July 31, 1928. 1,678,835

W. O. VIVARTTAS

CHIP BREAKER FOR MOLDING MACHINES AND THE LIKE

Filed March 24, 1924 2 Sheets-Sheet 1

Fig. 1.

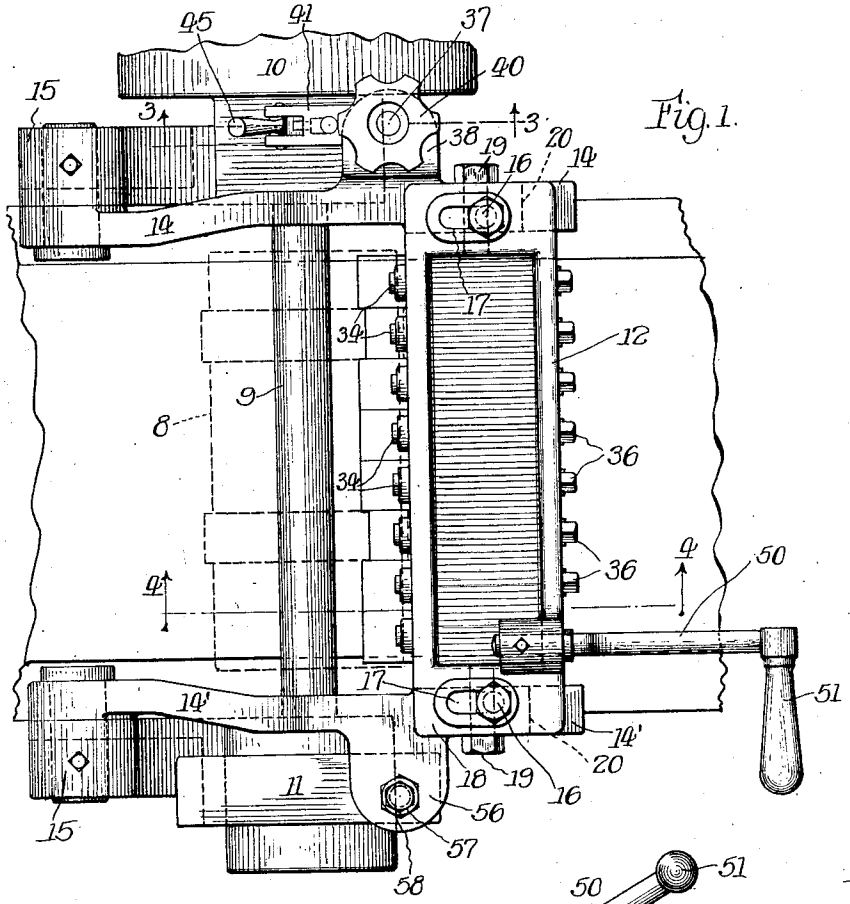


Fig. 2.

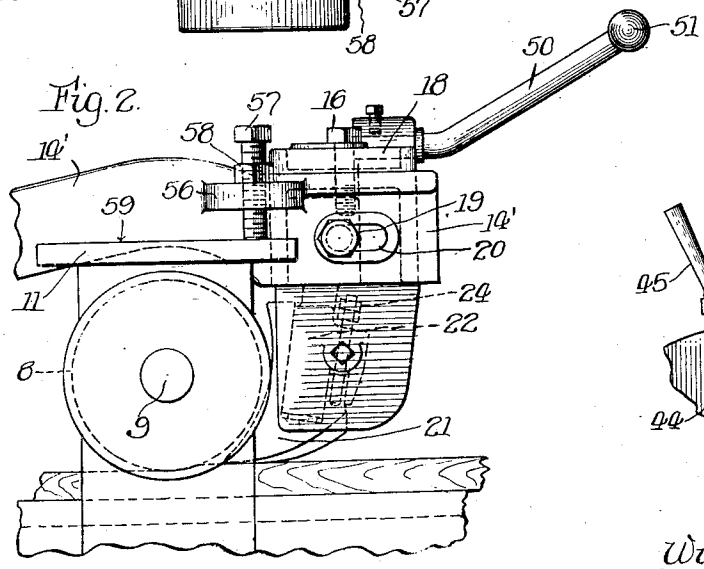
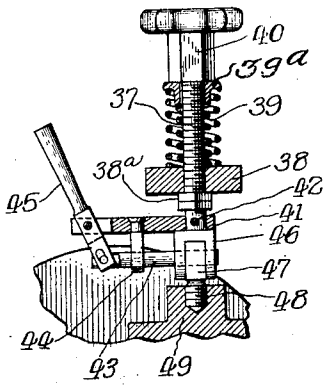


Fig. 3.



Inventor:
William O. Vivarttas
By Crandall, Parker & Carlson
Attys.

July 31, 1928. 1,678,835

W. O. VIVARTTAS

CHIP BREAKER FOR MOLDING MACHINES AND THE LIKE

Filed March 24, 1924 2 Sheets-Sheet 2

Fig. 6.

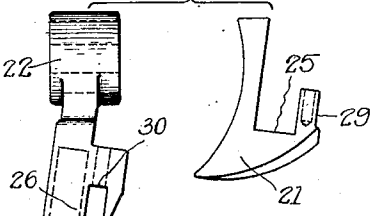
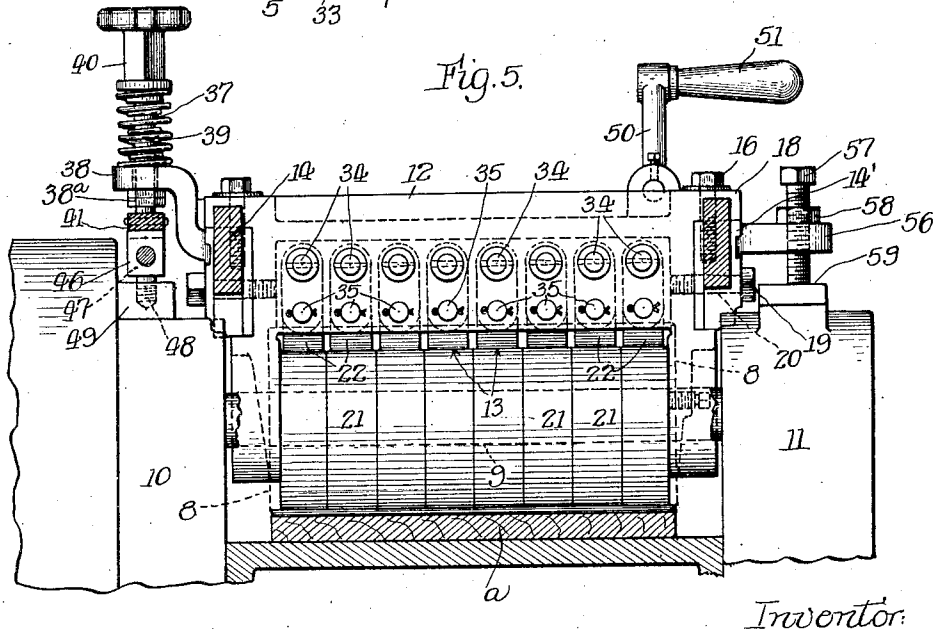


Fig. 4.

Fig. 5.



Inventor:
William O. Vivarttas,
By Chindahl, Parker & Carlson
Attys.

Patented July 31, 1928. 1,678,835

UNITED STATES PATENT OFFICE.

WILLIAM O. VIVARTTAS, OF ROCKFORD, ILLINOIS, ASSIGNOR TO MATTISON MACHINE WORKS, OF ROCKFORD, ILLINOIS, A CORPORATION OF ILLINOIS.

CHIP BREAKER FOR MOLDING MACHINES AND THE LIKE.

Application filed March 24, 1924. Serial No. 701,278.

The invention has general reference to woodworking machines of the type employed in the manufacture of moldings and the like. More specifically, the invention has reference to means commonly termed "chip breakers" which are employed in molding machines for preventing the splintering of the wood by the cutting knives.

In the use of such chip breakers, it is desirable that they be located as near as possible to the cutting knives in order more effectually to prevent the splintering of the wood. The cutters vary in accordance with the work to be produced in that the cutting edges of the knives are located at varying distances from the cutter axis. Accordingly, it is desirable that the chip breaker be capable of being quickly and easily adjusted to conform to the particular form of cutter which it may be desired to employ. It is also desirable that the chip breaker be capable of accommodating itself to variations in the thickness of the work which sometimes occur throughout the width of the latter due to imperfections in cutting and planing the wood.

It is the primary object of my invention to produce a chip breaker composed of a plurality of independent units which are capable of adjustment toward and from the axis of the cutter and also capable of yielding to compensate for irregularities in the work.

The object of the invention thus generally stated, together with other and ancillary advantages, is attained by the construction and arrangement illustrated in the accompanying drawings forming part hereof, wherein

Figure 1 is a fragmentary plan view partially diagrammatic in character of a chip breaker constructed in accordance with my invention and showing it in association with a cutter of a molding machine.

Fig. 2 is a fragmentary end view illustrating the chip breaker.

Fig. 3 is a fragmentary vertical sectional view taken approximately in the plane of line 3—3 of Fig. 1.

Fig. 4 is a fragmentary vertical sectional view taken approximately in the plane of line 4—4 of Fig. 1.

Fig. 5 is a similar view taken in the plane of line 5—5 of Fig. 4.

Fig. 6 is a detail view showing the two sections of a chip breaker unit in detached relation.

For purposes of illustration I have shown my improved chip breaker mounted upon the base or frame of a molding machine, in association with one of the cutters. 7 designates the frame and 8 indicates diagrammatically the cutter mounted on a shaft 9 above the frame. To support the shaft, the frame has upon opposite sides bearing heads 10 and 11 which may be of any suitable character. The cutter as usually constructed comprises knives projecting varying distances radially of the cutter head, two knives being shown diagrammatically in Fig. 1 as projecting radially beyond adjacent knives.

The chip breaker comprises a cross head 12 substantially of channel form as indicated clearly in Fig. 4 but with the channel opening downwardy so as to form an elongated housing in which the upper ends of a plurality of independent units 13 are mounted. At its opposite ends the cross head 12 is mounted upon the rear ends of a pair of arms 14 and 14′ which in turn are pivoted rearwardly of the axis of the cutter 8 upon upright supporting members 15. The arms are of such length and the head mounted thereon in such manner that it is located forwardly of the cutter axis. In the present instance the head is secured at its opposite ends upon the free ends of the arms 14, 14′ by means of bolts 16 entered through slots 17 in projecting portions 18 on the head and anchored in the arms. Locking bolts 19 entered through elongated slots 20 in the sides of each of the arms are anchored in the ends of the head. It will be apparent that the cross head is thus adjustable as a whole toward and from the axis of the cutter.

The chip breaker herein shown comprises eight independent units 13. These units are sectional in character with spring means interposed between the sections so as to permit them to yield vertically, and the units are also mounted for bodily adjustment in the head for movement toward and from the axis of the cutter. Thus each of the units comprises a lower section or shoe 21 and an upper section or hanger 22, and the two sections are constructed so as to interengage

and are secured together by means of a screw 23 and nuts 24. As shown best in Figs. 4 and 6, the shoe is provided with an upwardly opening recess or groove 25 and the upper section or hanger has a downwardly projecting portion or tongue 26 having a sliding engagement with the walls of said groove. A coiled expansion spring 27 is entered in a downwardly opening bore 28 and acts between the two sections so as to yieldably hold the shoe 21 downwardly upon the work which is indicated at *a*.

The shoe 21 forwardly of the recess or groove 25 has an upwardly extending tongue portion 29 fitting into a downwardly opening recess or groove 30 in the upper section of the unit; and the upper section is notched rearwardly as at 31 to accommodate the upper end of the screw 23 and nuts 24 thereon, said screw being entered loosely though a bore 32 in the upper section and anchored in the tongue portion 29 of the lower section. It will be apparent that by adjusting the nuts 24 the spring 27 may be placed under varying degrees of tension. In Fig. 4 the spring 27 is shown as being under compression but capable of yielding still further to compensate for irregularities in the work. It will also be observed that the shoe is shaped upon its rear side to conform approximately to the periphery of the cutter, and that the toe portion 33 of the shoe projects to a point close to the point of engagement of the cutter knives with the work.

In order that the units 13 may be independently adjusted longitudinally of the machine, that is to say, toward and from the axis of the cutter, the upper section or hanger is mounted in the head upon two pins or rods one of which is in the nature of a screw 34 and the other a slide rod 35. These pins are disposed one above the other and have their opposite ends mounted in the side walls of the channel. The screw 34 has a squared end 36 projecting from the rear side of the head and because of a screw-threaded connection between the screw and the upper section or hanger the unit may be adjusted transversely of the head or longitudinally of the machine by the application of a wrench to the squared head 36.

The chip breaker head is also capable of an upward yielding movement as a whole. To this end I connect the forward ends of the arms 14, 14′ with the frame 7 by means of a screw 37 entered through a lug 38 rigid with the arm 14 and having a releasable connection with the frame. Below the lug the screw carries a nut 38ª, and a pair of coiled springs 39 are interposed between the lug and a bearing member 39ª loose on the screw and adjustable thereon by a screw-threaded hand wheel 40.

The releasable connection between the screw and the base or frame comprises in the present instance (Fig. 3) a plate 41 to which the lower end of the screw is pivotally connected as at 42. A plunger 43 slidable in an apertured member 44 depending from the plate is operatively connected to the plate for movement by a hand lever 45 which is fulcrumed on the plate. The rear end of said plunger slides through a yoke member 46 rigid with the lower end of the screw 37, the opposite portions or legs of the yoke being apertured for this purpose. The yoke is adapted to straddle an apertured anchoring lug 47 having a stem 48 screw-threaded into a stationary part 49 on the frame. It will be apparent that by operating the lever 45 the pin may be readily withdrawn from the lug 47 so as to release the head from the frame and permit it to be swung upwardly out of the way of the cutter when desired.

To facilitate the swinging of the head I provide a forwardly extending rod 50 rigid therewith and having a handle 51 at its free end.

The arm 14′ has a lug 56 thereon carrying a stop screw 57 provided with a lock nut 58. The lower end of this screw is arranged to engage with a stationary part of the frame as at 59 and the screw is adjusted so as to support the head at the proper distance above the frame.

In Fig. 4 I have shown a means for yieldingly holding the work downwardly upon the frame prior to the engagement of the work with the chip breaker. This means comprises yielding fingers 52 mounted upon an arcuate member 53 which is in turn mounted to swing on a shaft 54 with a feed roll 55.

It will be observed that the chip breaker which I have provided is capable of operating effectually to prevent the splintering of the work in the cutting operation. The individual units are adjustable independently toward and from the axis of the cutter so as to accommodate various forms of cutters, and they are also capable of yielding vertically to compensate for irregularities in the work as it passes into engagement with the cutter. Moreover, the chip breaker as a whole is adjustable relative to the cutter and is capable of yielding when an unexpected thickness of the work is encountered.

I claim as my invention:

1. In a molding machine or the like, the combination with a cutter, of a chip breaker comprising a cross head located at one side of the axis of the cutter and mounted to swing on an axis located on the other side of the cutter axis, yieldable means for holding the head in operative position, and a plurality of two-part chip breaker units carried by the head for individual adjustment toward and from the axis of the cutter, the lower parts of said units being adapted

to yield independently of each other in accordance with the varying thicknesses of the work transversely thereof.

2. In a molding machine or the like, the combination of a cutter, of a chip breaker mounted to swing on an axis located at one side of the cutter and having a cross head upon the other side of the cutter axis, said cross head being of channel form, and a plurality of independent chip breaker units having their upper ends mounted in the channel of the cross head for adjustment across the groove of the channel and toward and from the axis of the cutter, the means for supporting the units in the cross head comprising slide rods extending transversely of the channel groove and passing one through the upper end of each unit and adjusting screws also mounted in the cross head and operatively engaging the upper ends of the units.

3. A chip breaker comprising, in combination, a cross head, and a chip breaker unit having a shoe portion adapted to engage with the work and a hanger portion mounted on the cross head and adjustable thereon longitudinally of the machine, said shoe portion being adapted to yield relatively to the hanger portion.

4. A chip breaker comprising, in combination, a cross head of channel form, adapted to be positioned with the groove extending transversely of a machine, a chip breaker unit having a shoe portion adapted to engage with the work, and a hanger portion entered within the channel of the cross head and adjustable transversely of the groove, said shoe portion being adapted to yield relative to the hanger portion.

5. A chip breaker for molding machines and the like comprising a channel shaped cross head adapted to be positioned with the channel groove extending transversely of a machine, a chip breaker unit comprising a shoe adapted to engage with the work, and a hanger adapted to enter the channel of said head, a slide rod mounted in the walls of the channel and extending longitudinally of the machine on which the hanger is adapted to slide, and an adjusting screw also mounted in the walls of the channel parallel to the slide rod and having a screw-threaded engagement with the hanger.

6. A chip breaker for wood-working machines comprising a cross head, a chip breaker unit comprising a shoe adapted to engage with the work, an adjusting screw journaled in the cross head longitudinally of the machine and having a screw-threaded engagement with said unit, and means comprising a rod mounted in the head parallel to said screw for guiding the said unit for movement in the cross head by said screw.

7. A chip breaker for molding machines comprising, in combination, a cross head, a chip breaker unit comprising a shoe and a hanger in interfitting engagement and having spring means interposed therebetween, adjustable means for holding the shoe and hanger in operative association against the action of said spring, and means for supporting the hanger in the cross head.

8. A chip breaker comprising, in combination, a cross head, and a detachable two-part chip breaker unit, said unit comprising a hanger mounted in the cross head, a shoe mounted for up and down sliding movement relative to the hanger, a spring tending to move the shoe downwardly into engagement with the work, and adjustable means for drawing the shoe toward the hanger for varying the tension in said spring and for limiting the downward movement of the shoe.

9. A chip breaker for molding machines and the like comprising a cross head, a pair of arms to which the opposite ends of the cross head are adjustably secured, a plurality of chip breaker units carried by the cross head for adjustment transversely thereof, said units including hangers mounted in the head and shoes movably supported by the hangers, and spring means operable to permit the shoes to yield upwardly in operation.

10. In a molding machine or the like, the combination with a cutter, of a chip breaker comprising a cross head located at one side of the axis of the cutter and mounted to swing on an axis located on the other side of the cutter axis, adjustable means for holding the head in operative position and independent means to release said head from its operative position.

11. A chip breaker for wood-working machines comprising a cross head, a plurality of chip breaker units carried by the cross head, said units being independently yieldable when in operative engagement with the work, and spring means for yieldably holding the cross head and thereby the units in operative relation to the work, said units being adjustable independently for movement transversely of the cross head.

12. A chip breaker for molding machines and the like comprising a cross head, a plurality of independent chip breaker units carried by the cross head, said units being individually adjustable transversely of the cross head, individual means to adjust each of said units, and means for supporting the cross head adapted to permit of its adjustment in a front to rear direction.

13. A chip breaker for molding machines and the like comprising a cross head, a chip breaker unit comprising a shoe adapted to engage with the work and a hanger mounted on the cross head, a slide rod in the cross head on which the hanger is adapted to slide longitudinally of the machine, and an

adjusting screw also mounted in the head and having screw-threaded engagement with the hanger.

14. A chip breaker comprising, in combination, a cross head, a slide rod mounted on said cross head, a hanger adapted to slide on said rod, a second rod in screw-threaded engagement with said hanger rotatably mounted in said cross head parallel to said slide rod and adapted to adjust said hanger, a shoe in slidable engagement with said hanger adapted to engage the work, spring means interposed between said hanger and shoe, and means to adjust said shoe relative to said hanger.

In testimony whereof, I have hereunto affixed my signature.

WILLIAM O. VIVARTTAS.