Aug. 2, 1955 K. KOLLMANN 2,714,487

LOCKABLE KEY BANKS FOR BUSINESS MACHINES, SUCH AS CASH REGISTERS

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Fig. 1

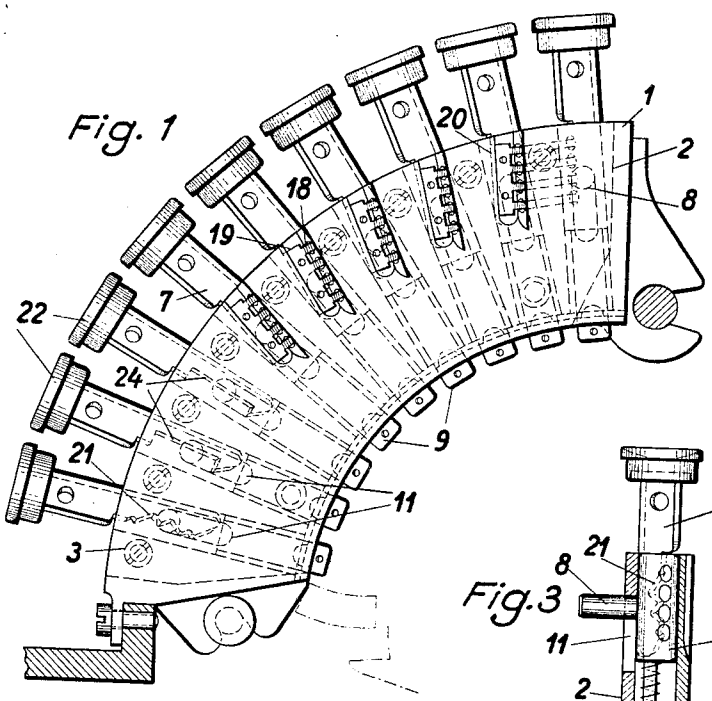


Fig. 3

Fig. 2

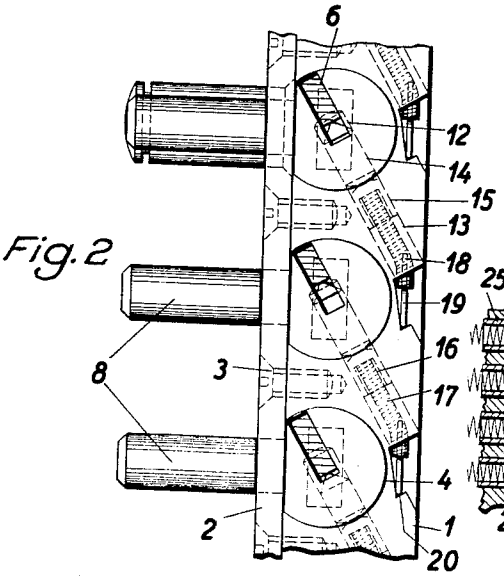
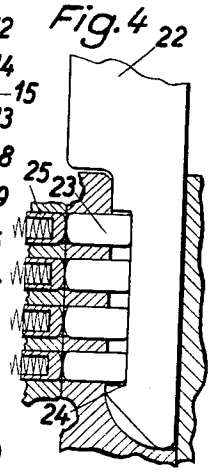


Fig. 4



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LOCKABLE KEY BANKS FOR BUSINESS MACHINES, SUCH AS CASH REGISTERS

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4 Claims. (Cl. 235—27)

My invention relates to cash registers, calculating machines, bookkeeping machines and the like, and more particularly to a lockable key bank assembly for such business machines.

It is known to make some of the manually depressible push-button type keys of such machines lockable so that the machine keys thus equipped can be actuated only by authorized persons upon insertion of the proper lock key. In one of the known deisgns of such lockable key banks, the cylinders of the lock device are disposed beside the push key to be locked so that the axes of the lock cylinder and of the depressible machine key extend parallel to each other. These designs considerably increase the space requirements of the bank assembly, as well as the space occupied by the machine devices to be actuated, adjusted or controlled by the key bank.

In other known bank assemblies, the stems of the push keys are coaxially aligned with the lock cylinder of the pertaining locking device. While this permits reducing the width of the lockable key bank assembly compared with the first-mentioned design, the width of the bank still remains undesirably larger than the width of an ordinary, non-lockable assembly, as the stationarily guided lock bolts or tumbler elements take up appreciable space laterally and perpendicularly to the lock cylinder.

It is, therefore, an object of my invention to provide a lockable key bank for business machines whose space requirements, especially in the direction of its width transverse to the alignment direction of the bank keys, are considerably smaller than in the known bank assemblies of this kind.

Another object of my invention is to design the lock means of such a key bank so that one and the same bank may readily be equipped with lockable machine keys as well as with non-lockable keys in any desired arrangement and proportion.

The foregoing and more specific objects of my invention, as well as its essential features set forth with particularity in the claims annexed hereto, will be apparent from the following description of the embodiment exemplified by the drawing, in which:

Fig. 1 is a side view of a complete key bank assembly,

Fig. 2 shows part of the same assembly from above with the key tops removed,

Fig. 3 is a cross section of the bank along the axial plane of one of the pertaining lockable machine keys, and

Fig. 4 is a partial and sectional view of another, non-lockable machine key pertaining to the same bank.

The illustrated bank assembly comprises an arcuate body or frame structure 1 to which a plate structure 2 is attached by means of screws 3. Such an arcuate assembly may form part of the keyboard in a cash register. The body 1 is traversed by a number of peripherally aligned bores 4 for receiving the push-button key members. Inserted into each bore is a lock cylinder 5 which has a key slot 6 for the insertion of a removable key 7. The keys 7 serve to control the locking device of which the lock cylinder forms part, and they are also equipped with

button-shaped key tops to be operated in the manner of a push button, as customary in such business machines. Rigidly connected with each lock cylinder is a pin 8 which extends perpendicular to the cylinder axis and may act upon the register sliders (not illustrated) to be controlled by the machine key. Also rigidly joined with each lock cylinder 5 is a key stem 9 which, when the machine key is being depressed, may act upon the differential mechanism (not shown) of the cash register. The lock cylinder 5 is biased toward the position shown in Fig. 3 by a spring 10 seated upon stem 9. The slide movement of the lock cylinder 5, and hence of the entire machine key structure, is limited by a slot 11 in plate 2 which is traversed by the pin 8.

Each lock cylinder 5 has a number of aligned bores 12 which in the inactive position of the machine key register with corresponding bores 13 in body 1. Disposed in each bore 12 is a latch bolt 14 which may cooperate with a counter bolt 15 in the corresponding bore 13. Each latch bolt 15 has an axial bore 16 engaged by a helical compression spring 17. The other end of spring 17 sits upon a stud 18 of a holding piece 19, a single holding piece with a corresponding number of studs being provided for each machine key, as is apparent from Fig. 1. The holding piece 19 of each machine key abuts against a milled-in shoulder 20 of the body 1. The removable lock key 7 has notches of respectively different depths customary with the keys of other safety locks, and these notches are respectively engageable with the differently long latch bolts 14 to permit axial movement of the lock cylinder in opposition to the spring 10 only when the proper button-topped lock key is inserted.

The bolt axes of each locking device, as determined by the bores and latch bolts of the lock cylinder, extend obliquely to the axis of push button movement of the machine key structure. The arrangement is such that, for instance, the locking device of the uppermost machine key, shown in Fig. 2, extends from the lock cylinder of that machine key to the next lower machine key. Consequently, the locking devices for the respective machine keys form an overlapping arrangement best apparent from Fig. 2. It will be realized that each of the abutment plates 19 visible in Fig. 1 in front of a machine key does not pertain to the same machine key, but forms part of the lock device of the next upper machine key. By virtue of this oblique and overlapping arrangement of the locking devices, an extremely small space beside each machine key is sufficient for accommodating the lock structure so that the entire width of the bank assembly need hardly be larger than that customary for non-lockable machine keys.

Aside from the above-described lockable machine keys, the same bank assembly may also be equipped with normal machine keys, i. e. with push-button type keys that form a fixed element of the assembly. Such firmly attached push-button keys are shown in Figs. 1 and 4 at 22. The permanently attached keys 21 are similar to the removable lock keys 7 but, as shown in Fig. 4, have a large recess 24 to receive the latch bolts 23 of the pertaining lock cylinder. These bolts cooperate with the counter bolts 25 which are slidable in the bores of the body 1 and correspond to the above-described bolts 15. Consequently, when a key 22 is being inserted, the large recess 24 permits all lock bolts or tumblers to drop in so that the safety lock is opened. The bolts 23 also prevent the key 22 from being removed once such a key has been inserted into the proper lock cylinder since the projection at the lower end of key 22 acts as a hook which cannot slide back past the tumbler bolts.

I claim:

1. A lockable key bank for cash registers, calculating machines, bookkeeping machines and the like business machines, comprising a frame structure, a row of aligned

push members slidably mounted on said structure, each of said members being only axially movable in the direction normal relative said structure, each of said members having a key-controllable lock device slidably mounted on said structure to permit actuating the member upon insertion of a matching lock key, means to prevent rotation of said lock device with respect to said structure, said lock device having a single set of aligned lock bolts slidable in said member in a direction perpendicular to the axis of said member and in a plane oblique to the common axial plane of said members.

2. A lockable key bank for business machines, comprising a frame structure, a row of elongated push members having a common axial plane and being slidably mounted on said structure and movable only in their respective axial directions, each of said members having a spring abutting against said structure for biasing said member in opposition to such movement, each of said members having a lock cylinder, means to prevent rotation of said lock cylinder with respect to said structure, said cylinder having at its front surface a slot for insertion of a lock key and having at its peripheral surface a row of axially aligned bores perpendicular to the axis of said member, respective lock bolts slidable in said bores, lock means mounted on said structure having a single row of counter bolts engageable with said respective lock bolts to form together therewith a lock to permit axially moving said lock cylinder and member only when a proper lock key is inserted into said slot, said counter bolts having respective axes of sliding movement located on a common plane oblique to said axial plane of said members.

3. A frame structure, a row of elongated push members having a common axial plane and being slidably mounted on said structure for movement in their respective axial directions, each of said members having a key-controlled lock device, said lock device comprising a key-receiving slot and a group of key-engageable and slidable lock bolts in said member as well as a group of mating counter bolts slidable in said structure, said lock bolts of each member and said counter bolts for the same member being movable within a plane extending from the axis of said member in an oblique direction to beside an adjacent member, said group of counter bolts for each member having spring means biasing said counter bolts toward said lock bolts, and said structure having for each of said members an abutment engageable by said spring means and located beside said adjacent member.

4. In a key bank according to claim 1, a first number of said push members having respective removable lock keys insertable into said members, and a second number of said push members having respective keys irremovably fastened thereto, each of said latter keys having an elongated longitudinal slot engageable by all of said lock bolts of said lock device.

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