No. 894,726. PATENTED JULY 28, 1908.

W. R. CORBIN.

KEY DUPLICATOR.

APPLICATION FILED MAR. 13, 1907.

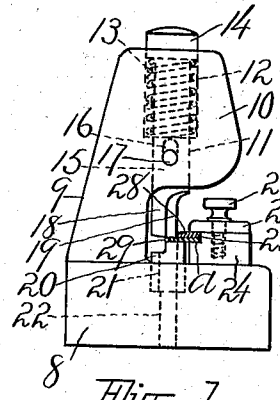


Fig. 1.

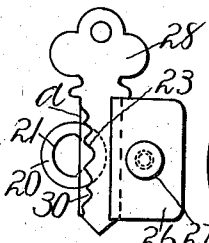


Fig. 3.

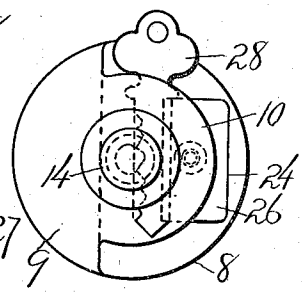


Fig. 2.

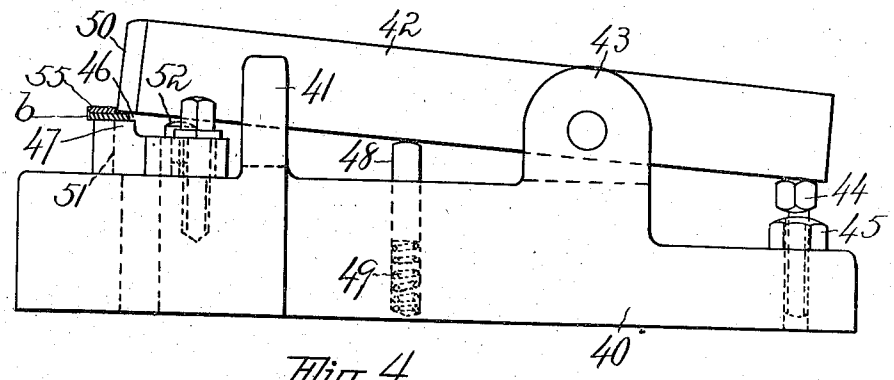


Fig. 4.

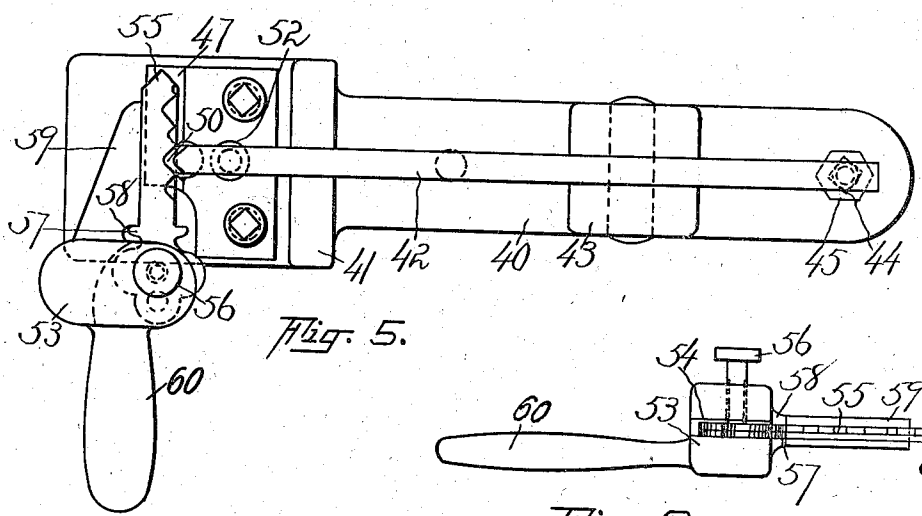


Fig. 5.

Fig. 6.

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KEY-DUPLICATOR.

No. 894,726. Specification of Letters Patent. Patented July 28, 1908.

Application filed March 13, 1907. Serial No. 362,124.

To all whom it may concern:

Be it known that I, WILBUR R. CORBIN, a citizen of the United States, and a resident of New Britain, in the county of Hartford and State of Connecticut, have invented a new and Improved Key-Duplicator, of which the following is a specification.

My invention relates to the class of devices used for producing duplicates of keys or like articles, and the object of my invention is to provide a device of this character that shall be especially simple in construction and operation; one that shall be effective and accurate in its operation to reproduce articles to exact form, and a further object of the invention is to provide a device in which duplicates may be produced with extreme rapidity. Forms of devices in the use of which these objects may be attained are illustrated in the accompanying drawings, in which—

Figure 1 is a view in side elevation of a duplicator embodying my invention. Fig. 2 is a top or plan view of the same on enlarged scale. Fig. 3 is a top view of the die and blank holder illustrating the method of operation. Fig. 4 is a view in end elevation of another form of device embodying the invention, the key and pattern being cut in section and the holder removed. Fig. 5 is a top or plan view of the same showing the holder in position. Fig. 6 is an edge view of the holder used in the latter form of device.

While my invention is especially applicable for duplicating keys of that pattern used in cylinder locks containing pin tumblers, yet it is obvious that its application may be widely extended to articles other than keys of this particular style, and while I have illustrated and described my invention in connection with the reproduction of keys, it will be obvious that the invention is not limited to use for the production of such articles.

In the accompanying drawings the numeral 8 denotes a bed from which rises a standard 9 having a head 10. This head has a depthwise opening 11 and a spring chamber 12 in which a spring 13 is located. This spring rests upon the bottom of the chamber and its opposite end thrusts against the enlarged end 14 of a plunger 15. This plunger has a slot 16 which receives a pin 17 projecting through the head and through the plunger to limit the reciprocating movement of the latter. The lower end of the plunger is formed into a cutter 18. The pattern edges 19 of this cutter are of angular shape, being so formed to produce the serrated edge of a key.

In the manufacture of keys of this class all of the serrations on a single key, or on a number of keys forming a set, are of the same angular formation, that is, the two sides composing each serration are formed, as to all of the serrations on a single key or set of keys at the same angle each with respect to the other. The difference in the serrations are in depth only. The two sides composing the pattern edges 19 being formed at a certain angle with respect to each it is obvious that this cutter may be employed to produce keys of many different patterns.

A die 20 is secured in the bed 8, this die having an opening 21 registering with an opening 22 through the bed. What I term the front of this opening 21 is of angular form, as shown at 23, in Fig. 2 of the drawings, this opening being formed at the same angle as that on which the pattern edges 19 of the cutter 18 are formed.

For presenting the blank and pattern to the cutter I provide a holder 24 having a groove 25 and a clamp plate 26. The latter forms one side of the groove 25, and is held as by means of a clamp screw 27.

The pattern 28 is placed upon the blank *a* which is to be formed into a key and the two securely clamped within the groove 25. The holder is then placed on the base 8 and moved up to the plunger.

The pattern 28, which is in fact a removable part of the holder 24, may be a key, as shown herein, used in the reproduction of duplicates thereof, but in the use of the term "reproductior" as employed herein it is not intended to limit the machine to the making of duplicates, but is intended to include the making of all articles from a pattern which may have been especially prepared for the

purpose by any means, whether in the use of this particular device or otherwise. It will be obvious that the implement is equally well adapted for the production of originals, the pattern for which may be prepared by the use of any well-known method.

The plunger 15 is so limited, as to its outward movement, that a space 29 shall be left between the cutting end of the plunger and the face of the die 20 but slightly greater than the thickness of the blank to be operated upon and not of an extent to equal the thickness of the blank and the pattern.

The holder 24 is moved up to the cutter so that the pattern edges 19 shall rest within the serrations 30 of the pattern. The plunger being now forced down it will be seen that the blank is cut with a serration the exact counterpart of that against which the pattern edges 19 are placed, and the operation being repeated for each serration on the pattern an exact duplicate as to the serrated edge will be obtained.

In the form of the device shown in Figs. 4 to 6 inclusive the base 40 has guides 41 between which the pivoted head 42 moves. This head is pivoted to ears 43 on the base, and a stop 44 consisting of a screw threaded into the base and secured as by a lock nut 45 provides means for determining the distance forming the space 46 between the cutting face of the head 42 and that of the die 47. A spring plunger 48 is held, as by means of a spring 49 located in the base, against the head 42, retaining its end in engagement with the stop 44. The end of the head 42 has pattern edges 50 the extremities of which form the cutter or cutting face of the head. These pattern edges and the opening 51 in the die 47 are of the same relative construction and arrangement as described with regard to the hereinbefore mentioned device. A stop 52 may be employed to limit the movement of the head in the cutting operation. In this form of the device the holder consists of a body 53 in which is formed a slot 54 for the reception of the pattern 55 and the blank *b*. A clamp screw 56, projecting into the slot, is employed for holding the blank and pattern in place. Keys of this general description are often provided with a lip 57, and a recess 58 is formed for the reception of such lip. A support 59 projects from the body 53 to back up the key and the blank and hold them in alinement. A handle 60 may be employed if desired. The manner of use of this last described device is the same as that first described, the pattern 55 being placed with a serration against the pattern edges 50 of the head 42, the blank *b* resting in the space between the cutting surfaces of the head and die. Force may be applied as by a blow struck upon the end of the head.

What I claim as my invention and desire to secure by Letters Patent is:—

1. A cutter having a pattern edge to engage a pattern to relatively position said cutter and a blank, a die supported to coöperate with said cutter, and a holder arranged to receive a blank.

2. A cutter having a pattern edge to engage a pattern to relatively position said cutter and a blank, a die to coöperate with said cutter in cutting a blank, and a holder having means to receive a blank and a pattern.

3. A cutter having a pattern edge to engage a pattern to relatively position said cutter and a blank, a die to coöperate with said cutter in the cutting operation, and a holder having means to receive a pattern and a blank one underneath the other.

4. A cutter having a pattern edge to engage a pattern and thereby determine the shape to be given to a blank, a die supported to coöperate with said cutter, and a holder arranged to receive a pattern and a blank.

5. A cutter having a pattern edge terminating in a cutting end, a die having an opening to receive said cutter and with a cutting edge corresponding in shape to said pattern edge, and a holder arranged to receive a pattern and a blank.

6. A cutter having a pattern edge and a cutting end corresponding in shape therewith, a die underlying the cutter, a stop to retain the cutter in a position with a space between the die and cutter less than the thickness of a pattern and blank to be operated upon, and a holder arranged to receive a pattern and a blank.

7. A base, a cutter supported by the base and mounted for reciprocating movement, a die held by the base, means for retaining the cutter with a space therebetween and the die less than the thickness of a pattern and blank to be operated upon, a pattern edge on said cutter, and a holder arranged to receive a pattern and a blank.

8. A cutter having a pattern edge terminating in a cutting end, a die coöperating with the cutter in cutting operations, a holder having a recess for the reception of a blank underneath a pattern, and means for clamping the blank to the holder.

9. A cutter having a pattern edge terminating in a cutting end, a die coöperating with said cutter in cutting operations, a holder having a recess for the reception of a pattern and a blank, means for clamping the blank in place against said pattern, and means for supporting the edge of the blank.

10. A cutter supported for reciprocating action and having a pattern edge, a die to coöperate with the cutter in cutting operations, a holder having a recess in the body thereof, means for clamping a blank in said

recess, and a support projecting from the body against which the edge of a blank may rest

11. A cutter having a pattern edge, a die supported to coöperate with said cutter, and a holder having means to receive a pattern and a blank with the former in position to engage said pattern edge.

12. A cutter having a pattern edge, a die supported to coöperate with said cutter, a holder having means to receive a pattern and a blank with the latter in position to encounter said pattern edge, and with the blank underlying said cutter.

WILBUR R. CORBIN.

Witnesses:
JNO. R. DEAN,
CHAS. J. COX.