A. H. GUSSMAN.

KEY DUPLICATING MACHINE.

APPLICATION FILED FEB. 7, 1913.

1,105,769. Patented Aug. 4, 1914.

2 SHEETS—SHEET 1.

Fig. 1.

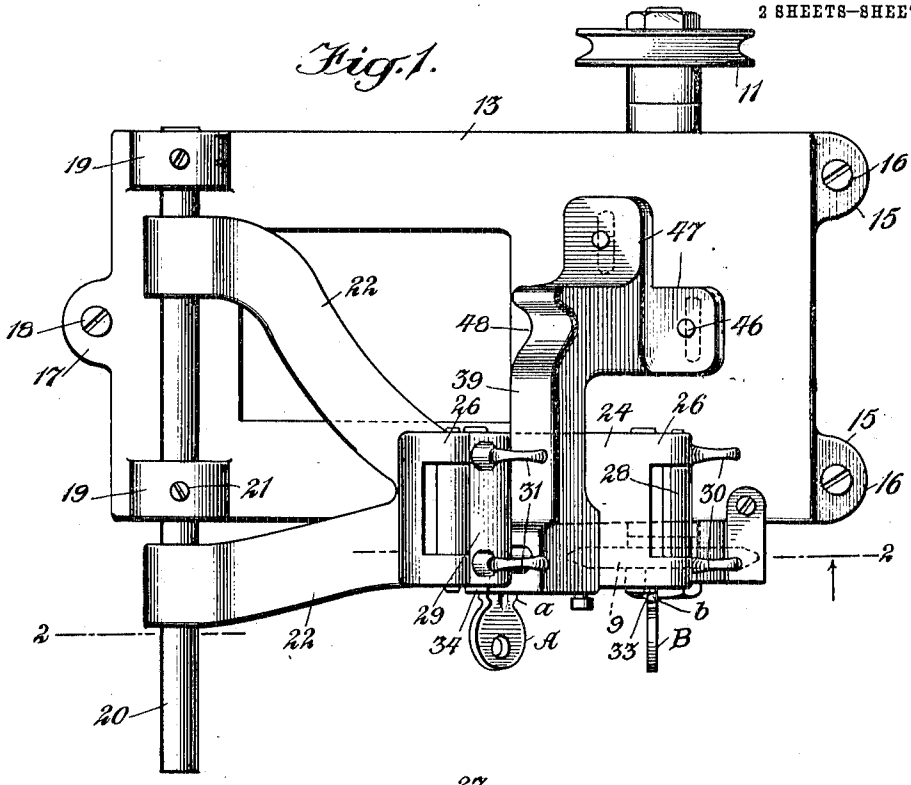
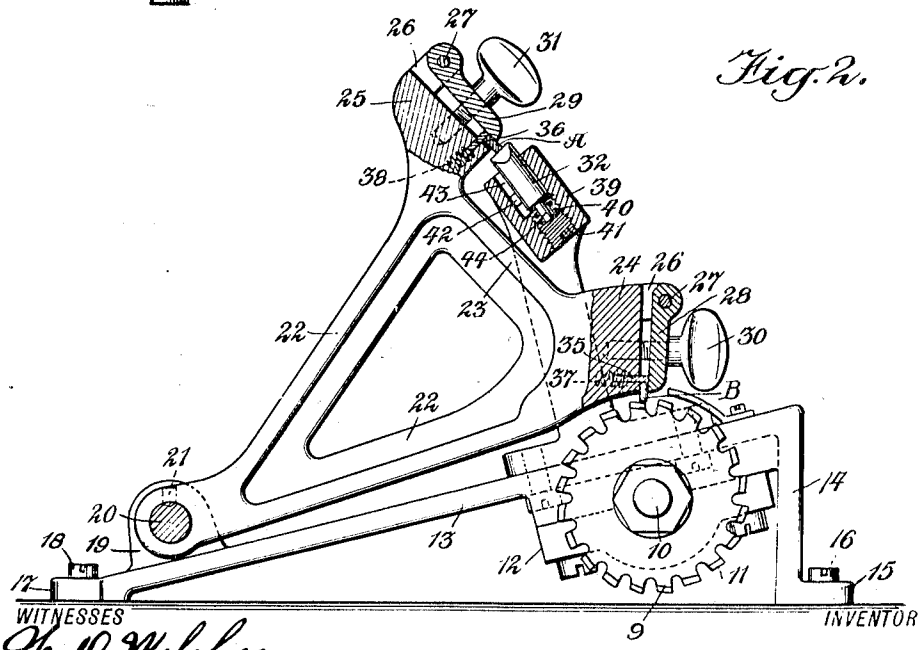


Fig. 2.



WITNESSES

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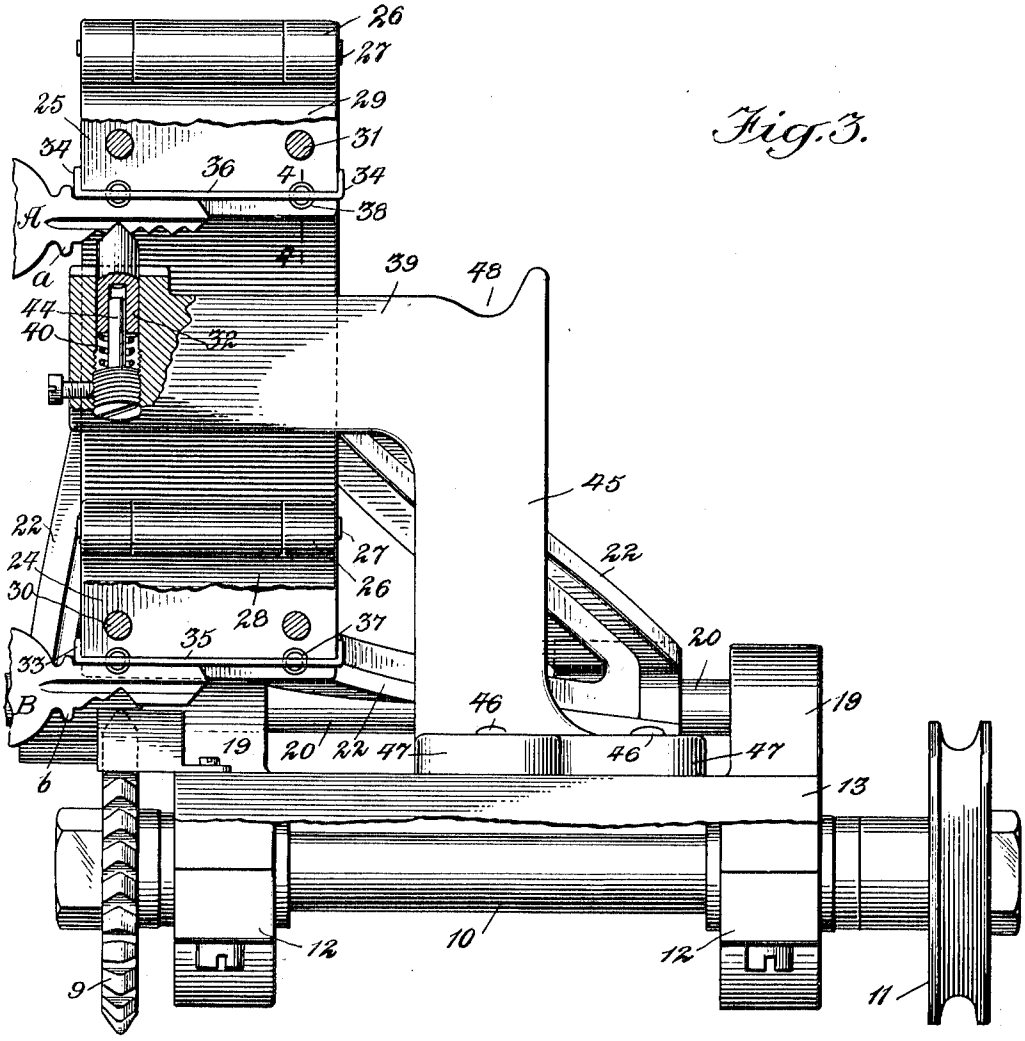
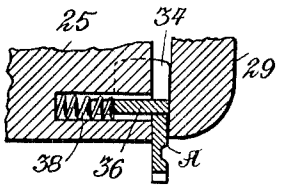


Fig. 3.

Fig. 4.



WITNESSES

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UNITED STATES PATENT OFFICE.

AUGUST H. GUSSMAN, OF EAST ORANGE, NEW JERSEY.

KEY-DUPLICATING MACHINE.

1,105,769. Specification of Letters Patent. Patented Aug. 4, 1914.

Application filed February 7, 1913. Serial No. 746,781.

To all whom it may concern:

Be it known that I, AUGUST H. GUSSMAN, a citizen of the United States, and a resident of East Orange, in the county of Essex and State of New Jersey, have invented a new and Improved Key-Duplicating Machine, of which the following is a full, clear, and exact description.

Among the principal objects of the present invention are: to provide a machine of the character mentioned adapted to readily and rapidly adjust itself to the desired operative position while in service; to provide a simplified construction for the machine; to provide a plurality of interchangeable finders or centering devices, whereby the machine may be accommodated for shaping keys of various styles; and to provide for a machine of the character mentioned a spread bearing for maintaining the alinement of the vises with which the machine is equipped.

One embodiment of the present invention is disclosed in the structure illustrated in the accompanying drawings, in which like characters indicate corresponding parts in all the views, and in which—

Figure 1 is a top plan view of a machine constructed and arranged in accordance with the present invention; Fig. 2 is a vertical section taken on the line 2—2 of Fig. 1; Fig. 3 is a sectional elevation of the machine shown on enlarged scale; while Fig. 4 is a detail view in cross section, showing fragments of the vise for holding the key shapes and blanks.

As seen in the accompanying drawings, a cutter 9 is mounted on a driven shaft 10 which is provided with a pulley 11, and mounted in bearings 12 located below the inclined base plate 13. The base plate 13 has a vertical wall or leg 14, through the feet 15 whereof the lag screws or bolts 16 are driven into the table or other fixed structure upon which the machine is mounted. At the opposite end of the base plate 13, and preferably adjacent the center thereof, is a bolting tab 17 through which a screw 18 or other fastening is passed into the said table or fixed structure.

Integrally formed on the upper side of the base plate 13 are lugs 19. The lugs 19 are perforated to hold the slide bolt 20. The bolt 20 is held rigidly in the tabs 19 by means of set screws 21. The bolt 20 is extended laterally from the base plate 13 to supply a bearing for one of the legs 22 with which the double-vise head of the machine is provided. The distance between the sides of the leg 22 which rests between the lugs 19 is equal to or greater than the length of the keys for the cutting of which the present machine is designed.

The legs 22 are integrally formed with the head 23, and each consists of two separated flared members, seen best in Fig. 2 of the drawings. The head 23 is elongated to provide the necessary separation for the vises with which it is furnished. The lowermost of the said vises, as shown in the drawings, is so disposed as to rest directly above the shaft 10, and when in service above the cutter 9 mounted thereon. The face of the stationary jaw 24 of the said lowermost vise is approximately parallel with one of the radii of the said shaft. The plane of the face of the said jaw is removed from the plane of the center of the shaft a distance approximately one-half of the thickness of the keys to be cut.

The two vises having the stationary jaw 24 and the stationary jaw 25 are relatively fixed, and each is provided with hinge wings 26 set out from the jaw to hold the pivot pins 27 by which the swinging jaws 28 and 29, respectively, are pivoted to the stationary jaws of the vises. The movements of the jaws 28 and 29 are controlled by screws having wing nuts 30 and 31, respectively. As seen in Figs. 1 to 3 of the drawings the vises are disposed in the same vertical plane, which is the preferred form, being more compact and therefore more readily transported. When disposed in the vertical plane, as shown, the center of the finder 32 is coincident with the center of the cutter 9. Preferably the head of the finder 32 is beveled to form a cutting edge, the shape of which corresponds with the shape of the edge of the cutter 9, and the plane which passes through the center of the finder 32 and the center of the cutter 9 is equally distant from the outer surface of the stop plates 33 and 34 of the bed plates 35 and 36.

The bed plates 35 and 36 are each mounted in grooves formed in the stationary jaws 24 and 25, respectively. The said grooves are disposed parallel to the axis of the shaft 10. Within pockets intersected by the said grooves are disposed spiral springs 37 and 38. The springs operate to project the said plates toward the jaws 28 and 29 to bear against the same and to extend across the

gap between the said jaws 28 and 29 and the stationary jaws 24 and 25 at all times and for the full possible opening of the said jaws.

The finder 32 is normally projected from a socket in the anvil bar 39 by means of a spring 40. The spring 40 rests in the said socket between the end of the finder 32 and the screw plug 41 which closes the lower end of the socket provided with the finder 32. The lower end of the said socket is tapped to provide screw threads to register with the threads on the plug 41.

To prevent the turning of the finder 32 while in operation the same is provided with a stud pin 42 to register with and move in the guide slot 43 formed in the wall of the socket for the said finder. The finder 32 is preferably provided with a reduced end 44 about which the spring 40 is preferably wound. In practice the movement of the finder 32 is terminated when the reduced end 44 thereof strikes upon the plug 41. The extent of the travel of the finder 32, it is obvious, may be regulated by the adjustment of the plug 41.

The anvil bar 39 is elongated and laterally extended from a leg 45. The leg 45 is rigidly secured to the base plate 13 by suitable fastenings 46 which pass through the feet 47 provided for this purpose. At the upper end of the leg 45, and properly distanced from the finder 32, is a recess or saddle 48 to carry the hand of the operator.

With a machine such as described and as illustrated in the accompanying drawings, the operation of cutting keys is as follows: A pattern key A is placed between the stationary jaw 25 and the swinging jaw 29, the back of the pattern key resting firmly against the bed plate 36. The screws having the nuts 31 are manipulated to clamp the jaw 29 firmly upon the said pattern key. In the movement of the jaw 29 the springs 38 yield to permit the retraction of the bed plate 36 to expose the pattern key to the grip of the jaw 29. In placing the pattern key in position the stop member *a* with which keys of this character are provided to regulate the depth of insertion thereof within the keyhole, strikes against the stop plate 34 to regulate the lengthwise adjustment of the pattern key. A key blank B is disposed between the stationary jaw 24 and the swinging jaw 28 in a manner similar to that above described with reference to the pattern key, the stop plate 33 arresting the said blank in proper position by the stop members *b* impinging on the said stop plate. When the screws and nuts 30 connected therewith are manipulated to close the jaw 28 it will be found that the pattern key A and the key blank B are accurately alined with reference to the finder 32 and the cutter 9, respectively. When now the head 23 is depressed by the operator the finder 32 strikes within the nicks of the pattern key, the spring 40 exerting pressure enough to laterally move the head 23 and parts connected therewith to permit the wedged end of the finder to seat firmly within the nick. This action precedes the meeting of the key blank with the cutter 9. When thus adjusted the head 23 is forced downwardly, the cutter being driven by the shaft 10 cutting away the blank to conform with the shape of the cutting edge thereof, which, as above stated, conforms with the shape of the end of the finder 32. When the finder 32 is arrested by the reduced end 44 striking upon the plug 41 the depth of the cut produced by the cutter 9 equals the depth of the nick in which the finder 32 rests. Each of the nicks with which the pattern key A is provided is successively imposed upon the end of the finder 32, and the key blank B is cut by the cutter 9 to form nicks therein corresponding accurately with the pattern key A. When the operation is completely performed the loosening of the screws having the nuts 30 and 31 permits the withdrawal of the newly cut key and the key pattern. If it be desired to cut from the same pattern many keys, the lower vise only is opened for the removal of the cut key and the introduction of a new blank.

While I have herein described the machine as having the vises superposed, and preferably arranged to operate in the same vertical plane, it will be understood that the said vises may be horizontally arranged, it being necessary only that the relation between the stop plate 34 and the center of the finder 32, and the stop plate 33 and the center of the cutter 9 shall coincide, and that the relation between the bed plate 35 and the cutter 9 shall be identical with the relation between the bed plate 36 and the end of the finder 32 when the same is arrested by the plug 41.

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

1. A key duplicating machine, comprising a rotary cutter; an anvil having a socket; a finder slidably mounted in said socket to move in a plane parallel to the plane of said cutter; a frame having a plurality of vises fixedly disposed therein and in identical relation to said finder and said cutter, said frame being pivotally mounted to move in a path perpendicular to and to swing in a path parallel with the plane of said cutter; a plurality of adjustable jaws, one mounted on each of said vises; means for tightening said jaws on said vises; and a plurality of spring-seated bed plates mounted in said vises to bear against the face of each of said jaws to provide for holding in adjust-

ment keys and blanks of different thicknesses.

2. A key duplicating machine, comprising a rotary cutter; an anvil having a socket; a finder slidably mounted in said socket to move in a plane parallel to the plane of said cutter; a frame having a plurality of vises fixedly disposed therein and in identical relation to said finder and said cutter, said frame being pivotally mounted to move in a path perpendicular to and to swing in a path parallel with the plane of said cutter; a plurality of adjustable jaws, one mounted on each of said vises; means for tightening said jaws on said vises; a plurality of spring-seated bed plates mounted in said vises to bear against the face of each of said jaws to provide for holding in adjustment keys and blanks of different thicknesses; and stops mounted one on each of said bed plates to regulate the adjustment of keys and blanks in said vises.

3. A key duplicating machine, comprising a rotary cutter; an anvil having a socket; a finder slidably mounted in said socket; a resilient cushion for said finder; means for regulating the movement of said finder within said socket; and a frame having a plurality of vises fixedly disposed therein and in identical relation to said finder and said cutter, said frame being pivotally mounted to move in a path perpendicular to and to swing in a path parallel with the plane of said cutter.

4. A key duplicating machine, comprising a rotary cutter; an anvil having a socket; a finder slidably mounted in said socket; a resilient cushion for said finder; an adjustable striker mounted in said socket to receive the thrust of said finder; and a frame having a plurality of vises fixedly disposed therein and in identical relation to said finder and said cutter, said frame being pivotally mounted to move in a path perpendicular to and to swing in a path parallel with the plane of the cutter.

5. A key duplicating machine, comprising a rotary cutter; an anvil having a socket; a finder slidably mounted in said socket; a resilient cushion for said finder; an adjusting screw mounted in said socket to determine the movement of said finder in said socket; and a frame having a plurality of vises fixedly disposed therein and in identical relation to said finder and said cutter, said frame being pivotally mounted to move in a path perpendicular to and to swing in a path parallel with the plane of said cutter.

6. A key duplicating machine, comprising a rotary cutter; an anvil having a socket; a finder having a contracted end to seat in the nicks of a pattern key, said finder being removably mounted in said socket; a frame having a plurality of vises fixedly disposed therein and in identical relation to said finder and said cutter, said frame being pivotally mounted to move in a path perpendicular to and to swing in a path parallel with the plane of said finder; a screw adjustably mounted in said socket; and a spring for holding said finder in projected relation to said socket, said spring being adapted to seat said finder in the nicks of the pattern key held in one vise prior to said cutter engaging the key blank held in the other vise.

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

AUGUST H. GUSSMAN.

Witnesses:
W. D. MELCHER,
L. S. FANTON.