

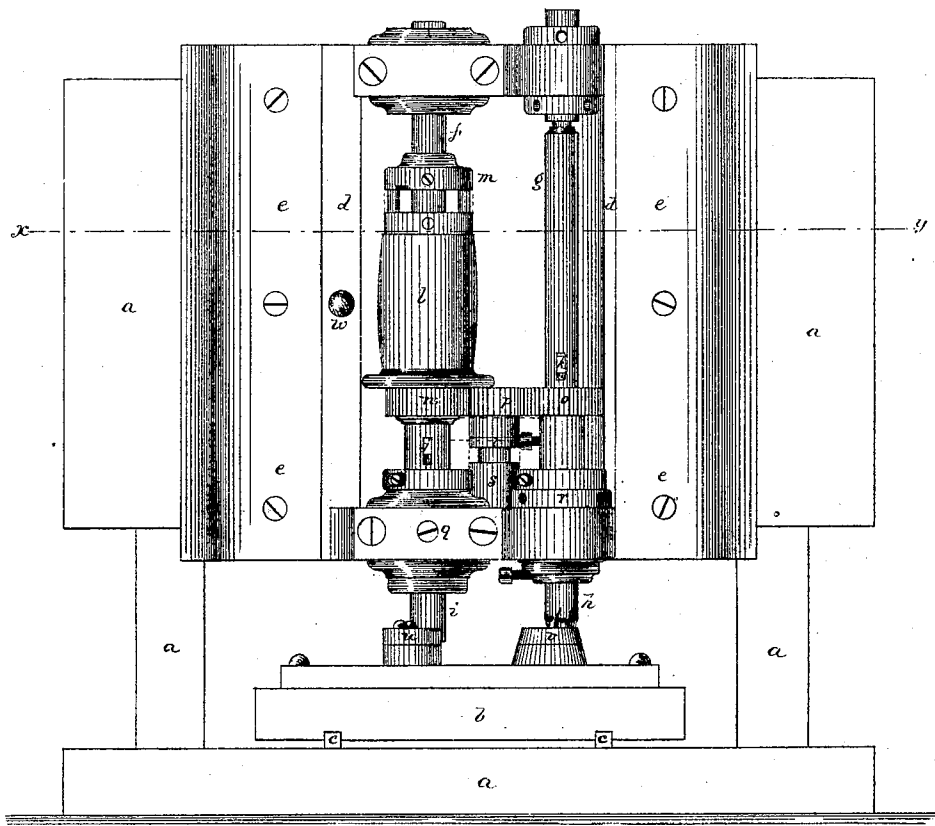
3 Sheets--Sheet 1.

E. G. PARKHURST.
Profiling-Machines.

No. 150,253.

Patented April 28, 1874.

Fig. 1.



Witnesses.

Bend. Crocker.
F. C. Carpenter



Inventor.

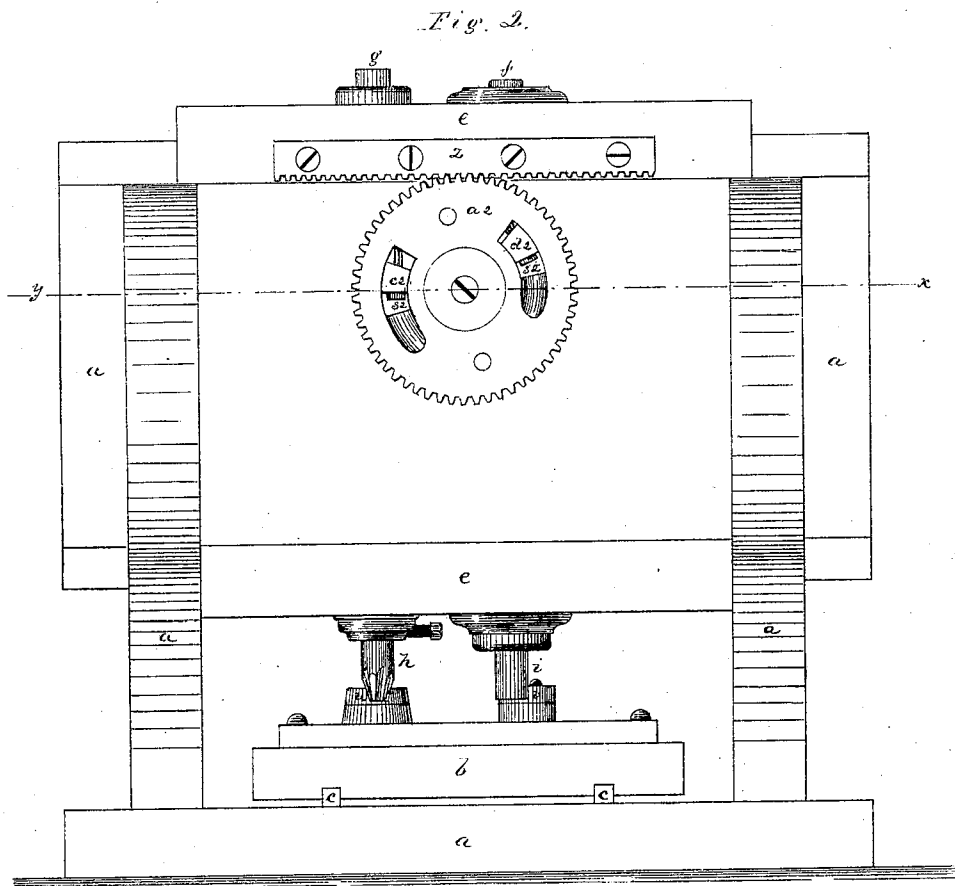
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By Theo. G. Ellis
Attorney

3 Sheets--Sheet 2.

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No. 150,253.

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Witnesses.

Benderson
F. C. Carpenter

Inventor.

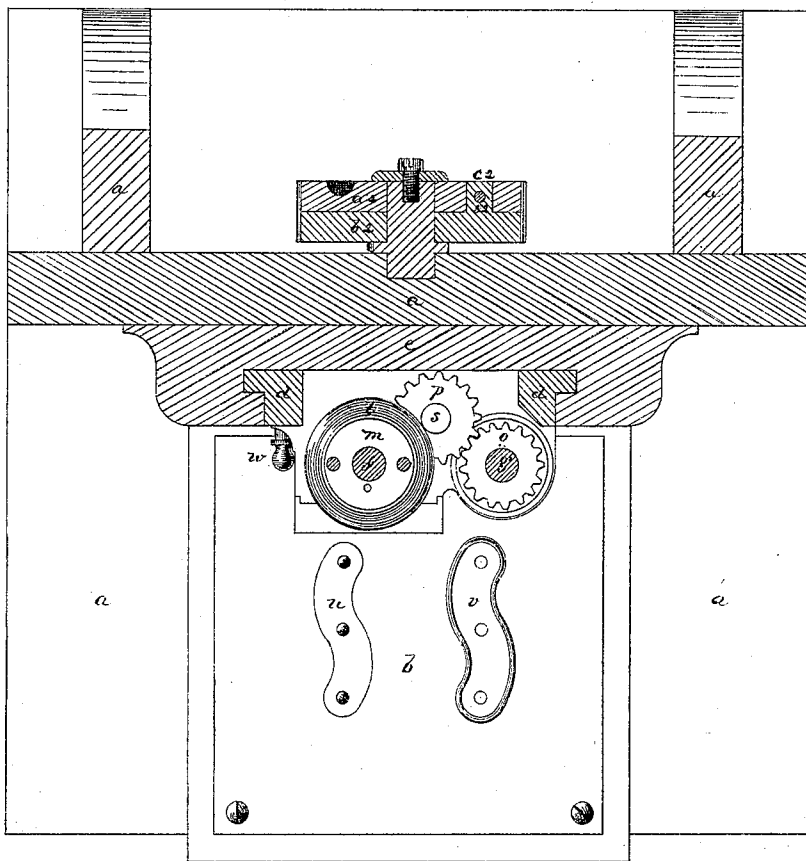
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Fig. 3.



Witnesses.

Burd. Leake.
J. E. Carpenter.

Inventor.

E. G. Parkhurst
by Thos. G. Ellis.

UNITED STATES PATENT OFFICE

EDWARD G. PARKHURST, OF HARTFORD, CONN., ASSIGNOR OF ONE-HALF HIS RIGHT TO THE PRATT & WHITNEY COMPANY, OF SAME PLACE.

IMPROVEMENT IN PROFILING-MACHINES.

Specification forming part of Letters Patent No. **150,253**, dated April 28, 1874; application filed June 28, 1872.

To all whom it may concern:

Be it known that I, EDWARD G. PARKHURST, of Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Profiling-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, whereby a person skilled in the art can make and use the same, reference being had to the accompanying drawings and to the letters of reference marked thereon.

Like letters in the figures indicate the same parts.

My invention consists in the construction and arrangement of certain parts of a profiling-machine, whereby a former can be cut from a model or pattern while both are fixed upon the bed-plate, and the model removed and duplicates cut from the former exactly similar to the original without turning the bed-plate or in any manner altering the position of the former after it is cut.

In the profiling-machines of ordinary construction the model is fixed to the bed-plate, and a former-pin attached to the slide which carries the cutting-tool is held in close contact with it while the cutting-tool passes around the piece to be cut to the same form, likewise fixed to the bed-plate, and makes a former which shall reproduce the given model. Then the bed-plate is turned around one hundred and eighty degrees, so as to change the relative position of the two pieces and bring the former under the forming-pin and the cutter in a position to cut duplicates as the forming-pin travels around the former. In this operation it is impossible to exactly change the relative position of the pieces, so that inaccuracies will occur which prevent the duplicates from being exactly like the original. To remedy this is the object of my invention.

In the accompanying drawings, on three sheets, Figure 1 is a front view of part of a profiling-machine, showing my improvements. Fig. 2 is a back view of the same. Fig. 3 is a view looking downward from a section on the line *xy*, Figs. 1 and 2.

a is the fixed frame of the machine. *b* is the bed-plate, which moves longitudinally upon the slides *c c*. *d* is the head or slide which carries

the tool and forming-pin. This head moves up and down in grooves in the piece *e*. *e* is a sliding block, which moves laterally across the machine on slides of the ordinary construction, forming part of the fixed frame *a* of the machine. Thus the tool-head *d* is free to be moved up or down, or laterally, as may be desired. The part *d* carries the two spindles *f* and *g*, which are provided with the interchangeable tool and former-pin *h* and *i*. These are removed by driving a wedge into the opening *j* and *k*. *l* is the pulley for driving the spindles and communicating a rotary motion to the tool. *m* is a clutch for connecting or disconnecting the pulley *l* upon the spindle *f*. It is shown in the drawings as disconnected. *n* is a gear-wheel permanently attached to the pulley *l*, and revolving with it. *o* is a gear-wheel firmly fixed to the spindle *g*, and turning with it. *p* is a connecting-gear, running loose on an arbor, *s*, and communicating motion from *n* to *o* when not thrown out of gear. This wheel *p* is movable up and down upon the arbor *s*, so that it can be thrown into or out of gear, as desired. The arbor *s* is made with a shoulder, above which the collar-piece *t* (also shown in a small detached figure under Fig. 1) is inserted, for the purpose of holding the wheel *p* up in the position shown in the drawing. When this piece *t* is withdrawn the wheel drops down out of gear into the position shown by dotted lines in Fig. 1. *o* and *n* are then disconnected. *q* is a set-screw for clamping the spindle *f* and preventing it from turning, when desired. *r* is a clamp-nut on the spindle *g* for the same purpose. *u* is the model or pattern. *v* is the former cut upon it. *w* is a pin for holding the tool-head at any desired height. *z* is a rack attached to the piece *e*. This rack is operated by a pinion of special construction for the purpose of taking up all lost motion when its revolution is reversed. The pinion is composed of two parts, *a*² and *b*², which, together, form the proper thickness for gearing into the rack *z*. The part *b*² has two studs or projections, *c*² *d*², which pass through openings in the part *a*², and in which they have a circular play for a small distance. Small set-screws *s*² pass through these studs and rest against the wheel *a*² in such a manner that the two wheels are firmly

held from turning one upon the other, but can be adjusted by turning the screws so as to separate the cogs of one part of the pinion from those of the other part and completely fill the spaces in the rack, and leave no play or lost motion when the motion of the pinion is reversed. The openings in the part a^2 are of such a form that the set-screws can be easily operated without removing any parts of the pinion from the machine. My improved pinion is intended to be adapted to the rack giving the longitudinal movement to the bed-plate b , as well as to that giving the lateral movement to the block e .

The operation of my invention is as follows: When it is desired to cut a former to any desired pattern the model is firmly attached to the bed-plate at u , and the piece from which the former is to be cut is attached to the bed-plate at v . The former-pin is placed in the spindle f and the cutter in the spindle g . The clutch m is disconnected and the spindle f clamped by the set-screw q . The gears n and o are connected by gear-wheel p , and the spindle g allowed to turn freely. Motion being now communicated to the pulley l the tool h revolves rapidly. The forming-pin is then passed around the edge of the model by means of the longitudinal motion of the bed-plate b and the lateral motion of the block e , and the tool h cuts its exact form at v . To reproduce the model u the forming-pin i and the tool h are changed. The clutch m is connected, so that

the pulley shall turn the spindle f . The screw q is unclamped. The gear p is dropped down out of gear by removing the collar t , and the spindle g is clamped by turning the nut r . The spindle f is now revolved by the pulley l , and when the forming-pin is passed around the former v the exact counterpart of the original model is cut by the tool at u .

It will be observed that the whole operation is performed without any possible change in the relative position of the parts, and that an exact reproduction of the original model is assured.

What I claim as my invention is—

1. The two parallel spindles f g , with interchangeable former-pin and cutting-tool, when arranged with intermediate gearing, so that either can be driven by the pulley l while the other is clamped, and this mechanism is attached to traversing frames which cause the spindles always to move in similar and parallel directions, substantially in the manner described.

2. The combination of the pulley l , the clutch m , the spindle f , the gear-wheels n o p , and the spindle g , when constructed and arranged substantially as herein described.

E. G. PARKHURST.

Witnesses:

THEO. G. ELLIS,
BEN. A. COOKE.