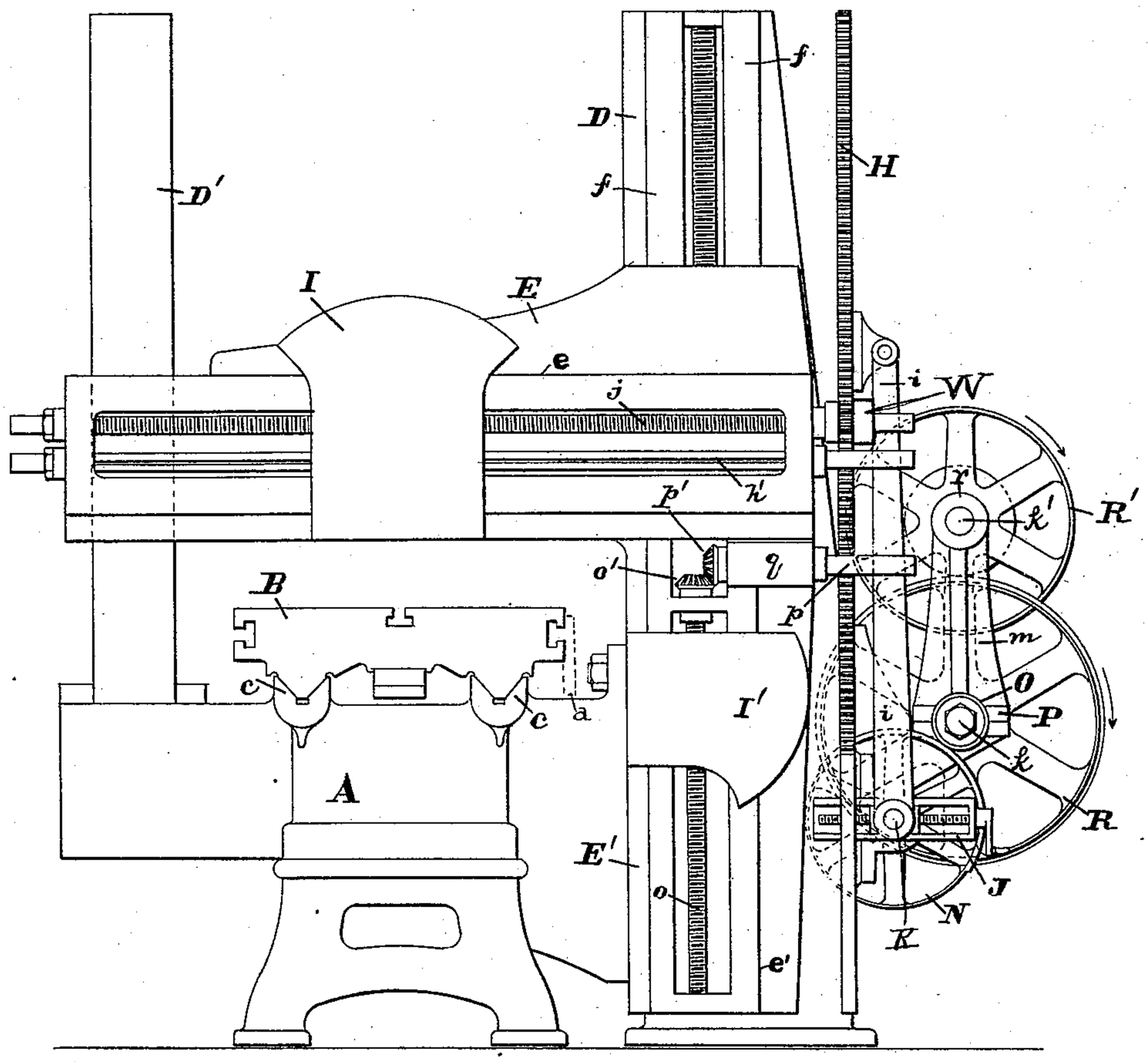
(No Model.) 4 Sheets—Sheet 1.

J. S. DETRICK.

METAL PLANER.

No. 472,804. Patented Apr. 12, 1892.

Fig. 1.



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(No Model.) 4 Sheets—Sheet 2.

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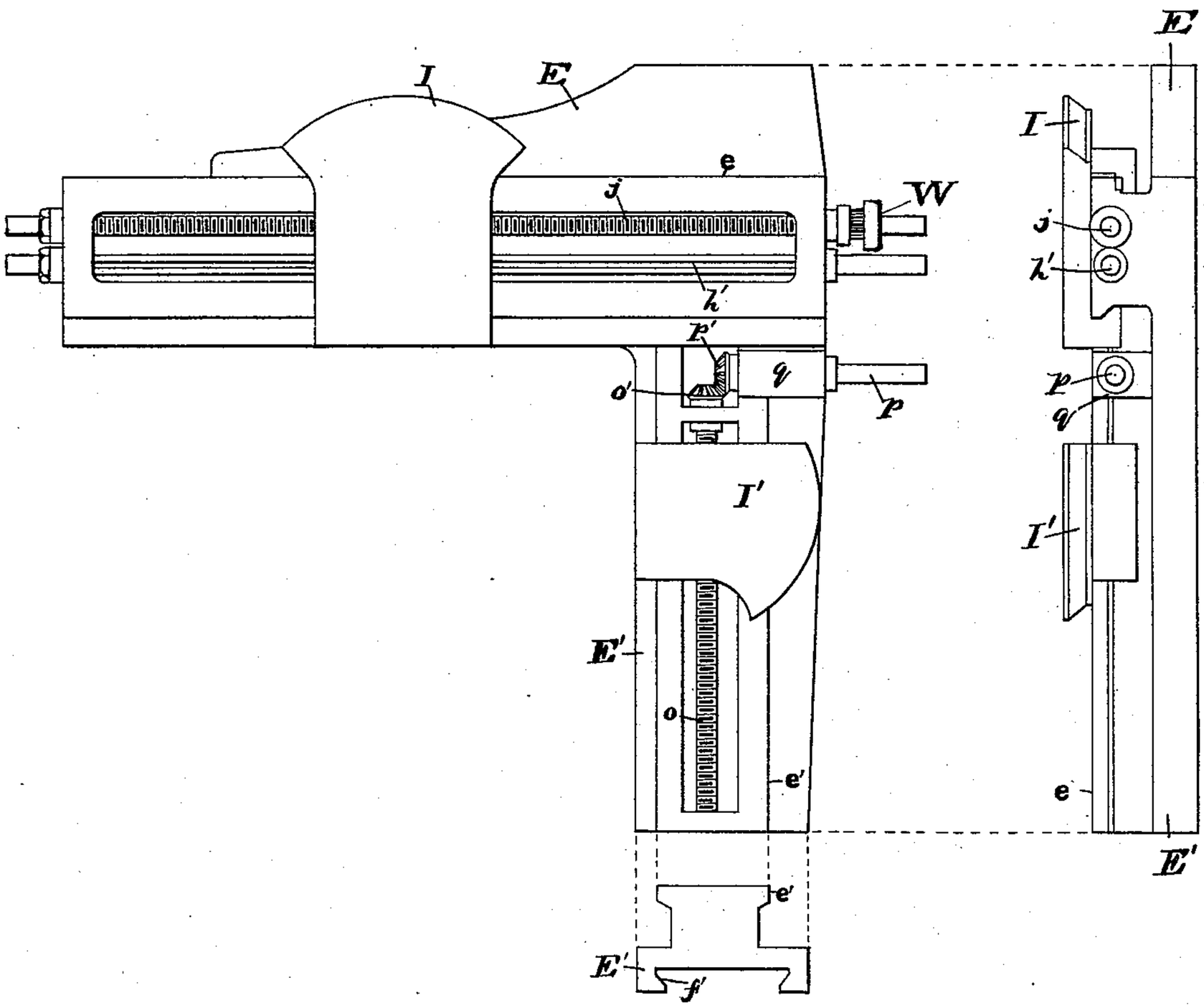
Fig. 2.



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(No Model.) 4 Sheets—Sheet 3.

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METAL PLANER.

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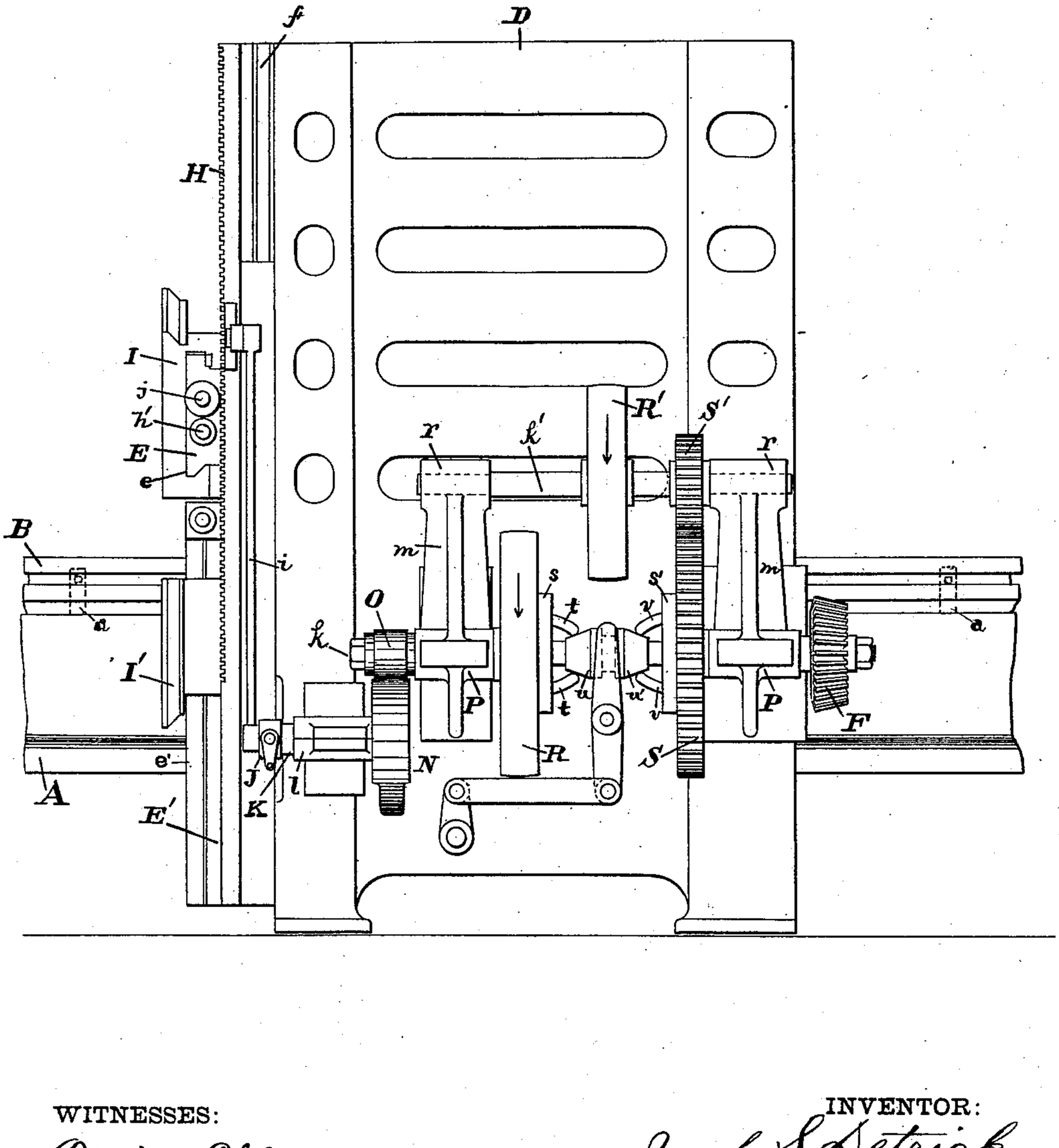
Fig. 3.



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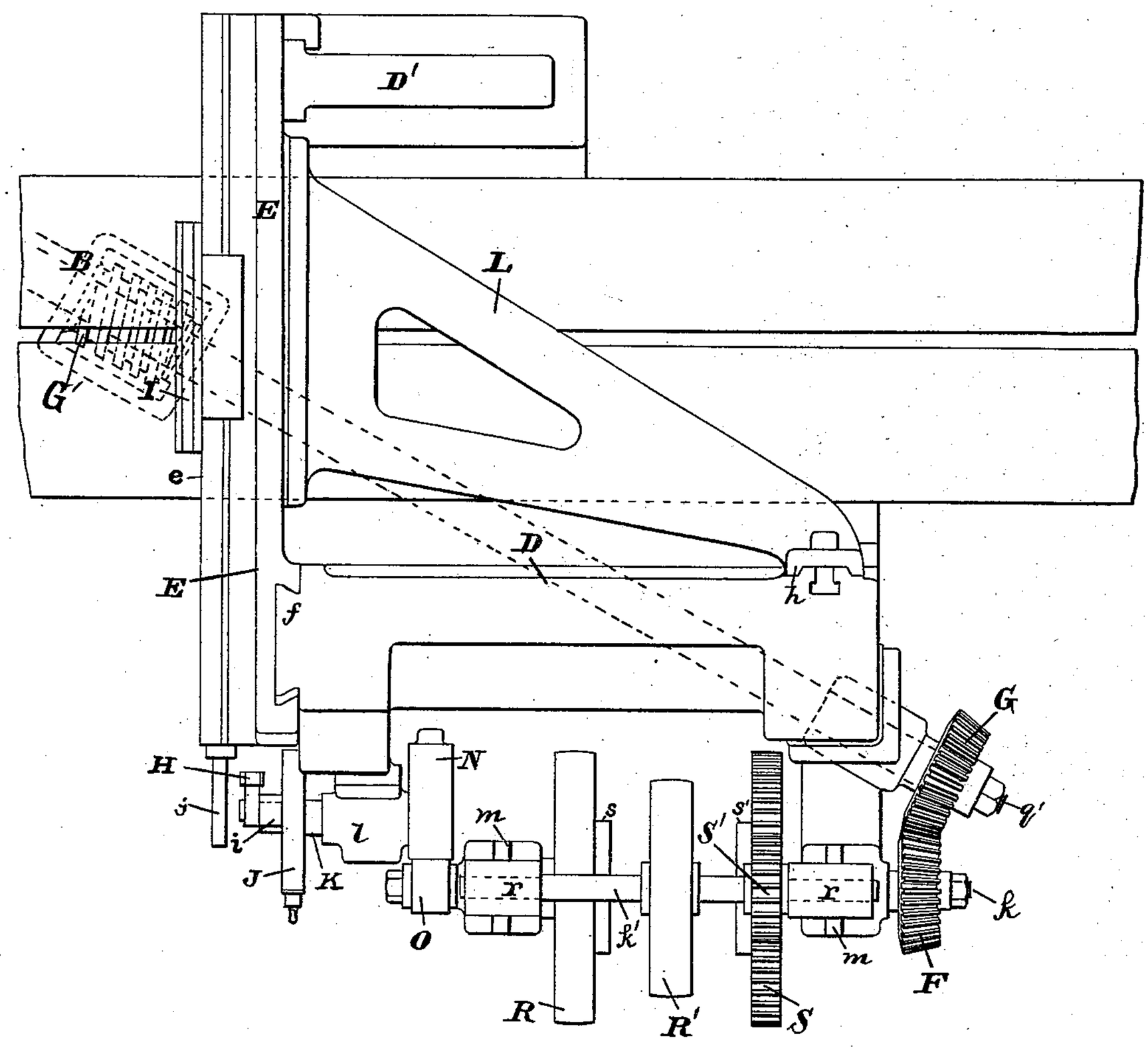
(No Model.) 4 Sheets—Sheet 4.

J. S. DETRICK.

METAL PLANER.

No. 472,804. Patented Apr. 12, 1892.

Fig. 4.



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UNITED STATES PATENT OFFICE.

JACOB S. DETRICK, OF BALTIMORE, MARYLAND.

METAL-PLANER.

SPECIFICATION forming part of Letters Patent No. 472,804, dated April 12, 1892.

Application filed February 5, 1891. Serial No. 380,264. (No model.)

To all whom it may concern:

Be it known that I, JACOB S. DETRICK, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Metal-Planers, of which the following is a specification.

My invention relates to improvements in metal-planing machines whereby two surfaces of an object can be planed at the same time and also the back movement of the platen be much more rapid than the forward or cutting movement.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a front view of the machine. Fig. 2 shows two views of the cross-beam and the vertical slideway which projects down from and at right angles to it. Fig. 3 is a side view showing the reversing mechanism. Fig. 4 is a top view of the machine.

The letter A designates the frame or bed, B the reciprocating platen, and *c* the guides on which the platen moves. The mechanism for moving the platen will be described hereinafter.

Some of the features of this invention are applicable to ordinary two-post planers or to the "open-side" planer for which a patent was granted me May 29, 1883, No. 278,518.

The drawings show a rigid or permanent post D at one side of the frame A, a removable standard D′ being in the present instance at the opposite side. By removing the standard D′ the cross-beam is wholly supported by rigid post D and the planer is converted into the open-side design.

The letter E designates the cross-beam, which is provided with a horizontal slideway *e* and is vertically adjustable on the vertical slide *f* of the rigid post. Integral with one end of this cross-beam is a downwardly-extending part E′, having in its back a dovetailed groove *f′*, fitting the said slideway *f* on the post, and on its front is provided with a vertical slideway *e′*—that is, the cross-beam E and the downwardly-extending slideway are in one solid piece and form a right angle, the said downwardly-projecting part serving to brace and sustain the cross-beam and insuring that the latter will preserve a true horizontal position when vertically adjusted.

I designates the tool head or saddle, which fits and moves laterally on the slideway *e* on the cross-beam. On this saddle is mounted the ordinary tool-holder. (Not shown.) Another tool-saddle I′ is mounted on the vertical slideway *e′* of the downwardly-extending part E′.

A triangular or oblique bracket L is attached by one end to the back of the cross-beam and the other end bears against a vertical slide *h* on the post D. This bracket braces the cross-beam against the strain of the tool while cutting.

The horizontal feed of the tool-head I on the cross-beam is accomplished by the usual shafts *j h′*, which are rotated by the well-known ratchet-box and pinion W and a vertical rack H. The said vertical rack has a rod *i*, which has one end attached to a crank-head J on the end of a shaft K, which has a bearing *l* at one side of the machine-frame and carries a sector friction-pulley N, driven first one way and then the opposite way by the driving-pulley O on the shaft *k*, which reverse at each movement of the platen B. A vertical screw-shaft *o* is in the vertical slideway *e′*, and this screw is connected with and controls the vertical movement of the tool-head I′, which moves on the said vertical slideway. Mounted on the upper end of the said vertical screw-shaft *o* is a miter-pinion *o′*, which intermeshes with a corresponding miter-pinion *p′* on one end of a horizontal shaft *p*, which has its bearing *q* on the vertical slideway. The portion of this shaft *p* that extends beyond the bearing is also, like the shafts *j h′*, to receive and be rotated by a ratchet-box and pinion, the same to be turned by the vertical rack H.

The alternate reverse movement or rotation of the driving-pulley O, previously referred to, is accomplished as follows: The shaft *k*, on which the pulley O is mounted, has two bearings P on the side of the machine-frame. Mounted loosely on this shaft *k* and between its bearings are a driving-pulley R, a large gear-wheel S, and a sliding double cone *u u′* between the said driving-pulley R and gear-wheel S. Rigidly secured on the shaft *k* is a bevel gear-wheel F, which connects with another bevel-gear G on a diagonal shaft *q′*, which extends under the platen B and im-

parts motion to the said platen by well-known connecting mechanism—as, for instance, by the well-known worm-gear G′, shown in dotted lines in Fig. 4. The bearings P each have an arm *m*, which extends up and above the said driving-pulley R and gear-wheel S. These arms afford bearings *r* for a shaft *k′*, on which and between the bearings is rigidly mounted a driving-pulley R′ and a small gear-wheel S′, which latter intermeshes with the large gear-wheel S on the shaft *k*. The two pulleys R R′, mounted on the shafts *k k′*, respectively, are driven by belts (not shown) and both are rotated in the same direction, as indicated by the arrows in Figs. 1 and 3. Fixed to the shaft *k* on the side of the loose driving-pulley R toward the sliding double cone *u u′* is a friction clutch *s* to make connection with the pulley, and from this clutch extend two arms *t* on opposite sides of the shaft *k*. These arms, when forced apart by one end *u* of the double cone, cause the friction-clutch *s* to connect with the pulley R and thereby turn the said shaft *k*. Fixed to the shaft *k* on the side of the large loose gear-wheel S is a similar clutch *s′*, having two arms *v*, which extend toward the other end *u′* of the double cone and in similar manner cause the clutch *s′* to connect with the loose gear-wheel S and turn the shaft *k*. The function of the clutch-arms *t* in the one case and those *v* in the other is to be alternately forced apart by the sliding double cone *u u′*. It will now be understood that when the sliding double cone is moved along the shaft *k* toward the driving-pulley R, thereby spreading the two arms *t*, it will cause the friction-clutch *s* to grip the pulley R, which then rotates the shaft *k*. Further, the rigid bevel-wheel F on the same shaft being connected through the bevel-wheel G and diagonal shaft *q′* with the platen B, the latter will be moved toward one end of the machine. In the present instance this will be the back movement, which is more rapid than the forward movement. When the sliding double cone is moved along the shaft toward the loose gear-wheel S and the clutch *s′* made to grip the latter, the shaft *k* will be rotated in an opposite direction and at a slower speed than when driven by the pulley R, for the reason that the small gear-wheel S′ of the shaft *k′*, which imparts motion to the large gear-wheel S, rotates in the same direction as the loose driving-pulley R. The platen B will therefore move in the forward or cutting direction at a slower speed than when moving in the backward direction, previously explained. The double cone, which controls the forward and backward movement of the platen, is connected in any suitable manner with the usual reversing-dogs A, (shown only in dotted lines in Figs. 1 and 3,) employed for this purpose, which are operated by the moving platen. Thus it will be seen that the double cone is to be shifted alternately back and forth between the driving-pulley R and the gear-wheel S, and consequently the platen B caused to move backward and forward.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a metal-planer, the combination of the base or frame, a reciprocating platen, a post fixed rigidly at the side of the platen and having a vertical slideway *f*, and a cross-beam E, having at one end a downwardly-projecting part E′, which fits the said vertical slideway of the post, as and for the purpose set forth.

2. In a metal-planer, a cross-beam provided with a horizontal slideway and having at one end a downwardly-projecting part provided with a vertical slideway for a tool-head, as set forth.

3. In a metal-planer, the combination of a cross-beam provided with a horizontal slideway and having at one end a downwardly-projecting part provided with a vertical slideway, a movable head I on the said horizontal slideway, and a movable head I′ on the vertical slideway, as set forth.

4. In a metal-planer, the combination of a cross-beam provided with a horizontal slideway and having at one end a downwardly-projecting part provided with a vertical slideway, a movable head I on the said horizontal slideway and a movable head I′ on the vertical slideway, screw-shafts on the cross-beam and a vertical screw on the downward-projecting part, said vertical screw having a miter-pinion *o′*, a horizontal shaft *p*, also having a miter-pinion, and a vertical rack H, which imparts motion, as described, to the screw-shafts on the cross-beam and also the vertical screw on the downwardly-projecting part.

5. In a metal-planer, the combination of the reciprocating platen, the diagonal shaft *q′* to impart motion to the platen, a shaft *k*, provided with a bevel-gear which connects with the said diagonal shaft and also having a driving-pulley R and gear-wheel S, both loosely mounted on said shaft, a double clutch between the pulley and gear-wheel, a second shaft *k′*, having rigidly mounted thereon a driving-pulley R′ and a gear-wheel S′, which latter is engaged with the said loose gear-wheel, and means to actuate the said double clutch.

In testimony whereof I affix my signature in the presence of two witnesses.

JACOB S. DETRICK.

Witnesses:
A. O. BABENDREIER,
F. P. DAVIS.