(No Model.)

D. H. REIMERS.

MECHANICAL MOVEMENT.

No. 465,948. Patented Dec. 29, 1891.

Fig. 1.

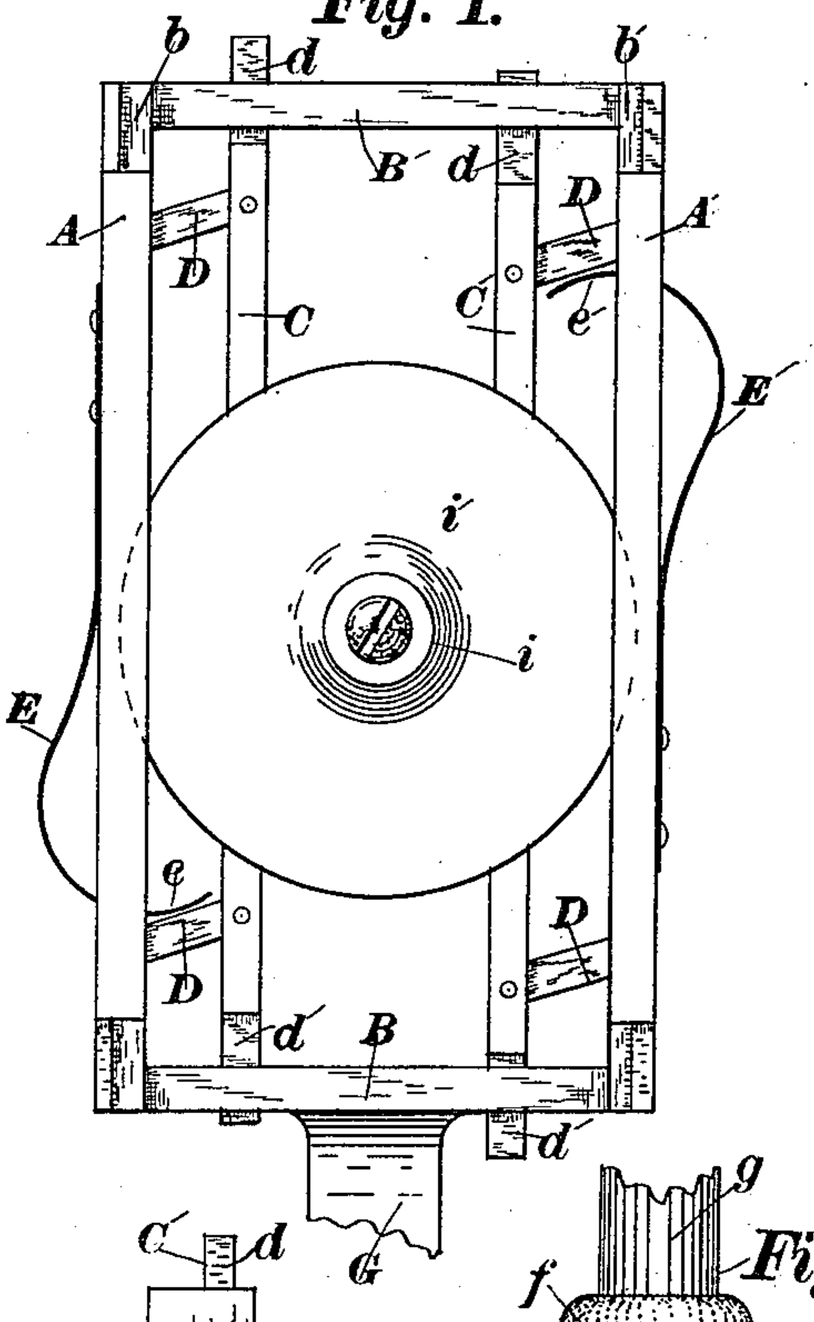


Fig. 2.

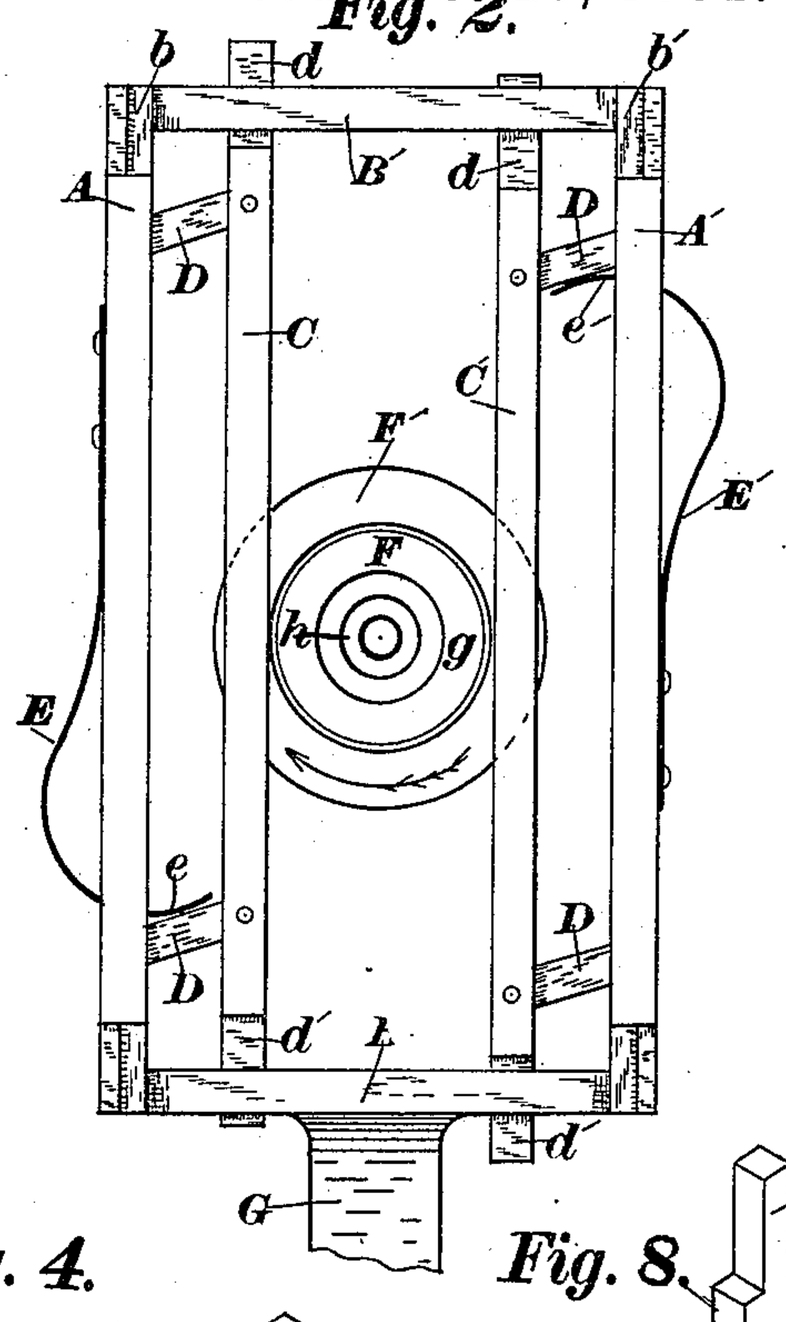


Fig. 4.

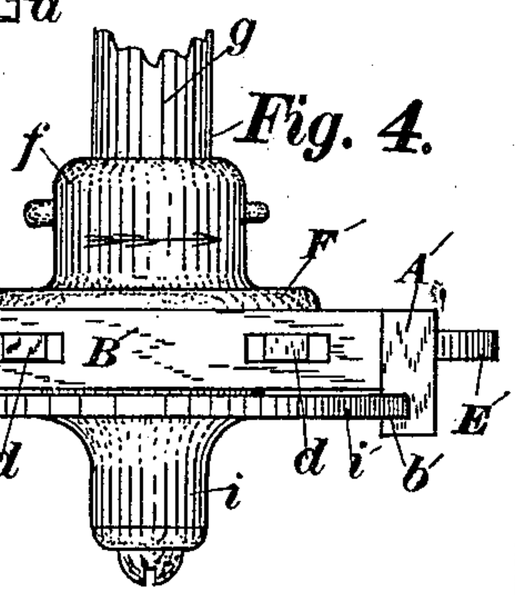


Fig. 8.

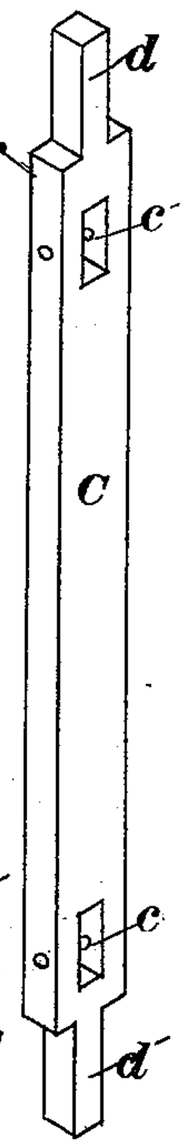


Fig. 3.

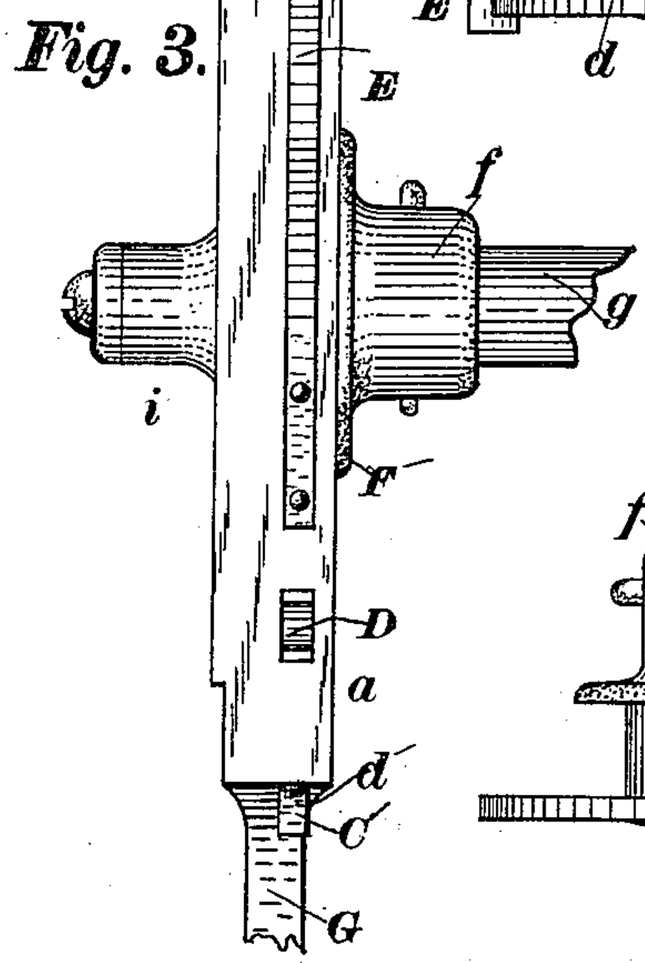


Fig. 5.

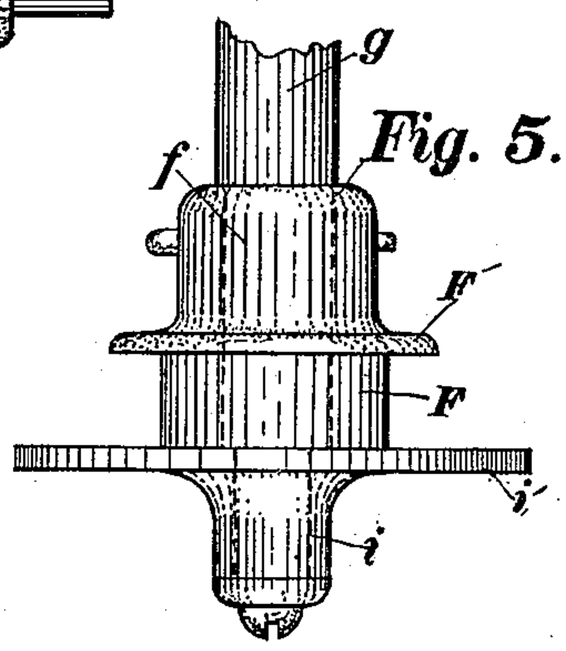


Fig. 6.

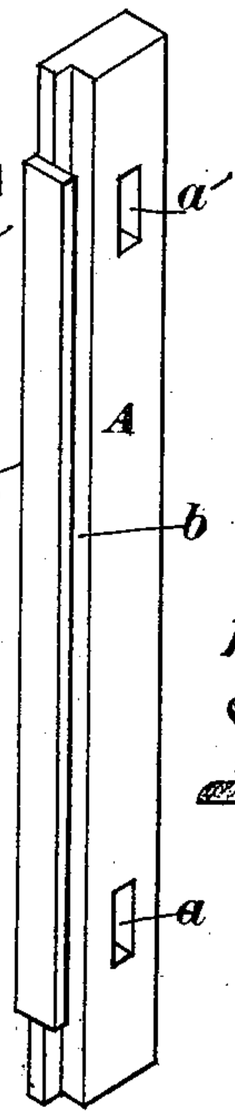


Fig. 7.

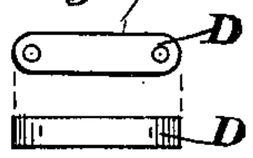
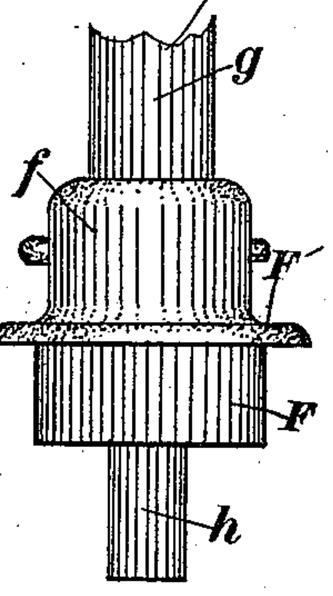


Fig. 9.



Witnesses
H. Spethmann
Axel Sotz.

Inventor
Dycke H. Reimers
By his Attorney Oscar Sneed

UNITED STATES PATENT OFFICE.

DYCKE H. REIMERS, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO CHRIST. H. STOELTING, OF SAME PLACE.

MECHANICAL MOVEMENT.

SPECIFICATION forming part of Letters Patent No. 465,948, dated December 29, 1891.

Application filed April 10, 1891. Serial No. 388,405. (No model.)

To all whom it may concern:

Be it known that I, DYCKE H. REIMERS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Mechanical Movement, of which the following is a specification.

My invention relates to that class of mechanical movements which are intended to convert a reciprocating into a rotary motion, the rotary motion being started and continuing in but one direction, and thus providing a substitute for the crank in operating sewing and other similar machines, which are usually constructed to operate when turned in but one direction.

My object is to provide a construction which is free from the objections of all others for the purpose yet introduced by an arrangement of the parts in such a manner that the wearing away of the principal frictional contacting surfaces is continually provided for, as will be hereinafter explained.

Another object is a construction which is practically noiseless when in operation, thus adapting it to almost universal use in operating light foot-power machinery.

I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a front elevation of the movement, looking toward the front end of the driving-shaft. Fig. 2 is the same elevation as Fig. 1, except that the guide-wheel has been removed better to show construction of operative parts, as will be fully explained. Fig. 3 is an elevation of the right side of Fig. 1, showing part of the driving-shaft broken away. Fig. 4 is a top view of Fig. 1. Fig. 5 is a view of the rotary parts as they appear when removed from their normal position in the frame of the device. Fig. 6 is one of the pieces composing the sides of the frame. Fig. 7 is respectively side and edge views of links, for the purpose hereinafter explained. Fig. 8 is one of the friction-bars, and Fig. 9 a view of Fig. 5 with the guide-wheel removed.

Similar letters indicate corresponding parts throughout the several views.

The frame is composed of four parts A A′ and B B′, and these parts are framed together in rectangular form, as shown. The perspective view of a side of the frame, Fig. 6, shows two mortises *a* and *a′* and a longitudinal groove *b* near the front edge. There are friction-bars C and C′, which have a position parallel with the sides A and A′. The form of these friction-bars is plainly shown in Fig. 8. There are two mortises *c* and *c′* and square tenons *d* and *d* at the ends, which tenons operate loosely in mortises made through the top and bottom pieces B and B′, as shown.

D shows short links which connect the bars C C′ with the sides of the frame A and A′, the links being pivoted in the mortises *a* and *a′* of the sides of the frame A and A′ and the mortises *c* and *c′* of bars C and C′, so as to vibrate and permit a slight longitudinal motion of bars C and C′.

Secured to the sides of frame-bar A and A′ are springs E and E′, these springs having their outer ends *e* and *e′* in contact with the links D, Figs. 1 and 2, spring E, operating to force friction-bar C downward, and spring E′, operating to force friction-bar C′ upward. Between friction-bars C and C′ is a friction-pulley F, which has a flange F′, and hub *f* for securing it firmly to driving-shaft *g* by means of a pin, as shown. The other end of driving-shaft *g* has a tenon *h*, Fig. 9, which projects forward of friction-pulley F and is made in size smaller than shaft *g*, and there is fitted to easily turn on this tenon a guide-wheel *i′*, having a hub *i*, the wheel *i′* being held on the tenon *h* by means of a screw and washer, as shown, or other suitable means well understood.

Fig. 6 plainly shows a longitudinal groove *b* in the side pieces of the frame, into which groove, in each side piece A and A′, operates the periphery of the wheel *i′*, Figs. 1 and 3. When the parts are in proper position for operation, the guide-wheel *i′* acts to hold the shaft *g* in a position central with the width of the frame from A to A′ and at the same time permit the frame to reciprocate longitudinally with the friction-bars C and C′.

When the parts are all in operative position, the pulley F will have a place between friction-bars C and C′, and the link D, which connects the friction-bars to the side A A′ of the frame, standing in such an angular posi-

tion in relation to both friction-bars and frame sides that the action of spring E and E′ will cause the friction-bars C and C′ to approach each other and thus clamp the pulley F between them, as shown in Fig. 2. At the rear of pulley F is a flange F′, which bears against the rear sides of the friction-bars C and C′. Connected to the center of length of the lower piece B of the frame is the top portion of a pitman broken away. This pitman is supposed to have its lower end attached to any foot-treadle common to sewing-machines or other light machinery for producing a vertical reciprocating motion which is to be converted into a rotary motion in one direction only. The shaft *g* is supposed to have bearings to support it so that it can freely revolve, and upon this shaft is placed wheels or pulleys for driving machinery. The outer end of shaft *g* in this instance is not supported; but supporting-boxes can be placed close up to hub *f*, or boxes can be provided on both sides of the device by extending shaft *g* through wheel *i′* and securing the wheel from longitudinal movements on the shaft by means of a collar, all of which is well understood by those skilled in the art.

It will be noticed by reference to Fig. 4 that the mortises in the top end piece, into which operate the tenons *d* of friction-bars C and C′, are longer than the width of the tenon, and this is for the purpose of allowing for the segmentary motion of the bars C and C′, caused by them being pivoted to arms D, which have a vibratory motion.

In operation, referring to Fig. 2, if an upward motion be given to the frame through pitman G by the frictional contact of friction-bar C, the bar would remain in contact with pulley F, while the frame would be carried upward, causing the links D to partially rotate and by their inward angular motion force the friction-bar C very hard against pulley F; but on the opposite side the action of the frictional contact of bar C′ with pulley F is reversed from that just described. The upward motion of the frame causes the friction-bar C′ to loosen its contact by the outward angular motion of the links D. The action of friction-bar C in an upward movement of the frame is to force the shaft *g* out of the center of the width of the frame of the device; but this is resisted effectually by the contact of the rim of the described wheel *i′*, which operates in groove *b* of the side piece A′. While the frame is being carried upward the shaft *g* will be rotated from left to right (see arrows) by the frictional contact of friction-bars C against the left-hand side of pulley F, Fig. 2; but lower piece B of the frame will finally contact with pulley F when the frame's motion is changed downward, when the action of the links connecting friction-bar C′ and side frame-piece A′ will force friction-bar C′ in close contact with pulley F and the motion of shaft *g* continued in the same direction as started. It is obvious that as long as friction-bars C and C′ are arranged in combination with the frame-links and springs, as shown and described, the reciprocating motion of the frame can transmit by friction to pulley F and shaft *g* a rotary motion in but one direction. The reciprocating motion of the frame can be very short or full stroke, thus making the device very valuable in sewing-machines, where in very many kinds of fancy work or turning sharp corners it is necessary to run the machine very slowly. As the pulley F is worn smaller or the surface of the friction-bars are worn, the angular motion of the link D can be such that all lost motion will be taken up by the pressure of springs E and E′. The friction-bars C and C′ being always in contact with pulley F, there is no lost motion and therefore no noise when the reciprocating motion of the frame is reversed at the end of the stroke or when very short strokes are quickly made.

Having now described my invention, I claim—

1. Means for converting reciprocating motion into rotary motion, consisting of a pulley F, attached to a driving-shaft *g*, two substantially parallel friction-bars C and C′, adapted to reciprocate in frictional contact against opposite sides of the periphery of said pulley, and short links D, operating in combination with springs to hold said friction-bars in contact with said pulley, said links pivoted at one end to said friction-bars and at the other end to the frame of the device, and the guide-wheel *i′*, mounted loosely upon driving-shaft *g*, the periphery of said guide-wheel operating against the frame of the device to hold shaft *g* in a central position, substantially as described.

2. In a device for converting reciprocating into rotary motion, a pulley F, having a flange F′, said pulley firmly secured to shaft *g*, a guide-wheel *i′*, said wheel loosely journaled on said shaft *g*, as described, friction-bars C and C′, operating against the periphery of wheel F on opposite sides and between said flange F′ and flange *i* of wheel *i′*, said friction-bars being held in operative position by the described links D, and springs E E′, operating in combination with guide-wheel flange *i*, said flange operating in grooves *b* and *b′* of side frame-pieces A and A′, in the manner and for the purpose as shown and described.

DYCKE H. REIMERS.

Witnesses:
CHRIST. H. STOELTING,
OSCAR SNELL.