

June 12, 1923.

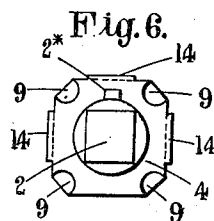
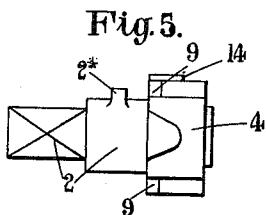
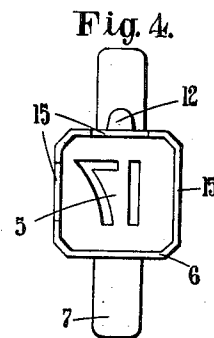
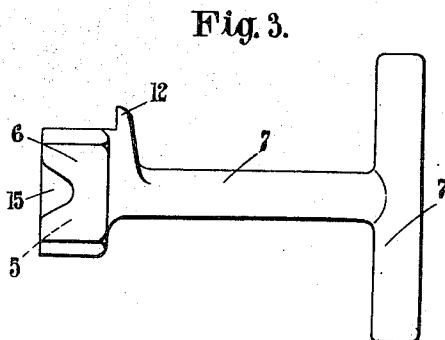
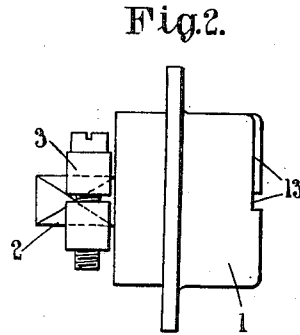
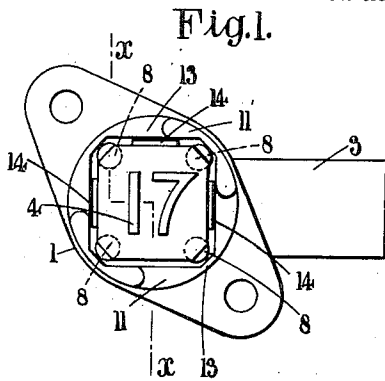
J. H. CASTELL

1,458,520

LOCK

Filed Aug. 18, 1922

2 Sheets-Sheet 1



INVENTOR

James Harry Castell

per Robert S. Phillips
Attorney.

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2 Sheets-Sheet 2

Fig. 7.

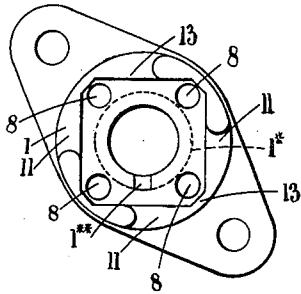


Fig. 8.

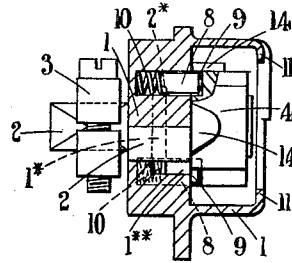


Fig. 9.

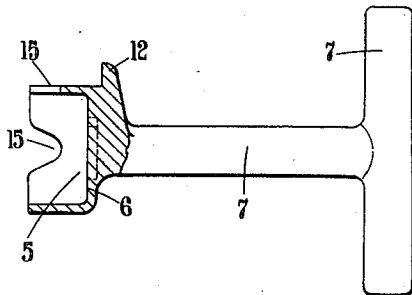


Fig. 10.

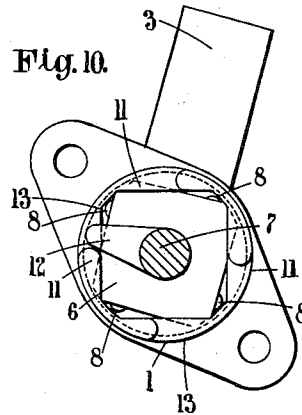


Fig. 11.

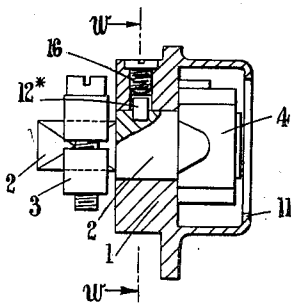
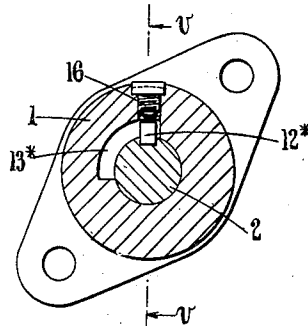


Fig. 12.



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UNITED STATES PATENT OFFICE.

JAMES HARRY CASTELL, OF WESTMINSTER, LONDON, ENGLAND.

LOCK.

Application filed August 18, 1922. Serial No. 582,768.

To all whom it may concern:

Be it known that I, JAMES HARRY CASTELL, a subject of the King of Great Britain and Ireland, residing at Clun House, Surrey Street, in the city of Westminster, in the administrative county of London, England, have invented a new and useful Improvement in Locks, of which the following is a specification.

This invention relates to locks of the rotating key pin type and has particular application to locks intended to be used in large quantities in a single establishment such for instance as an electric generating station where the switches are located in separate and independent cells or cubicles and in which it is desirable that each lock or set of locks can only be operated by one particular key, and it has for its object a construction in which the corresponding locks and keys are readily discernible and in which the means of discernment form the wards of the lock and key. A further object of this invention is the production of a lock which is of simple and robust construction and relatively cheap to manufacture.

I attain these ends by the construction shown in the accompanying drawing in which:—

Fig. 1 is a view in front elevation of the complete lock.

Fig. 2 is a view in side elevation thereof.

Figs. 3 and 4 are views in side and end elevation respectively of the key.

Figs. 5 and 6 are views in side and end elevation respectively of the key pin of the lock.

Fig. 7 is a view in front elevation of the case of the lock with the key pin removed.

Fig. 8 is a view of the lock in longitudinal section on line *x x* Fig. 1.

Fig. 9 is a view of the key partly in section.

Fig. 10 is a view in end elevation of the lock showing the position of the head of the key—which is partly in section—relative to the case when the latch is in its non-operative position and Figs. 11 and 12 are views in longitudinal and transverse section on lines *v v* and *w w* showing an alternative method of preventing axial movement of the key pin in relation to the case and at the

same time limiting the radial movement of the key pin in relation to the case to a predetermined angle.

Throughout the views similar parts are marked with like numerals of reference.

In a suitably shaped case 1 adapted to be fixed to the door is mounted a rotatable key pin 2 which projects beyond the back of said case said projecting part being of reduced diameter and shaped to receive the latch 3 which is secured to it in any suitable manner. The part of the pin 2 within the case 1 which is preferably enlarged to form a head 4 with which the key 7 is adapted to engage is so shaped that on the head 6 of the key being engaged with it said key can impart a rotary movement to it. A convenient construction—as shown in the accompanying drawing—is to make the head 4 of the key pin and the recess 5 in head 6 of the key 7 square, but the interlocking against relative rotary movement may be obtained by making said parts of any other polysided form, or by making said parts round and providing one part with a radially arranged projection and the other part with a slot to engage said projection.

The key pin is kept in engagement with the case by means of the latch 3 fixed on its end but it is preferred to employ additional means independent of said latch. Convenient means is that shown in the accompanying drawing which consists of a radial pin 2* on the key pin which is adapted to engage a circumferential slot 1* in the case 1, a suitably placed longitudinal slot 1** being provided for the purpose of getting the pin 2* into engagement with the slot 1* said slot 1** being preferably so located that the pin 2* does not register with it in any position the key pin can assume during or subsequent to the movement of the latch 3 into its operative position. On the end of the key in 3 with which the key engages and on the bottom of the recess in the head 6 of the key are corresponding letters, numerals or signs those on the one being cameo, and on the other intaglio, so that they will interlink. In the construction shown in the accompanying drawing the numerals 17 are employed said numerals being cameos on the end of the key pin and intaglios in the bottom of

the recess in the head of the key but said positions may be reversed.

Any suitable form of spring controlled device may be employed for locking the key pin to the case against rotation after the key is withdrawn said device may be released either by direct axial engagement of the key or by relative rotary movement between the key and the key pin. A convenient form of spring locking device of the former type comprises four pins 8 mounted to slide axially in the case 1 and to engage four recesses 9 in the key pin 2 said pins 8 being mounted on small springs 10 which press them into engagement with said recesses said pins being so located that when the key is placed on the key pin and pressed inwards its head 6 engages said pins and pushes same out of engagement with the recesses in the key pin. When the key pin is of circular form the locking pins 8 may be so arranged that they can be released from the recesses 9 by the rotation of the key on the key pin the interlocking of the key with the key pin being arranged to permit of this preliminary movement.

When it is desired that the key should not be capable of being withdrawn from the lock except when the same is operating, i. e. when the door is locked, the case of the lock is provided with an escutcheon which is so shaped that it allows the key to be inserted in said case when the lock is operating but retained within said case in all other positions of the latch. In the construction shown in the accompanying drawing the escutcheon takes the form of a flange 11 on the outer edge of the case 1 said flange being so shaped as to admit of the passage of the square head 6 of the key and to engage the corners of said head when the key is rotated to bring the latch out of its operative position as shown in Fig. 10. To prevent the key from being turned through an arc of more than 90°—which would bring the square head of the key free of the flange 11 when the door is unlocked and thus allow the key to be withdrawn—a radial projection carried by the key or key pin is provided which engages a sector slot in the case. In the construction shown in Figs. 1, 2, 3 and 4 the radial projection 12 is carried by the head of the key and moves in a sector recess 13 in the outer face of the case 1. In the construction shown in Figs. 11 and 12 a pin 12* is carried by the key pin 2 and engages with a sector slot 13* in the case 1. In this arrangement said pin and slot also operate to prevent axial movement between the key pin and the case so that the pin 2* on the key pin 2 and the circumferential slot 1* in the case 1 can be dispensed with. To enable the pin 12* to be gotten into position a radial hole is drilled in the case 1 which after the placing of the pin 12* in position is closed by a screw 16.

In addition to the wards formed by the letters, numerals or signs on the key and key pins secondary wards may be provided which may conveniently take the form of one or more projections 14 on the key pin with which one or more recesses 15 in the wall of the recessed head 6 of the key engage.

In some cases it may be convenient to use the letters, numerals or signs on the key pin and key as the means for interlocking the key and key pin for the purpose of transmitting the motion of one to the other.

Each key may have on its exterior a repetition of its letter, numeral or sign for easy identification.

A master key for locks of the type described and having cameo letters, numerals or signs on the key pin would simply have the recess in the head 6 of the key of such a depth as will keep the bottom of said recess clear of the letters, numerals or signs on the key pin, or alternately if the intaglio letters, numerals or signs are on the end of the key pin no cameo letters, numerals or signs would be formed on the bottom of the recess in the head of the key.

What I claim is:—

1. A lock comprising a case, a rotatable key pin mounted in said case, a key shaped to fit over and engage said pin, wards on said key pin and key, in the form of cameo and intaglio letters numerals or signs, and a spring controlled locking device operating between the key pin and the case and adapted to be released by the insertion of the key into the case.

2. A lock comprising a case, a rotatable key pin mounted in said case, a key shaped to fit over and engage said pin, wards on said key pin and key in the form of cameo and intaglio letters numerals or signs, a spring controlled locking device operating between the key pin and the case and adapted to be released by the insertion of the key into the case, and means for preventing the withdrawal of the key from the case until the latch is in its operative position.

3. A lock comprising a case, a rotatable key pin mounted in said case, a key shaped to fit over and engage said pin, wards on said key pin and key in the form of cameo and intaglio letters numerals or signs, a spring controlled locking device operating between the key pin and the case and adapted to be released by the insertion of the key into the case, means for preventing the withdrawal of the key from the case of the lock until the latch is in its operative position and means for preventing the key pin from being moved through more than a predetermined angle, in relation to the case.

4. A lock comprising a case a rotatable key pin mounted in said case, a key shaped to fit over and engage said pin and wards

on said key pin and key, in the form of cameo and intaglio letters numerals or signs, a spring controlled locking device operating between the key pin and the case and adapted to be released by the insertion of the key into the case, means for preventing the withdrawal of the key from the case of the lock until the latch is in its operative position, means for preventing the key pin from being moved through more than a predetermined angle, and means for securing the key pin in the case against axial displacement.

5. A lock comprising a case a rotatable key pin mounted in said case, a key shaped to fit over and engage said pin and wards on said key pin and key, in the form of interlinking letters numerals or signs, a spring controlled locking device operating between the key pin and the case and adapted to be released by the insertion of the key into the case, and an escutcheon on the outer face of the case with which the key engages so that the key cannot be rotated until the interlinking wards of the key and key pin are in engagement and cannot be withdrawn until the latch is in its operative position.

6. A lock comprising a case a rotatable key pin mounted in said case, a key shaped to fit over and engage said pin and wards on said key pin and key in the form of cameo and intaglio letters numerals or signs, a spring controlled locking device operating between the key pin and the case and adapted to be released by the insertion of the key into the case, secondary wards on and in the key pin and the key, an escutcheon on the outer face of the case with which the key engages so that the key cannot be rotated until the interlinking wards of the key and key pin are in engagement and cannot be withdrawn until the latch is in its operative position.

7. A lock comprising a case a rotatable key pin mounted in said case, a key shaped to fit over and engage said pin and wards on said key pin and key in the form of cameo and intaglio letters numerals or signs, a spring controlled locking device operating between the key pin and the case and adapted to be released by the insertion of the key into the case, an escutcheon on the outer face of the case with which the key engages so that the key cannot be rotated until the interlinking wards of the key and key pin are in engagement and cannot be withdrawn until the latch is in its operative position and a radial projection on the head of the key which coacts with a sector recess in the outer face of the case for preventing the key pin from being moved through more than a predetermined angle.

8. A lock comprising a case a rotatable key pin mounted in said case, a key shaped to fit over and engage said pin and wards

on said key pin and key in the form of cameo and intaglio letters numerals or signs, a spring controlled locking device operating between the key pin and the case and adapted to be released by the insertion of the key into the case an escutcheon on the outer face of the case with which the key engages so that the key cannot be rotated until the interlinking wards of the key and key pin are in engagement, and cannot be withdrawn until the latch is in its operative position, a radial projection on the head of the key which coacts with a sector recess in the outer face of the case for preventing the key pin from being moved through more than a predetermined angle, and a radial projection on the key pin which coact with a circumferential groove in the case for preventing axial displacement of said pin relative to said case.

9. In a lock a case, a rotatable key pin mounted in said case, a key shaped to fit over and engage said pin, wards on said key pin and key in the form of cameo and intaglio letters, numerals or signs, a spring controlled locking device operating between the key pin and the case and adapted to be released by the axial movement of the key as the wards are interlinked.

10. In a lock a case, a rotatable key pin mounted in said case, a key shaped to fit over and engage said pin, wards on said key pin and key in the form of cameo and intaglio letters numerals or signs, a spring controlled locking device operating between the key pin and the case and adapted to be released by the axial movement of the key as the wards are interlinked, and means for preventing the withdrawal of the key from the case of the lock until the latch is in its operative position.

11. In a lock comprising a case, a rotatable key pin mounted in said case, a key shaped to fit over and engage said pin, wards in the form of interlinking letters numerals or signs on and in said key pin and key, a spring controlled locking device operating between the key pin and the case and adapted to be released by axial movement of the key as and when the wards are interlinked, means for preventing the withdrawal of the key from the case of the lock until the latch is in its operative position, and means for preventing the key pin from being moved through more than a predetermined angle in relation to the case and from axial displacement relative to said case.

12. In a lock a case, a rotatable key pin mounted in said case, a key shaped to fit over and engage said pin, wards on said key pin and key in the form of cameo and intaglio letters numerals or signs, a spring controlled locking device operating between the key pin and the case and adapted to be released by the axial movement of the key

as the wards are interlinked, and an escutcheon on the outer face of the case with which the key engages so that the key cannot be rotated until the interlinking wards of the key and key pin are in engagement and cannot be withdrawn from said case until the latch has been brought into its operative position.

13. In a lock a case, a rotatable key pin mounted in said case, a key shaped to fit over and engage said pin, wards on said key pin and key in the form of cameo and intaglio letters, numerals or signs, a spring controlled locking device operating between the key pin and the case and adapted to be released by the axial movement of the key as and when the wards are interlinked, secondary wards carried by the key pin and the key, an escutcheon on the outer face of the case with which the key engages so that the key cannot be rotated until the interlinking wards of the key and key pin are in engagement and cannot be withdrawn until the latch is in its operative position.

14. In a lock a case, a rotatable key pin mounted in said case, a key shaped to fit over and engage said pin, wards on said key pin and key, in the form of cameo and intaglio letters numerals or signs, a spring controlled locking device operating between the key pin and the case and adapted to be released by the axial movement of the key as and when the wards are interlinked, an escutcheon on the outer face of the case with which the key engages so that the key cannot be rotated until the interlinking wards of the key and key pin are in engagement and cannot be withdrawn until the latch has been returned to its operative position, and a radial pin carried by the key pin which coacts with a sector recess in the case for the purpose of preventing the pin being moved through more than a predetermined angle.

15. In a lock a case, a rotatable key pin mounted in said case, a key shaped to fit over and engage said pin, wards on said key pin and key in the form of cameo and intaglio letters, numerals or signs, a spring controlled device operating between the key pin and the case and adapted to be released by the axial movement of the key as and when the wards are interlinked, an escutcheon on the outer face of the case with which the key engages so that said key cannot be rotated until the interlinking wards of the key and key pin are in engagement and cannot be withdrawn until the latch is in its operative position, a radial projection carried by the key which coacts with a sector recess in the case for preventing the key pin from being moved through more than a predetermined angle in relation to the case, and a radial projection carried by the key pin which coacts with

a circumferential slot in the case for securing the key pin in the case against axial displacement.

16. The combination in a lock, of a case, a rotatable key pin with an enlarged polysided head mounted in said case, a key having a recessed head adapted to fit over and engage with the polysided head of the key pin wards, on said key pin and key, in the form of cameo and intaglio letters, numerals or signs, a spring controlled locking device operating between the key pin and the case and adapted to be released by the axial movement of the key when the wards are interlinked, and means for preventing axial displacement of the key pin relative to the case and for linking the rotary movement of the key pin relative to the case.

17. The combination in a lock, of a case, a rotatable key pin with an enlarged polysided head mounted in said case, a key having a recessed head adapted to fit over and engage with the polysided head of the key pin, wards on said key pin and key in the form of cameo and intaglio letters, numerals or signs, a spring controlled locking device operating between the key pin and the case and adapted to be released by the axial movement of the key in relation to the case by which said wards are interlinked, an escutcheon on the outer face of the case with which the key engages so that said key cannot be rotated until the interlinking wards of the key and key pin are in engagement and cannot be withdrawn from the case until the key pin is turned to bring the latch into its operative position and means both for preventing axial movement of the key pin in the case and for limiting the radial movement of the key pin in the case.

18. In a lock the combination with a case, of a rotatable key pin with an enlarged polysided head mounted in said case, a key having a recessed head adapted to fit over and engage with the polysided head of the key pin wards on said key pin and key in the form of cameo and intaglio letters, numerals or signs, a spring controlled locking device operating between the key pin and the case which can only be released by the axial movement of the key after the wards are interlinked, and combined means for preventing axial displacement of the key pin in the case and for limiting the rotary movement of the key pin relative to the case.

19. In a lock the combination of a case, a rotatable key pin with an enlarged polysided head mounted in said case, a key having a recessed head adapted to fit over and engage with the polysided head of the key pin, wards on said key pin and key, in the form of cameo and intaglio letters numerals or signs, a spring controlled lock-

ing device operating between the key pin and the case comprising a plurality of spring controlled pins adapted to slide axially in the case and to engage recesses in the underside of the head of the key pin 5 said pins being adapted to be depressed to release the locking device by the axial or rotational movement of the key relative to the key pin an escutcheon on the outer face of the case with which the key en- 10 gages so that it cannot be rotated until the interlinking wards of the key and key pin are in engagement and cannot be withdrawn from the case until the key pin is turned into its position to effect the lock- 15 ing of the lock, and a radial projection on the key pin which coacts with a slot in the case, so as to prevent axial displacement of the key pin relative to the case and so as to limit the radial movement of the key 20 pin relative to the case.

JAMES HARRY CASTELL.