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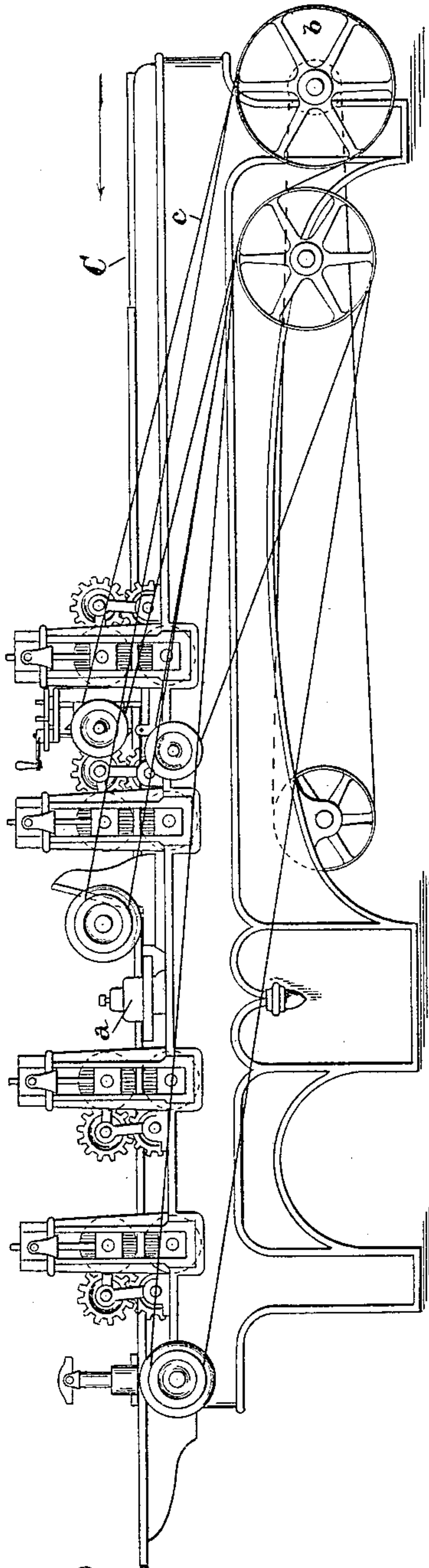
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J. B. MAHAFFEY.  
PLANING AND MATCHING MACHINE.

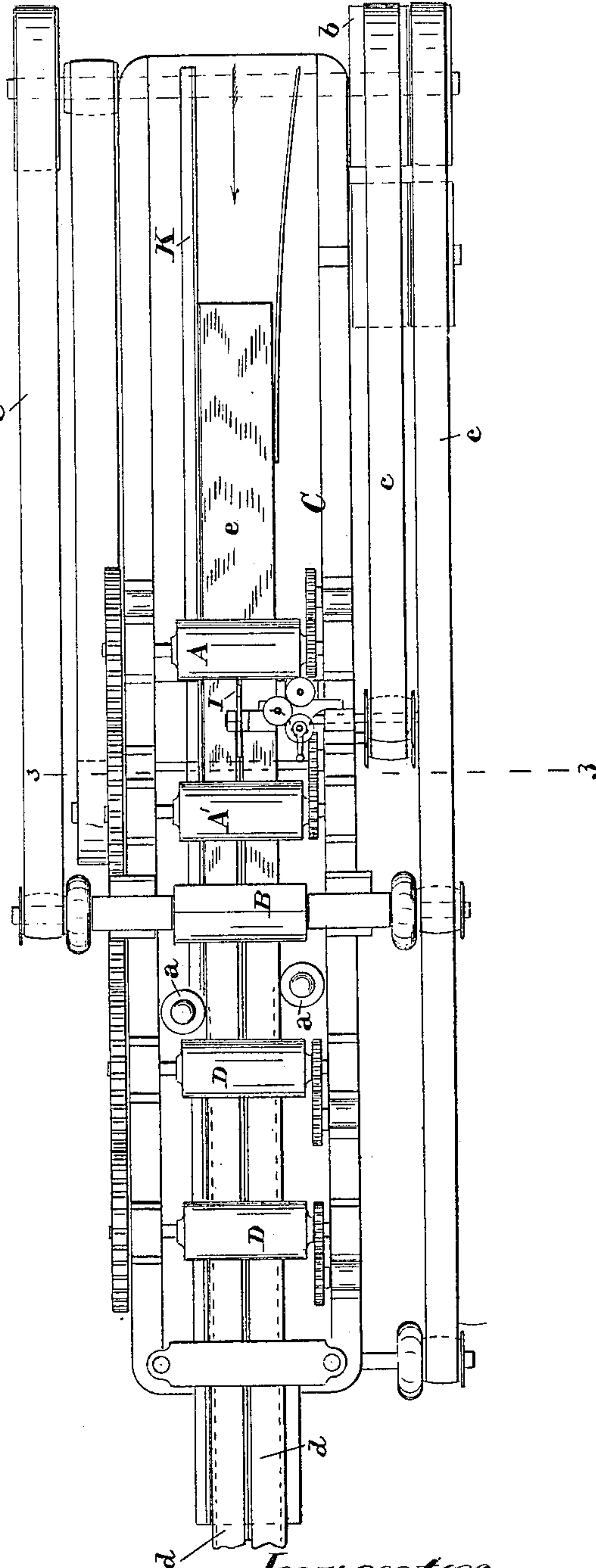
No. 362,896.

Patented May 10, 1887.

*Fig. 1.*



*Fig. 2.*



*Witnesses*

*Edward A. Osce,*

*John E. Morris.*

*Inventor*

*J. B. Mahaffey*

*By Chas B Mann*

*Attorney*

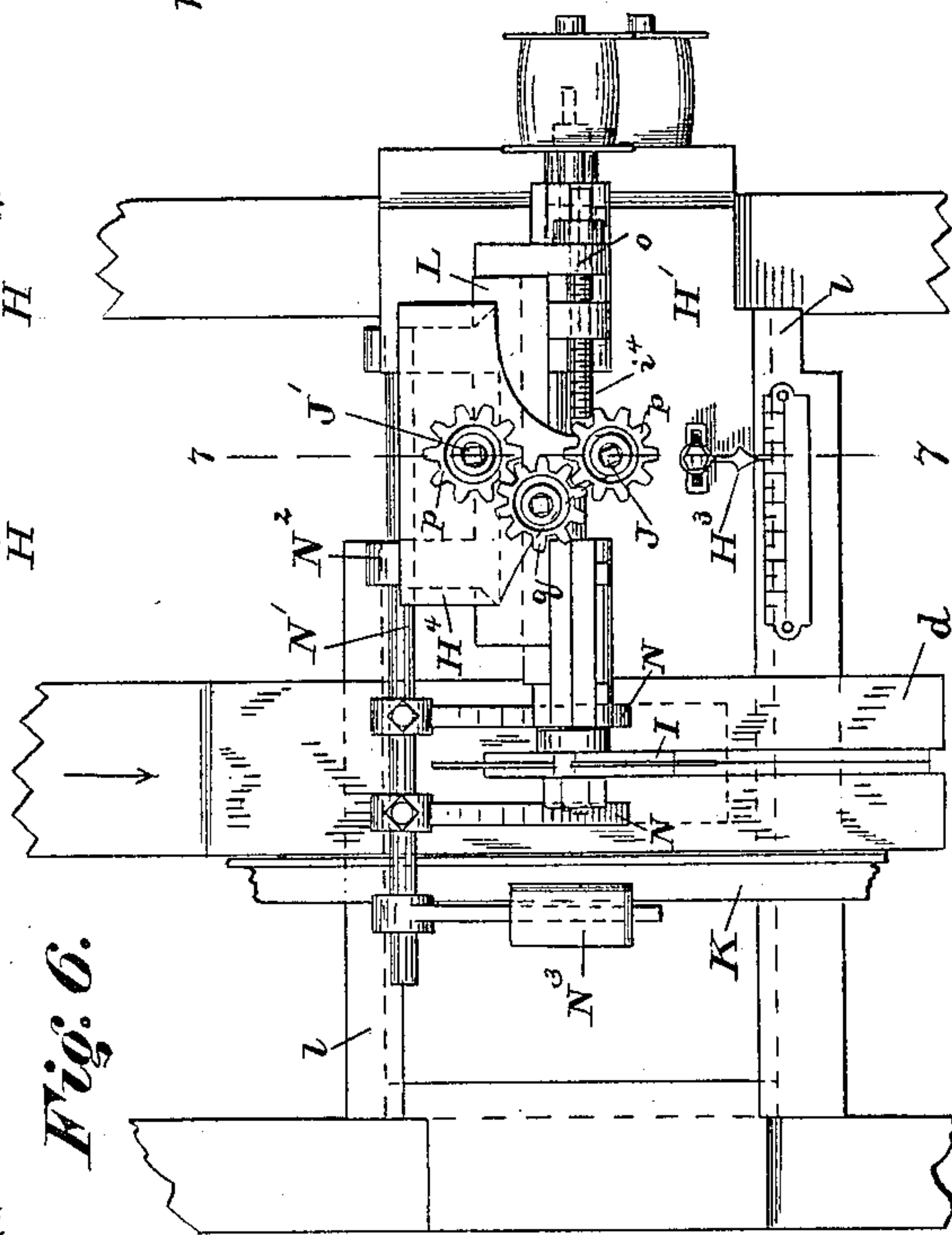
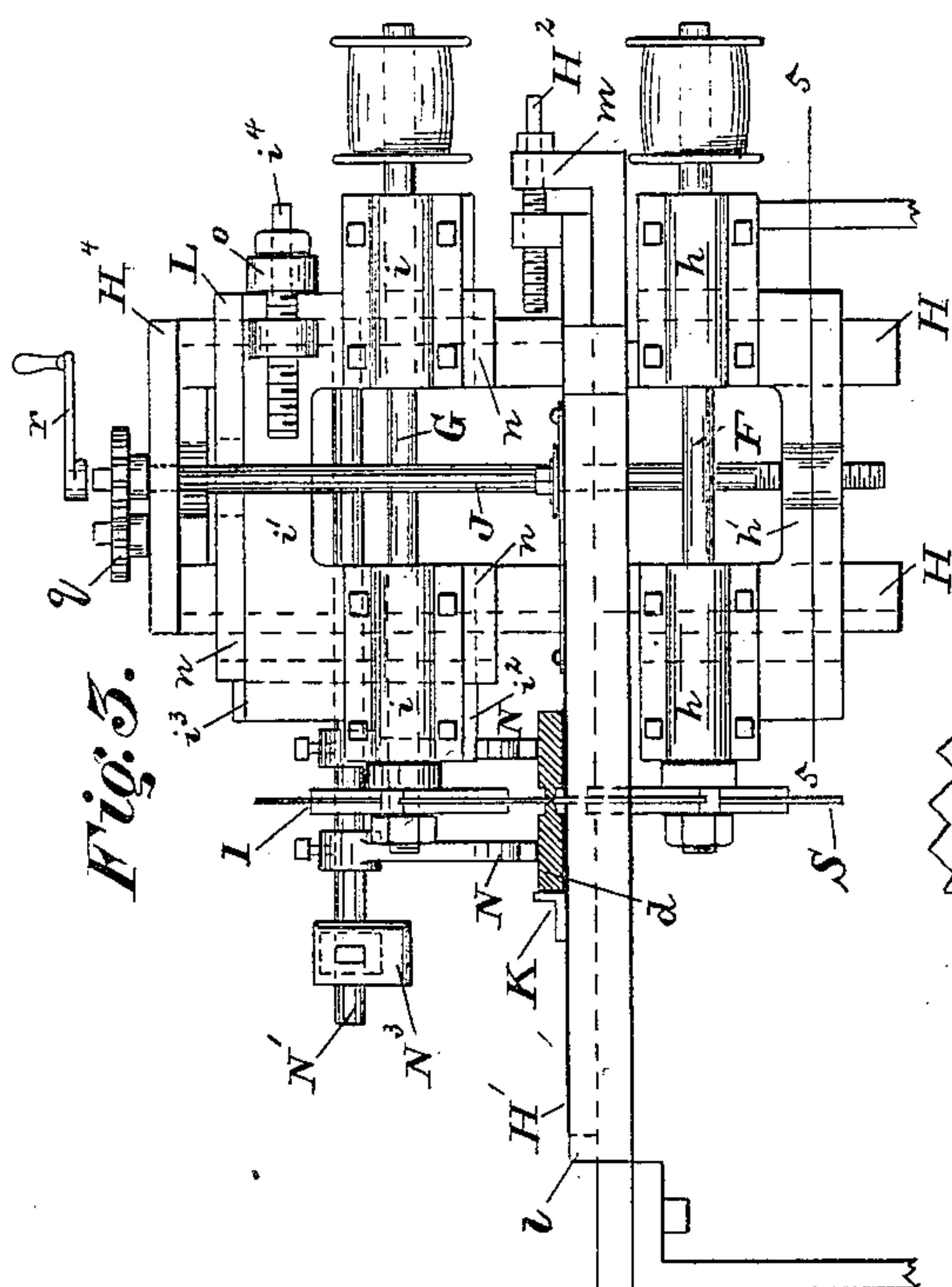
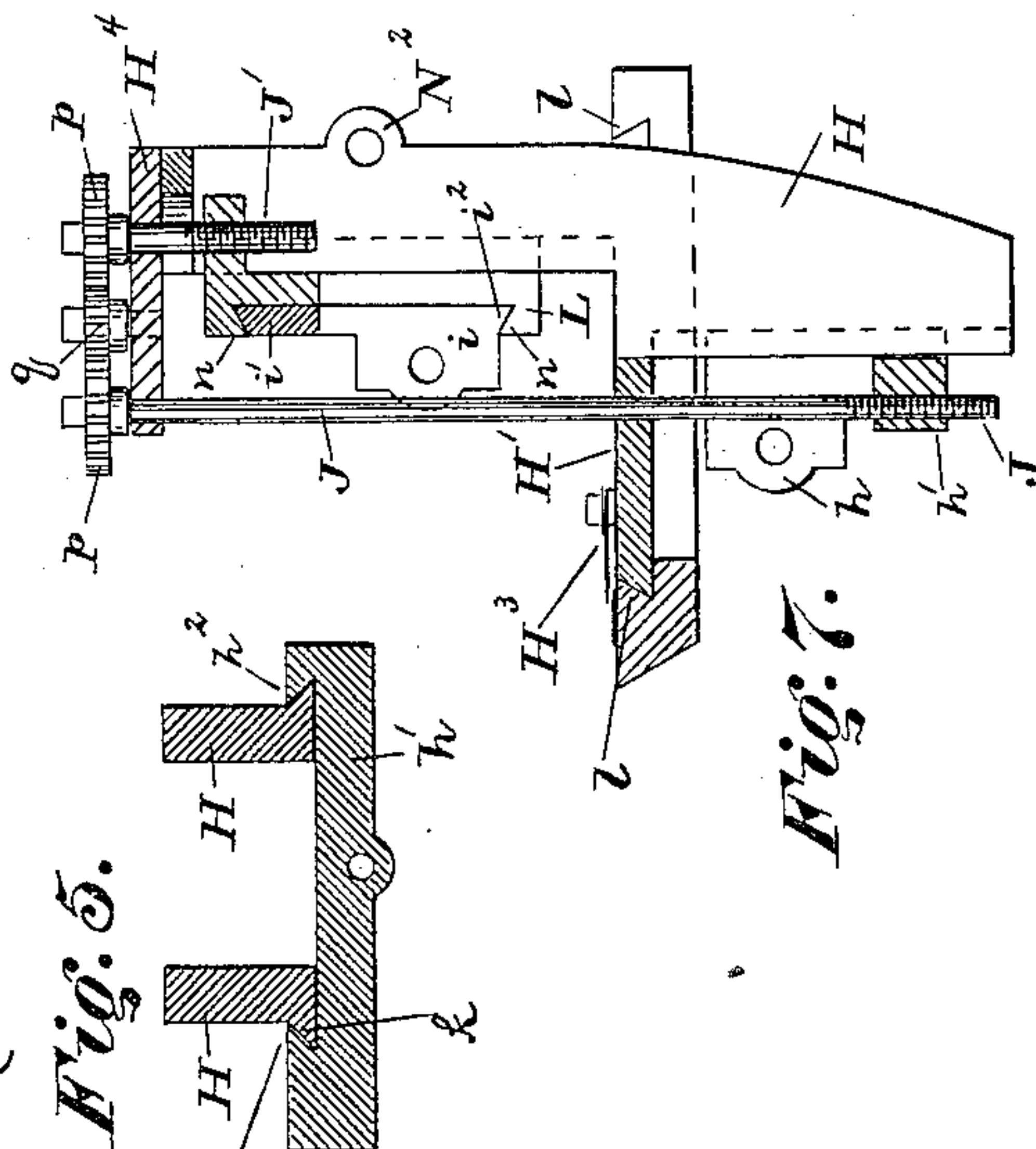
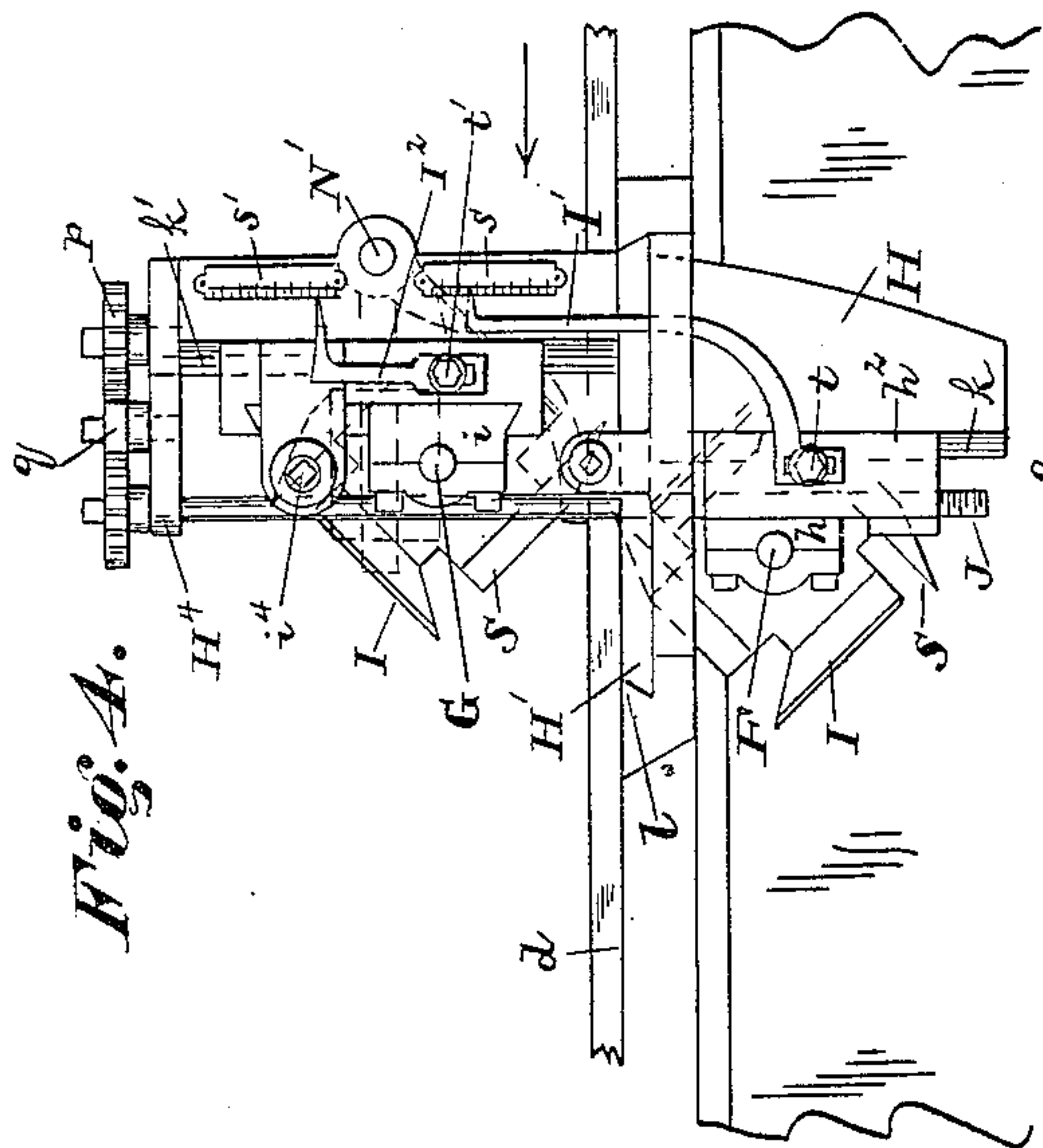
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J. B. MAHAFFEY.  
PLANING AND MATCHING MACHINE.

No. 362,896.

Patented May 10, 1887.



Witnesses:

EDWARD A. OSSE,

John E. Morris.

Inventor

J. B. Mahaffey

By Chas B. Mann

Attorney.



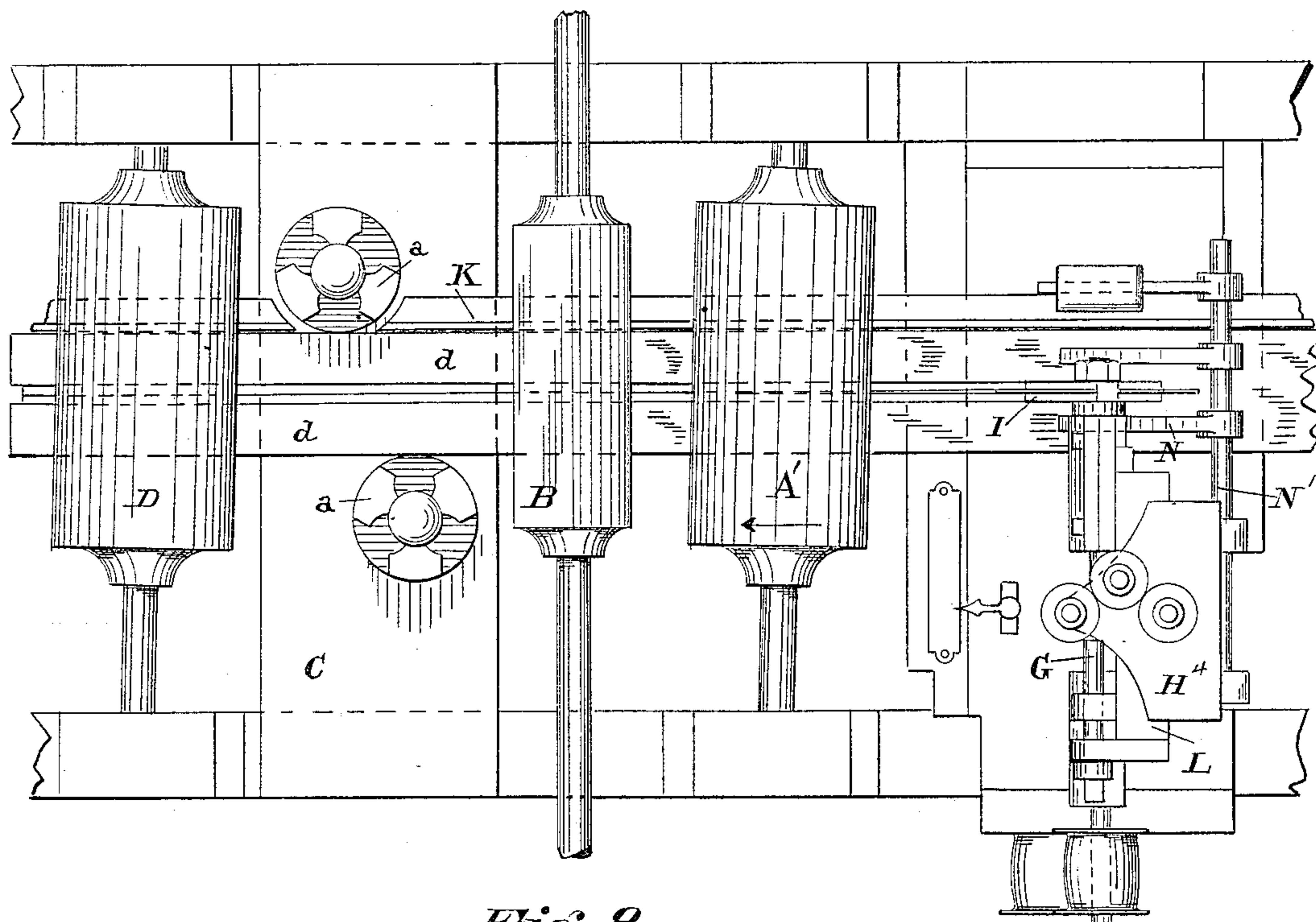
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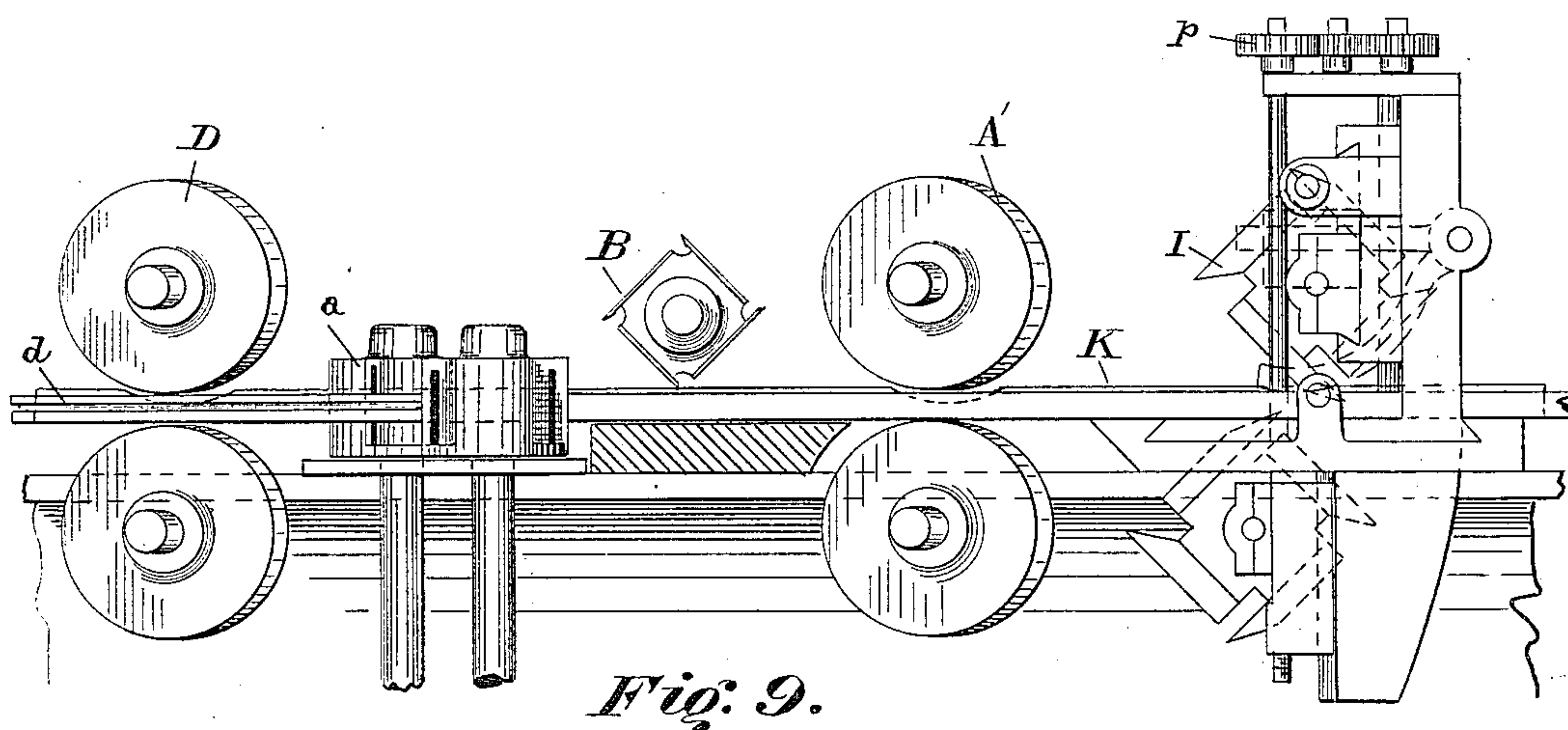
J. B. MAHAFFEY.  
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Patented May 10, 1887.



*Fig. 8.*



*Fig. 9.*

*Witnesses:*

*Edward El. Osse,*

*John E. Morris.*

*Inventor*

*J. B. Mahaffey*

*By Chas B. Mann*

*Attorney*



# UNITED STATES PATENT OFFICE.

JAMES B. MAHAFFEY, OF BALTIMORE, MARYLAND, ASSIGNOR OF ONE-FOURTH TO DAVID WILSON AND EBEN B. HUNTING, BOTH OF SAME PLACE.

## PLANING AND MATCHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 362,896, dated May 10, 1887.

Application filed November 30, 1886. Serial No. 220,254. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES B. MAHAFFEY, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Matching and Planing Machines, of which the following is a specification.

This invention has reference to improvements in the construction of machines for tonguing and grooving and planing boards at one operation.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a machine having my improvements. Fig. 2 is a top view of the machine. Fig. 3 is a vertical cross-section on the line 3 3, and shows an elevation of the tongue-cutter mechanism. Fig. 4 is a side view of the same parts. Fig. 5 is a horizontal section on the line 5 5. Fig. 6 is a top view of the tongue-cutter mechanism. Fig. 7 is a vertical section of the tongue-cutter mechanism on the line 7 7. Figs. 8 and 9 are top and side views, respectively, of the machine, showing an improvement in the feed-rolls.

The first pair, A, and the second pair, A', of feed-rollers and the surface-planer B are mounted on a table, C, in the order named. After these come the feed-rollers D, and at any desired point on the table after the surface-planer the two grooving cutters *a* may be located. The pulley or pulleys *b* and belts *c* may be constructed or arranged in the usual manner, or according to the necessities of the case.

The machine is organized to divide a rough board into two tongued, grooved, and planed boards, such as are used for floors, ceilings, wainscoting, and the like.

I use special tongue-cutters I and dividing-blades S, which are secured to a suitable body or head. These parts need not be particularly described here, as they form the subject of another application for a patent, Serial No. 220,254, filed November 30, 1886.

The heads having the tongue-cutters I are located immediately after the first pair of feed-rollers, A, and before the surface-planer B. Two tongue-cutter heads are employed—one above and the other below—and two narrow

tongued, grooved, and planed boards, *d*, are produced from one rough board, *e*.

The cutter-shafts F G are mounted in bearings designated, respectively, *h i*. The two lower bearings, *h*, are connected by a cross-bar, *h'*, having on its back two vertical flanges, *h<sup>2</sup>*, the confronting faces of which are beveled or undercut. (See Fig. 5.) These vertical flanges fit and slide up and down on the outward-flaring edges *k* of the two standards H below the table-top. A vertical screw, J, takes effect on the lower cross-bar, *h'*, and serves to vertically adjust the lower cutter. The standards H project both below and above the table-top, and are supported on a crosswise slide-plate, H', which moves in guides *l* on the table-top. By means of this crosswise slide-plate the standards, shaft-bearings, upper and lower shafts, and both tongue-cutters are all adjustable laterally, and this adjustment is regulated by a horizontal set-screw, H<sup>2</sup>, which is fixed in a post, *m*, on the table-top. This lateral adjustment of all the tongue-cutter mechanism in connection with the guide K will determine the width of the tongued-and-grooved boards. When shifting these parts by the set-screw H<sup>2</sup>, the precise adjustment may be determined by the indicator H<sup>3</sup>, one part (the pointer) being fixed to the slide-plate and one part (the scale) to the table-top.

The two upper bearings, *i*, are connected by a cross-bar, *i'*, and the lower edge, *i<sup>2</sup>*, of these bearings and the upper edge, *i<sup>3</sup>*, of the said cross-bar are beveled or flared out, (see Fig. 7,) so as to fit and slide horizontally in the guides *n* on the vertically-adjustable carrier L, which latter is on the two standards H. By having the upper bearings fitted in the horizontal guides *n*, the upper shaft, G, and upper tongue-cutter may alone be adjusted laterally, so as to place the said cutter in precise relation with the lower cutter. The separate lateral adjustment of the upper shaft, G, and cutter is regulated by a horizontal set-screw, *i<sup>4</sup>*, which is fixed to an arm, *o*, on the said carrier L.

By reference to Figs. 4 and 7 it will be seen that the upper and lower bearings for the shafts which carry the tongue-cutters are lo-



cated as nearly in a vertical plane as practicable. It will be seen that the upper bearing, *i*, is a little in advance (to the right) of the lower bearing, *h*. The carrier *L*, before referred to, sustains the upper bearings, shaft, and cutter, and is itself supported on the standards *H* above the table-top. The said carrier (like the lower cross-bar, *h'*) has on its back two vertical flanges, which fit and slide up and down on outward-flaring edges *h'* of the two standards *H* above the table-top.

A vertical screw, *J'*, (see Fig. 7,) takes effect on the carrier *L*, and by raising or lowering it serves to vertically adjust the upper tongue-cutter. It will be seen that means are here shown for the separate or independent vertical adjustment of the upper and lower tongue-cutters, whereby the wood tongue to be cut on the board may be made thick or thin, as desired. It will also be seen further on that both cutter-heads are vertically adjustable together or in unison.

At the top of the two standards *H* is a cross-head, *H'*, which has bearings for the two vertical screws *J* and *J'*, which turn freely without advancing. Each of these screws, above the cross-head, has a gear-wheel, *p*, and the two gear-wheels *p* are connected by an idle gear-wheel, *q*. The upper end of each vertical screw, and also the idle gear-wheel, is suitably squared to receive a wrench, *r*. When it is desired to vertically adjust the upper and lower tongue-cutters both together or in unison—that is, to raise both of them or to lower both of them—it may be done by applying the wrench *r* to either, and thereby the wood tongue to be cut on the board may be formed higher or lower on the board edge. It will thus be seen that connecting mechanism is provided to raise and lower the bearings of both cutter-shafts. When either one of the tongue-cutters is to be separately adjusted, the idle gear-wheel *q* may be removed by simply lifting it from its position, and the wrench applied to the upper end of the proper vertical screw.

An indicator is employed in connection with both the lower and upper tongue-cutters to determine with precision the vertical adjustment of said parts. The indicator for the lower cutter consists of a scale, *s*, fixed on one of the standards *H*, and a pointer, *I'*, adjustably secured by a set-screw, *t*, on the cross-bar *h'* of the bearings of the lower shaft. The indicator for the upper cutter consists of a scale, *s'*, and a pointer, *I''*, secured by set-screw *t'* on the carrier *L*.

Combined with the tongue-cutter mechanism so as to be automatically adjustable therewith are two board-pressers, *N*, each of which has position on an opposite side of the upper tongue-cutter, *I*, and both of which bear down on the board. These two board-pressers are mounted on a shaft, *N'*, which has bearings *N<sup>2</sup>* on the two standards *H*. At one end of

the shaft *N'* is an arm having a weight, *N<sup>3</sup>*. It is this weight which causes the pressers *N* to bear down on the board. It will be seen that when the tongue-cutters are adjusted laterally by a crosswise movement of the slide-plate *H'* the board-pressers *N* are also adjusted at the same time.

Two surface-planers *B* may be used, if desired—one for the upper and the other for the lower surface of the board.

This machine produces from a single rough board two divided boards tongued, grooved, and planed. The tongues are formed first, and then the surface is planed.

In a machine of this character it is important that the groove-cutters *a* cut a groove in the boards of uniform depth. To effect this end I have arranged the feed-rollers *A'* and *D* (see Figs. 8 and 9) at a diagonal position with respect to the board-guide *K*, which latter extends lengthwise of the table-top, and of course parallel with the sides thereof. In practice a machine having a twelve or fourteen inch long feed-roller need have said rollers deviate only about an eighth of an inch from a right angle with respect to the board-guide. The effect of this arrangement of the feed-rollers is to crowd the two tongued and planed boards *d* toward the board-guide *K*, and as the said boards in their passage through the machine are kept crowded against the guide, the groove-cutters *a* will always cut to the same depth.

Having described my invention, I claim and desire to secure by Letters Patent of the United States—

1. In a machine for tonguing and dividing boards, the combination of the crosswise slide *H'*, the two standards *H*, mounted on and projecting both below and above the said slide, and provided below and above with guide-edges, a cutter shaft, *F*, below the said slide, having bearings *h* vertically adjustable on the standard-guides, a carrier, *L*, vertically adjustable on the standard-guides above the said slide, and an upper cutter-shaft, *G*, having bearings *i* laterally adjustable on the said carrier, for the purpose set forth.

2. In a machine for tonguing and dividing boards, the combination of the crosswise slide *H'*, the two standards *H*, mounted on and projecting both below and above the said slide and provided with vertical guide-edges, a lower cutter-shaft, *F*, below the table-top, having bearings *h* vertically adjustable on the standard guide-edges, an upper cutter-shaft, *G*, having bearings above the table-top vertically adjustable on the standard guide-edges, and connecting mechanism to raise and lower the bearings of both cutter-shafts, whereby the part may laterally be adjusted, and both the upper and lower tongue-cutters may be raised or lowered together, or either one of the tongue-cutters may be raised or lowered separately.



3. In a machine for tonguing and dividing  
boards, the combination of the crosswise slide  
H', standards mounted on said slide, a tongue-  
cutter whose shaft G has bearings supported  
5 on said standards, and a shaft, N', having  
bearings also on the said standards and pro-  
vided with two weighted board-presses, N,  
each of which has position on an opposite

side of the said tongue-cutter, for the purpose  
set forth.

In testimony whereof I affix my signature in  
the presence of two witnesses.

JAMES B. MAHAFFEY.

Witnesses:

JOHN E. MORRIS,

JNO. T. MADDOX.