S. A. Woods & G. E. Woodbury.
Imp'ts in Moulding Machines.

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PATENTED JUL 18 1871

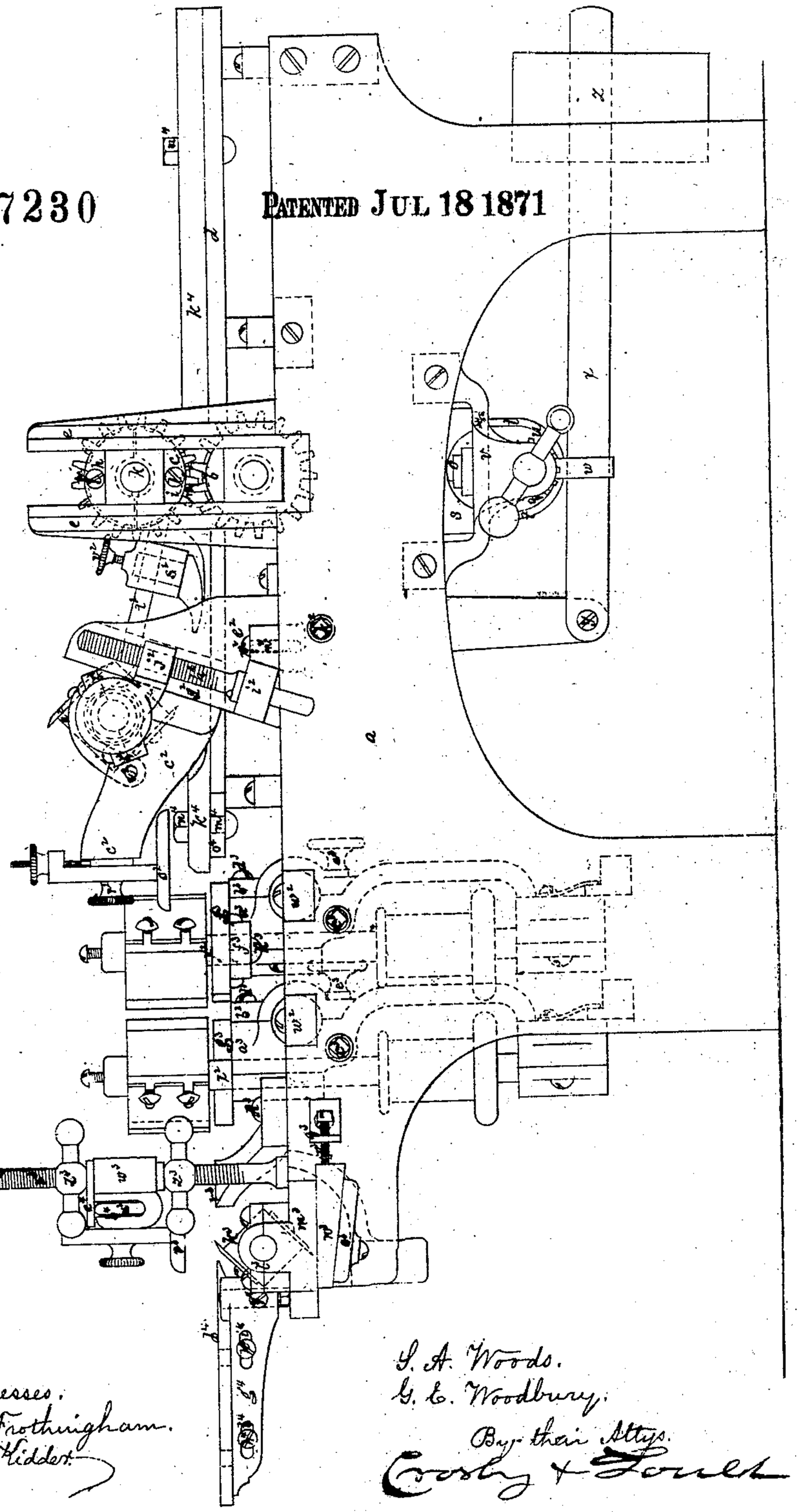

Fig. 1.

Witnesses.
Mo. W. Frothingham.
G. B. Kidder.

S. A. Woods.
G. E. Woodbury.
By their Attys.
Crosby & Gould

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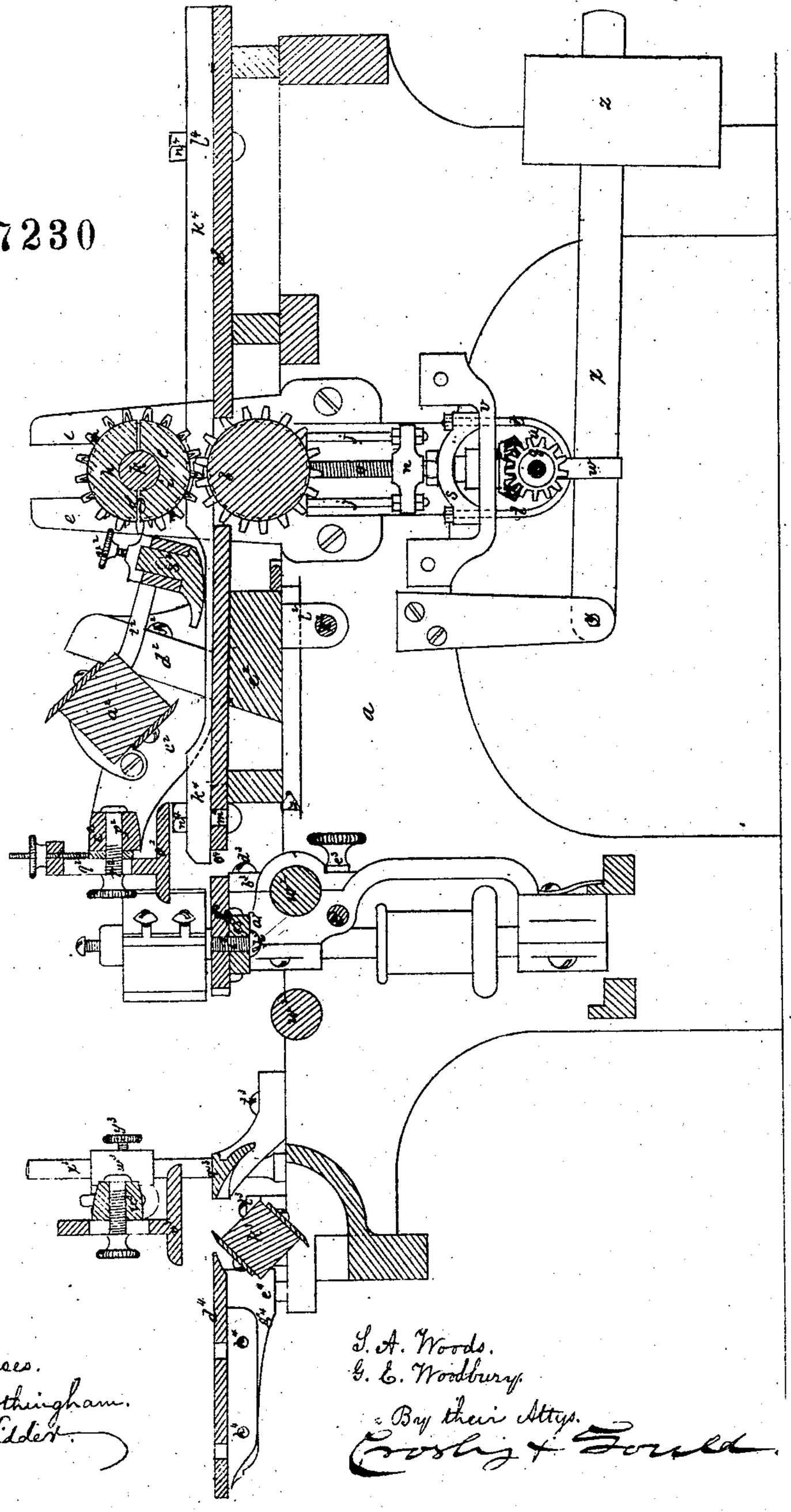

Fig. 2.

Witnesses.
M. M. Frothingham.
S. N. Hidden.

S. A. Woods.
G. E. Woodbury.
By their Attys.
Cushing & Gould.

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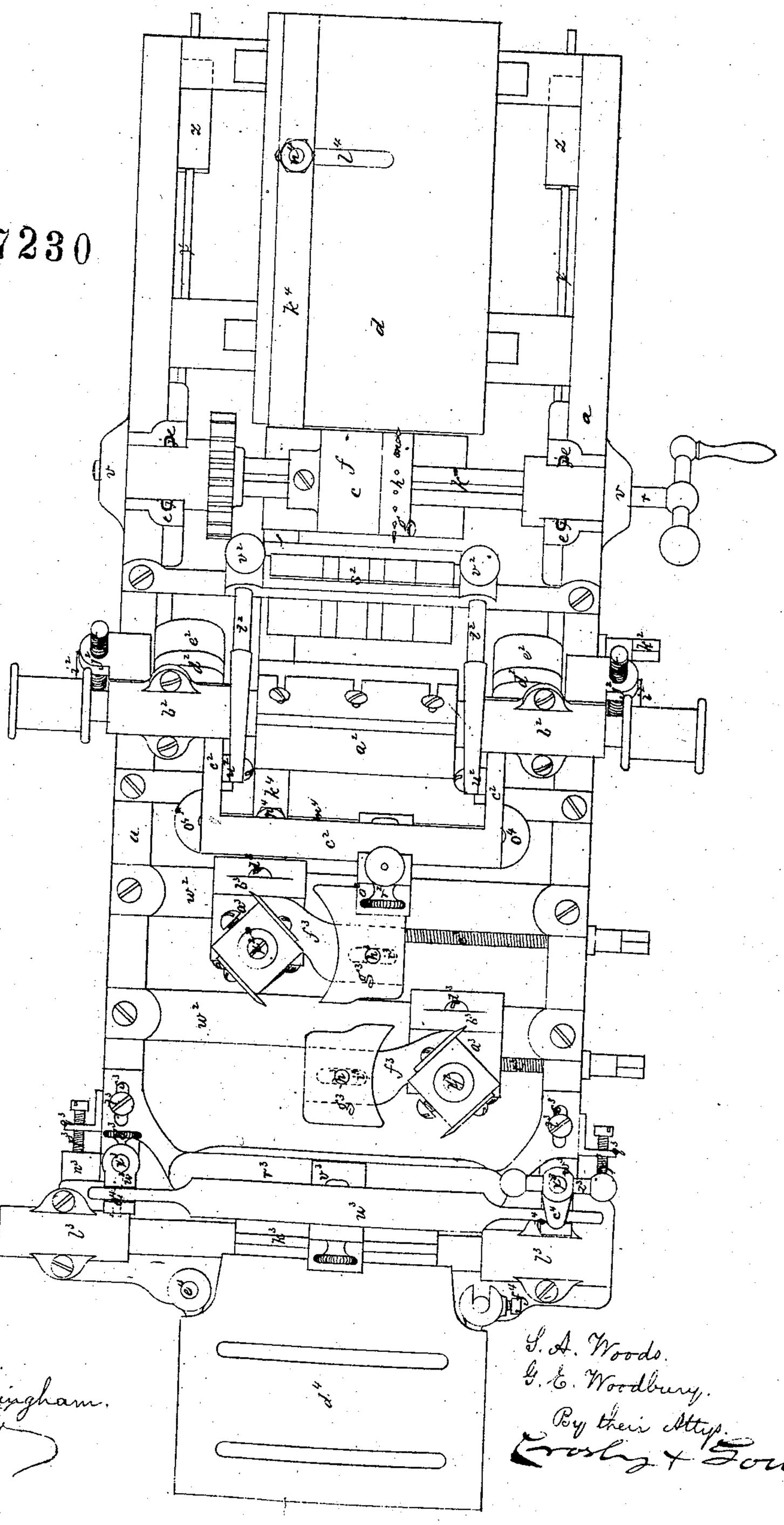

Fig. 3.

Witnesses.
Mo. W. Frothingham.
S. B. Kidder

S. A. Woods.
G. E. Woodbury.
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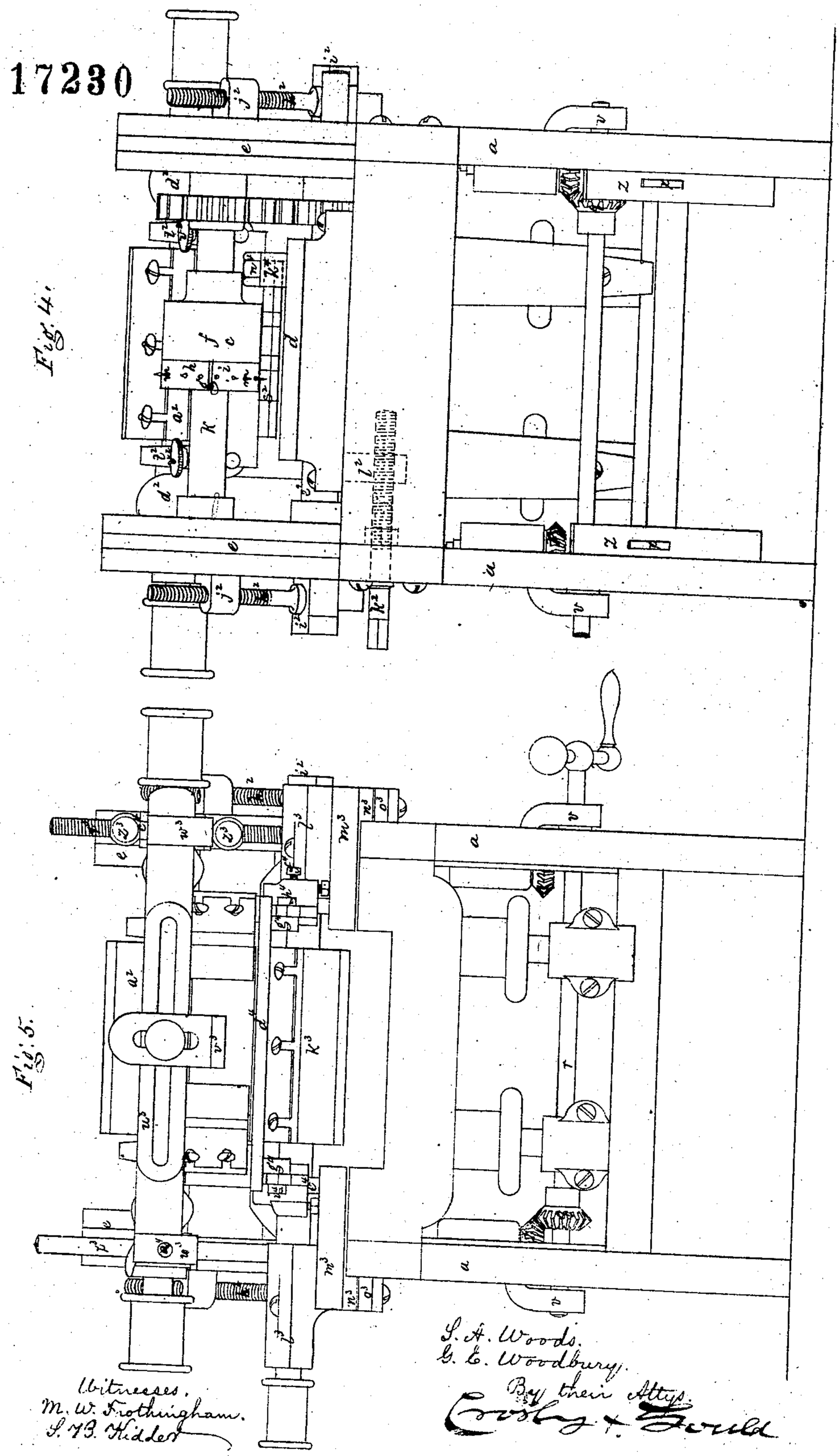

Fig. 4.

Fig. 5.

Witnesses.
M. W. Frothingham.
L. B. Kidder

L. A. Woods.
G. E. Woodbury.
By their Attys.
Crosby & Gould

UNITED STATES PATENT OFFICE.

SOLOMON A. WOODS, OF BOSTON, AND GEORGE E. WOODBURY, OF CAMBRIDGE, MASSACHUSETTS.

IMPROVEMENT IN PLANING-MACHINES.

Specification forming part of Letters Patent No. 117,230, dated July 18, 1871.

To all whom it may concern:

Be it known that we, SOLOMON A. WOODS, of Boston, Suffolk county, and GEORGE E. WOODBURY, of Cambridge, Middlesex county, all in the State of Massachusetts, have jointly invented certain Improvements in Molding-Machines; and we do hereby declare that the following, taken in connection with the drawing which accompanies and forms part of this specification, is a description of our invention, sufficient to enable those skilled in the art to practice it.

The invention relates to details of construction and arrangement of mechanism of that class of planing-machines particularly designed for making moldings, rabbeted stock, &c.; and the improvements will be fully understood by the following detailed description of such construction and arrangement:

The drawing represents a machine embodying the invention. Figure 1 shows the machine in side elevation. Fig. 2 is a sectional elevation. Fig. 3 is a plan. Fig. 4 is an end elevation. Fig. 5 is an opposite end elevation.

a denotes the frame; *b c*, the pair of feed-rolls; *d*, the work-supporting table over which the board or other stock is introduced to the feed-rolls. The shafts of the two rolls *b c* are geared together and the boxes of the rolls slide between vertical ways or guide-posts *e*. The lower roll is shown as smooth. The upper roll may be a compound roll, one part, *f*, being a solid cylinder or wheel, and the other part, *g*, being sectional, or made of two semicircular halves, *h i*, which embrace the shaft *k*, and are fastened to the wheel *f* by screws or bolts *l*. The sectional wheel is provided with feed-spurs *m*, or other devices adapted to entering and feeding stock of irregular cross-section, upon which the plain surfaces of the rolls will not bite sufficiently hard or upon sufficient surface to effect the feed of the stock. As such a wheel is only needed at times, and is objectionable when not required, and as the roll-shaft cannot readily be removed from the frame or one of its belts slipped off to enable such a wheel to be driven on or off, and the wheel would in such case also have to be splined or keyed to its shaft, we make a wheel in sections, as shown, and place these sections together around the shaft and then fasten them to the main roll, thus forming a removably-attached roll, to be applied or displaced without disturbance of the journal-mechanism of the roll-shaft. The boxes of the lower roll-shaft rest on the top of the frame *a*, but the boxes of the upper roll are made capable of vertical adjustment, as follows: Each upper box is supported upon the tops of the two vertical rods *j*, which set in grooves in the inner faces of the guide-posts, the top of each rod being bent and entering the side of the box, as seen at Fig. 3. The rods pass through the side pieces of the frame *a*, and at their lower ends the sides of each box, respectively, are fastened to the opposite ends of a nut-piece, *n*, through the nut-threaded center of which works a rotating screw-shaft, *o*. This shaft turns in suitable bearings, and at its lower end carries a bevel-gear, *p*, the two gears *p* meshing into and being simultaneously driven by bevel-pinions *q* on a cross-shaft, *r*, so that by turning the shaft the two boxes of the upper roll are simultaneously and positively raised or lowered and the upper feed-roll thereby set in any desired position in accordance with the nature of the stock to be operated upon; the stock being, of course, always thicker than the proper space between the rolls, the upper roll must be made with provision for rising by the pressure of the stock and of pressing down upon the stock. For this purpose the adjusting screw-shafts have provision for free vertical play in their bearings, and each passes through and is fastened by suitable nuts to a bar, *s*, through the opposite ends of which pass two arms, *t*, of a yoke, *u*. The arms of each yoke pass through a bearing-piece, *v*, and at the bottom of each yoke is a stirrup, *w*, through which passes a weighted lever, *x*, pivoted at *y* and borne down by a suitable weight, *z*, the weights being preferably made adjustable to vary the stress upon the yokes. When the upper roll is passed up (by the stock) the rods lift the screw-shafts, which shafts raise the yokes and the weighted levers, and the downward stress of the weights is then exerted through the stirrups, yokes, adjusting screw-shafts, and the rods, to draw the roll with force down upon the stock, and it will thus be seen that while the upper boxes are supported upon, and their positions controlled by the rods, the rods also form the connections through which the stress is exerted upon the upper roll to force it against the stock. By having the adjusting mechanism below the rolls the presence of gearing over the machine is ob-

viated, and the teeth of the gears p, being on the under surfaces of the gear-wheels, cannot become clogged with shavings and other fine matter. a^2 denotes the cutter-cylinder, journaled in boxes or bearings b^2 at opposite ends of a yoke-frame; c^2, the journal-boxes resting against and being fastened to and capable of adjustment upon vertically-inclined uprights or supports d^2 of a journal-stand or frame, e^2, mounted upon the main frame. The boxes b^2 are fastened to their supports d^2 by screws f^2 passing through suitable slots in the supports, and by loosening these screws the cutter-cylinder can be raised or lowered and adjusted in position by screw-shafts h^2, each having a bearing in a stud, i^2, projecting from the frame e^2, and the screw-threaded shank of each working through a nut-threaded ear, j^2, at the adjacent end of the yoke-frame. The cutter-cylinder may be adjusted endwise (or laterally with respect to the frame a) by a screw-shaft, k^2, having a bearing in one of the sides of the frame a, and having a screw-threaded shank working in a nut-thread in an ear, l^2, extending down from the bottom of the frame e^2, the frame being fastened in any suitable position by screws m^2, passing through slots n^2 of the frame e^2. It will be observed that the connecting-bar of the journal-yoke or yoke-frame extends around the front of the cutter-cylinder. When such a yoke has heretofore been employed it has connected the boxes either by extending over the cylinder (where it is very much in the way of free access to the cylinder) or under the cylinder, (which location is in some respects ojectionable,) or in rear of the cylinder, (where it is in the way of the pressure-bar.) By extending the yoke across in front of the cylinder an otherwise unoccupied location is secured, the pressure-bar mechanism is left unobstructed, and we secure in the front part of the yoke a means of attaching shoe-pieces o^2, each shoe-piece being at the foot of a vertical bar, which is secured by a suitable nut and screw to the yoke-bar, the yoke-bar having a slot, p^2, by means of which the shoe or shoes can be moved laterally and fastened in any desired position. The shoe-bar o^2 has a vertical slot, q^2, by means of which, and a screw and nut, r^2, the shoe may be adjusted vertically. The pressure-bar s^2 is mounted, and slides on two swinging arms, t^2, each pivoted to the yoke, as seen at u^2, each end of the bar sliding on its arm and being fastened in position by a screw, v^2. When the cutter-cylinder is provided with a straight cutter for simple planing, the pressure-bar may be set close to the cylinder, but when long molding or rabbeting-cutters are used it may be moved out until it will clear the paths of rotation of the cutting-edge of such cutters and press upon the stock as near as can be to the points of action of such cutters. In front of the yoke-frame c^2 are cross-beams or bearers w^2 for supporting the boxes of the vertical spindles x^2, upon which are edge-planing or tonguing-and-grooving cutters. These boxes are usually made adjustable in position, but by means of bolts, nuts, and slotted rails, and such methods of fastening are not sufficient to prevent the boxes from loosening and slipping from position. To obviate this we employ a supporting-rail or bar, with fastenings which embrace the rail, making a clamp around the entire surface. The upper boxes of the vertical shafts or spindles are seen at a^3, and each of said boxes forms part of a clamp, b^3, which encompasses the supporting-rail so as to bear all around the surface of the rail, the rail being preferably made circular in section, although it may be of oval, lozenge, or triangular form. Each box has a horizontal screw-shaft, c^3, extending through it, said shaft having a bearing in the frame a, and by loosening the screw d^3 of either clamp, and a screw, e^3, that screws up against the screw-shaft, the box and vertical cutter-cylinder may be moved and adjusted in position along the rail, as may be necessary or desirable. From each or either box of the vertical cutter-cylinder shafts an arm, f^3, extends, and to this arm an adjustable table or rest-plate, g^3, is fastened by a screw, h^3, extending through a slot, i^3, in the arm, the slot and screw enabling the plate to be brought as near to the cutter-cylinder as the kind or length of cutters on the cylinder will permit. At the end of the machine is seen a lower-surface cutter-cylinder, k^3. The boxes l^3 of this cylinder are supported on movable plates m^3, which rest on adjustable wedges n^3, each wedge sliding on a bed-plate, o^3, and having extending into its end a screw, p^3, which works through a nut-threaded ear, q^3, extending from the frame a. By turning the screw p^3 the wedges are operated and the cutter-cylinder shaft and cylinder k^3 are thereby raised or lowered. Just back of this cylinder a work-supporting bar, r^3, is placed, this bar being made adjustable by slots s^3, and screws t^3, so as to enable the bar to be carried up toward or away from the cylinder, in accordance with the form of the cutters being used. Over the bar r^3 is an adjustable bar, u^3, for attachment of shoe-pieces v^3, said bar being mounted in bearings w^3, which slide on vertical posts or rods x^3, and are held in adjustable position on said rods by clamp-screws y^3, or by suitable nuts z^3, working in a screw-thread cut on each or either post. The bar is pivoted at one end, as seen at a^4, while its other end drops into slot b^4 and is held down by a button, c^4, and by turning said button the bar may be swung up on the pivot a^4 into vertical position to facilitate access to the mechanism at the front part of the machine. In front of the cylinder k^3 is a horizontally-swinging work-supporting table, d^4, pivoted at one end, at e^4, (so as to be swung away from the cylinder,) and fastened in position at the opposite end by a screw, f^4. This table slides on bars g^4, being fastened to the bars by screws h^4 extending through slots i^4, these slots and screws permitting adjustment of the table toward or from the cylinder in such manner as to enable the stock to be supported close up to the cutting-edges of the cylinder-cutters to whatever extent such cutters may project or whatever form of cutters may be interchangeably used. The main cutter-cylinder frame being made adjustable laterally, we extend a guide-rail, k^4, under the cylinder, and bolt its front end to a rest or table, d, which is stationary as respects

the frame *a*, and at its rear end to a rest, o^4, so that the lateral movement of the cutter-cylinder frame imparts no movement to the guide. By this means nice adjustment of the cutters with respect to the guide may be made by adjusting the cutter-cylinder frame after the guide has been moved to an approximate position. The guide may be adjusted by means of slots l^4, m^4, and nuts and screws n^4.

We do not herein claim anything found in the patent of F. Douglass, dated October 12, 1869.

We claim—

1. The arrangement of the mechanism by which the upper feed-roll is adjusted under the machine or in the under part of the frame, said mechanism consisting of the cross-shaft *r* and its bevel-pinions *q*, said pinions meshing into and driving the bevel-pinions *p* on the vertical screw-shafts *o*, and which, by means of vertically-sliding connecting-rods *j*, which work in grooves in the standards *e*, support and move the upper feed-roll, substantially as shown and described.

2. The weighted levers *x*, stirrups *w*, yokes *u*, bars *s*, screw-shafts *o*, nut-pieces *n*, and rods *j*, combined, substantially as shown and described.

3. The sectional feed-roll *g*, furnished with feed-teeth or spurs *m*, and removably attached to the shaft *k* and main feed-roll *f*, substantially as shown and described.

4. The journal-stand e^2, combined with the frame *a* and adjustable laterally thereon, and having the inclined journal-supports d^2, upon which the journal-boxes b^2 of the cutter-cylinder are adjusted vertically, all substantially as shown and described.

5. The pressure-bar s^2, adjustably mounted on arms t^2, pivoted upon the yoke c^3, substantially as shown and described.

6. The combination, with the journal-yoke c^2, of the laterally-adjustable stand d^2 extending across in front of the cutter-cylinder to connect the journal-boxes, substantially as shown and described.

7. The adjustable shoe-pieces o^2, in combination with the slotted yoke-bar c^2 projecting from the journal-stand, substantially as shown and described.

8. In combination with the vertical cutter-cylinders, the plates or supports g^3, made adjustable with reference to the cutter-cylinders, substantially as shown and described.

9. The arrangement, shown and described, of the under cutter-cylinder k^3 and its boxes b^3 with the wedges n^3 on the ends of screws p^3, by rotation of which screws the cutter-cylinder is adjusted vertically, substantially as shown and described.

10. The rest r^3 and swinging table d^3 at the back and front of the under cutter-cylinder k^3, each made adjustable toward or from the cutter-cylinder and combined therewith, substantially as shown and described.

11. The shoe-bar w^3, made adjustable vertically, but pivoted at one end, so that it may be swung up into vertical position, substantially as shown and described.

12. The work-supporting and adjustable swinging table d^4, in combination with the cutter-cylinder k^3, substantially as shown and described.

SOLOMON A. WOODS.

Witnesses: GEORGE E. WOODBURY.

FRANCIS GOULD,

M. W. FROTHINGHAM.