(No Model.) 2 Sheets—Sheet 1.

E. BENJAMIN.

PLANING MACHINE.

No. 413,163. Patented Oct. 22, 1889.

Fig. 2.

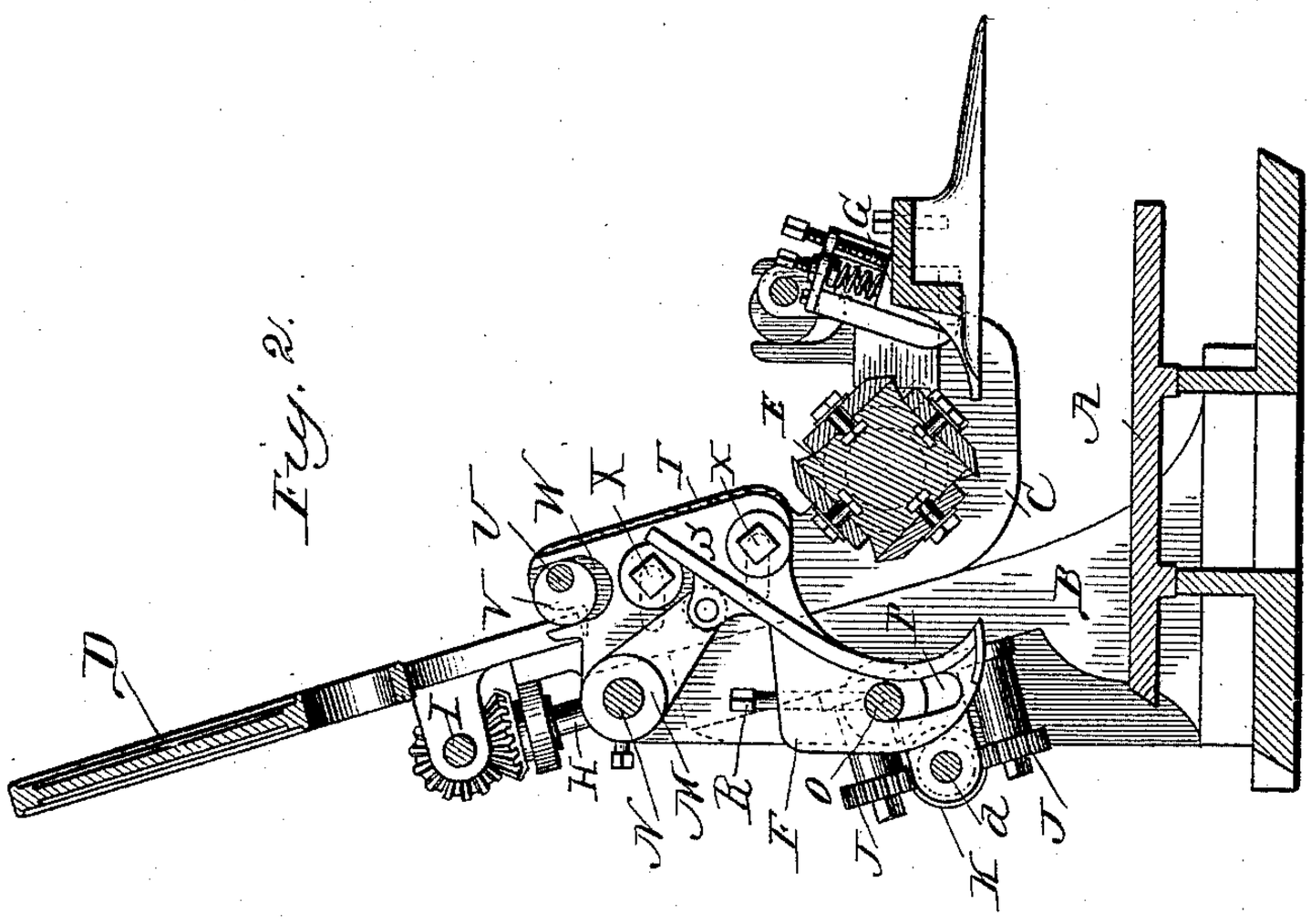
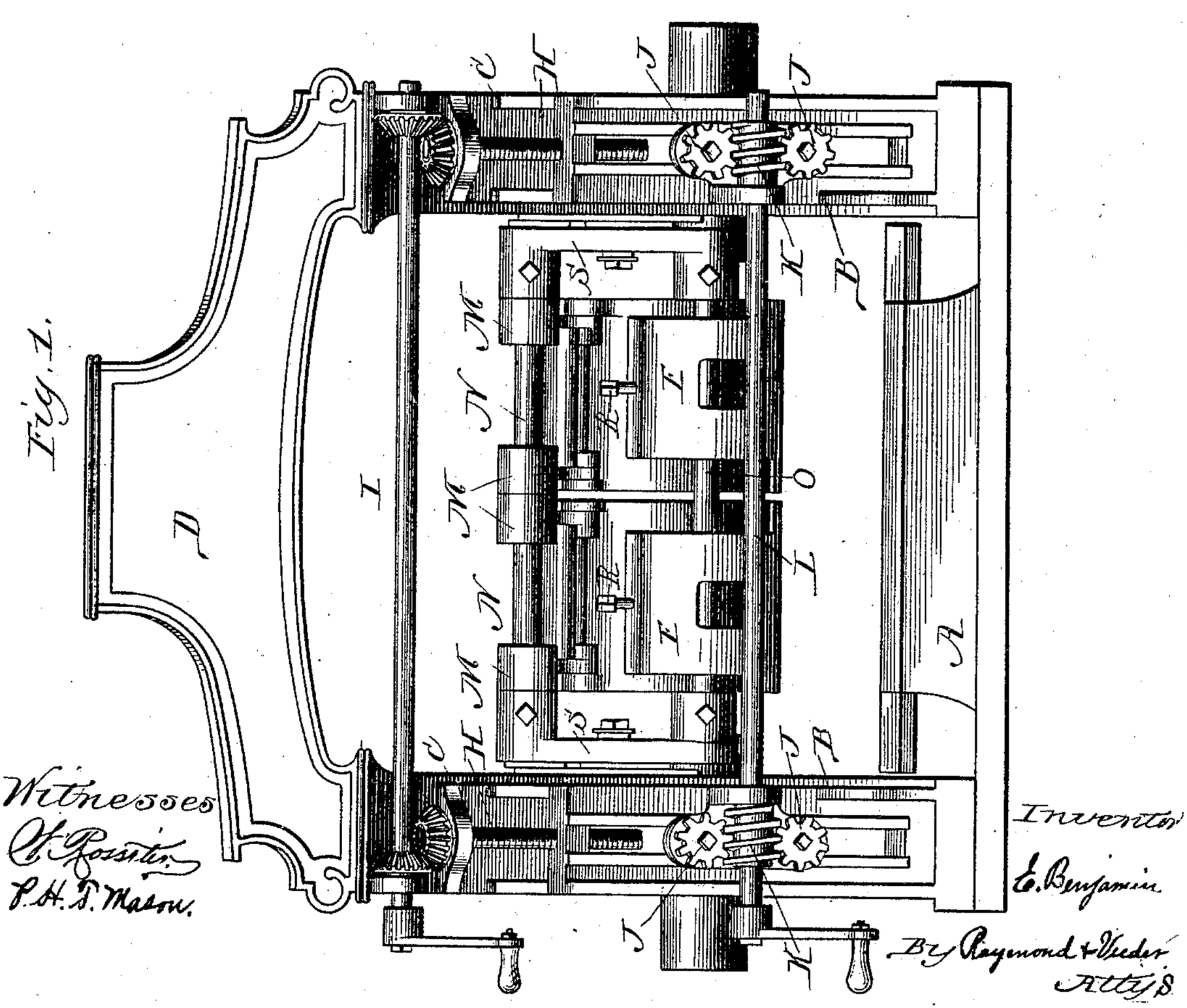


Fig. 1.



Witnesses
C. Forster
P. H. T. Mason.

Inventor
E. Benjamin
By Raymond & Wieder
Attys

N. PETERS, Photo-Lithographer, Washington, D. C.

(No Model.) 2 Sheets—Sheet 2.

E. BENJAMIN.

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Fig. 5.

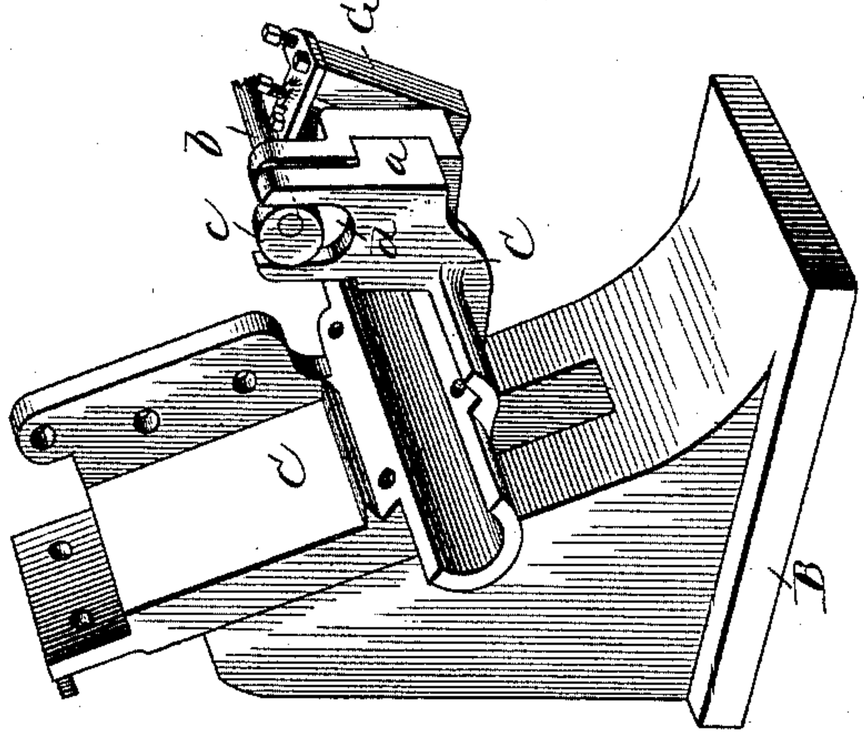


Fig. 4.

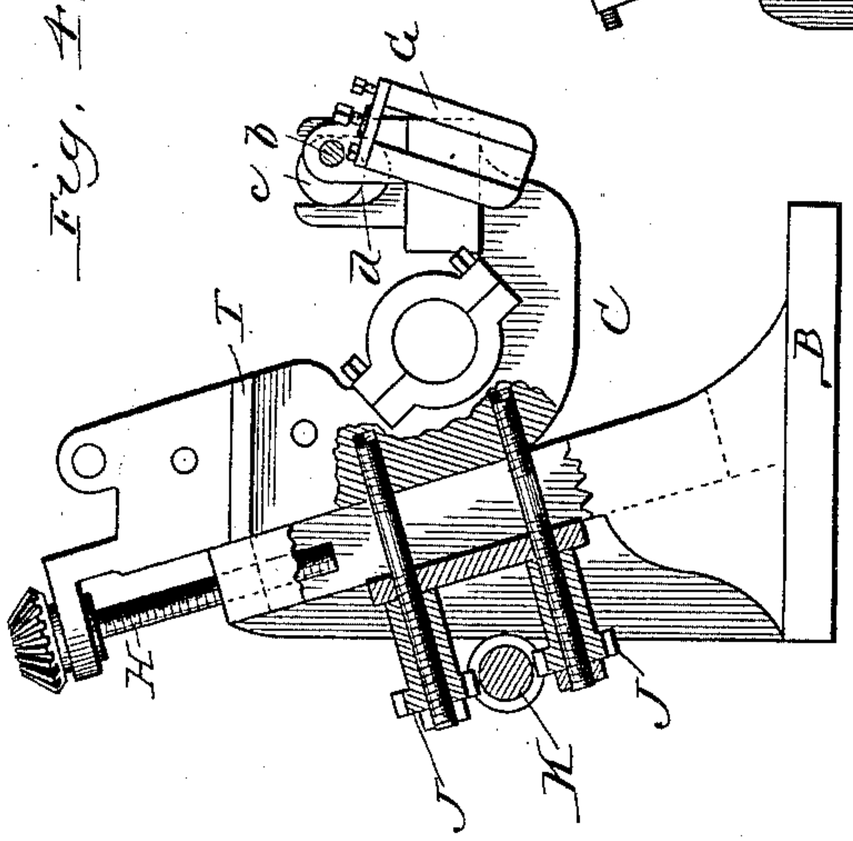
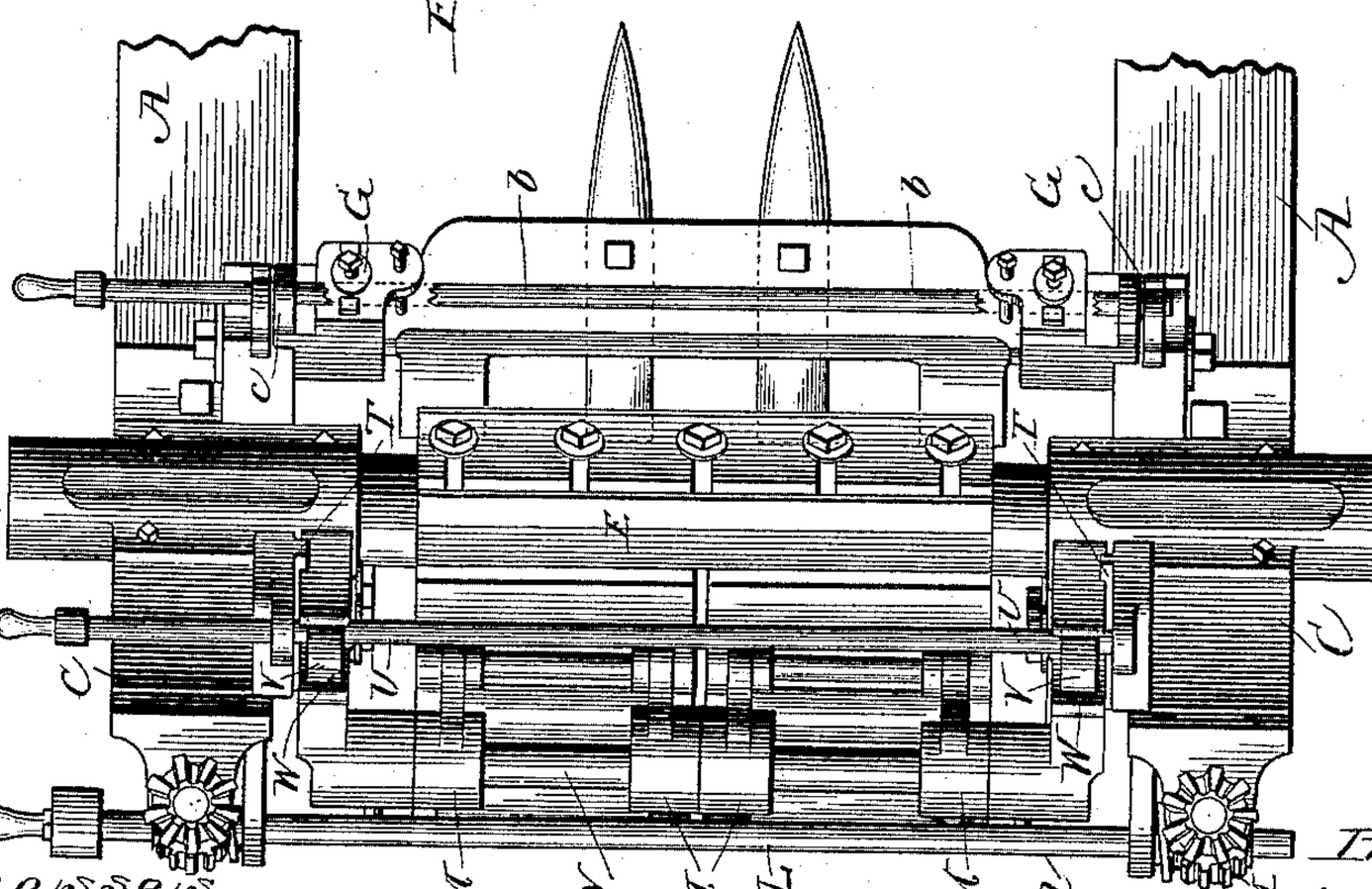


Fig. 3.



Witnesses
F. Fowler
P. H. P. Mason.

Inventor
E. Benjamin
By Raymond & Veeder
Attys.

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

EDWIN BENJAMIN, OF SOUTH EVANSTON, ILLINOIS, ASSIGNOR TO THE BENJAMIN MACHINE COMPANY, OF ILLINOIS.

PLANING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 413,163, dated October 22, 1889.

Application filed December 10, 1888. Serial No. 293,128. (No model.)

To all whom it may concern:

Be it known that I, EDWIN BENJAMIN, of South Evanston, Cook county, Illinois, have invented certain new and useful Improvements in Planing-Machines, of which the following is a specification.

The objects of my invention are to facilitate the adjustment of the planer for working different widths and thicknesses of lumber and to provide means of adjusting the chip-breaker and pressure-bar to accommocate the varying sizes of cylinder.

My invention is further intended to provide a method of suspending the chip-breaker which shall cause it, in yielding to the passage of the lumber, to maintain its lower edge in proper relation to the cylinder-knives by moving in an approximately circular path concentric with the path of the knives.

In the drawings, Figure 1 is an end view of the planer-housing carrying the cylinder and associated parts and of a portion of the planer-bed. Fig. 2 is a central cross-section of Fig. 1. Fig. 3 is a plan view corresponding to Fig. 1, the top brace D, Figs. 1 and 2, being removed. Fig. 4 is a view partly in section of one of the standards B, Fig. 1, and its attached bracket C. Fig. 5 is a perspective view of one of the brackets C, carrying the cylinder-boxes, showing how the pressure-bar is supported and adjusted thereon.

A, Figs. 1 and 2, is a portion of the planer-frame to which the standards B B are secured. The standards B B support the brackets C C, which are joined by the cross-brace D, the whole constituting the housings for the planer-cylinder E and supporting also the chip-breakers F F and the bearings G G for the pressure-bar. The bar itself is only shown in Figs. 2 and 3, as it would obscure the other parts, and is of the usual construction. The brackets C C are raised and lowered by the screws H H, which screws are simultaneously operated in the usual manner by bevel-gearing and a cross-shaft I.

In order to combine greater firmness and quick adjustment, I employ two clamping-screws J J for each bracket C C and operate all four simultaneously by means of the worm-gearing K K and shaft L. Each pair of screws J J must consist of a right and a left hand screw, as they necessarily revolve in opposite directions. The worms K K may be duplicates of each other, as shown, or one may be right and the other left, the latter being preferable, as the end-thrusts of the two balance each other and thereby lessen the friction of the worms against the shaft-bearings.

The chip-breakers F F are hung upon links M M, which turn upon the shaft N, their lower ends being guided by the rod O, passing through the slot P. The movement of the lower part of the chip-breaker is determined by the combined action of the link M and slot P, the downward inclination of the link M causing the top of the chip-breaker when raised to be thrown horizontally toward the cylinder and the lower end in the opposite direction, the position and shape of the slot P so modifying the movement of the lower part of the chip-breaker that its path is substantially circular and concentric with the cylinder. A set-screw R, tapped into the chip-breaker, abuts against the rod O and affords a means of adjusting the height of the chip-breaker relatively to the knives. The use of a slot in combination with a link for guiding the chip-breaker I consider advantageous, for the reason that without creating undue friction one is enabled, by suitably arranging the shape and position of the slot and link, to give the proper direction to the movement of the chip-breaker and at the same time make provision for the adjustment of the chip-breaker by a set-screw abutting against the guide-rod.

Two chip-breakers, as shown in Fig. 1, are preferably employed, for the reason that two pieces of lumber may be operated upon simultaneously in some of the planers to which the chip-breakers are applicable, while the two will serve as well or better than a single wide one on wide lumber.

The shaft N and guide-rod O are supported in side pieces S S, which are secured to the brackets C C in such manner as to be capable of horizontal adjustment, the abutting faces of side piece and bracket being tongued and grooved for that purpose, as may be seen

at T, Figs. 2, 3, and 4. A shaft U, having eccentrics V, (*vide* Fig. 2,) is journaled in the brackets C C and the eccentrics work in slots W W in the side pieces S S, so that when the clamp-bolts X X are loosened the turning of the shaft U shifts the side pieces S S to or from the cylinder as may be necessary to accommodate the knives properly.

The adjustment of the pressure-bar housings G G is effected in a similar manner, as may be seen by reference to Figs. 4 and 5. Said housings are grooved and are supported by tongues *a* on the bracket C. A shaft *b* is journaled in the housings G, and eccentrics *c c* thereon work in the slots *d d* in the bracket C, so that the turning of shaft *b* will simultaneously move the housings to or from the cylinder-knives, as desired.

I claim—

1. The combination, with the cylinder of a planing-machine, of a pivoted link downwardly inclined toward the cylinder, a chip-breaker suspended from the end of said link nearest the cylinder and having a slot in its lower portion, as described, and a guide-rod through said slot, whereby the lower edge of the chip-breaker will move in a circular path concentric with the cylinder, substantially as described.

2. The combination, with the cylinder of a planing-machine, of a pivoted link downwardly inclined toward the cylinder, a chip-breaker suspended from the end of said link nearest the cylinder and having a slot in its lower portion, as described, a guide-rod through said slot, and a set-screw passing through the chip-breaker and abutting against said guide-rod, substantially as described.

3. The combination, with the housing and cylinder of a planing-machine, of side pieces horizontally adjustable thereon for supporting the chip-breaker or the pressure-bar, a shaft, and eccentrics on said shaft by which the side pieces may be simultaneously adjusted, as and for the purpose set forth.

EDWIN BENJAMIN.

Witnesses:
J. I. VEEDER,
P. H. T. MASON.