

April 9, 1935.

A. L. SPRECKER

1,997,155

DOORLOCK

Filed Sept. 23, 1933

2 Sheets-Sheet 1

FIG.1.

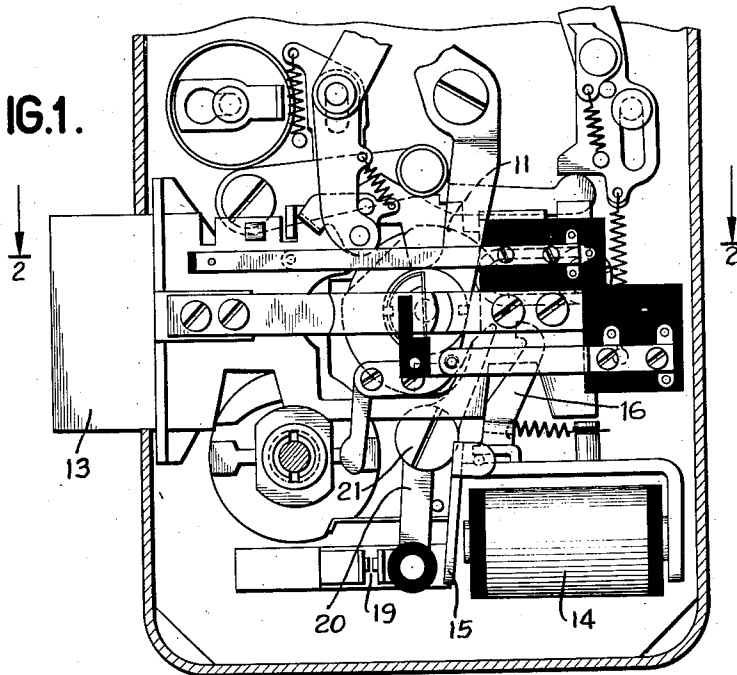


FIG.2.

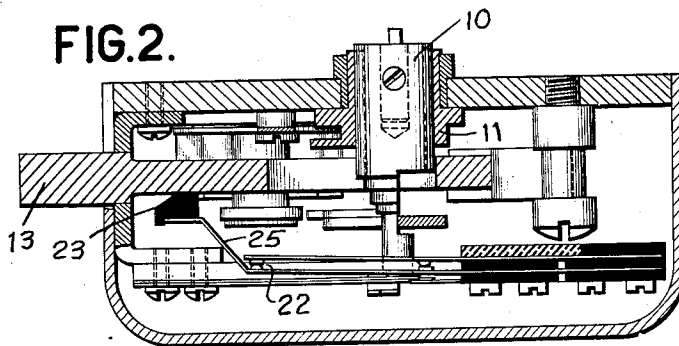
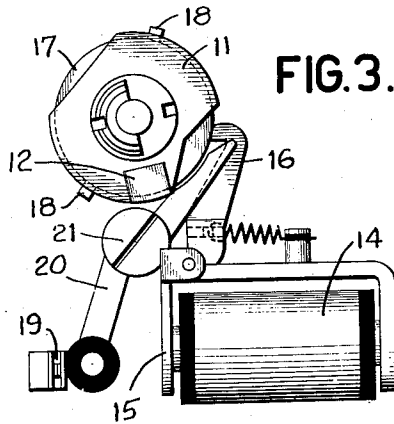


FIG.3.



INVENTOR

Alfred L. Sprucker

BÝ

BY *W. M. Wilson*
ATTORNEY

ATTORNEY

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FIG. 4.

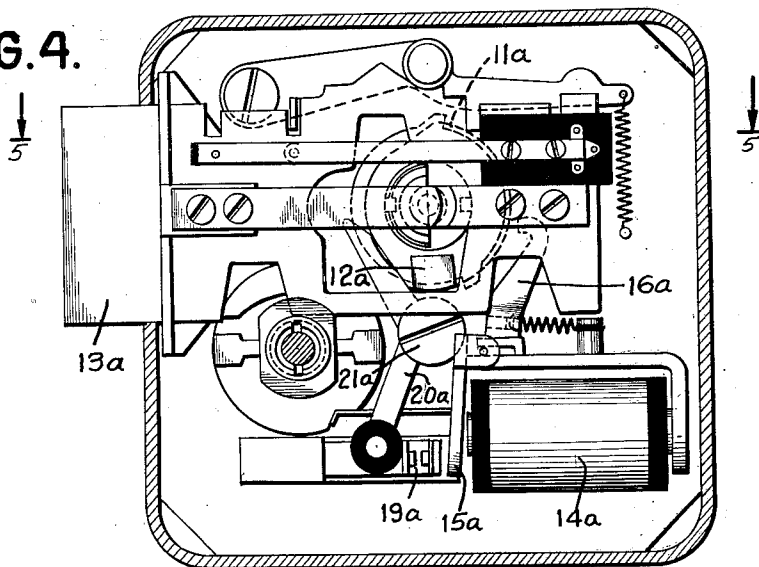


FIG. 5.

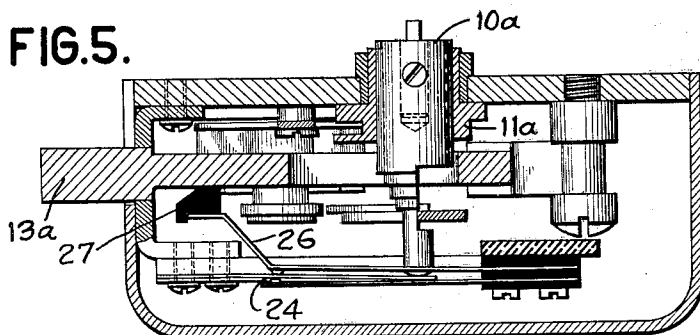


FIG. 7.

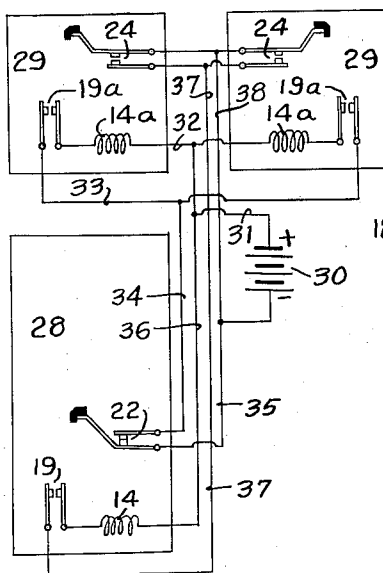
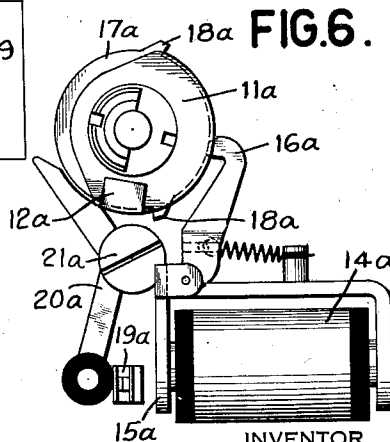


FIG. 6.



INVENTOR

Alfred L. Sprecker
BY
Wm. Wilson
ATTORNEY

UNITED STATES PATENT OFFICE

1,997,155

DOORLOCK

Alfred L. Sprecker, Freeport, N. Y., assignor to
International Business Machines Corporation,
New York, N. Y., a corporation of New York

Application September 23, 1933, Serial No. 690,643

3 Claims. (Cl. 70-79)

This invention relates to improvements in locks and more particularly to improved interlocking features between locks such as shown in the patent to Bush 1,611,579.

5 The interlocking arrangement disclosed in the patent to Bush shows the feature of interlocking the master lock to prevent the bolt from being thrown to a locked position unless all subsidiary locks and bolts which are on other doors and
10 windows have previously been thrown to their locked position. A more extensive protection of the property is often desired and particularly under conditions where a storage room or warehouse is located within the property. For ex-
15 ample, many clothing manufacturers leave storage rooms within which they keep the finished product locked and it is desirable to be assured that this room is locked before the premises are vacated at closing time, and the door locked.
20 Many times a watchman in collusion with others on the outside has opened these rooms and has passed the contents of the room through the windows to his confederates on the outside. It is important therefore to arrange the interlock so
25 that the storage room door cannot be unlocked while the main door containing the master lock is locked and also that the lock to said storage room be locked before the one responsible for locking up the premises can finally lock the mas-
30 ter lock on the door of the main entrance to the establishment.

An object of the invention is to provide a master lock and subsidiary locks whereby the locking of the master-lock is prevented unless all
35 subsidiary locks are locked.

A further object of the invention is to provide a master-lock and subsidiary lock whereby the subsidiary locks, having been locked, may not be
40 unlocked until the master-lock is unlocked.

Further objects and advantages will be hereinafter pointed out in detail in the accompanying specifications and claims and shown in the drawings, which by way of exemplification show a
45 preferred embodiment of the invention.

In the drawings:

Fig. 1 shows a front elevation of the lower part or bolt section of the master-lock.

Fig. 2 shows a section taken substantially along line 2-2 of Fig. 1.

50 Fig. 3 shows a detailed view of the interlocking mechanism of the master-lock.

Fig. 4 shows a front elevation of a subsidiary dead-lock.

Fig. 5 shows a section taken substantially along
55 the line 5-5 of Fig. 4.

Fig. 6 shows a detail of the interlocking mechanism of the dead-lock.

Fig. 7 is a diagram showing the wiring between the interlocking mechanisms of the locks.

In view of the complete disclosure of the recording and timing mechanism shown in the patent to Bush, No. 1,611,579, dated December 21, 1926, it is believed unnecessary for the sake of simplicity to show or describe further this part of the master-lock as it plays no part in the present
10 invention. The lower or bolt section and interlocking section of the master-lock shown in Fig. 1 is substantially the same as that shown in the prior patent to Bush with slight changes in some of the parts and with additional improvements
15 which constitute the present invention.

Any conventional form of tumbler lock, not shown, may be attached to the barrel 10 of the master lock, Fig. 2, and the barrel 10a of the lock shown in Fig. 5 which will hereinafter be
20 designated the dead lock. The cylinders 10 and 10a therefore may be turned by suitable keys inserted into the key barrel and turned in the usual manner.

The bolt and the mechanism for actuating it
25 are the same general construction as that shown in the patent to Bush previously mentioned, in which members 11 and 11a are keyed to the cylinders 10 and 10a respectively. Integral with the members 11 and 11a are lugs 12 and 12a re-
30 spectively which project into an aperture of the bolts 13 and 13a so that when said members are turned the lugs actuate the bolt and cause the same to be thrown or retracted according to the
35 position of the bolts and the direction in which the member is turned, all of which is described in detail in Patent Number 1,611,579.

Interlocking mechanism similar to that described in the previously mentioned patent is shown in Figs. 3 and 6 in which the energization
40 of magnets 14 and 14a causes their respective armatures 15 and 15a to be attracted, throwing locking pawls 16 and 16a against cams 17 and 17a, respectively, which are fixed to the cylinders 10 and 10a thus preventing the complete turning
45 of the members 11 and 11a when the lugs 18 or 18a abut either of the locking pawls 16 or 16a, respectively, which may be thrown into their path. Spring blade contacts 19 and 19a shown closed in
50 Figs. 3 and 6 are normally biased to open position by the action of their spring blades and press against insulating members fixed to one arm of members 20 and 20a pivotally mounted at 21 and
21a respectively. The member 20 is biased in
55 counterclockwise direction and the member 20a 55

is biased in a clockwise direction, thus the upper arms of these levers are held in contact with the peripheries of the members 11 and 11a respectively. In Figs. 1 and 4 the members 11 and 11a are shown in their normal positions so that the upper arms of levers 20 and 20a are cooperating with cut-away portions on the peripheries of the members 11 and 11a respectively so that the contacts 19 and 19a are normally open. When the key cylinder is rotated, therefore, the members 11 and 11a rotate with it and cam their coordinating cam wipers 20 and 20a to turn in such a manner as to cause the contacts 19 and 19a to close momentarily.

If upon closure of these contacts a circuit is established their respective magnets 14 and 14a will become energized to prevent further turning of the cylinder barrel as previously described and thus prevent the bolt from being thrown.

Spring blade contact 22 shown in Fig. 2 is normally closed when the bolt is thrown to locked position. A camming member 23 made of suitable insulated material is fixed to one end of the outer spring blade 25 and is biased against the side of the bolt. It will be seen from the bolt section in Fig. 2 that the extreme end of the bolt 13 is of a thicker cross section than the shank of said bolt against which the member 23 is shown resting in Fig. 2. When this bolt is withdrawn to unlocked position the thicker end of the bolt comes in contact with the insulating member 23 and cams it outwardly to open contact 22. A similar contact 24 is provided in the dead-lock shown in Fig. 5, but in this instance the contact 24 is normally in open position when the bolt 13a is thrown. The inner spring blade 26 also has fixed to its end an insulating member 27 similar to that previously described and biased against the shank of the bolt 13a, and in this instance the camming outward of the member 27 by the withdrawal of the bolt causes contact 24 to close, which is the reverse operation of the corresponding contact in the master-lock. Fig. 7 shows a wiring diagram of the connections between the master-lock generally shown at 28 and a plurality of dead-locks generally shown at 29. The position of the contacts 22 and 24 as shown in this diagram is that taken when the bolts in all locks are withdrawn. If any attempt is made by someone on the premises to unlock them, dead-lock contact 19a is closed momentarily as previously described by the turning of the member 11a by the barrel 10a in the attempt to unlock the dead-lock and a circuit is thereby established as follows: From the positive side of the battery 30 through wires 31 and 32, magnet 14a, contact 19a, now closed, wires 33 and 34 contact 22 now closed, wire 35, and back to the negative side of the battery, thus energizing the magnet 14a and causing the interlocking mechanism to prevent the dead-lock bolt 13a from being withdrawn as previously described.

When the premises are open for business the master-lock bolt 13 is withdrawn by the proper key in the usual manner, thereby causing contacts 22 to open. Thereafter, the dead-lock bolt 13a may be withdrawn as the closure of contact 19a during this operation will not set up a circuit to energize magnet 14a due to the contacts 22 now being open. With the dead-lock now in an unlocked position, i. e., with its bolt withdrawn contacts 24 are closed. If now at the close of busi-

ness an attempt is made to lock up the premises by locking the master-lock by throwing the bolt 13 of the master-lock to a locked position before the bolts in the dead-locks have been thrown, a circuit is established by virtue of the contacts 19 being momentarily closed upon the turning of the key in the master-lock as previously described. This circuit is as follows: From the positive side of the battery 30 through wire 36, magnet 14, contacts 19 now closed, wire 37, contacts 24 now closed, wire 38, and back to the negative side of the battery. The magnet 14 is thus energized, causing the interlock mechanism in the master-lock to lock the barrel 10 against making a complete turn and thus preventing the bolt 13 in the master-lock from being thrown to a locked position. This calls attention to the fact that the subsidiary dead-locks have not all been thrown into their locked positions. If now the dead-locks are properly locked contacts 24 will be open, thus breaking the circuit through contacts 19 and magnets 14 permitting the master-lock to be operated into its locked position. As all the contacts in the subsidiary dead-locks are wired in parallel connection with the contacts in the master-lock the failure to lock any one of the dead-locks will cause the master lock to be locked against operation.

While the fundamental novel features of the invention as applied to a single modification have been shown and described it will be understood that various omissions and substitutes and changes in the form and details of the device illustrated and in its operation may be made by those skilled in the art without departing from the spirit of the invention. I intend to be limited therefore only as indicated by the scope of the following claims.

What I claim is as follows:

1. In an interlocking door system in combination with a main door lock and supplementary door locking means, interlocking means in said supplementary door locking means to prevent unlocking operations thereof, circuits connecting said interlocking means with said main door lock and means in said main door lock for controlling the interlocking means in said supplementary door locks.

2. In an interlocking door system, a main and a plurality of supplementary locks, means for locking said main door lock, locking means for said supplementary locks, interlocking means between each of said supplementary locks and said main lock for preventing the operation of the locking means for the main lock, and further interlocking means between the main lock and the supplementary locks for preventing operation of the supplementary locking means unless the locking means for said main lock is operated.

3. In an interlocking door system in combination with a main door lock and supplementary door locking means, electromagnetically operated interlocking means in said supplementary door locking means to prevent unlocking operations thereof, circuits connecting said electromagnetically operated locking means with the main door locks and contacts in said main door lock connecting with said circuits for controlling the electromagnetically operated means in said supplementary locking means.

ALFRED L. SPRECKER.