

No. 698,709.

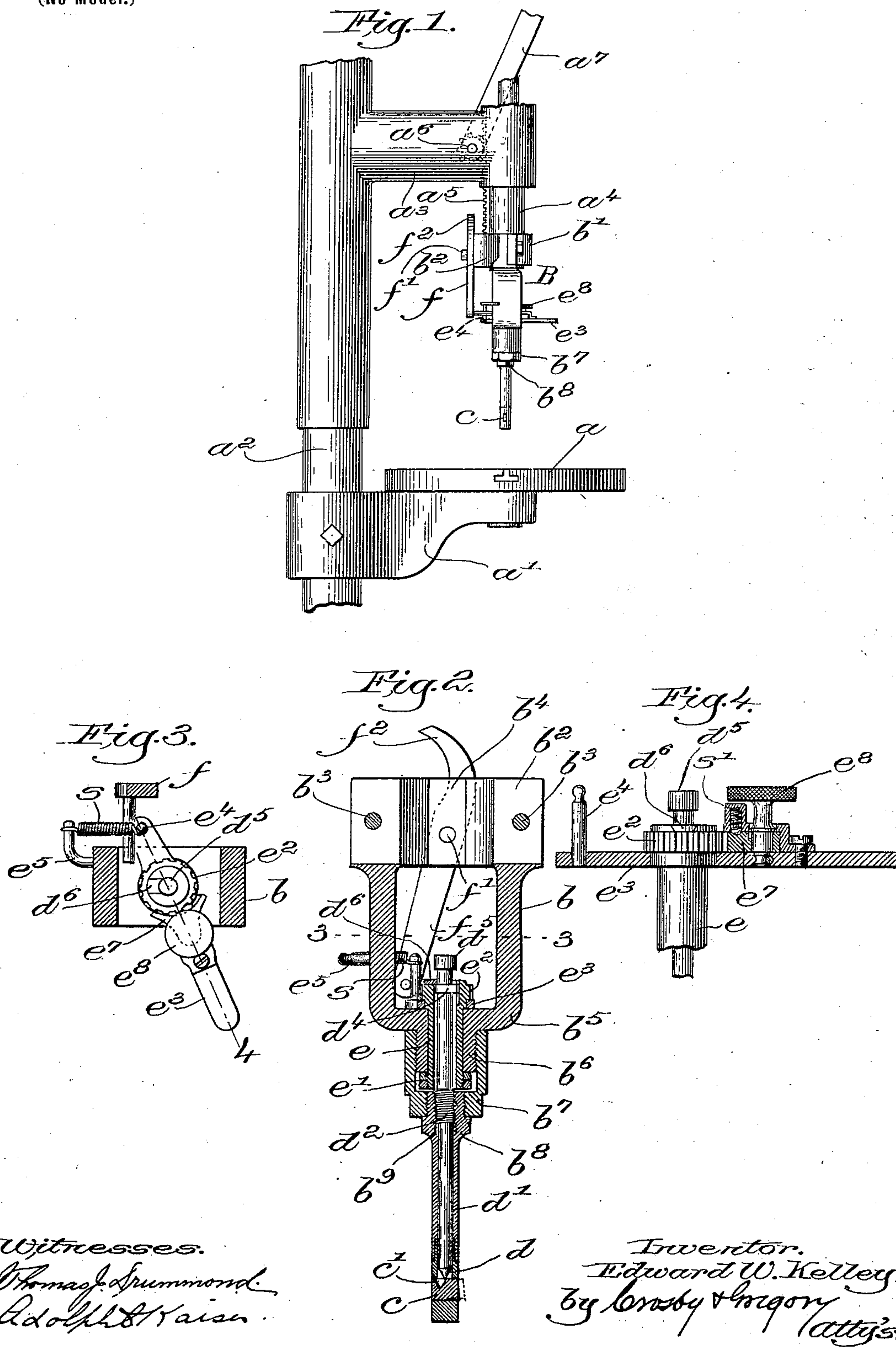
Patented Apr. 29, 1902.

E. W. KELLEY.

RECIPROCATING KEY SEATING ATTACHMENT FOR DRILLS.

(Application filed Aug. 21, 1901.)

(No Model.)



UNITED STATES PATENT OFFICE.

EDWARD W. KELLEY, OF TAUNTON, MASSACHUSETTS.

RECIPROCATING KEY-SEATING ATTACHMENT FOR DRILLS.

SPECIFICATION forming part of Letters Patent No. 698,709, dated April 29, 1902.

Application filed August 21, 1901. Serial No. 72,754. (No model.)

To all whom it may concern:

Be it known that I, EDWARD W. KELLEY, a citizen of the United States, residing at Taunton, county of Bristol, State of Massachusetts, have invented an Improvement in Reciprocating Key-Seating Attachments for Drills, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My invention is an attachment to be applied to usual power-drills for converting them temporarily into key-seating machines.

As at present practiced, cumbersome and expensive machines are required for making internal keyways, and it is the purpose of my present invention to obviate the necessity of these special machines by providing an inexpensive and simple attachment applicable to any ordinary power-drill, my present invention providing more particularly an attachment capable of making a key-seat in a very small hole, and for this reason I depend upon the reciprocating movement of the drill rather than upon its rotary movement.

In the drawings, Figure 1 is a broken detail, in side elevation, showing a portion of a drilling-machine to which my attachment has been applied, the main portions of the operating mechanism of said machine being omitted, as my invention will be understood without them. Fig. 2 is a central vertical section of the attachment. Fig. 3 is a horizontal section thereof, taken on the line 3 3, Fig. 2; and Fig. 4 is a vertical sectional detail on the line 4, Fig. 3.

The table or work-support a , supported by an adjustable bracket a' on a standard or column a^2 of the drill, which is provided with an overhanging arm a^3 , in the outer end of which is mounted a spindle-support or journal-bearing a^4 , carrying a rack a^5 , operated by a pinion a^6 and lever a^7 , is of usual construction, the same as found in the common power-drills. My attachment, specially constructed for coöperation with such a usual drill or drilling-machine, is indicated at B as secured in place on the lower end of the reciprocating support a^4 .

The mechanism of my attachment is carried by a hanger b , whose upper end is composed of two parts b' b^2 , secured by bolts b^3

for the purpose of clamping it rigidly in accurate position on the lower end of the support a^4 , the part b^2 having an offset or recess b^4 for feeding around the rack a^5 , as clearly shown in Figs. 1 and 2. The lower end of said hanger b is in the form of a stirrup or U-shaped member b^5 , provided with a hollow threaded projection or boss b^6 , on which is mounted a cap b^7 , internally threaded at its lower end to receive a slender tool-holder b^8 , provided at its lower end with a transverse slot, in which is mounted a chisel or cutting-tool c . This cutting-tool is preferably substantially as long as the length of the transverse slot in the tool-holder b^8 and is provided at its upper side with a conical or inclined recess c' , coöperating with the conical end d' of a plunger d' . Said plunger is threaded intermediate its length at d^2 to fit internal threads b^9 in the tool-holder b^8 , by means of which the plunger is fed forward for the purpose of advancing the cutter c . The mechanism for advancing said cutter by the rotation of the plunger d' is a step-by-step mechanism, shown as a ratchet, and comprising a sleeve e , passing down through the hollow boss b^6 and secured at its lower end by a nut and check-nut e' and at its upper end having a ratchet-shoulder e^2 , engaging a ratchet-lever e^3 , resting on the bottom of the stirrup b^5 . The lever e^3 is normally held in the position shown in Figs. 2 and 3 by a spring s , secured at one end e^4 to the lever and at its other end to a prong e^5 on the hanger. The lever e^3 is moved in opposition to said spring by the lower end of a dog f , pivoted at f' to the part b^2 of the hanger and provided at its upper end with an inclined nose f^2 for engaging with the arm a^3 each time the drill-support a^4 is moved upwardly.

Coöperating with the ratchet hub or flange e^2 is a usual toothed dog e^7 , normally held by a spring s' in engagement with said ratchet and arranged to be shifted by a thumb-nut e^8 when it is desired to retract the plunger d' upon finishing a key-seat.

The plunger d' is provided with a collar d^4 , keyed within the sleeve e to move longitudinally thereof, but not rotate therein, and is also provided at its upper end with a collar d^5 , being limited in its movement to the distance between these collars by a stop d^6 , carried at

the upper end of the sleeve *e*, this distance corresponding to the length of the incline *c'* and permitting, therefore, a full feeding movement of the tool *c*.

5 In operation when it is desired to make a key-seat in the hub of a wheel or in any other small hole or confined space the attachment B is simply put in place on any convenient drill, being clamped in position, as shown in
10 Fig. 1, and then the drill-shaft support is reciprocated up and down by means of the usual hand-lever *a'* and rack-and-pinion movement commonly found in such drills, the result being that at each reciprocation the lever *f* operates the ratchet of the plunger, thereby turning
15 the plunger *d'* a predetermined distance, and this rotation correspondingly lowers said plunger and wedges forward the tool *c*. This feed of the tool is positive and accurate, as
20 the plunger is held rigidly by the threads *d²* *b⁹* against backward movement and is held laterally by the supporting-holder *b⁸*. This construction permits the tool to operate in exceedingly small places and with the same
25 precision which is accomplished by the usual expensive and complicated key-seating machines.

The attachment is entirely self-contained and may be placed quickly and readily upon
30 any ordinary drill without requiring any change whatever in the latter.

My principal object has been to provide a simple attachment applicable to an ordinary drill, so as to practically do away with the necessity for the usual elaborate key-seating machines which at the present time are considered necessary for making keyways when required.

I do not intend to limit myself to all the details of construction above set forth, as will be evident from the appended claims.

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

45 1. A reciprocating key-seating attachment for drills, comprising a hanger adapted to be removably attached to a reciprocable part of a usual drill, a tool-holder carried by said hanger, a transverse slot in said tool-holder,
50 a cutting-tool or chisel mounted in said slot

adapted to project from said tool-holder for cutting a keyway, and means also carried by said hanger for advancing said cutting-tool, said means including a step-by-step mechanism actuated by the reciprocation of the
55 hanger relatively to a stationary part of the drill.

2. A reciprocating key-seating attachment for drills, comprising a hanger adapted to be removably attached to the reciprocable drill-
60 shaft support, a hollow tool-holder secured rigidly to the outer end of said hanger and provided at its free end with a transverse slot, a cutting-tool movable in said slot and provided with an inclined upper surface, a threaded
65 plunger rotatable in said holder and cooperating with said inclined surface of the cutting-tool for feeding the latter, a ratchet mechanism also mounted on said hanger for rotating said plunger, and means carried by
70 said hanger for coming into contact with a stationary part of the drill upon each reciprocation of the hanger for operating said ratchet.

3. A reciprocating key-seating attachment for drills, comprising a hanger adapted to be
75 removably attached to the reciprocable drill-shaft support, said hanger on its lower end having a hollow threaded boss, a cap mounted thereon and having a threaded opening in line with said hollow boss, a tool-holder mounted
80 at one end in said threaded opening and at its other end carrying a radially-moving cutting-tool or chisel, a rotary plunger fitting within said tool-holder, said plunger and said tool-holder having cooperating screw-threads
85 for feeding the plunger, and said tool having an inclined feeding-surface for cooperating with the plunger, a ratchet-sleeve mounted in said hollow boss above said tool-holder, the latter being connected to rotate with said
90 sleeve and mechanism for operating said ratchet-sleeve step by step as the drill-shaft support is reciprocated.

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

EDWARD W. KELLEY. [L. S.]

Witnesses:

WM. E. KELLEY,
BENJAMIN MORRIS.