(Model.)

F. ELBING.

DEVICE FOR CONVERTING MOTION.

No. 251,560. Patented Dec. 27, 1881.

Fig: 1.

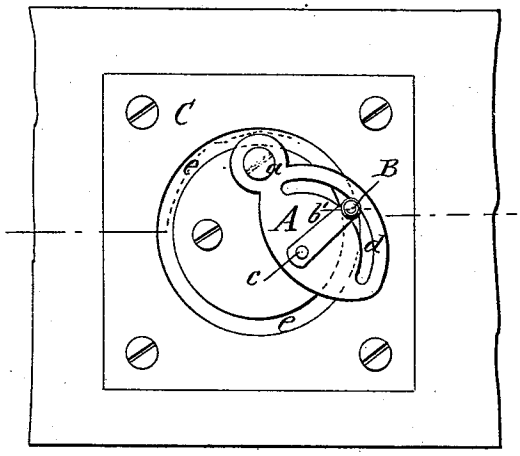


Fig: 2.

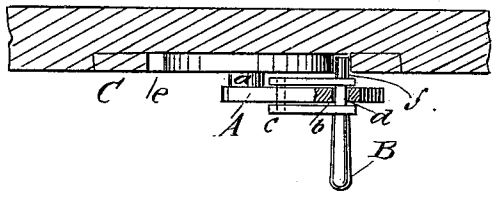


Fig: 3.

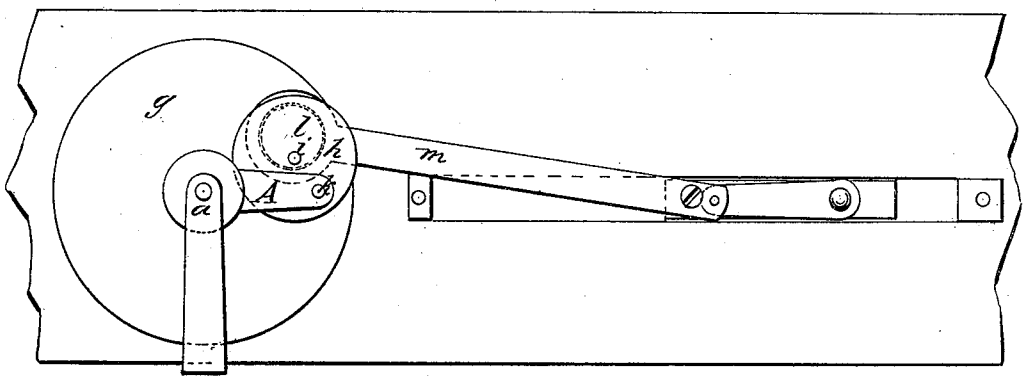


Fig: 4.

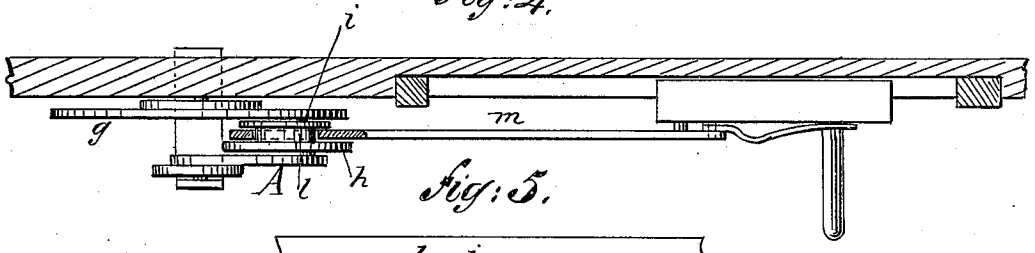
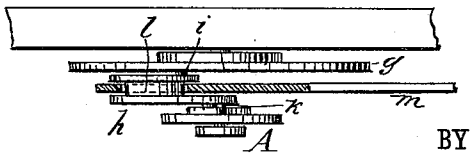


Fig: 5.



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UNITED STATES PATENT OFFICE.

FRANK ELBING, OF ALGERSDORF, BOHEMIA, AUSTRIA.

DEVICE FOR CONVERTING MOTION.

SPECIFICATION forming part of Letters Patent No. 251,560, dated December 27, 1881.

Application filed October 5, 1881. (Model.)

To all whom it may concern:

Be it known that I, FRANK ELBING, of Algersdorf, Bohemia, Austria, have invented certain new and useful Improvements in Devices for Converting Motion, of which the following is a specification.

My invention relates to mechanism for converting reciprocating rectilinear to continuous rotary motion, and has for its object to overcome the dead-centers of the usual crank mechanism without loss of motion and power.

The invention consists in a shifting crank-pin guided to move in a path eccentric to the crank-axis, as hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

In the drawings, Figure 1 is a side view, and Fig. 2 a sectional plan view, of crank mechanism embodying my invention. Fig. 3 is a side view, and Figs. 4 and 5 are sectional plan views, of a modification.

Referring to Figs. 1 and 2, A is a crank-arm on an axis, *a*. B is the crank-pin, fixed on an arm, *b*, that is pivoted to arm A by a pin, *c*, on which the crank-pin and its arm *b* are free to turn. The crank-arm A is formed with a slot, *d*, that is an arc having its center at pin *c*, and the crank-pin B has a projection, *f*, at the back of its arm *b*, extending through the slot *d*. C is a plate fixed at the side of the crank-arm, and formed with a guide-slot, *e*, eccentric to the main axis *a*, into which slot the projection *f* of the crank-pin enters. The pitman or rod having reciprocating motion being connected to pin B, the pin is moved in guide-slot *e*, and by its engagement with the slot in arm A carries the arm around the axis *a*. In no position of the parts can the pin B, axis *c*, and axis *a* come into line, and there are consequently no dead-centers at the extremes of the reciprocations.

In the modified form shown in Figs. 3, 4, and 5 a disk or wheel, *g*, is substituted for the eccentric guide-slot. A is the crank-arm on an axis, *a*. *h* is a crank-disk, pivoted to wheel *g* by an axial pin, *i*, and connected by a pin, *k*, to the crank-arm A, and provided with a crank-pin, *l*, for the pitman *m*. The operation is the same in principle. The crank-disk *h*, which is the equivalent of a crank-arm, is guided arbitrarily by the wheel *g*, and carries the main crank-arm A.

In Figs. 4 and 5 the parts are shown at the extremes of movement. The crank-pin *l* is of large size, comparatively, so that the movement of disk *h* on its axis *i* is limited.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. The crank mechanism consisting of slotted crank-arm A, crank-pin B, hung by arm *b* on the crank-arm, and the grooved plate C, having a guide-slot engaged by the crank-pin, substantially as shown and described.

2. The combination, with a crank, of a secondary crank engaging the main arm and held in position by an eccentric guide, substantially as herein shown and described.

The foregoing specification of my improvements in devices for converting motion signed by me this 12th day of August, A. D. 1881.

FRANK ELBING.

Witnesses:

C. MEINECKE,

H. RENJES.