Jan. 5, 1932. S. SEGAL 1,839,418

KEY CUTTING MACHINE

Filed July 15, 1925

Fig. 1

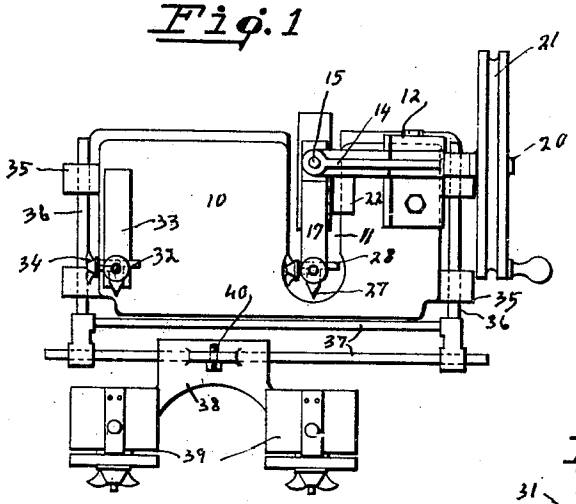


Fig. 4

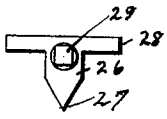


Fig. 5

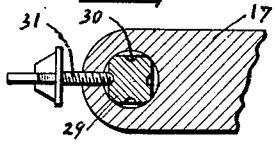


Fig. 2

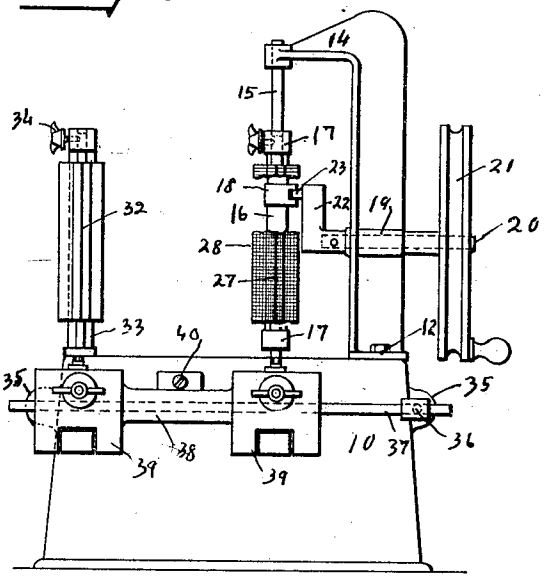
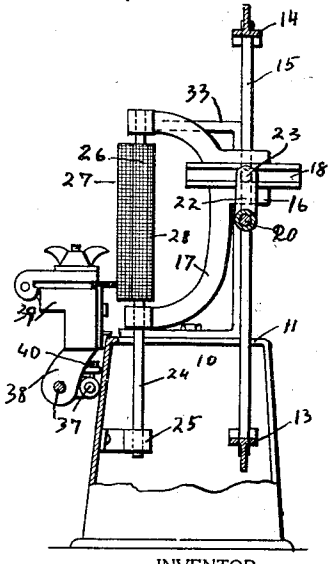


Fig. 3



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Patented Jan. 5, 1932 1,839,418

UNITED STATES PATENT OFFICE

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KEY CUTTING MACHINE

Application filed July 15, 1925. Serial No. 43,777.

This invention relates to a cutting machine, and specifically aims to provide an improved device of this character particularly adapted for use in the cutting of keys.

It is a primary object of the invention to furnish a key duplicating machine of an extremely simple type, the parts of which will be rugged and readily constructed and assembled, so that a machine will be produced which will offer a maximum freedom from mechanical difficulty and which may be placed upon the market at a relatively nominal figure.

It is a further object of the invention to furnish a device of the type stated which will be extremely simple in operation, so that a relatively inexperienced person may utilize the machine and produce work which will be perfection in all respects, the output of the machine being relatively high.

A still further object is that of providing a cutting machine of improved construction which may be employed to duplicate keys of the standard or ward type, i. e., a key commonly including a bit or web in which a main ward or bridge is to be formed, and a stem usually connected to the former by a pin, adjacent the rear end of which a collar is provided.

Another object is that of constructing such a machine which is not alone useful to duplicate keys of the standard type, but which may also be employed to advantage in duplicating keys of the "Yale and Towne" type.

With these and further objects in mind, the invention accordingly comprises the features of construction, combination of elements, and arrangement of parts which will be exemplified in the construction hereinafter set forth, and the scope of the application of which will be indicated in the claims.

For a fuller understanding of the nature and objects of the invention reference should be had to the following detailed description taken in connection with the accompanying drawings in which:

Fig. 1 is a plan view of one form of cutting machine embodying the improved construction of the present invention;

Fig. 2 is a front elevation thereof;

Fig. 3 is an end view of the same;

Fig. 4 is a plan view of the cutting element; and

Fig. 5 is an enlarged sectional view of the stem of the cutting tool and the bracket for supporting the same.

In the illustrated embodiment of the invention, the numeral 10 indicates the base, which is hollow and is formed with a slot 11 in its upper face. Secured to the base as at 12, and having one of its arms 13 extending into the same, is a U-shaped supporting member, the upper arm 14 of which extends in a line with the arm 13 and the base slot. Supported between the ends of these arms is a shaft 15, upon which a collar 16 is slidably mounted, this collar supporting a yoke 17, between the outer ends of which a cutting member may be carried to extend in the present instance parallel to the shaft 15.

With a view to causing the collar to reciprocate along the shaft upon which it is mounted, it may carry a track or grooved bar 18, which extends at right angles to the collar axis. The standard provides a bearing 19 for a shaft 20, the outer end of the shaft supporting a suitable driving member 21 and the inner end of the same carrying a crank 22, terminating in a pin 23, riding in the groove of the member 18. Thus it will be obvious that upon the shaft 20 being turned, the crank 22 will be rotated, and the track member, together with the collar and yoke carried thereby, will be reciprocated along the shaft 15.

In order to confine the movements of this yoke member to a given path, it will be noted that in the present instance a rod 24 is attached to and extends from the lower end thereof, this rod, similarly to the shaft 15, extending through the slot, and a bracket 25 being provided within the base 10 and slidably engaging the rod in order to accomplish the desired result.

While any desirable form of cutting member, as for example a file or similar element, may be supported between the arms of the yoke, it is preferred that a member of the nature illustrated be employed. This member includes a substantially T-shaped body,

the shank 26 of which terminates in a wedge-shaped edge 27, the arms 28 of this member being flat and all of the faces thereof presenting a cutting or grinding surface—the purpose of this construction being hereinafter brought out.

This cutting member may be associated with the yoke in any desired manner. For example, it may be mounted upon a substantially square rod, or its ends may be reduced as at 29 to provide in cross-section a rectangular member having preferably rounded corners, each face of the member being formed with a recess 30 substantially intermediate the side edges thereof. The ends of the yoke 17 may be bored, and preferably the upper bore is intersected by a tapped and threaded opening, within which is a setscrew 31, which, when the cutting member is properly positioned, will bear with its inner end against one of the recesses or depressions 30, in order to prevent relative movement of the parts.

In the present instance, a guide is provided by utilizing a member 32, the surfaces of which correspond to the surfaces of the cutting member, this guide being mounted by a bracket 33 to extend parallel to the cutting member and a setscrew 34, being provided to lock the same against movement and in a position corresponding to the position in which the cutting member is locked.

If desirable, key and blank clamping members may be provided by having lugs 35 extending from the side faces of the base and mounting within these lugs rods 36 between the outer ends of which a pair of rods 37 extend. Swingingly secured to the outermost of these latter rods is a bracket 38 with which a pair of clamping members 39 are associated—these members being spaced a distance equal to the distance extant between the guide and cutting member. Also, if desired, a setscrew 40 may be carried by the bracket 38 and bear against the innermost of the rods 37 so that the parts may be adjusted to have the key blank edges lie in a plane at right angles to the direction of travel of the cutting member when the clamps have been swung to the position shown in Fig. 3.

In use, presuming that the parts have been properly set, and it is desired to cut a blank for a key of the standard type, the key which is to be duplicated will be associated with the left-hand clamping member 39, and the blank will be clamped by the right-hand member 39. If necessary, the guide 32 may be swung after the setscrew 34 has been loosened, in order to have the rear face of this guide lie adjacent the outer edge of the key to be duplicated. Subsequently this guide will be locked, and the cutting member may at this time or previously be rotated to assume a position corresponding to the position assumed by the guide. Upon the shaft 20 being rotated, the cutting member will be reciprocated and with this disposition of the parts it will be understood that the device will act as a milling machine in order to wear away the outer edge of the blank until such time as the latter's web has a length corresponding to the length of the web which is being duplicated. After this operation has been completed, the guide, as well as the cutting member, may be swung so that the edges of their arms 28 are in operative position, and when the parts are thus arranged the edges of the cutting members will act as a slotter in order to form the ward or bridge of the key and to have the same correspond exactly to the key which is being duplicated.

Presuming now that it is desired to duplicate a key of the "Yale and Towne" type, the original and blank will be associated with the clamping members as has been previously described, and these members will be swung to a position at which the work is held in proper relationship to the guide and cutting member.

In view of the fact that in a key of this type the bittings are usually in the form of wedge-shaped extensions and notches, the guide and cutting member will be swung to the positions indicated in Figs. 1 and 3, and the blank may thus be readily shaped, it being of course understood that if the entire edge of the blank is to be reduced the device may be initially utilized as a milling machine, as previously described.

Thus, among others, the objects above mentioned are accomplished, and since certain changes may be made in the above construction, and different embodiments of the invention could be made, without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all of the generic and specific features of the invention herein described and all statements of the scope of the invention which as a matter of language might be said to fall therebetween.

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

1. A key-cutting machine including a single reciprocating cutter-body, reciprocating means for mounting said body and permitting an axial shifting thereof, said body presenting straight side surfaces, one providing a milling cutter and another providing a slotting cutter, a key-blank holder positioned adjacent said cutter and to support blanks of both gate and cylinder types, such cutter being axially and rotatably shifted according to the type of blank to be operated upon; a key holder connected with said

blank holder, a guide having surfaces approximating in contour those of the cutter, and means for mounting said guide whereby the same may be axially and rotatably shifted according to the type of key with which the guide is cooperating.

2. A key cutting machine including, in combination, a frame, a cutter holder mounted on said frame for reciprocal movement with respect thereto, a single elongated multi-faced cutter carried by said holder and rotatable about its longitudinal axis so as to present any one of a plurality of cutting edges, means carried by said holder to lock said cutter in operating position, a key blank holder mounted on said frame adjacent said cutter and adapted for movement into and out of engagement with said cutter, a key holder fixedly coupled to said last named holder, an elongated multi-faced guide member simulating said cutter and adjacent said key holder for cooperation therewith, said guide member being mounted on said frame for rotation about its longitudinal axis, locking means associated with said guide member whereby the latter may be caused to assume a position corresponding to that of the cutter, and means for reciprocating said cutter.

In testimony whereof I affix my signature.

SAMUEL SEGAL.