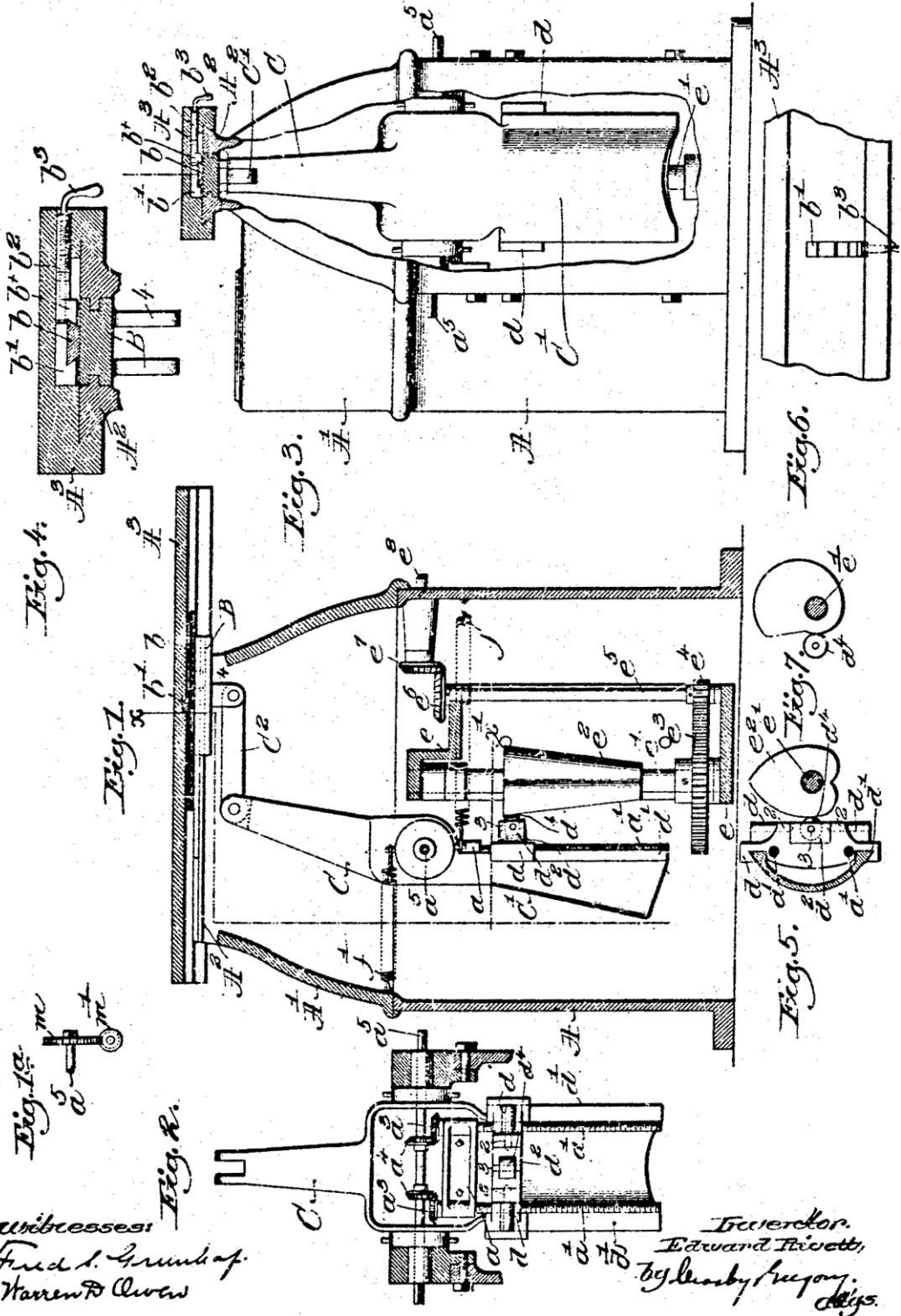


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MECHANISM FOR CHANGING ROTARY INTO RECIPROCATING MOTION.

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NO MODEL.



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UNITED STATES PATENT OFFICE.

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MECHANISM FOR CHANGING ROTARY INTO RECIPROCATING MOTION.

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To all whom it may concern:

Be it known that I, EDWARD RIVETT, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented an Improvement in Mechanism for Changing Rotary into Reciprocating Motion, of which the following description, in connection with the accompanying drawings, is a specification, like characters on the drawings representing like parts.

This invention has for its object the production of novel means for producing a reciprocating movement from a rotating movement, the invention being applicable for use in any class of machinery wherein it is desired to reciprocate a part for various distances.

In accordance with this invention I mount a slide in suitable guideways and move the same to and fro through a lever connected at one end with said slide and having a contact against which strikes a cam as the latter is rotated, and according to the position of the contact with relation to the fulcrum of the lever I may vary the throw of the slide. The reciprocating movement of the slide may be at a uniform speed in one and then in the opposite direction, or it may be moved in one direction at a faster speed and in the opposite direction at a slower speed, that depending upon the class of work being done and the shape in cross-section of the actuating-cam.

Figure 1 shows a sufficient portion of an apparatus embodying my invention to illustrate the same in one practical form. Fig. 1^a is a detail to be referred to. Fig. 2 is a detail looking at the right-hand side of the lever and its journals. Fig. 3 is a left-hand end view of Fig. 1, the frame being broken out. Fig. 4 is an enlarged detail in the line *x*; Fig. 5 is a section below the line *x'*; Fig. 6 is an under side view of part of the platen, and Fig. 7 a modification showing a cam for imparting a slow movement in one direction and a rapid movement in the opposite direction.

Referring to the drawings, A represents the lower portion or base of the framework with which I have incorporated my invention, the upper portion of said framework sustaining an auxiliary frame A', having its upper

end A² shaped as shown in Fig. 4 to receive and guide a carriage or platen A³ of any usual construction and commonly employed in machines for doing different classes of work. The upper end A² is shown as tapered at its edges to fit a groove of corresponding shape in the under side of the carriage or platen. The upper portion A³ referred to is shaped as represented in Fig. 4 or in other suitable manner to receive and guide: slide B and direct the same in its movements in a straight line, the slide and portion A³ being connected by a tongue and groove.

The upper portion of the slide B has a dove-tailed projection *b*, any portion of which with relation to its length may be grasped by a dog, best shown in Fig. 4 as comprising a bar *b'* having a projection shaped to fit one edge of the projection *b*, said bar being extended, as represented at *b''*, and threaded to receive a handled nut *b'''*. Before applying the handled nut to the bar I mount loosely thereon a cooperating projection *b''''*, and thereafter by applying the nut to the bar and rotating the same the projections of the bar may be made to clamp firmly the projection *b* of the slide, so that the carriage or platen will partake of the movement of the slide. By turning the nut *b'''* in one direction the projections of the bar may be made to instantly release the projection of the slide, leaving the carriage or platen at rest, that it may be moved by hand into any desired position, as when, for instance, adjusting or trying the position of the carriage or platen with relation to the tool or other device to be used in the machine in which my invention is embodied, whether a grinder, a planer, or any machine wherein a reciprocating movement is desired. By embracing the projection *b* on both sides when clamping the carriage or platen to the slide there is no liability of springing or distorting the carriage or slide, as would be the case if a screw were used acting upon one side of the projection *b* through a shim or otherwise.

The portion A of the base sustains on a suitable fulcrum *a'* a lever C, shown as having its lower end C' shaped to constitute two tracks *d'*. The lever sustains a bearing-block *a*, through which are extended two screws *a''*,

having at their upper ends bevel-wheels a^3 , which wheels are engaged by bevel-wheels a^4 on a shaft a^5 , having its axis coincident with the turning-point or fulcrum of the lever C.

5 The screws a' a' fit threaded portions of a contact-carrier d , the ends of which are shaped (see Fig. 5) to embrace and ride on tracks d' , forming part of the lower end C' of the lever. The contact-carrier has pivoted upon it
10 at 2 a block d^2 , that receives a stud 3, that sustains loosely a contact d^1 , shown as a roller. One end of the lever C is joined by a link C' with a depending lug 4 of the slide.

The framework sustains suitable arms e , that are provided with bearings for a shaft e^1 , on which is fixed a cam e^2 , said shaft having also fixed to it a toothed gear e^3 , that is engaged by a pinion e^4 on a shaft e^5 , having at its upper end a bevel-wheel e^6 , that is engaged and rotated by a bevel-gear e^7 on a short shaft e^8 , said shaft being driven constantly from any suitable counter-shaft or shaft of the machine, so that the cam e^2 is moved uniformly. The cam e^2 , Figs. 1 and 5,
15 is in cross-section a substantially perfect heart, and as it is rotated it will act on the contact d^1 and turn the lever C about its fulcrum, so as to move the slide and any part connected therewith, as the carriage or platen,
25 forward and backward at just the same speed; but the length of the stroke may be varied by changing the position of the contact with relation to the ends of the cam e^2 . To effect this, it is only necessary to rotate the shaft
35 a^5 , which may be done either by a key fastened upon a squared end of the shaft, or said shaft may be rotated slowly at any desired speed by any usual or suitable means—such, for instance, as a worm-wheel m engaging a
40 worm m' on the shaft a^5 , as shown in the detail Fig. 1^a. As the contact is moved downwardly from the position Fig. 1 toward the smaller diameter of the cam e^2 the stroke is gradually made shorter. By shaping the cam
45 in cross-section as represented in Fig. 7 the stroke of the slide in one direction may be made slowly, and arriving at the end of its stroke the return stroke may be made rapidly—as, for instance, in planers, where it is
50 desired to vary the work slowly under the tool and bring it back rapidly when the tool is not doing work.

To keep the contact against the periphery of the cam, I employ a spring f , connected
55 with some portion of the lever below its pivot, the opposite end of the spring being connected with some portion of the framework. To counterbalance the weight of the lever and its friction on its pivot, I employ a second counterbalancing-spring f' , said springs being
60 preferably of the same strength.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In an apparatus for controlling motion, 65 a lever, means connected with one end of said lever to be reciprocated thereby, a carrier mounted on said lever and provided with a loosely-sustained contact, means carried by said lever to adjust said carrier, a cam, means to rotate said cam that it acting on said contact may turn said lever more or less according to the position of the carrier and contact on said lever. 70

2. In an apparatus for controlling motion, 75 a slide, means to sustain said slide, a pivoted lever connected with said slide and provided with a carrier having a loosely-sustained contact, means to move said carrier on said lever, a tapered cam, means to revolve said cam that it may strike said contact and move said lever and slide for a greater or less distance according to the part of the cam acting upon said contact. 80

3. In an apparatus of the class described, 85 a frame having a guideway, a slide entering said guideway and having a dovetailed projection, means to reciprocate said slide, a carriage having a groove, a clamp having opposed jaws, and arranged in said groove and embracing the opposite sides of said projection, and means to close and open at once the jaws of said clamp, as it is desired to move said carriage or leave it at rest. 90

4. A lever, means connected with one end 95 of said lever, to be moved thereby, a carrier having a loosely-sustained contact, a screw sustained by said lever and engaging said carrier, a tapered cam, means to rotate said cam about its longitudinal axis, means to turn said screw to adjust said carrier longitudinally of said lever that it may be met by any desired part of said cam to thereby control the extent of movement of said lever and the part to be moved thereby. 100

5. A lever having tracks, means connected with one end of said lever to be moved thereby, a carrier embracing said tracks and having a pivoted block provided with a roller, screws engaging said carrier, means to rotate said screws to slide said carrier on said tracks, a tapered cam, and means to rotate the same, said cam moving said lever for a greater or less distance according to the part of the cam against which said roller bears. 105

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses. 115

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Witnesses:

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