

H. A. PERKINS.
JOINTING ATTACHMENT FOR CUTTER HEADS.
APPLICATION FILED AUG. 31, 1912.

1,054,936.

Patented Mar. 4, 1913.

2 SHEETS-SHEET 1.

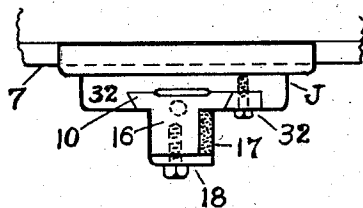
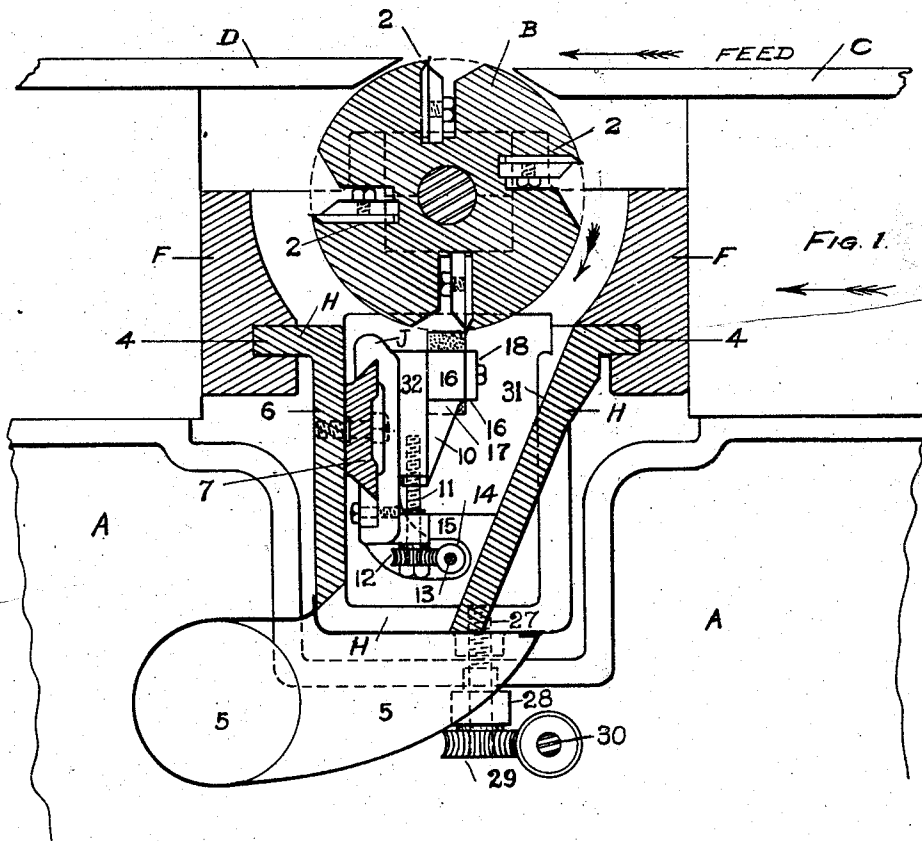


FIG. 4.

WITNESSES:

Livertta Appler
[Signature]

INVENTOR

Hiram A. Perkins

BY

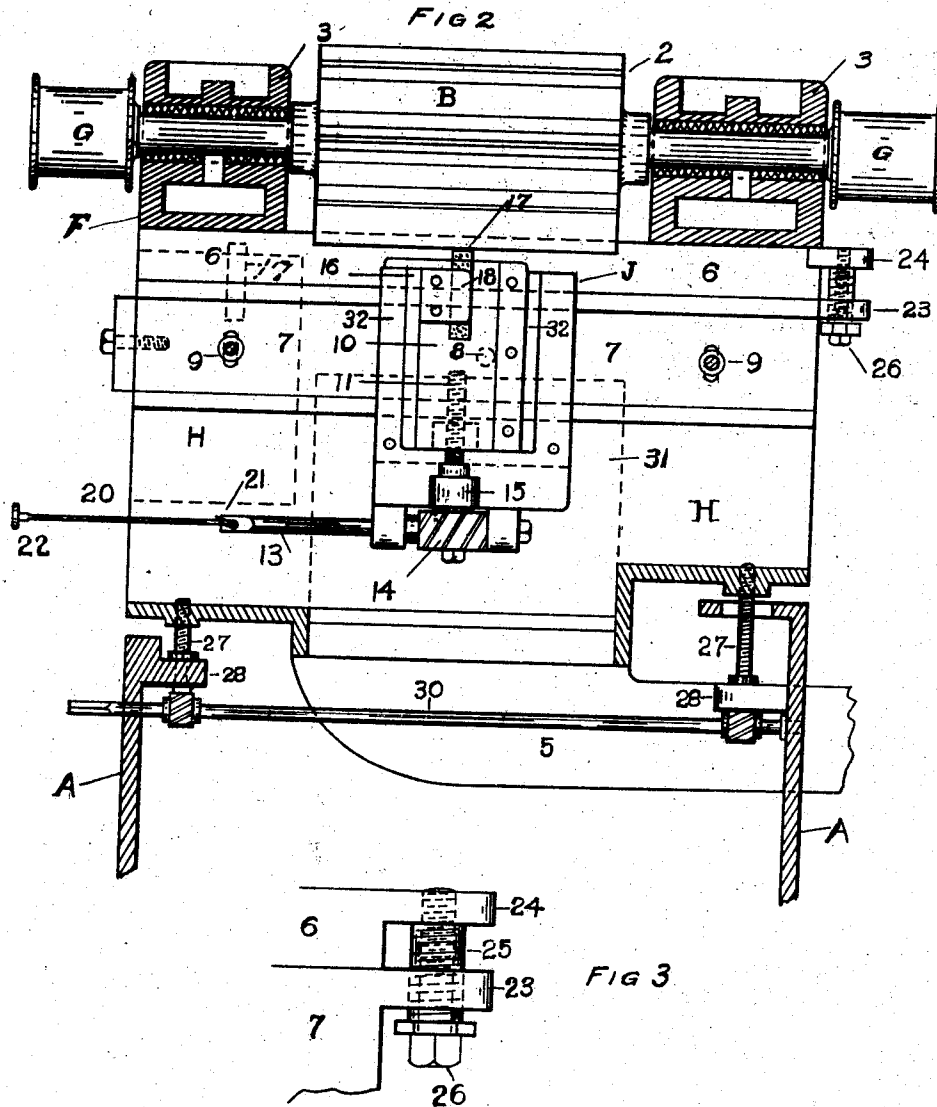
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UNITED STATES PATENT OFFICE.

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JOINTING ATTACHMENT FOR CUTTER-HEADS.

1,054,936.

Specification of Letters Patent.

Patented Mar. 4, 1913.

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To all whom it may concern:

Be it known that I, HIRAM A. PERKINS, a citizen of the United States, and a resident of the city of Rochester, State of New York, have invented certain Improvements in Jointing Attachments for Cutter-Heads, of which the following is a specification.

My invention relates to an attachment for wood planers adapted to "joint" or true up to an accurate running circle the knives of a cutter head whereby every knife shall do its share of the cutting and thus produce better work at a higher rate of feed; and it consists principally in the location of a jointing stone under the lower head in a surface planer in such a manner that the jointing operation can be carried on at any time without the necessity of attaching any supporting parts or stopping the machine. It further consists in certain details of construction for carrying out the objects sought.

In the drawings, Figure 1 is a transverse section of a lower cutter head, its supporting yoke and the contiguous parts; Fig. 2 is a section at right angles to Fig. 1 looking in the direction of the arrow. Fig. 3 is an elevation of the slide bar adjustment. Fig. 4 is a plan view of the jointing block and stone.

As is well known to planing mill operators, it is necessary after roughly setting and clamping up the knives in a planer cylinder, to grind off the cutting edges to an exactly uniform cutting circle; and this is done by running the cylinder at full speed and sliding along it an abrasive block on ways, parallel to the axis of the cylinder, so adjusted as to just touch the cutting edges and thus grind or "joint" them all down to a uniformly exact radial distance from said axis. This insures the accurate division of the cutting action among all the knives which thus produce smooth work at a high rate of feed. There are, however, many difficulties connected with the practical application of such devices and the object of my invention is to overcome these difficulties.

A, Figs. 1 and 2, is a portion of the framing of a double surface planer. B is the lower cylinder or cutter head which is provided with knives 2 secured in any suitable manner. C is the infeed work table and D is the delivery bed, both of which are suit-

ably secured to the frame A. F is a yoke having boxes 3—3 at each end in which the cylinder journals are supported, the latter carrying driving pulleys G in the usual manner. The above described parts are common to double surface planing machines, and my invention is embodied in adjacent parts which form the jointing mechanism for the knives. H is a supporting casing having slide ways 4 at the upper edge upon which the yoke F is fitted so as to slide longitudinally and thus be drawn out transversely to the machine to obtain access to the knives. This casing extends across the machine and is supported on the frame A by means of screws 27 having bearings on strong lugs 28 in said frame and shouldered thereon vertically. Screws 27 are threaded into the casing H and may be operated in any convenient manner, but I prefer to attach worm gears or spiral gears 29 to their ends and operate them by means of a cross shaft 30 carrying corresponding gears meshing into gears 29. Shaft 30 extends outside of the frame A at one end for the attachment of a wrench or crank handle. Thus both ends of the casing and cutter head are adjusted simultaneously. The front wall 31 of the casing is inclined for such a portion of its length as corresponds to the position of the cutter head transversely, as indicated in Fig. 2, for the purpose of directing the shavings as they are forced by the motion of the cutter head into the delivery pipe 5, which is attached to the bottom of the casing 4. Thus the latter performs several functions: supporting the cutter head yoke, providing space for the introduction of the knife jointer, confining and conveying away the shavings, and forming the medium for the vertical adjustment of the cutter head to the work. To the rear wall 6 of this casing, I attach a longitudinal slide bar 7 by means of a central pivot bolt 8, Fig. 2, and two clamp bolts located near the ends of the slide in vertical slots 9, permitting a slight oscillation for adjustment. J is a carriage fitted to move freely along this slide bar and to this, at right angles to the slide bar, is fitted an adjustable block 10 which moves vertically in slide ways 32 prepared for it. Adjustment is secured by means of a screw 11 to which is attached a worm gear 12, and a short shaft 13 carries

a corresponding worm 14 meshing into the worm gear. The shaft 13 has bearings on the carriage J and the screw 11 is supported by the boss 15 also on the carriage: Thus by revolving the shaft 13 the block 10 is adjusted vertically.

A lug 16 on the block 10 is adapted to receive an abrading stone 17 and a gib 18, Figs. 1 and 4, holds it firmly in place. By these means the stone 17 may be micrometrically adjusted to the circle of revolution of the knives 2 and their edges accurately jointed off. For the purpose of operating the carriage J on the slide way 7, I provide a rod 20, Fig. 2, which has a hook 21 at one end and a pull knob or handle 22 at the other: the hook 21 is easily attachable and detachable by means of a hole in the end of shaft 13, and the operator is thus enabled to quickly apply it and reciprocate carriage J on its ways for the full length of the knives, and when necessary to adjust the stone 17 to its work the handle 20 may be revolved together with shaft 13 and the adjustment thus made through the worm and worm wheel and screw 11. The exact method shown of attaching the handle 20 to the shaft 13 is not essential, because any method which permits of the reciprocation of the carriage and the revolution of shaft 13 would fulfil the requirements of my invention.

For the purpose of alining the slide bar 7 exactly parallel with the axis of the cutter head and fixing it rigidly where adjusted I provide projecting ears 23 and 24, one on the bar 7 and one on the casing H. Through one of these, 23, a tubular screw 25 is threaded and through its bore a screw 26 passes freely and is threaded into the other ear 24. The end of screw 25 rests against ear 24 and thus fixes the adjustment, and the screw 26 binds them rigidly together after adjustment.

In Fig. 2 the carriage J is shown in a midway position with the stone 17 in action on the knives, but when not in use the carriage is pulled over toward the operator, with the stone out of contact with the knives as indicated in dotted lines Fig. 2. When the work begins to indicate that the knives are not cutting equally, the carriage J is pushed forward and the stone adjusted by the handle 22 to just touch the edges of the knives 2. Carriage J may then be traversed along the revolving knives as many times as necessary to bring them to an exact cutting circle: This operation can be repeated as often as seems required, at a moment's notice and without the attachment or detachment of any parts, while the machine is in operation.

It will be seen that the location of the jointing slide 7 on that side of the cutter head away from the flow of the shavings

tends to keep the operating parts clean and in constant working condition, for the reason that the centrifugal action of the knives creates a strong current down the inclined wall 31 through the casing H and into the pipe 5 as shown by the arrow in Fig. 1, and thus away from the wall 6 of the casing. It will also be noted that by this location of slide 7 I am enabled to approach the knives with the stone 17, directly under the axis of the cutter head, thus jointing them when the cutter head journals are lying fairly in their bearings. These are important points because heretofore the jointer slides have been in such a position as to catch shavings, dust and gum and render the jointing carriage useless in a short time: and furthermore it has been found that a more efficient and accurate method of jointing cutter heads is to apply the stone either directly above or directly under the axis of the head. By attaching the slide bar 7 to the casing H it thus remains in the same relative position to the cutter head when it is adjusted to its cut, while at the same time the cutter head and its yoke are free to be drawn out on the ways 4 independently of the jointing attachment.

What I claim as my invention and desire to secure by Letters Patent is:

1. In a wood planing machine a lower cutter head, a supporting yoke with bearings for the same, a knife jointing attachment under said cutter head, means for vertically adjusting the cutter head, its yoke and the jointing attachment simultaneously, and means for adjusting the jointing stone independently, whereby the jointing attachment is in position to operate whenever required, without disturbing any adjacent part of the machine.

2. In a wood planing machine a lower cutter head, a yoke for the same with bearing boxes, a supporting casing with slide ways upon which the cutter head yoke may be drawn out transversely to the machine, a "jointing" or knife truing attachment secured to and inclosed by the casing, means for vertically adjusting said casing and cutter head to the cut, and independent means for adjusting the jointing stone to the knives.

3. In a wood planing machine a lower cutter head, a yoke for the same with bearing boxes, a casing supporting said yoke and made vertically adjustable to vary the cut, slide ways on said casing permitting the cutter head and yoke to be drawn out of the machine transversely, a slide bar secured within said casing, a carriage on said bar, a grinding stone attached to the carriage directly under the cutter head and means for traversing the grinding stone along the knives for the purposes set forth.

4. In a wood planing machine, a lower

5 cutter head and its yoke, a supporting casing under the yoke, a slide bar located within said casing below the cutter head and on the side of the axis of the latter opposite the direction of the feed, a carriage moving thereon carrying a jointing stone which is adjustable to the knives, whereby the slide and its carriage are removed from the line of the shavings passing through the casing into the delivery pipe.

10 5. In a wood planing machine a lower cutter head, a yoke for the same with bearing boxes, a slide bar located below the yoke, and constructed to tilt on a suitable pivot, a carriage traversing said slide bar, a vertically adjustable jointing stone on said carriage, and means for adjusting and clamping the slide bar parallel with the axis of the cutter head.

20 6. In a wood planing machine, a lower cutter head, a jointing attachment under the same, means for adjusting the jointing stone to the edge of the knives, and detachable

means for traversing the stone along the knives and also adjusting it to its work whereby the operation of jointing is rendered simple and expeditious.

7. In a wood planing machine, a lower cutter head, a jointing attachment located under such cutter head comprising a slide bar, a carriage traversing said bar, a grinding or "jointing" stone made vertically adjustable on said carriage, a screw for adjusting the stone, a horizontal shaft to which an actuating handle is detachably connected, gears or equivalent means for conveying motion from the horizontal shaft to the adjusting screw, whereby the carriage may be traversed along the slide bar and the adjusting screw revolved at the will of the operator.

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Witnesses:

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