(No Model.)

G. E. REINHARDT.

TOOL HOLDER OSCILLATING DEVICE FOR PLANING MACHINES.

No. 339,212. Patented Apr. 6, 1886.

Fig. 1.

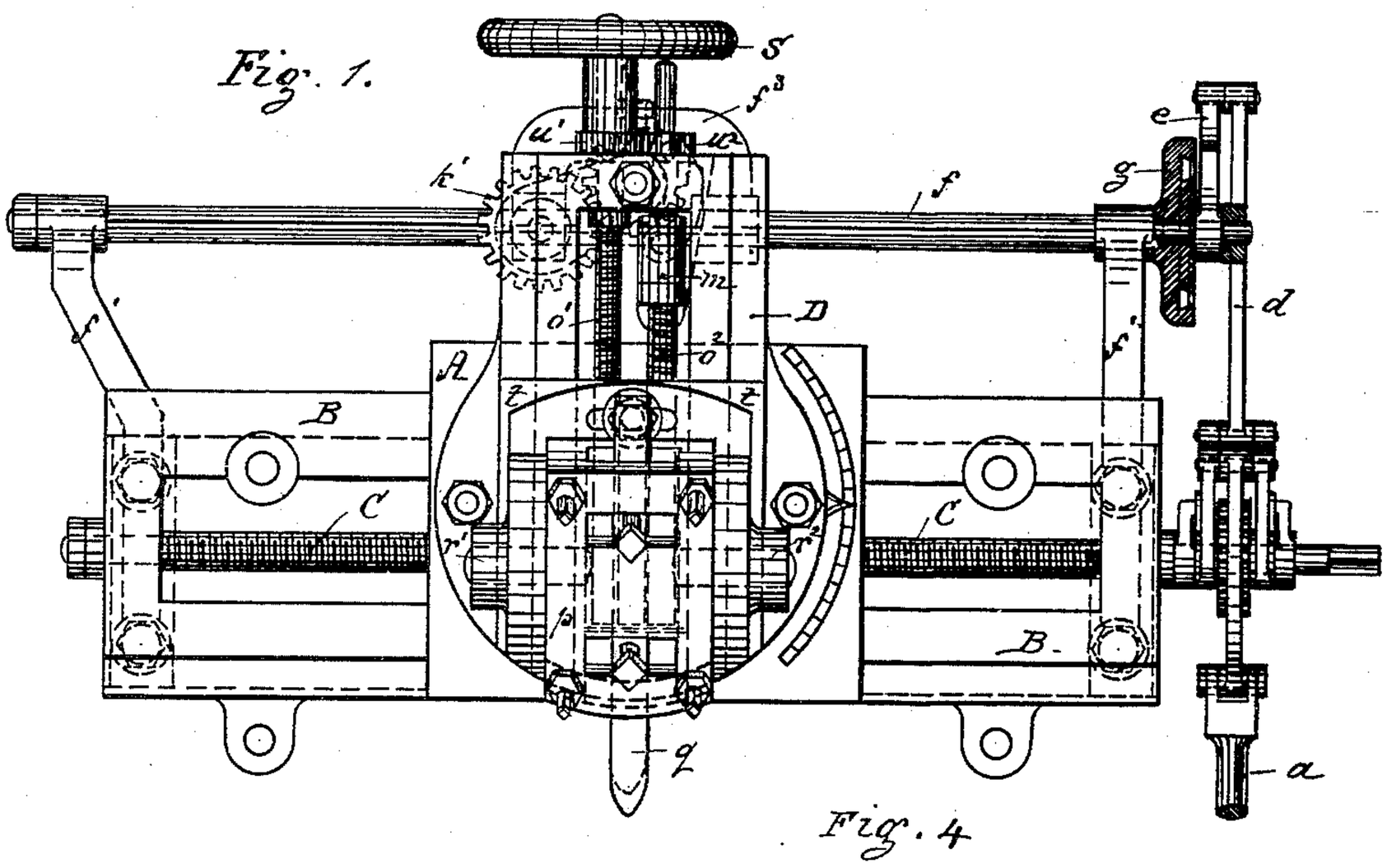


Fig. 4

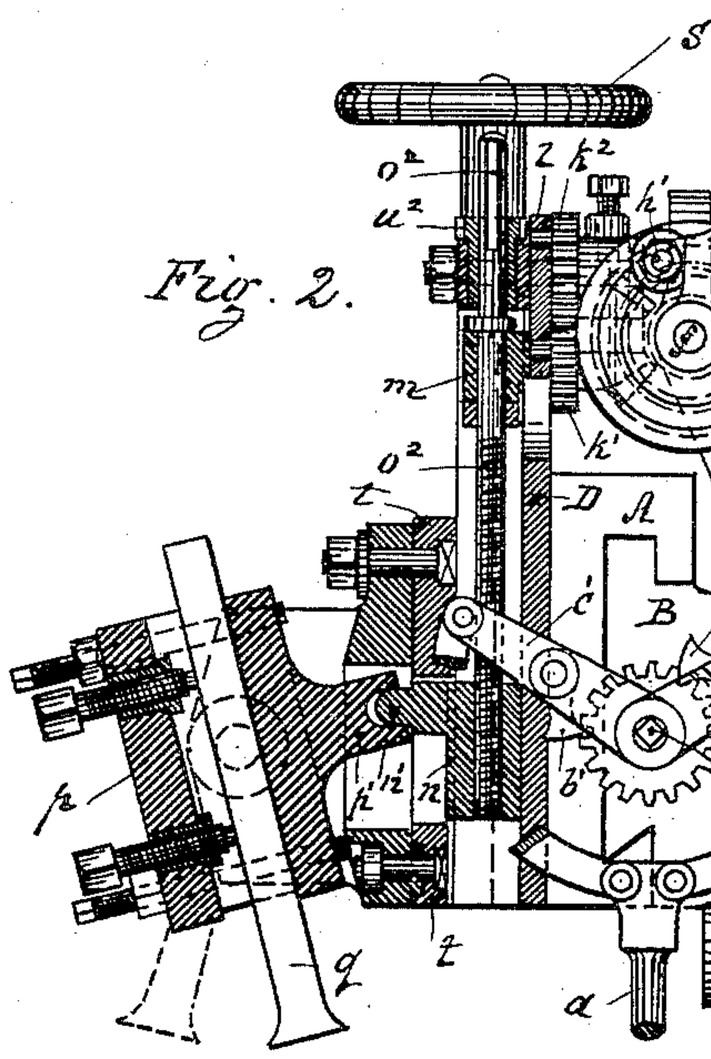


Fig. 2.

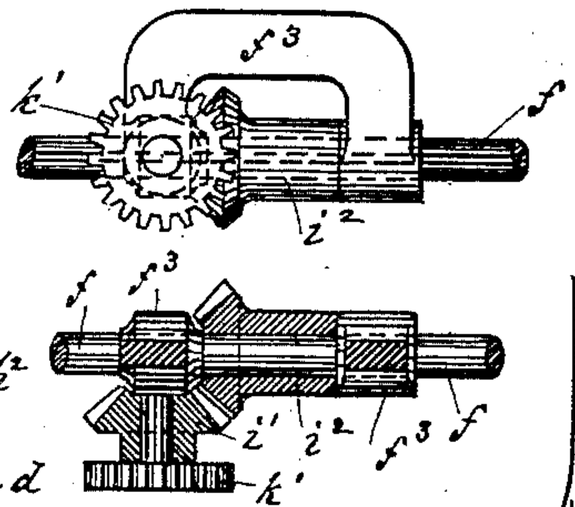


Fig. 5

Fig. 3.

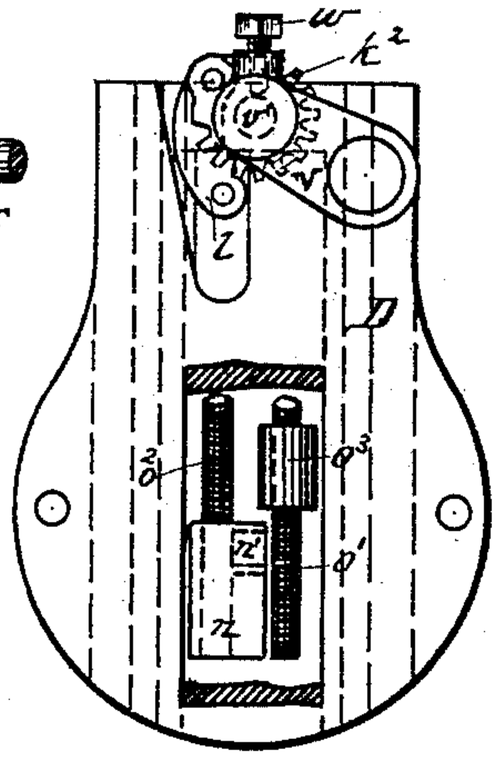
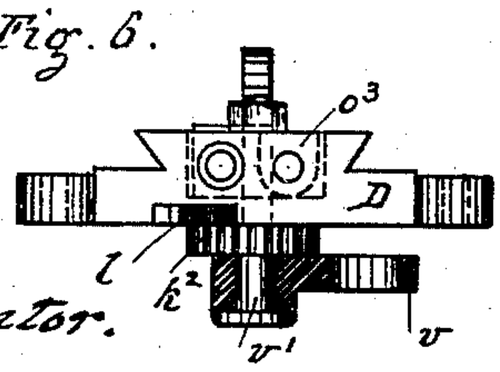


Fig. 6.



Witnesses.
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UNITED STATES PATENT OFFICE.

GUSTAV EDMUND REINHARDT, OF LEIPSIC, GERMANY.

TOOL-HOLDER-OSCILLATING DEVICE FOR PLANING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 339,212, dated April 6, 1886.

Application filed July 22, 1885. Serial No. 172,264. (No model.)

To all whom it may concern:

Be it known that I, GUSTAV EDMUND REINHARDT, a citizen of Germany, residing at Leipsic, in the Empire of Germany, have invented a new and useful Improvement in Tool-Holder-Oscillating Devices for Planing-Machines, of which the following is a full and exact specification.

This invention relates to improvements on planing-machines; and it consists in novel mechanism whereby a swinging motion is communicated to the tool-holder. This will enable a double-edged cutter to cut or plane during the forward as well as during the backward motion of the machine.

In the accompanying drawings, Figure 1 is a front view of a support of a planing-machine. Fig. 2 is a cross-section of the same. Fig. 3 is a back view of the carriage, partly in section; and Figs. 4, 5, and 6 are details referred to in the following specification.

The cross-slide A is fitted upon the vertical slide B, attached to the upright frame of the machine (not shown in the drawings.) This cross-slide A receives sidewise motion by means of the screw C, operated by the pawls $b' b^2$, arranged on the levers $c' c^2$. These levers are connected to the rod *a*, which receives motion in the usual manner. The arm c^2 is elongated and connected by rod *d* with a lever, *e*, placed upon a shaft, *f*, so as to be capable of turning freely upon the same. This shaft *f* is supported parallel to the feed-screw *c*, by brackets $f' f'$, attached to the vertical slide B. Close to the lever *e* there is firmly attached to the shaft *f* a disk, *g*. This disk *g* is provided with studs $h' h^2$, capable of being regulated and against which the lever *e* is made to strike, and to thus communicate the desired motion to the shaft *f*. Upon the shaft *f* the bevel-gear i^2 is arranged, capable of sliding in a groove on said shaft and meshing into a corresponding bevel-gear, i', connected to a wheel, k'. (See Figs. 4 and 5.) One end of this bevel-gear i' is supported in a frame f^3, that slides on the shaft *f* and straddles the bevel-gear i^2. The other ends or hubs of the wheels i' and k' are supported in a lever, *v*, turning on a bolt, v', attached to the carriage D. This bolt v' supports a wheel, k^2, that meshes into the wheel k'. The wheel k^2 is fastened upon the bolt v' by means of the set-screw *w*, Fig. 3, to regulate its exact position. The carriage D is provided with a spindle, o^2, having a fixed collar or hub, *m*, and a second collar, *n*, working on the threaded part of said spindle o^2. The fixed collar or hub *m* is connected with the gear-wheel k^2 by a rod, *l*, and the hub or collar *n* is provided with a convex projection, n', engaging a corresponding socket, p', at the back of the tool-holder *p*. This rod *l* forms the connecting-rod between the wheel k^2 and the hub *m*, which is firmly attached to the spindle o^2, as above described, and converts the rotary motion of the wheel k^2 into a reciprocating motion of the hub *m* or spindle o^2. The hub *n* is held fast on the threaded part of the spindle o^2, and thus receives the reciprocating motion from its spindle o^2 By means of the threaded part of the spindle o^2, the hub *n* can be raised or lowered to correspond with the position of the tool-holder *p*. The tool-holder *p* turns in side bearings, $r' r^2$, on the carriage *t*.

The operation of the above described mechanism is as follows: The cross-slide A, with carriages D *t*, and tool-holder *p*, receives sidewise motion on the vertical slide B by the screw C, operated by rod *a* in the usual manner. The motion of this rod *a* is communicated by arm c^2 and rod *d* to lever *e*, which latter (by coming in contact with one or the other of the studs $h' h^2$) gives an oscillating motion to the shaft *f*. This motion given to the shaft *f* is communicated by bevel-gear $i^2 i'$ and wheel k', to the wheel k^2, and from the latter by the connecting-rod *l* to the spindle o^2, thus producing a reciprocating motion of the spindle. This motion is again communicated by projection n' to the tool-holder *p*, turning on the bearings $r' r^2$, thus producing an oscillating motion of said tool-holder. In this way either the one or the other side or cutting-edge of the tool *q* is brought into action, according to the direction of the motion of the planing-table.

In the carriage D there is placed a second screw-spindle, o', on the side of the spindle o^2, and connected with the same by gearing $u' u^2$. These gear-wheels $u' u^2$ turn in the upper part of the carriage D, and the spindles $o' o^2$ pass through the same and are connected thereto by suitable feathers.

The spindle o' has for its object to regulate

the position of the carriage t, by passing through a boss, o^3, attached to the carriage t, while the spindle o^2 produces the oscillation of the tool-holder p, in the manner above described.

Instead of a double-edged cutter q, two regular cutters placed side by side, with their cutting-edges in opposite directions, at about one hundred and eighty degrees to each other, may be employed for the purpose.

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

1. In a planing-machine, the combination of reciprocating spindle o^2 with hub n, having projection n', and with tool-holder p, having socket p', and with rod l and collar m, substantially as and for the purpose described.

2. The combination of cross-slide A, operated by feed-screw C, with the spindle o^2, bevel-gear i^2, wheels k' k^2, rod l, and shaft f, the shaft f and screw C receiving motion from rod a by means of intermediate gearing, substantially as specified.

3. The combination of tool-holder p, oscillating on centers r' r^2, with reciprocating spindle o^2, rod l, collars m n, and with screw o' and wheels u' u^2, as and for the purpose set forth.

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

GUSTAV EDMUND REINHARDT.

Witnesses:
EDMUND BACH,
OTTO GUNTHER.