(No Model.)

2 Sheets—Sheet 1.

T. C. DILL.

KEY SEATING MACHINE.

No. 412,023. Patented Oct. 1, 1889.

FIG. 1.

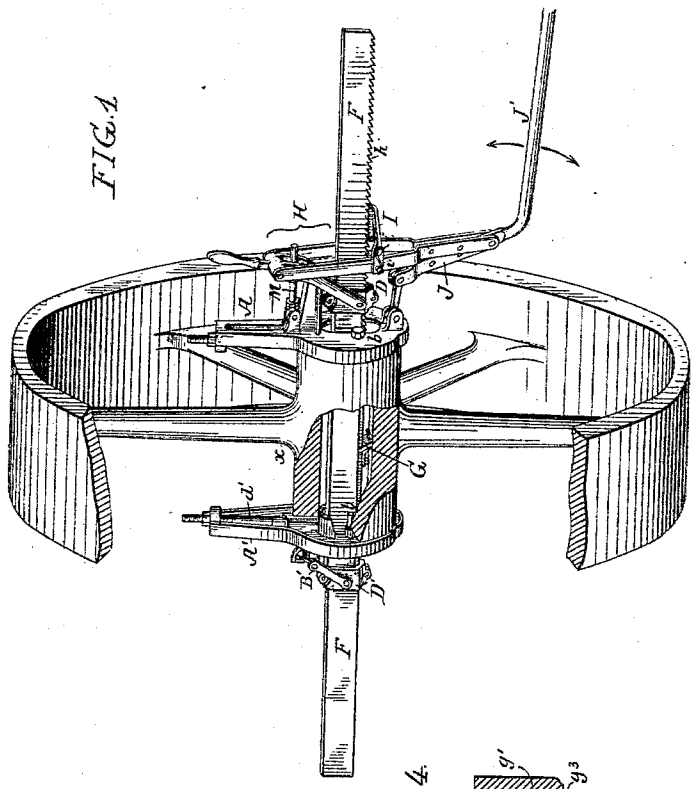


FIG. 4.

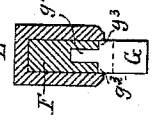
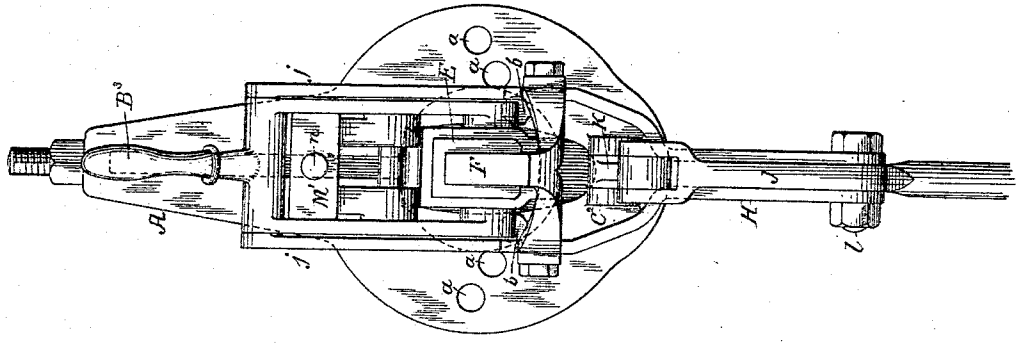


FIG. 3.



Witnesses:
William D. Lamer.
Alex. Barkoff

Inventor.
Thomas C. Dill
by his Attorneys
Howson & Howson

N. PETERS. Photo-Lithographer, Washington, D. C.

(No Model.)

2 Sheets—Sheet 2.

T. C. DILL.

KEY SEATING MACHINE.

No. 412,023. Patented Oct. 1, 1889.

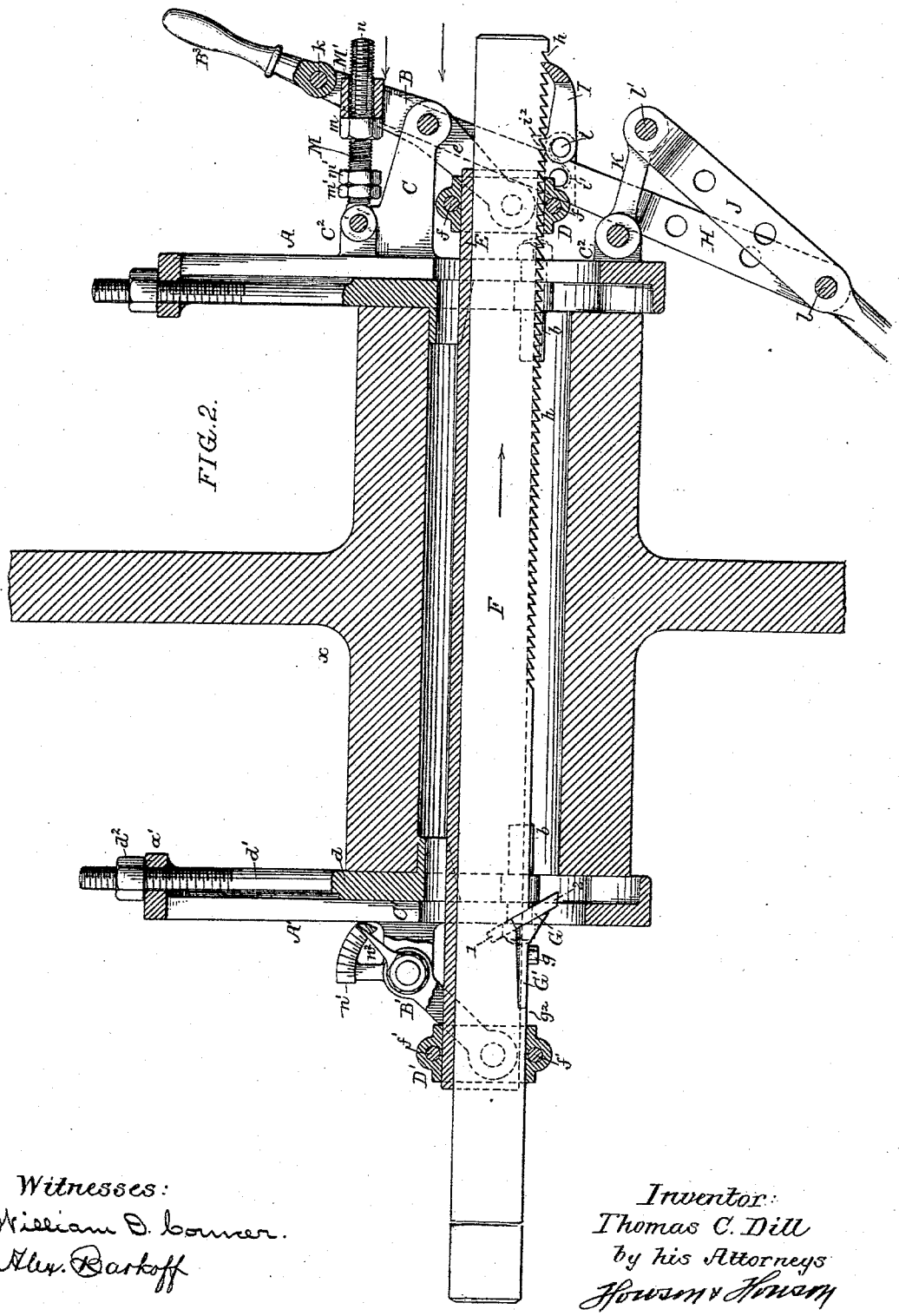


FIG. 2.

Witnesses:
William D. Bowser.
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Thomas C. Dill
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UNITED STATES PATENT OFFICE.

THOMAS C. DILL, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR TO HIMSELF, THOMAS Y. ENGLAND, CHARLES S. WALTON, AND JAMES W. ENGLAND, OF SAME PLACE.

KEY-SEATING MACHINE.

SPECIFICATION forming part of Letters Patent No. 412,023, dated October 1, 1889.

Application filed March 7, 1889. Serial No. 302,233. (No model.)

To all whom it may concern:

Be it known that I, THOMAS C. DILL, a citizen of the United States, and a resident of Philadelphia, Pennsylvania, have invented certain Improvements in Key-Seating Machines, of which the following is a specification.

The object of my invention is to construct a machine for cutting keyways in pulleys and wheels, my invention being especially adapted for cutting keyways in large pulleys or wheels which cannot be cut upon a stationary power-driven machine.

In the accompanying drawings, Figure 1 is a perspective view of a pulley, partly broken away, showing my improved key-seat-cutting tool attached. Fig. 2 is a longitudinal section of my improved key-seat-cutting tool clamped to the hub of a pulley. Fig. 3 is an end view looking in the direction of the arrow, Fig. 2; and Fig. 4 is a section on the line 1 2, Fig. 2.

Clamped to the pulley-hub x, in which is to be cut the keyway, are two heads A A'. In these heads are a series of holes a a, to which are adapted pins b, as shown in Fig. 1, which extend into the hub, as shown, forming two lower bearings for the heads. On each head is a segmental jaw d, having a screw-threaded shank d', passing through a projection a', the shank being provided with a nut d^2. This jaw d extends into the hub, as shown, and forms the upper bearing for the head, and by turning the nut d^2 the head is clamped firmly in position on the face of the hub through the medium of the two pins b b and jaw d.

Projecting from the head A is a bracket C, pivoted to which is a lever B, having an arm e, pivoted to a clamp D, which is clamped to a U-shaped beam E, extending through the hub of the pulley. This beam E is of a length sufficient to take in the largest pulley required to be cut. The clamp D is made in two parts and bolted together by bolts f f, so as to clamp it firmly on the beam E in any position required. At the opposite end of the beam is a clamp D', also made in two parts and secured together by bolts f' f'. The clamp D' is attached by a link B' to a bracket C', projecting from the head A, the link being pivoted to the bracket as well as to the clamp.

Adapted to slide on the U-shaped beam E is the cutter-bar F, carrying the cutting-tool G. This tool G is secured in place in the present instance by a clamp-block G', which rests between the back of the tool and a shoulder g^2 of the bar. A bolt g passes through the block and into the cutter-bar, which, when screwed up, tends to press the block against the tool, thus firmly holding it in place.

The cutter is made as shown in the sectional view, Fig. 4, having a tang g', which passes into an orifice in the bar, forming two shoulders g^3 on each side of the tang, which take the strain of the cutting. Other forms of cutting-tool may be employed without departing from my invention.

In the present instance the lower edge of the bar F has a series of ratchets h, engaging with which is a pawl I, pivoted at i to projecting lugs on a lever H, formed of two bars j j. This lever is pivoted to the lever B at k. The pawl I is kept in acting position by a spring i', as shown by dotted lines in Fig. 2; but other devices for keeping the pawl in position may be adopted, if desired. The pawl has a stop i^2 to limit its upward movement, so that the toothed bar F can be raised clear of the pawl when it is to be returned to make a cut. The lever H is pivoted to a lever J at l. This lever J has a handle J', by which it is manipulated, and said lever is pivoted to a link K at l', this link in turn being pivoted to a bracket c^2 on the head A.

The levers J and H form what is commonly known as a "compound" lever. By vibrating the lever J in the direction of the arrow the pawl moves the cutter-bar F in the direction of its arrow, so as to cut a slot in the hub. The bar F is intermittently moved as the pawl slips past the teeth during its travel in one direction, and engages with the teeth in traveling in the opposite direction, as will be understood on referring to the drawings.

The amount of forward movement of the cutter-bar F may be regulated by moving the pin l into any one pair of holes in the two

bars H J, and in some cases the bar J may be rigidly secured to the bar H, forming a single instead of a compound lever. In this case the link K is dispensed with.

The depth of cut is regulated as follows: Projecting from a bracket c^3 above the bracket c on the head A is a screw-rod M, on which slides a block M′, pivoted to the lever B, this lever being provided with a handle B^3, by which it is moved so as to raise and lower the cutter-bar F. On the screw-rod M is a nut m, which serves to limit the movement of the block M′ in the direction of its arrow, thus limiting the downward movement of the bar F. By turning this nut m on the rod M the cutter-bar can be dropped a certain distance, so as to make a deeper cut.

In practice the nut is turned sufficiently to allow the cutter-bar to make a cut of a depth proportionate to the strength of the tool and the power employed. The lever J is then manipulated so as to intermittently move the cutter along the inner face of the hub, and then the bar is pushed back again and the nut m turned slightly, so as to allow the beam to drop a trifle, and the lever J manipulated to cause the cutter to again travel through the hub, these operations being repeated until a keyway of the required depth has been cut.

Nuts m' m' on the rod M are for the purpose of limiting the movement of the nut m, so that by adjusting one of these nuts and forcing the other up to it the depth of cut can be set and there can be no mistake in cutting the keyway to the proper depth.

On the screw-rod M are a series of graduations n, the uncovering of which by the block M′ indicates the depth of cut at the front of the machine. At the opposite end of the machine I secure a segment n' to the bracket c', and I also secure to the link b' a pointer n^2, which indicates, in connection with the graduated segment, the depth of cut at the rear of the machine, so that to set the machine to cut a slot parallel with the bore of the hub both gages are set alike, insuring a parallel cut; but in case a tapered keyway is required one gage is set so as to raise or lower one end of the bar, depending upon the amount of taper required. This is accomplished by simply loosening one or other of the clamps D D′ and moving it toward or from the opposite clamp.

I claim as my invention—

1. The combination of the heads adapted to be secured to a pulley, the beam, and traveling cutter-bar with mechanism for moving said cutter-bar, substantially as described.

2. The combination of the heads adapted to be secured to a pulley, and the beam linked to said heads with a traveling cutting-tool guided by said beam, substantially as described.

3. The combination, in a key-seat-cutting tool, of the head having the bearing-pins b b with the movable clamping-jaw d, substantially as described.

4. The combination, in a key-seat-cutting tool, of the heads adapted to be clamped to the hub, the beam, the adjustable clamps on said beam connected to said heads, and a cutter-bar guided by said beam and carrying a cutting-tool, substantially as described.

5. The combination of the heads A A′, the beam E, adjustable clamps D D′, a lever, and links pivotally connecting the clamps to the heads A A′, with a threaded rod M, having a nut acting upon the lever for limiting the depth of cut of the key-seat, substantially as described.

6. The combination of the heads A A′, the beam linked thereto and carrying a cutting-bar with a cutter, ratchet-teeth in the cutting-bar, and a lever H, having a pawl adapted to said teeth, so that on the movement of the lever the cutter-bar will be intermittently moved, substantially as described.

7. The combination of the heads A A′, carrying a beam in which is guided a cutter-bar having a series of ratchet-teeth, with a lever H, having a pawl adapted to said teeth, and a lever J, pivoted to said lever H and linked to the head A, substantially as described.

8. The combination of the heads A A′, the beam linked thereto and carrying a cutter-bar, with a lever B, provided with a handle B^3 and carrying a block M′, adapted to a rod M, and a lever H, carrying a pawl engaging with teeth on the cutter-bar, said lever H being pivoted to a lever B and to a lever J, which in turn is linked to the head A, substantially as described.

9. The combination of the heads A A′, the beam E, carrying the cutter-bar, adjustable clamps D D′ on said beam, with levers or links connecting the clamp-plates to the heads, gages on each head, and indicators on the links or levers, substantially as and for the purpose set forth.

10. The combination, in a key-seat-cutting tool, of the heads A A′, the beam E, carrying the cutter-bar, adjustable clamps on said beam, a handled lever B, connecting the front clamp to the head A and carrying a block M′, and a rod M, projecting from said head A and having a series of graduations therein, with a link B′ at the opposite end connecting the rear clamp to the head A′, a pointer on the link B′, and an indicator on the head, substantially as described.

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

THOMAS C. DILL.

Witnesses:
WILLIAM D. CONNER,
HENRY HOWSON.