E. R. SEWARD.

MECHANICAL MOVEMENT.

APPLICATION FILED JUNE 10, 1908.

**1,014,184.**

Patented Jan. 9, 1912.

3 SHEETS—SHEET 1.

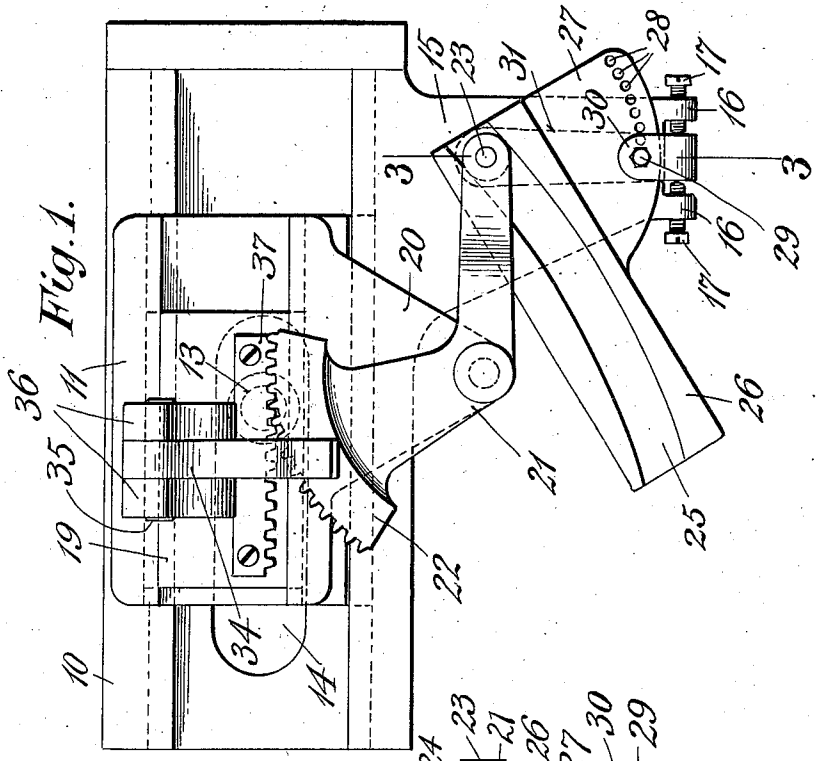


Fig. 1.

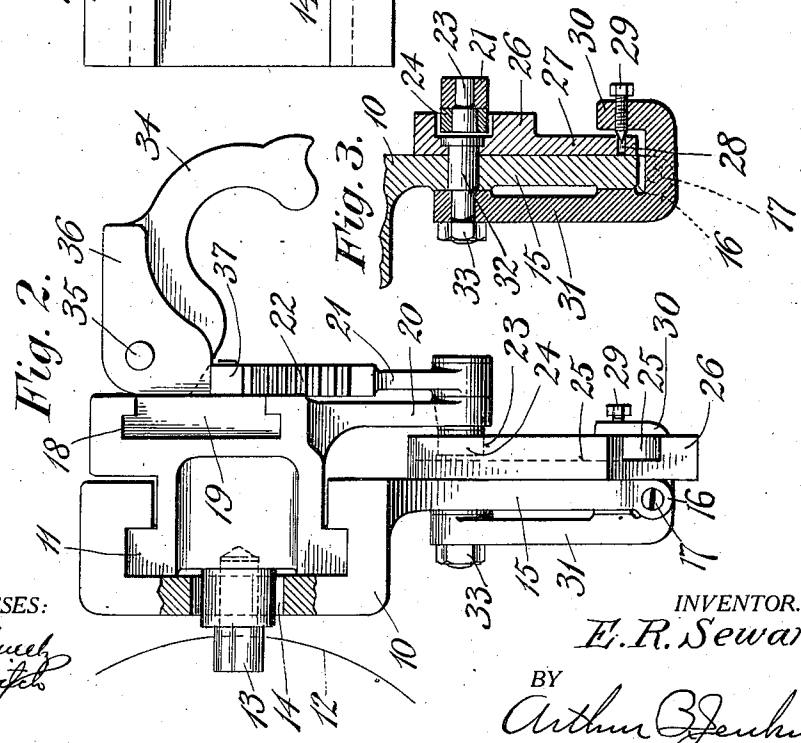


Fig. 3.



Fig. 2.

WITNESSES:

Chas. F. Schmeck

L. E. Berkowitz

INVENTOR.

E. R. Seward,

BY

Arthur C. Jenkins.

ATTORNEY.

E. R. SEWARD.

MECHANICAL MOVEMENT.

APPLICATION FILED JUNE 10, 1908.

**1,014,184.**

Patented Jan. 9, 1912.

3 SHEETS—SHEET 2.

*Fig. 4.*

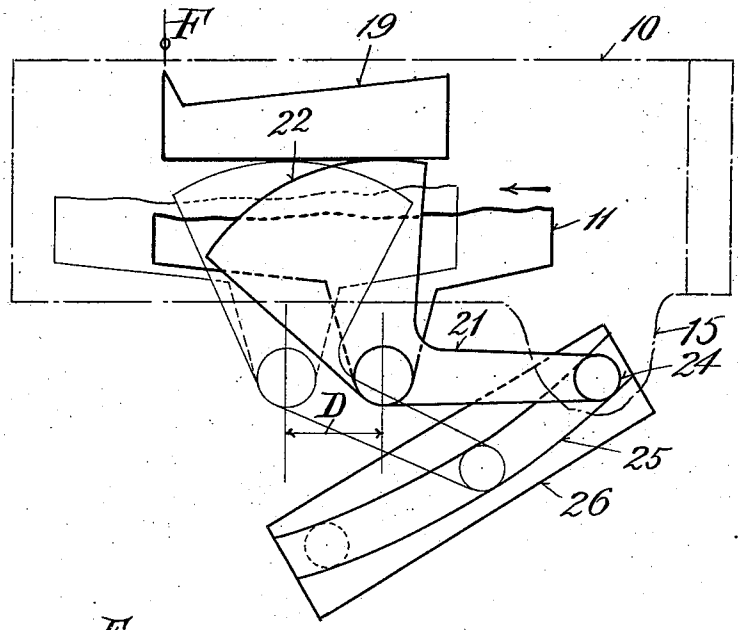
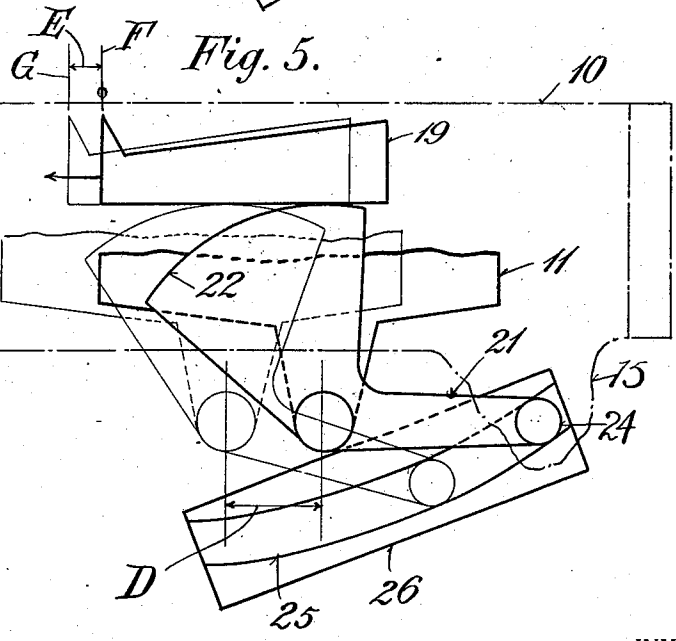



*Fig. 5.*




WITNESSES:

Chas. F. Schmelz

L. E. Berkowitch

INVENTOR.

E. R. Seward,

BY

Arthur G. Jenkins,

ATTORNEY.

E. R. SEWARD.

MECHANICAL MOVEMENT.

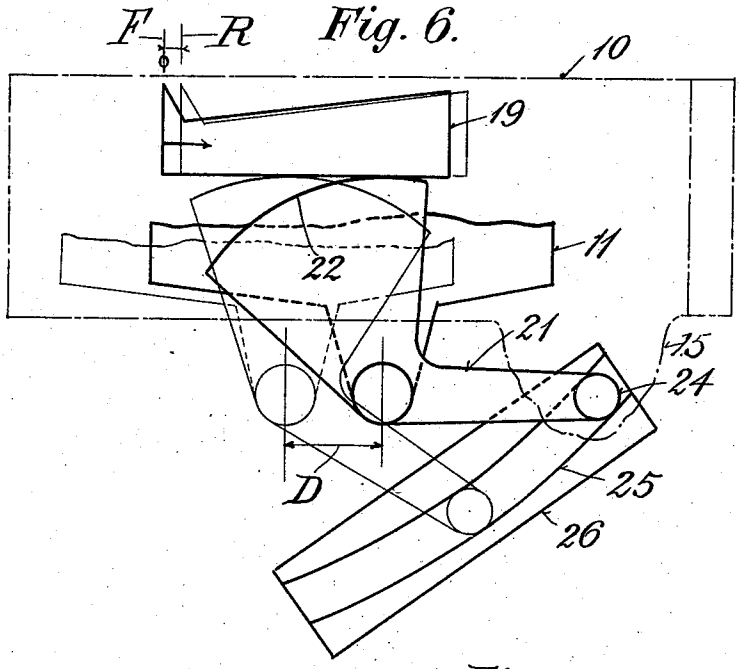
APPLICATION FILED JUNE 10, 1908.

**1,014,184.**

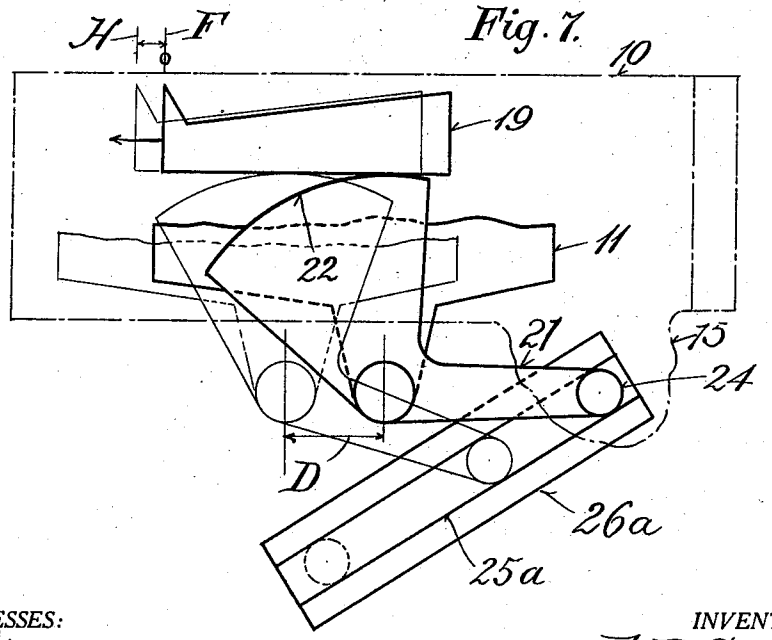
Patented Jan. 9, 1912.

3 SHEETS—SHEET 3.

F R Fig. 6.




H F Fig. 7.




WITNESSES:

Chas. F. Schmeh

L. E. Berkowitch

INVENTOR.

E. R. Seward,

BY

Arthur B. Jenkins.

ATTORNEY.

# UNITED STATES PATENT OFFICE.

ERNEST R. SEWARD, OF HARTFORD, CONNECTICUT, ASSIGNOR TO THE HARTFORD MACHINE SCREW COMPANY, OF HARTFORD, CONNECTICUT, A CORPORATION OF CONNECTICUT.

## MECHANICAL MOVEMENT.

1,014,184. Specification of Letters Patent. Patented Jan. 9, 1912.

Application filed June 10, 1908. Serial No. 437,701.

*To all whom it may concern:*

Be it known that I, ERNEST R. SEWARD, a citizen of the United States, and a resident of Hartford, in the county of Hartford and State of Connecticut, have invented a new and Improved Mechanical Movement, of which the following is a specification.

My invention relates to the class of devices for imparting variable movement to an actuated member, and the object of the invention is to provide a device of the class specified having numerous novel features of advantage and utility. One form of device in the use of which these objects may be attained as illustrated in the accompanying drawings, in which—

Figure 1 is a view in front elevation of a device embodying my invention. Fig. 2 is a view in end elevation of the same. Fig. 3 is a view in section through a portion of the device on plane denoted by line 3—3 of Fig. 1. Fig. 4 is a diagrammatic view illustrating the relative movement of the parts arranged as shown in Fig. 1. Fig. 5 is a like view illustrating the relative movement of the parts in another disposition of the controlling member. Fig. 6 is a similar view illustrating the relative movement of the parts in yet another disposition of the controlling member. Fig. 7 is a diagrammatic view illustrating the relative movement of the parts as produced by a modified form of the controlling member.

The invention contemplates mechanisms in which the movement of the actuated member may be varied in amount, speed and direction relatively to the movement of the actuating member.

The mechanism is susceptible of use in many forms of apparatus, and for widely varied purposes, the form selected for the purpose of illustration and description being one that may be applied to variable feed devices for metal working machines.

In the accompanying drawings the numeral 10 denotes a stationary member or frame on which the several elements constituting the mechanism are mounted. This frame is in the form of a guide in which the primary slide 11 is supported for reciprocating movement as by means of a cam indicated by the line 12 (see Fig. 2), said cam engaging a stud 13 projecting from the rear of the primary slide 11 through a slot 14 in the frame. This cam may be of any suitable form, as herein indicated it being a face cam constructed to move the stud 13 toward and from the observer. An arm 15 preferably integral with the frame, projects therefrom and has ears 16 at its outer end bearing screws 17 for a purpose to be hereinafter described.

The primary slide 11 is formed into a guide 18 for a secondary slide 19 which in the present instance constitutes the actuated member of the mechanism, the primary slide 11 constituting the actuating member thereof. The primary slide 11 is extended to form a support 20 upon which is pivoted a lever 21 bearing at one end a toothed segment 22. In the form of the device herein shown this lever is in the form of an angle-lever having at the end opposite the segment a stud 23 projecting into a cam groove 25 in a controller 26, said stud bearing within the groove 25 a roller 24.

The controller is pivotally mounted on a stud 32 in the arm or controller support 15, said controller having an index plate 27 projecting therefrom, and means are provided for positioning the controller. In the form of mechanism herein shown this means includes indexing recesses 28 in the plate 27, which recesses receive a retaining pin 29 projecting through a lip 30 in a retainer 31. This retainer is in the form of an arm pivoted on the stud 32 above described. The screws 17 in the ears 16, hereinbefore described, are adjusting screws and serve as a means for adjusting the position of the retainer 31 thereby securing a fine adjustment of the position of the controller 26. A nut 33 is shown on the end of the stud 32 for holding the retainer in position, said stud being rotatable in the arm 15 and the controller 26 also being rotatable on said stud. A rack 37 is secured to the secondary slide or actuated member 19, which slide meshes with the segment 22. Said slide may be suitably connected with parts to be operated thereby, in the form herein shown a finger 34 being mounted on a pin 35 in projections 36 from the secondary slide 19.

In the diagrammatic views illustrating the operation of the device the parts are illustrated in conventional form rather than in the exact form shown in Fig. 1, this in order to clearly distinguish the relative movement, the same reference characters, however, being applied to the parts in the

diagrammatic views as are applied to parts which they represent in Fig. 1.

The cam groove 25 in the controller 26 may have any desired form depending on the kind of movement which it is desired the actuated member 19 shall have, and the form of this groove, together with the disposition of the controller 26, will determine or control the amount, direction, and relative speed of movement of the actuated member.

It will be seen that by means of the retaining pin 29 and indexing recess 28 the controller may be readily placed to produce a given movement of the actuated member, and if a degree of movement is desired which can not be obtained by means of the recesses the adjusting screw 17 may be employed for securing this result. For instance, referring to Fig. 4, which corresponds with the relative position of the elements as shown in Fig. 1, the actuating member 11 being moved in the direction shown by the arrow from the position indicated in heavy lines to the position shown in light lines, a distance denoted by the line D, the actuating lever 21 will be swung from the position shown in heavy lines to the position shown in light lines. A result of this movement will be that the actuated member 19 will remain stationary as regards a fixed point denoted by the line F, the groove being of such a curve that the segment simply rolls on the intermeshing rack and without imparting movement to the actuated member. This is what I term the neutral position of the controller.

With the controller placed in the position shown in Fig. 5 and the actuating member moved the same distance and in the same direction as in Fig. 4 and as again indicated by the line D, the actuated member 19 will be moved in the same direction as the actuating member but a less distance, the amount of actual movement of the actuated member from its starting point F being the distance indicated by the line E.

With the controller placed in the position shown in Fig. 6 and the actuating member moved the same distance and in the same direction as in Fig. 4, and as again indicated by the line D, the actuated member 19 will be moved in a direction opposite to that shown in Fig. 5, and the distance denoted by the interval between the lines F—R.

If the controller be provided with a straight slot and placed in the position shown in Fig. 7, and the actuating member moved the same distance and in the same direction as Fig. 4, and as again indicated by the line D, the actuating member will be moved in the direction indicated by the arrow up to the point shown in light lines, and then back again to the position indicated in heavy lines, this forward and backward movement taking place between the points indicated by the lines H—F. The initial and final positions of the lever, as indicated by the heavy circles 24 in Figs. 4 and 7, and by the dotted circles at the free ends of the controllers 26 and 26ª, respectively, of said figures, are in both cases alike, while in one case the slot 25ª is straight and in the other the slot 25 is curved.

It will be evident from this showing that the nearer the groove of the controller is brought into parallelism with the line of movement of the actuating member the less will be the movement of the actuated member relative to the actuating member, and the more will be the actual movement of the actuated member. In other words, the movement of the actuated member in the same direction with the actuating member depends entirely upon the position of the controller between the neutral position indicated in Fig. 4, (in which the actual movement of the actuated member is nil) and such position of the controller as will bring the groove thereof nearest into parallelism to the line of movement of the actuating member, in which latter instance the actuated member has its greatest actual movement from its initial position.

The application of the device to a metal working machine will be readily understood, the part 10 forming a part of the base of the machine and 11 a slide mounted in the base which is operated by a cam from the main cam drum 12. The finger 34 engages with the grooved spool or like part for moving the feed tube of such machines.

I claim—

1. An actuating member, an actuated member, each slidable in a straight line and in the same direction as that of the other member, means for operating the actuating member, a lever pivotally mounted on the actuating member and having a toothed segment meshing with teeth on the actuated member and having a projection, a controller pivotally mounted and having a groove to receive said projection, and means for changing the positions of the controller.

2. An actuated member, an actuating member with means for operating it, both of said members being slidable in a straight line and in the same direction, a lever supported upon the actuating member and operatively connected with the actuated member, said lever having a projection, a controller having a slot to receive said projection, said controller being pivotally mounted upon a stationary part, and means upon said stationary part and controller for locating the latter in different fixed positions while maintaining the position of its pivot.

3. An actuated member, an actuating member with means for operating it, both of said members being slidable in a straight

line and in the same direction, a lever supported upon the actuating member and operatively connected with the actuated member, said lever having a projection, a controller mounted upon a fixed member and having a slot to receive said projection, means for adjustably locating the controller in different positions and means for changing the positions of said controller locating means.

4. An actuated member and an actuating member with means for operating the latter, a lever mounted upon the actuating member and operatively connected with the actuated member, said lever having a projection, a controller mounted upon a fixed member and having a slot to receive said projection, an arm mounted upon the fixed member, means upon said arm and controller for locating the controller in established positions, and means for adjusting the position of said locating means.

5. An actuated member and an actuating member with means for operating the latter, a lever mounted upon the actuating member and operatively engaged with the actuated member, said lever having a projection, a controller movably mounted upon the fixed support and having a slot to receive said projection, an arm connected with the fixed support and having a stud to engage recesses in the controller, and means for adjusting the position of said arm.

6. An actuated and an actuating member with means for operating the latter, a lever mounted upon the actuating member and operatively connected with the actuated member, said lever having a projection, a fixed support, a controller pivotally mounted upon said support and having a slot to receive said projection, an arm mounted upon the pivot sustaining the controller, means upon the controller and arm for locating the former in established positions, and means for adjusting the position of said established parts.

7. An actuated member and an actuating member with means for operating the latter, a lever mounted upon the actuating member and operatively connected with the actuated member, said lever having a projection, a fixed member, a controller pivotally mounted upon the fixed member and having a slot to receive said projection, an arm pivotally mounted at the opposite side of said fixed member from the controller and having a lip overlying the controller, means between said lip and controller for locating the latter in established positions, and means for adjusting the position of said established parts.

8. A stationary part having a slideway, a primary slide mounted in said slideway, means for operating said primary slide, an auxiliary slide mounted upon said primary slide, a lever operatively connected with the auxiliary slide and mounted upon the primary slide, a controller mounted to receive a projection from said lever, and means for changing the position of the controller.

9. In combination with the frame of a metal working machine having a guideway thereon, a primary slide mounted in said guideway and having a guideway for an auxiliary slide, an auxiliary slide mounted in said guideway, means for operating the primary slide, a lever mounted upon the primary slide and operatively connected with the auxiliary slide and having a projection, a controller mounted upon the frame of the machine and having a slot to receive said projection, and means for changing the positions of the controller.

ERNEST R. SEWARD.

Witnesses:
GEORGE E. WITHERELL,
JOSEPH F. COOLEY.