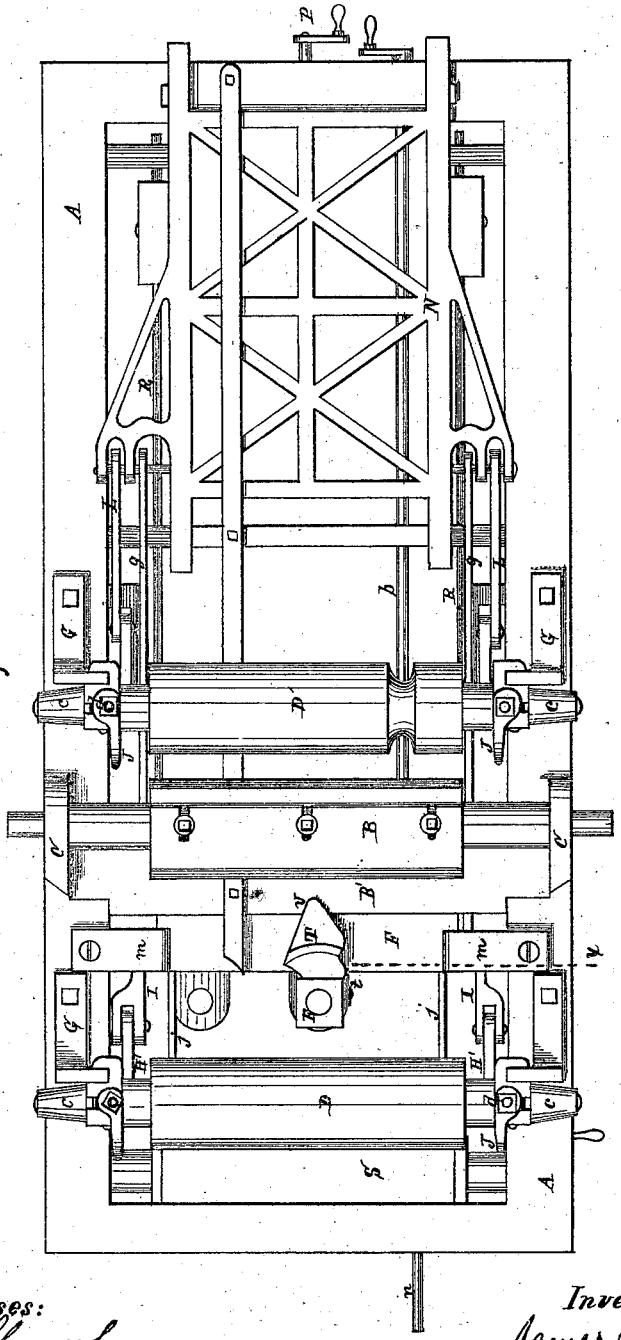
2 Sheets--Sheet 1.

J. S. GRAHAM.

Wood-Planing Machine.

No. 164,989. Patented June 29, 1875.

Fig 1.



Witnesses:
P. A. Loughborough
Dexter Reynolds

Inventor:
James S. Graham
By Wm. A. Loughborough
Atty

THE GRAPHIC CO. PHOTO-LITH. 39 & 41 PARK PLACE, N.Y.

2 Sheets--Sheet 2.

J. S. GRAHAM.

Wood-Planing Machine.

No. 164,989. Patented June 29, 1875.

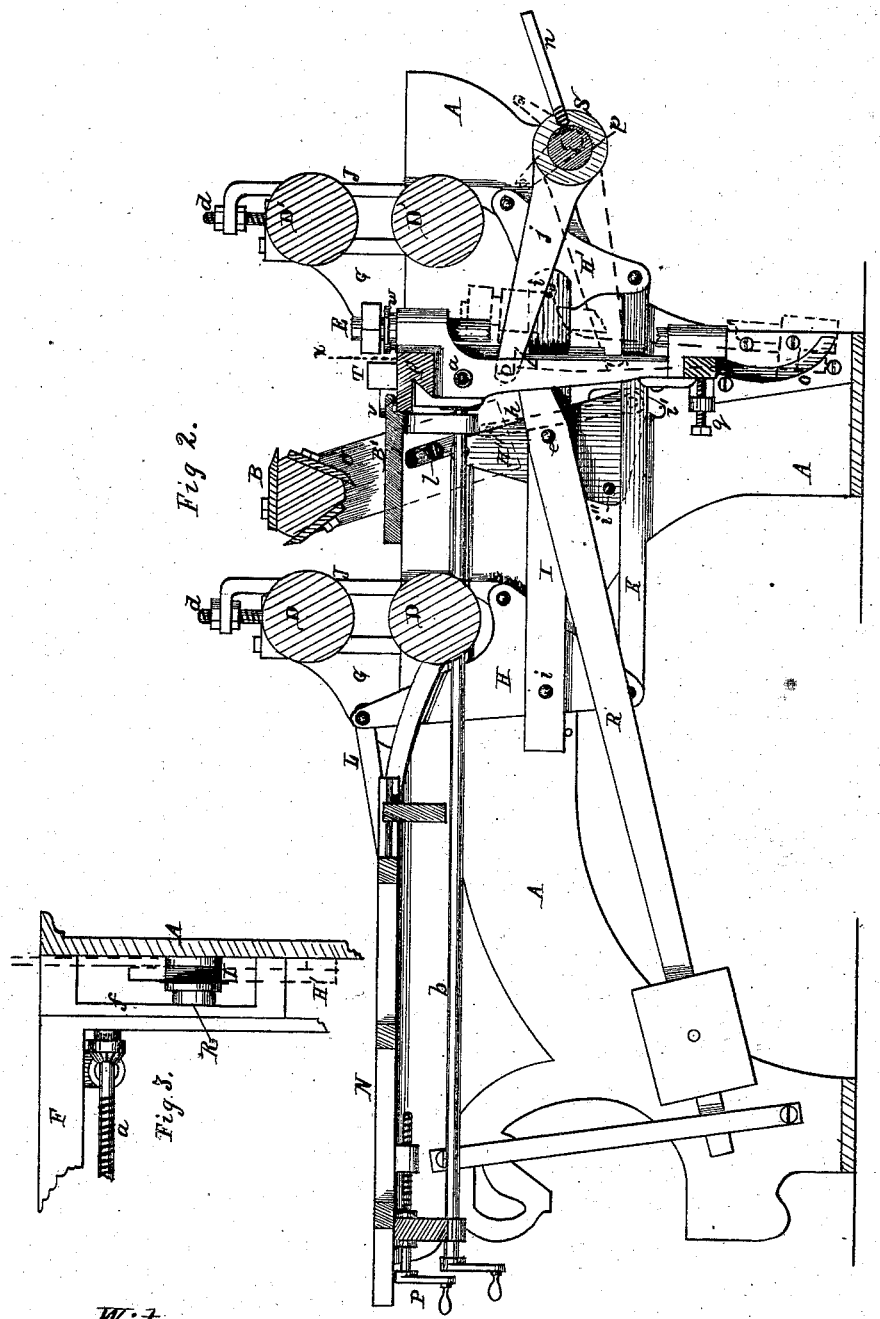


Fig 2.

Fig 3.

Witnesses:
P. A. Loughborough
Dexter Reynolds.

Inventor:
James S. Graham
By Wm. P. Loughborough
Atty

THE GRAPHIC CO. PHOTO-LITH. 39 & 41 PARK PLACE, N.Y.

UNITED STATES PATENT OFFICE.

JAMES S. GRAHAM, OF ROCHESTER, NEW YORK.

IMPROVEMENT IN WOOD-PLANING MACHINES.

Specification forming part of Letters Patent No. **164,989**, dated June 29, 1875; application filed January 13, 1873.

To all whom it may concern:

Be it known that I, JAMES S. GRAHAM, of Rochester, in the county of Monroe and State of New York, have invented certain Improvements in Wood-Planing Machines, of which the following is a specification:

My invention relates to the machine known as the Woodworth planer and matcher; and it consists, mainly, in a method of raising the feed-rollers and cutter-heads simultaneously by means of a single regulating crank or handle, and also in a device for sustaining the matcher-frame, whereby the matcher-heads may be dropped out of line of the board when not in use, and in a novel chip-breaker applied to the matcher head or heads. It further consists in a certain construction and arrangement of the parts, whereby the above results are obtained in a simple and direct manner.

In the accompanying drawings, Figure 1 is a plan view of my improved planer. Fig. 2 is a vertical side sectional elevation. Fig. 3 is a partial cross-section, on dotted line *x*.

A, Figs. 1 and 2, is the frame which supports the working parts of my machine. B is the cutter-head, to which are attached the surfacing-cutters; and E E, the matcher-heads. D D′ are the feed-rollers, journaled in the boxes *c*, which slide vertically upon ways formed on the brackets G, the latter being secured to the main frame A, and the cutter-head has bearings upon the uprights C C, which are also vertically adjustable in ways provided upon the frame A. F is an independent frame, to which the matcher-hangers are attached, one being stationary and the other adjustable laterally, to accommodate boards of different widths as dressed in this class of machines. This adjustment is preferably accomplished by means of the screw *a*, Figs. 2 and 3, and shaft *b*, the latter actuating the screw by bevel-gears, and carrying at its outer extremity a crank for operating it. H and H′, Fig. 2, are bell-cranks, pivoted upon a bar, I, and one arm of which is connected to the boxes *c* of the feed-rollers by links J and eyebolts *d*, and said boxes are adjustable with reference to the links and bell-cranks by means of jam-nuts upon these bolts. A link, K, connects other arms of the bell-cranks, and causes them to move together. The bell-crank H is provided with a third arm, and a link, L, is jointed thereto and upon a suitable stud or pin secured to the table N. This table slides longitudinally upon the frame of the machine, and its position is controlled by means of the screw and crank P, Fig. 2, or other suitable device. Thus it will be seen that when the screw is revolved the bell-cranks H and H′ are oscillated upon their pivots *i* on the bar I, and the rollers D are raised or lowered simultaneously. The bar I is independent of the frame of the machine, and a weighted lever, R, is pivoted to it at *e*, Fig. 2, and is hinged at its extremity to the offset-bar *f*, Figs. 2 and 3. This bar is fastened to the frame of the machine, and forms the lateral guide for the matcher-frame F, before mentioned. By this means the weight acts upon the bar I, and through it upon the feed-rollers D D, and since this arrangement of parts is applied to both sides of the machine, as indicated in Fig. 1, all the roller-boxes are thus operated. The advantages of this construction are, first, by the use of the bell-cranks and adjusting-screw the rollers may be quickly set by the operator without moving from his position; second, the bar I being independent, either roller may rise or fall without influencing the other, or both may rise or fall together; third, the relative height of the rollers may be adjusted without disturbing the common adjustment of both by means of the screws *d*; fourth, since the parts just described are alike at each end of the feed-rollers, but each set independent of the other, it follows that either end of either roller may accommodate itself to inequalities in the lumber without influencing the other parts.

For the purpose of adjusting the cutter-head simultaneously with the feed-rollers, I provide another bell-crank, H″, which is pivoted to the frame of the machine, one arm being linked to the table N by the bar *g*, and the other connected to the standards C by the link *h*, shown in the dotted lines. The latter is jointed to the bell-crank by a stud, which projects through a slot, *i′*, in the frame A, and the link *h* thus lies outside of said frame. A clamping-bolt, *l*, Fig. 2, passes transversely across the machine, acting, when tightened, to bind the uprights C upon the frame A. It

is clear that if the bell-cranks H, H′, and H″ are properly proportioned, the vertical movements of the rollers and cutter-head will be equal and simultaneous by any longitudinal adjustment of the table N. The crank H″, being pivoted to the frame A, does not partake of the independent movements of the bar I, and when the bolt *l* is tightened, the cutter-head boxes are firmly fixed to the frame, but may be adjusted at any time by slacking said bolt. It may be desirable at times to shift the rollers independently of the cutter-head, and for this purpose a notch or gab may be provided at the end of the link *g*, by which it may be unhooked from the pin or stud in the table N. The matcher-frame F is fitted to move easily between the bars *f*, before described, and stops *m*, Fig. 1, determine its vertical position, and it rests laterally against the bed B′ and the set-screw *q* in the frame A.

This matcher-frame is constructed to be dropped out of the line of the travel of the board, when not in use, by means of the arms *j*, hinged to said frame, and secured to a sleeve, S, which revolves loosely upon the shaft *p*. A shifting-lever, *n*, is provided in the sleeve, and it is plain that by throwing this lever up the matcher-frame will descend to the position shown in dotted lines in Fig. 2. The lower end of the frame is guided laterally by the groove *o*, into which a stud upon said frame projects, thus preventing the latter from swinging over against the feed-rollers.

The extremities of shaft *p* are turned eccentric, as shown in dotted lines in Fig. 2, and have bearings in the frame of the machine. When the shaft is swung over to the position shown in Fig. 2 by a suitable crank or handle it will be noticed that the sleeve S is forced to the left, carrying with it the matcher-frame. By this means the latter, when elevated, is firmly clamped against the bed B′ and set-screw *q*. To lower the matcher-frame it is only necessary to give the shaft *p* a partial revolution, by which the frame is thus unclamped and allowed to drop, swinging upon the arms *j* and sleeve S. The set-screw *q* serves to adjust the matcher-spindles to a perpendicular. A chip-breaker, T, is provided upon the adjustable matcher-head, and has lips *v*, clasping a way formed upon the edge of the bed B′. A groove, *w*, is turned in the matcher box, into which a flange of the chip-breaker fits loosely, and the latter may thus oscillate freely around the matcher-head, such movement being limited by a suitable stop or stops. A spring, *t*, holds the face of the breaker against the edge of the board.

By this construction, the chip-breaker has an independent movement around the matcher-head, while it may also partake of its lateral adjustment. When the matcher-frame is lowered, the chip-breaker is removed by giving it a partial revolution around the head, thus disengaging the lips *v* from the way.

The axis of the matcher-head being that around which the chip-breaker swings in its adjustments, it will be seen that the latter can never, whatever its movement may be, interfere with the action of the matcher-head.

What I claim as my invention is—

1. The combination of the bell-cranks H and H′, feed-rollers D and D′, and suitable connecting-links, and the common adjusting-handle P, screw-shaft, and table N, operating substantially as set forth.

2. The combination of the yielding fulcrum-bar I, weighted lever R, bell-cranks H and H′, feed-rollers D and D′, and suitable connecting-links, operating substantially in the manner described.

3. The combination of the bell-cranks H, H′, and H,″ suitably linked to each other and to the rollers D and D′ and cutter-head B, and the adjusting-handle P and table N, whereby said rollers and cutter-head may be simultaneously adjusted.

4. In combination with the independent matcher-frame F, the sleeve S, and its eccentric supporting-shaft *p*, and connecting-bars *j*, arranged to operate conjointly for the purposes set forth.

5. The chip-breaker T, provided with the lips *v*, and detachably hung upon the matcher-shaft E as an axial center, in combination with the spring *t* and frame F, substantially as and for the purposes shown and described.

6. The matcher-frame F, carrying the matcher-shaft E, in combination with the gears upon the adjusting-screw *a* and rod *b*, as and for the purposes shown and described.

7. The matcher-frame F, resting in the curved grooves *o*, and so arranged as to receive its horizontal and vertical movements by means of the lever *n* and cam or eccentric *j*, whereby the said frame is retained in a vertical or nearly vertical position at all times, as shown and described.

JAMES S. GRAHAM.

Witnesses:

WM. LOUGHBOROUGH,

J. M. HOWE.