding position, and means on said reciprocating cutter blade for moving said fingers apart to disengage from the sheet guided therebetween as the reciprocating cutter blade descends.

2. In a cutter having a frame carrying a stationary cutter blade and a reciprocating cutter blade for cooperation with said stationary cutter blade in cutting sheet material, guide mechanism in advance of said blades for guiding sheet material between said blades for cutting, comprising a pair of oppositely formed guide fingers in opposed relation to receive and guide sheet material by slidably receiving opposite edges, means slidably mounting said fingers for movement normally toward each other, and means on said reciprocating cutter blade for moving said guide fingers away from each other to disengage a sheet guided therein as the reciprocating cutter is operated to cut said sheet.

3. In a cutter having a frame carrying a stationary cutter blade and a reciprocating cutter blade for cooperation with said stationary cutter blade for cutting sheet material, guide mechanism in advance of said blades for guiding sheet material between said blades comprising a support-

ing member mounted on said frame in front of said stationary cutter blade and parallel thereto, a pair of guide fingers slidably mounted on said supporting member for movement toward and from each other in a plane parallel to said stationary blade, means normally moving said guide fingers toward each other into position to engage and guide the opposite edges of sheet material, and means mounted on said reciprocating cutter blade for engaging and moving said guide fingers away from each other as said reciprocating cutter blade moves toward cutting position for disengaging said guide fingers from sheet material being cut.

4. In a cutter having a frame carrying a stationary cutter blade and a reciprocating cutter blade for cooperation with said stationary cutter blade in cutting sheet material, guide mechanism in advance of said blades for guiding sheet material between said blades comprising a supporting member mounted on said frame in front of said cutter blades, a pair of slide bars slidably mounted on said supporting member for movement toward and from each other, means normally moving said slide bars toward each other, a pair of guide fingers arranged in opposed relation and mounted on respective slide bars for movement therewith toward and from each other, said guide fingers being normally held in guiding position for guiding sheet material between said cutter blades in separated position, and means on said reciprocating cutter blade for moving said slide members and guide fingers apart to disengage said guide fingers from engagement with a sheet guided thereby as said reciprocating cutter blade moves into cutting position.

5. In a cutter having a frame carrying a stationary cutter blade and a reciprocating cutter blade for cooperation with said stationary cutter blade in cutting sheet material, guide mechanism in advance of said blades for guiding sheet material between said blades, comprising a supporting member mounted on said frame in advance of and in parallel relation to said blades, a pair of slide bars mounted for longitudinal sliding movement on said supporting member, means normally moving said slide bars toward each other and the central portion of said sup-

porting member, means for limiting the movement of said slide bars toward each other, a pair of oppositely formed guide fingers detachably and adjustably mounted on said slide bars for movement therewith toward and from each other and normally held with said slide bars in position to receive the opposite edge portion of sheet material for guiding said sheet material between said cutter blades in separated relation, and operating means on said reciprocating cutter blade for engaging and moving said slide bars away from each other to disengage said guide fingers from the opposite edges of a paper sheet as the reciprocating cutter blade moves into cutting position.

6. In a cutter having a frame carrying a stationary cutter blade and a reciprocating cutter blade for cooperation with said stationary cutter blade in cutting sheet material, guide mechanism in advance of said blades for guiding sheet material between said blades, comprising a supporting member mounted on said frame in front of said stationary cutter blade and parallel thereto, said supporting member having a guide channel extending longitudinally thereof, a pair of slide bars slidably mounted on said supporting member in said guide channel in end to end relation, resilient means engaged between outer end portions of said slide bars and said supporting member for normally moving said slide bars toward each other, stop means on said supporting member for limiting movement of said slide bars in said channel, a pair of oppositely formed guide fingers, each mounted on one of said slide bars in detachable and adjustable relation and having U-shaped end portions facing toward each other for receiving opposite edge portions of a sheet being fed toward said cutter blades for guiding said sheet between said cutter blades in separated relation, and a cam member mounted on said reciprocating cutter blade and movable therewith to engage between the ends of said slide bars and move them apart in the movement of said reciprocating cutter blade toward cutting position for disengaging the U-shaped ends of said guide fingers from the sheet material guided thereby.

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