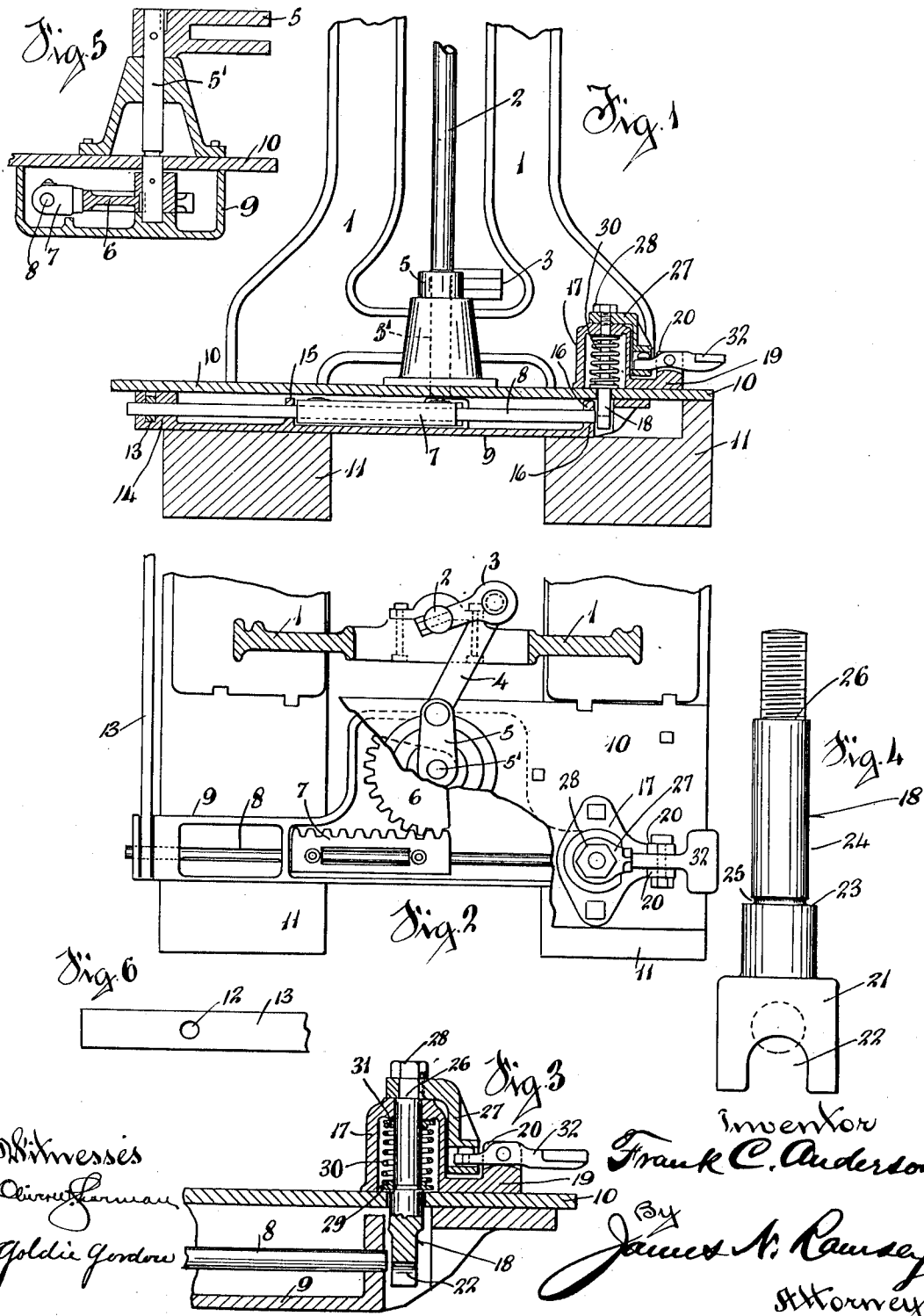


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 AUTOMATIC AUXILIARY GRAVITY LOCK FOR SWITCH STAND INTERLOCKING MECHANISM.
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UNITED STATES PATENT OFFICE.

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AUTOMATIC AUXILIARY GRAVITY-LOCK FOR SWITCH-STAND INTERLOCKING MECHANISM.

1,048,480.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FRANK C. ANDERSON, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Automatic Auxiliary Gravity-Locks for Switch-Stand Interlocking Mechanism, of which the following is a specification.

My invention relates to gravity means for securing the interlocking mechanism of an interlocking switch stand.

The object of my invention is to provide simple, positive and efficient automatic means to control and hold the interlocking mechanism of a switch stand in locked position, when the switch is knocked down, damaged or destroyed under traffic, the proper position of the means to control the interlocking mechanism being maintained by gravity, and means for releasing same to operate said interlocking mechanism.

A further object of my invention is to provide such a device which can be easily applied for automatically securing in locked position the interlocking mechanism of an interlocking switch stand having an interlocking plunger by means of a dog, whose position is maintained by gravity, and adapted to lock said interlocking plunger by resting in the operating path thereof.

A further object of my invention is to provide an automatic auxiliary gravity lock for switch stand interlocking mechanism consisting of a gravity actuated dog adapted to normally rest in the path of an interlocking plunger and provided with a stem having a weakened portion whereby said stem is adapted to break at said weakened portion for the purpose of permitting the operating means of said gravity lock to be knocked down under traffic without moving said dog from the path of the interlocking plunger.

My invention consists in providing automatic auxiliary gravity lock for switch stand interlocking mechanism comprising a dog adapted to normally rest in the path of an interlocking plunger of said interlocking mechanism for the purpose of holding said plunger in engagement with an interlocking bar connected to the point rails of a switch when the switch is in closed position whereby said point rails are held in

locked position, means whereby the position of said dog is maintained by gravity, and means whereby said dog may be operated to permit the plunger to be disengaged from said interlocking bar to open the switch.

My invention consists more specifically in an automatic auxiliary gravity lock for switch stand interlocking mechanism provided with a plunger adapted to engage and lock an interlocking bar secured to the point rails of a switch, comprising a dog adapted to rest by gravity in the operating path of said plunger and prevent the operation of said interlocking plunger, said dog having a recess therein, a spring adapted to assist gravity in holding the dog in its lowermost position, thereby preventing the plunger from moving, a housing mounted on a plate above said interlocking mechanism and surrounding the stem of said dog, a weak point in the stem of said dog immediately above said plate, a lifting member fastened to said dog, and a foot bearing trip lever pivotally mounted on the base or extension flange of said upper housing and adapted to lift said lifting arm and thereby lift said dog to allow said plunger to be operated.

My invention also consists in the peculiar construction, combination and arrangement of the several parts as herein set forth and claimed.

In the accompanying drawing, which serves to illustrate the construction, application and use of my invention: Figure 1 is a view partly in side elevation and partly in vertical section showing a portion of a switch stand and interlocking mechanism therefor controlled by my invention; Fig. 2 is a plan view of same, part of the switch stand being shown in cross-section; Fig. 3 is an enlarged vertical section showing my present invention applied to said interlocking mechanism; Fig. 4 is a detail view of a dog employed in my invention; Fig. 5 is a vertical section showing the operating shaft of the interlocking mechanism; and Fig. 6 shows a portion of the interlocking bar provided with an opening to receive the plunger.

Constructed as illustrated in the drawing, which shows a preferred embodiment of my invention, 1 represents a portion of a switch stand with the usual vertical operating shaft 2 having interlocking crank 3

adapted to operate the interlocking mechanism through link 4, interlocking crank 5, shaft 5', segmental gear 6, plunger rack 7, and plunger 8 mounted in a suitable housing 9 which is secured to a steel cover plate 10 mounted upon the ties 11. The plunger 8 is adapted to enter an opening 12 in the interlocking bar 13 to hold the switch in locked position. The interlocking plunger is mounted in the housing and is slidably supported in bearings 14, 15 and 16.

The mechanisms just described form the subject matter of separate applications and are not claimed herein.

15 My automatic lock which is used in connection with the interlocking mechanism is partly mounted in a housing 17. The housing 17 is mounted on the plate 10 and is provided with an extension flange 19 at the
20 end of which is provided two upwardly extending lugs 20. The dog 18 of the lock is provided with an engaging side 21 which is provided with a recess 22 in the bottom thereof. The dog 18 extends upwardly
25 through a suitable opening in the plate 10 and just above said plate it is provided with a shoulder 23 from which a stem 24 extends upwardly. I preferably form a groove 25 in the stem 24 just above the shoulder 23 so
30 that should the portion of my automatic auxiliary gravity lock above said plate become damaged or destroyed under traffic said stem will break at the reduced or weakened portion and leave the lower portion of
35 the dog undisturbed and in the operating path of the interlocking plunger, thereby eliminating the liability of the lower engaging portion 21 of the dog from being moved from the operating path of the interlocking
40 plunger 8. The stem 24 of the dog extends up through the top of the housing 17 where it is provided with another shoulder 26 upon which rests the angular lifting arm 27. The stem 24 is screw threaded at the
45 upper end and a nut 28 is provided to fasten said lifting arm to said dog. A flanged washer 29 is mounted on the stem of the dog 18 and is adapted to rest upon the shoulder 23 thereof. Bearing against the
50 top of said washer 29 I provide a compression spring 30 which bears against another washer 31 at the other end and which is adapted to bear against the inner wall of the top of the housing 17 as best shown in
55 Fig. 3. It is the purpose of this spring to assist gravity in causing the dog to operate more quickly in keeping said dog in its lowermost position and thereby prevent the interlocking plunger from being operated.
60 A foot bearing trip lever 32 is suitably pivoted to the lugs 20 and is adapted to engage the lifting arm 27 to lift the dog 18 when the foot bearing trip lever is operated. It is readily seen that the lifting member 27
65 raises the dog far enough to allow the in-

terlocking plunger 8 to pass under said dog through the recess 22 in the bottom of said dog thereby allowing the interlocking mechanism to be operated.

It is obvious from the construction shown and described that should the interlocking mechanism mounted on the plate be severed the lower engaging portion 21 of the dog would still remain intact and prevent said interlocking plunger from being operated, for the reason that the same would be suspended or held in proper position by the head block as shown in Fig. 1.

The operation of the device is as follows: When the interlocking switch stand is to be operated the operator must first place his foot upon the foot bearing trip lever thereby raising the dog 18 out of the operating path of the interlocking plunger 8. Then the switch stand can be operated thereby operating the interlocking mechanism which will operate the interlocking plunger and allow the interlocking bar and the point rails to be moved.

It is readily seen that I provide special safety means for switch stand interlocking mechanism of the character described whereby practically all mechanism above the plate which covers the interlocking mechanism can be destroyed under traffic and still prevent the interlocking mechanism from being operated.

What I claim as new and desire to secure by Letters Patent is:

1. In an automatic auxiliary gravity lock for switch stand interlocking mechanism provided with an interlocking plunger adapted to engage an opening in an interlocking bar connected to the point rails of a switch, a gravity dog mounted in said interlocking mechanism in the path of said interlocking plunger to prevent the movement of said interlocking plunger when the switch is in closed position, and means whereby said dog can be operated to release said interlocking plunger to permit the switch to be thrown to open position.

2. In an automatic auxiliary gravity lock for switch stand interlocking mechanism, an interlocking plunger constituting part of said interlocking mechanism, a dog adapted to rest by gravity in the path of said interlocking plunger, said dog having a recess in its lower end adapted to register with the interlocking plunger when the dog is raised to its highest position, said dog having a stem provided with a weak point, and foot bearing trip lever mechanism mounted on the stem of said dog whereby said dog may be raised to allow the interlocking plunger to be operated to open the switch.

3. In an automatic auxiliary gravity lock for switch stand interlocking mechanism, a gravity dog adapted to prevent the movement of an interlocking plunger, a stem on

said dog, a spring mounted on said stem, an upper housing for said stem, and a lifting arm mounted on said stem, a foot bearing trip lever adapted to engage and operate
 5 said lifting arm for the purpose of raising said dog to permit the operation of said interlocking plunger.

4. In an automatic auxiliary gravity lock for switch stand interlocking mechanism
 10 having an interlocking plunger adapted to engage an interlocking bar connected to the point rails of a switch, a gravity dog mounted in the path of said interlocking plunger when said switch is in closed position to
 15 prevent the interlocking plunger from releasing the interlocking bar, a spring mounted on the stem of said dog to assist gravity in actuating said dog, and means whereby said dog may be moved from the path of
 20 said interlocking plunger to permit the switch to be thrown to open position.

5. In an automatic auxiliary gravity lock for switch stand interlocking mechanism, a dog adapted to be actuated by gravity and
 25 provided with a stem, a spring mounted on said stem, a housing for said stem, a lifting arm mounted on the end of said stem above said housing, said lifting arm being provided with a pocket or recess in its lower end
 30 adapted to receive the end of a foot trip lever, and a cap screw on said foot trip lever adapted to adjust the movement of said dog for registering with the interlocking plunger of an interlocking mechanism.

35 6. In an automatic auxiliary gravity lock for switch stand interlocking mechanism, a dog adapted to be actuated by gravity, a

stem for said dog, a housing for said stem, a lifting arm mounted on the end of said stem above said housing, an extension on
 40 said housing provided with upwardly extending lugs, a foot bearing trip lever pivotally mounted between said lugs and adapted to engage a recess or pocket in said arm whereby said dog may be raised to permit
 45 the interlocking plunger to register with the recess in the lower end of the dog, substantially as and for the purposes set forth.

7. In an automatic auxiliary gravity lock for switch stand interlocking mechanism
 50 having an interlocking plunger adapted to engage an interlocking bar connected to the point rails of a switch, a gravity dog mounted in the path of said interlocking plunger, a stem for said dog, a housing for said stem,
 55 a lifting arm mounted on the end of said stem above said housing, an extension flange on said housing provided with upwardly extending lugs, a foot bearing trip lever pivotally mounted between said lugs and adapted
 60 to engage a recess or pocket in said arm whereby said dog may be raised to permit the interlocking plunger to register with the recess in the lower end of said dog and having a reduced area of metal or weak
 65 point in the stem of said dog whereby the means for operating said dog may be destroyed without removing said dog from the path of said interlocking plunger.

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