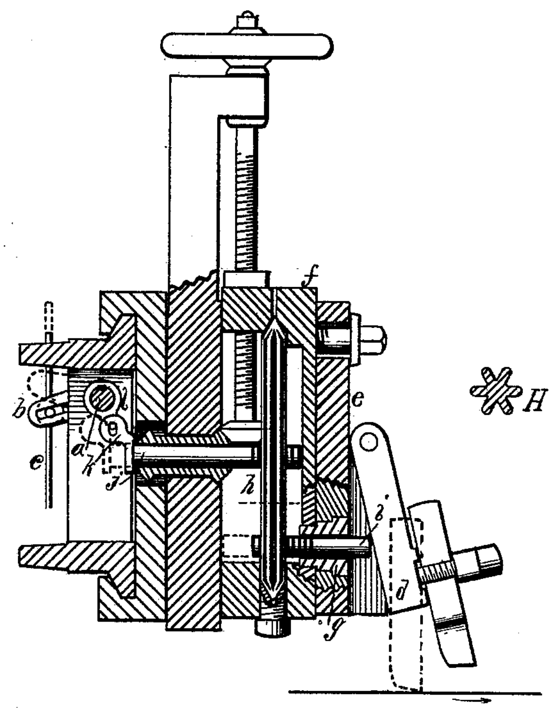
G. E. BRETTELL.

IRON PLANER.

No. 187,960. Patented March 6, 1877.



Witnesses:

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GEORGE E. BRETTELL, OF ROCHESTER, NEW YORK, ASSIGNOR TO FRANCIS S. BRETTELL, OF SAME PLACE.

IMPROVEMENT IN IRON-PLANERS.

Specification forming part of Letters Patent No. **187,960**, dated March 6, 1877; application filed December 21, 1876.

To all whom it may concern:

Be it known that I, GEORGE E. BRETTELL, of Rochester, in the county of Monroe and State of New York, have invented a new and useful Improvement in Iron-Planers, which improvement is fully set forth in the following specification and accompanying drawing, in which the main figure is a vertical section of the cross-head and tool-slide, showing the parts improved.

My invention consists in making additions to the ordinary cross-head and tool-slide of an iron-planer, by means of which the tool may be automatically lifted from the work when it is not cutting, and in such a manner as not to interfere with the other working parts whether the cross-slide is being moved to the right or left, or whether the tool-slide is being moved (in feeding) up, down, or at an angle.

In the drawing, *a* is a rod running longitudinally within the cross-head, and placed above the usual feed-rod and screw. (Not shown.) At one end the rod *a* is provided with a crank, *b*, which is connected with another rod, *c*, by a set-screw, the lower end of which rod *c* is connected to the same (or other) crank that imparts motion to the feeding device.

The rod *c* is similar to the feed-rod which is used on many iron-planers, and works up and down in the same manner, and at the same time.

There are several ways of imparting motion to the feed-rod. In some cases it is connected to a crank, which is worked by being connected to the shifting arrangement. In others—one of which we have built and have in use in our machine-shop—the feed-rod is worked by connecting by a crank-pin or stud to a friction-wheel, working on one end of one of the gear-shafts, first in one direction, then the other, as the motion of the planer is reversed.

In this planer we provide a separate friction-wheel, on the same shaft as the feed friction-wheel, to work the rod *c*. This, however, is not always necessary, as it (the rod *c*) could be connected to the same friction-wheel by a crank pin or stud on the side opposite that which the feed-rod is connected to.

I do not claim any particular method of connecting the end of the rod *c*; but think it best to connect to a friction-wheel.

d is the tool-holder; *e*, the tool-box; *f*, the movable slide; and *g*, the screw holding the tool-box *e* to the slide *f*, and also forms a pivot for the tool-box to swing on. *h* is a long pinion placed vertically in the slide *f*, and working on centers at either end. *i* is a shaft, which moves through a hole at the center of the screw *g*, and is provided with teeth, forming a rack, the teeth working into the teeth of the vertical pinion *h*. *j* is another shaft, which passes through the center of the pivot on which the whole slide is swung when it is desired to plane at an angle, and is, like the shaft *i*, provided with teeth, which also work into those of the pinion *h*. At the other end the shaft *j* is fastened to the loop *k*, which is loosely attached to the sleeve *l*, feathered on the horizontal rod *a*, which rod is furrowed the whole length to allow the sleeve *l* to move from end to end.

The parts *k* and *l* are connected by means of a pin within a slot, as shown, so that when the crank *b* is moved by a downward motion of the rod *c* the shaft *j* is forced forward and rotates the pinion *h*, which in turn drives the end of the shaft *i* against the tool-holder *d*, and lifts the tool from the work, as shown. The motion of the parts is so timed that the tool is lifted, as above described, just as each cut is finished, and remains up till the opposite end of the work is reached, when, by a reverse motion of the rod *c*, the tool is allowed to drop back to place ready for another cut. By this means the tool is prevented from dragging while backing up.

The loop *k* is attached to the shaft *j* by a sort of a journal-joint, by means of which joint, when the slide is swung over to plane at an angle, the shaft *j* is allowed to turn.

The slide *f* is recessed, as shown, so that

the shaft *j* will not interfere with its up and down motion.

The long pinion *h* is shown in transverse section (enlarged) at H.

What I claim as my invention, and desire to secure by Letters Patent, is—

In a tool-lifting device, of an iron-planer, the combination of a pinion, *h*, racks *i* and *j*, loop *k*, sleeve *l*, and rod *a*, together with its crank *b*, to which it may be applied, and suitable actuating mechanism, substantially as shown and described.

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Witnesses:
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