(No Model.)

C. S. WARNER.

SECTIONAL ADJUSTABLE PRESSURE BAR AND CHIP BREAKER FOR WOOD PLANING MACHINES.

No. 388,094. Patented Aug. 21, 1888.

Fig. 2.

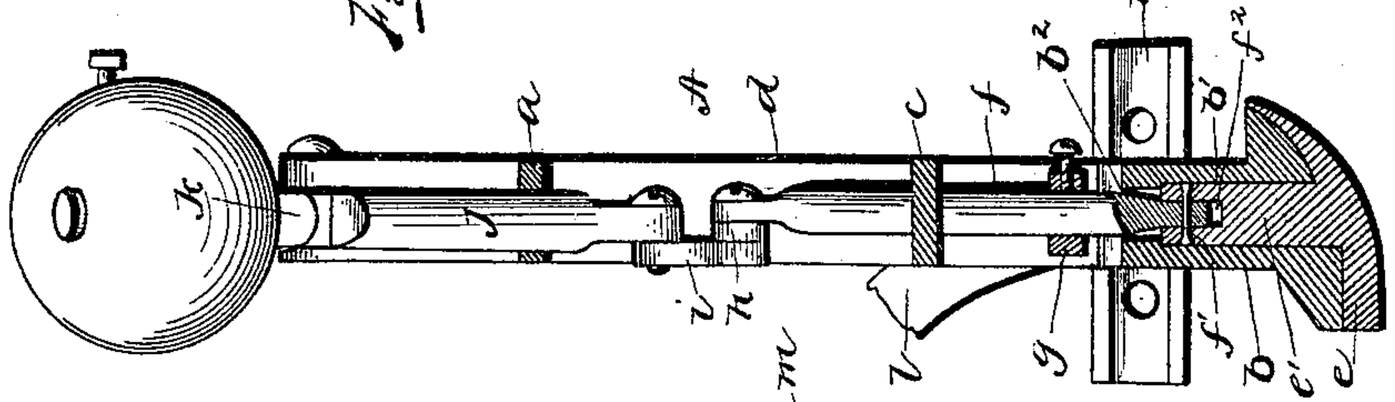
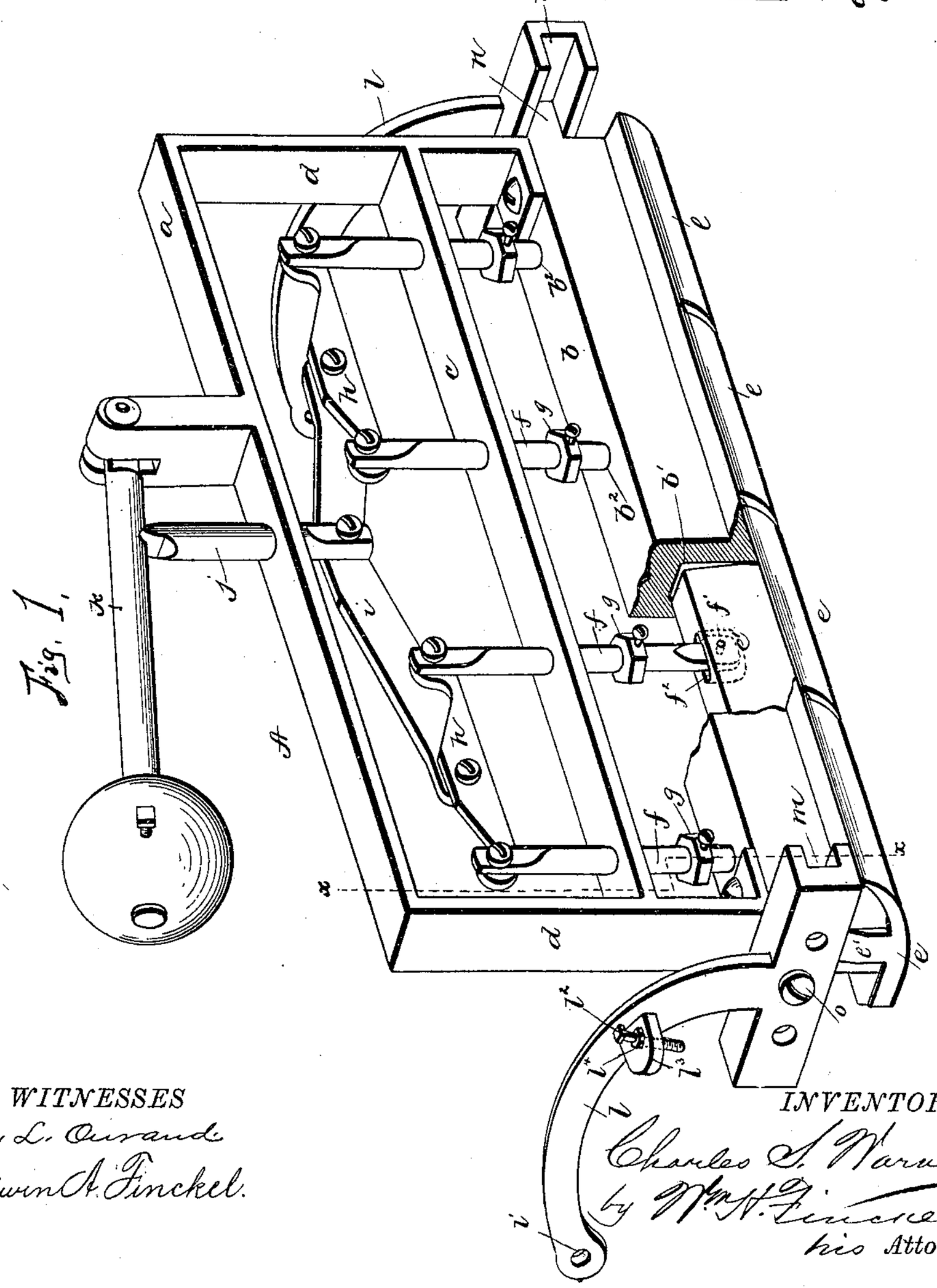


Fig. 1.



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UNITED STATES PATENT OFFICE.

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SECTIONAL ADJUSTABLE PRESSURE-BAR AND CHIP-BREAKER FOR WOOD-PLANING MACHINES.

SPECIFICATION forming part of Letters Patent No. 388,094, dated August 21, 1888.

Application filed May 11, 1888. Serial No. 273,548. (No model.)

To all whom it may concern:

Be it known that I, CHARLES S. WARNER, a citizen of the United States, residing at Gloversville, in the county of Fulton and State of New York, have invented a certain new and useful Improvement in Sectional Adjustable Pressure-Bars and Chip-Breakers for Wood-Planing Machines, of which the following is a full, clear, and exact description.

This invention relates to that class of pressure-bars for wood-planing machines in which a number of shoes or blocks or equivalent pressure-applying devices are employed to hold properly the lumber while being planed.

The object of the invention is to provide a sectional pressure-bar to extend across the entire bed of the planer, and in which the sections yield independently of one another, and are separately self-adjusting and self-conforming to the surfaces and planes of the lumber being acted upon, the pressure being applied directly to the shoes rather than upon their bearings or axes, as has been done heretofore where rollers have been used.

A further object of the invention is to provide such a sectional self-adjusting pressure-bar with auxiliary adjusting mechanism whereby the whole bar may be adjusted as to its height from the bed and also as to its distance from the cutter.

The invention consists in a wood-planer pressure-bar having a suitable number of shoes, each independently suspended from or connected with a compound lever of substantially the construction of a vehicle draft-equalizer, and hereinafter termed an "equalizer;" and the invention also consists of adjustable supporting mechanism for the pressure-bar, all as I will proceed now to set forth and particularly claim.

In the accompanying drawings, illustrating my invention, in the two figures of which like parts are similarly designated, Figure 1 is a perspective view; and Fig. 2, a vertical section taken on the plane of line *x x*, Fig. 1.

In the form of my invention shown in the drawings and illustrating the principle thereof, a frame, A, is employed of dimensions and construction adequate to the machine upon which it is to be used. This frame is rectangular in outline, and is composed of a top rail, *a*, the bottom rail, *b*, and the intermediate cross-rail, *c*, all connected by side or end pieces *d d*. The rail *b* is made with a longitudinal groove, *b'*, and this groove is intersected by a number of transverse openings, b^2, corresponding with the number of shoes used. The shoes *e* have substantially the outline indicated in Fig. 2, and are preferably as long as the narrowest lumber for which the planer is designed. Each shoe has a shank, *e'*, fitted to play in the groove *b'* of the bottom rail, *b*. A stem, *f*, is fitted by a pivot, *f'*, in a socket, f^2, substantially in the longitudinal center of the shank *e'*, and this socket is made enough larger than the stem to permit lateral play or oscillation of the shoe on the stem and in the grooved bottom rail, so as to make it self-conforming to the varying plane of the lumber. An adjustable collar, *g*, is arranged upon the stem *f*, just above the bottom rail, to limit the descent of the shoe.

In a pressure-bar having four shoes, as shown, I employ an equalizer-bar composed of two short levers, *h h*, pivoted centrally to the ends of a third and longer lever, *i*, which in turn is pivoted to a stem, *j*, passed through the top rail and acted upon by a counterbalancing weighted lever, *k*, secured to the frame. The four shoes are connected by their four individual stems to the ends of the levers *h*. By this construction of equalizer the frame only becomes its limit of movement, and hence each shoe has its individual movement first through its lever *h* and then through the common lever *i*. Thus, also, the pressure is equably distributed, while not at all interfering with but rather promoting the adaptability of the shoes to boards of different thickness, of varying planes, and of individual variations in cross-section.

The pressure-bar is secured to the machine—preferably to the frame of the cutter-head—by curved arms or brackets *l*, having grooved ways *m*, in which the bottom rail, *b*, is fitted to slide by its lugs *n*, set-screws *o* being employed to fix the proximate adjustment of the pressure-bar relatively to the cutter-head.

The arms or brackets may be pivoted at their ends *l'* and be provided with set-screws

l^2, arranged in lugs l^3, projecting laterally from the brackets and adapted to bear upon some fixed part of the machine-frame, so as to adjust the height of the pressure-bar from the bed of the planer. A jam-nut, l^4, may be used to secure each set-screw on its lug.

It will be observed that the shoes are not fastened to the frame, but are simply suspended therein. The grooved bottom rail limits their rise, and the collars g on the stems limit their fall. Practically this leaves the shoes with entire freedom of movement within the range of desirable or necessary adjustability. Again, the equalizer is not connected or fixed to the frame, but is suspended therein, the upper rail and cross-rail preventing its escape in their directions and the stems f and j preventing lateral escape. The weighted lever k gives the necessary pressure upon the shoes, and by adjusting the weight on the lever that pressure may be varied.

Instead of four shoes, any multiple of that number of shoes may be employed by correspondingly increasing the equalizers.

What I claim is—

1. A pressure-bar for wood-planing machines, comprising a frame, a grooved bottom rail therein, a suitable number of shoes having shanks arranged in said grooved rail, an equalizer composed of two levers, to the ends of which the shoes are flexibly connected, and a third freely-moving lever, to which the said two levers are pivoted, and a counterbalancing device, substantially as described.

2. A frame, A, composed of a top rail, a grooved bottom rail, an intermediate cross-rail, and suitable connections, combined with a series of shoes having shanks arranged in said grooved rail, a three-lever equalizer, and stems flexibly connected to the shoes and to the equalizer, and a counterbalancing device, whereby individual self-adjustment is permitted to each shoe, substantially as described.

3. A frame composed of a top rail and a grooved bottom rail, combined with a series of shoes having shanks fitted looosely in said bottom rail, stems flexibly pivoted to said shanks about midway of their lengths and provided with adjustable detents for limiting the descent of the shoes, a three-lever equalizer loosely arranged in said frame, and to which said stems are flexibly connected, and a counterbalancing device applied to said equalizer, substantially as described.

4. A frame, A, comprising a top rail and a grooved bottom rail, combined with an equalizer composed of the levers h h, the lever i, to the ends of which said first-named levers are pivoted, and which lever i is provided with a stem or post rising freely through the top rail of the frame, the equalizer being thus freely suspended within the frame, a counterbalancing device applied to the equalizer stem or post, and shoes arranged in the grooved bottom rail, and stems connected flexibly to the shoes and to the levers h h, substantially as described.

5. A pressure-bar for wood-planing machines, composed of a frame having a bottom rail, shoes therein, and an equalizer to which such shoes are connected, combined with pivotal arms or brackets having grooved ways m, receiving lugs on the bottom rail, and set-screws for fixing the bottom rail in adjusted position in said ways, to vary the proximity of the pressure-bar to the cutter-head, substantially as described.

6. A pressure-bar for wood-planing machines, composed of a frame having a bottom rail, shoes therein, and an equalizer to which such shoes are connected, combined with pivotal arms or brackets having grooved ways m, receiving lugs on the bottom rail, and set-screws for fixing the bottom rail in adjusted position in said ways, to vary the proximity of the pressure-bar to the cutter-head, and set-screws on the sides of the brackets or arms, to vary the height of the pressure-bar from the bed of the planing-machine, substantially as described.

In testimony whereof I have hereunto set my hand this 9th day of May, A. D. 1888.

CHARLES S. WARNER.

Witnesses:

FRANK L. EASTERLY,

NELSON H. ANIBAL.