J. D. WALLACE.

SAFETY GUARD FOR ROTARY PLANERS.

APPLICATION FILED MAY 7, 1915.

1,241,588.

Patented Oct. 2, 1917.

2 SHEETS—SHEET 1.

Fig. 1.

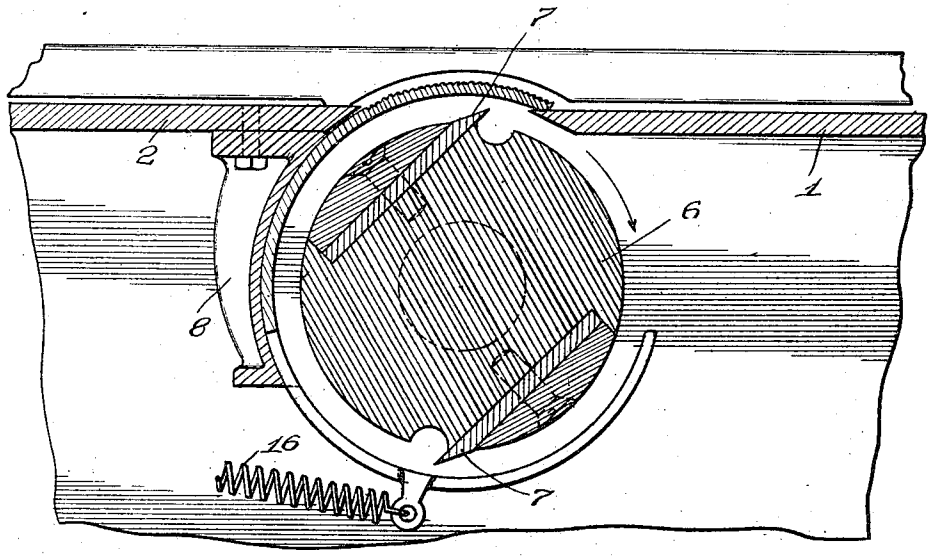


Fig. 2.

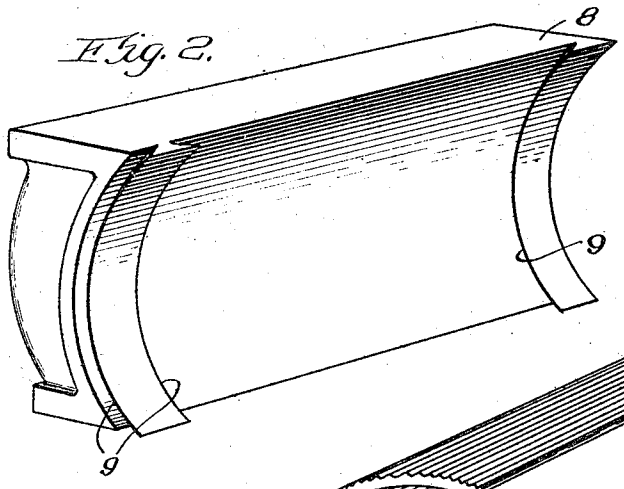
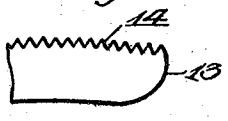


Fig. 4.



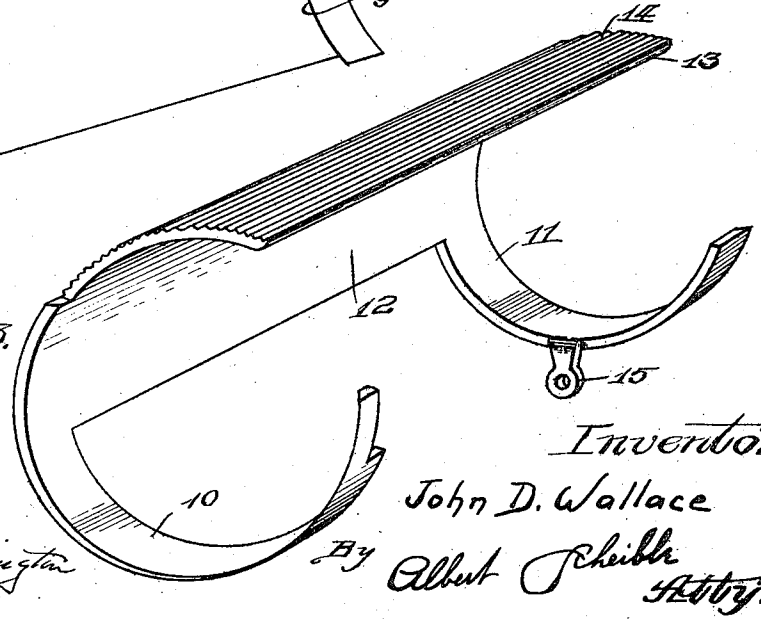


Fig. 3.

Witnesses:

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2 SHEETS—SHEET 2.

Fig. 5.

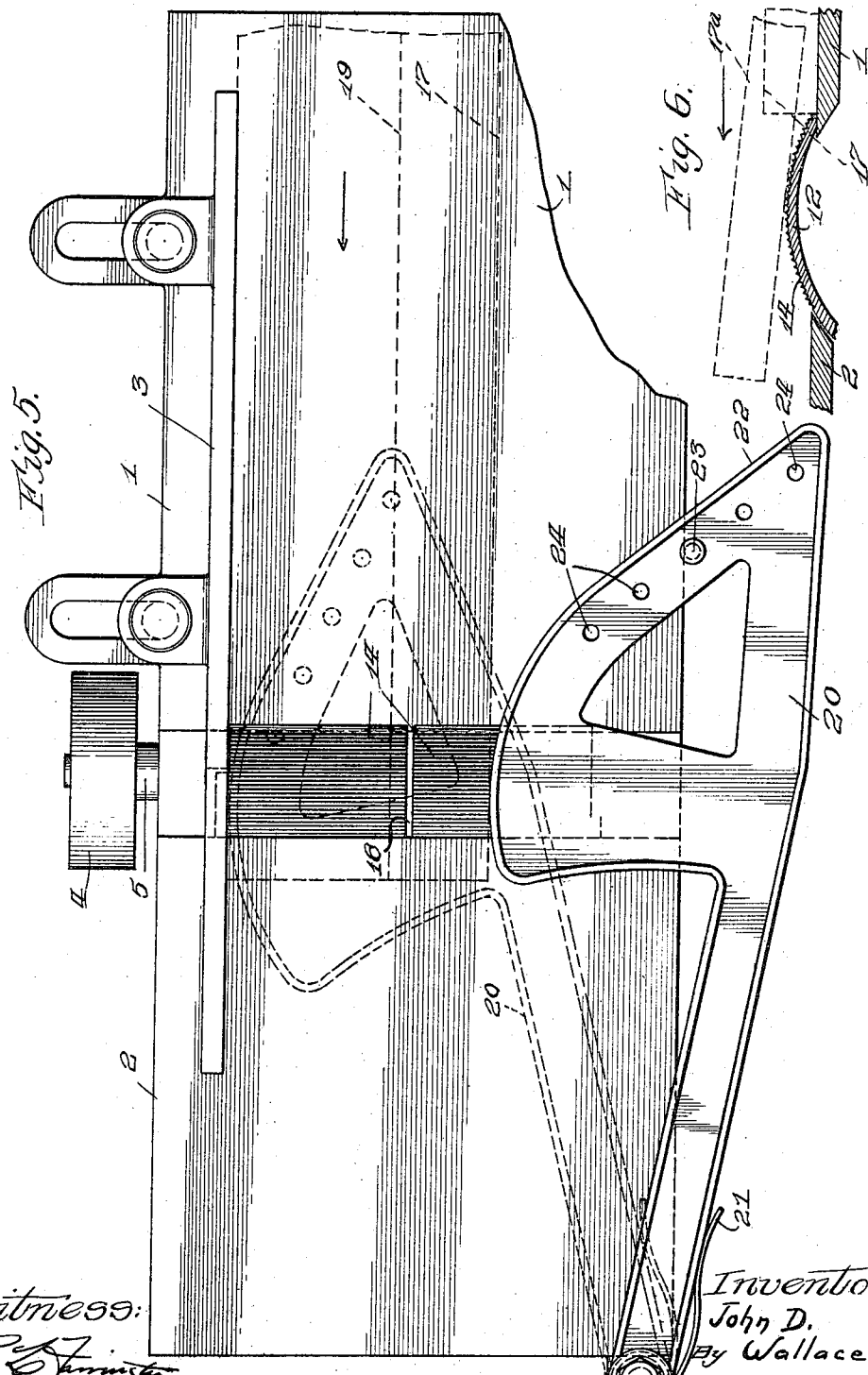


Fig. 6.

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UNITED STATES PATENT OFFICE.

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SAFETY-GUARD FOR ROTARY PLANERS.

1,241,588. Specification of Letters Patent. Patented Oct. 2, 1917.

Application filed May 7, 1915. Serial No. 26,488.

To all whom it may concern:

Be it known that I, JOHN D. WALLACE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Safety-Guards for Rotary Planers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to guards for rotary cutting mechanisms, such as wood planers or circular saws, its general objects being to provide a safety guard which will not interfere with the rapid and effective use of the machine equipped with it, and which will automatically move into and out of its safe-guarding position.

My invention aims to overcome these objections by providing a safety-attachment for a planer or the like which will be moved out of its guarding position by the feeding of the stock which is to be planed and which will not uncover the cutters ahead of the stock: which will continually cover such a lateral portion of the cutters as is not covered by the stock itself: which will permit the planing to be started at any desired point back of the forward end of the stock without manually manipulating any part of the guard: which will prevent a slipping of the stock over the guard: which will provide simple and cheap means for maintaining one or more guard elements close to the cutters and for returning all guard elements automatically to their safety positions after the stock has passed by: which will prevent the stock from being raised off the planer bed by the guard elements and which will permit one guard element to be adjustably locked in position for reducing the labor when a number of pieces of stock of a given width are to be planed successively.

Other objects, many of which are equally applicable to other types of machinery, will be apparent from the following specification and from the accompanying drawings, which latter show my invention as applied to a wood planer of the type shown in my co-pending application, filed May 1st, 1914 as Serial No. 835779.

Figure 1 is a fragmentary vertical section through a guarded cutter-head and the parts adjacent thereto.

Fig. 2 is a perspective view of one of the guides supporting the rotatable guard elements.

Fig. 3 is a perspective view of one of the rotatable guard elements.

Fig. 4 is an enlarged fragmentary end view of the tongue tip of the guard element of Fig. 3.

Fig. 5 is a fragmentary plan view of a planer equipped with my invention.

Fig. 6 is a fragmentary vertical section through portions of the planer bed and a rotary guard element, showing two positions in which the stock may engage this guard element to move the same out of the way.

In the embodiment of the drawings, my invention is shown as applied to a planer having a rear table portion 1, a forward table portion 2 and a fence or side-guard 3 carried by one of the tables. Rotated by a pulley 4 is a shaft 5 carrying a cutter head 6 supporting knives 7, which knives project slightly above the rear table portion 1 during part of their rotation. Mounted under the table portion 2 are a series of guides 8 each equipped with oppositely directed annular grooved formations 9 slidably housing the ends 10 and 11 of a series of guard elements 12 made of sheet steel or the like. Each of the guard elements 12 consists of a split tube cut away from one edge, and having its other edge 13 rounded as shown in Fig. 4, the outer surface adjacent to the last named edge being equipped with projections (such as the corrugations 14) adapted to be non-slidably engaged by stock superposed on such a surface and moved substantially tangentially of the latter.

Projecting from one end 11 of each guard element 12 is a lug 15 connected by a tension spring 16 to some rigid part of the planer frame, the tension of which spring normally rotates such element 12 within its supporting guide into the position shown in Figs. 1 and 5: that is to say, into a position in which the corrugated part of said element covers the adjacent portion of the cutter-head operating through the opening in the top of the table. In this position, the rounded edge 13 of the element 12 abuts against the top of the table portion 1 as shown in Fig. 6 and will be engaged by stock 17 slid along said table portion, so that this stock will move the guard out of the way ahead of it, the

rounding of the edge permitting the end to slide upon the stock vertically of the latter so as not to raise the stock out of its horizontal path. If the stock is not to be planed for its entire length, it may be superposed on the guard element 12 as shown at 17ª in Fig. 6 and then slid forward, during which sliding the projecting formations 14 will engage the stock so that the latter will move the guard element 12 out of its safety position. In either case, the spring 16 will return this guard element to its normal or guarding position as soon as the stock has been fed past the cutter.

To prevent the exposing of portions of the cutters when the stock is narrower than the latter, I preferably use a number of relatively narrow elements 12 disposed longitudinally of the shaft 5 and separated by so narrow a spacing 18 as not to permit the entrance of a finger therebetween. Thus, Fig. 5 shows a two-section construction in which only the right hand element 12 would be moved out of its guard position by stock of the width 19, thereby leaving the left hand element 12 to guard the inactive end of the cutter. However, the widths of stock planed at different times vary too much to permit of allowing for them all by suitably proportioned widths of guard elements, hence I preferably also use an auxiliary guard 20 movable laterally of the planer (or substantially parallel to the axis of the shaft 5) and normally hooding each guard member 12. This auxiliary guard may be pivoted to its guard position (shown in dotted lines) by a spring 21, and preferably has a tapering tip presenting a cam surface 22 adapted to be slidably engaged by the stock for moving the auxiliary guard out of its safety position for a distance corresponding to the width of the stock.

In operation, the stock first strikes the edge 22 so as to move the auxiliary guard to uncover one or more of the elements 12 comprising the rotatable guard member, and thereafter engages the latter to move it out of the way. Then, as soon as the stock has been slid past the cutters, the springs 21 and 16 automatically return the upper and lower guard members respectively to their safety positions, no manual attention whatever being required. However, if a considerable number of pieces narrower than the width of the cutters are to be planed, the auxiliary guard 20 may be latched in a position freely passing such a width of stock by dropping a pin 23 through the corresponding one of a series of holes 24 in the guard 20 and allowing said pin to engage the left hand edge of the planer table.

While I have shown the upper guard member 20 as pivoted and as adapted to be latched by pins 23, and the lower guard elements as slidably dovetailed into the guides supporting the latter, I do not wish to be limited to these or other details of the construction herein disclosed, which construction might be modified in many ways without departing from the spirit of my invention. However, I preferably so mount the upper and lower guards as to be independently movable, and preferably dispose the grooves 9 concentric of the shaft 5 so as to maintain the guard elements 12 as close to the cutter as possible. I also preferably cut away the portion of each element 12 opposite the edge 13 so as to provide a free passage for the shavings or other particles detached from the stock by the rotating cutters.

I claim as my invention:

1. In a machine having a rotary cutter projecting through an opening in a table, a guard normally closing said opening and presenting a portion disposed in the path of the stock fed to the cutter, said portion being movable in the general direction in which the stock is fed and being equipped with projections adapted to be engaged by the stock when the latter is superimposed on the guard.

2. In a machine having a table equipped with an opening and a rotary cutter member operating through said opening, the combination of an upper guard movable laterally of the cutter member and having a cam surface adapted to be engaged by a lateral edge of the stock for effecting such lateral motion, and a lower guard movable circumferentially of the cutter member and having a tip adapted to be engaged by the end of the stock for effecting such circumferential motion, each of said guards normally entirely covering the portion of the cutter member exposed through the said opening, said guards being independently movable and disposed for simultaneous engagement with the stock for affording an exposure of the underside of the stock to the cutter substantially without exposing the cutter to view, the upper guard having a stock engaging portion disposed farther rearward of the machine than the said opening, thereby permitting the lower guard to move to its safety position before the upper guard returns to its normal position.

3. In a machine having a table equipped with an opening and a rotary cutter member operating through said opening, the combination of an upper guard movable laterally of the cutter member and having a cam surface adapted to be engaged by a lateral edge of the stock for effecting such lateral motion, and a lower guard movable circumferentially of the cutter member and having a tip adapted to be engaged by the end of the stock for effecting such circumferential motion, each of said guards normally entirely covering the portion of the cutter member exposed through the said

opening, said guards being independently movable, the cam surface upon the upper guard being so disposed that said guard will be laterally moved for a distance corresponding to the width of the stock before the end of the latter engages the tip of the lower guard, the upper guard having a stock engaging portion disposed farther rearward of the machine than the said opening, thereby permitting the lower guard to move to its safety position before the upper guard returns to its normal position.

4. In a machine having a table equipped with an opening and a rotary cutter-member operating through said opening, the combination with supporting means presenting opposed annular grooved formations substantially concentric with the cutter member, of a tubular guard having oppositely directed portions slidably mounted in the said formations and presenting a tongue normally hooding the portion of the cutter member exposed through the said opening, the said tongue having a tip rounded on its under side and normally engaging the upper surface of the table, the said end of the tongue being adapted to abut against an end of the stock fed to the cutter member, thereby enabling the stock to rotate said guard within its said mountings.

5. In a machine having a table equipped with an opening and a rotary cutter member operating through said opening, the combination with supporting means presenting opposed annular grooved formations substantially concentric with the cutter member, of a guard comprising a metal element curved in longitudinally split cylindrical formation and having oppositely directed portions slidably housed respectively by the said grooved formations, the said element being outwardly roughened adjacent to one edge of its longitudinal opening and being cut away intermediate of its ends along the other edge, the said cutting away affording a passage for particles detached by the cutter member when the latter is in operation.

JOHN D. WALLACE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."