

L. J. Knowles,
Mechanical Movement.
N^o 53308. Patented Mar. 20, 1866.

Fig. 2.

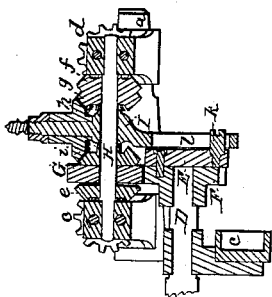


Fig. 4.

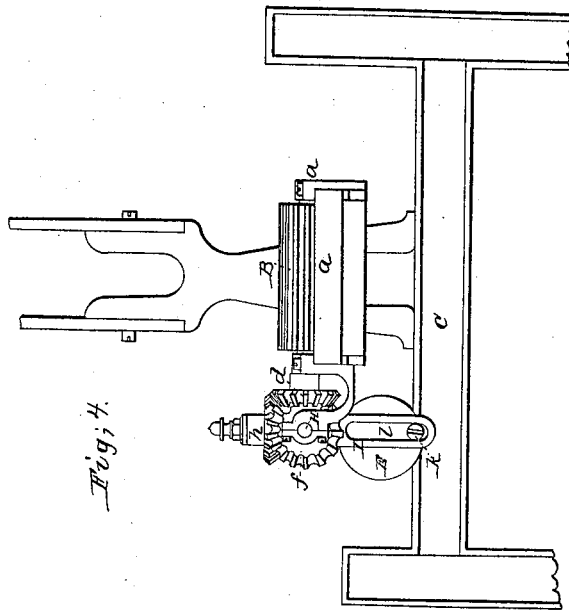
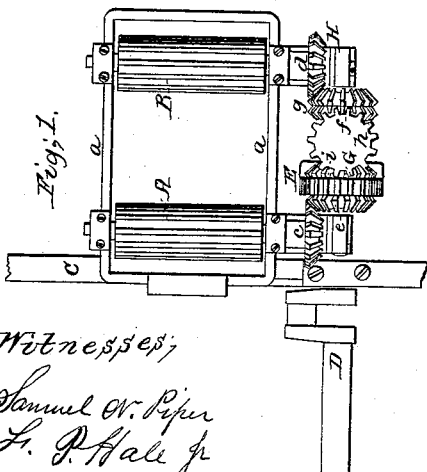
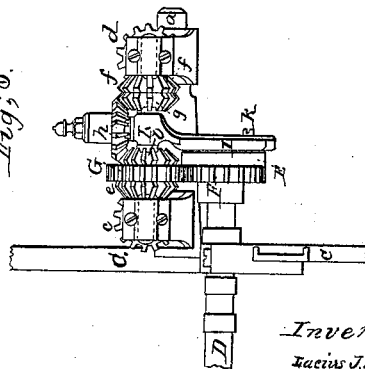


Fig. 1.



Witnesses;
Samuel W. Piper
L. P. Hale Jr

Fig. 3.



Inventor;
Lewis J. Knowles,
By his Attorney
R. H. Eddy

UNITED STATES PATENT OFFICE.

LUCIUS J. KNOWLES, OF WARREN, MASSACHUSETTS.

IMPROVEMENT IN MECHANISM FOR OBTAINING INTERMITTENT ROTARY MOTION.

Specification forming part of Letters Patent No. 53,308, dated March 20, 1866.

To all whom it may concern:

Be it known that I, LUCIUS J. KNOWLES, of Warren, in the county of Worcester and State of Massachusetts, have invented a new and useful Mechanism for Obtaining an Intermittent Rotary Motion from a Constant Rotative Motion, such mechanism being specially applicable to the production of the requisite movements of the lifting and depressing gears of fancy-loom harnesses; and I do hereby declare the same to be fully described in the following specification, and represented in the accompanying drawings, of which—

Figure 1 is a top view of my invention as applied to the cranked shaft and the harness lifting and depressing gears of a fancy loom. Fig. 2 is a vertical and longitudinal section of the mechanism. Fig. 3 is a side elevation, and Fig. 4 an end elevation, of it.

In the said drawings, A and B are the two lifting and depressing gears, which are arranged parallel to one another, and whose journals are supported in bearings upheld by an open frame, *a*, projecting from the loom-frame C.

D is the cranked shaft of the loom—that is, the shaft which serves to operate the lay—and is immediately connected with it by pitmen or connecting-rods.

On the outer end of the shaft D is a crank-wheel, E, and a spur-gear, F. The said gear F engages with another such gear, G, which is placed on and concentrical with, and so as to be capable of freely revolving on a shaft, H, having its axis arranged in the same horizontal plane with those of the gears A B. Each of such gears A B has one of two bevel-gears, *c d*, fixed to one of its journals. These bevel-gears engage with two other bevel-gears, *e f*, which are fixed to and carried by the auxiliary shaft H. There is attached to the gear *f* another such gear, *g*, which engages with a bevel-pinion, *h*, which revolves freely on the upper arm of a vibratory lever, I, whose fulcrum is the shaft H, and whose lower arm has a slot, *l*, for the reception of a crank-pin, *k*, projected from the side of the wheel E. The pinion *h* engages with a bevel-gear, *i*, fixed to the side of the gear G, and revolves freely with it on the shaft H.

While the crank-shaft of the lay is in revolution its cranked wheel E will impart to the lever I a vibratory motion on its fulcrum-shaft

H. While the said lever is in the act of being moved in one direction the shaft H and the gears A B will have a rotary motion imparted to each of them; but while the lever is in the act of being moved in the opposite direction the shaft H and gears A B will not revolve but be at rest. This stoppage of motion of the shaft H and the gears A B results from the fact that when the bevel-pinion *h* is vibrated in the direction of motion of the spur-gear G it will move around the shaft H with the same velocity of movement that the gear G has around such shaft. Consequently the bevel-gear *i* attached to the gear G, and for driving the pinion *h*, will during such time produce no revolution of the pinion *h* on its journal or lever arm.

As the shaft H, with its three bevel-gears, *c f g*, derive motion from the pinion *h* by its action on one of such gears, such shaft will be at rest while the pinion is not revolved by the bevel-gear fixed to the spur-gear G. But when the lever I moves in an opposite direction, so as to vibrate the pinion in a direction contrary to that in which the spur-gear G may be in motion, the shaft H will be put in rotation, so as to cause the lifting and depressing gears to simultaneously revolve.

It is by the connection of the lay-gears A B with the shaft H by means of bevel-gears, as described, that the said gears A B derive from such shaft H their rotary motions and intervals of rest. The invention, therefore, consists in the mechanism which operates to produce the intermittent rotary movement of the shaft H, such intermittent movement being imparted to other mechanism by means of proper devices leading from the shaft H.

What I claim as my invention is—

The combination, as well as the arrangement, of the cranked wheel E, the slotted lever I, the spur-gears F G, the bevel-gear *i*, applied to the spur-gear G, the bevel-pinion *h*, applied to the lever, the bevel-gear *g*, and its shaft H, the whole being for producing an intermittent rotary motion of such shaft from a continuous rotary motion of the cranked wheel.

LUCIUS J. KNOWLES.

Witnesses:

R. H. EDDY,
F. P. HALE, Jr.