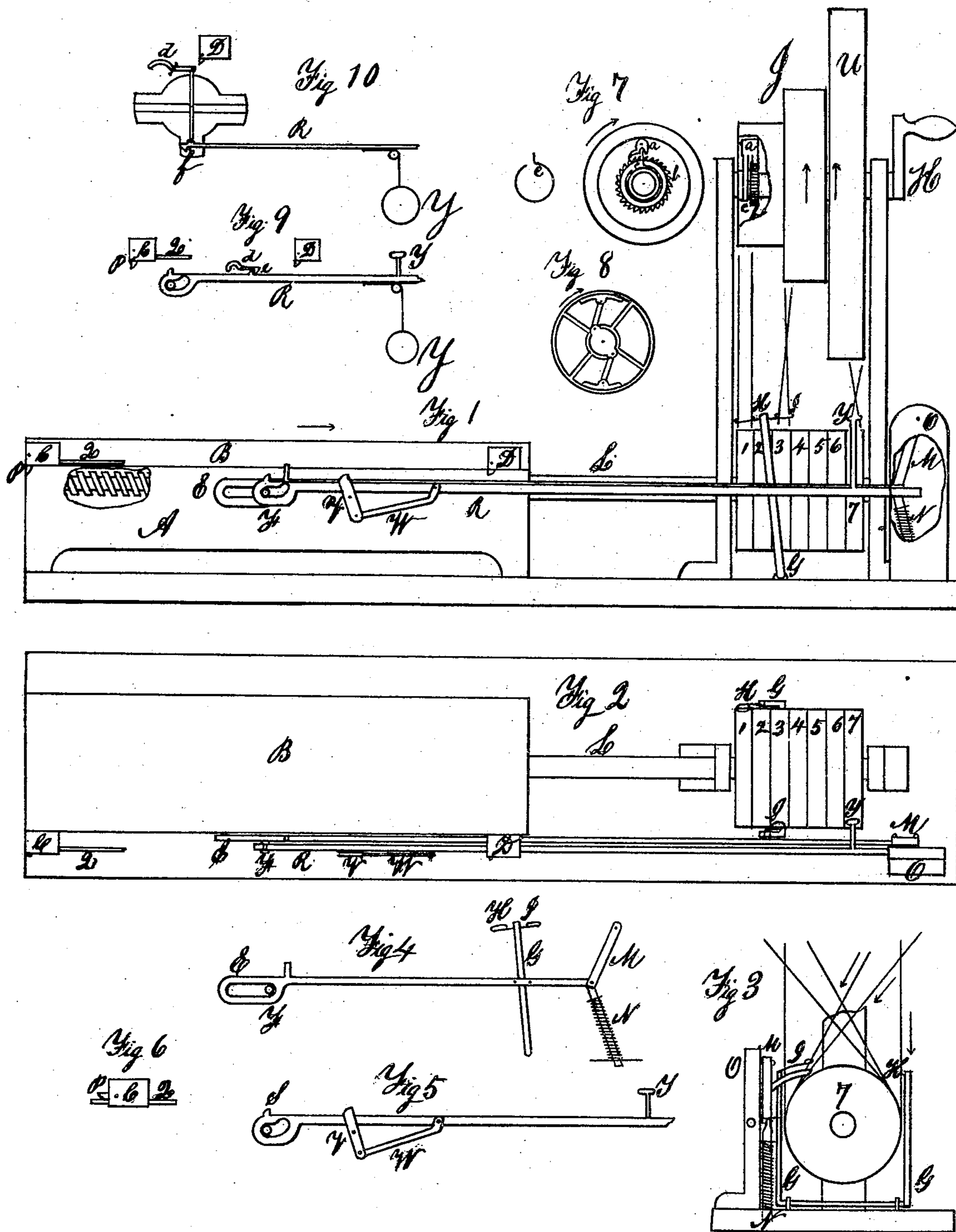


A. M. HILLS.
Planing Machines.

No. 101,462.

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Witnesses
Joseph A. Lodge
Jeremiah Clark

Inventor
Alfred M. Hills

United States Patent Office.

ALFRED M. HILLS, OF LOWELL, MASSACHUSETTS.

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IMPROVED PLANING-MACHINE.

The Schedule referred to in these Letters Patent and making part of the same.

I, ALFRED M. HILLS, of Lowell, in the county of Middlesex and State of Massachusetts, have invented certain Improvements in Planing-Machines, for metals, of which the following is a specification.

The Object of the Invention.

The platen or table of ordinary planers has an average cutting speed of sixteen feet per minute. It returns in two-thirds or one-half that time.

The object of my invention is to double (or more) the speed of the return movement of the platen without causing any injurious shock to the working parts.

This result is accomplished by the application of the devices herein described.

Description of the Accompanying Drawings.

Figure 1 is a side elevation of a machine embodying my invention.

Figure 2 is a plan of the same without the countershaft.

Figure 3 is an elevation, showing that end of the machine which is at the right-hand in figs. 1 and 2.

Figures 4, 5, 6, 7, 8, 9, 10, are elevations of detached devices.

General Description.

A is the bed-piece of the planer, supporting the platen B, having dogs C and D, which operate the slotted shipper-rod E, working on the stud F; said rod operates the shipper G.

Fig. 4 shows the same detached, by means of two pins in said rod.

This shipper has two belt-guides, H and I. H guides the open belt, which runs over the small step on the pulley J of the countershaft K, and passes over the tight pulley L of the screw-shaft, and drives the platen for the cutting stroke.

The guide I of said shaft operates the cross-belt, which runs over the large step on pulley J, and drives pulley 5, for producing the ordinary return stroke of the platen.

The pulleys 2, 3, and 4 are for these two belts to shift upon.

The slotted shipper-rod E terminates with a pin, which works in two vibrating arms M and N.

M is pivoted in the standard O, and N has a spring, which aids in shifting the belts.

My invention consists—

First, in the application of a pawl, P, and sliding rod, Q, to the dog C. Said sliding rod is to prevent the pawl P from operating the shipper-rod R when the planer is being used for very short work, and also is of such length as to prevent both dogs from operating at one time.

The object of this pawl is to operate the shipper-rod R.

Fig. 5 shows the same detached, by means of a projection, S, on said shipper-rod.

This shipper-rod has a belt-guide, T, which operates the cross-belt that runs over the large pulley U. Said pulley being fast to the countershaft K. This cross-belt operates for the increased quick return movement of the platen when placed on the tight pulley 6; this being done, the shipper-rod R releases itself from the pawl P by means of the curved slot in said shipper-rod.

The pulley 7 is a loose pulley for said cross-belt to run on.

It will be noticed, in the arrangement of the parts described, that the speed of the platen is increased as soon as it starts on its return movement, but this increased speed is diminished in season for the momentum of the working parts to get reduced to the ordinary speed before the dog D operates the ordinary shipper for the cutting stroke. This is done by the dog D striking the pivoted lever V in advance of the ordinary shipper, and by means of the connection W with the shipper-rod R, carries the belt from tight pulley 6 to loose pulley 7. This distance varies in different planers, according to the size, amount of friction, &c., but on an eight-foot planer already in operation, this distance is five inches.

The third part of my invention consists in the application of a pawl, a, to the pulley J and friction spring c, and ratchet b to the countershaft K. The object of this is to prevent the cramping of the cross-belts when placed on tight pulleys 5 and 6 of the screw-shaft L, by permitting the pulley J to travel faster than the countershaft K, but when its speed is reduced to that of the countershaft, the pawl a is thrown into the teeth of the ratchet b, by the friction spring c, and carries the pulley along with it.

Fig. 8 shows a friction-clutch pulley, that would produce the same result.

Fig. 9 shows fig. 5 applied in another form.

The dog C operates the rod R the same as in fig. 5, but instead of the pivoted lever V shifting the belt onto the loose pulley 7, it is done by the weight Y, when the dog D releases the rod by the pivoted lever d, having a hook, e, on the end.

The dog D operates the device in fig. 10 the same as in fig. 9, but instead of the dog C operating to draw the cross-belt from pulley 7 to 6, the oscillating friction-box does it by means of a pin, f, which moves the rod R by a hook on one end.

This friction-box is commonly applied to rack-planers.

I consider the application of device fig. 8 for fig. 7, and figs. 9 and 10 for fig. 5, as my invention in an-

other form, as they accomplish the same results, and I regard them as obvious substitutes.

Claim.

I claim as my invention—

1. The combination of the slotted shipper-rod R, dog C, pawl P, and sliding rod Q, substantially as described, and for the purpose set forth.

2. The combination of the slotted shipper-rod R, lever V, arm W, dog D, and its swinging pawl, as set forth and described.

3. The combination of the pawl *a*, ratchet *b*, friction-spring *c*, pulley J, shaft K, pulley U, and the series of band pulleys on screw-shaft L, substantially as described, and arranged to operate in the manner and for the purpose specified.

ALFRED M. HILLS.

Witnesses:

JOSEPH A. HODGE,
JEREMIAH CLARK.