F. B. MILES.

BELT SHIFTER.

No. 185,120. Patented Dec. 5, 1876.

Fig. 1.

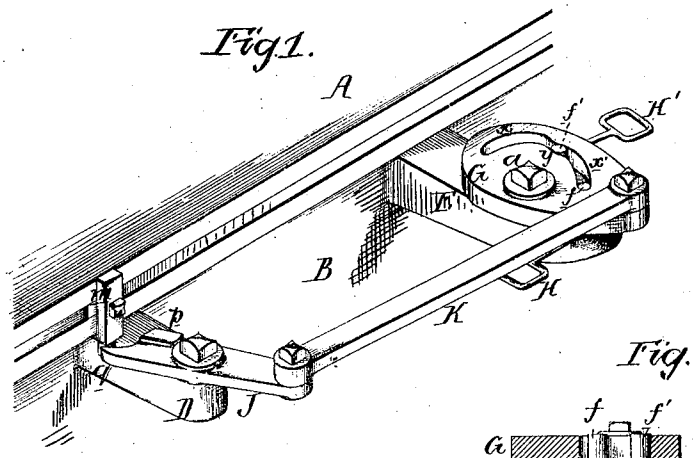


Fig. 4.

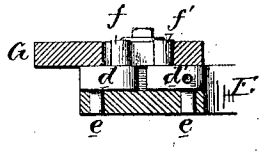


Fig. 2.

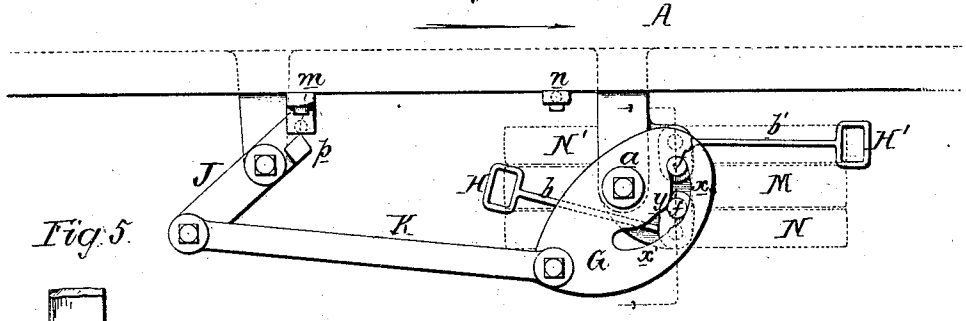


Fig. 5.

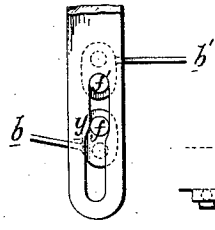
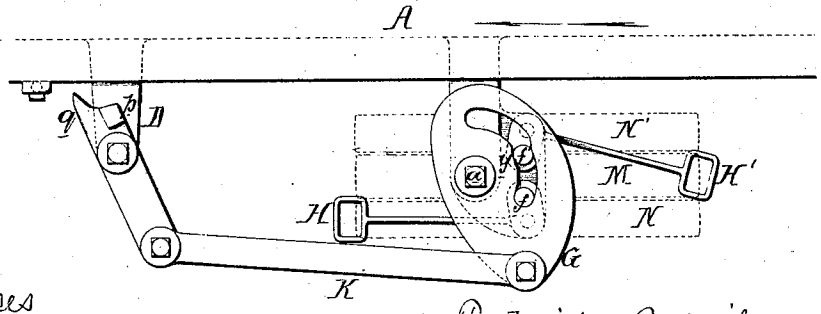


Fig. 3.



Witnesses
Harry Howson Jr
Harry Smith

Frederick B. Miles
by his Attorneys
Howson and Sons

UNITED STATES PATENT OFFICE.

FREDERICK B. MILES, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO HIMSELF AND OSCAR C. FERRIS, OF SAME PLACE.

IMPROVEMENT IN BELT-SHIFTERS.

Specification forming part of Letters Patent No. **185,120**, dated December 5, 1876; application filed August 17, 1876.

To all whom it may concern:

Be it known that I, FREDERICK B. MILES, of Philadelphia, Pennsylvania, have invented an Improved Belt-Shifting Device for Metal-Planing Machines, of which the following is a specification:

The object of my invention is to construct a cheap, simple, and effective belt-shifting device for reversing the motion of a planing-machine table.

In the accompanying drawing, Figure 1 is a perspective view of my improved belt-shifting device for metal-planing machines; Figs. 2 and 3, plan views, showing the device in different positions; Fig. 4, a vertical section on the line 1 2; and Fig. 5, a diagram illustrating a modification of my invention.

A is part of the reciprocating table of a planing-machine, from the bed B of which project the two brackets D and E. To a pivot-pin, *a*, on the bracket E, is loosely hung a plate, G, in which is a slot, composed of two segmental parts, *x* and *x'*, both being concentric with the pivot-pin *a*, but the part *x* being more distant than the part *x'* from the center of the said pin, and the two parts of the slot communicating with each other at *y*, where there is an abrupt step.

The belt-shifters consist of two bell-crank levers, H and H', the lever H having a long arm, *b*, and a short arm, *d*, and the lever H' a long arm, *b'*, and short arm *d'*, the long arm of each lever having at its outer end an eye for the passage of the belt. The pivot-pins *e e* of the two levers have their bearings in the bracket E, and pins *f f'* on the short arms of the two levers project through the slots in the plate G.

The planing-machine has the usual three pulleys, M, N, and N', (shown by dotted lines,) the central pulley M being fast on the shaft and the others loose. There is also the usual pair of driving-belts, one being straight to move the table in one direction, and the other crossed to move the table in the contrary direction. Two adjustable studs, *m* and *n*, are secured to the edge of the table A, the former for striking a projection, *p*, on the short arm of the lever J, and the latter for striking the projection *q* at the extreme end of the same arm of the lever, the long arm of which is connected to the plate G by a rod, K. As seen in Fig. 2, the table A has just completed its movement in the direction of the arrow, during which movement the cutting takes place, and the straight belt, owing to the vibration of the plate G on its pivot, has been moved by the shifter H from the pulley N to the fast pulley M, and the crossed belt from the latter pulley to the pulley N', so that the table will at once commence its course in a direction contrary to that pointed out by the arrow, and will continue this course until the stud *n* strikes the end of the lever J, when the moving parts will assume the position shown in Fig. 3, the straight belt being moved from the tight pulley M to the loose pulley N, and the crossed belt from the loose pulley N' to the fast pulley, so that the table will at once commence its return or cutting movement. It should be understood, however, that the movement of the two belt-shifters is not simultaneous. When the stud *m* strikes the lever J, the pin *f'* of the shifting-lever H' is the first to come under the influence of the abrupt step *y* at the junction of the two segmental parts of the slot in the plate G, and consequently the belt on the fast pulley will be moved clear of the same by the shifter H' onto the loose pulley N' before the shifter H moves the other belt onto the fast pulley. Precisely the same thing occurs when the parts are moved from the position shown in Fig. 3 to that shown in Fig. 2, the tight pulley being, in all cases, freed from the influence of one belt before it is influenced by the other belt; hence there can be no such shocks or jars when the reversal of the table takes place as would occur if the two belts exercised temporary contradictory efforts on the fast pulley.

When the shifting-levers are in the position shown in Fig. 1, the pins *f f'* are within the limits of the portion *x'* of the slot, which locks both levers. In like manner the shifting-levers, when in the position Fig. 2, are within the limit of, and are locked by, the portion *x* of the slot. It is only essential that the slot should consist of two segmental parts, when it is made in an intermittently-vibrating plate, G, for which the plate shown in Fig. 5 may be

substituted. This plate may be arranged to slide in ways, and may be actuated from studs on the table, in a manner which will readily suggest itself to those skilled in the art. The two parts of the slot for receiving the pins *f f'* of the belt-shifters will, in this case, be straight, but out of line with each other, and communicating at an abrupt step, *y*. The results accomplished by this intermittently-reciprocating plate and its slot will be precisely the same as those due to the movement of the slotted vibrating plate G, described above.

I claim as my invention—

The combination of a plate actuated from the table of a planing-machine, and provided with a slot in two parts, having an abrupt communication, *y*, with two belt-shifting levers, having pins adapted to the said slot, all substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses

FREDERICK B. MILES.

Witnesses:

HENRY HOWSON, Jr.,

HARRY SMITH.