A. CONTE.

CONTROLLING DEVICE FOR LOCKS.

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1,376,405. **Patented May 3, 1921.**

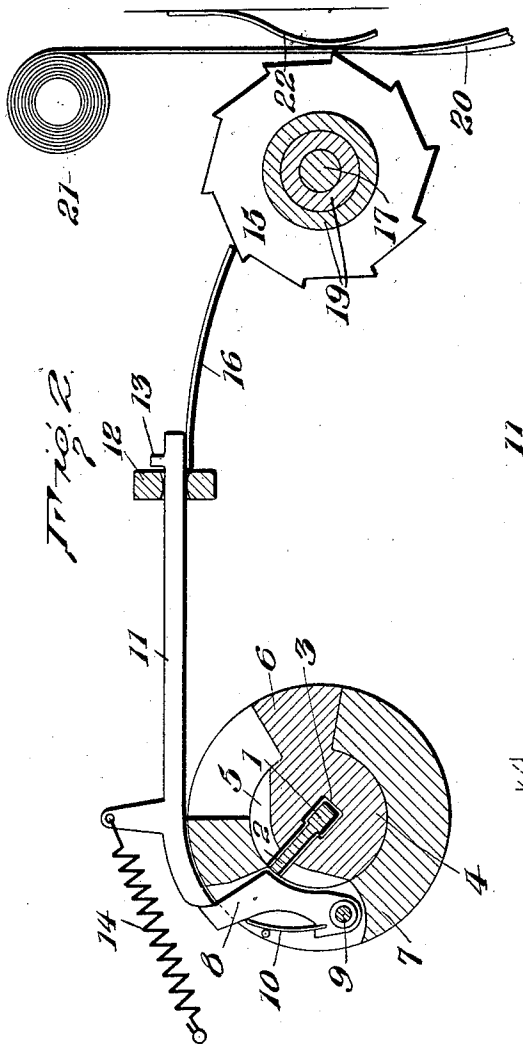


Fig. 2.

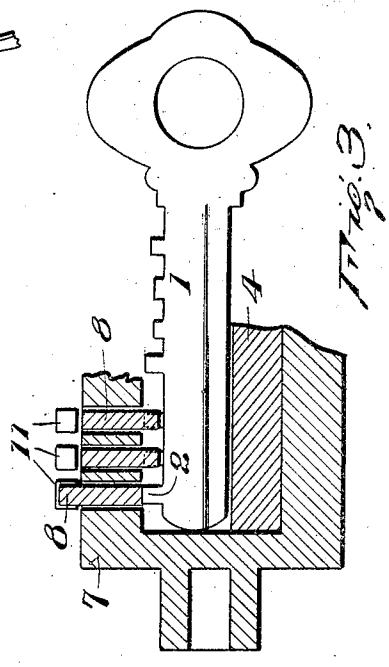


Fig. 3.

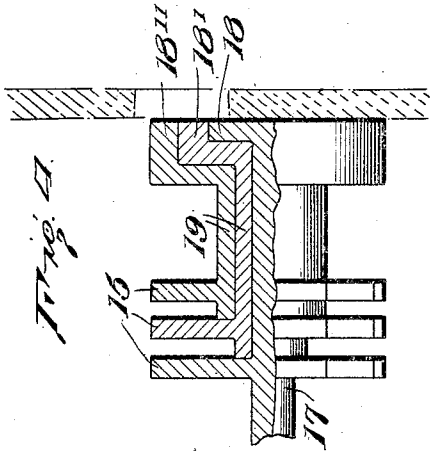


Fig. 4.

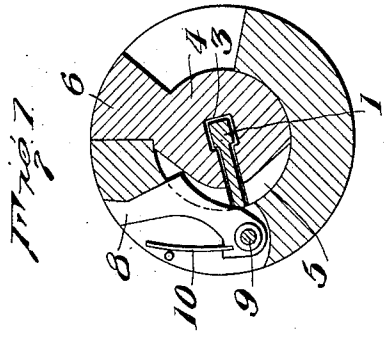


Fig. 7.

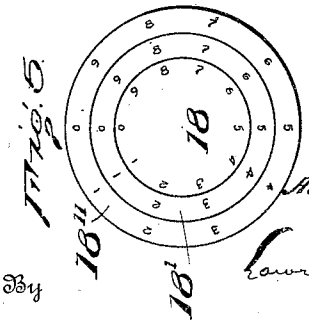


Fig. 5.

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CONTROLLING DEVICE FOR LOCKS.

1,376,405. Specification of Letters Patent. Patented May 3, 1921.

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To all whom it may concern:

Be it known that I, ATTILIO CONTE, a subject of the King of Italy, residing at Buenos Aires, Argentina, have invented certain new and useful Improvements in Controlling Devices for Locks, of which the following is a specification.

This invention relates to a controlling device for locks, adapted to be applied to any type of lock, of which the key is provided with a slight modification.

The invention has for an object to obtain a control as to how many times a lock has been opened within a predetermined lapse of time and who were the persons who opened the lock. For this purpose, each of the keys of the same lock differs from the other by one of its parts and such key, every time it is used to open the lock, will cause the operation of a recording device which will indicate the number of the key. Hence, by knowing the number of each key in relation to the person in possession thereof, one can tell who opened the door.

The device substantially consists of a cylinder or barrel rotatably supported in any suitable manner in the axis of the key within the lock. Said barrel or cylinder is provided with a series of strikers equal in number to that of the keys used in connection with the lock, said strikers being pivoted to a planetary axle. Every key is provided with a tooth or projection of different location in the several keys. When rotating the key, one of the strikers is raised and caused to push a stem which in turn will rotate the toothed controlling wheel through the distance of one tooth. A similar number of rods or stems and toothed wheels is provided for every key. Each wheel is formed integral with a disk marked with numbers and is placed opposite to an opening provided in the housing of the lock through which may be read the number indicating how many times a key has been used, one disk being provided in connection with every key.

Another method of control may also be used, according to which a paper strip is employed which is caused to pass in front of the toothed wheels, being pressed against the same by means of a spring. The rotation of the toothed controller wheel corresponding to the particular key used causes one of its teeth to engage and feed the paper strip and, at the same time, to make a mark on the paper strip, whereby the turn in which each key operated the lock, can readily be ascertained.

In order that this invention may be readily understood and carried into practice without difficulty, the same has been represented by way of example in the drawings annexed to this specification, wherein:

Figure 1 is a view in cross section of the barrel or cylinder in its initial position;

Fig. 2 is a view in cross section of the entire device, showing the position in which the rod is about to be operated;

Fig. 3 illustrates a longitudinal section of the cylinder along the plane of the key, corresponding to the position of Fig. 2;

Fig. 4 is a longitudinal section of the controlling wheels and disks, and

Fig. 5 is a front elevation of said disks.

In all the said views, similar numbers of reference indicate like or corresponding parts.

The key 1 which may be of any desired system of lock, must be provided with an extension formed with the controlling tooth 2. In the case under consideration, the lock is operated with three keys, so that three positions must be provided for the controlling tooth. In Fig. 3, the respective teeth of the two other keys have been shown in dotted lines. It will be evident that any desired number of keys and a corresponding set of controlling teeth and operating devices associated therewith, may be provided.

The key, after passing through the operative parts of the lock, enters into a cylinder 4, arranged to the rear of said parts and provided with a groove 3 for the passage of the key and with a recess or cut away part 5 for the entrance of the strikers, to be described further on. Said cylinder will at a given moment carry along with it, by means of a suitable projection 6, an outer concentric cylinder 7. Within the latter are arranged the strikers 8, in number equal to that of the keys, being pivoted on a common pin 9, suitably secured within the said cylinder. A spring 10 secured to each of the strikers normally presses the same against the inner cylinder.

Owing to the concave profile of said strikers, the key when turning, will raise that one of them which corresponds with the controlling tooth; in this way, the head of the striker will protrude beyond the cylinder and bear against a rod 11 which will be pushed along by said head as the further ro-

tation of the key causes the inner cylinder to carry along with it the outer one, one such rod being provided in connection with each striker. These rods are slidably engaged at one end in the guide piece 12, the other end of each rod having connected to it a spring 14 which tends both to hold it against the cylinder and to draw it backward. The stop 13 prevents the rod from receding farther than the head of the striker in the initial position.

Each rod operates a toothed controlling wheel 15 by means of a resilient blade 16.

One of the wheels is formed integral with an axle 17 which serves to support the other wheels and also carries a disk 18, arranged in front of an aperture provided in the lock, as indicated in dotted lines in Fig. 4. The other wheels as well as the corresponding disks 18′ and 18″ are formed integral with hollow axles 19, arranged to rotate concentrically with the same and with the axle 17. The disks 18, 18′, 18″, etc., carry numbers which correspond with the number of teeth of the toothed wheel.

A paper tape 20, coming from a roller 21 supported in some suitable manner within the casing of the lock, passes in front of the toothed wheels, being pressed against the same by means of the spring 22.

The operation of the device will be readily understood from the following explanation:

Each individual key, being provided with a controlling projection at a distance from its end which is different in each key, will raise the corresponding striker, and while operating on the one hand the lock itself, it will on the other hand act on the controlling device by means of the proper rod 11 which in turn will cause the corresponding controlling wheel to rotate the distance of one tooth. Through the aperture provided for that purpose in the lock will appear on the corresponding disk a number which will indicate how many times the respective key has been used. By means of the other disks, the other keys and in consequence their owners, will be identified in a similar way.

At the same time, each actuation of a toothed wheel will have caused the paper strip to travel along with it for a certain distance, due to the frictional engagement of the strip by the tooth opposite it on the wheel, and will have impressed thereon a mark, either by embossing or in color, by using in connection with the strip a suitable printing device, not represented in the drawings.

By inspecting the printed part of the strip, it may readily be ascertained which of the keys were used for opening the lock and in which succession such opening was effected.

As has already been stated, this controlling device may be constructed for use in connection with any type of lock, and the form and details of construction of the same may vary without departing, however, from the essential features of the invention as set forth in the final claiming clauses annexed to this specification.

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

1. A multi-key lock, comprising a key-operated barrel or cylinder; a set of strikers, one for each individual key, adapted to enter said cylinder; an outer cylinder incasing the first-named cylinder and provided with an axle whereon said strikers are pivotally mounted, the second cylinder being disposed concentrically with and adapted to be rotated by the first cylinder; a set of driving rods, one for each striker, adapted to be engaged and propelled by said strikers; a set of toothed wheels, one individual to each rod, associated with said rods to be driven thereby; and indicating means associated with said wheels to determine the particular keys operated to open the lock and the sequence of their operation.

2. A multi-key lock, comprising a key-operated rotatable element; a set of normally-inactive strikers associated therewith, one for each individual key, each striker being movable into active position when the corresponding key is operated to turn said rotatable element; a carrier for said strikers operable by said rotatable element; a set of indicating wheels, one for each striker, to determine the particular keys operated to open the lock and the sequence of their operation; and an individual driving connection between each striker and the corresponding indicating wheel.

3. A multi-key lock, comprising a recessed carrier; a set of strikers mounted in the recess in the carrier and normally occupying an inactive position, one striker individual to each key; a key-operated element disposed adjacent the carrier to enable the corresponding striker to be moved outwardly of said recess into active position when a key is engaged with said key-operated element and turned; a set of indicating wheels, one for each striker, to determine the particular keys operated to open the lock and the sequence of their operation; and an individual driving connection between each striker and the corresponding indicating wheel.

4. A multi-key lock, comprising a movable, key-operated element; a set of strikers, one for each key; a movable striker carrier operable by said key-operated element; a set of drivers, one individual to each striker, each striker being movable into position to engage its respective driver when the corresponding key is operated; and indicating means embodying a set of nested elements, one for each driver, each provided at

one end with a toothed wheel for engagement by the corresponding driver and at the other end with an indicating disk.

5. A multi-key lock, comprising a movable, key-operated element carrying a set of strikers, one corresponding to each individual key, said strikers being normally inactive but adapted to be moved individually into active position when said key-operated element is moved by the corresponding keys; and indicating means embodying a set of indicating wheels, one for each striker, each wheel being adapted to be turned one step by the action of the corresponding striker during the movement of the key-operated element.

6. A multiple-key lock, comprising a movable, key-operated element carrying a set of strikers, one corresponding to each individual key, said strikers being normally inactive but adapted to be moved individually into active position when said key-operated element is moved by the corresponding keys; and indicating means embodying a set of nested elements, one individual to each striker, each provided at one end with an indicating disk and at the other end with a wheel adapted to be turned one step by the action of the corresponding striker during the movement of the key-operated element.

7. A multi-key lock, comprising a movable, key-operated element; a set of strikers, one for each key; a movable striker carrier operable by said key-operated element, each striker being movable into active position during the movement of the corresponding key incidental to its operation of said key-operated element; and a set of indicating wheels, one for each striker, to be individually operated thereby; said wheels having means for effecting a step-by-step feed movement of a record strip.

8. A multi-key lock, comprising a set of individually-operable strikers, one corresponding to each key, each striker being operated consequent upon the opening of the lock by its respective key; a set of number wheels, one for each striker; operating connections between each striker and its respective number wheel; and means associated with each number wheel for feeding a strip to receive a mark indicating the particular key operated, said strip being common to all of said number wheels so as to be fed each time a wheel is turned and thereby indicate the sequence of operation of the keys.

In witness whereof I hereunto affix my signature in presence of two witnesses.

ATTILIO CONTE.

Witnesses:
J. A. DE MARVAL,
FELIPE MERLE.