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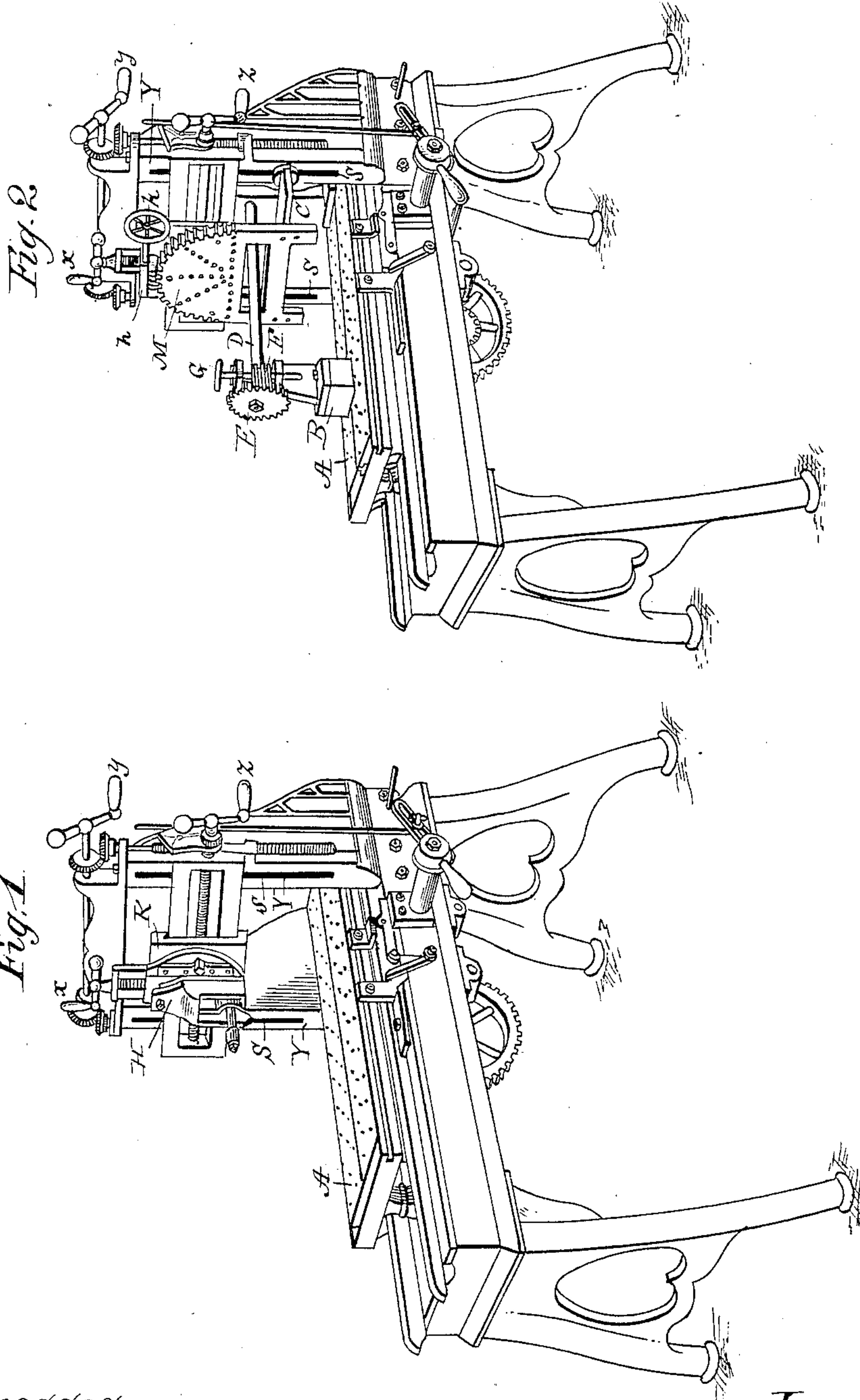
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C. K. DAWES.

PLANING AND SLOTTING MACHINE.

No. 325,061.

Patented Aug. 25, 1885.



Witnesses:

L. C. Hills,  
W. B. Masson

Inventor:

Charles K. Dawes,  
by Brodhead, King & Worcester  
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(No Model.)

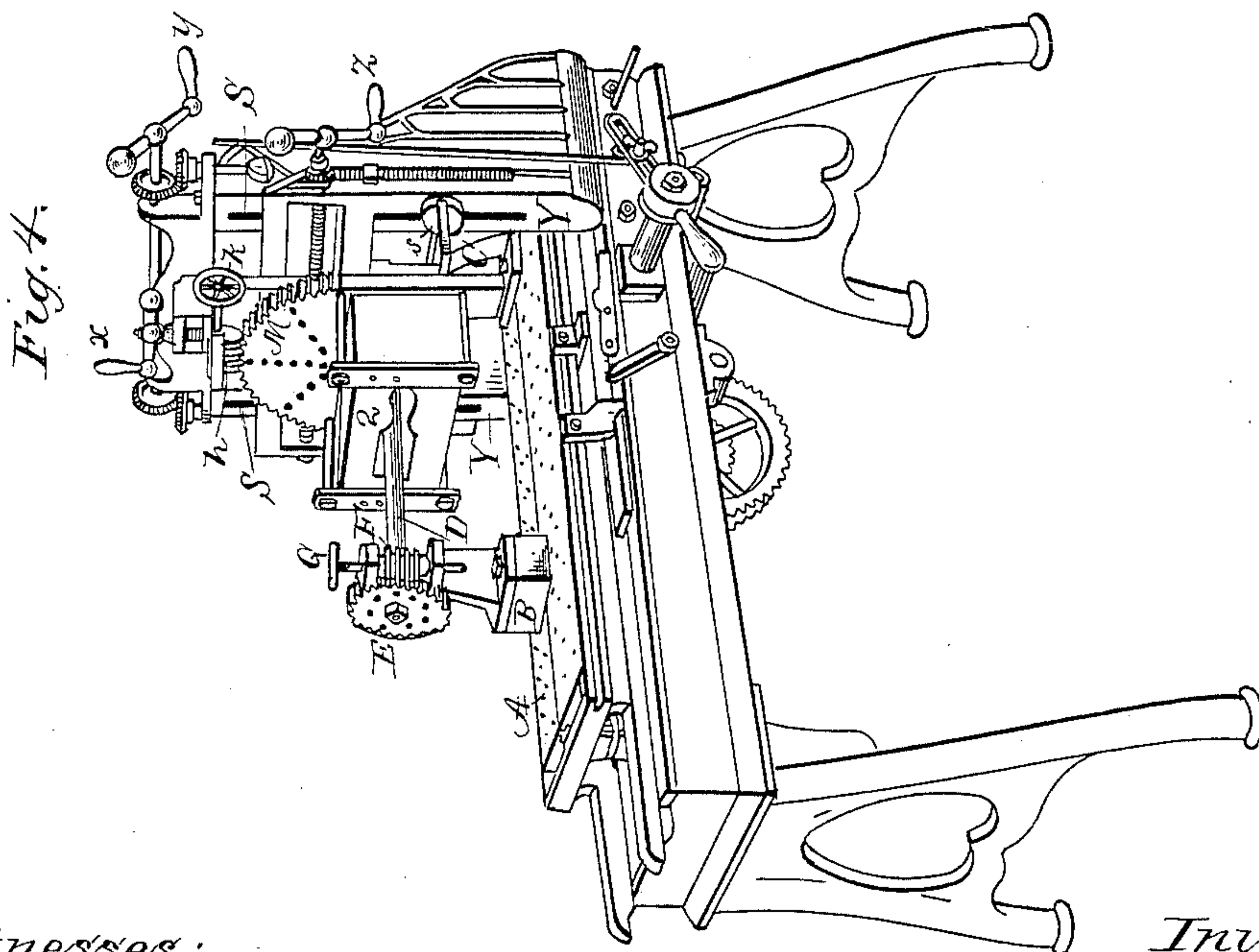
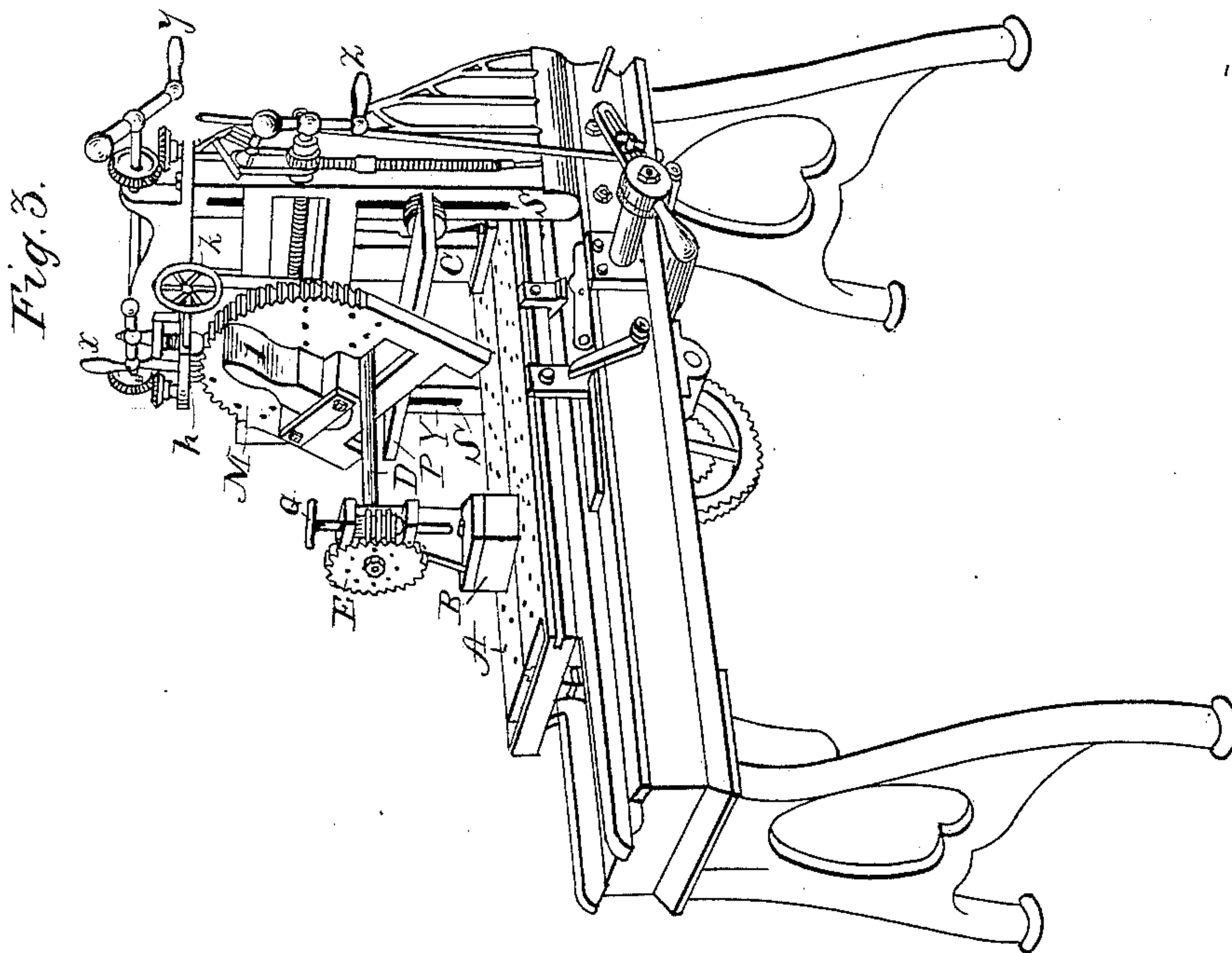
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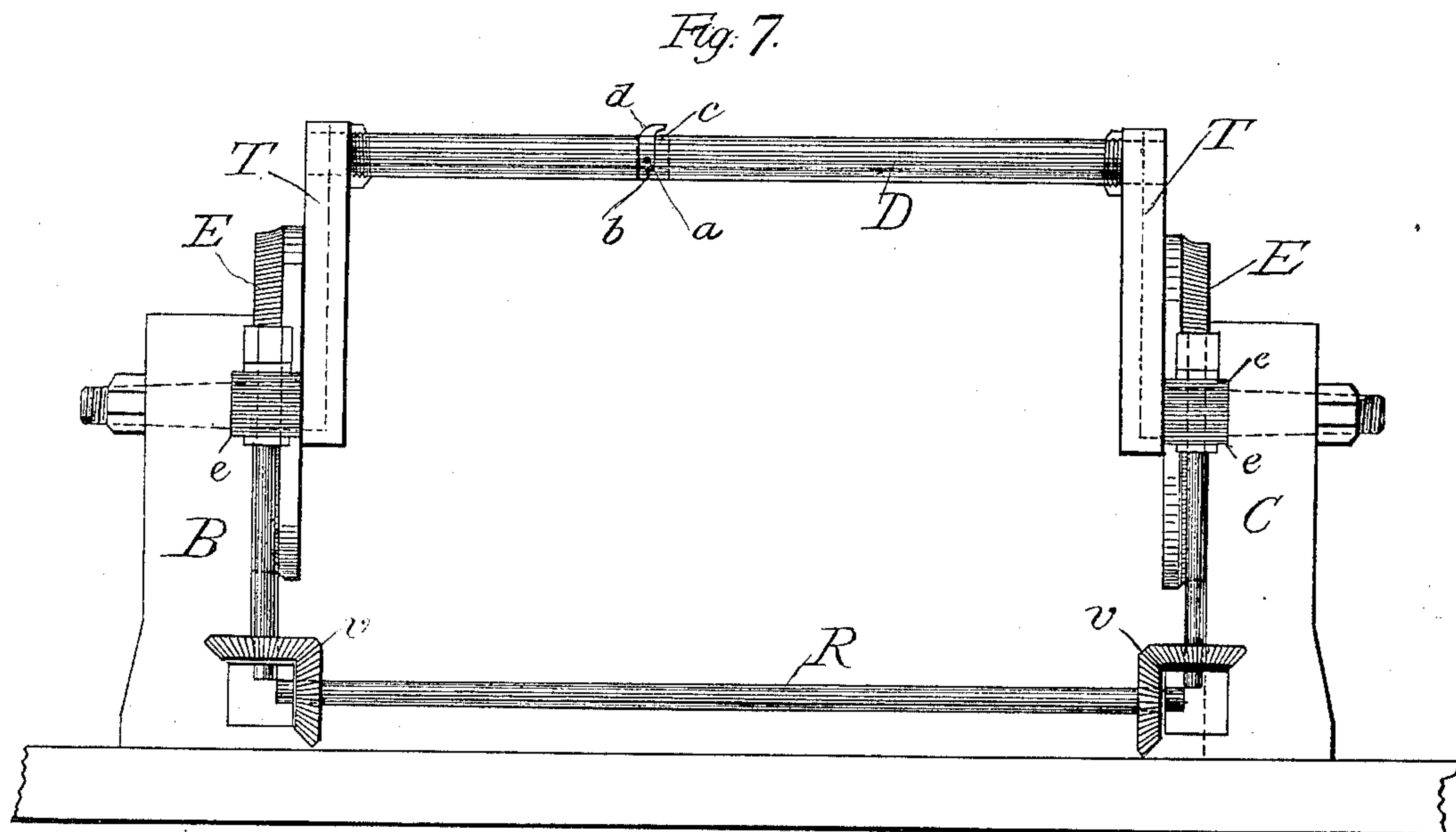
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C. K. DAWES.

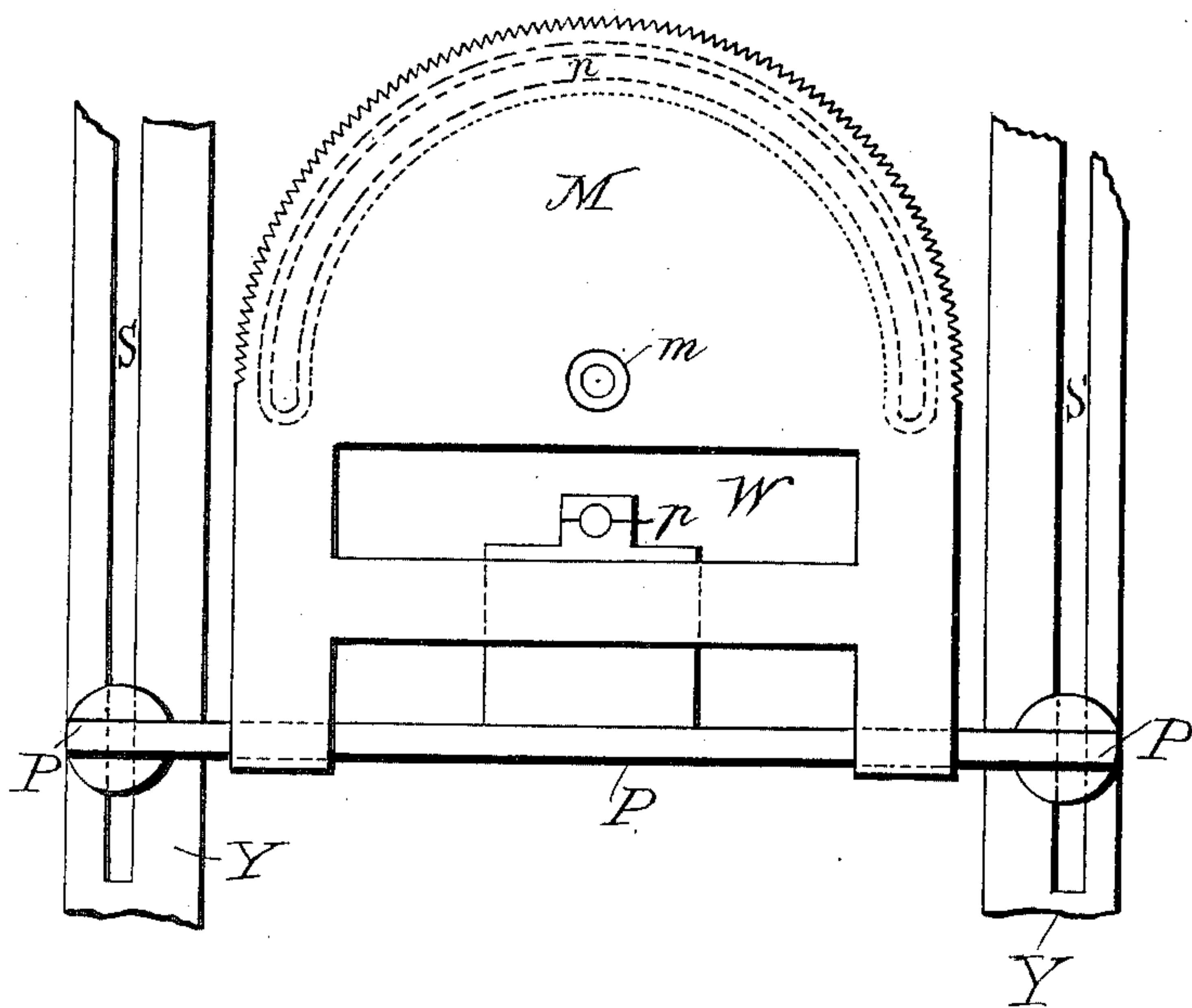
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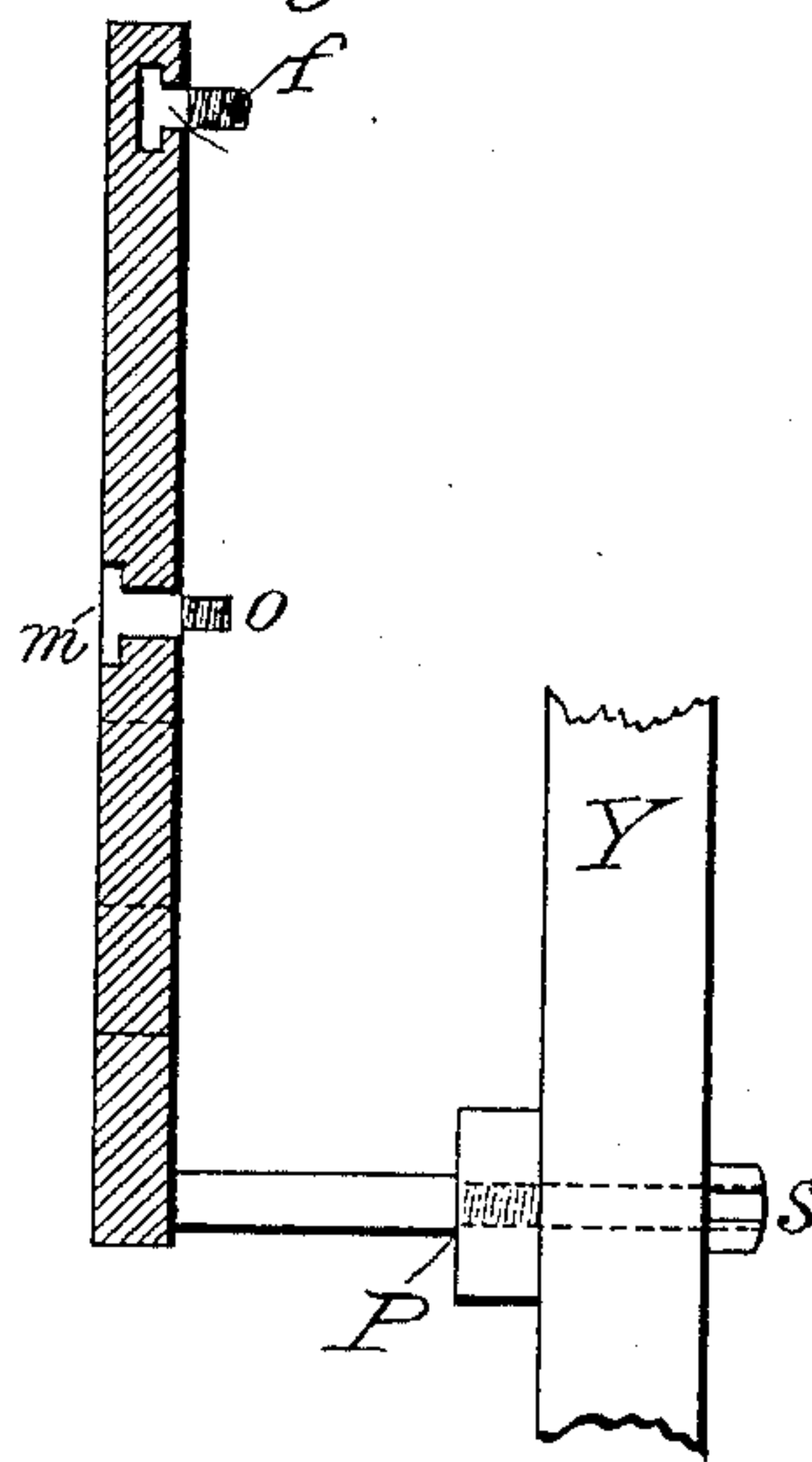
Patented Aug. 25, 1885.



*Fig. 5.*



*Fig. 6.*



Witnesses:

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Frank A. Mead.

Inventor:

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Atty.



# UNITED STATES PATENT OFFICE.

CHARLES K. DAWES, OF TRENTON, NEW JERSEY, ASSIGNOR OF ONE-HALF  
TO THEODORE H. DIBBLE, OF SAME PLACE.

## PLANING AND SLOTTING MACHINE.

SPECIFICATION forming part of Letters Patent No. 325,061, dated August 25, 1885.

Application filed September 27, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES K. DAWES, of Trenton, in the county of Mercer and State of New Jersey, have invented certain new and useful Slotting and Shaping Attachments for Metal-Planing Machines, which invention is fully set forth and illustrated in the following specification and accompanying drawings.

The object of this invention is to enlarge the capacity for varied work of ordinary planing-machines having reciprocating beds by converting such planers into both shaping and slotting machines by means of simple attachments which, when removed, leave the machines in condition to perform their ordinary planing work.

Said attachments will now be described and their mode of operation explained as follows:

In the accompanying drawings, Figure 1 shows in perspective an ordinary metal-planing machine, whose construction and mode of operation will be readily understood by those skilled in the art to which it pertains without any verbal description thereof. Fig. 2 shows, also in perspective, the same machine with the tool-holder removed from the sliding feed-block and a face plate or chuck substituted therefor. It also shows a cutter-bar with cutting-tool therein secured to the reciprocating bed of the machine, as hereinafter described. Figs. 3 and 4 show, respectively, bolted to said chuck a male and female die suitable for molding the backs of hair-brushes from plastic materials. In the one case the cutter-bar slots out the die. In the other case it shapes the exterior of the male die, as shown in the respective figures. Fig. 5 shows an intermediate rest or bearing for the cutter-bar of the machine in rear of the face-plate. Fig. 6 is a side view of Fig. 5, showing the face-plate in vertical section. Fig. 7 shows a more complete form of cutter-bar attachment with gearing suitable for transmitting either automatic or hand feed motion.

In said figures, the letter A indicates the sliding bed of the machine; B and C, columns or standards firmly secured thereto by bolts or in any suitable manner. Journaled in said standards B and C is the cutter-bar D, and secured on the end of said bar is the worm-wheel E, to which is geared the worm F, journaled

in the standard B and operated by the hand-wheel G. Said worm, however, may be operated by any well-known form of power attachment, automatic or otherwise, instead of by hand. Within the slot *c* in the cutter-bar D, Fig. 7, is pivoted the cutting-tool *d* upon the pin *a*, and in said slot is confined the spring *b*, in the rear of and preferably let into a notch in the base of the cutting-tool *d*. Said spring permits the cutting-tool to turn upon its pin and recede from the work when its back edge is brought in contact therewith, but restores the tool to proper position for cutting when the cutter-bar is advanced by the movement of the bed A to make a cut. The slot *c* is long enough to allow the tool *d* to oscillate sufficiently within it.

The tool-holder proper, H, having been removed from the cross-head or sliding feed-block K, leaving the whole feed-gearing of the machine intact, the face plate or chuck M is secured to the block K in place of the tool-holder H. Fig. 5 shows a front view of said chuck, which is provided with a center hole, *m*, and a blind and curved groove or slot, *n*, concentric with said hole. The hole *m* forms the bearing for the center O, upon which the chuck M rotates. Said center may be made to be tapped into the block K or otherwise formed, as most convenient. Other bolts, *f*, are tapped into said block, with hooked or T heads projecting into the slot *n*, which, when turned across said slot, hold the chuck M securely to the block K, and at the same time permit it to freely revolve upon its axis or center O, as clearly shown in Figs. 5 and 6. The upper part of the chuck M is curved on edge concentric to the axis *m*, and provided with worm-gear, to which is geared the worm *h*, journaled in any convenient part of the cross-head or sliding block K. Said worm is operated by the hand-wheel *k*, or may be operated by any well-known form of automatic feed. Vertical motion is given to the chuck M as well as transverse motion by the well-known feed-gearing of the machine operated by the respective handles *x y z*.

Within the slots S S of the upright frame Y of the machine is secured by ordinary tap-bolts, *s s*, the cross-bar P, which serves as a seat upon which the lower part of the back of



the chuck M may bear and slide when any desired movement is given to said chuck. Said bar is adjustable either up or down within necessary limits by simply slacking up the bolts *s s*, passing through the slots *S S*, whose heads are curved to bind against the back edges of said slots when it is desired to clamp said bar.

Fig. 5 shows the bar *P* provided with a bearing and cap, *p*, for the cutter-bar *D*. Said bearing when in use acts as a rest for said bar between its extreme points, and being placed immediately behind the face-plate *M*, to which the work to be cut is secured, it effectually supports the bar and prevents all "springing" or resilience therein or "chattering" of the tool carried by it.

Fig. 7 shows the cutter-bar (instead of being mounted directly in the standards *B* and *C* with but one worm-wheel at one end) mounted in two radial arms, *T T*, secured each to a worm-wheel, said wheels being each journaled in supports similar to the standards *B* and *C* in Fig. 2. Said radial arms *T T* are slotted in the direction of their length, and in these slots are adjustably secured the ends of the cutter-bar *D*. It is obvious that if said cutter-bar is adjusted and held in line with the centers of the two worm-wheels *E E* it will only revolve upon its axis when said wheels are rotated; but if said bar is moved outwardly it will revolve around or eccentrically to the centers of said wheels when they are rotated.

Fig. 7 also shows a shaft, *R*, and bevel-gearing *v v*, by means of which and the worms *e e* the cutter-bar *D* may be operated either by hand or by any well-known automatic feed motion.

The operation of this machine, which is very simple, can now be readily understood. In Fig. 3 is shown bolted to the chuck *M* a piece of work, 1, requiring to be shaped to great nicety to fit into a piece of work, 2, its counterpart, bolted to the chuck *M*. (Shown in Fig. 4.) By means of the various feed-motions shown and well understood by those skilled in the art so accurately can the necessary cutting to scribed outlines be done that cuts may be made to microscopic lines, and such counterparts put together fitting with great accuracy without any file-fitting, scraping, or other manipulation after leaving the machine. Key-seats can be cut in gear-wheels and in other work with equal facility to any required taper, and with equal nicety as to dimensions. The feed-motions thus feed the work as well as the tool, and the bed of the machine reciprocates the tool instead of the work, and thus is accomplished a great variety of work in planing, shaping, and slotting in a superior manner and of great depth or length, all on one simple machine.

The worms *F* and *h* may be fitted so as to be thrown out of gear with their respective worm-wheels by means of eccentric bearings, or in any other well-known manner, if desired,

when said gear-wheels may be rapidly rotated by hand to a wide range of adjustment, instead of being moved by the slower motion due to the fine pitch of the worm-gearing.

The chuck *M* is provided with a slot or opening, *W*, through it, of sufficient length or area to permit of necessary motion either in the chuck itself about the cutter-bar *D* or of the cutter-bar *D* within said slot, without interfering with the operation of either shaping or slotting the work secured to the chuck itself.

By this invention comparatively cheap planing-machines of ordinary construction (and principally of moderate size, though not exclusively) are in a very few minutes converted into machines capable of doing as great a variety of work (if not greater) as machines of many times the cost of the attachments constituting this invention in addition to the cost of the machines to which they are chiefly adapted.

The attachments can be as readily removed and the machine reconverted into an ordinary bed-planer in a few minutes. I do not confine myself to the precise method of bolting or securing the several parts of my attachments to the machine or to each other, either fixedly or movably, as it is evident that other means well known to mechanics may be adopted without departing from the principle of my invention.

Having thus fully described my said improvements, as of my invention, I claim—

1. In a planing-machine, in combination with a reciprocating bed, a cutter-bar reciprocated by said bed for cutting the work secured to a chuck, substantially as described and set forth.

2. In a planing-machine, in combination with a reciprocating bed, a cutter-bar adjustably set in radial guides journaled in standards secured to the bed and reciprocated by said bed, for cutting the work secured to a chuck, substantially as described and set forth.

3. In a planing-machine, in combination with reciprocating cutting mechanism, a sliding feed-block provided with a face plate or chuck for securing the work thereto and operated by said feed-block, substantially as and for the purposes set forth.

4. In a planing-machine, in combination with a cutter-head or sliding feed-block and operated thereby, a face plate or chuck for securing the work thereto, a bearing bar or seat, as *P*, for said chuck, and reciprocating cutting mechanism, substantially as and for the purposes set forth.

5. In a planing-machine, a face plate or chuck for securing the work thereto, journaled on a cutter-head or sliding feed-block, and gearing for imparting rotary motion to said chuck, in combination with reciprocating cutting mechanism, substantially as and for the purposes set forth.

6. In a planing-machine, a rotary face plate



or chuck secured to a cutter-head or sliding feed-block and provided with a slot or opening therethrough, in combination with a reciprocating bed and a cutter-bar passing  
5 through said slot and reciprocated by said bed, whereby rotary feed motion may be imparted to said chuck without interfering with the operation of the cutter-bar upon the work secured to said chuck, substantially as set forth.

10 7. In a planing-machine, in combination with a reciprocating bed and reciprocated thereby, a cutter-bar provided with a cutting-tool for cutting the work to be operated upon, and with a steadying-rest, as P, between its end supports, substantially as and for the pur- 15  
poses set forth.

CHARLES K. DAWES.

Witnesses:

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