

(No Model.)

2 Sheets—Sheet 1.

E. D. JOHNSTON.
PLANING MACHINE FOR BLOWER PISTONS.

No. 509,086.

Patented Nov. 21, 1893.

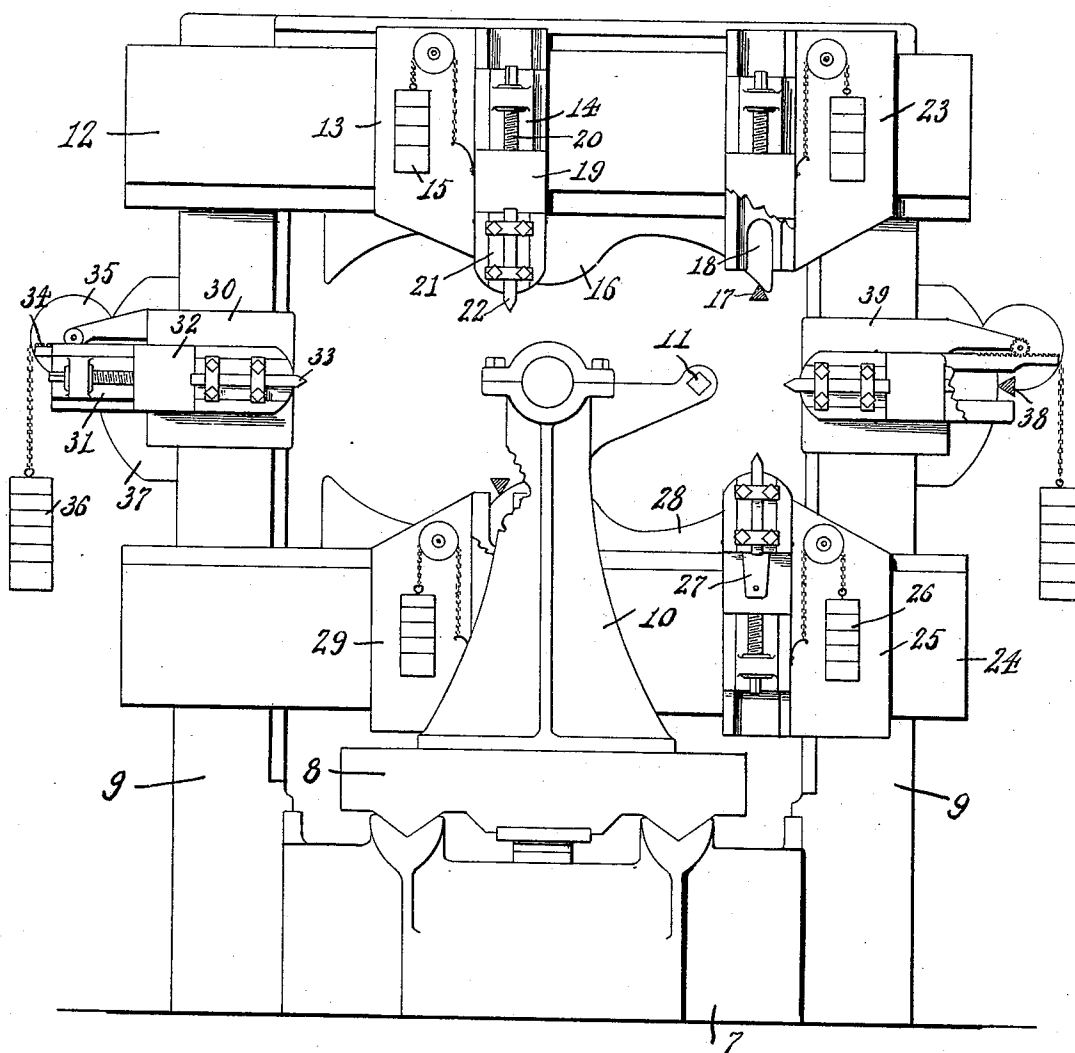


Fig. 1.

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M. S. Belden

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by James W. See
Attorney

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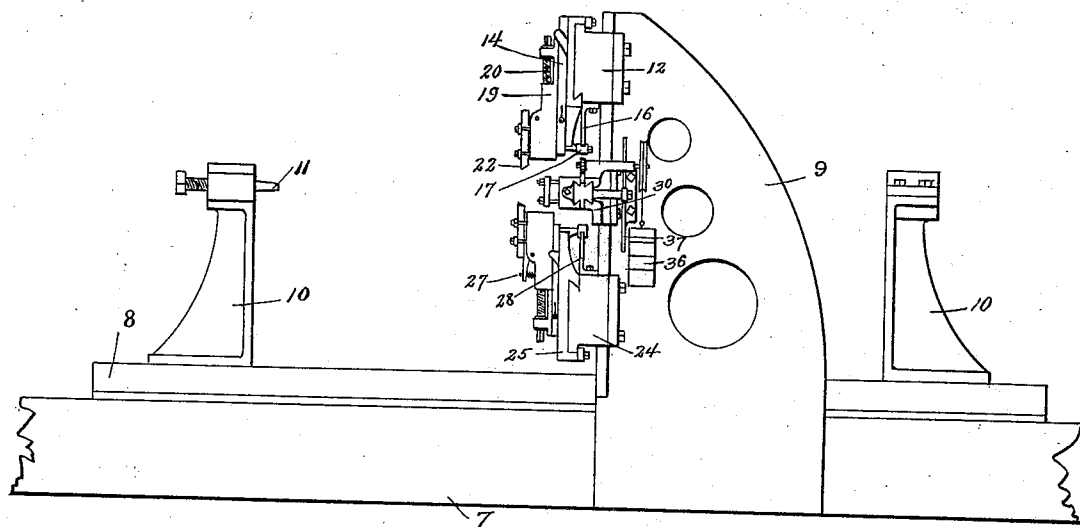


Fig. 2.

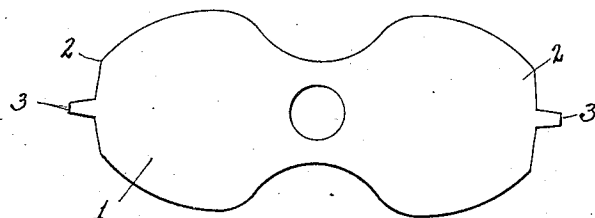


Fig. 3.

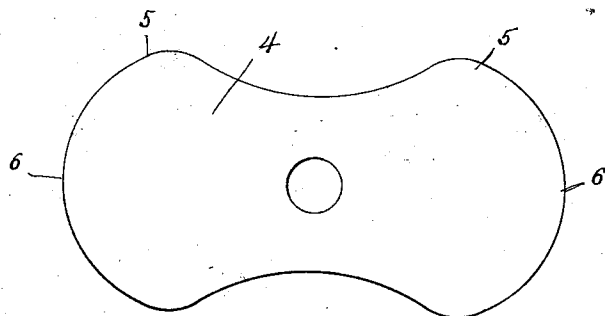


Fig. 4.

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UNITED STATES PATENT OFFICE.

EDGAR D. JOHNSTON, OF CONNERSVILLE, INDIANA.

PLANING-MACHINE FOR BLOWER-PISTONS.

SPECIFICATION forming part of Letters Patent No. 509,086, dated November 21, 1893.

Application filed March 13, 1893. Serial No. 465,751. (No model.)

To all whom it may concern:

Be it known that I, EDGAR D. JOHNSTON, of Connerville, Fayette county, Indiana, have invented certain new and useful Improvements in Planing-Machines for Blower-Pistons, of which the following is a specification.

This invention relates to improvements in planing machines for dressing the curved contacting surfaces of the pistons or revolvers of rotary blowers, and the improvements will be readily understood from the following description taken in connection with the accompanying drawings, in which—

Figure 1, is a front elevation of a planing machine illustrating my improvements, parts being broken away in places; Fig. 2, a side elevation of the machine; Fig. 3, an end view of one form of blower-piston designed to be planed in my improved machine; and Fig. 4, an end view of another form of blower-piston designed to be planed in my machine.

In the drawings:—1, Fig. 3, indicates one form of blower-piston. 2 are peripheral points thereon between which is comprehended convex and concave curves whose surfaces are to be accurately planed parallel with the axis of the piston, such planing however being not absolutely essential at the central concave curve.

3, are packing ribs projecting from the peripheries of the piston, in the line of the major axis of the curves of the piston, the extremities of these ribs being dressed to a circle to fit the cylinder of the blower; the peripheral portions of the piston at each side of these ribs, not being necessarily dressed, the entire piston shown in Fig. 3 therefore calls for the accurate dressing of four convex curves from the points 2 inwardly, and for the dressing of the two packing ribs.

4, Fig. 4, indicates a second form of piston whose periphery is formed by an unbroken curve requiring to be dressed throughout.

5, are points in the curve where the convex end curves join the smaller convex-side curves.

6, are the convex end curves.

7, is the bed of the planing machine. 8, is the table thereof.

9, are the housings.

10, is a pair of housings secured to the table and having journal boxes in their upper ends

adapted to receive the journals of the shaft of the blower piston and support the piston rigidly with the axis of its shaft parallel with the path of movement of the planer table.

11, is a clamp pin carried by one of the housings 10 and adapted to be projected into a proper hole in the end of the blower-piston whereby the piston, when supported in the housings 10, is held against rotation in the housings 10 and in an accurate position.

12, is a rail secured against the upper portion of the housings 9 of the planer. 13, is a saddle fitted to slide along this rail. 14, is a tool slide fitted to slide vertically in a dove-tail in this saddle.

15, is a counterbalancing weight connected with the tool slide and adapted to draw it upward in the saddle.

16, is a templet rigidly secured to the lower edge of the rail and having its lower edge formed into a curve corresponding with the curve to be produced upon the upper surface of the blower-piston, as from 2 to 2 in Fig. 3.

17, is a stud projecting rigidly from the lower end of tool slide 14 rearwardly under the templet 16 and armed at its rear end with an upwardly presenting knife edge making contact with the curve of the templet, the arrangement being obviously such that counterweight 15 tends to hold the slide 14 upward as far as the contact of stud 17 with the templet will permit.

18, is a downwardly opening notch in the lower portion of the saddle to the rear of tool slide 14 to permit of the rise and fall of stud 17 as that stud follows the curve of the templet.

19, is a tool block fitted to slide vertically in a dove-tail upon the front of tool slide 14.

20, is an adjusting screw engaging the tool slide and tool block and serving as means by which the tool block 19 may be vertically adjusted upon slide 14.

21, is an apron pivoted in the front of tool block 19 and provided with a tool clamp.

22, is a tool held in the tool clamp of the apron and presenting its cutting point downwardly in the vertical plane of the axis of stud 17.

23, is a second saddle upon rail 12, similarly provided with the described accessories.

24, is a second rail rigidly secured against

the planer housings 9 below the axis of the housings 10 and above the table of the planer.

25, is a saddle, similar to saddle 13, fitted to slide upon this lower rail and provided with the accessories described in connection with saddle 13, the parts being however inverted so that the cutting tool presents its point upwardly. 26, is a counter-weight tending to hold the tool slide of this saddle up, the action of this counter weight, however, being different from that of counter-weight 15 in that counter weight 15 tended to pull the cutting tool away from its fork, this tendency of the weight being resisted by the weight of the tool slide and parts carried by it, while in case of counter-weight 26 the counter-weight tends to urge the tool into the work, the action of the counter-weight being resisted by the gravity of the tool slide and its attached parts.

27, is a spring tail projecting downwardly from the apron which carries the tool of saddle 25, the office of this spring tail being to urge the apron into normal working position and still permit it to swing forward for the relief of the tool upon the backing stroke of the planer.

28, is a templet rigidly secured to the upper surface of rail 24 and having its upper edge in the form of a guiding curve similar to that of templet 16.

29, is a second saddle upon the rail 24, similar in construction and accessories to saddle 25.

30, is a fifth saddle arranged for vertical sliding motion upon one of the housings 9 of the planer. 31, is a tool slide sliding horizontally in this saddle. 32, is a tool block sliding horizontally on this tool slide and controlled in its position upon the tool slide by a screw as in the case of the other saddles. 33, is the cutting tool pertaining to this saddle and carried in an apron pivoted in tool block 32.

34, is a rack upon tool slide 31 and engaged by a pinion journal in a portion of saddle 30. 35, is a sheave upon the shaft of this pinion.

36, is a counter-weight suspended by a chain winding upon sheave 35.

37, is a templet rigidly secured to the outer surface of the planer housing on which saddle 30 slides, this templet presenting a guiding curve outwardly.

38, is a knife edge stud projecting rearwardly from tool slide 31 and engaging the guiding edge of templet 37, the templet therefore controlling the position of the tool slide and parts carried by it, and the counter-weight 36 tending to urge the tool slide inwardly and hold the knife edge in contact with the templet; and 39, is a saddle upon the opposite housing of the planer, similar in construction and provisions to the saddle 30.

No illustration or description is given of the means for traversing the saddles upon the rails, &c., on which they move, as such means

will be the same as is usual with planing machines, as will also be the means for giving reciprocating motion to the table of the machine. The blower piston having been secured in the housings 10, and the cutting tools properly set, the cutting tools will reproduce upon the piston the curves defined by the templets. For blower pistons of the form indicated in Fig. 4, the four templets would be employed, but for pistons of the form indicated in Fig. 3, the templet 37 may be omitted as the only requirement is that the tools at the side shall dress a narrow rib, and the face of the tool may be relied upon to give the proper form to these narrow ribs.

I claim as my invention—

1. The combination, substantially as set forth, with a planer bed, planer table, and planer housings, of a pair of shaft housings projecting upwardly from the table and adapted to support a blower-piston by its axial shaft, a rail secured to the planer housings above the axis of the shaft housings, a rail secured to the planer housings below the axis of the shaft housings, one or more saddles fitted to slide upon each of said rails, tool slides and accessories carried by said saddles, templets mounted upon said rails, and studs carried by said tool slides and engaging the templets of their respective rails.

2. The combination, substantially as set forth, with a planer bed, planer table, and planer housings, of a pair of shaft housings projecting upwardly from the table and adapted to support a blower-piston by its axial shaft, a rail secured to the planer housings above the axis of the shaft housings, a rail secured to the planer housings below the axis of the shaft housings, one or more saddles fitted to slide upon each of said rails, tool slides and accessories carried by said saddles, templets mounted upon said rails, studs carried by said tool slides and engaging the templets of their respective rails, saddles arranged to slide upon the planer housings, templets secured to the planer housings, and tool slides and accessories at the saddles of the housings and having studs engaging the templets on the housings.

3. The combination, substantially as set forth, with a planer bed, planer table, and planer housings, of shaft housing projecting upwardly from the planer table and adapted to support a blower piston by its axial shaft, a rail secured to the planer housings, a templet secured to said rail and presenting a curved edge toward the axis of said shaft housings, a pair of saddles fitted to slide upon said rail, a tool slide in each of said saddles, tool carrying accessories upon said tool slides, and studs projecting from said tool slides into engagement with said templet.

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Witnesses:

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