B. FRESE.

Mechanical-Movements.

No. 146,244. Patented Jan. 6, 1874.

Fig. 1.

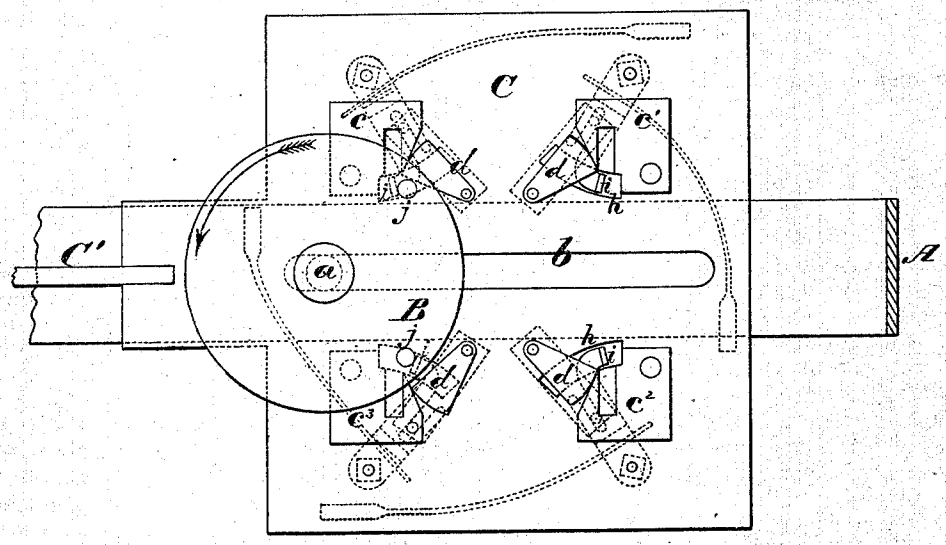
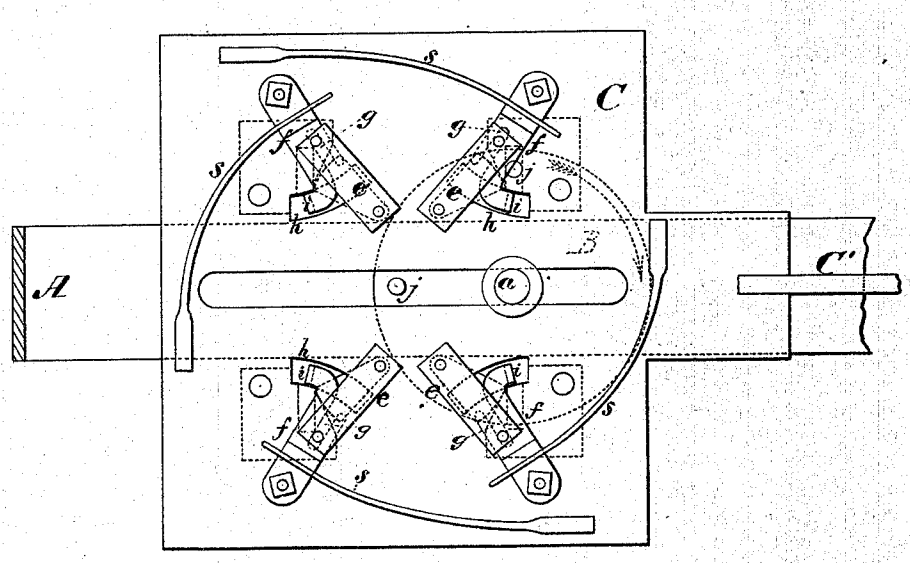


Fig. 2.



WITNESSES.

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UNITED STATES PATENT OFFICE.

BERNARD FRESE, OF GILMAN, INDIANA.

IMPROVEMENT IN MECHANICAL MOVEMENTS.

Specification forming part of Letters Patent No. **146,244**, dated January 6, 1874; application filed October 25, 1873.

To all whom it may concern:

Be it known that I, BERNARD FRESE, of Gilman, in the county of Marion and State of Indiana, have invented a new and valuable Improvement in Mechanical Movements; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings making a part of this specification, and to the letters and figures of reference marked thereon.

The figures of the drawings show the arrangement of my devices.

This invention has relation to mechanical movements for converting rotary motion into rectilinear reciprocating motion, or vice versa. It consists in combining with two studs on the face of a balance-wheel, a reciprocating head, on the face of which are four grooved offsets, to which pivoted segments and spring tripping-fingers are applied in such manner that when the balance-wheel is rotated the studs thereon will pass from one grooved offset to another, and communicate a reciprocating motion to the head, or, if the latter be reciprocated, it will give rotary motion to the balance-wheel, as will be hereinafter explained.

The following is a description of my improvement.

In the annexed drawings, A represents a frame, in the sides of which the shaft *a* of a balance-wheel, B, has its bearings. C represents a reciprocating head, which is on the end of a guide-rod, C′, that passes through one end of the frame A, and may be connected to machinery which it is desired to operate. The head C has an oblong slot, *b*, through it, through which the shaft *a* of wheel B passes, and receives a nut on it for keeping the head up to the face of wheel B, and parallel thereto. The reciprocating head C has four U-shaped offsets, *c* c^1 c^2 c^3, formed on or affixed to its face, and arranged equidistant from the slot *b* on opposite sides of it, and equidistant from each other. One limb of each offset is shorter than the other, and is provided with a vibrating segment, *d*, which is pivoted to the head C. The pivot of each segment *d* passes through the head C, and is fixed to an arm, *e*, that is connected to a vibrating plate, *f*, by a pin working in a slot, *g*, through this plate. Each plate *f* is acted on by a spring, *s*, which presses its free end, on which is formed a tripping-finger, *i*, toward the segment *d*. The tripping-finger of each plate *f* passes through a curved slot, H, through the head C, and is exposed between the open ends of the U-shaped offset, as shown in the drawing, Fig. 1. On the face of the balance-wheel B two studs, *j j*, are fixed, on which anti-friction collars may be applied. These studs are equidistant from the axis of the wheel B, and equidistant from each other, and the distance between them is equal to the distance between the grooves in the four offsets *c* c^1 c^2 c^3.

If rotary motion be given to the wheel B, in the direction indicated by the arrow in the drawings, the pins or studs *j j* on this wheel will pass from one U-shaped offset into another, and give a rectilinear reciprocating motion to the head C without interfering with the segments *d*. On the other hand, if rotary motion in the same direction is given to the wheel B by reciprocating the head C, the segments *d d* of the two offsets *c* c^2 will be brought into play alternately, and will cause the pins or studs *j j* to enter these offsets with certainty.

It will be observed that as the pins pass into the offsets *c* c^2, they strike the fingers *i i*, and move the free ends of the segments *d* in front of the pins, thus allowing the latter to push the wheel past its dead-center, after which the offsets continue to give impulse to the wheel.

If it is desired to rotate wheel B in the opposite direction, the fingers and segments applied to the offsets c^1 c^3, are brought into play, and the fingers and segments of the offsets *c* c^1 will be moved out of the way by the pins or studs *j j* as they pass around.

If it should not be desired to rotate the wheel B in two directions, then two of the segments *d d* and their fingers may be omitted, leaving two segments diagonally opposite each other to act alternately on the wheel B at the termini of its strokes.

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

1. The U-shaped offsets *c* c^1 c^2 c^3, arranged

on the reciprocating head C, in combination with pins or studs *j j* arranged on the wheel B, as shown and described.

2. The segments *d* and spring-fingers *i*, combined with the slotted offsets on head C, and with pins or studs *j j* on the wheel B, as and for the purposes described.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

BERNARD FRESE.

Witnesses:

THEODOR FUMBUSH,

CHAS. F. HAHN.