2 Sheets--Sheet 1.

HENRY A. LEE.

Improvement in Planing Machines.

No. 120,589. Patented Nov. 7, 1871.

Fig. 1

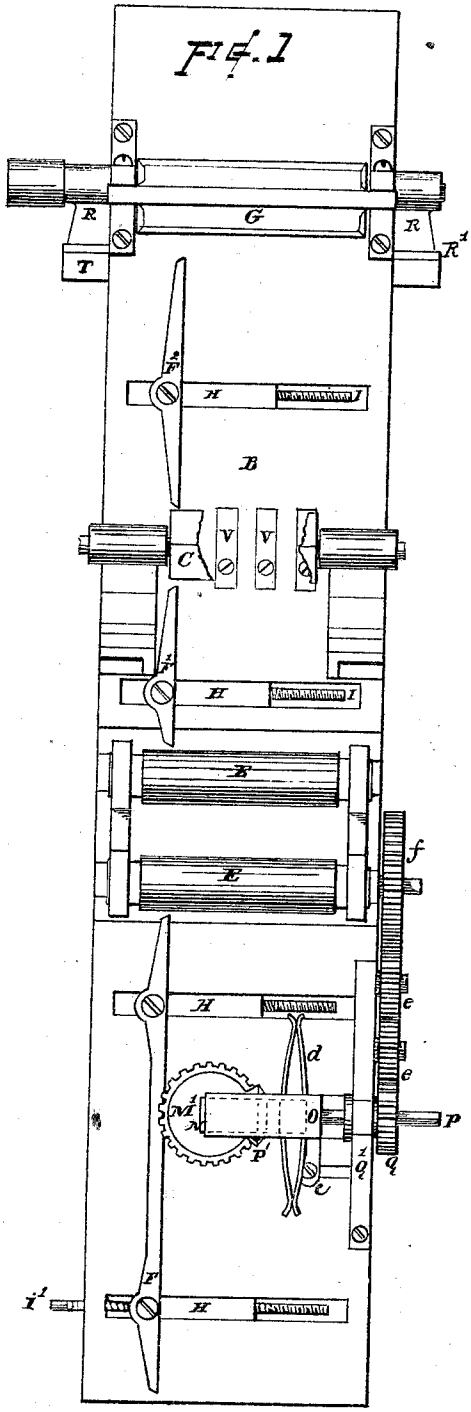
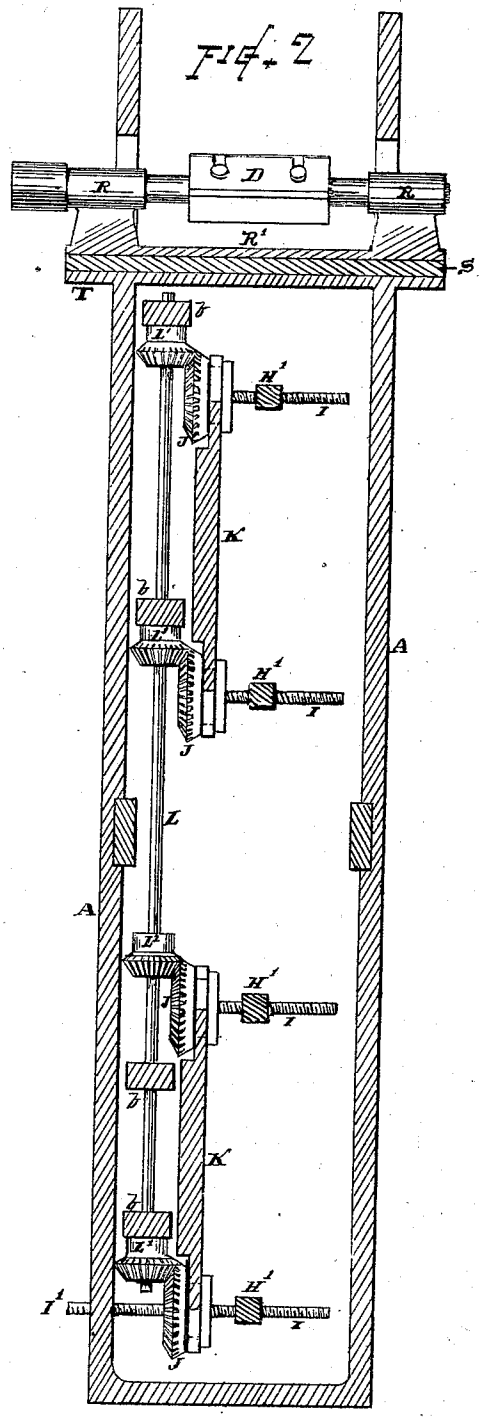


Fig. 2



Witnesses

Thos. G. Dodge

Chas. H. Partleigh

Inventor.

Henry A. Lee

2 Sheets--Sheet 2.

HENRY A. LEE.

Improvement in Planing Machines.

No. 120,589. Patented Nov. 7, 1871.

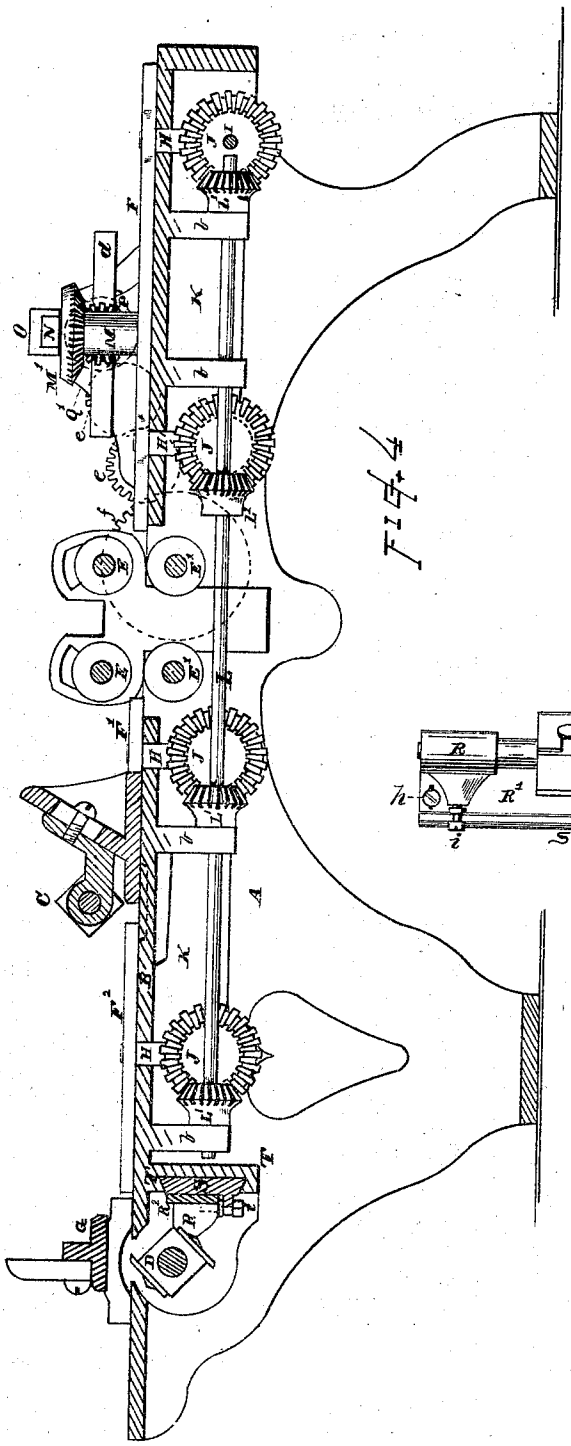


FIG. 4.

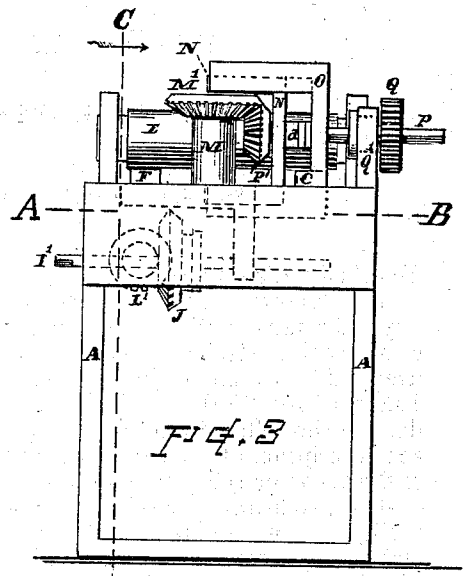


FIG. 3.

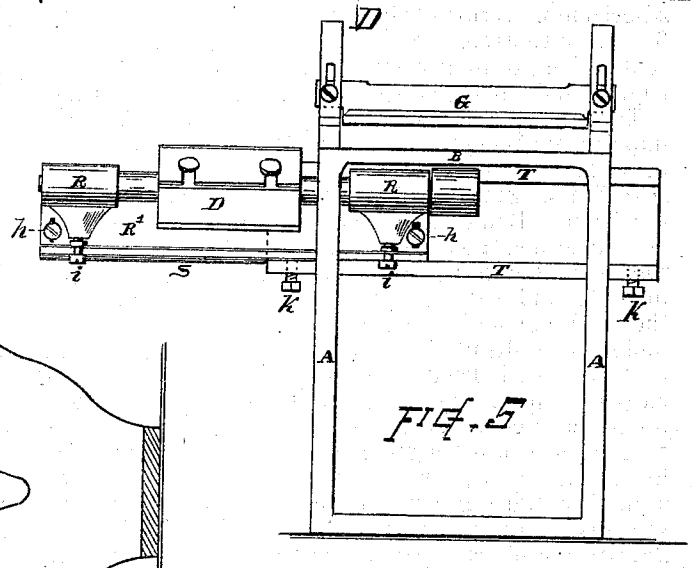
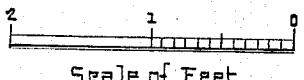


FIG. 5.



Scale of Feet.

Witnesses

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UNITED STATES PATENT OFFICE.

HENRY A. LEE, OF WORCESTER, MASSACHUSETTS.

IMPROVEMENT IN PLANING-MACHINES.

Specification forming part of Letters Patent No. 120,589, dated November 7, 1871.

To all whom it may concern:

Be it known that I, HENRY A. LEE, of the city and county of Worcester and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Planing and Molding Machines for Working Wood; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing which forms a part of this specification, and in which—

Figure 1 represents a plan view of a machine embracing my improvements. Fig. 2 represents a horizontal section of the same at line A B, Fig. 3. Fig. 3 represents a front view. Fig. 4 represents a longitudinal vertical section at line C D, Fig. 3; and Fig, 5 represents a rear-end view.

The nature of my invention consists in certain improvements in planing and molding machines, as hereinafter described.

In the drawing, the parts marked A indicate the frame. B indicates the bed-plate; C, the upper cutter-head; D, the lower cutter-head; E E′, the top and bottom feed-roller; F F^1 F^2, the adjustable guides for guiding the boards through the machine; and G, the presser-plate above the under cutter-head D. The guides F F^1 F^2 are formed of such lengths as will conveniently occupy the space between the cutter-heads, feed-roller, and the end of the machine, being formed of greater or less length, as desired. They are firmly secured by screws, bolts, or otherwise to adjusting-slides H fitted to work in transverse grooves or slots formed through the bed-plate B. Screws I are arranged in horizontal positions through downward-projecting arms H′ of the slides H, which screws are furnished with bevel-gear heads J, that are held in bearings K attached to the under side of the bed-piece B, whereby the screws I are supported. Grooves are formed around the heads J at the back of the gear-teeth, and the bearings embrace said grooves in the form of collars, so that, while the screws and gears are free to revolve, no motion in a direction parallel with the screw-spindle is permitted; consequently, when the screws are revolved they act upon the slides H and thereby move the guides to the right or left, as the case may be. A shaft, L, is arranged longitudinally beneath the bed-plate B, from which it is supported by suitable bearings *b*. Said shaft L is provided with a series of bevel-pinions, L′, which mesh with the bevel gear-heads J of the screws I, so that all of the screws are caused to move simultaneously; and the operator, by placing a wrench upon the end of the first screw-spindle, which is extended through the frame at I′, is thereby enabled to adjust all of the guides F F^1 F^2 by a single operation and at the same time. A side feeding device is arranged near the front end of the machine for holding the board or stock firmly against the guides, and at the same time to propel it forward. This device consists of a vertical roll, M, supported in a sliding bearing-piece, N, which latter is fitted to move horizontally in grooves formed on the arms of an upright standard, O, as indicated in Figs. 1 and 3 of the drawing. The standard O is fitted in a transverse slot in the bed B, and is provided with a clamping-bolt or screw, *c*, also working in a transverse slot, whereby the feeding device can be held at any adjusted position, as desired; and it will be observed that at whatever distance the roll is set from the guide F said roll is always in an exact vertical position, so that the pressure is exerted squarely across the board. A shaft, P, extends from the side of the machine through the standard O and bearing-piece N, and is connected to the feed-roll M by means of the bevel-pinion P′ fixed to the shaft and bevel-gear M′ fixed to the upper end of the roll. A metallic spring, *d*, of elliptic or other suitable form or material, is placed between the bearing-piece N and standard O, to press the roll M firmly against the stock, while it permits it to conform to any irregularity of the boards. The outer end of the shaft P passes through the hub of a gear, Q, which is supported in a bearing, Q′, at the side of the frame A. The shaft P is formed square or fitted to the hub of the gear Q by means of a spline, so that it can slide freely through the gear in a direction parallel with its length, and will, at the same time, receive a rotary motion from said gear. The gear Q is connected for operation by means of intermediate gears *e e* to the driving-gear *f* of the main feed-roller F′, or, if preferred, to any other convenient portion of the machine. By the use of the vertical feed-roll M the board or stock, as it is moved forward, is held firmly against the guide F, and in case the board should be crooked it is straightened by the pressure of the roll. By arranging the sliding devices, relieving-spring, and supporting-standard in the manner herein shown

and described, the mechanism is rendered quite perfect and satisfactory in its operation, while it is very convenient and easy of adjustment. The bearings R which support the lower cutter-head D are connected to each other by a bar or plate, R′, which latter is secured by means of screws or bolts *h* to a transverse slide-plate, S, fitted to move between dovetailed or other formed ways T that extend transversely across the machine from side to side, as shown. By means of this arrangement the bearing-bar or plate R′ and cutter-head D can be moved out from beneath the bed of the machine at either side, in the manner illustrated in Fig. 5, thereby enabling the operator to examine, sharpen, or remove the knives with facility and without the necessity and trouble of removing the presser-plate G or other portions of the machine which are situated above the cutter-head. The bearing-plate R′ is furnished with vertical slots to receive the screws or bolts *h*, so that said plate can be raised or depressed to adjust the cutter-head D to the proper height, and a pair of adjusting-screws, *i*, are arranged through a projecting flange at the lower edge of the slide-plate S, which screw into bosses on the bearing-plate R and by means of which the parts can be adjusted to any desired degree of nicety. Set-screws *k* are arranged through one of the ways T for securing the slide-plate S in position. The bed-plate B is cast with a series of longitudinal depressions in its upper surface, beneath the upper cutter-head C and blocks of metal V, of the proper form and size, are accurately fitted into said depressions and secured, by means of flush-headed screws or bolts, in the manner illustrated in Fig. 1. When it is desirable to have any of the cutters run lower than the surface of the bed B one or more of the blocks V may be removed, so that the cutter can run down into the depression thus left open. By means of this construction I obtain all the advantages of both the lattice and the solid beds. The use of the blocks V obviates one great objection which arises in the use of the open or lattice-bed when running nice smooth work—that is, of the chips and dirt catching upon the corners of the openings and scratching the boards, or otherwise interfering with the smooth and perfect running of the stock.

The parts of the machine which are not herein specially referred to may be made in any of the well-known forms employed in the construction of cylinder molding and planing machines; consequently, further description of said parts is unnecessary.

It will be understood that my improvements can be applied equally well to machines used for sticking moldings or to machines used as surface-planers.

An adjustable or other stop device may be combined with the standard O and slide-piece N, to prevent the spring *d* from forcing the feed-roll M too far out when there is no stock running through the machine. In this instance a screw-bolt is employed, which is supported in the slide N and is situated directly below the shaft P, and is arranged so that its head, coming in contact with the standard O, prevents further outward movement of the slide and roll.

Having described my improvements in planing and molding machines, I would say that I do not claim such an arrangement of feed-roll as shown in the patent granted to H. H. Baker on the 15th of February, 1859; but

What I claim as new and of my invention, and desire to secure by Letters Patent, is—

1. The combination, with the vertical side-feed roll M, of the slide-bearing N, spring *d* or equivalent device, adjusting-standard O, shaft P, and gears M′, P′, and Q, said parts being constructed and arranged to operate substantially as and for the purposes set forth.

2. The combination, with the lower cutter-head and the bearings of the same, of a slide-piece or plate supporting the said bearings, and arranged to slide in or on the frame transversely to the length of the machine, as shown and described, so that, when desired, the cutter-head may be moved out from the side of the machine, for the purposes stated.

3. The combination, with the bearings R which support the lower cutter-head, of the bearing-plate R′, slide-plate S, and adjusting and clamp-screws *h i k*, substantially as and for the purpose set forth.

HENRY A. LEE.

Witnesses:
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CHAS. H. BURLEIGH.

(173)