(No Model.)

A. BECK & G. CRETER.

MECHANICAL MOVEMENT.

No. 289,881. Patented Dec. 11, 1883.

fig. 1.

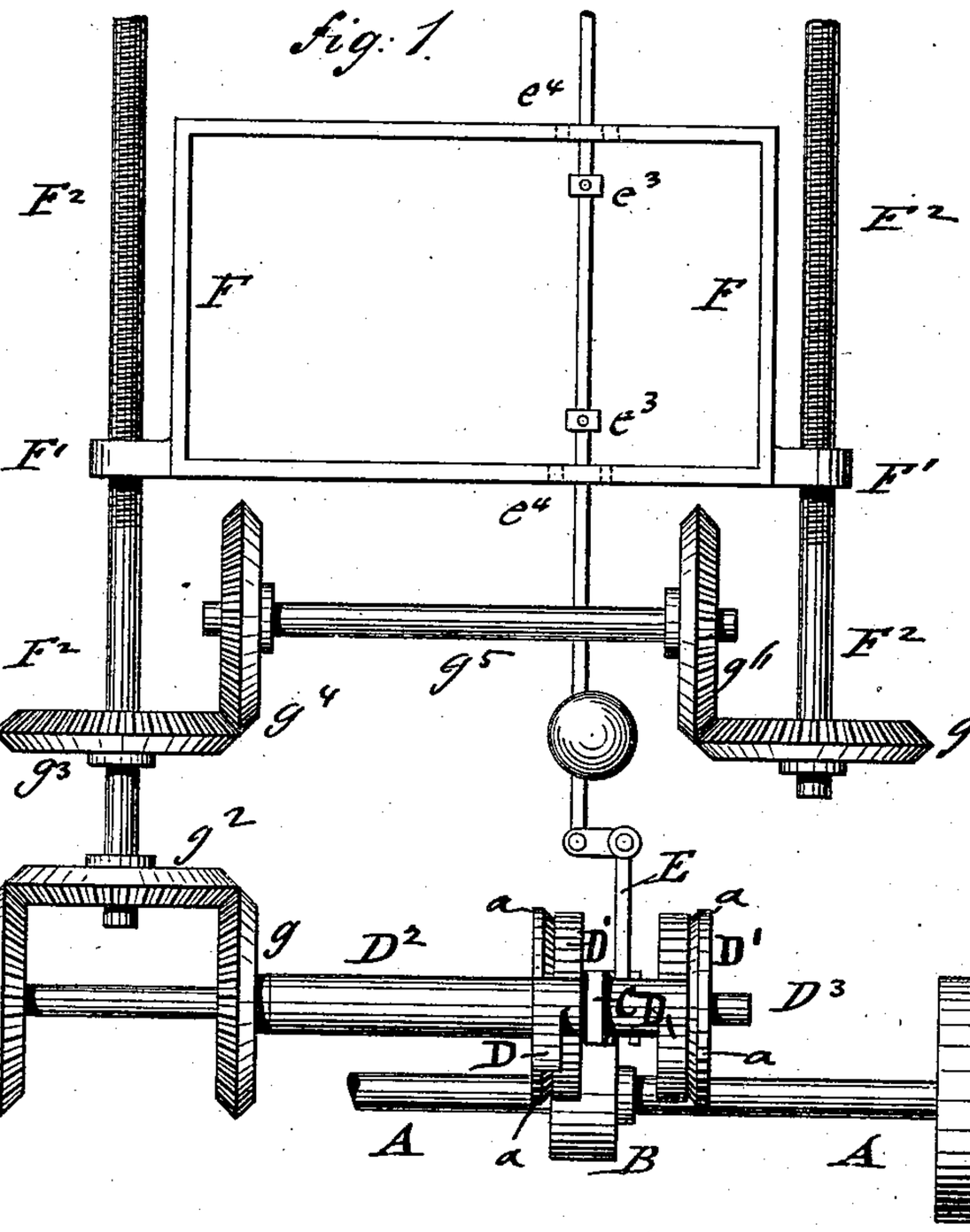


fig. 2.

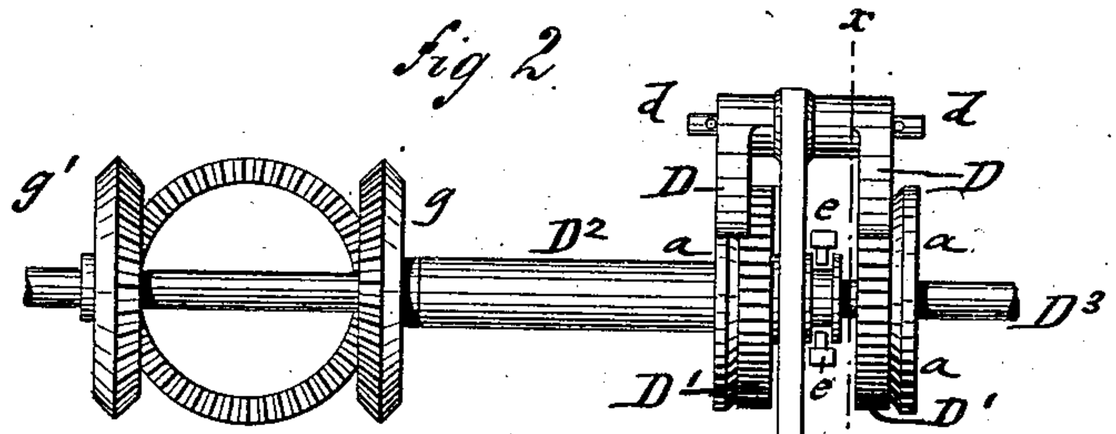
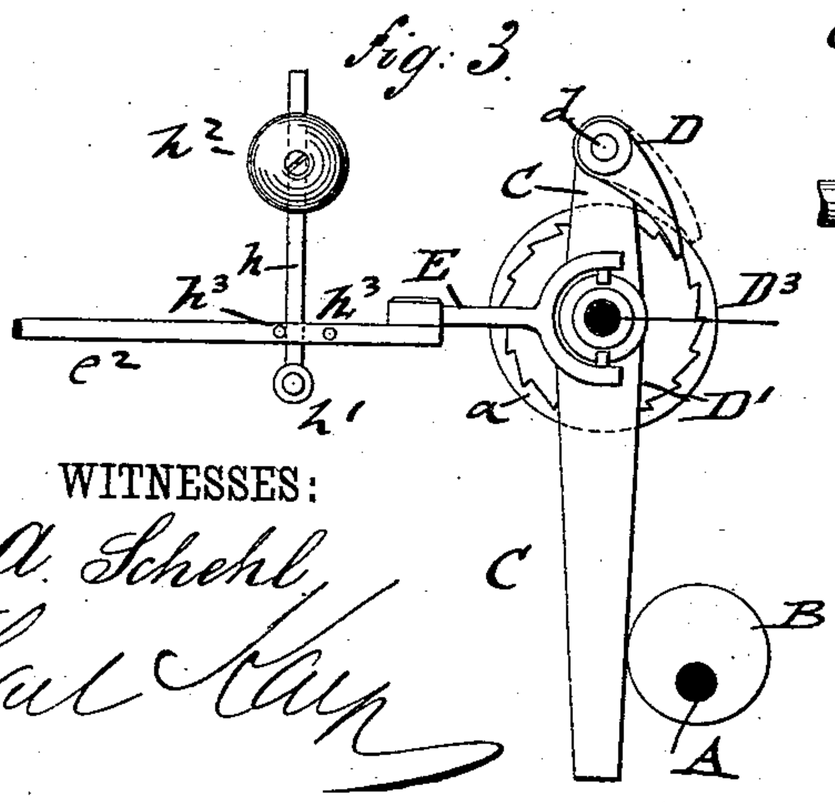


fig. 3.



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AUGUST BECK AND GEORGE CRETER, OF NEW YORK, N. Y.

MECHANICAL MOVEMENT.

SPECIFICATION forming part of Letters Patent No. 289,881, dated December 11, 1883.

Application filed July 21, 1883. (No model.)

To all whom it may concern:

Be it known that we, AUGUST BECK and GEORGE CRETER, both of the city, county, and State of New York, have invented certain new and useful Improvements in Mechanical Movements, of which the following is a specification.

The object of this invention is to furnish an improved mechanical movement, by which rotary motion is transmitted into rectilinear reciprocating step-by-step motion, to be applicable to sewing and quilting machines and other purposes; and the invention consists of a revolving driving-shaft having an eccentric cam that actuates an oscillating lever provided with two drop-pawls. The drop-pawls engage alternately one of two gear-wheels located at the ends of a tubular and a solid shaft, according as the oscillating lever is shifted from one side to the other by suitable mechanism. The ratchet-wheels are provided with beveled flanges of greater diameter than the wheels, by which the pawls are lifted clear of the ratchets. The ratchet-wheel shafts transmit their motion by intermediate bevel-wheels to longitudinal screw-rods, that actuate a reciprocating frame, which, in connection with stop-lever and suitable shifting mechanism, imparts lateral motion to the oscillating lever, and reverses thereby the motion of the frame.

In the accompanying drawings, Figure 1 represents a plan of our improved mechanical movement for transmitting rotary into reciprocating motion. Fig. 2 is an end elevation of the same; and Fig. 3 is a vertical transverse section on line *x x*, Fig. 2.

Similar letters of reference indicate corresponding parts.

In the drawings, A represents a revolving power-shaft, by which the initiatory motion is imparted to our improved mechanical movement. The shaft A is provided with an eccentric cam, B, against which is pressed, by a suitable spring or otherwise, the lower end of an oscillating lever, C, that carries at its upper end on a pivot, *d*, the drop-pawls D, which engage alternately one of two ratchet-wheels, D′. One of the ratchet-wheels D′ is keyed to the end of a tubular shaft, D^2, and the other to a solid shaft, D^3, that extends a certain distance beyond the tubular shaft D^2. The shafts D^2 D^3 are supported in suitable bearings of the supporting-frame. (Not shown in the drawings.) The lever C oscillates by a circumferentially-grooved sleeve, *e′*, on the solid shaft D^3, and is adapted to shift laterally thereon. The ratchet-wheels D′ D′ are provided at their outer faces with disks *a a*, which are attached rigidly thereto and made of greater diameter than the ratchet-wheels, the circumference of said disks connecting the flaring or beveled portions toward the ratchet-wheels D′ D′. The flaring disks serve for the purpose of lifting the drop-pawls D D out of the teeth of the ratchet-wheels D′ whenever the oscillating lever C is shifted laterally to one side or the other on the shaft D^3. When one pawl D is in mesh with the ratchet D′ next adjoining thereto, the other pawl is raised clear of the other ratchet-wheel D′, and slides on the circumference of its disk *a*, as shown clearly in Figs. 2 and 4. The laterally-shifting motion of the oscillating lever C is accomplished by the forked end *e* of an elbow-lever, E, that engages the grooved sleeve *e′* of the lever C. The opposite end of the elbow-lever E is pivoted to a rod, e^2, that is provided at proper points with stops e^3. The connecting-rod e^2 is guided in suitable straps, e^4, of a frame, F, to which the rectilinear reciprocating motion is imparted. The opposite ends of the tubular shaft D^2 and solid shaft D^3 are provided with bevel-gear wheels *g g′*, which mesh alternately with a bevel-wheel, g^2, according as one ratchet-wheel D′ or the other is actuated by the drop-pawls D D, as before described. The bevel-wheel g^2 is keyed to the end of a longitudinal screw-rod, F^2, that passes through an interiorly-threaded ear, F′, of frame F.

A bevel-gear, g^3, engages a bevel-gear, g^4, of an auxiliary transverse shaft, g^5, that carries a gear-wheel, g^6, at the opposite end, the latter meshing with a gear-wheel, g^7, of a second longitudinal screw-rod, F^2, that engages a threaded ear, F′, at the other side of frame A. By the intermediate bevel-wheel transmission, the screw-rods F^2 are rotated both in the same direction, but alternately in opposite direction, according as the motion is imparted by the bevel-wheel of the tubular or of the solid shaft. By the screw-rods, which are turned alternately in one then in opposite direction around their axes, an intermittent reciprocating motion is imparted to the frame A. When the frame F forms contact with one of

the stops e^3, it pushes the connecting-rod e^2 in one or the opposite direction, so as to actuate the elbow-lever E, and shift thereby the oscillating lever C to one side or the other on the shaft D^3, so as to change the engagement of the pawls D with the ratchet-wheels D′. The shifting motion of the lever C is assisted and made more sudden by a lever, *h*, that swings on a pivot, *h*′, at its lower end, and is provided at its upper end with a weight, h^2, the lever engaging one or the other of two pins, h^3, on the connecting-rod e^2, so as to drop beyond its center of gravity, and accelerate thereby the motion of the elbow-lever E and the shifting of the lever C. When the reciprocating frame F has arrived at either end of its motion, it will shift, by its contact with the stops e^3, the lever C, so that one pawl D drops into the ratchet-wheel D′, while the other pawl D is moved clear of the other ratchet D′ and over the flange *a*, whereby the motion of the frame F is reversed. An intermittent or step-by-step motion is imparted to the frames, owing to the fact that by a revolution of the driving-shaft A and eccentric B, the lever C is oscillated and one of the ratchet-wheels D′ moved by one of the pawls D for the distance of one tooth, which motion is transmitted by the intermediate bevel-gears to the longitudinal screw-rods F^2, and thereby to the frame F.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. A mechanical movement for transmitting rotary motion into a reciprocating step-by-step motion, consisting of a revolving driving-shaft, A, having an eccentric cam, B, an oscillating lever, C, drop-pawls D, pivoted to the upper ends of the lever, ratchet-wheels D′, having flaring side disks, *a a*, of greater diameter, a tubular shaft, D^2, and a solid shaft, D^3, to which the ratchet-wheels are applied, intermediate transmitting bevel-wheels, longitudinal screw-rods F^2, turned in the same direction by said bevel-wheels, a reciprocating frame, F, having ears F′ F′, and means whereby the oscillating lever C is shifted when the reciprocating frame arrives at either end of its motion, substantially as set forth.

2. In a mechanical movement for transmitting rotary into reciprocating step-by-step motion, the combination, with a revolving driving-shaft, A, having an eccentric, B, an oscillating lever, C, having pivoted drop-pawls D D, ratchet-wheels D′ D′, having flaring disks of greater diameter, a tubular and a solid shaft, D^2 D^3, a series of intermediate transmitting bevel-wheels, screw-rods F′, turned in the same direction by said bevel-wheels, a reciprocating frame, F, connecting-rod e^2, having stops e^3, and bell-crank lever E, having a forked end, that engages a grooved sleeve of the oscillating lever, so as to shift the same laterally and reverse the motion of frame F when the same engages either one of the stops e^3 e^3, substantially as specified.

In testimony that we claim the foregoing as our invention we have signed our names in presence of two subscribing witnesses.

AUGUST BECK.
GEO. CRETER.

Witnesses:
PAUL GOEPEL,
CARL KARP.