

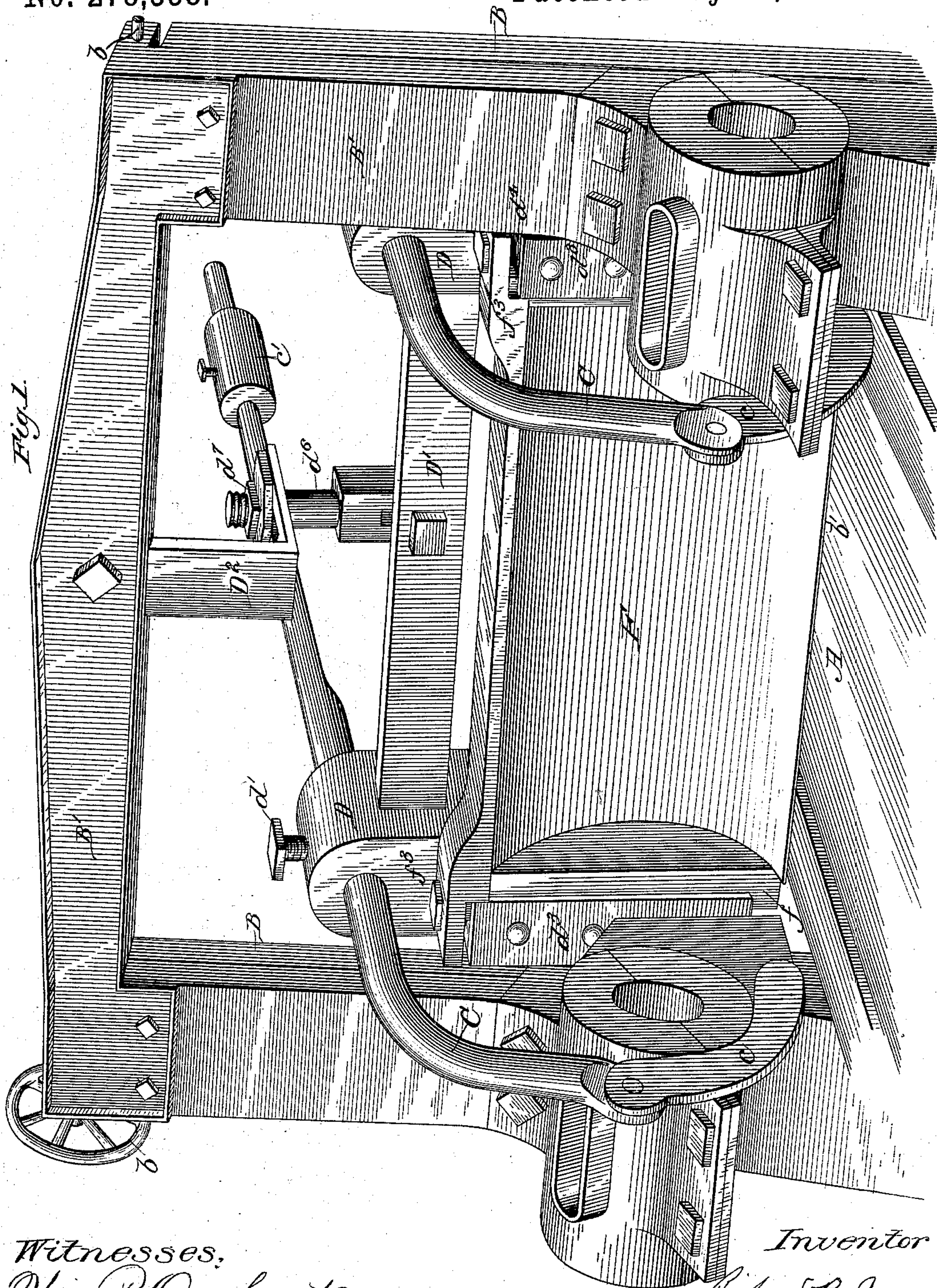
(No Model.)

2 Sheets—Sheet 1.

R. B. JONES.
PLANING MACHINE.

No. 278,338.

Patented May 29, 1883.



Witnesses,
Will R. Omohundro.
Frank J. Blanchard

Inventor
Richard B. Jones
By, Pierce Fisher
Attys

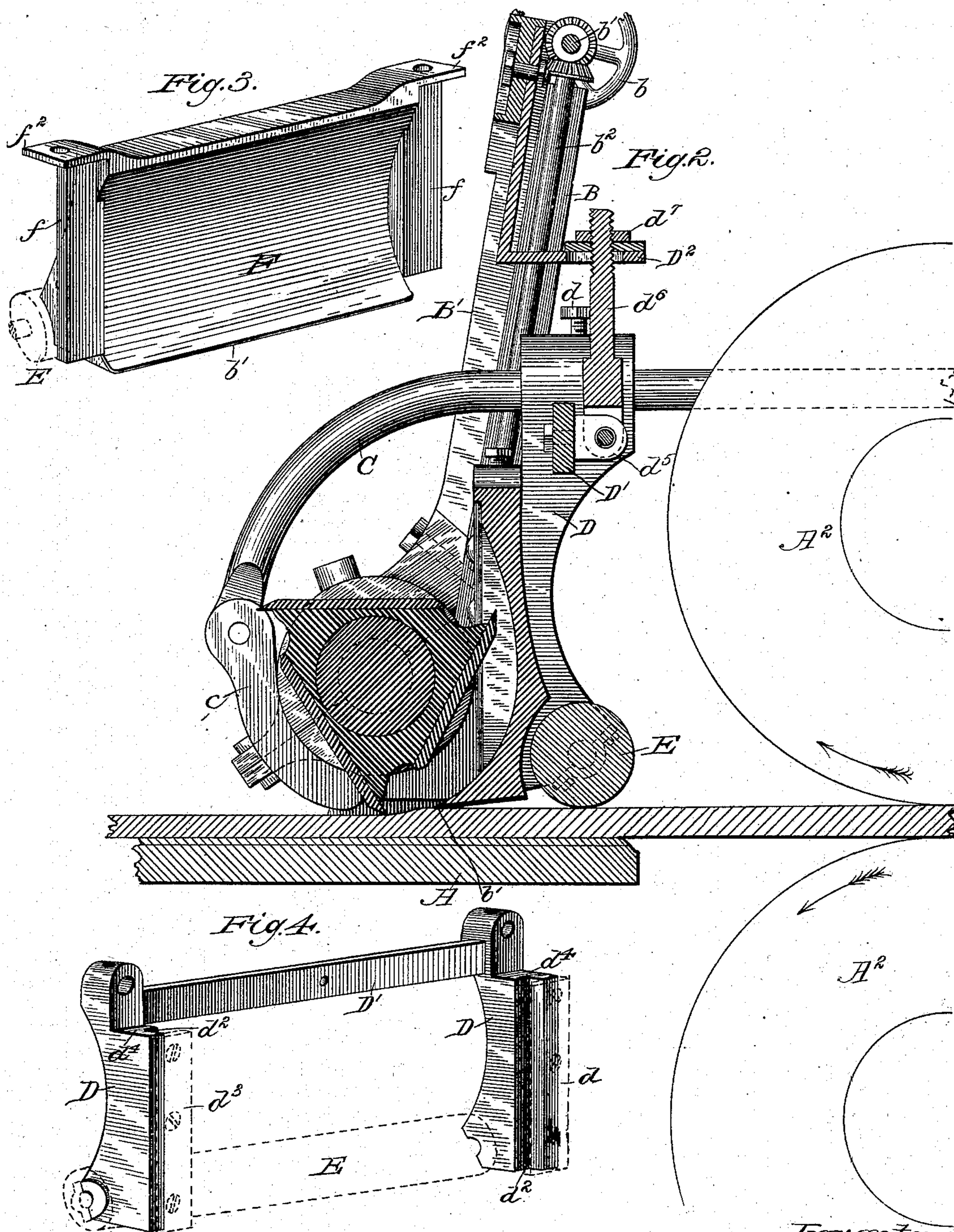
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UNITED STATES PATENT OFFICE.

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

PLANING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 278,338, dated May 29, 1883.

Application filed February 1, 1883. (No model.)

To all whom it may concern:

Be it known that I, RICHARD B. JONES, 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, sufficient to enable others skilled in the art to which my invention appertains to manufacture and use the same.

In cylinder planing-machines as commonly constructed it is customary to place in front of the rapidly-revolving cutter-head a presser-roll for the purpose of retaining the lumber on which the cutters are acting firmly upon the bed of the machine. The journals of such presser-rolls are usually held within spring-seated bearings, which rest in vertical channels formed in the side of the frame, and their tension is adjusted by means of set-screws for the different thicknesses of material. This construction of machine is objectionable for the reason that, even when operating upon perfectly sawed or true material, it is necessary for satisfactory work to adjust the tension of the presser-roll for each different thickness of lumber, and for the further reason that when operating upon a lot of material of different thicknesses, or upon imperfect material, the thickness of which is rendered uneven by reason of distortion or inaccurate sawing, the presser-roll set for a certain thickness will press too lightly upon the thin stuff, while upon the thick stuff it will bear with such force that it becomes difficult and at times impossible to press it beneath the presser-roll and through the machine. The consequence is that in planing this kind of lumber the operation of the machine is often necessarily irregular and slow. A further objection to the spring-seated presser-roll is that it bears upon the work at such a distance from the point of contact of the cutter-head that the cut of the knives is apt to be somewhat ragged, and knots in the wood are liable to be thrown out by the knives and cause breakage of the machine, for it is obvious that although the roll be fixed in proximity to the path of the knives when set for a very deep cut, it will be at some distance there-

from when the cutter-head is adjusted to make a shallow surface cut.

Instead of employing a presser-roll, as above described, a presser-foot or chip-breaker depending from a pivoted weighted bar, to which it is rigidly connected, is sometimes placed in front of the cutter-head. This construction of machine is objectionable, however, for the reason that the presser-foot, if weighted sufficiently to keep down the work, offers so great a resistance to its passage as to materially decrease the speed of the machine, and for the further reason that although arranged in proximity to the path of the cutting-knives when making a deep cut, it will be at some distance therefrom when they are set to make a shallow cut.

The object of my present invention is to provide a machine which will avoid the above-enumerated objections, and by which lumber may be planed with greater accuracy and speed than has been heretofore possible in cylindrical machines, and this object I have accomplished by the novel construction of mechanism hereinafter described, particularly pointed out in the claims, and illustrated in the accompanying drawings.

Figure 1 is a perspective view, in front elevation, showing a portion of a planing-machine with my improvements applied thereto. Fig. 2 is a view in longitudinal vertical section taken centrally through the part of the machine embodying my invention. Fig. 3 is a detail rear perspective view of the presser-foot or chip-breaker. Fig. 4 is a detail rear perspective view of the presser-frame.

A designates the bed of the machine, to which is connected, in any suitable manner, the vertical standards B, by which is sustained the cutter-head frame B', the vertical adjustment of which is effected in the usual way by means of the hand-wheel b, the rod b', and the screw-rods b².

Connected to the housings of the cutter-head, and preferably cast integral therewith, are the lugs c, to which are hinged the bent lever-rods C, which extend over the cutter-head and over and in proximity to the journals of the upper one of the main feed-rolls A². Upon the rods

C are adjustably secured the weights c' , the position of which upon the rods will regulate the pressure of the material upon the bed at a point in front of the cutter-head.

5 Between the upper feed-roll A^2 and the cutter-head is placed what I designate the "presser-frame," the side standards, D, of which are perforated at the top to receive the rods C, upon which the presser-frame is hung. Set-
10 screws d' in the top of the standards D serve to determine the position of the presser-frame upon the rods, so that its distance from the cutter-head may be varied as desired.

To the lower front portion of the standards
15 D is journaled, as shown, the presser-roll E, which retains the material upon which the cutter-head is operating securely upon the bed of the machine.

In the back edges of the standards D are
20 formed the recesses d^2 , in which fit, in such manner as to slide freely therein, the reduced ends f of the presser-foot or chip-breaker F, which is retained in place by means of the strips d^3 . The front of this chip-breaker is cut
25 away, as shown, to allow space for the presser-roll, and the back is concaved to permit the back bottom edge, b' , to be brought in nearer proximity to the path of the cutting-knives. At the top of the chip-breaker are formed the
30 lugs f^2 , through which pass the set-screws f^3 , which bear upon the shoulders d^4 of the side standards, D, and serve to limit the downward movement of the chip-breaker, as will herein-after appear.

35 Centrally of the cross-bar D' , which connects the standards D at their tops, is bolted the lug d^5 , to which is pivotally connected the screw-rod d^6 , the threaded end of which passes through the slotted bar D^2 , depending from the
40 cross-beam of the cutter-head frame. The slotted bar D^2 serves to sustain the presser-frame, and by means of the set-nut d^7 and washer on the end of the screw-rod d^6 the vertical adjustment of the presser-frame, and consequently of the presser-roll and chip-breaker,
45 with respect to the cutter-head is effected. The slot in the bar D^2 , as well as the pivoted connection with the presser-frame, allows the latter to be readily adjusted in longitudinal
50 direction upon the sustaining-rods C.

From the foregoing description it will be seen that by sustaining the pressure mechanism from the same frame that carries the cutter-head any vertical adjustment of the latter
55 will at the same time effect the necessary corresponding adjustment of the pressure mechanism when the same depth of cut is to be made in boards of different thicknesses. By making the pressure mechanism longitudinally
60 adjustable it can be readily brought very near the path of the cutting-knives, whatever may be the depth of the cut, and thus secure a better cutting action and avoid all danger of their withdrawing knots from the wood. I
65 have found in practice that the weight of the presser-foot or chip-breaker is sufficient in it-

self to effect a proper action of the cutting-knives, and for this reason it is held in the standards in such manner that it can have a free vertical movement and avoid offering any
70 unnecessary resistance to the passage of the work. The pressure requisite to retain the work upon the bed is exerted by the presser-roll, which offers much less friction than would be given by a weighted presser-foot, and hence
75 allows the material to be fed much more rapidly through the machine.

My object in arranging the rods that sustain the pressure mechanism in such position relative to the upper main feed-roll that it will be
80 lifted thereby when the roll is pressed beyond a certain distance is to insure the proper entry beneath the presser-roll of any unusually-thick material which may have been forced between the main feed-rolls. By this construction the
85 jamming of the material against the presser-foot or presser-roll after passing through the main feed-rolls is entirely avoided. The set-screws in the upper corners of the presser-foot or chip-breaker allow the same to be so ad-
90 justed that it can descend a slight distance below the presser-roll (a quarter of an inch is sufficient) in order to insure its bearing constantly upon the surface of the work. As the bottom edge of the presser-foot is subjected to
95 considerable friction, the set-screws allow it to be lowered when necessary to compensate for wear.

The operation of the machine, as will be seen from the construction as above defined, is as
100 follows: The cutting-knives having been set for the desired depth of cut upon material of certain thickness, the screw-rod is adjusted vertically until the presser-roll will bear with sufficient force upon the work, and the pressure-
105 frame is adjusted longitudinally until the bottom back edge of the presser-foot or chip-breaker is in close proximity to the path of the knives. The main feed-rolls, which are spring-seated and of common construction, are ad-
110 justed in the usual manner. If now the lumber be fed into the machine, it will be found, as already stated, that, without any unnecessary friction, the presser-roll will hold the same firmly upon the bed, and the presser-foot or
115 chip-breaker will secure the accurate working of the cutters and prevent roughness of cut or tearing out of knots. In case the same depth of cut is to be made upon thicker material, it is only necessary to adjust the cutter-head
120 frame in vertical direction, as by so doing a corresponding adjustment of the pressure mechanism is effected. If the depth of cut is varied, a corresponding longitudinal adjustment of the pressure mechanism will be made
125 to bring the chip-breaker in close proximity to the path of the cutting-knives.

Although I have stated in the foregoing description what I regard as the best embodiment of my invention, I do not wish to be un-
130 derstood as restricting myself to the precise details set out, as these may be varied within

wide limits without departing from the spirit of the invention. Some of the features may be used without the others, or in connection with corresponding parts of other machines.

5 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 the weighted rods, of the pressure-frame provided with a presser-roll and a vertically and freely movable chip-breaker, substantially as described.

2. In a planing-machine, the combination, with the cutter-head, of a longitudinally-adjustable pressure-frame carrying a chip-breaker and a presser-roll, substantially as described.

3. In a planing-machine, the combination, with the cutter-head, of the presser-roll and a vertically and freely movable chip-breaker, substantially as described.

4. In a planing-machine, the combination of the weighted rods and longitudinally-adjustable pressure mechanism mounted upon said rods, substantially as described.

5. In a planing-machine, the combination, with the cutter-head, of a longitudinally and vertically adjustable pressure-frame provided with a chip-breaker and a presser-roll, substantially as described.

6. In a planing-machine, the combination, with the cutter-head and a frame for carrying and adjusting the same, of a longitudinally-adjustable pressure-frame sustained by the frame that carries the cutter-head, substantially as described.

7. In a planing-machine, the combination, with the cutter-head and the adjustable frame for sustaining the same, of the weighted rods hinged to said adjustable frame and a pressure-frame adjustably connected to the sustaining-frame of the cutter-head, substantially as described.

8. In a planing-machine, the combination of a pressure-frame having vertical guideways, and a chip-breaker mounted loosely in said guideways and provided with set-screws for its vertical adjustment, substantially as described.

9. In a planing-machine, the combination, with the cutter-head, of the main feed-roll A^2 and the hinged rods C, carrying pressure mechanism and extending beyond and a slight distance above the journal of the main feed-roll in such relation to said main feed-roll as to be lifted thereby when the feed-roll is forced beyond a certain distance, substantially as described.

10. In a planing-machine, the combination, with the cutter-head, of the main feed-roll A^2 , the pressure-frame carrying the presser-roll E, and the hinged rods connected with said pressure-frame and arranged in such relation to said main feed-roll as to be lifted thereby when the feed-roll is forced beyond a certain distance, substantially as described.

11. In a planing-machine, the combination, with the cutter-head and mechanism for sustaining and adjusting the same, of the dependent slotted bar, the screw-rod, the cross-bar, and pressure mechanism, substantially as described.

12. In a planing-machine, the combination, with the cutter-head, of the pressure-standards carrying the presser-roll, and provided with grooves or ways, and the presser-foot or chip-breaker having edges adapted to slide freely on the ways of the side standards, substantially as described.

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Witnesses:

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