

WILLIAM H. WARREN.

Improvement in Metal Planers.

No. 116,243.

Patented June 20, 1871.

Fig. 1

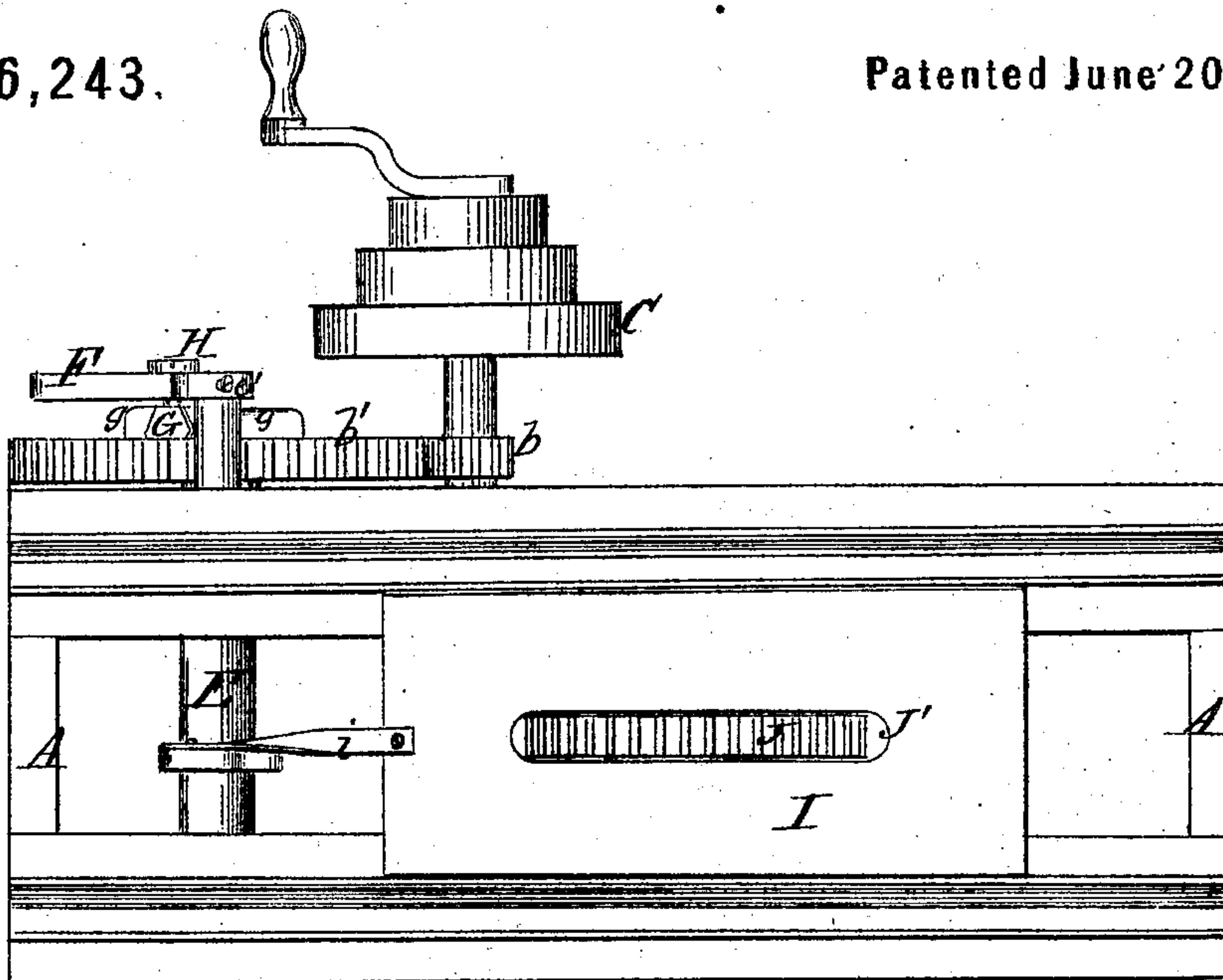
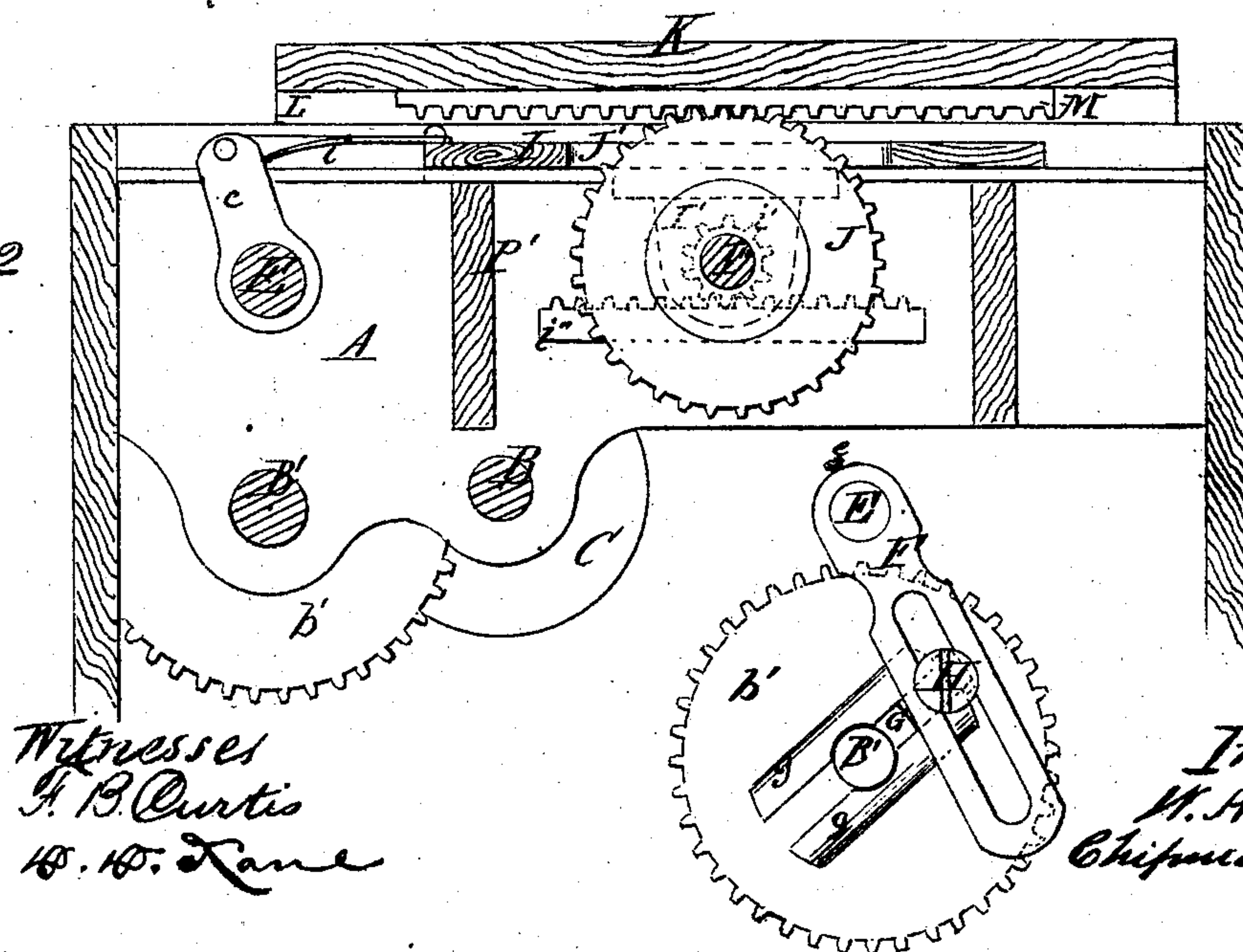


Fig. 2





# UNITED STATES PATENT OFFICE.

WILLIAM H. WARREN, OF WORCESTER, MASSACHUSETTS.

## IMPROVEMENT IN METAL-PLANERS.

Specification forming part of Letters Patent No. 116,243, dated June 20, 1871.

*To all whom it may concern:*

Be it known that I, WILLIAM H. WARREN, of Worcester, in the county of Worcester and State of Massachusetts, have invented a new and valuable Improvement in Machines for Planing; 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 annexed drawing making a part of this specification and to the letters and figures of reference marked thereon.

Figure 1 of the drawing is a top or plan view of my machine. Fig. 2 is a central vertical longitudinal section. Fig. 3 is a detailed view of the slotted crank and the driving gear-wheel.

This invention has relations to machines for planing metals; and it consists in the application of certain devices, hereinafter described, by means of which the work-table, having a reciprocating rectilinear motion, is made to traverse an augmented distance, and otherwise improved in its mode of operation.

In the accompanying drawing, which represents so much of a planing-machine as is necessary to illustrate the nature of this invention, A designates the rectangular bed-frame of a planing-machine, upon which all the other parts are supported. B B' are transverse shafts, holding, respectively, the pinion and gear-wheel *b b'* in contact with each other. C denotes a speed-pulley; E, a transverse shaft provided with a crank-arm, *e*, and a slotted arm, F, the latter being secured by a pin, *e'*, to the outer end thereof. G represents a beveled block, which fits in a long dovetailed groove or chamber, formed by the parallel flanges *g*, constructed on the face of the wheel *b'*, and may be adjusted to any point therein. H indicates a screw, which passes through the slot *f* in the arm F, and into the block G. When the wheel *b'* revolves, reciprocating curvilinear motion is given to the arm F, and by it, through the medium of the shaft E, to the crank-arm *e*. The sweep of the slotted and crank arms is regulated, as is also their speed, by the adjustment, as above stated, of the block G. I represents a horizontal table, arranged to slide back and forth on the bed-frame A, being connected to the crank-arm *e* by means

of a pitman, *i*. From the under part of this table brackets I' depend and carry a transverse shaft, I'', to each end of which a pinion, *i'*, is made fast, and to the middle part a toothed wheel, J, of greater diameter, secured. In rotating, the toothed periphery of the latter traverses through a longitudinal slot, J', formed in the table I. The pinions *i'* are set on racks *i''* secured within the frame A, at either side thereof, as shown in Fig. 2 of the drawing. K indicates the table, upon which is placed the work to be planed. This table is constructed with the ordinary A-shaped projections L, to slide in V-shaped grooves on the top of the frame A. It is also provided with a long inverted rack, M, which connects with the wheel J.

This invention, being now described, operates as follows: Reciprocating motion being given, as before mentioned and described, to the crank-arm *e*, the table I begins to move and carries along the shaft I''. The pinions *i'*, then traveling over the racks *i''*, are made to revolve, thereby communicating rotary motion to the wheel J, which in turn propels the table K. The distance which the table K travels is determined by the relative sizes of the pinions *i'* and wheel J. For instance, if the circumference of the wheel J should be five times as great as that of the pinions, it is evident that the latter would travel over only one-fifth the distance of the former. Hence, if the pinions shall pass over three feet of the racks *i''*, the wheel J would operate on fifteen feet of the rack M. In plainer terms, at every three-foot sweep of the crank *e*, or such sweep as would move the table I that distance, the table K would be propelled fifteen feet.

In reference to the comparative advantages possessed by a planing-machine in which the appliances hereinbefore described are embodied, it may be observed that there are now in ordinary use two kinds of planing-machines for work upon metal. The one that appears to be more generally used is the screw or rack planer, upon which, according to its capacity, can be planed work of from one inch up to forty feet or more.

One of the objections to this description of planer is that, from various causes, it does

not plane the same distance every time it cuts. Again, when in some instances it is desirable to increase the speed of the planer, as in planing brass, the sudden jerking consequent shakes the machine violently, interfering with the smoothness and regularity of its work, and possibly breaking or injuring some of its parts.

The other kind of planing-machine in ordinary use, and to which the improvements hereinbefore described are applicable, is the crank-planer, which has none of the objectionable features of the screw machine. It may be run at any degree of speed without any bad results, and will plane the same distance at every stroke of the crank, but yet will plane a distance only the length of the stroke.

The application of the improvements which have been specified remedies the above-men-

tioned defect, and makes provision for planing work of any length desired, and allowing the machine to be run at any speed necessary without liability to injury.

Having fully described my invention, what I claim is—

The wheel J, shaft I', pinions i', and racks i'' M, in combination with the rock-shaft E, applied to a planing-machine for the purpose of increasing the travel of the work-table, substantially as and for the purpose set forth.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

WILLIAM H. WARREN.

Witnesses:

F. T. BLACKMER,  
H. C. GRATON.