

June 27, 1944.

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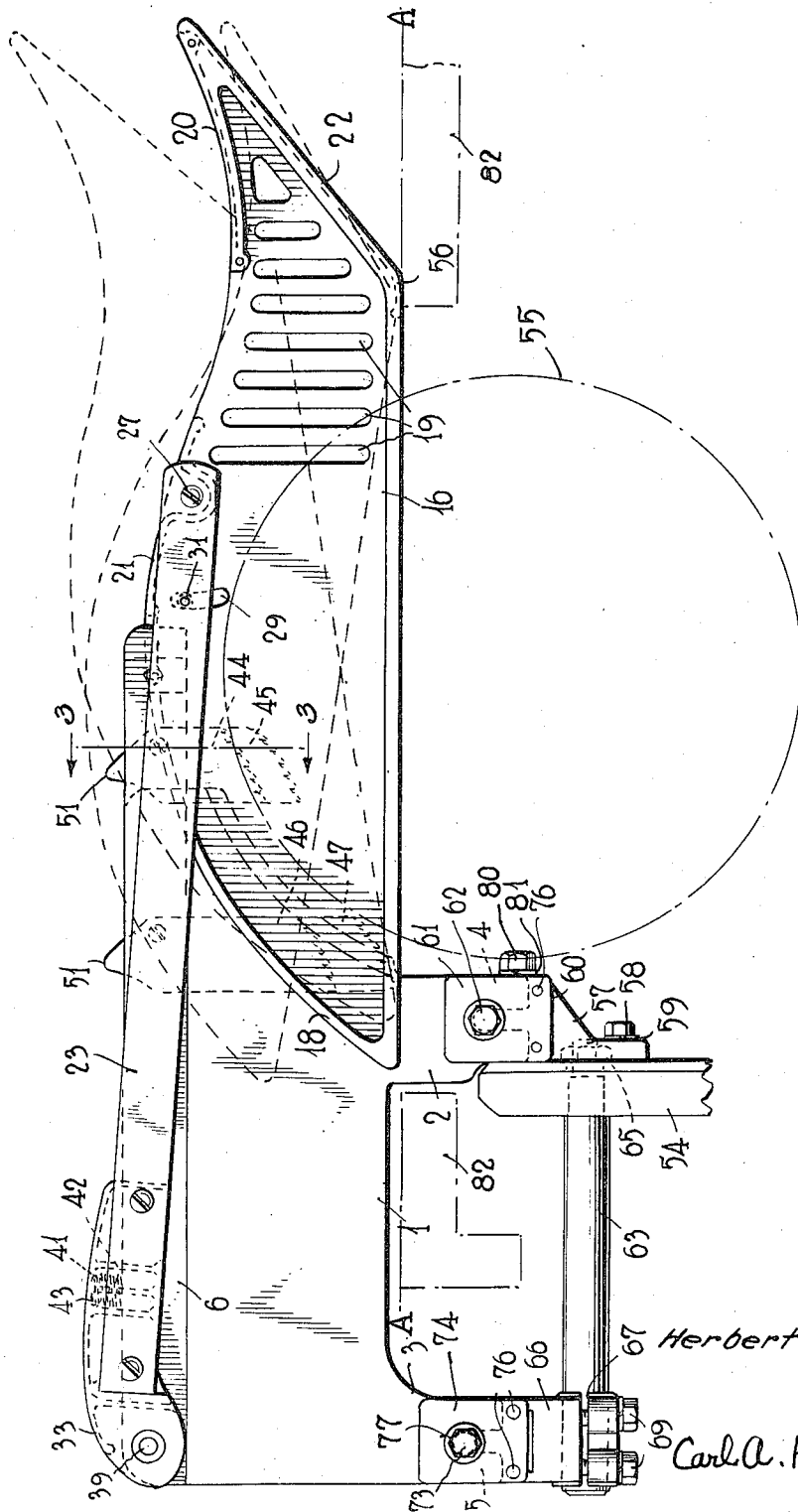
2,352,235

SAW GUARD

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Fig. 1



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Fig. 2

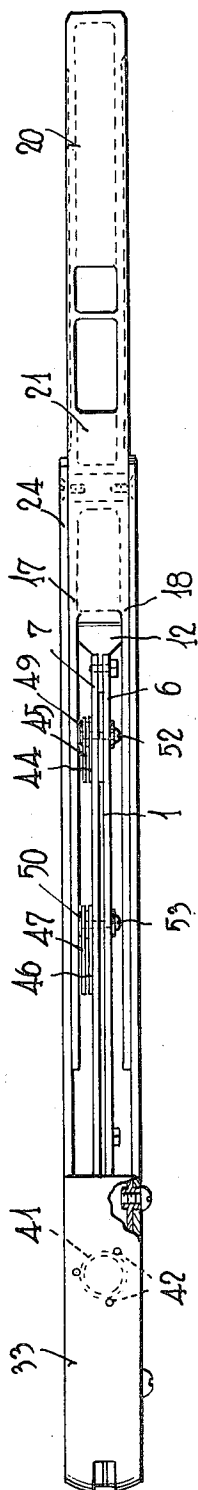


Fig. 5

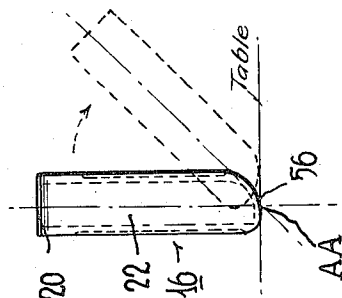


Fig. 4

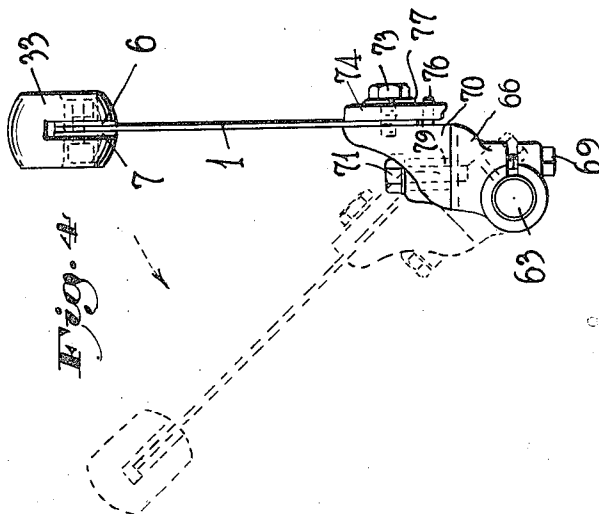
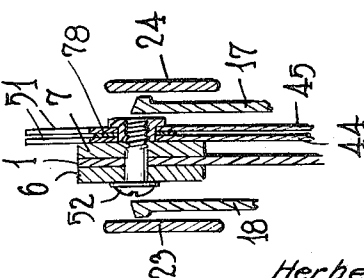


Fig. 3



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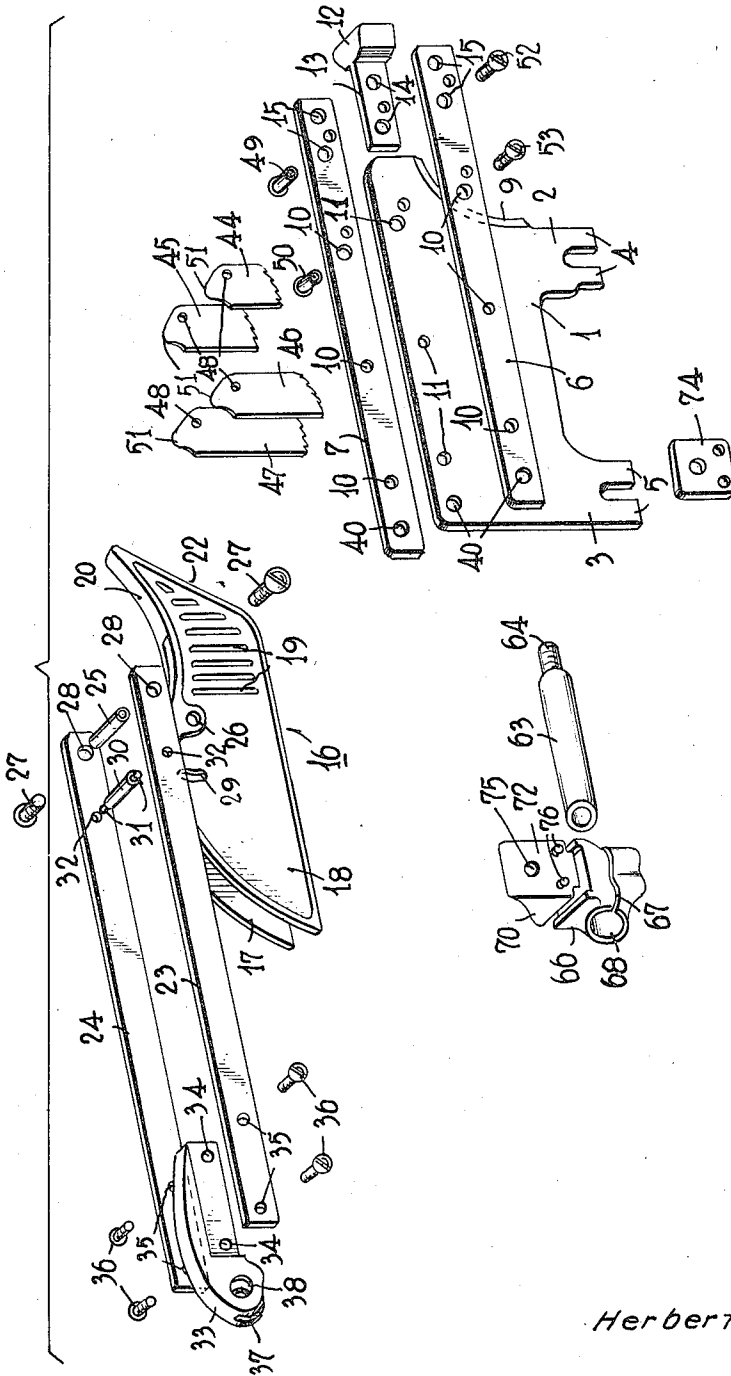
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Fig. 6



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## UNITED STATES PATENT OFFICE

2,352,235

## SAW GUARD

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Application September 10, 1941, Serial No. 410,326

7 Claims. (Cl. 143—159)

The present invention relates to safety guards, intended particularly for use with circular saws and similar tools.

An object of the invention is to provide an improved saw guard having features which increase the safety operation. In a preferred form, this combines features of three different types of saw guards, namely the basket guard, the splitter, and the kick-back preventer.

The invention includes a novel way of mounting the splitter at spaced-apart points, and providing reinforcing elements thereon, so designed as to avoid increasing the thickness of the operative portion thereof, whereby it becomes possible to make the splitter rigid enough to support the other elements of the guard properly.

The splitter embodies novel adjusting means and provides a pivotal support for the basket guard as well as a lateral guide for the guard supporting arms and also provides pivotal support for the kick-back fingers, which are designed to give improved kick-back prevention and are so mounted that they may be released at will, while the machine is in operation, without requiring the hands of the operator to approach dangerously close to the saw blade or other tool.

The basket guard is mounted to pivot about a point well in back of the table and above the level of the table top, thus making it easy for the work piece to lift the guard, when passing the tool, and spring means are provided to partially balance the weight of the guard and assist feeding of the work.

While the invention is particularly advantageous in providing a saw guard for use in connection with tilting arbor saw, as it will tilt with the saw blade, it is not limited thereto, nor to any specific kind of circular saw.

Other objects and advantages of the invention will in part be disclosed specifically in the present specification and in part will be self-evident from the structures described therein and illustrated in the drawings which accompany the said specification, and form a part thereof.

In said drawings, which illustrate a preferred form of the invention:

Fig. 1 is a side elevation of the saw guard, and shows in phantom lines the top of the saw table;

Fig. 2 is a plan view thereof;

Fig. 3 is a fragmentary section on the plane indicated by the line 3—3 of Fig. 1;

Fig. 4 is a rear elevation, illustrating also the range of movement of the guard, certain parts being omitted;

Fig. 5 is a front elevation showing merely the

forward end of the basket guard, to show the shape and the range of movement thereof; and

Fig. 6 is an exploded view illustrating structural details of the saw guard and its component parts.

In all the figures corresponding elements are indicated by similar reference characters.

Referring first to Figs. 1 and 6, it will be seen that the guard comprises a splitter 1 having the front support or leg 2 and the rear support or leg 3 each of which is bifurcated at its lower end, as indicated at 4 and 5. The splitter has a curved and beveled or tapered forward portion 9 curved to correspond to the size of the saw blade, but suitably spaced therefrom, and is stiffened at its upper edge by means of two bars 6 and 7 secured thereto in any suitable way, as by screws or the like passing through the holes 10 in the bars and the holes 11 in the splitter which are aligned therewith.

A T-shaped guide block 12 has a flat shank 13 of the same thickness as the splitter 1 and preferably of the same width as the bars 6 and 7, so that it may fit between said bars and extend forward from the front end of the splitter 1. This shank has holes 14 therein which are aligned with the holes 15 in the bars 6 and 7, so that the guide block 12 may be held rigidly in place by suitable fastenings passing through said holes.

The bars 6 and 7 when properly secured in place serve not only to hold the guide block 12 rigidly in its proper position, but also to stiffen the splitter blade 1 very materially, so that it may serve as a satisfactory relatively stationary support for the basket guard 16. This guard comprises the two substantially parallel side panels 17 and 18 each of which preferably has a series of slots 19 therein. The side panels are connected in front by the top web 20, and also connected at an intermediate point by the web 21. The front web 22 connecting the panels is inclined at an acute angle, as shown, so that when a work piece advances toward the guarded saw, it will lift the basket out of the way until the work piece has passed by.

The basket guard is supported by the bars 23 and 24 located on opposite sides thereof and spaced apart by the tubular pivot sleeve 25 which passes through corresponding holes 26 in the panels 17 and 18 of the basket. This spacer 25 is preferably threaded internally at each end to receive screws 27 passing through the holes 28 in the bars 23 and 24, after said spacer 25 has been inserted through the holes 26 of the basket.

The tubular spacer 25 is preferably slightly longer than the width of the basket, so that when the screws 27 are tightened the bars 23 and 24 will not bind against the basket. The basket also has a pair of aligned arcuate slots 29 to receive the pin 30, which has reduced ends 31 fitting in the holes 32 of the bars 23 and 24. The guide block 12 passes freely between the panels 17 and 18 of the basket and helps to hold and guide same against side sway.

At the rear, the bars 23 and 24 abut against the opposite face of a hinge member 33 having holes 34 therein, aligned with the holes 35 in said bars. The holes 34 are preferably threaded, so that the bars 23 and 24 may be secured to the hinge 33 by screws such as 36. The hinge member 33 is slotted at 37 and provided with a bore 38 so that it may be mounted over the splitter guard 1 and its reinforcing bars 6 and 7 by means of a pivot stud or pin 39 passing through the hole 38 and the corresponding holes 40 in the splitter and its reinforcing bars.

Within the hinge 33 is provided a spring 41 which may be retained in position by a socket or cage 42 formed in the hinge member, the spring 41 thus resting against the inner surface 43 of the hinge and the top surface of the splitter 1 and its reinforcing bars 6 and 7. The spring thus serves to cushion the downward movement of the basket guard, and to sustain some of the weight thereof, to facilitate the lifting of the basket by the work piece.

Fig. 6 shows a set of kick-back prevention fingers 44, 45, 46 and 47, of various lengths, four being illustrated, although it will be understood that any desired number may be used, to the extent that space is available. Each finger has a mounting hole 48 therein for holding it pivotally to the splitter, as by the tubular nut 49 and screw 52 passing through holes 14 and 15 and supporting the fingers 44 and 45, and the tubular nut 50 and screw 53 passing through holes 10 and 11 and supporting the fingers 46 and 47. Each finger has a nose 51 at its upper end, which will project above the top of the basket, in easy reach of the operator. A washer 78 is placed between the fingers of each pair, to prevent binding and catching, and it will be understood that the reduced shanks of the nuts 49 and 50 are long enough to permit the fingers to pivot freely even when these nuts are tightened fully.

In order that the entire guard may turn with the saw blade, it is secured to a portion of the tilting support of the mechanism, for example the rear trunnion 54, the saw being shown in detail in my copending application S. N. 252,744 filed January 25, 1939, issued as Patent No. 2,265,407, December 9, 1941. In this way it is clear that once the splitter 1 is adjusted properly into the plane of the saw blade 55, and clear of the said blade, it will always remain in such relative position with respect to the saw blade, no matter how it is tilted. Similarly, when the basket guard has once been adjusted to proper position with respect to the saw blade, it will always maintain such adjustment, as it moves with the splitter, to which it is pivoted.

A characteristic of the trunnion mounting of the saw operating mechanism as disclosed in said copending case is that the axis of the tilt A—A lies in the plane of the table top, so that the line of intersection of the plane of the cutting blade and the plane of the table top does not shift laterally when the saw blade is tilted. Since the saw guards are carried by the saw operating

mechanism, they necessarily also tilt about the same axis, and remain in the same correct relative position with respect to the blade, regardless of the angle of cut.

In order that the front end of the basket may remain as close as possible to the table regardless of the tilting, it is made curved at the portion which rests on the table, as shown at 56 in Fig. 5. This also allows the basket guard to tilt smoothly, and prevents the possibility of catching and binding that might exist if these parts were cut off at right angles to the sides of the baskets in the manner heretofore customary, it being understood that side 17 of the guard (Figure 6) is slightly shorter than side 18, so that when the guard is in the full line position of Figure 5 it will be spaced slightly above the table top, and when the guard is rocked both sides or wings will engage the table. The novel manner in which the splitter is associated with the trunnion 54 will now be set forth.

A bracket 57 is secured to the trunnion 54 in any suitable way, as by the cap screw 58 and lock washer 59, and the cap screw 80 and the lock washer 81 Fig. 1, which permits turning the bracket 57 about such cap screw to the very slight extent necessary to adjust the same into the plane of the saw. The bracket has a flat surface upon which rests the forked end 4 of the splitter 1, with a washer 61 on top of same so that the splitter may be secured to the bracket by means of the cap screw 62, the slot in the leg 2 permitting adjustment in the plane of the splitter blade 1, as required.

In order to support the splitter at another point considerably back of the trunnion 54, a spacer 63, here shown as tubular, and having a threaded end portion 64, may be secured to the said trunnion as shown in Fig. 1 by means of the nut 65. This spacer provides a support and guide for a split clamp 66, which is slotted at 67 to provide a split extending into the bore 68, which fits slidably and rotatably upon the spacer 63. Cap screws 69 are provided to tighten the clamp 66 on the spacer 63 in any desired position of adjustment.

The clamp 66 has an upstanding bracket 70 mounted thereon for a slight range of sliding movement, as shown best in Figs. 4 and 6, and a cap screw 71 is provided to secure the bracket 70 in adjusted position on the clamp 66. The hole 79 through which the screw 71 passes is elongated (as shown in Fig. 4) to permit such adjustment. In this way the splitter 1 may be supported by having its bifurcated end 3 secured to the plane surface 72 of the bracket by means of the cap screw 73 passing through the washer 74 and between the splitter lugs 5, and into the threaded bore 75 in the bracket 70. Guide pins 76 fitting into corresponding openings in the washer 74 will prevent said washer from turning when the screw 73 is tightened, and the lock washer 77 will prevent screw 73 from loosening due to vibration.

The operation of the guard is as follows: In applying the guard to a saw, the bracket 57 is first secured to the trunnion 54, whereupon the splitter 1 is mounted thereon and adjusted approximately into the plane of the saw blade 55 and correctly spaced therefrom. The rear end of the splitter is then secured to the bracket 70 by means of the washer 74 and screw 73, leaving all the parts loose enough for final adjustment. The clamp 66 is then turned and slid as necessary on the tube 63 while the bracket 70 is also ad-

justed on top of the clamp 66 so as to aline the splitter 1 with the plane of the saw blade throughout its length, whereupon the various screws are tightened to maintain the correct adjustment.

The splitter is very materially stiffened by the two spaced-apart supports, which have thus been adjusted into proper alinement, and the splitter is further stiffened by the flat bars 6 and 7 secured along its upper edge. By reason of this stiffening, the splitter becomes capable of supporting the basket guard adequately. It will be noted that the pivot 39 of said basket guard is a considerable distance back of the rear edge of the table 82, thus affording a better lift of the basket and easier operation. The front support 2 of the splitter of course is directly behind the saw blade and necessarily projects through the top of the saw table. However this portion of the splitter extends through the saw slot in the insert of the table, and thus there is a sufficiently extensive portion of the table behind the support or leg 2 to provide ample strength for said table.

The work piece will lift the basket 16 upon coming in contact with the inclined forward surface 22 thereof and the basket will tilt as necessary about the pivot 39 as well as about the pivot 25 to accommodate the work piece passing thereunder, the pivotal movement about tube 25 being limited by the slot 29 through which passes the rod 30, as best shown in Fig. 6.

The kick-back prevention fingers are of course supported from the splitter guard, and cannot follow the basket in its vertical movements, for necessarily the serrated lower ends of these fingers must be capable of engaging firmly in the work piece the instant it starts to move toward the operator. This action could not be secured unless the fingers were mounted on a rigid stationary support, which is here provided by the rigid and firmly mounted splitter with its reinforcing bars. The fingers may be moved readily out of the way without danger when not wanted, by applying the operator's finger tips to the projecting noses 51, since the guards 1 and 16 still remain in place.

The entire basket guard may be swung backward and upward out of the way by turning it about the pivot 39, thus leaving only the splitter guard and the kick-back prevention fingers in service. The rounded construction 56 at the bottom of the basket facilitates keeping the said basket close to the table at any tilted position of the saw mechanism. The widened portion 12 at the front end of the splitter guard serves as a lateral guide for the basket, as it fits loosely between the inner faces of the side panels 17 and 18 of the basket. This is a valuable feature, since it prevents an accidental side blow from forcing the basket guard into the saw blade or other tool, with consequent injury to both.

It should be clearly understood that while what is now believed to be a preferred embodiment of the invention has been illustrated and described, this has been done solely by way of illustration and not as a limitation to the particular details disclosed. Numerous changes, additions and omissions of individual features may be made without departing from the invention, the scope of which is defined solely in and by the following claims.

I claim:

1. In combination with a saw table and saw supporting mechanism, a guard comprising a

splitter, said splitter having two stiffening members, one extending along each face of the splitter at the upper edge portion thereof and secured thereto, a basket guard for the saw pivotally mounted on the splitter adjacent the rear end thereof and having side walls, and a guide for said basket guard supported by the front ends of said stiffening members and slidably coacting with the side walls of said basket guard.

2. In combination with a saw table and a saw supporting mechanism tiltable about an axis lying substantially in the plane of the table top, a guard comprising a support carried by said mechanism and tiltable therewith and a basket guard pivotally mounted on the support and adapted to rest upon said table, said guard comprising a pair of side wall portions extending from front to rear of the saw, for guarding both sides thereof, and a front portion rigidly joining said side wall portions adapted to rest upon the table in front of the saw, said front portion having its lower surface curved about an axis parallel to the said axis of tilt of the said mechanism, whereby said basket may roll on the table when the mechanism tilts, while maintaining the lateral central plane of the basket in such position that it will intersect the top of the table in said axis of tilt.

3. In a circular saw having a table over which the work may be fed toward the saw, a splitter plate mounted over the table behind the saw and in the plane of rotation thereof; an elongated stiffening member extending along and secured to the upper edge of said splitter plate, a plurality of anti-kickback fingers pivotally mounted upon said splitter plate adjacent the upper edge thereof; a basket saw guard pivotally mounted upon said splitter plate for vertical swinging movement and having wing portions disposed either side of said splitter plate, one of said wing portions housing said anti-kickback fingers; and means associated with said splitter plate and slidably coacting with the forward ends of said wing portions for maintaining said one wing portion of said guard out of contact with said anti-kickback fingers and also confining said guard for accurate guided movement in the plane of rotation of said saw.

4. In a circular saw having a table over which the work may be fed toward the saw, a splitter plate mounted behind the saw in the plane of rotation thereof and extending forwardly to a point overlying the saw axis and being of sufficient size and having means so supporting it as to resist substantial forces tending to deflect it out of the plane of the saw; a pair of links pivoted adjacent the upper edge of said splitter plate remote from said saw and extending forwardly to a point overlying the saw; a basket guard pivotally mounted upon the free ends of said links and located over said saw, said guard having wing portions disposed either side of said splitter plate and spaced outwardly from and guarding both sides of said saw; and a guiding device carried by the forward portion of said splitter plate, said guiding device being wider than the thickness of the splitter plate and coacting in sliding relationship with the wings of said guard for guiding the guard for accurate swinging movement in the plane of the saw.

5. In a circular saw, a saw table having a slot therein spaced from the front and rear edges of the table; a circular saw projecting upwardly through said slot and carried by a support disposed below said table and mounted for tilting

movement about an axis lying substantially in the plane of the upper surface of the table; a splitter plate disposed immediately behind said saw and having widely spaced apart front and rear supporting legs extending downwardly therefrom, said front leg extending into said slot and having means rigidly securing it to said saw support, the rear leg of said plate extending downwardly beyond the rear edge of said table; a rearwardly directed cylindrical member rigidly carried by said support and having a portion projecting outwardly of the table to a region underlying the rear leg of said splitter plate; a bracket mounted for longitudinal adjustment on said member and for angular adjustment about the axis of said member; a second bracket mounted on said first bracket for adjustment transversely to the axis of said cylindrical member; means for

securing the rear leg of said splitter plate to said second bracket; and a guard pivotally mounted on said splitter plate adjacent the rear end thereof and guarding the top and both sides of said saw.

6. The saw construction defined in claim 2, wherein one side wall portion of said guard is adapted to rest upon the table and the other is slightly spaced from the table when the guard is in non-tilted position, and said one portion is adapted to be lifted free of the table and the other to rest upon the table when said guard is tilted into a predetermined position.

7. The saw guard construction defined in claim 4, wherein said links extend parallel to and slidably coact with the outer sides of said wing portions in guiding relationship therewith.

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**Disclaimer**

2,352,235.—*Herbert E. Tautz*, Englewood, Colo. SAW GUARD. Patent dated June 27, 1944. Disclaimer filed Oct. 28, 1949, by the assignee, *Rockwell Manufacturing Company*.

Hereby enters this disclaimer to claims 2 and 6 of said patent.  
[*Official Gazette December 20, 1949.*]