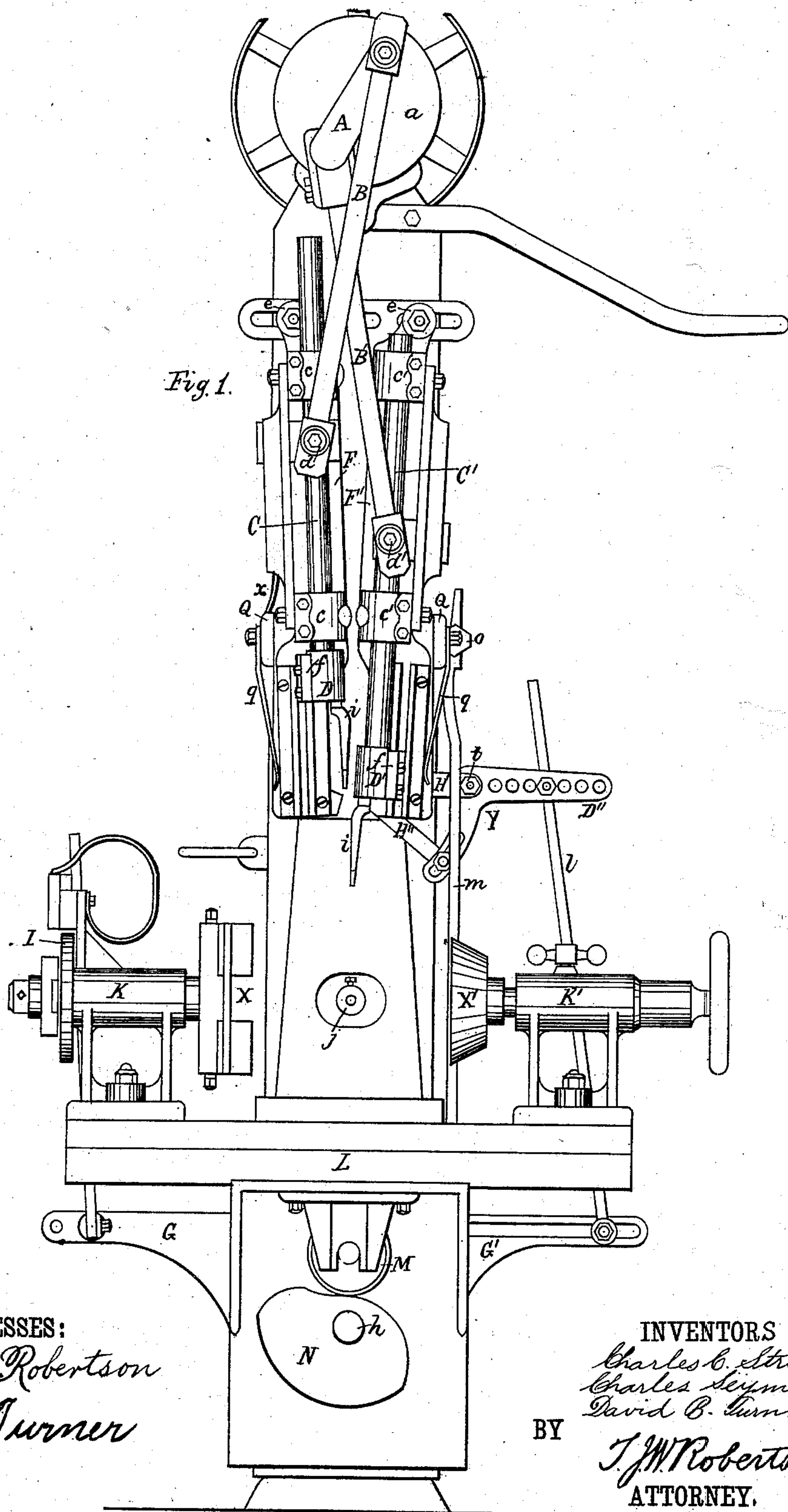


(No Model.) 4 Sheets—Sheet 1.
C. C. STRONG, C. SEYMOUR, & D. B. TURNBULL.
Mortising Machine.

No. 239,881.

Patented April 5, 1881.



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(No Model.)

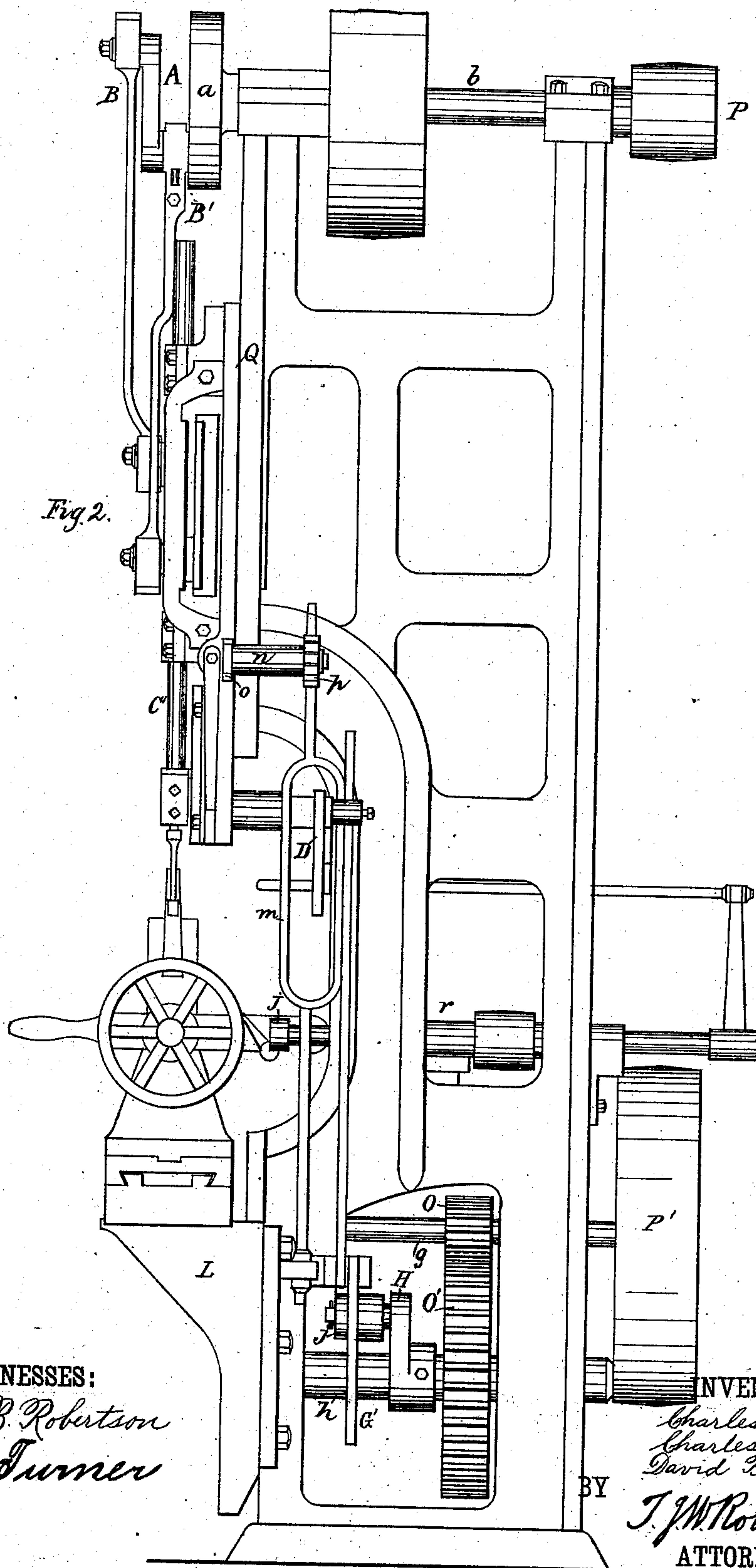
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C. C. STRONG, C. SEYMOUR, & D. B. TURNBULL.

Mortising Machine.

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Patented April 5, 1881.



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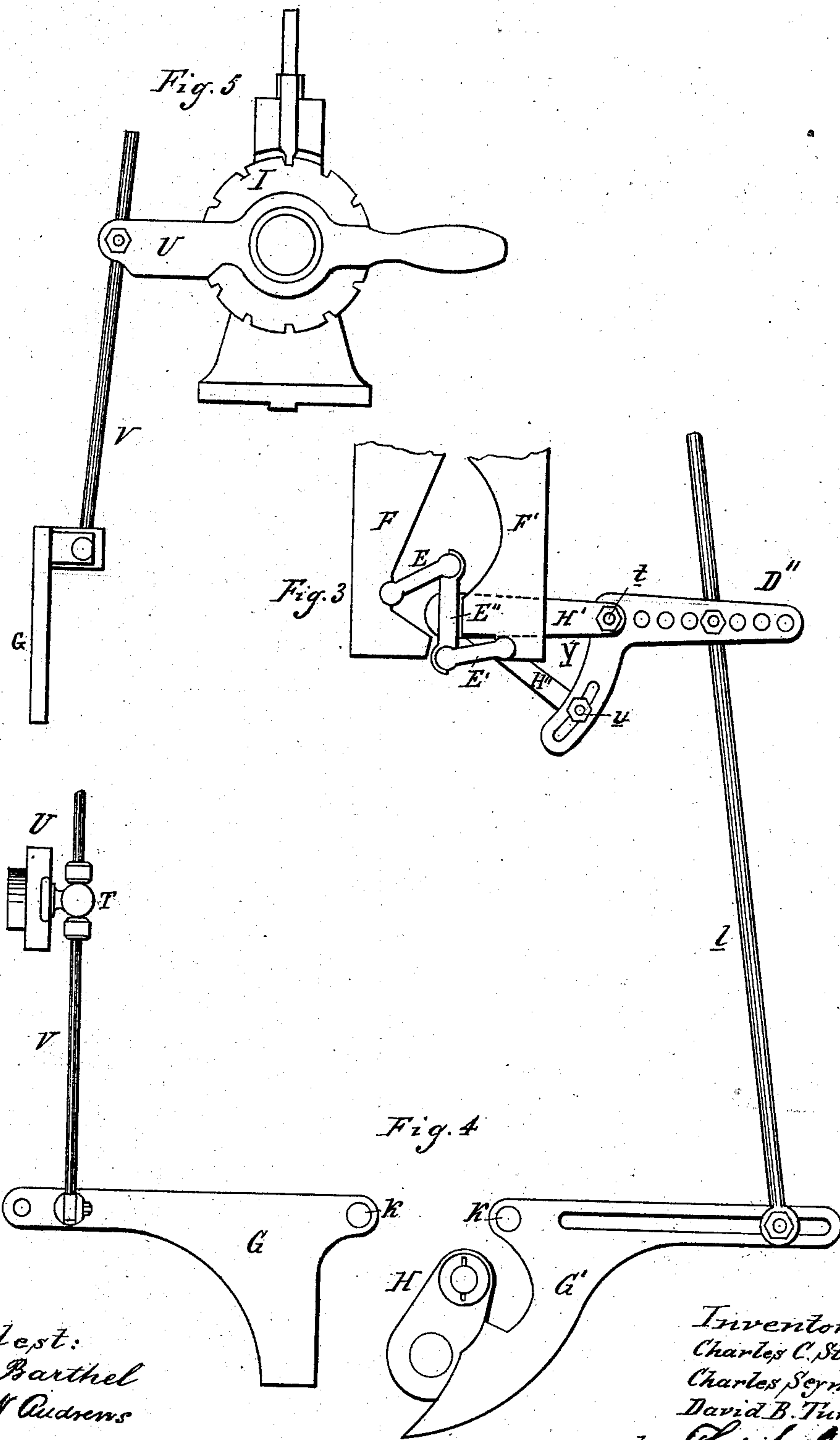
C. C. STRONG, C. SEYMOUR, & D. B. TURNBULL.

4 Sheets—Sheet 3.

Mortising Machine.

No. 239,881.

Patented April 5, 1881.



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(No Model.)

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C. C. STRONG, C. SEYMOUR, & D. B. TURNBULL.
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Fig. 7.

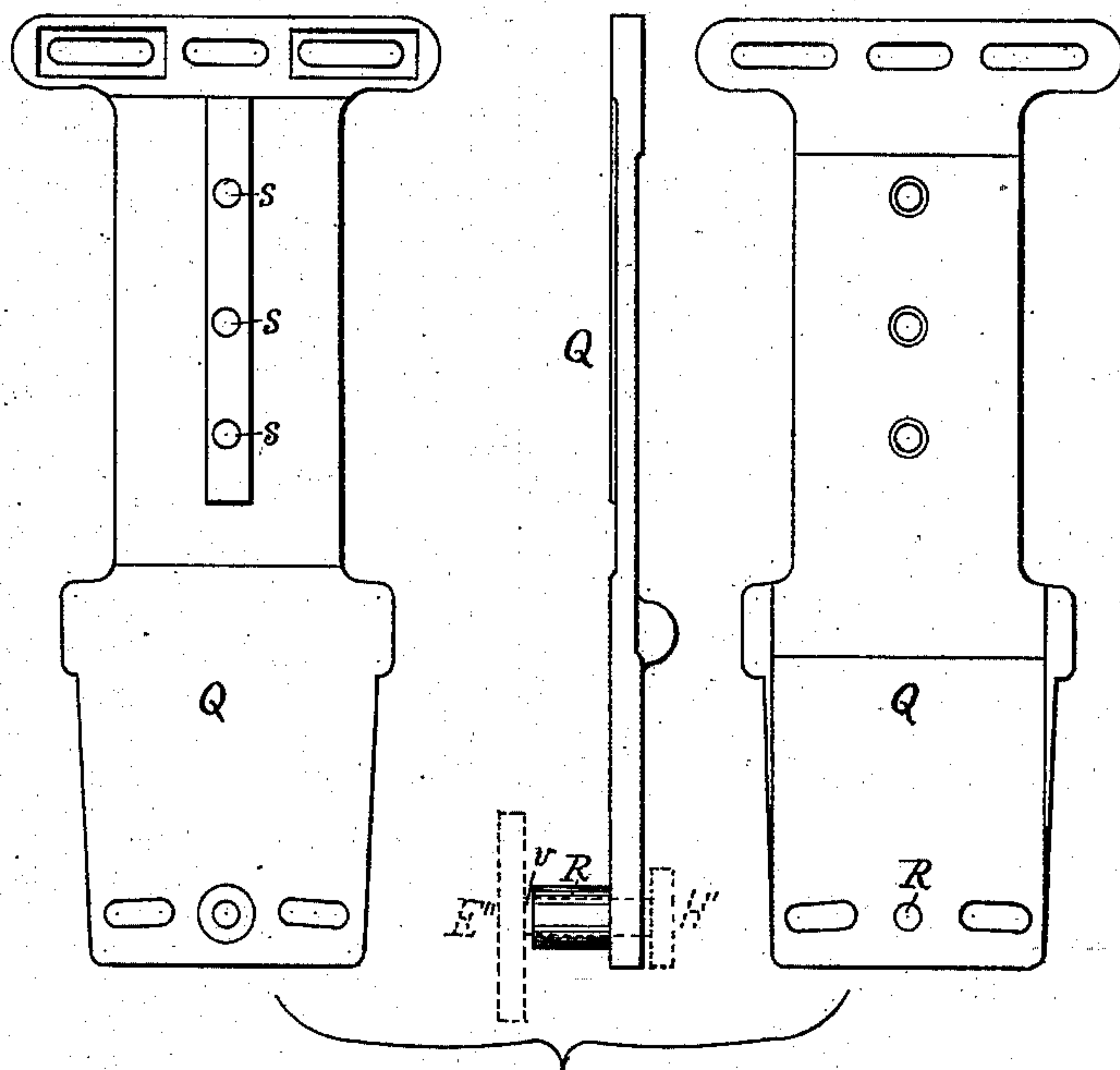


Fig. 8.

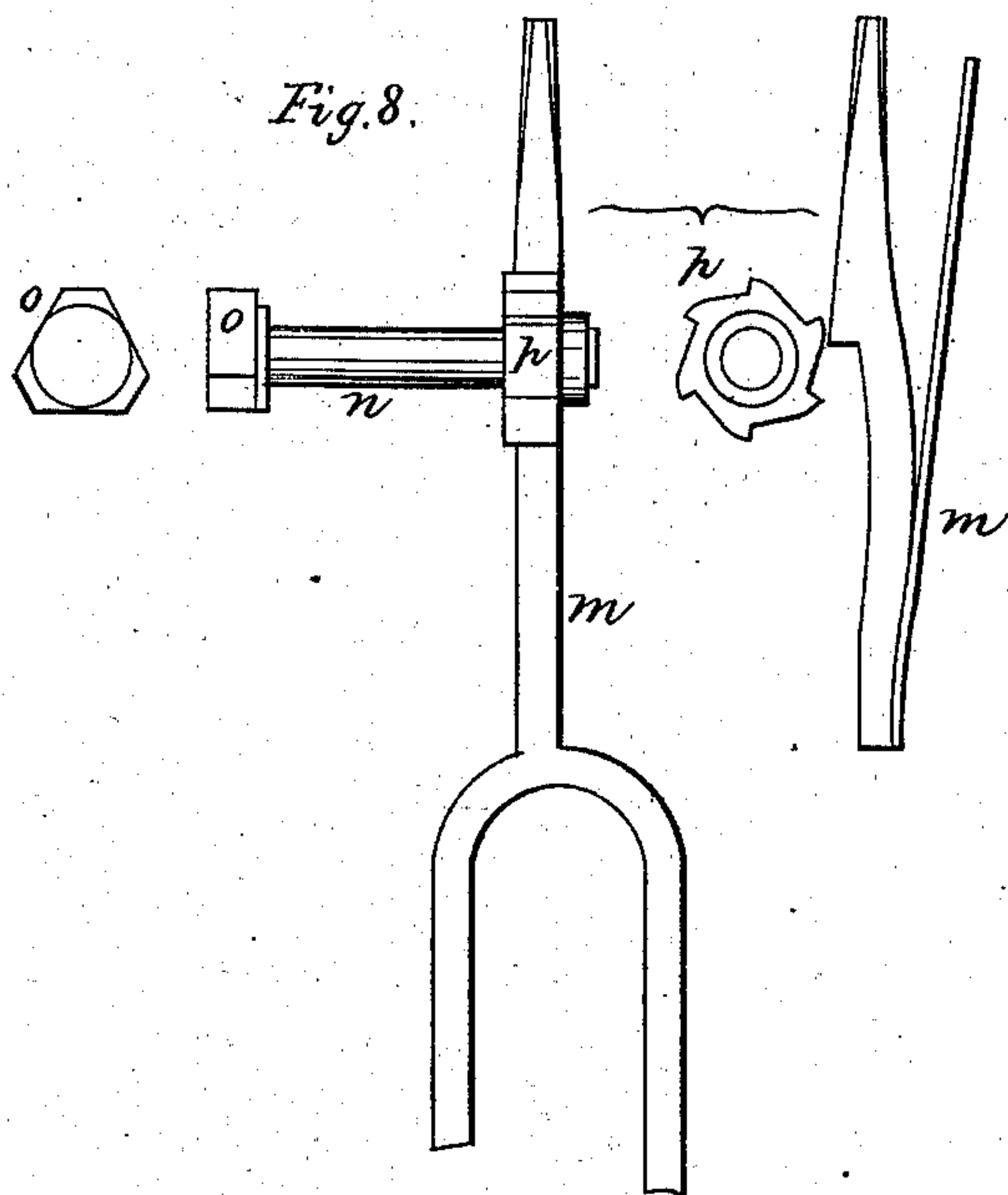
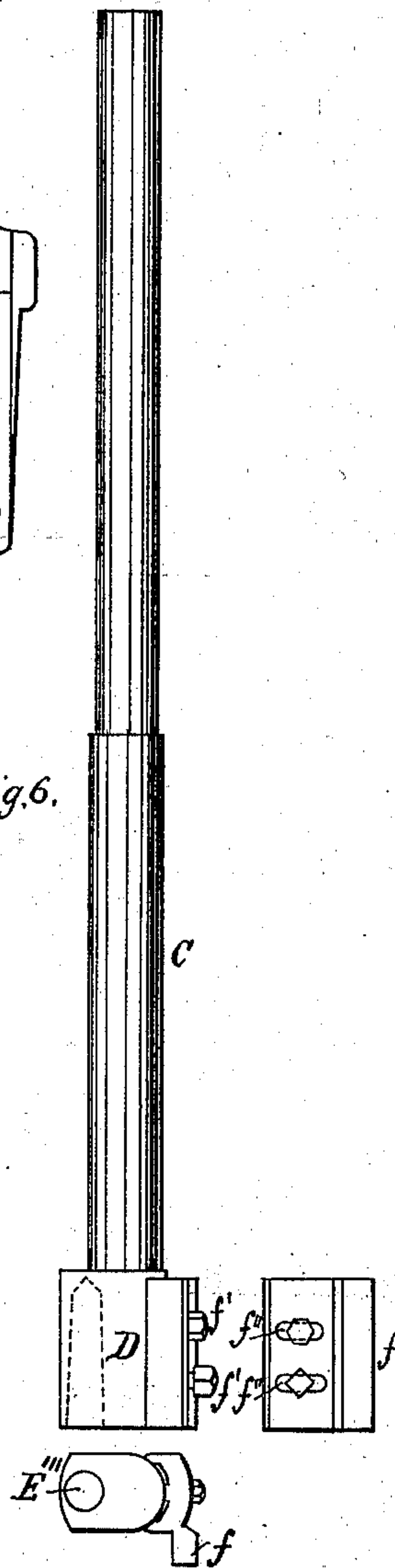


Fig. 6.



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UNITED STATES PATENT OFFICE.

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DEFIANCE, OHIO, ASSIGNORS TO DEFIANCE MACHINE WORKS, OF
SAME PLACE.

MORTISING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 239,881, dated April 5, 1881.

Application filed December 28, 1880. (No model.)

To all whom it may concern:

Be it known that we, CHARLES C. STRONG, CHARLES SEYMOUR, and DAVID B. TURNBULL, of Defiance, in the county of Defiance and State of Ohio, have invented an Improvement in Mortising-Machines, of which the following is a specification.

The nature of this invention relates to certain new and useful improvements in mortising-machines for the specific purpose of mortising carriage and wagon hubs; and it consists in the peculiar construction and arrangement of the parts, as hereinafter more fully set forth.

Figure 1 is a front elevation. Fig. 2 is a side elevation. Fig. 3 is a detached elevation, showing the mechanism for parting the chisels. Fig. 4 shows the device by which the gigging of the dial-plate and the operation of the parting device shown in Fig. 3 is alternately performed. Fig. 5 is a detached elevation of the dial-plate. Fig. 6 is a detached elevation and plan of one of the chisel-bars. Fig. 7 shows a detached front, side, and rear view of the oscillating bed-plate Q. Fig. 8 is a detached elevation, side and rear view, of the device used for producing "stagger-mortises."

In the accompanying drawings, which form a part of this specification, *a* is a crank-wheel attached to the main driving-shaft *b*, which is journaled at the top of a suitable upright frame.

A is a double crank, giving reciprocating motion, by means of the pitmen *B B'*, to the chisel-bars *C C'*, which are held in position by the guides *c c* and *c' c'* upon the bed-plates *F* and *F'*. The pitmen *B B'* are attached to the chisel-bars *C C'* by means of wrists *d d'*, in which the chisel-bars are held by set-screws, thus allowing of their being turned, raised, or lowered, for the purpose of adjustment. The bed-plates *F F'* are adjustably pivoted to the bed-plate *Q* at *e*, and have a pendulous movement on said pivots, which is controlled by the parting mechanism hereinafter described.

The bed-plate *Q* is firmly but adjustably bolted to the frame of the machine by means of bolts passing into the holes *s s* in the plate *Q*, and thence into the frame, except when stagger-mortises are made, when all the bolts are removed except a bolt passing through one of

the holes *s s s*, which then serves as a pivot for the bed-plate *Q*, and on which it is made to oscillate, as further on described.

Attached to the lower ends of the chisel-bars *C C'* are the heads *D D'*, to which the chisels *i* are secured in sockets *E''' E'''*. These sockets are circular in cross-section, with their axis parallel but not coincident with the axis of the chisel-bars. *f* is a guide, adjustably secured to the head *D* by screws *f'*, passing through lateral slots *f''*. By this arrangement the chisels can be adjusted in their relative position to each other by turning the chisel-bars.

g is a counter-shaft, to which motion is given by a belt and pulleys, *P P'*. *O* is a gear-wheel, meshing with the gear-wheel *O'*, which is situated upon a shaft, *h*, and upon which is keyed the rotating crank *H*, provided with the roller wrist-pin *j*.

Pivoted at *k k'* are the two bell-crank levers *G G'*, with which the crank *H* alternately comes in contact and actuates the same. The bell-crank lever *G* actuates or gigs the dial-plate *I*, which is notched, as shown, each notch defining, in the operation of the machine, the position of the mortise upon the hub.

V, *T*, and *U* are the connections for transmitting the motion from the bell-crank lever *G* to the dial-plate *I*, all the parts being provided with any ordinary means for adjustment. The bell-crank lever *G'* has adjustably pivoted to one end the connecting-rod *l*, which is also adjustably pivoted to the bell-crank *D''* of the compound lever *Y*. This lever *Y* actuates the parting mechanism of the chisel-bars *CC'*, and its construction and operation will be explained after the parts which act in conjunction therewith are described.

Keyed upon the shaft *h* is the cam *N*, which, in its rotation, bears against the roller *M*, journaled at the under side of the table *L*, whereby the latter is given an up-and-down motion, being held in position by proper vertical guides. Upon this table, and secured to proper head-blocks *K K'*, are the chucks *X X'*, between which the hub is held and presented to the operation of the chisels. The chuck *X* is connected with the dial-plate *I*, thus gigging the hub in the manner desired, the crank *H*

operating the bell-crank R G, rod V, connection T, and rocking lever U, intermittently turning the dial-plate and hub.

For the purpose of making stagger-mortises 5 in the hub the bed-plate Q is oscillated on a pivot passing through one of the holes s into the frame. This oscillation is produced in the following manner: Attached to the frame of the machine, and journaled in proper bearings, 10 is a small shaft, *n*, carrying on one end a small cam-wheel, *o*, and at the other the ratchet-wheel *p*. This latter is caused to intermittently revolve by the action of the rod *m*, which engages therewith, as shown in Fig. 8, and has 15 an up-and-down motion imparted to it by being attached to the table L. The rotation of the ratchet *p* imparts its motion to the cam-wheel *o*, which latter, by bearing against the side of the plate Q, will shift or oscillate the same 20 upon its pivot to right or left. A spring, *x*, (see Fig. 1,) secured to the frame, holds the plate Q against the cam-wheel *o*. The oscillation of the bed-plate Q necessarily oscillates the plates F F', and thereby the chisel-bars 25 C C', alternately from right to left, and vice versa, thus staggering the mortises cut by the chisels *i i*.

In the same horizontal plane, but with its axis at right angles to the axis of the chucks, 30 is properly journaled a shaft, *r*, whose forward end carries the head J, which is properly socketed to receive a drill, whereby the holes are bored in the hub previous to chiseling, as usual.

In the operation of the machine the chisel-bars, the direction of whose motion is converging, begin to cut the mortise from opposite sides of the hole, and are made to diverge gradually, so as to obtain the proper length of mortise. This spreading or diverging of 40 the chisel-bars during their operation is produced by the lever Y, which, as above described, is actuated by the bell-crank G'. The lever Y consists of the three parts D'', H'', and H'. The link H' is pivoted at *t* to the bell-crank D'', while its other end, which passes 45 behind the plate Q, carries a pin, *v*, which passes through the hollow stud R, and has secured to its front end the cross-bar E'', to whose ends are pivotally secured the links E E', which also are pivotally connected to the plates F and F'. The link H'' is adjustably pivoted at *u* to the bell-crank D'', while its other end is pivoted to the frame directly back of R, which is the pivotal point for the link H'. 55 It will be seen that if the bell-crank G' is actuated by the crank H the rod *l* will raise the lever Y, turn the cross-bar E'' upon its pivot R, and by means of the links E E' force the lower ends of the pendulous bed-plates F and F' apart, the chisel-bars partaking in the same motion. After the crank H parts its contact with the bell-crank G', the parts above named will resume their original position by the pressure of the springs *q q* on the bed-plates F F'. As all the parts effecting the 65 parting of the chisels have a positive move-

ment, the chisels will cut mortises of uniform lengths during the operation of the machine, and with the same adjustment.

During the operation of making a stagger-mortise, the bed-plates F F', by which the chisel-bars are held in position, are caused to oscillate on their pivot *e* from right to left, and vice versa. During such oscillation the bell-crank D'' would be alternately raised and depressed, 75 thereby producing an undesirable difference in the length of mortises, if the links H'' and H' had a common pivot at R. It is for the purpose of correcting such difference that the link H' is pivoted to the oscillating bed-plate 80 Q at R, and the link H'', back of R, to the frame of the machine, this arrangement effecting, in turn, a correction of the raised and depressed movement of the bell-crank D.

In practice, after the hubs have been bored 85 for the mortises, motion is given to the shaft *b*. This motion will actuate the chisel-bars and force the chisels to cut a mortise in the hub held between the chucks. In the interval the cam N has moved the table L to its highest 90 point, and the crank H has actuated the parting device for the chisel-bars. When the table L has descended, the gigging of the hub for the next mortise has taken place, and the same series of operations begins anew. The 95 staggering is done at each descent of the table.

What we claim as our invention is—

1. In a machine for cutting mortises, the combination of the double crank A, pitmen B 100 B', chisel-bars C C', pendulum bed-plates F F', lever Y, crank-arm E'', and links E E', for the purpose of parting the same, substantially in the manner described.

2. The combination of the crank H with the 105 bell-crank lever G', rod *l*, lever system Y, cross-bar E'', links E E', connecting said cross-bar with bed-plates F F', and chisel-bars C C', whereby lateral movement is imparted to the chisels, substantially as described. 110

3. The combination, with the chisel-bar C, provided with the head D, of the socket E'', adjustable guide *f*, provided with slots *f''*, and screws *f'*, whereby the chisel can be turned, 115 substantially as described.

4. The combination of the cam N, friction-roller M, table L, head-blocks K K', and chucks X X', whereby the hub is alternately presented to and withdrawn from the chisel-bars, for the purposes described. 120

5. The combination, with the bed-plate Q, having bed-plates F F' pivoted thereto, of the cam-wheel *o* and spring *x*, pressing the bed-plate Q against said cam-wheel, whereby an oscillating movement is given to the bed-plates 125 and chisel-bars, substantially as described.

6. The combination, with the pivoted bed-plates F F', of the slotted bell-crank D'', link H', adjustable link H'', said links connecting the bell-crank lever to the rocking cross-bar 130 E'', and links E E', connecting the cross-bar and plates, substantially as described.

7. In a machine for cutting mortises, the
combination of two alternately-reciprocating
chisel-bars, C C', pivoted on pendulous bed-
plates F F', with automatic mechanism, as
5 set forth, for spreading the chisel-bars and
staggering the same, a table, L, alternately
raised and lowered, and devices constructed
and operated substantially as described, for
holding and gigging the hubs and boring the

mortises, the whole constructed, arranged, and 10
operated in the manner and for the purpose
set forth.

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