

(No Model.)

2 Sheets—Sheet 1.

L. HOUSTON.
PLANING MACHINE.

No. 298,755.

Patented May 20, 1884.

Fig. 1

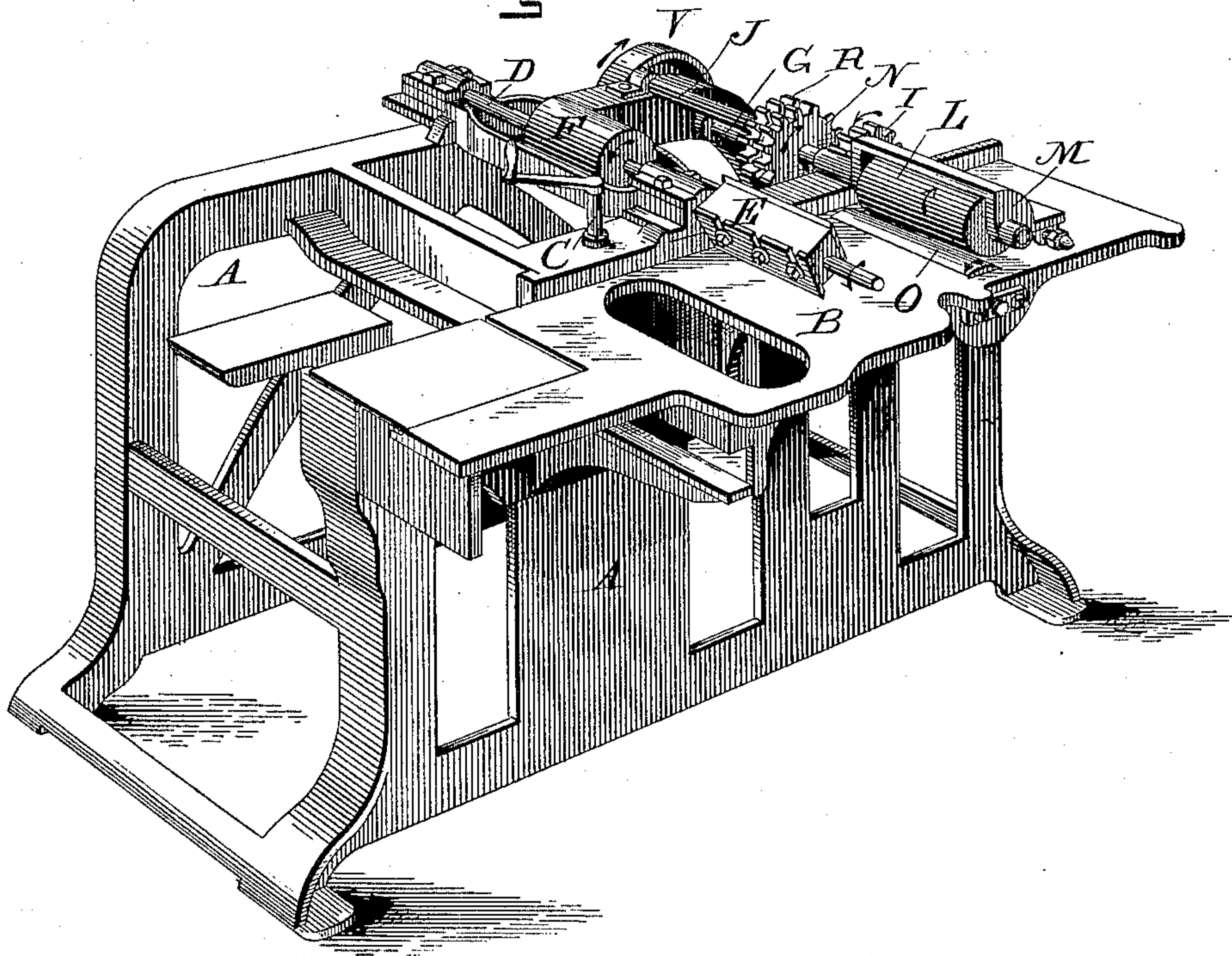
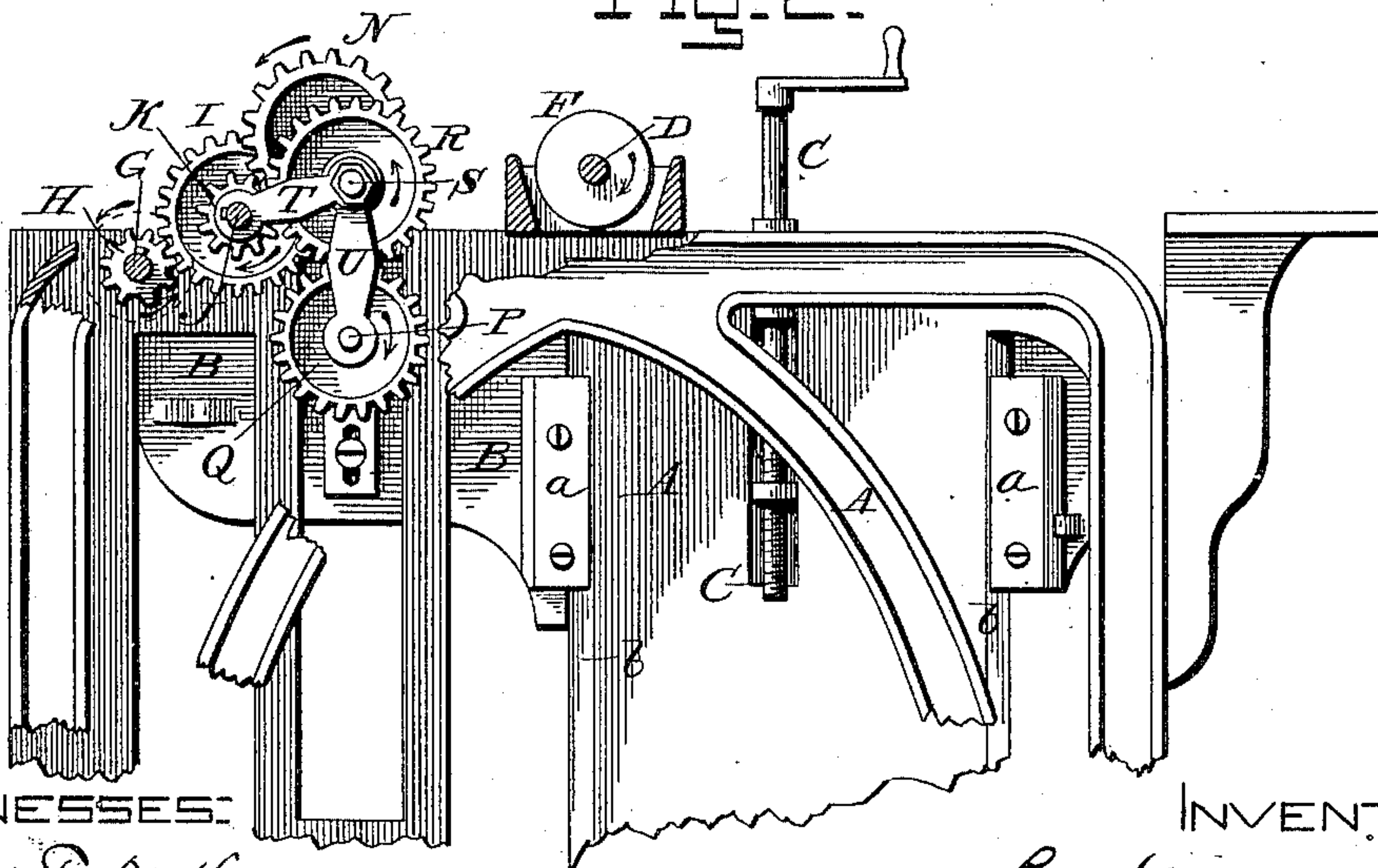


Fig. 2.



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2 Sheets—Sheet 2.

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Fig. 3.

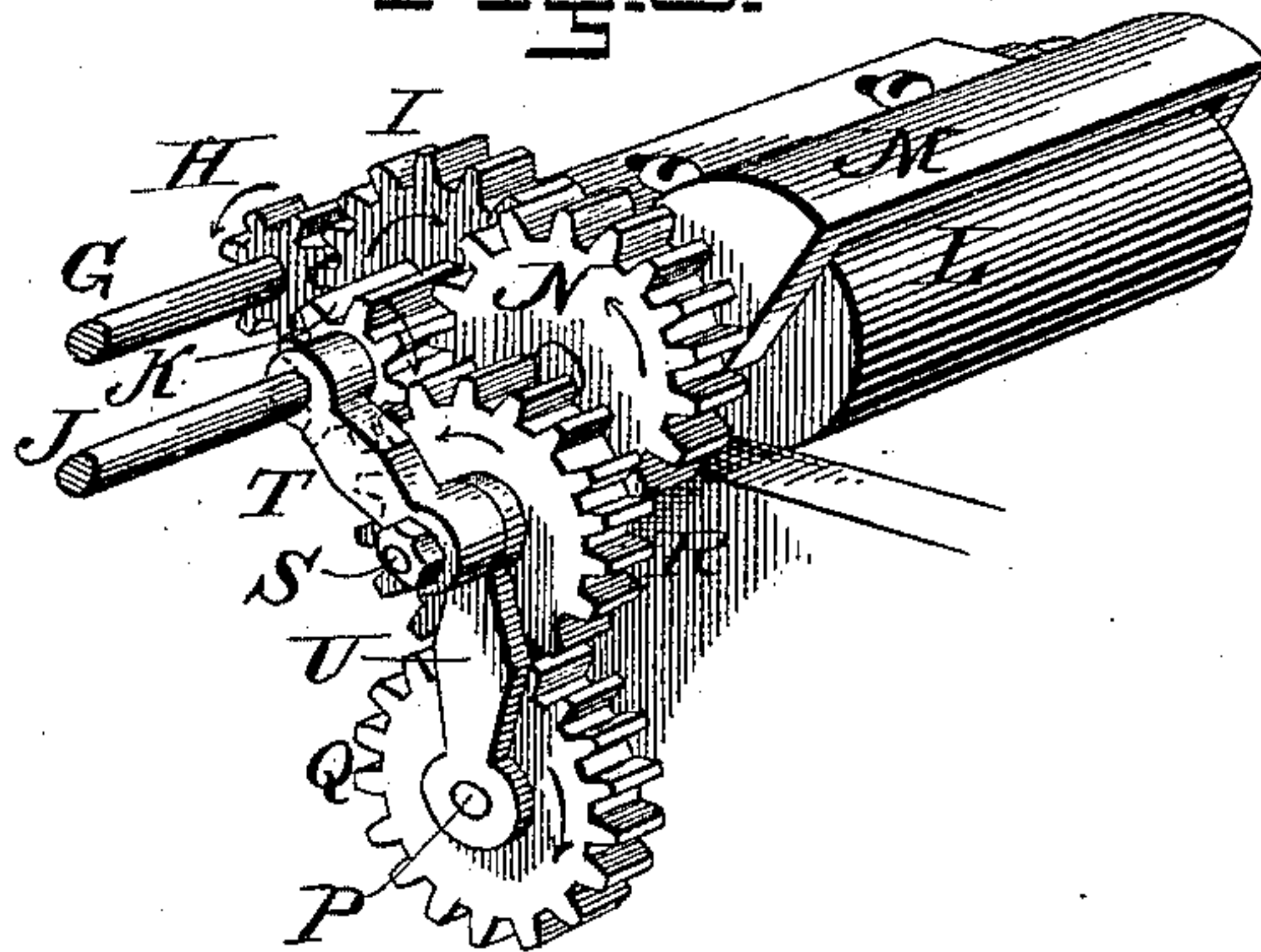
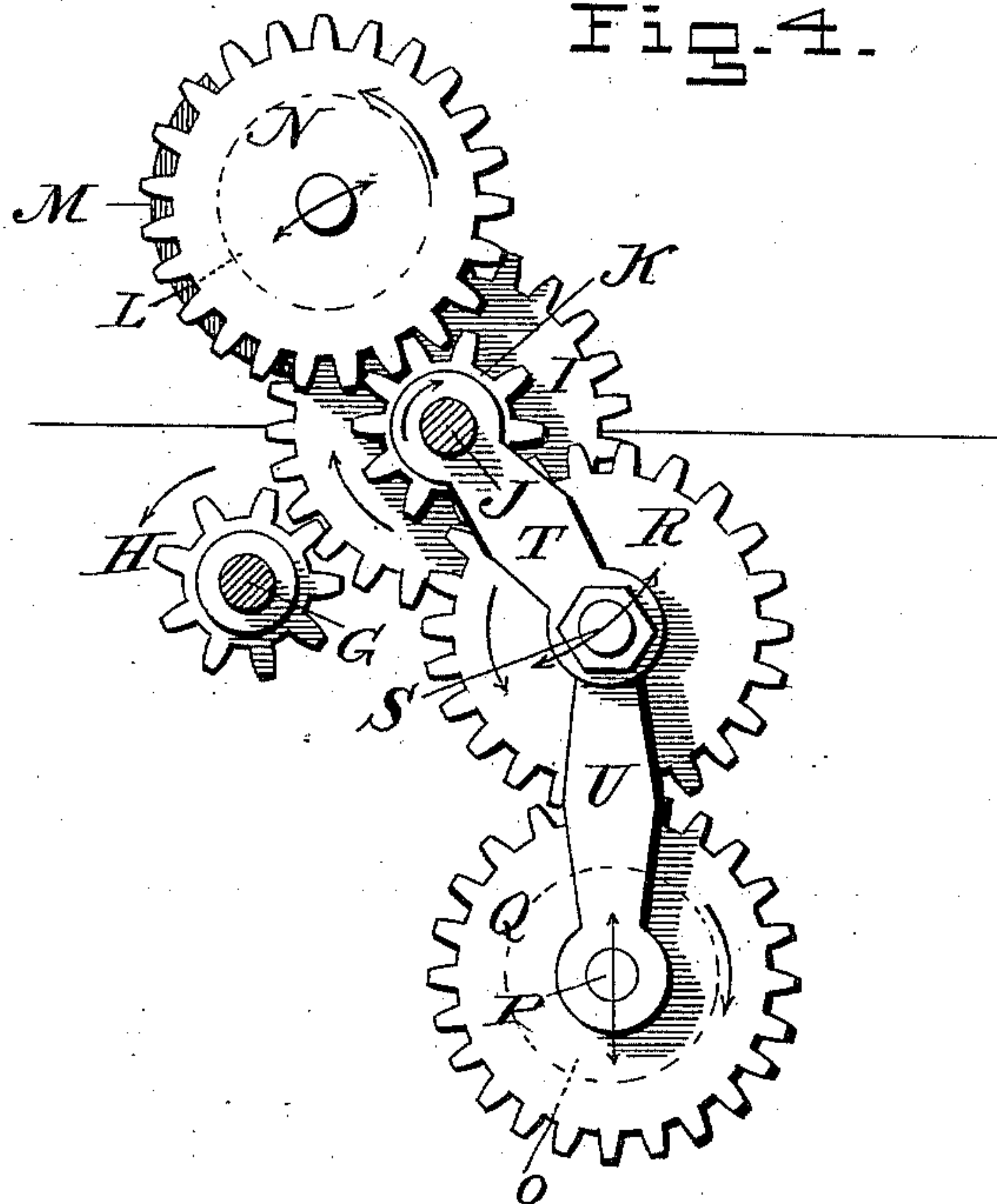


Fig. 4.



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UNITED STATES PATENT OFFICE.

LEVI HOUSTON, OF MONTGOMERY, PENNSYLVANIA.

PLANING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 298,755, dated May 20, 1884.

Application filed February 13, 1884. (No model.)

To all whom it may concern:

Be it known that I, LEVI HOUSTON, of Montgomery, in the county of Lycoming and State of Pennsylvania, have invented certain Improvements in Wood-Working Machines, of which the following is a specification.

My invention consists in a novel construction and arrangement of gearing for planing, molding, and surfacing machines, whereby the press-roll is permitted to freely rise and fall to adjust itself to inequalities in the material passing under it, and the bed may be raised and lowered as required without in any way interfering with the operation of the machine.

In the accompanying drawings, Figure 1 is a perspective view of a planing-machine embodying my improvements; Fig. 2, a vertical sectional view showing the inner faces of the gear; Fig. 3, a perspective view of the gearing, and Fig. 4 a face view of the same in an adjustment different from that indicated in Fig. 2.

In machines of this class it is desirable to so arrange the press-roll that it may freely rise and fall to adapt itself to the irregularities of material passing under it, which result I secure by mounting the press-roll in a swinging or pivoted frame overhanging the bed or table of the machine, as in the patent granted to me bearing date October 26, 1880, and numbered 233,620. It is further desirable and important to provide for vertical adjustment of the bed or table, to adapt the machine to work on material varying considerably in thickness or requiring different finishing.

In order to avoid undue complication and cost of construction it is advisable to drive the feed-rolls and press-rolls from a common shaft in the machine, and to permit this to be done and provide for their free adjustment is the object of the present invention. To this end I construct the machine as follows:

A indicates a suitable frame of substantially the usual construction, and B a bed or table vertically adjustable relative to said frame, a screw, C, being provided for raising and lowering the table and retaining it at the required elevation, and guides or plates *a* being provided to run upon the vertical bearing-faces or ways *b* of the frame to maintain the table or bed in proper relation to the frame.

D indicates a shaft carrying a cutter-head,

E, which overhangs the bed or table B, and receives motion through the rotation of the shaft produced by a belt passing about a pulley, E, on said shaft.

G indicates the driving-shaft, from which the feed and press rolls are driven, said shaft being mounted in fixed bearings in the frame A, and provided with a pinion, H, which gives motion to a gear-wheel, I, secured upon a shaft, J, which carries also an elongated pinion, K. The shaft J is preferably held against rotation, but may be arranged to rotate in fixed bearings in the main frame in the same manner as shaft G. If the shaft is made fast in its support, the wheel I and pinion K must be cast together, or otherwise rigidly connected and loosely arranged upon the shaft J.

L indicates a press-roll, which overhangs the bed or table B, and is carried by a swinging frame, M, which permits the free rise and fall of the press-roll. The shaft of press-roll L is furnished with a gear-wheel or pinion, N, which meshes with the elongated pinion K, the pivot or support of frame M being concentric with, or, as is preferred, formed by an elongation of the shaft J, on which the pinion K is mounted, as indicated in Figs. 1 and 3, and consequently permitting said frame to swing up and down to any required extent without in any way interfering with the mesh or operation of the gear N and pinion K.

O, Fig. 1, indicates a feed-roll projecting up through the bed or table, and serving to advance the material to the cutter-head. This feed-roll is mounted in boxes or bearings carried by the vertically-adjustable bed or table B, and consequently rises and falls therewith, projecting always a sufficient distance through or above said table to act upon and advance the material. The inner end of shaft P of feed-roll O is furnished with a gear or pinion, Q, as shown in Figs. 2, 3, and 4, which receives motion from elongated pinion K through the medium of an idle pinion or gear, R, the axis or journal S of which is carried by two arms, T U, swiveled, respectively, upon shafts J and P, as plainly shown in Figs. 2, 3, and 4. The arms T U maintain the gear or pinion R always in mesh with pinion K and gear or pinion Q, yet permit the free rise and fall of the latter with the bed or table, and the consequent travel or adjustment of the gear or pin-

ion R about the pinion K. Thus it will be seen that pinion K gives motion both to the press-roll L and feed-roll O, and permits the free adjustment of each.

5 It will be seen that the band-pulley V of shaft G may be applied to shaft J if the latter be arranged to rotate, and thus said shaft G, its pinion H, and gear or pinion I could be dispensed with; but as the shaft G serves as
10 an axle or pivot for frame M, it is preferred to secure it against rotation, and to cast together or otherwise connect gear I and pinion K, and mount them loosely on the shaft, as mentioned.

15 Instead of employing the arm T, the journal S may have one end guided in a slot concentric with the shaft J, though the arrangement shown is deemed best.

20 All parts not specifically described or shown may be of ordinary construction.

I am aware that expansion-gear for permitting the adjustment of the bed or table with its feed-roll and the free and independent adjustment of the press-roll is old and common;
25 but by mounting the press-roll in a hanger or frame having an axis of motion concentric with the pinion from which said roll is driven, I secure an easy movement and wide range of adjustment of the press-roll without the slightest change in the mesh of the gear, and without the backlash and wear occasioned by variation in the depth of mesh of gear, as necessarily occurs where the press-roll rises and falls in vertical guides, while its pinions mesh
30 with a pinion having a fixed axis, as has been proposed.

Having thus described my invention, what I claim is—

1. In a wood-surfacing machine, the combination of a main frame, a vertically-adjustable bed or table, a press-roll overhanging the table and carried by a swinging frame, a feed-roll mounted in bearings carried by the table, gear-wheels secured to the shaft of the press-roll and feed-roll, a driving-pinion meshing
40 with the gear of the press-roll, an intermediate gear-wheel meshing with the driving-pinion and with the gear-wheel of the feed-roll, and means, substantially such as described and shown, for supporting said intermediate gear
45 and permitting it to rise and fall with the table and feed-roll without interfering with its mesh with the other gearing.

2. The combination, substantially as herein described and shown, of main frame A, provided with driving-shaft G, carrying pinion H, gear-wheel I, and elongated pinion K, connected to rotate in unison, press-roll L, provided with gear N, and carried by swinging frame M, having a center of motion concentric with pinion K, (the gear N meshing with said pinion,) vertically-adjustable table B, feed-roll O, mounted in bearings carried by said table, and furnished with a gear, Q, intermediate gear, R, and arms T U, hung upon the
50 pinion-shaft and feed-roll shaft, respectively.

LEVI HOUSTON.

Witnesses:

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HENRY C. McCORMICK.