

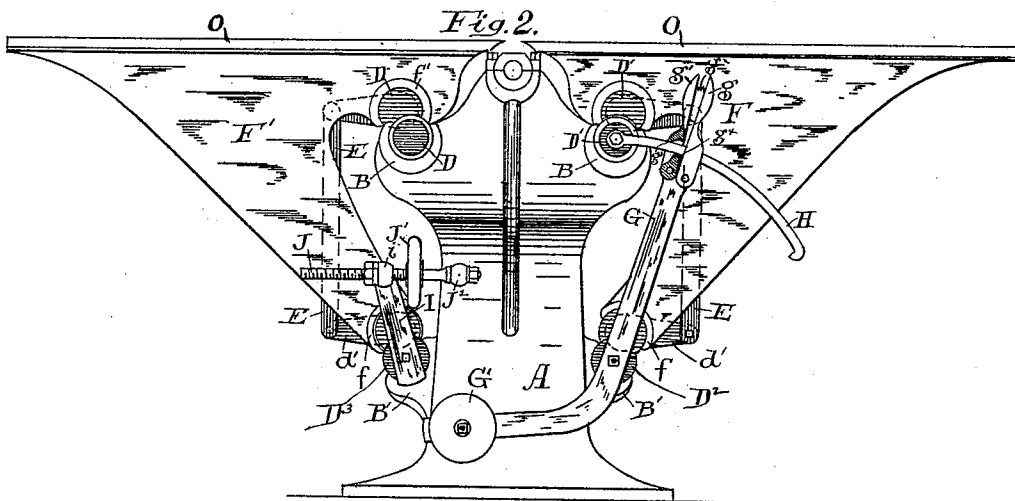
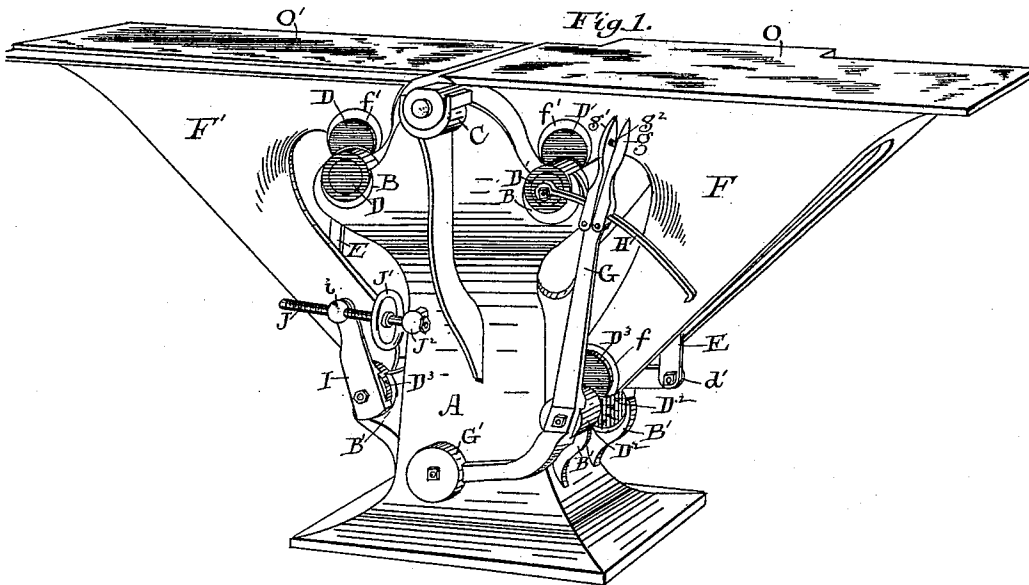
(No Model.)

2 Sheets—Sheet 1.

F. B. PHILBRICK.
CYLINDER PLANER.

No. 397,246.

Patented Feb. 5, 1889.



Witnesses:

F. K. Shaw
J. E. Sawdell

Inventor:

Frank B. Philbrick
by J. M. Bates his atty.

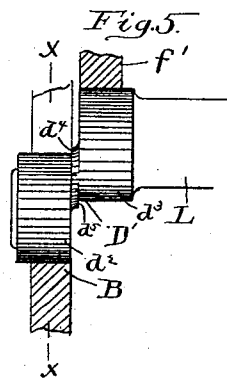
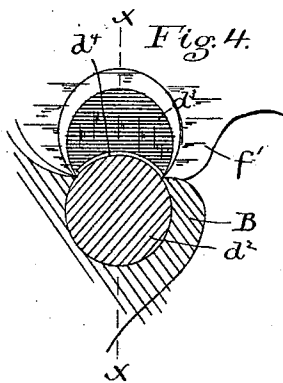
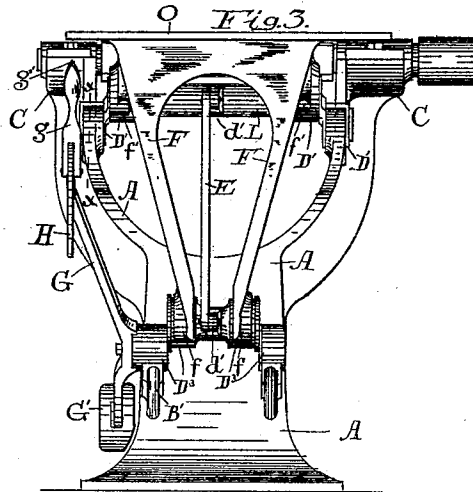
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J. C. Sawtelle

Inventor:
Frank B. Philbrick
by S. W. Bates & Co.

UNITED STATES PATENT OFFICE.

FRANK B. PHILBRICK, OF WATERTVILLE, MAINE, ASSIGNOR OF ONE-HALF TO
FRANK B. WEBBER, OF SAME PLACE.

CYLINDER PLANER.

SPECIFICATION forming part of Letters Patent No. 397,246, dated February 5, 1889.

Application filed August 1, 1888. Serial No. 281,699. (No model.)

To all whom it may concern:

Be it known that I, FRANK B. PHILBRICK, a citizen of the United States, residing at Waterville, in the county of Kennebec and State of Maine, have invented certain new and useful Improvements in Cylinder Planers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to cylinder planers of that class commonly called "buzz" planers, which consist of a cylinder-head having a table on each side whose upper surfaces are approximately on a level with the upper surface of the cylinder-head, one or both being adjustable vertically. They are used for planing the surfaces of short pieces of lumber, rabbeting door-frames, and for other like work.

My invention is directed to the production of a planer which shall combine cheapness, simplicity, and strength, and particularly to an improved construction of the bearings by which the cams which raise and lower the tables are connected with the standard and the brackets on which the table rests. Hitherto these bearings or parts of them have been detachable and separate parts of the machine, and, being constructed in the ordinary form, they were necessarily attached to the standard by bolts or otherwise. By the use of my improvement I am enabled to cast the standard and its bearings all in one piece, and in like manner the bed and its brackets and bearings are also cast in one piece, thus saving much expense in finishing many parts and making my machine very solid and durable.

My invention consists, essentially, in forming the standard and the bearings integral. The latter, instead of having a circular opening, as usually made, are open at the top for a space of less than the semi-circumference of the bearing. The brackets and their bearings are also integral and have a similar construction, except that the opening is downward, the cams being sufficiently eccentric so that they can be slipped laterally into place, and when turned slightly will be locked in all directions.

The invention also consists of the various combinations of parts, as hereinafter set forth in the claims.

In the accompanying drawings I illustrate a machine which embodies my invention, although I do not wish to limit myself to the exact features here shown.

In the drawings, Figure 1 is a perspective view. Fig. 2 is a side elevation. Fig. 3 is an end elevation. Fig. 4 is an enlarged section on the line *xx* of Fig. 5. Fig. 5 is a section on the line *xx* of Fig. 4.

The standard or support A is provided with the usual base. The lower portion has its four sides continuous. Near its upper end the sides diverge to a considerably greater width than at the lower part, and they also extend out lengthwise of the machine to form the upper bearings, B B.

All the bearings—ten in number—are cast in one piece with the standard. These consist of the bearings C for the cylinder-head at the extreme upper and central part, four bearings, B B, two on each side and near the top, and the four bearings B' B' near the bottom. The upper bearings B do not form complete circles, but they are open at the top for a space of less than a semicircle. They present in section the figure of a circular segment greater in area than half a circle, with the top portion cut away. The lower bearings have a similar opening at the top, except that they are made, preferably, as half-bearings, or nearly so.

The two tables O O' and their supporting-brackets F F' are cast all in one piece, including the four bearings in each bracket. These brackets have a general triangular shape and are placed one under each side of its table, and the lower ends draw together or approach each other to adapt themselves to the width of the standard. The upper bearings *f' f'* on the brackets are similar in construction to the bearings B B, except that the segmental opening is downward instead of upward, and the two lower bearings are in the form of a half-circle, or they may be made less than a half-circle.

The upper bearings, B and *f'*, are adapted to fit the cams D and D', which are identical

in form. Each of these cams is formed of a cylindrical bearing, d^2 and d^3 , (see Figs. 4 and 5,) the outer bearing, d^2 , fitting the bearing B in the standard and the inner bearing, d^3 , fitting the bearing f' in the bracket. These two cylindrical portions of the cam are formed integral and are eccentric as to each other, lapping, as here shown, something less than one-half of a circle. The amount which these circular sections overlap each other or the solid portion which joins them, is about equal in extent, as here shown, to the open space left in the bearings, so that when the centers of the cam are in a vertical position relative to each other, and the bearings are in a like position, the former can be slipped endwise through the latter into position. When, however, the cam is turned slightly in either direction, the lateral outer surface of the inner section or bearing comes against the inner edge of the bearing B of the standard and the inner lateral surface of the outer section, d^2 , comes against the bracket. It will thus be seen that when the cams are slipped in in a vertical position and then slightly turned they are locked against any lateral pressure in both directions, as well as any horizontal or vertical pressure.

The lower cams are similar in form to the upper ones and are fitted to the half-bearings B' and f' . Each pair of cams on opposite sides is united by a shaft or arbor, L, (see Fig. 3,) the shaft which unites the lower cams being much shorter than those which join the upper ones. Each shaft has formed integral with it, as here shown, a short arm or lever, d' , which projects horizontally outward when the tables are raised, and the ends of the arms, which are vertically over each other, are connected by a link, E.

To the lower cam, D^2 , at one side of the machine, is attached the hand-lever G. The lever is secured by passing through a slot in the face of the cam to which it is bolted. The lower end of the lever G, which is bent to occupy a substantially-horizontal position, is provided with a counter-weight, G' . On the upper end of the lever G is a fixed handle, g , and a pivoted handle, g' , arranged side by side, in the usual manner. A spring, g^2 , is inserted between them at their upper ends and acts to force them apart. A segment, H, is pivoted, as here shown, to the outer section of the cam D' and passes through openings in the handles g and g' .

The opening in the pivoted handle g' is cut away to form two pinching edges or surfaces, one, g^3 , above the segment and on the outside of the handle or the side farthest from the spring, and one, g^4 , on the under side of the segment on the inside of the handle. At the end of the segment there is a hook or stop to limit the motion of the lever.

To the cam D^3 , which supports the back table, there is attached a short arm, I, to the end of which is pivoted a nut, i . A screw, J, passes through the nut i , the end of the screw

being secured to a stud, J^2 , in such a manner that it is capable of being rotated. The stud J^2 is pivoted to the side of the machine and the screw J is provided with a hand-wheel, J' .

The machine is made up and may be put together in the following manner, namely: The bearings having been properly faced and turned, the upper bearings in each bracket are placed in position in a vertical plane above the bearings in the standard. The upper cams are then slipped in endwise, as before described, and the lower cams are simply dropped into place in their bearings, which is readily done, since the latter are in form semicircular. The lower bearings of each bracket are now brought to rest on the lower cams, and, finally, the link E is inserted, which locks all parts in position, so that they cannot be displaced. Segmental shoulders d^4 and d^5 are formed between the two cam-bearings d^2 and d^3 , Fig. 5, to take the bearing against the table and the standard and to save finishing the entire face of the cams. The lever G and the arm I are attached to the cams in any suitable manner.

It will be seen that I am enabled by the use of my improved structure to make the main part of my machine practically in three pieces—namely, the two tables and the standard—dispensing entirely with all detachable bearings both on the standard and on the brackets. This adds great strength and rigidity to the machine, among other things enabling me to plane off the tables or beds after the machine is set up, thus securing the most exact alignment. The use of the lever G gives me quick control over the table, and the clamp and segment render the nicest adjustment possible.

It is evident that many changes and modifications may be made in my machine, as here illustrated and exactly described, without departing from the spirit of my invention as expressed in the claims.

The device here shown and described for raising and lowering the rear table, F' , and that for raising and lowering the front table, F, are designed to be used in one machine, they being especially adapted to the requirements of each case.

I claim—

1. In a cylinder planer, the combination of a standard or support, a bed or table supported by brackets, cams for forming a vertically-adjustable connection between said brackets and said standard, each of said cams having two cylindrical bearings eccentric with each other, bearings in said support each formed to surround or inclose more than the lower half and less than the whole of one of the cam-bearings, and bearings in the bracket formed to surround more than the upper half and less than the whole of the other cam-bearing, whereby the said cam may be inserted endwise into its position, substantially as described.

2. In a cylinder planer, the combination of

a standard or support, a bed or table supported by brackets, cams for forming a vertically-adjustable connection between said brackets and said standard, each of said cams having two cylindrical bearings eccentric with each other, bearings in said support and formed integral with it and so formed as to inclose or surround more than the lower half and less than the whole of one of the cam-bearings, and bearings in said brackets formed integral therewith and formed to surround more than the upper half and less than the whole of the other cam-bearing, substantially as shown.

3. In a cylinder planer, the combination of a base or support, a bed or table supported by brackets, cams for raising and lowering said brackets and having bearings in said support and in said brackets, a lever attached to said cams for rotating the same, and means for clamping the same in any desired position, substantially as shown.

4. In a cylinder planer, the combination of a base or support, a bed or table supported by brackets, an upper and a lower set of cams for connecting said brackets with said support, arms connected with said cams and a link connecting said arms, a hand-lever connected with one set of cams, and means for clamping the same in place, substantially as shown.

5. In a cylinder planer, the combination of a support, a rear table and a front table supported by brackets, cams for forming a vertically-adjustable connection between said standard and said brackets, a lever for rotating said cams, a rigid handle and a pivoted handle at the upper end of said lever, a segment passing through an opening in said pivoted handle, a pinching-surface above and below said segment, and a spring for forcing said handles apart and clamping said lever, substantially as shown.

6. In a cylinder planer, the combination of a base or support, a front table, a rear table supported by brackets, cams for raising and lowering said brackets and having bearings in said support and in said brackets, a lever for rotating said cams, a nut pivoted to the end of said lever, a screw working in said nut and having one end secured to a stud pivoted to said support, and a hand-wheel for rotating said screw, whereby said bed or table may be accurately adjusted for small vertical distances, substantially as shown.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK B. PHILBRICK.

Witnesses:

S. W. BATES,

HARRIET J. LARRABEE.