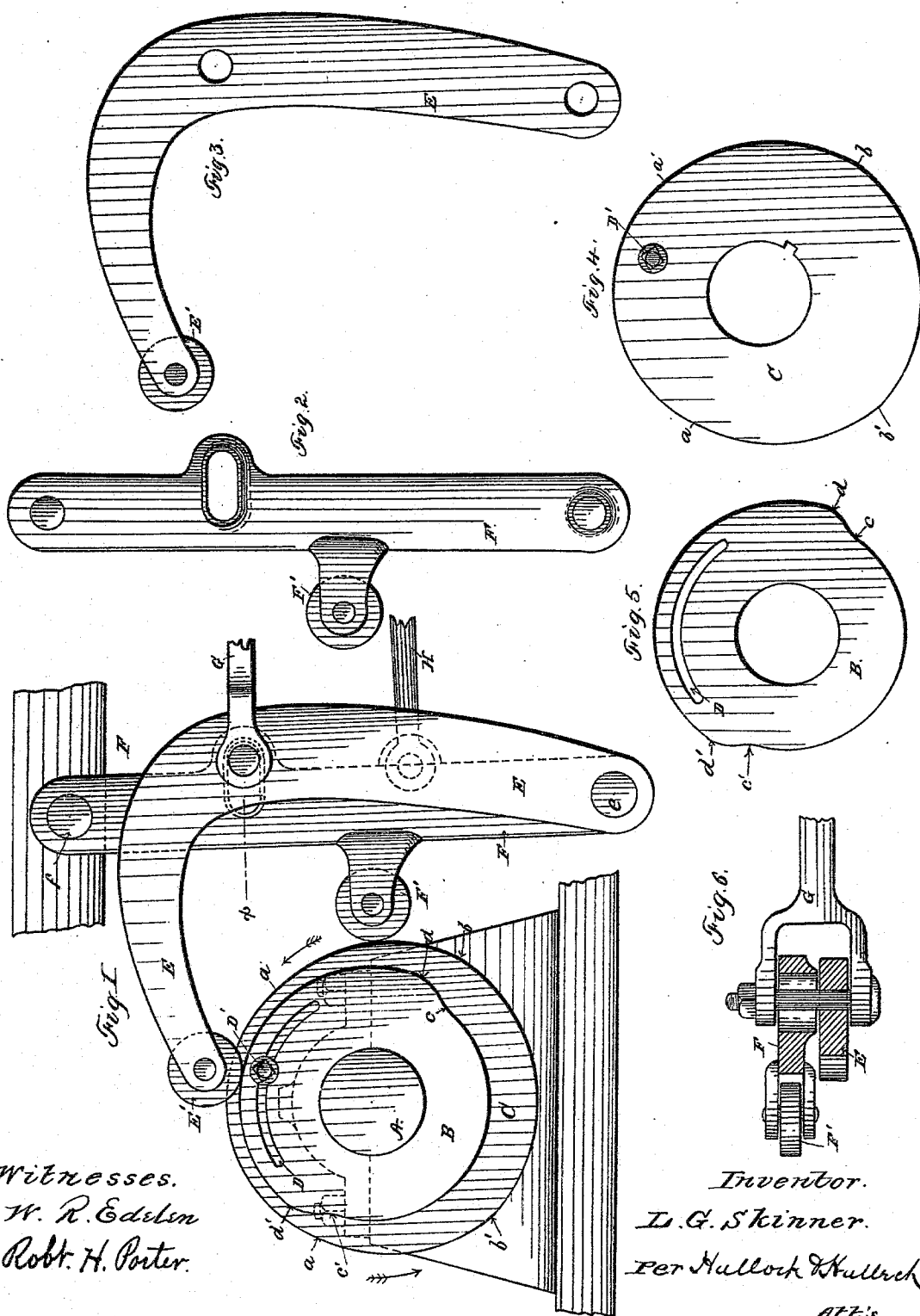


(No Model.)

LE GRAND SKINNER.
MECHANICAL MOVEMENT.

No. 288,130.

Patented Nov. 6, 1883.



Witnesses.
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UNITED STATES PATENT OFFICE.

LE GRAND SKINNER, OF ERIE, PENNSYLVANIA.

MECHANICAL MOVEMENT.

SPECIFICATION forming part of Letters Patent No. 288,130, dated November 6, 1883.

Application filed April 26, 1883. (No model.)

To all whom it may concern:

Be it known that I, LE GRAND SKINNER, a citizen of the United States, residing at Erie, in the county of Erie and State of Pennsylvania, have invented certain new and useful Improvements in Mechanical Movements; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention consists in providing new and improved means for obtaining an intermittent varying reciprocating movement from a continuous and uniform rotary movement.

My device is shown in the accompanying drawings as follows:

Figure 1 is a side elevation of the movement complete. Figs. 2, 3, 4, and 5 show the various parts separately, and Fig. 6 is a detail section on the line *x* in Fig. 1.

The parts are as follows: A is the rotating shaft, and G the reciprocating rod. B and C are cams on the shaft. D is a slot in one cam, and D' a set-screw in the other, for varying the adjustment of one cam upon the other. E and F are swinging levers, one of which, F, is pivoted to a fixture and the other, E, to the companion lever F. *f* is the fixed pivot, and *e* is the pivot connecting the two levers. E' is a roller on the lever E, which runs upon the cam B, and F' is a similar roller on the lever F, which runs upon the cam C. Each of the cams have two dwells and a lift and a drop. Thus, on cam B there is a dwell from *d* to *d'* and from *e'* to *e*, and a lift from *e* to *d*, and a drop from *d'* to *e'*, and in cam C there is a dwell from *a* to *a'* and from *b'* to *b*, and a lift from *a'* to *b'*, and a drop from *b* to *a*. The lifts and drops on the cam B are abrupt, while those on the cam C are gradual and slow.

It must be supposed that there is some reacting force applied to the rod G, or at some other point, to keep the rollers E' F' in contact with the cams. This force may be a spring or gravity or any other means.

It will be observed that the lever E may move on its pivot without moving the lever F; but the lever F cannot move without moving the lever E, and the reciprocating bar G connects only with the lever E.

A rotation of the shaft A in the direction of the arrows will produce the following movement: As seen in the drawings, the roller F' is

running up the lift *a b*, and so the rod G is moving slowly to the right. When the point *b* is reached, the movement of the rod G stops and dwells until the roller E' begins to run down the drop *d c*, which will give a rapid movement to the left; but a halt occurs as soon as the roller passes *c*, and continues until roller F' passes *b'*, when the movement to the left continues slowly while the roller F' is running down the drop *b' a'*, and then it stops and a dwell occurs until the lift *e' d'* passes the roller E', which gives a quick movement back to the right. A halt or dwell again occurs until the point *a* passes under the roller F, when the movement to the right continues slowly, as we found it above. The reciprocal movement therefore may be described as follows, beginning at the extreme right: a quick movement to the left; then a dwell; then a slow movement to the extreme left; then a dwell; then a quick movement to the right; then a dwell; then a slow movement to the right, and finally a dwell at the place of beginning. This movement may fairly be called an "intermittent varying reciprocal" movement. Great variation can be made in the relative duration of the various periods of dwell and movement by changing the position of the cam B on the cam C. The slow movements are effected wholly by the cam C and the quick movements by the cam B, and the duration of the extreme dwells is regulated by the proximity of the lifts and drops on the cam B to the beginning of the dwells on the cam C.

When no readjustment is required, the cams B and C may be one piece of metal. The abruptness of the lifts and drops of the two cams determine the rapidity of movement of the reciprocating part when they act upon it, and hence the construction of the cams in that respect will be in accordance with the requirements.

Where a simple reciprocating movement is wanted, in conjunction with the intermittent varying reciprocating movement, a connecting-rod, H, may be attached to the lever F.

The form and position of the levers F and E may be greatly modified, and a sliding block may be used in place of the lever F. It would be impossible, almost, to illustrate all the various forms and styles of levers that might be substituted for those shown and obtain the

same effect. The essential point is that the part which is moved by the cam C must carry the part which is connected with the reciprocating rod and operated from the cam B in such a manner that it shall move when it moves and may also move independently of it.

What I claim as new is—

1. In a mechanical movement for converting a continuous and uniform rotary movement into an intermitting varying reciprocal movement, the combination, substantially as shown, of the following elements: two cams with alternating lift and drop, adjusted on the rotating part, and two vibrating parts moved, respectively, by said cams, one of which is connected with the other part in a manner substantially as shown,

whereby it may vibrate independently of its support and also with it.

2. In a mechanical movement for converting a continuous and uniform rotary movement into an intermitting varying reciprocal movement, the combination, substantially as shown, of the cams B and C on the rotating shaft, and the vibrating lever F, moved from the cam C and supporting the vibrating lever E, which is moved from the cam B, and also by the lever F, and is connected with the part to be reciprocated.

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

LE GRAND SKINNER.

Witnesses:

JNO. K. HALLOCK,
ROBERT H. PORTER.