April 1, 1952 S. SEGAL 2,591,472

PAPER TRIMMER

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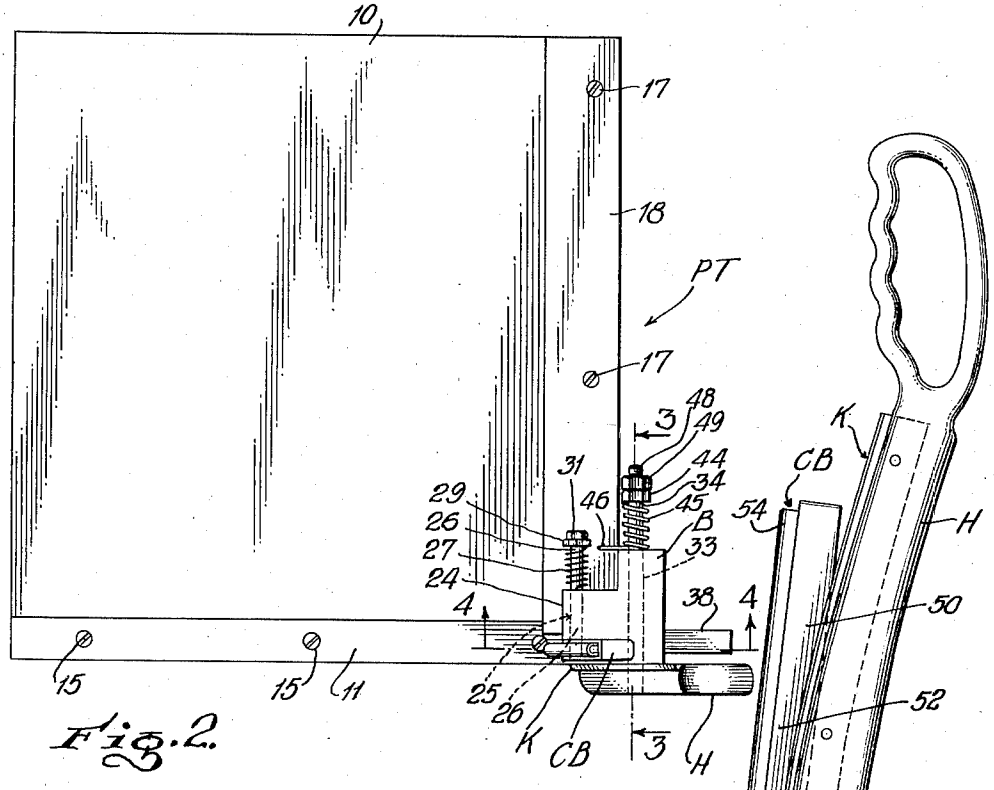


Fig. 2.

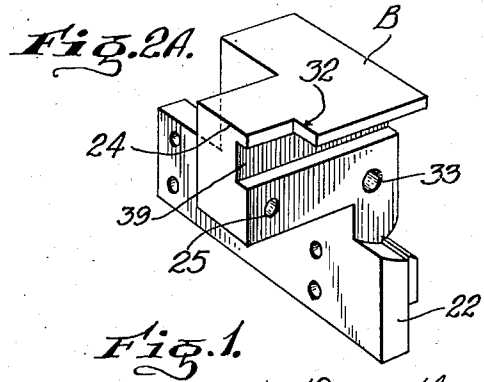


Fig. 2A.

Fig. 1.

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April 1, 1952 S. SEGAL 2,591,472

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Filed Feb. 1, 1947 3 Sheets-Sheet 2

Fig. 3.

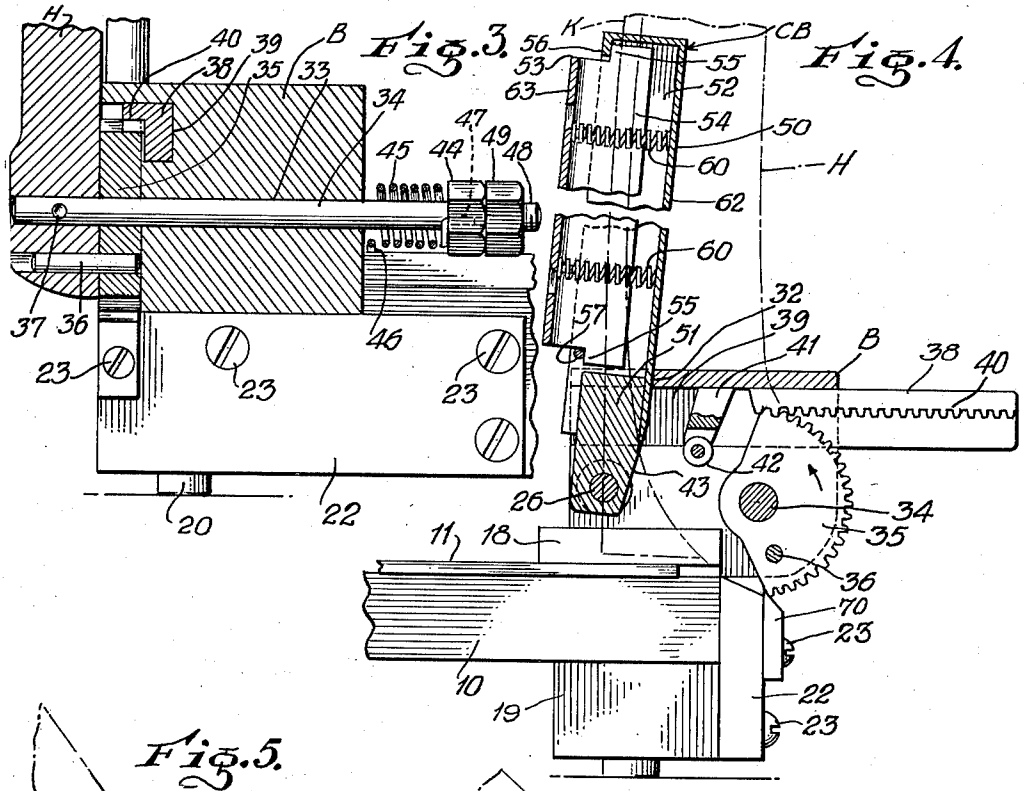


Fig. 4.

Fig. 5.

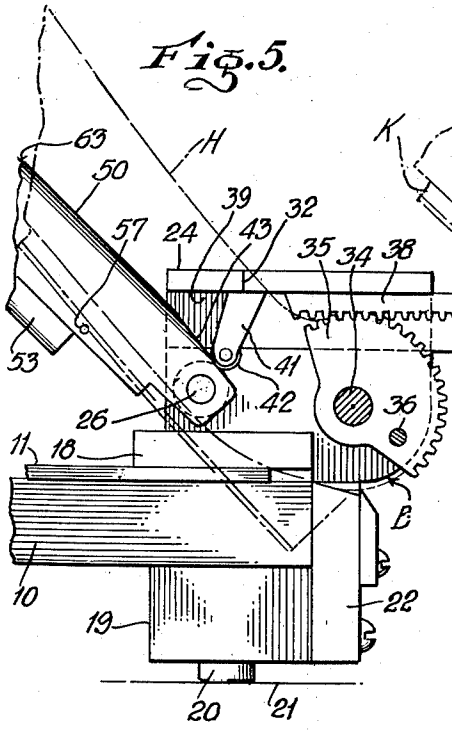
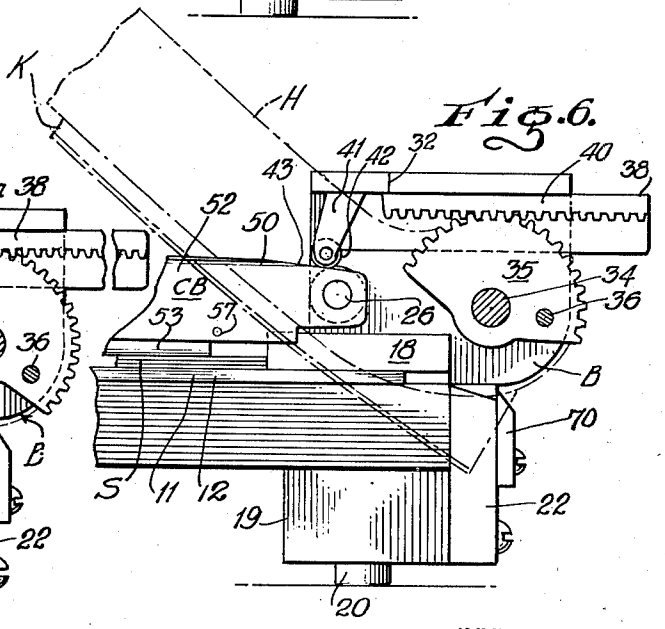


Fig. 6.



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April 1, 1952 S. SEGAL 2,591,472

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Fig. 7.

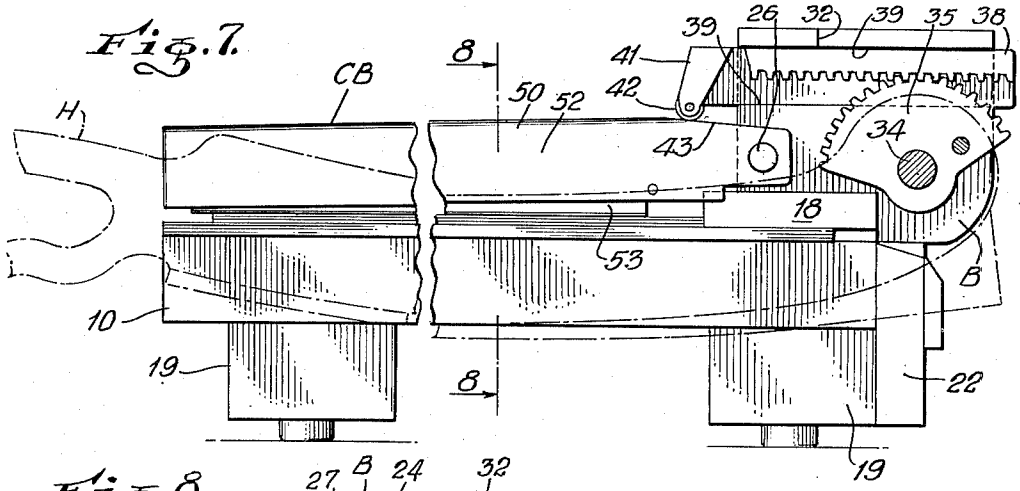


Fig. 8.

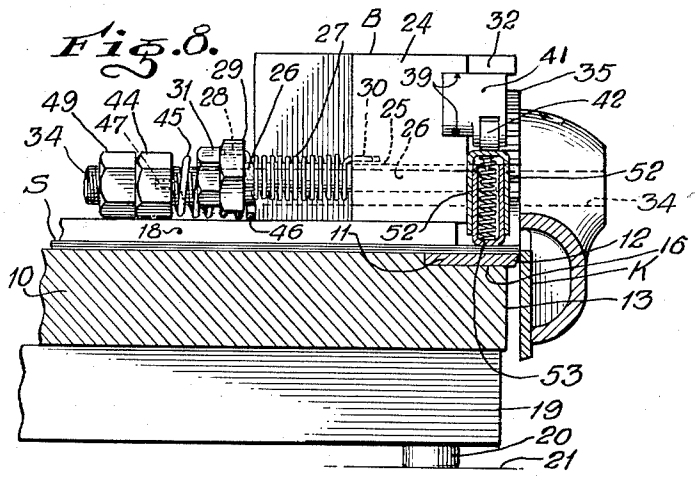
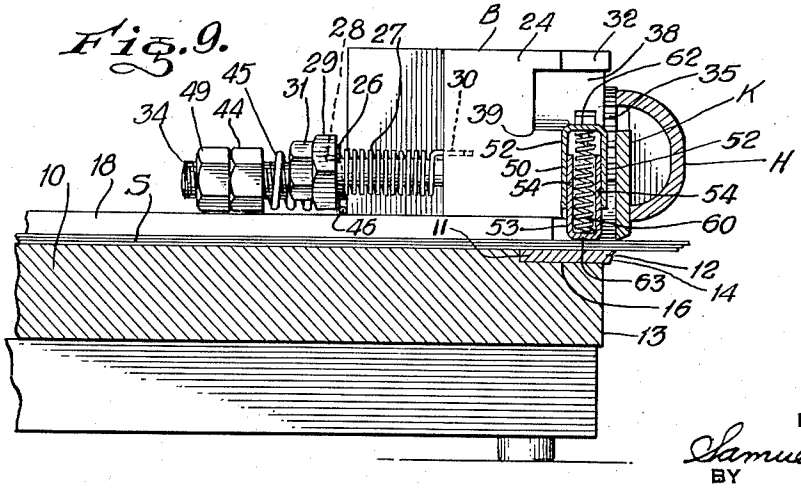


Fig. 9.



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UNITED STATES PATENT OFFICE

2,591,472

PAPER TRIMMER

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Application February 1, 1947, Serial No. 725,873

11 Claims. (Cl. 164—45)

1

The present invention relates to a cutter for sheet material and it particularly relates to a paper cutter or trimmer of the type having a swinging blade or knife operating in conjunction with and mounted upon a cutting board or platform.

Considerable difficultiy has been experienced with devices of the character described in holding the paper or sheet material in position on the board as the cutting knife descends and cuts the sheet material.

It is among the objects of the present invention to provide a novel sheet material cutter or trimmer of the character described provided with compact, effective, inexpensive means to hold the sheet material in position incidental to the cutting operation and opened in proper timing with the operation of the cutting blade.

Still further objects and advantages will appear in the more detailed descripiton set forth below, it being understood, however, that this more detailed description is given by way of illustration and explanation only, and not by way of limitation, since various changes therein may be made by those skilled in the art without departing from the scope or spirit of the present invention.

In accomplishing the above objects, there is provided an elongated holder device or compressor bar positioned closely adjacent to the swinging blade and designed to hold the sheet material down against the cutting board when the swinging knife is performing the cutting operation. The holder device or bar is preferably provided with resilient clamping or holding means. Desirably such holder means is automatically actuated incidental to manual or other operation of the cutting knife so as to clamp the paper shortly before or prior to the time the knife starts cutting the sheet material. Then it quickly releases, upon lifting of the knife handle after cutting operation has been completed. Preferably a gear and rack arrangement operated by the swinging handle is utilized to operate the clamping device or compressor bar.

The invention also consists in certain new and original features of construction and combination of parts hereinafter set forth and claimed, and as to its other objects, features and advantages, the mode of operation and manner of its organization, these, inter alia, may be better understood by referring to the following description considered in connection with the accompanying drawings forming a part thereof in which:

2

Fig. 1 is a side elevational view of the sheet material cutting device or paper trimmer showing both the cutting blade or knife and compressor bar fully raised.

Fig. 2 is a top plan view of Fig. 1.

Fig. 2A is a perspective view of the bearing block.

Fig. 3 is an enlarged transverse and vertical sectional view upon the line 3—3 of Fig. 2.

Fig. 4 is an enlarged fragmentary vertical sectional view upon the line 4—4 of Fig. 2.

Fig. 5 is a view similar to Fig. 4 illustrating the compressor or pressure bar swinging downwardly in advance of the knife handle on the downward stroke of the latter.

Fig. 6 is a view similar to Fig. 4 showing the position of the compressor or pressure bar just prior to the cutting operation of the swingable knife.

Fig. 7 is a side elevational view of Fig. 1 at the completion of the cutting stroke of the knife.

Fig. 8 is a transverse vertical fragmentary sectional view upon the line 8—8 of Fig. 7, and

Fig. 9 is a transverse vertical fragmentary sectional view similar to Fig. 8 showing the cutting blade or knife just before it starts cutting through the sheet material.

The paper trimmer according to the invention is generally designated PT and comprises a platform 10 for supporting sheet material such as paper, cardboard or the like. Fixedly mounted along one margin of the platform is the flat metal strip 11 having marginal portion 12 projecting beyond or overhanging an adjacent face 13 of the platform. Overhanging portion 12 is provided with the beveled face 14 for cooperating with the knife or cuttnig blade K for severing or cutting sheet material S mounted on the platform and on the metal strip 11 which is appropriately fixed by screws 15 within recess 16 in the platform.

Extending lengthwise of the platform and fastened to the back margin thereof by screws 17 is the bar or stop 18 for limiting the displacement of the sheet material S on the platform secured to the spaced rails 19 carrying rubber feet 20 to preclude marring of the supporting surface 21.

Arranged above the metal strip 11 and the bar 18 is a bearing or block generally denoted B having integral therewith the depending lug 22 secured by screws 23 to the platform 10 and one of the rails 19. The bearing B has an anterior reduced portion 24 including a circular bore 25 for rotatably guiding the fulcrum or pivot pin

26 surrounded in part by the normally expanded helicoidal spring 27. One end 28 of the spring 27 is threaded into and retained by the nut 29 mounted on pin 26 to be bodily rotatable therewith for winding up this spring while the opposing end 30 of spring 27 is suitably threaded into and anchored in the reduced portion 24 of the bearing B. A lock nut 31 threaded on the rotatable pin 26 maintains the companion nut 29 from slipping off this pin to which is fixedly attached the compressor bar or holder device generally designated CB. With the arrangement disclosed, due to the action of spring 27, the compressor bar is automatically held elevated or raised against the stop face 32 of the bearing B. If the compressor bar is swung downwardly towards the platform spring 27 compresses and winds up, and conversely if the force urging the compressor bar downwardly is removed, this spring expands and recoils, automatically lifting the compressor bar.

Disposed longitudinally of the bearing block B and to the rear of bore 25 but parallel thereto is the bore 33 in which the rotatable pin or shaft 34 is mounted or journaled. Bodily rotatable with shaft 34 is the segmental gear 35 fastened by pin 36 to the swingable handle H to which is appropriately fastened the knife or cutter blade K. Specifically handle H is anchored to one end of the rotatable shaft 34 by the pin 37. It is apparent that if the handle be actuated or swung, shaft 34 and the segmental gear 35 are rotated relative to the bearing block B.

Coacting with gear or pinion 35 is the rectilinear rack 38 slidably guided in the reentrant track or groove 39 arranged widthwise of the bearing block B. The rack is characterized by a horizontal toothed arm 40 continuously in mesh with segmental gear 35. Thus if the latter is rotated the tooth rack is linearly displaced. The forward end of the rack is provided with a depending and inclined projection 41 appropriately carrying roller 42.

With the handle fully raised rack 38 is retracted as illustrated in Fig. 4 and the roller is free of the upper and rear inclined or cam face 43 of the pivoted or rotatable compressor bar CB at which time the handle H is also in its fully raised position.

If the handlle be swung downwardly, the segmental gear 35 is rotated counterclockwise, and the rack is displaced forwardly. Eventually the roller strikes the cam or inclined face 43 of the pivoted or rotatable compressor bar CB, causing the latter to swing downwardly, thereby shifting the compressor bar towards the platform 10, however, in advance of or out of phase with the downward displacement of the handle. In other words, the compressor bar clamps the sheet material S to be cut in advance of the severing action of the knife K. For example, in Fig. 6, the compressor bar CB is fully clamping the sheet material S while the knife K is just about ready to start cutting or trimming of the stack of sheet material S.

Surrounding the end of shaft 34 which appreciably overhangs the bearing B is the normally expanded helicoidal spring 45 having a terminal or free rectilinear end 46 abutting the fixed stop or bar 18. The other end 47 of spring 45 is threaded into the body of the retaining nut 44 (Figs. 3 and 8) mounted on the threaded portion 48 of the rotatable shaft 34 and a lock nut 49 maintains the retaining nut in place.

On the downward swingable stroke of the handle H, the retaining nut 44 winds up the spring 45 and consequently the latter compresses, thus having the reactive tendency to urge the rotatable shaft 34 towards block B, hence urging the knife K yieldingly against beveled face 14 of the flat metal strip 11 to insure proper shearing or severing of the sheet material or a stack S thereof as desired subsequent to clamping thereof by the compressor bar.

Pursuant to the completion of the downward shearing stroke, the handle may thereafter be manually raised and on this action the spring 45 unwinds and the rack 38 is retracted. The roller 42 now recedes from and becomes clear of the cam face 43 of the rack. Or in other words, the rack is disengaged from the compressor bar CB. When this happens, spring 27 previously wound up by the retaining nut 29, begins to unwind or expand, recoiling sufficiently to bodily rotate the shaft or pin 26 reverse to the direction in the matter of downward rotation of the clamping or compressor bar, and the latter is automatically raised until it strikes the abutment wall 32 of the bearing block. It should be observed that upward displacement of the knife handle H is limited due to the action of segmental gear 35 striking stop lug 70 desirably fastened to flange 22 of the bearing B (Fig. 4).

Specifically referring to the swingable compressor bar CB, the latter comprises the elongated inverted U shaped casing 50 welded at its rear end to and straddling the solid portion 51 fastened to the rotatable shaft or pivot pin 26.

Arranged between the spaced sides 52 of casing 50 of the compressor bar CB and in part normally projecting from the latter is the U or channel shaped presser foot 53 having its sides 54 slidably guided by the spaced sides 52 of the casing 50. The spaced sides 54 of the presser foot 53 are each reduced at the ends thereof to provide terminal shoulders 55 cooperating with the inwardly turned stop lip 56 of the casing 50 and with the fixed stop pin 57 secured to the casing to limit projection of the presser foot out of the casing 50. Normally the front and rear shoulders 55 of the presser foot abut the stop lip 56 and the stop pin 57 respectively due to the action of the normally expanded helicoidal and spaced springs 60 appropriately located and retained within the compressor bar CB and coacting with the spaced upper and lower webs or walls 62 and 63 of the casing 50 and the telescopically guided pressure foot 53. It follows that on each down stroke of the handle, the pressure foot 53 effectively and disengageably clamps the sheet material S in its desired set relation against the platform to preclude involuntary slippage prior to the severing action of the swingable knife at which time of course the spaced helicoidal springs 60 are partly compressed and the shoulders 55 are lifted from stop lip 56 and the stop pin 57.

When the handle is manually raised pursuant to the severing or cutting stroke of the knife thereof springs 60 automatically expand, causing the presser foot 53 to be again fully projected out of the casing or receiver 50.

Various changes may be made in details of construction and arrangement of parts without departing from the spirit of the invention or sacrificing any of the advantages thereof inherent therein.

I claim:

1. A sheet material cutter device comprising a table to support the sheet material to be cut, a cutter blade pivoted relative to said table, a

swinging bar, means to actuate said bar automatically upon operation of said cutter blade to hold said sheet material during the cutting thereof, said means including a rack actuating said bar, and a pinion meshing with said rack and actuated by said cutter blade.

2. In a trimmer, a platform for supporting sheet material, a bearing block secured to said platform, a shaft journaled to said block, a handle secured to said shaft and carrying a knife, a pin journaled to said block, a compressor bar fastened to said pin, a pinion secured to and bodily rotatable with said shaft, rack means coacting with said pinion and slidably guided by said block, and means carried by said rack and cooperating with said compressor bar for swinging the latter downwardly and against said material in advance of severing of said material by said knife on the downward stroke of said handle.

3. In a trimmer, a platform for supporting sheet material, a bearing block secured to said platform, a shaft journaled to said block, a handle secured to said shaft and carrying a knife, a pin journaled to said block, a compressor bar fastened to said pin, a pinion secured to and bodily rotatable with said shaft, rack means coacting with said pinion and slidably guided by said block, means carried by said rack and cooperating with said compressor bar for swinging the latter downwardly and against said material in advance of severing of said material by said knife on the downward stroke of said handle, and means for automatically lifting of said compressor bar in a direction away from said platform towards the completion of the upward stroke of said handle.

4. In a trimmer, a platform for supporting sheet material, a bearing block secured to said platform and having track means, a shaft journaled to said block, a handle secured to said shaft and carrying a knife, a pin journaled to said block, a compressor bar fastened to said pin, a pinion secured to and bodily rotatable with said shaft, rack means coacting with said pinion and slidably guided by said track means, and means carried by said rack and cooperating with said compressor bar for swinging the latter downwardly and against said material in advance of severing of said material by said knife on the downward stroke of said handle.

5. In a trimmer, a platform for supporting sheet material, a bearing block secured to said platform and having track means disposed widthwise thereof, a shaft journaled to said block, a handle secured to said shaft and carrying a knife, a pin journaled to said block, a compressor bar fastened to said pin, a pinion secured to and bodily rotatable with said shaft, rack means coacting with said pinion and slidably guided by said track means and having cam means, and means carried by said rack and cooperating with said cam means for swinging said compressor bar downwardly and against said material in advance of severing of said material by said knife on the downward stroke of said handle.

6. In a trimmer, a platform for supporting sheet material, a bearing block secured to said platform and having track means, a shaft journaled to said block, a handle secured to said shaft and carrying a knife, a pin journaled to said block, a compressor bar fastened to said pin, a pinion secured to and bodily rotatable with said shaft, rack means coacting with said pinion and slidably guided by said track means, a roller

carried by said rack means and cooperating with said compressor bar for swinging the latter downwardly and against said material in advance of severing of said material by said knife on the downward stroke of said handle.

7. In a trimmer, a platform for supporting sheet material, a bearing block secured to said platform, a shaft journaled to said block, a handle secured to said shaft and carrying a knife, a pin journaled to said block, a compressor bar fastened to said pin and having an inclined portion, a pinion secured to and bodily rotatable with said shaft, rack means coacting with said pinion and slidably guided by said block, and means carried by said rack means and cooperating with said inclined portion for swinging said bar downwardly and against said material in advance of severing of said material by said knife on the downward stroke of said handle.

8. In a paper trimmer, a platform for supporting sheet material, a bearing block secured at a rear portion of said platform, a shaft disposed longitudinally of and journaled to said block, a handle secured to said shaft and carrying a knife, a pin spaced from said shaft and journaled to said block, a compressor bar including an inclined portion fastened to said pin and comprising a casing and a presser foot slidably guided by said casing, a pinion secured to and bodily rotatable with said shaft, rack means coacting with said pinion and slidably guided by said block, means carried by said rack means and cooperating with said inclined portion for automatically swinging said bar downwardly and against said material in advance of severing of said material by said knife on the downward stroke of said handle, spring means for normally projecting a portion of said presser foot out of said casing, and means to limit the projection of said foot out of said casing.

9. In a paper trimmer, a platform for supporting sheet material, a bearing block secured to said platform, a shaft disposed longitudinally of and journaled to said block, a handle secured to said shaft and carrying a knife, a pin spaced from said shaft and journaled to said block, a compressor bar bodily rotatable with said pin and having an inclined portion and comprising a casing and a presser foot slidably guided by said casing, spring means for normally projecting the bottom part of said foot out of said casing, means to limit the projection of said foot out of said casing, a pinion secured to and bodily rotatable with said shaft, rack means coacting with said pinion and slidably guided by said block, and a roller carried by said rack means and cooperating with said inclined portion for automatically swinging said bar downwardly whereby said foot yieldingly clamps said material but against slippage relative to said platform in advance of severing of said material by said knife on the downward stroke of said handle.

10. In a paper trimmer, a platform for supporting sheet material, a bearing block secured at a rear portion of said platform, a shaft disposed longitudinally of and journaled to said block, a handle secured to said shaft and carrying a knife, a pin spaced from said shaft and journaled to said block, a compressor bar fastened to said pin, a pinion secured to and bodily rotatable with said shaft, rack means coacting with said pinion and slidably guided by said block, a roller carried by said rack means and cooperating with said bar for automatically swinging said bar downwardly and against said material in ad-

vance of severing of said material by said knife on the downward stroke of said handle, helicoidal spring means encircling said pin and having one end anchored to said block, and retaining means bodily rotatable with said pin and having means for winding up said spring means on the downward stroke of said handle whereby said compressor bar automatically is lifted on the completion of the lifting stroke of said handle.

11. In a paper trimmer, a platform for supporting sheet material, a bearing block secured at a rear portion of said platform and including track means, a shaft disposed longitudinally of and journaled to said block, a handle secured to said shaft and carrying a knife, a pin spaced from said shaft and journaled to said block, a compressor bar fastened to said pin and including a tapered portion, a pinion secured to and bodily rotatable with said shaft, rack means coacting with said pinion, said rack means being slidably guided by said track means and having means cooperating with said tapered portion for automatically swinging said bar downwardly and against said material in advance of severing of said material by said knife on the downward stroke of said handle, normally expanded helicoidal spring means encircling said pin, and means interlocked with said spring means for winding up the latter on the downward stroke of said handle.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
524,638	Krah	Aug. 14, 1894
532,665	Hastings	Jan. 15, 1895
811,940	Marston	Feb. 6, 1906
1,337,675	Webb et al.	Apr. 20, 1920
1,567,078	Pennington	Dec. 29, 1925
1,955,811	Irmscher	Apr. 24, 1934
2,089,274	Laukhauff	Aug. 10, 1937
2,191,836	Stromberg et al.	Feb. 27, 1940
2,254,374	Laukhauff	Sept. 2, 1941
2,397,896	Wehr	Apr. 2, 1946