This invention relates to dispensing machines and more particularly to machines for dispensing key blanks which are to be used in making duplicate keys.

It is an object of this invention to provide a dispensing apparatus having a plurality of keyways of different body profiles to receive various standard keys, and in which the insertion of a key into a keyway accepting the key will cause a key blank to be dispensed which has the same body profile as that of the inserted key. In this connection, the term body profile is to be considered as the shape of the body of a key as seen in transverse section.

It is further an object of the invention to provide a dispensing unit which has: a keyway shaped to receive a key having a particular body profile, a plurality of key blanks having the same body profile, and means to dispense one of the key blanks upon insertion of a key into the keyway.

Yet another object of the invention is to provide a key blank dispenser having a keyway and in which the force of the insertion of a key into the keyway will cause a key blank having the same body profile to be released from the dispenser.

The present invention has particular advantages in self-service locations wherein the customer is usually quite unversed in the physical differences between standard keys. All that the customer has to do is to insert the key he wishes duplicated into the only keyway which will accept his key, and he will then automatically receive a duplicate key blank having the desired body profile which can then be processed to provide the same cut profile.

Other objects and advantages will become apparent in the course of the following detailed description.

In the drawings forming a part of this application, and in which like reference numerals are used to designate like parts throughout the same:

FIG. 1 is an elevational view of the front of a dispensing machine built in accordance with the invention.

FIG. 2 is a sectional view, taken on line 2-2 of FIG. 1, showing in side elevation one of the dispensing units, with a portion thereof cut away.

FIG. 3 is a rear elevational view of one of the dispensing units.

FIG. 4 is a sectional view, taken on line 4-4 of FIG. 2, illustrating the operation of the invention.

FIG. 5 is a transverse sectional view of a key blank, taken on line 5-5 of FIG. 4 to illustrate the body profile of the key blank.

FIG. 6 is a modification of the dispensing machine of FIG. 1 as adapted for electro-mechanical operation.

Referring now to the drawings, and in particular to the modification shown in FIGS. 1-4, the dispensing machine 10 has a plurality of horizontal frame members 11 and 12 to which the dispensing units 13 are secured in close adjacency to each other, as by screws 14, to the front thereof. The bottom of the dispenser 10 is provided with a trough 15 and a rearwardly and upwardly inclined bottom wall 16.

The dispenser units 13 are all similarly constructed and only one will be described in detail. Each dispenser unit is provided with a front panel 17 having upper and lower brackets 18 and 19 secured thereto which support a generally vertical cylindrical container chute 20 therebetween. The chute 20 may be secured to the panel 17 by a settable mastic 21 or by other conventional fastening means.

The chute 20 is designed to contain a plurality of generally flat key blanks 25 stacked on top of one another, with the heads 26 of the blanks within the chute and the bodies 27 of the blanks extending out through the vertical slot 28 of the chute. The slot 28 is wider than the width of the bodies of the key blanks but narrower than the heads thereof. A balance weight 29 is disposed on top of the stack of key blanks.

The panel is provided with a horizontal keyway 30 therethrough adjacent bracket 19 so that a key 31 having a body profile which will fit into the keyway can be inserted through the keyway into and across the bottom of the chute. The chute is cut away at 32 adjacent keyway 30 to allow the key to enter the chute.

The chute 20 is provided with a horizontal slot 33 at the bottom thereof and opposite to keyway 30, which slot 33 connects to the vertical slot 28. As seen in FIGS. 2 and 4, the width of the slot 33 is sufficiently great to permit the head of a key blank to pass therethrough, and is of a height greater than the thickness of one key blank and less than the thickness of two key blanks so that only one key blank can pass through the slot at a time.

The keyway 30, as has been suggested above, is formed to accept one desired type of key, and the key blanks 25 in chute 20 all have a body profile, FIG. 5, which is the same as that of keyway 30. Preferably the chute 20 is first loaded with key blanks and is then permanently cemented to the front panel 17. That is, the particular illustrated dispenser unit 13 is designed to be thrown away when empty.

Also as suggested above, each dispenser unit 13 of the machine 10 has a keyway 30 of a different-shaped body profile, and the chute associated with each keyway is filled with key blanks having the same body profile as that of the keyway. Naturally, if desired, two of the dispenser units 13 could be duplicated if the key blanks therein were highly popular.

In operation, a customer using his own key 31 would find the keyway 30 into which it would fit. The key is then inserted into that keyway, as in FIG. 4, until the stop shoulder 34 of the key engages the front panel 17. By this time, the point 35 of the key will have pushed the lowermost key blank 25 through the slot 33 of the chute, and the key blank will then fall down into the trough 15 of the dispenser, to be picked up by the customer.

In order that the key blank will be completely released from the chute, the rearwardly extending bottom bracket 19 is designed so that it will terminate a distance from the front of panel 17 that is less than the length of the body of the key 31 from its shoulder 34 to its point 35.

When the key 31 is removed from the keyway 30, the remaining key blanks will drop down in the chute so that the lowermost blank will then be ready to be dispensed upon the next insertion of a key into the keyway. The balance weight 29 on top of the key blanks insures that the key blanks will remain flat on the bottom bracket 19.

After the last key blank has been dispensed from a dispenser unit 13, the unit may be removed from the machine and discarded, and a new, full unit inserted in its place.

FIG. 6 illustrates a modified form of the invention. In this form a panel 40 is provided with a plurality of keyways, each having a different body profile to receive a different standard key. For purposes of simplicity, only two keyways, 41 and 42, are shown in the drawings. The keyways 41 and 42 each have a normally open switch 43 and 44 in line therewith which are used to complete an electrical circuit from the battery 47, or other source of electrical energy, to the solenoids 45 and 46 respectively. In operation, a key 41 having the same body profile as keyway 41 is fully inserted into that keyway so that its point causes switch 43 to close. The customer may then close switch 48, which will then cause solenoid
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45 to be energized so that the plunger 49 thereof will move to the right and force the lowermost key blank 25 from chute 20 in the same manner as previously described. The switch 48 may be located on the front panel or may be coin-controlled, as desired. Also, if desired, the switch 48 may be omitted so that the mere closing of switch 43 by the insertion of a key will cause a key blank to be dispensed. Again, each chute that is operatively associated with a keyway will contain key blanks having the same body profile as the keyway so that the dispensed key blank will correspond in body profile to the key that is inserted in the keyway.

The modification of FIG. 6 has various advantages in that the keyways 41 and 42 may be more closely spaced to each other and the modification can be made more easily for coin operation than the modification of FIGS. 1–4. On the other hand, the modification of FIG. 6 is more expensive, since it requires a solenoid for each dispensing unit.

However, both modifications present a dispensing apparatus whereby a key can be inserted into only one keyway with a key blank of the same body profile being dispensed in response to the insertion of the key.

It is to be understood that the forms of the invention herein shown and described are to be considered as preferred embodiments of the invention, and that various changes in the shape, size and arrangement of parts may be made without departing from the spirit of the invention or the scope of the attached claims.

Having thus described my invention, what I claim is:

1. A key blank dispenser unit comprising:
a vertical chute having a bottom closure member;
a plurality of identical key blanks, each having a head and a body of a particular body profile and body length, said key blanks being stacked flat on each other in said chute with the bottom most of said key blanks resting on said bottom closure member, said chute being shaped to receive the heads of said key blanks with the bodies projecting longitudinally from said chute;
said chute having a horizontal slot adjacent to said bottom closure member of a width and height to allow the head of the bottommost key blank to pass therethrough;
means forming a horizontal keyway adjacent to the bottommost key blank in said chute, said keyway being opposite to and in alignment with said slot to enable a key to be inserted into said keyway and to push the bottommost key blank out through said slot, said keyway having the same profile as the body profile of said key blanks;
said bottom closure member extending towards said

2. A key blank dispenser unit comprising:
a front panel member;
a vertical chute secured to said panel, said chute having a bottom closure member,
a plurality of identical key blanks disposed in said chute and stacked flat on one another with the bottommost key blank resting on said bottom closure member, said key blanks each having a head and a body of a particular body profile and body length, said chute being shaped to hold the heads of the key blanks with the bodies projecting longitudinally from the chute,
said panel having a horizontal keyway formed therethrough adjacent the bottom closure member, said keyway having the same profile as the body profile of said key blanks,
said chute having a horizontal slot adjacent to said bottom closure member, opposite to and in alignment with said keyway, and of a height and width to allow the head of the bottommost key blank to pass therethrough,
said bottom closure member extending towards said slot from said keyway and terminating a distance from said keyway less than the body length of said key blanks.

3. Apparatus for dispensing key blanks comprising:
a plurality of key blank dispenser units, each as set forth in claim 2, the keyway of each dispenser unit having a different-shaped profile, and the key blanks in the dispenser units each having a body profile corresponding to the keyway profile of the dispenser unit in which each of said key blanks is disposed, frame means mounting said dispenser units with the front panels thereof in close adjacency to each other.

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