(No Model.)

G. F. WETHERELL.

PLANING MACHINE.

No. 433,428. Patented July 29, 1890.

Fig. 1.

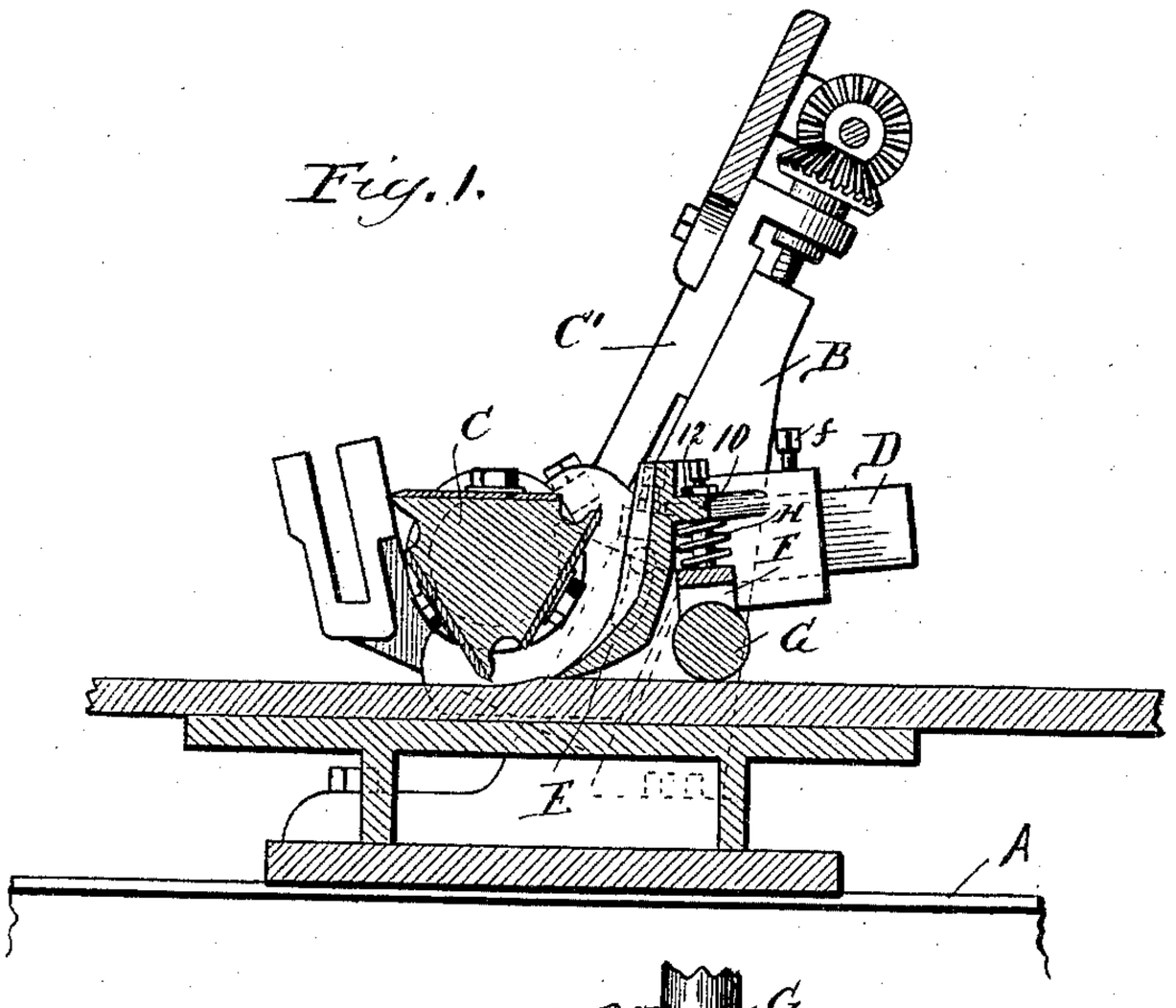


Fig. 4.

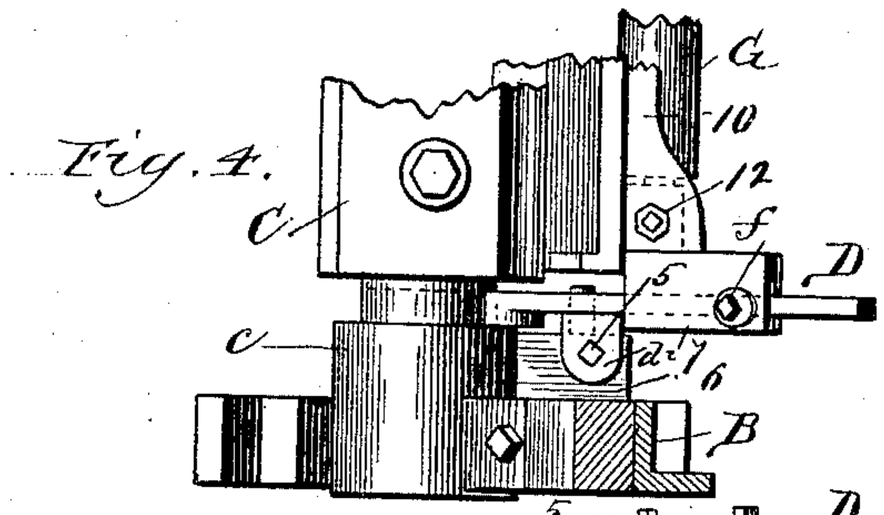


Fig. 2.

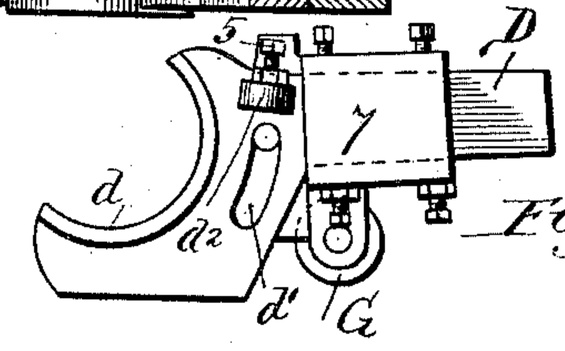


Fig. 3.

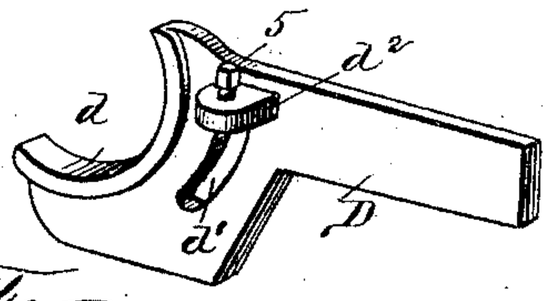
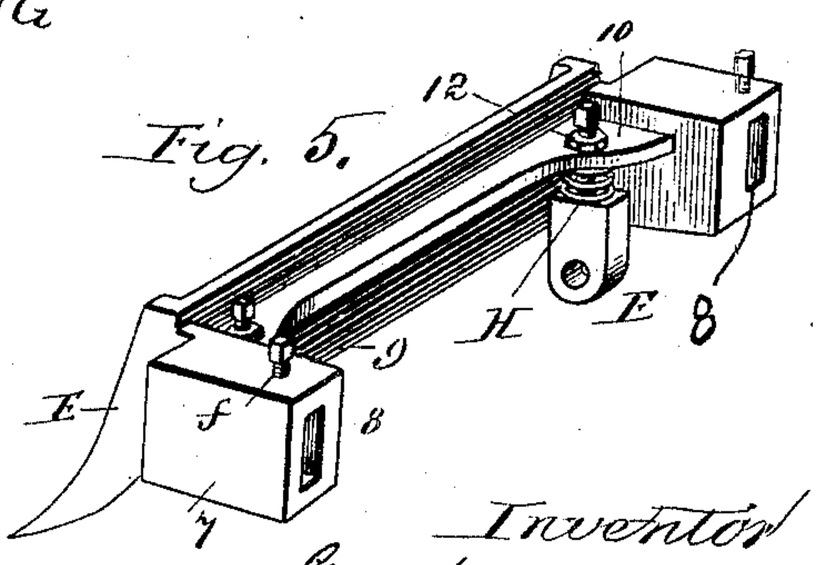


Fig. 5.



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UNITED STATES PATENT OFFICE.

GEORGE F. WETHERELL, OF CHICAGO, ILLINOIS, ASSIGNOR OF TWO-THIRDS TO RANSOM RICHARDS AND RICHARD B. JONES, OF SAME PLACE.

PLANING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 433,428, dated July 29, 1890.

Application filed February 6, 1890. Serial No. 339,469. (No model.)

To all whom it may concern:

Be it known that I, GEORGE F. WETHERELL, 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 Planing-Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My present invention has relation to that class of planing-machines in which the planing of the lumber is effected by means of a rotary cutter-head, and in which a chip-breaker is employed in close proximity to the path of the cutter-knives, in order to hold the lumber closely adjacent the knives and prevent roughness of cut or the tearing out of knots. An example of this type of machine is illustrated in Letters Patent No. 278,338, granted for an invention of Richard B. Jones, May 29, 1883.

My invention consists in the various novel features of construction hereinafter described, and illustrated in the accompanying drawings, and particularly defined in the claims at the end of this specification.

Figure 1 is a view in longitudinal vertical section taken centrally through a portion of a planing-machine embodying my invention. Fig. 2 is a detail view in side elevation of one of the sustaining-arms for the chip-breaker with the chip-breaker mounted thereon. Fig. 3 is a detail perspective view of one of the sustaining-arms for the chip-breaker. Fig. 4 is a view, partly in plan and partly in horizontal section, of one end of the cutter-head and the adjacent parts. Fig. 5 is a detail perspective view of the chip-breaker.

A designates the body of the machine, from which rise the vertical standards B, by means of which the cutter-head and chip-breaker are sustained, one only of these standards being shown in the accompanying drawings. The cutter-head C has its journals mounted within suitable housings *c*, attached to the cutter-head frame C′, the vertical adjustment of which will be effected in the usual or suitable manner, as well understood in the art. Upon the housings *c* of the cutter-head are seated the bearing ends *d* of the arms D, that serve to sustain the chip-breaker E, the ends *d* of these arms being recessed, as shown, to snugly fit upon the housings *c* in such manner as to permit a swinging movement of the arms about the housings, and consequently concentrically with the journals of the cutter-head. By preference, the bearing ends *d* of the arms D are formed as open sockets, and each of these arms is preferably furnished with a curved slot *d′*, through which will pass a pin *e*, that projects from the housings *c* and serves as a guide and retainer for the arm. Preferably, also, each of the arms D is provided with a lug d^2, through which passes a set-screw 5, adapted to bear upon a lug 6, extending inwardly from the housings *c* of the machine, the set-screw serving to determine the distance to which the sustaining-arms of the chip-breaker carried thereby will be allowed to descend. The chip-breaker E is provided at each end with an extension 7, having an opening 8 therein to receive the corresponding sustaining-arm D, and suitable set-screws may be employed for adjusting the chip-breaker in position upon the arms.

From the foregoing description it will be seen that as the arms D are pivoted concentrically with the cutter-head the movement of the chip-breaker E will also be concentrical with the cutter-head; hence it is manifest that if the chip-breaker E be set upon the sustaining-arms D in such position that its bearing-edge is in close proximity to the path of travel of the cutter-knives this relation of the bearing-edge of the chip-breaker to the cutter-knives will be maintained irrespective of the thickness of the lumber that may be passed through the machine, since if very thick lumber be passed through the machine it will lift the chip-breaker; but the sustaining-arms of the chip-breaker will cause it to to move concentrically with the cutter-head, and hence will at all times maintain its bearing-edge in the same relative position with respect to the path of the cutter-knives. So, also, when very thin lumber is passed beneath the cutter-knives the chip-breaker will be allowed to fall, but in its downward movement its bearing-edge will remain constant with respect to the path of the cutter-knives, because of the fact that the chip-breaker is hung to move concentrically with the knives. As the sustaining-arms D, by reason of the

fact of their lying entirely in front of the cutter-head housings, are made very short, there is no danger of the chip-breaker, when sustained by these short arms, springing into the path of the cutter-knives, and hence the bearing-edge of the chip-breaker can be set with perfect safety as close to the path of travel of the knives as is desired.

By forming the bearing ends *d* of the arms D as open sockets I am enabled to adjust the housings *c* of the cutter-head to compensate for wear without the necessity of disturbing the arms D of the chip-breaker, since the open sockets at the ends *d* of these arms permit the upper portion of the housings *c* to be removed in order to make the adjustment without the necessity of removing the chip-breaker arms, as would have been done if the arms D were held upon the housings by closed sockets or bearings.

The front of the chip-breaker E is provided with suitable boxes F, in which are journaled the ends of a relief-roll G, against which the ends of the incoming boards will strike as they are forced into the machine, and by preference the boxes F are held in position by means of the stems or bolts *f*, that pass through the rib 10, formed upon the chip-breaker, and are encircled by the springs H, which allow a slight yielding action to the relief-roll. The bolts *f* are provided with set-nuts 12, which enable these bolts to be adjusted in order to determine the vertical play of the relief-roll with respect to the bearing-edge of the chip-breaker. The springs H, while serving as a cushion for the relief-roll G and enabling this roll to better relieve the chip-breaker of the sudden shock of the incoming lumber, do not serve as pressure-springs for determining the force exerted upon the incoming lumber, since the springs will be lifted with the chip-breaker, the weight of which, together with its arms, determines the pressure exerted upon the lumber adjacent to the cutter-head.

From this construction it will be seen that the relief-roll serves to receive the impact of the lumber as it is introduced into the machine and to prevent the forcing of the chip-breaker inward thereby, and at the same time the adjustment of this relief-roll permits it to be raised or lowered to compensate for any wearing away of the edge of the chip-breaker incident to long usage.

The relief-roll G is located entirely at the front of the chip-breaker, so that no matter how great may be the variation in the thickness of the incoming lumber the roll will be struck by the boards and will relieve the chip-breaker from the shock thereof. As this roll G is entirely at the front of the chip-breaker, and consequently at a greater distance from its pivot-point than is the toe of the chip-breaker, it is obvious that after the roll has received the shock of the incoming lumber it will be so lifted that when the lumber passes beneath the toe of the chip-breaker the roll will be raised out of contact with the lumber, the toe of the chip-breaker alone bearing upon the lumber.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a planing-machine, the combination, with a cutter-head, of a chip-breaker and sustaining-arms for said chip-breaker, said arms being supported in front of said cutter-head and having their inner ends formed with open sockets, substantially as shown, resting upon the housings of the cutter-head and serving as bearings for said arms, whereby the housings can be readily adjusted, substantially as described.

2. In a planing-machine, the combination, with the cutter-head, of a chip-breaker and pivoted sustaining-arms for said chip-breaker, having open sockets resting upon the housings of the cutter-head and provided with curved slots, and retaining-pins entering said slots and serving to hold the arms in proper position with respect to the housings, substantially as described.

3. In a planing-machine, the combination, with the cutter-head, of a chip-breaker and sustaining-arms for said chip-breaker, said arms being supported in front of said cutter-head, and having open sockets resting upon the housings of the cutter-head, whereby the adjustment of the housings can be readily effected, and suitable adjusting-screws for limiting the downward movement of said arms, substantially as described.

4. In a planing-machine, the combination, with a cutter-head, of a chip-breaker, pivoted arms for sustaining said chip-breaker, the front of said chip-breaker being provided with suitable journal-boxes, a relief-roll G, held within said journal-boxes and entirely at the front of said chip-breaker, whereby said roll shall receive the shock of the incoming lumber, and adjustable stems or bolts carried by the chip-breaker for determining the position of the relief-roll, substantially as described.

5. In a planing-machine, the combination, with the cutter-head, of a chip-breaker, pivoted arms for sustaining said chip-breaker, the front of said chip-breaker being provided with suitable journal-boxes, a spring-seated relief-roll G, held within said journal-boxes, and adjustable stems or bolts carried by the chip-breaker for determining the position of the relief-roll, substantially as described.

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