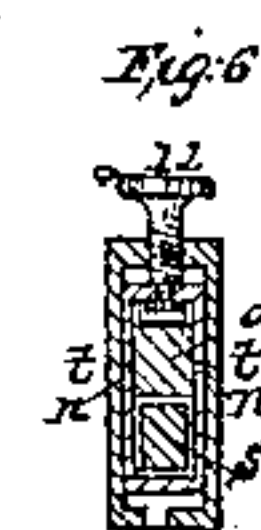
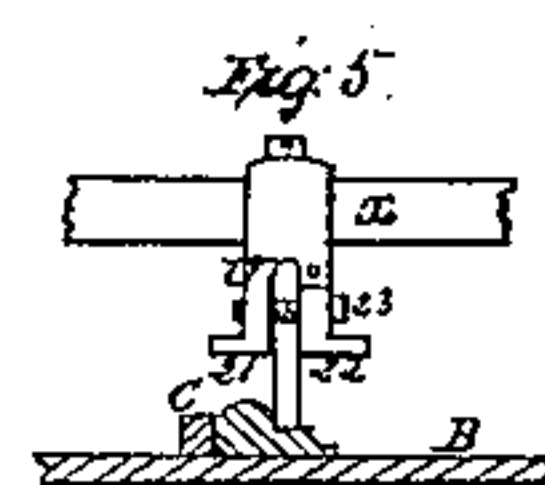
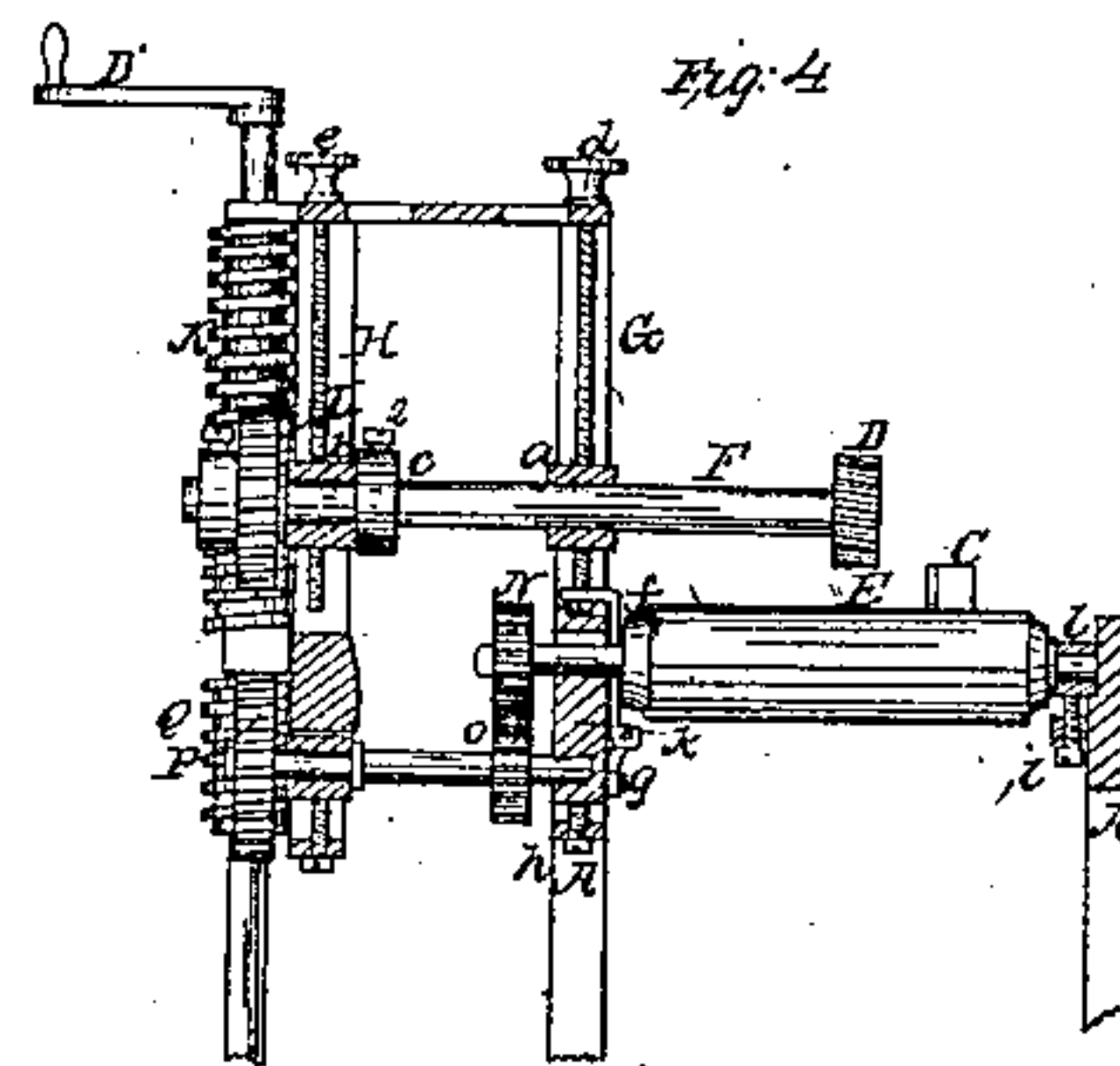
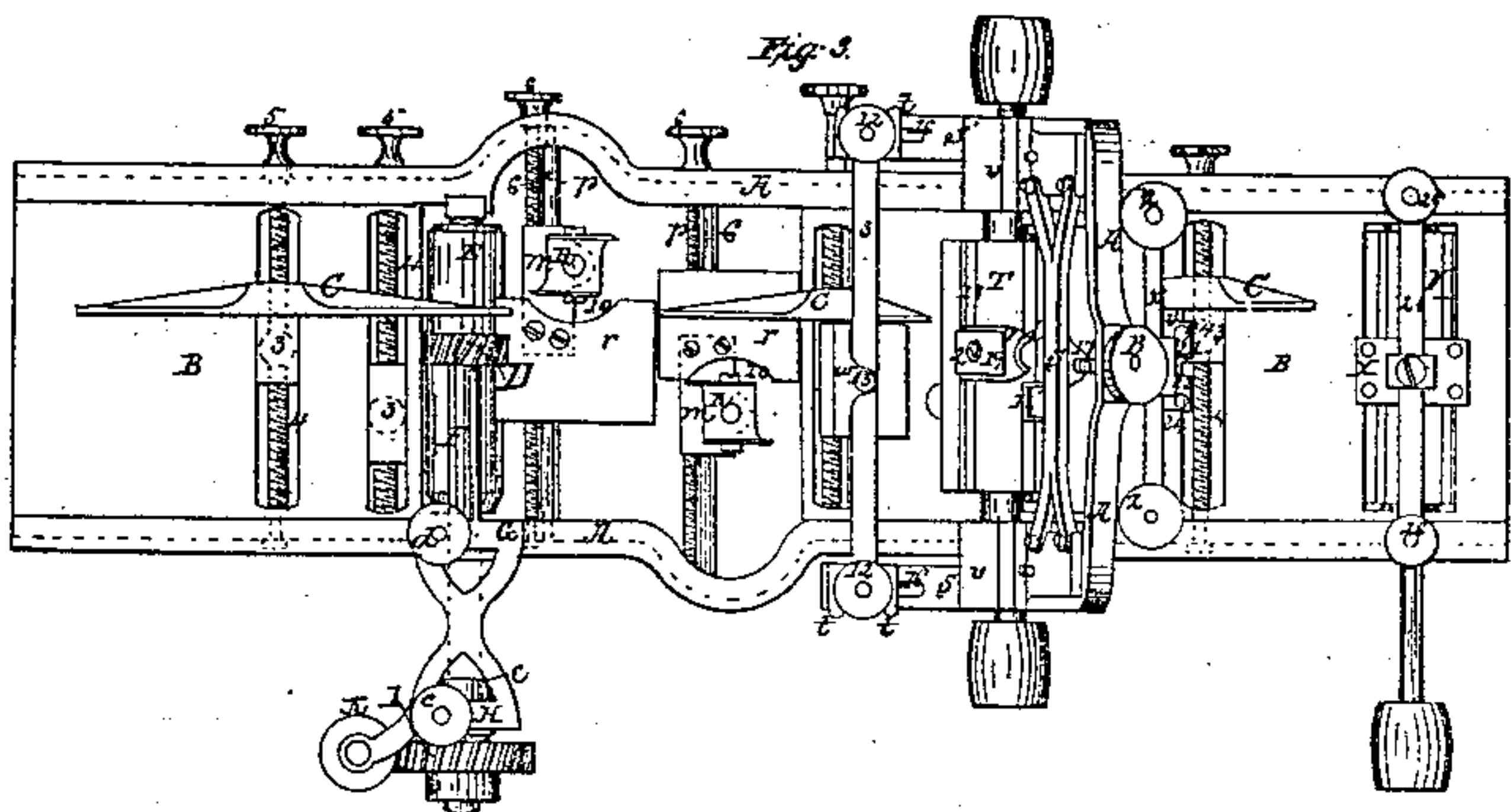
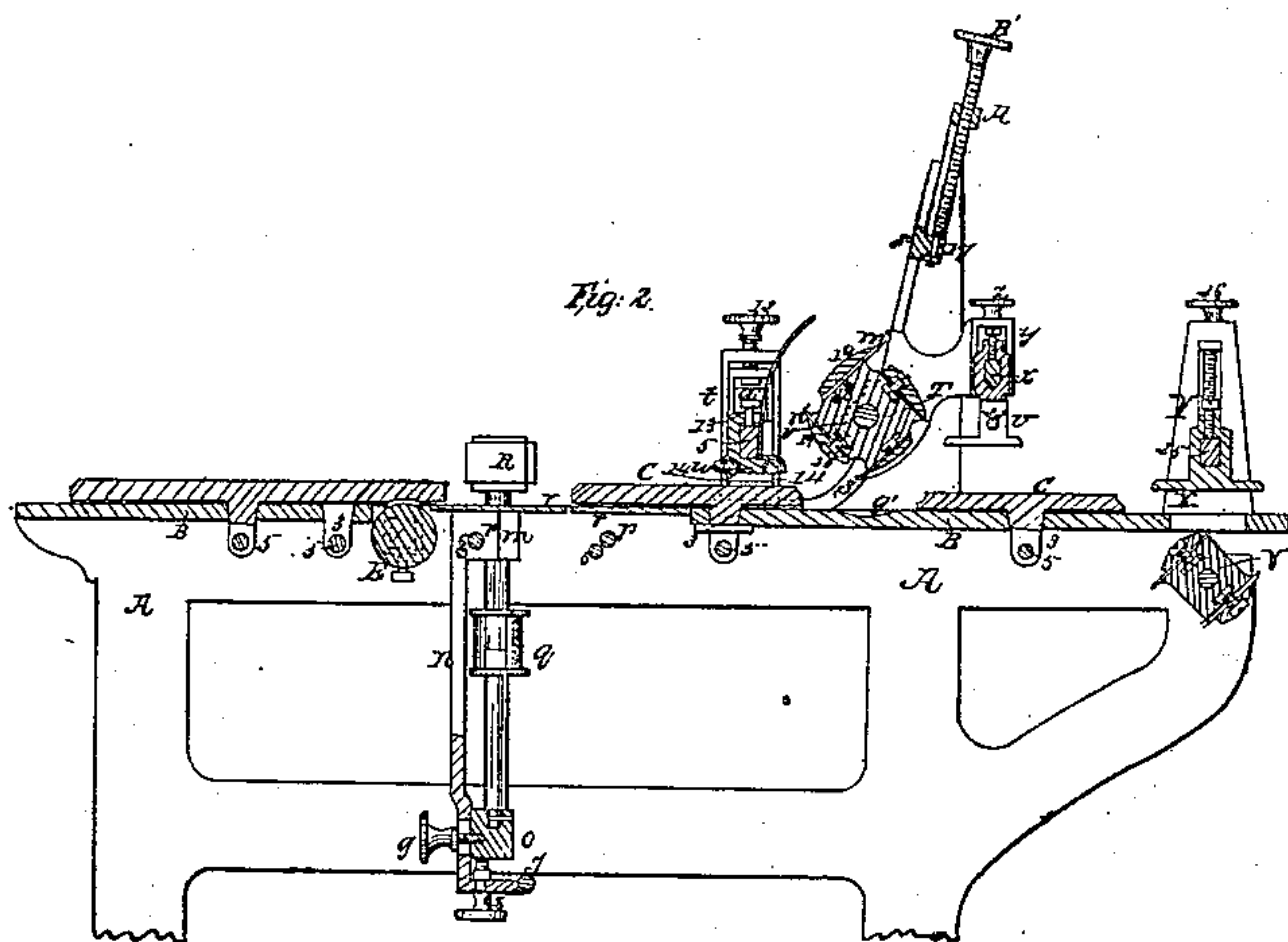
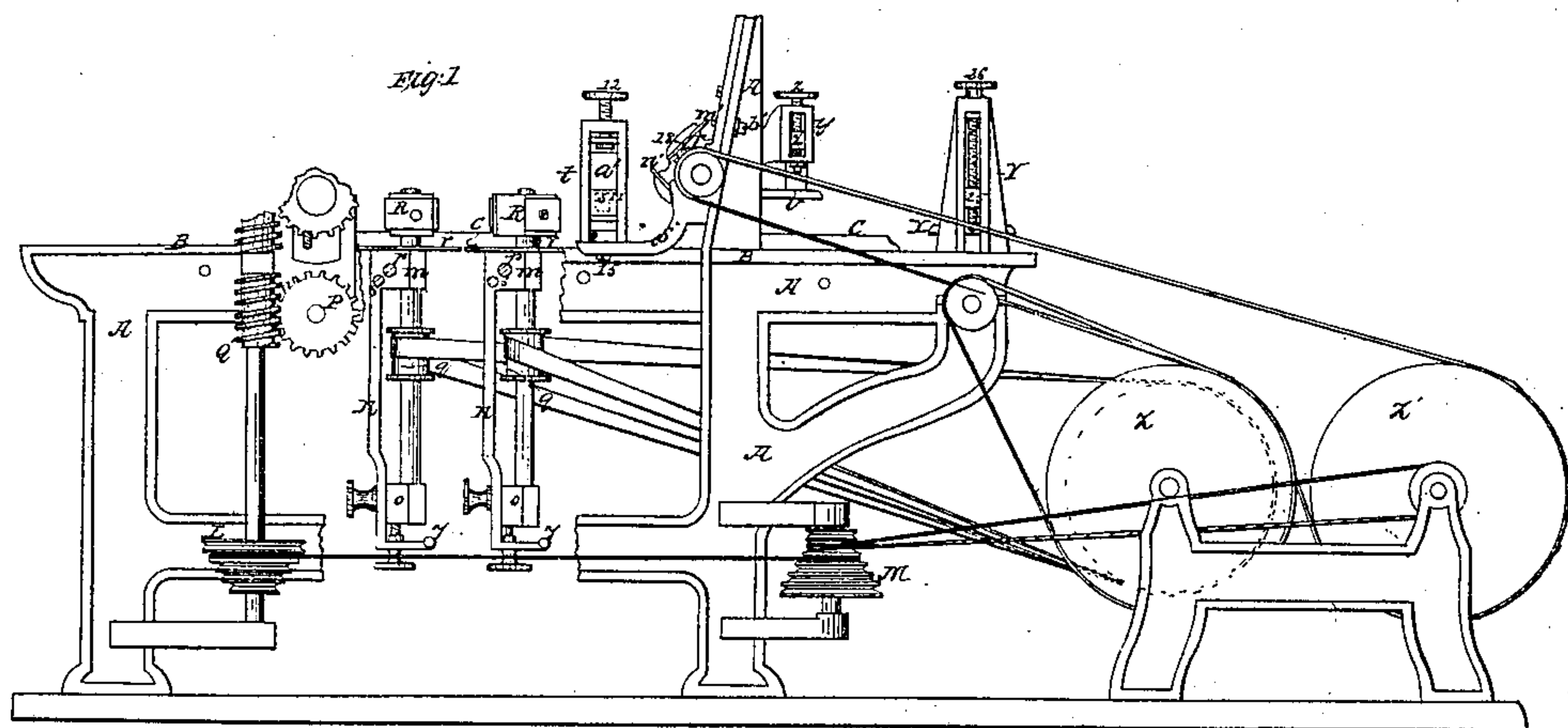


H. A. LEE.
MOLDING MACHINE.

No. 40,269.

Patented Oct. 13, 1863.



Witnesses:
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UNITED STATES PATENT OFFICE.

HENRY A. LEE, OF WORCESTER, MASSACHUSETTS.

IMPROVEMENT IN MOLDING-MACHINES.

Specification forming part of Letters Patent No. 40,269, dated October 13, 1863.

To all whom it may concern:

Be it known that I, HENRY A. LEE, of Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Molding-Machines; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, in which—

Figure 1 represents a side view of said machine. Fig. 2 represents a longitudinal vertical section through the same. Fig. 3 represents a top view of the same. Fig. 4 represents a vertical cross-section through the feed apparatus.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A represents the frame of the machine.

B represents the bed-plate on which the lumber is placed.

C represents the rests by which the lumber is held in its proper position while acted upon by the cutters.

D and E represent the feed-rollers, which feed the stuff to the cutters. The feed-roller D is grooved spirally for the purpose of pressing the lumber against the rests C during the operation of feeding. It is secured to the horizontal shaft F, which is supported by the journal-boxes *a b* within the standards G H, and it is operated by means of the gear-wheel I and screw-shaft K, the latter receiving its motion by means of the cone-pulleys L and M from the main driving-shaft. The feed-roller D and its shaft F can be adjusted longitudinally by means of the collar *c*, which is secured to the shaft by set-screw 2, and rests against the journal-box *b*. It can also be adjusted vertically to the thickness of the lumber by means of the adjusting-screws *d* and *e*, which pass through the standards G and H and through the journal-boxes *a b*. The end of the adjusting-screw *d* is secured to a stirrup, *f*, and the latter is connected with a spring, *g*, which is secured to the frame A. By this arrangement the feed-roller D is made yielding and to operate effectually on the lumber should it not be of the same thickness throughout. The position of the lower feed-roller, E, can be adjusted vertically by

means of the set-screws *h i*, which are made to operate upon its journal-boxes *k l*, which are set into proper recesses of the frame A. The feed-roller E is operated by means of the gear-wheels N O, gear-wheel P, and screw-shaft Q. The rests C are secured to guide-blocks 3, which can slide in the grooves 4 of the bed-plate, and their position can be adjusted laterally by operating the screw-shafts 5, which have their bearings in both sides of the frame A.

R represents the rotating vertical cutter-heads for cutting the molding on the sides of the material. They are supported by means of the journal-boxes *m* and *o*, the two being connected by a vertical hanger, *n*, which passes down from *m* to *o*. The two boxes or blocks are supported by means of the horizontal guide-rods *p* and *7*, and can be adjusted thereon laterally by means of the adjusting-screws 6. The cutter-heads can also be adjusted vertically by means of screw 8 of journal-box *o*, and are secured in any desired position by means of the set-screw 9.

r represents bed-plates which are secured to the top of the journal-boxes *m* to support the stuff while acted upon by the cutter-heads. They have circular recesses 10 to prevent the cutters from coming in contact with them, and being secured to the journal-boxes. They move with them when the latter are adjusted. By employing these small bed-plates *r*, I am enabled to dispense with the full bed-plate of the machine around the cutter-heads, thereby leaving large spaces through which the shavings may drop, thus keeping the cutter-heads clear and in view of the operator and enabling the latter to adjust their positions by means of the screw-shafts 6 without arresting the motion of the machine. The cutter-heads R receive their rotary motion by means of the pulleys *q* on their shafts.

s represents the press-bar for pressing the stuff to the bed B close to the horizontal rotary cutters, by which the molding is cut on the upper side of the material. The ends of the press-bar *s* are supported by suitable boxes 11, which are set into the frames *t*, and the height of said boxes and of the press-bar can be adjusted by means of the set-screws 12. A strong spring, *a'*, of india-rubber or other material, is set into the boxes 11, so as to press

upon the ends of the bar *s*, and thereby make the latter yielding in case the stuff which passes under it should vary in thickness. The shoe *w* is secured to the bar *s* by means of the set-screw 13, and two rollers, 14, are secured within said shoe to prevent friction when it is pressed on the material. The frames *t* are secured to the horizontal part of the cutter-frame *S* by means of the screws 15, which pass through slots 16, and thereby permit said frames to be adjusted in relation to the horizontal cutters.

T represents the horizontal cutter-head. The bearings of its center shaft are supported by the boxes *v* of the cutter-frame *S*. This cutter-frame is secured to the vertical part of the main frame *A* by means of the bolts *b'*, which pass through slots in the frame *A*, and it can be raised and lowered by means of the screw shaft *B'*, which passes through the main frame *A* and through the lug 17 of the frame *S*. The cutter-head *T* has four sides, to which the cutters are attached, instead of using two cutters only attached to the opposite side of the head. Thus I may use cutters *m' n'*, which are set alternately on the head, and which are shaped for different molds, and by this arrangement I am enabled to equalize the work and prevent the cutter from chopping out the wood, as is the case when two only are used. I secure the cutter-blades to the head by means of screw-bolts, the heads of which pass into T-shaped recesses 18 of the cutter-head, and they are fastened to it by means of the short plates 19 and screw-nuts 20. When the molding has a straight edge, the latter can be cut by these same cutters, and I therefore make a circular cavity, *g'*, in the bed-plate *B* and right under the cutter-head to enable the cutters to operate upon the edges of the material without striking the bed-plate. *x* represents another presser-bar. Its ends are supported by means of the brackets *y*, which are secured to the cutter-frame *S*, and it can be raised or lowered by operating the screws *z*. The hanger *U* is secured to the bar *x*, and can be adjusted thereon laterally. It has two jaws, 21 and 22. The former is stationary, the latter is hinged to the former, and they can be compressed by means of the screw 23. A piece of wood is secured between the jaws of this hanger, which is to press upon the molded material as it passes from the cutting-cylinder, as represented in red lines in Fig. 5; or a piece of wood may be secured for the same purpose to the bottom plate of the hanger by means of screws, which pass through the holes 24.

V represents another horizontal cutting or planing cylinder for the purpose of planing or molding the lower side of the material. It is provided with cutters in a similar manner as the cutter-head *T*. The material is pressed down upon the bed-plate *B* by means of the hanger *X* on cross-bar 25, the ends of which are suspended to the screw-shaft 26 in the

frames *Y*, and thus the hanger *X* can be raised or lowered. A block of wood is secured to the lower face of the hanger *X* and presses against the material on bed *B*.

The operation of the machine is as follows: Motion is imparted from the main shaft to the pulley *z*, *z'*, and *q*, which revolve the cutter-heads *R*, *T*, and *V*, and to the cone-pulleys *L* and *M* and screw-shaft, *Q*. The lumber being placed upon bed *B*, the feed-roller *D* is screwed down upon the lumber by turning the screw-shafts *e* and *d*. The spiral cogs on the feed-roller *D* press the lumber against the rests *C* without using springs or other devices for that purpose. By means of the crank *D'* on screw-shaft *Q* *K* the lumber can be drawn back or forward, to be examined by the operator if the work is properly performed. As the feed-rolls move the work toward the cutters the feed-roll *D* rises and descends with the different thicknesses of the material. The work is acted upon by the cutters of the cutter-heads *R*, passed under the yielding press-bar *w*, under the horizontal cutter cylinder *T*, which cuts the molding on the upper face, while by the arrangement above described the lumber is held down by the hanger *U*, and, as the presser *w*, cylinder *T*, and hanger *U* are all secured to the adjustable frame *S*, they can all be adjusted simultaneously by turning the screw-shaft *B*. The lumber now passes under the presser *X* and over the cutter-cylinder *V*, where the lower side is operated upon.

By the construction of the boxes *t*, which support the press-bar *s*, I am enabled to adjust the degree of pressure upon the lumber by adjusting the screws 12; but under any degree of pressure the bar *s* and shoe *w* will be able to yield by reason of the spring or elastic bolster *a'*, which is interposed between the action of the screw 12 and the press-bar *s*, as represented by a vertical section at Fig. 6.

Having thus fully described the nature of my invention, what I claim herein as new, and desire to secure by Letters Patent, is—

1. Securing the adjustable journal-box *a* of the feed-roller shaft *F* to the stirrup *f* and spring *g*, for the purpose of making said feed-roller yielding to the unequal thickness of the lumber, substantially in the manner herein described.

2. In combination with the adjustable rests *C*, the spirally-grooved feed-roller *D*, for the purpose of pressing the lumber against said rests while it is fed forward, substantially as herein set forth.

3. In combination with the vertical cutter-heads *R*, the boxes *m o*, hanger *n*, shafts *p*, 6, and 7, adjusting and set-screws 8 9, for the purpose of adjusting said cutter-heads horizontally and vertically without arresting the motion of the machine, substantially as herein set forth.

4. In combination with the yielding cross-bar *s*, press-shoe *w*, and its rollers 14, sub-

stantially in the manner and for the purposes set forth.

5. Securing the press-bars *s* and *x* in front and to the rear of the horizontal cutting-cylinder *T*, to the adjustable frame *S* of said cutting-cylinder, so as to enable the operator to adjust them simultaneously, substantially as herein described.

6. The concave *g'* in the bed-plate *B*, and under the cutter-cylinder *T*, to prevent the cutters from striking the bed-plate while operating on the edges of the lumber.

7. The adjustable hanger *U*, secured to the press-bar *x*, and when constructed and operated substantially in the manner and for the purposes set forth.

8. The arrangement of the pulleys *z* and *z'* with the belts for driving the shaft 9 of the

cutter-heads *R R*, by means of which I am enabled to throw off either of the two belts without interrupting the motion of the machine, and whereby said pulleys and belts are so arranged as not to interfere with the operator or the free passage of the material from the machine.

9. In combination with the press-bar *s*, the india-rubber springs *a'*, and boxes 11 and *t* and screw 12, for the purpose of making said bar yielding, and for adjusting its position to and pressure upon the lumber, substantially in the manner and for the purpose set forth.

HENRY A. LEE.

Witnesses:

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H. C. RICE.