

April 9, 1929.

I. N. KEELING

1,708,888

MECHANICAL MOVEMENT

Filed April 4, 1928

2 Sheets-Sheet 1

Fig. 1

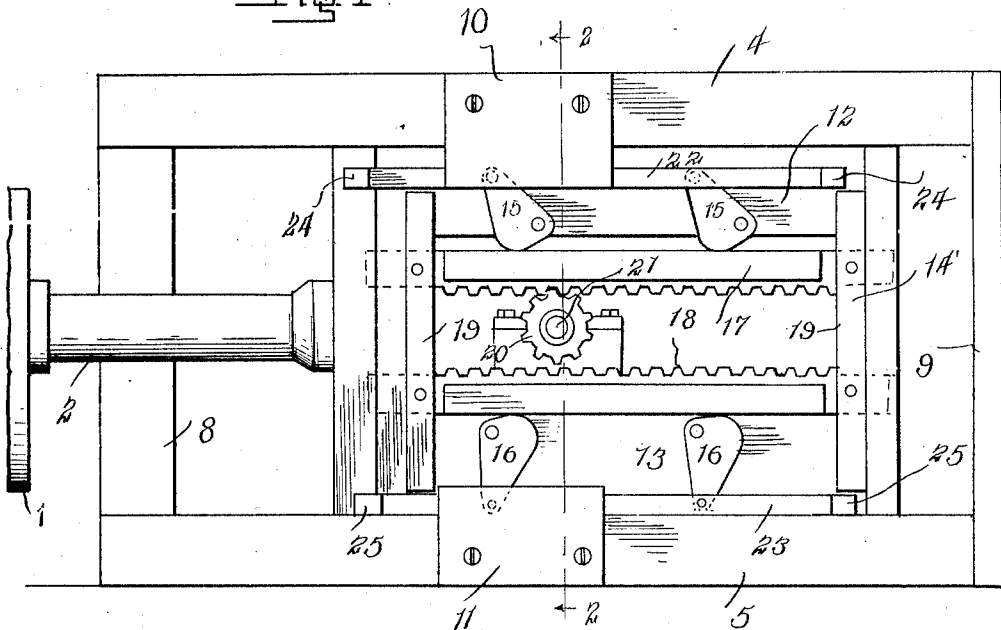
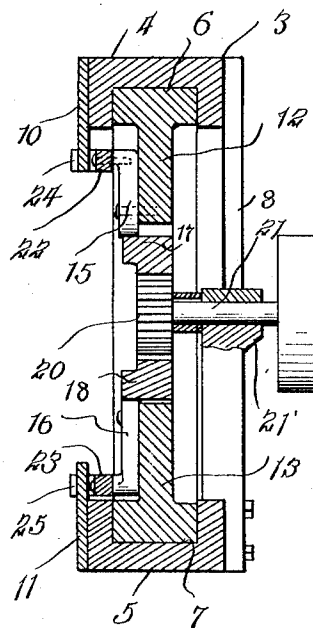


Fig. 2



Inventor

I.N.Keeling

By *Lacey & Lacey, Attorneys*

April 9, 1929.

I. N. KEELING

1,708,888

MECHANICAL MOVEMENT

Filed April 4, 1928

2 Sheets-Sheet 2

Fig. 3.

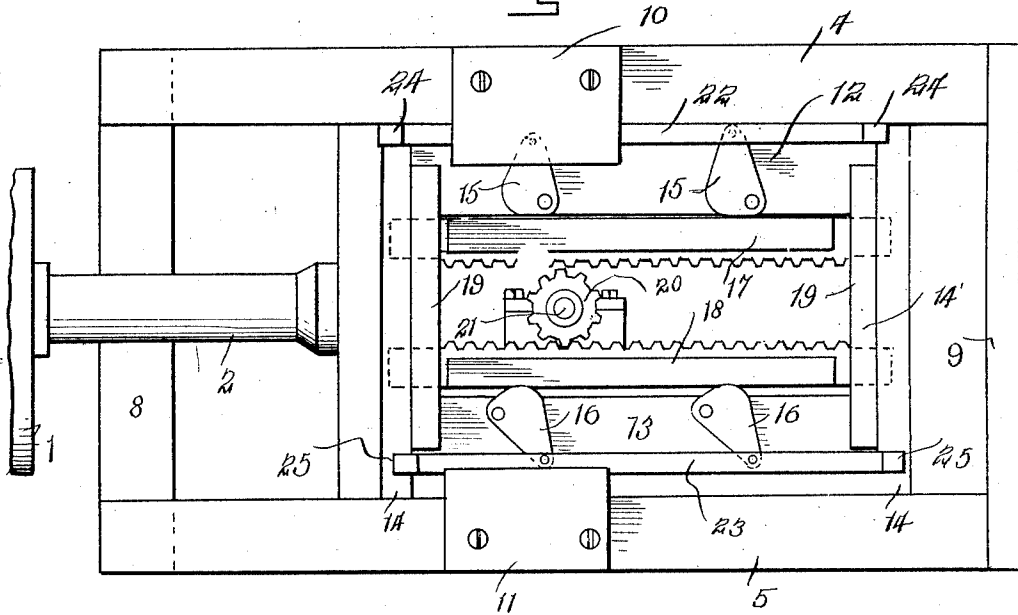
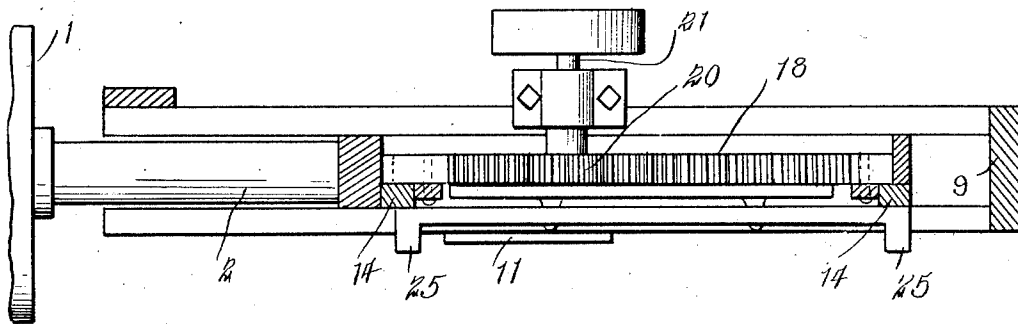


Fig. 4



Inventor

I. N. Keeling

By *Lacey, Lacey*, Attorney

UNITED STATES PATENT OFFICE.

ISAAC N. KEELING, OF TOMAHAWK, ARKANSAS, ASSIGNOR OF ONE-FOURTH TO ANDREW J. PARKS, OF MARSHALL, ARKANSAS.

MECHANICAL MOVEMENT.

Application filed April 4, 1928. Serial No. 267,301.

The present invention is directed to improvements in mechanical movements.

The primary object of the invention is to provide a device of this character so constructed that reciprocatory movement may be converted into rotary movement.

Another object of the invention is to provide a device of this kind so constructed that there will be less loss of power in the conversion of the reciprocating movement into rotary motion than in movements wherein crank shafts are used.

Another object of the invention is to provide a device of this kind which is simple in construction, compact, durable, and efficient in operation.

While the drawings illustrate a preferred embodiment of the invention it is to be understood that in adapting the means to meet specific needs and requirements the design may be varied and such other changes in the minor details of construction may be resorted to within the scope of the invention as claimed, without departing from the spirit thereof.

For a full understanding of the invention and the merits thereof, reference is to be had to the following description and the drawings hereto attached, in which,—

Figure 1 is a side view of the device.

Figure 2 is a sectional view on line 2—2 of Figure 1.

Figure 3 is a side elevation showing the device after being shifted.

Figure 4 is a longitudinal sectional view.

Corresponding and like parts are referred to in the following descriptions and designated in the several views of the drawings by like reference characters.

In the drawings, 1 designates a portion of an engine cylinder of any type and 2 the piston rod thereof. A frame 3 is provided and consists of upper and lower bars 4 and 5 provided, respectively, with guide grooves 6 and 7 and end connecting bars 8 and 9, said bars having fixed intermediate their ends abutments 10 and 11.

Slidable in the guide grooves 6 and 7 are bars 12 and 13 connected at their ends by vertical bars 14—14, said bars constituting an auxiliary frame 14' capable of sliding in the main frame 3. The bar 12 has pivotally connected thereto the lower ends of

the cams 15, while pivotally connected to the bar 13 are the upper ends of the cams 16, the purpose of which will be later explained.

Upper and lower rack bars 17 and 18 are employed and have their teeth disposed in opposed relation, said bars being rigidly connected at their ends by vertical strips 19—19 in order that the rack bars will move simultaneously upwardly or downwardly, there being a pinion 20 disposed between the rack bars for alternate meshing engagement therewith. The pinion 20 is fixed to a shaft 21 which is journaled in a bearing 21' and it is from this shaft that power is transmitted for any purpose desired. The cams 15 have their upper ends pivotally connected to the trip bar 22, while the cams 16 have their lower ends pivotally connected to a similar bar 23, said bars having their ends provided with stops 24 and 25, respectively.

The piston rod 2 is fixed in any appropriate manner to the adjacent bar 14 so that the auxiliary frame 14' will be compelled to reciprocate when the engine is in motion. It will be obvious that the stops 24 and 25 are so arranged as to contact with the abutments 10 and 11 in order that the trip bars will be shifted to operate the cams to alternately engage the rack bars 17 and 18 to move first one and then the other into mesh with the pinion 20 so as the piston is reciprocated the pinion 20 and the shaft 21 will be rotated in one direction and with a continuous movement.

From the foregoing it is thought that the construction, operation and many advantages of the herein described invention will be apparent to those skilled in the art, without further description, and it will be understood that various changes in the size, shape and proportion may be made without sacrificing the spirit or advantages of the invention.

Having thus described the invention, I claim:

1. A device of the class described, comprising a reciprocating piston, a frame having abutments carried thereby, an auxiliary frame slidable in said frame and including vertically spaced rack bars, trip bars cooperative with the abutments, cams pivotally connected with the trip bars for alternately moving the rack bars for engagement with a

pinion disposed therebetween, the movement of the cams being controlled by the cooperation of the trip bars and abutments.

2. In a device of the class described, the combination with a reciprocating piston, of a frame, abutments carried by the frame, upper and lower bars slidable in the frame, cams pivotally connected with the bars, trip bars pivotally connected with the cams and having stops carried thereby for alternate engagement with the abutments, rack bars disposed between the said bars, a pinion between the rack bars, the reciprocation of the piston serving to reciprocate the first named bars for causing the stops of the trip bars to engage the abutments to actuate the cams to alternately cause the rack bars to engage the pinion.

3. A device of the class described, a reciprocating piston, a frame having upper and lower bars slidable therein, abutments carried by the bars, cams pivotally connected

to the bars, upper and lower rack bars, a pinion between said bars, means for holding the rack bars in rigid spaced relation, trip bars pivotally connected to the cams and operable to actuate the cams to alternately move the rack bars into mesh with the pinion when the piston is reciprocated.

4. A device of the class described, a reciprocating piston, a frame having upper and lower bars provided with guide grooves, abutments carried by the bars, bars slidable in the grooves and having cams pivotally connected thereto, spaced rack bars, a pinion between the rack bars, trip bars having stops upon their ends for successively engaging the abutments to rock the cams into engagement with the rack bars to alternately cause the rack bars to engage the pinion, the piston serving to reciprocate the rack bars.

In testimony whereof I affix my signature.
ISAAC N. KEELING. [L. s.]