F. C. ANDERSON.

OPERATING MEANS FOR SWITCH SAFETY MECHANISMS.

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994,108. Patented June 6, 1911.

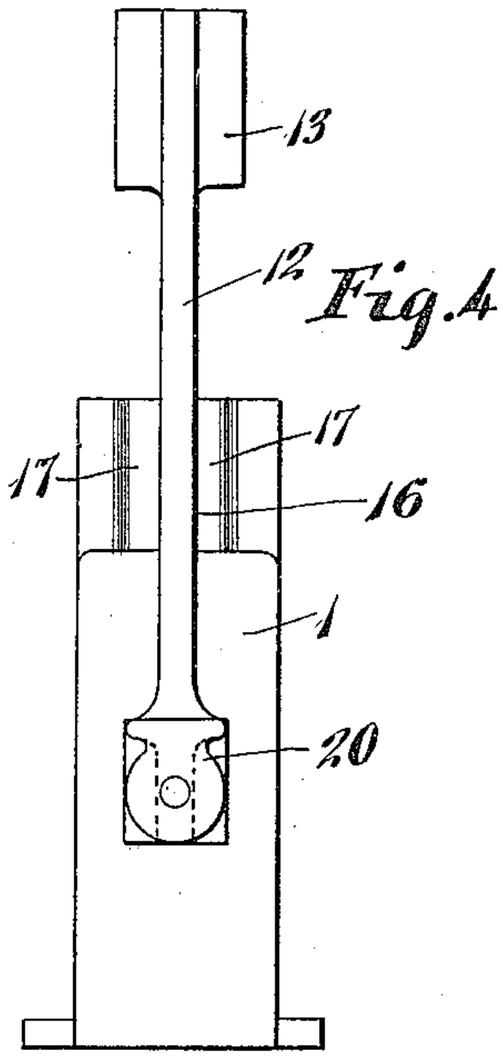

Fig. 4

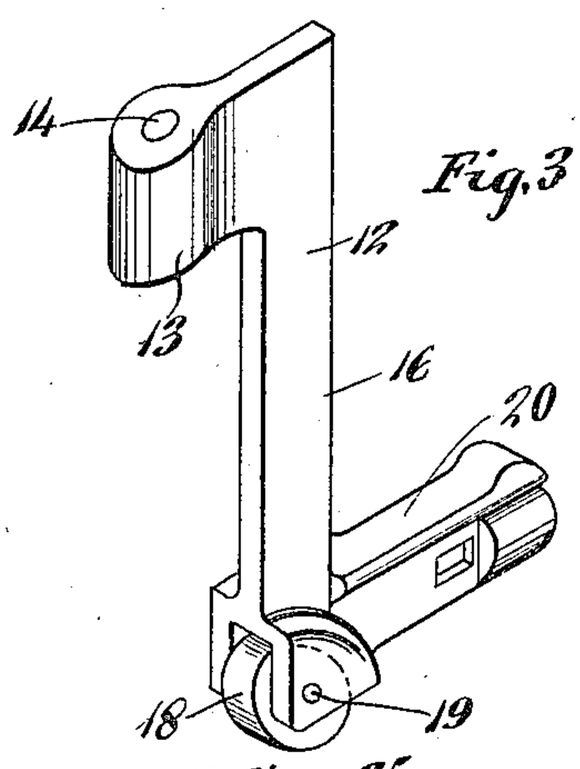

Fig. 3

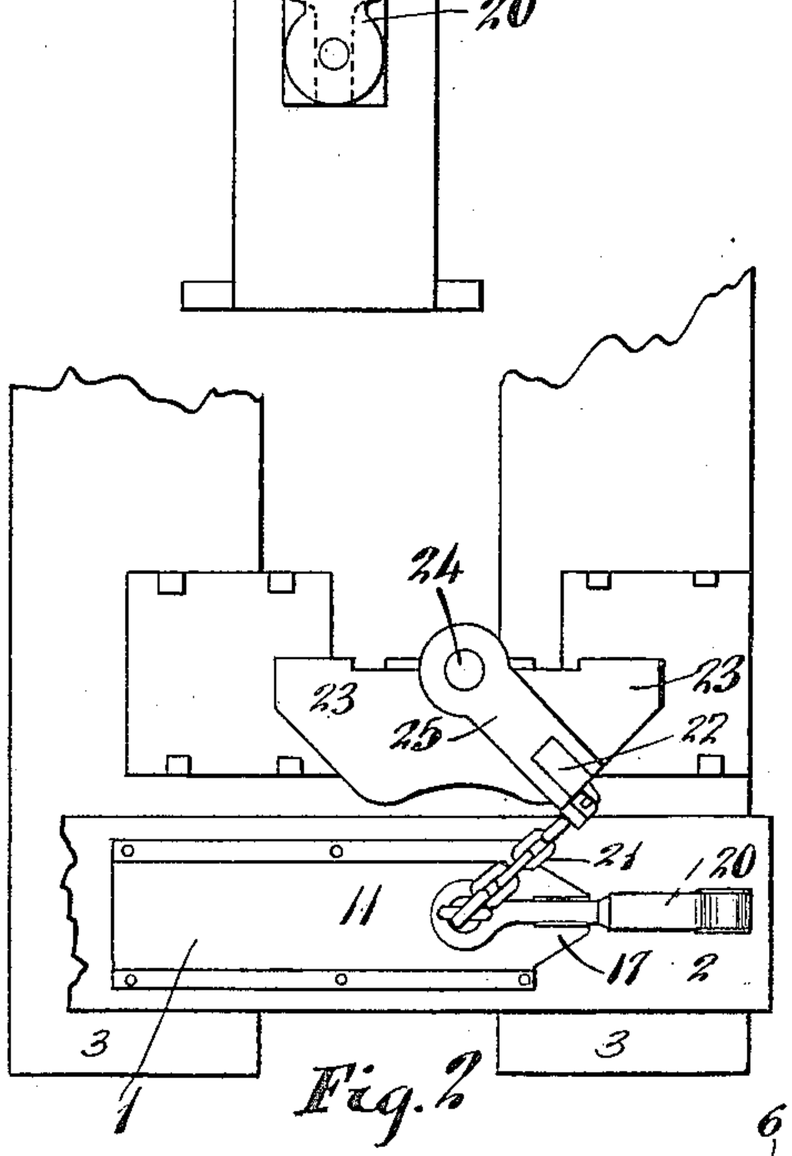

Fig. 2

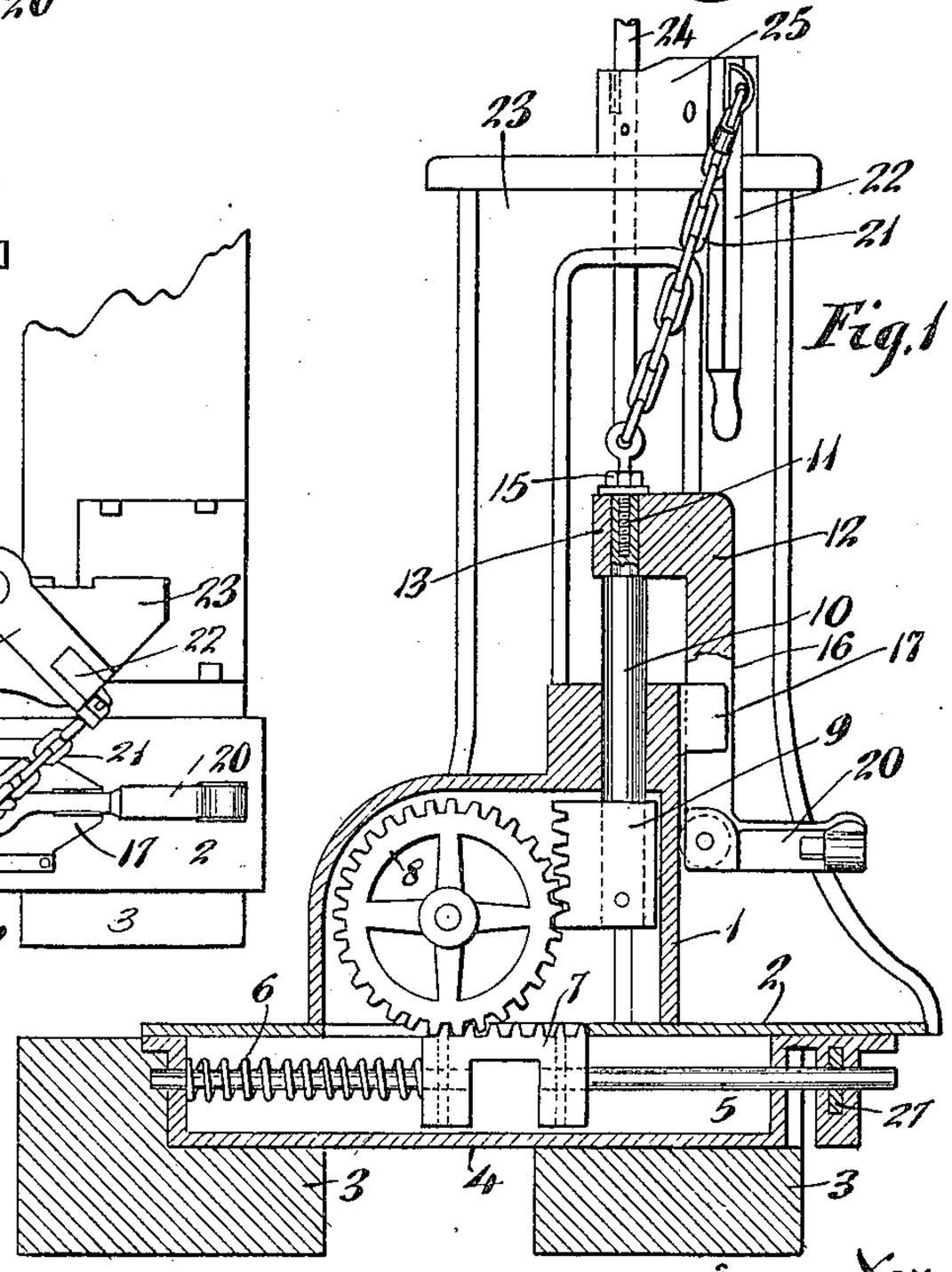

Fig. 1

Witnesses

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UNITED STATES PATENT OFFICE.

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OPERATING MEANS FOR SWITCH SAFETY MECHANISMS.

994,108. Specification of Letters Patent. Patented June 6, 1911.

Application filed August 8, 1910. Serial No. 576,074.

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 Operating Means for Switch Safety Mechanisms, of which the following is a specification.

My invention relates to improvements in switch safety mechanism and more particularly to improved means for operating switch safety devices of the character herein set forth.

The object of my invention is to simplify, reduce the cost of manufacture and produce a more efficient and durable operating means than that shown in my Patent No. 959,691.

Another object of my invention is to construct a switch safety device which eliminates the necessity of providing a slot in the main housing thereof for the purpose of allowing the operating shoe or lever to work therein and also to eliminate the necessity of providing shutters to cover said slot in the housing which are shown in my application, Serial No. 558,493.

In illustrating my invention I show my improved operating means applied to the mechanism which is illustrated in my previously mentioned inventions and it consists briefly of operating mechanism entirely outside of the housing comprising an L-shaped member having an extending hub portion at its upper end adapted to be mounted on the operating rod of the safety mechanism, and means whereby the L-shaped member is operated freely on the outside of said housing of the switch safety mechanism.

In the drawings which serve to illustrate my invention: Figure 1 is a transverse vertical section of a switch safety mechanism equipped with my improved operating means. Fig. 2 is a plan view of same engaging a switch stand. Fig. 3 is a perspective detail view of the operating member. Fig. 4 is an end view of the housing containing the switch safety operating mechanism.

Referring more particularly to the drawings, 1 illustrates the housing of the switch safety operating mechanism mounted upon a plate 2 which in turn is mounted upon the head blocks or ties 3. Underneath said plate 2 I provide the plunger chamber 4 which contains the interlocking plunger 5, spring pressed by means of spring 6 and having a gear rack 7 mounted thereon. Mounted inside the housing 1 is a gear 8 which is adapted to mesh with the said plunger rack 7 on the operating or interlocking plunger 5; also mounted in the housing 1 is an operating rack 9 which is adapted to mesh with the gear 8. Said operating rack 9 is mounted on the operating rod 10 which operating rod is tapped at the upper end and adapted to receive an eye-bolt 11.

An operating member 12 is provided with an extension 13 having a hub portion provided with an aperture 14 which is adapted to receive the end of the operating rod 10 which has a shoulder to form a bearing for the hub, and a threaded socket adapted to receive the eye-bolt 11. The operating member 12 is then securely fastened to the operating rod 10 by means of a nut 15 placed upon the eye-bolt 11 over a washer and screwing the eye-bolt into said threaded socket. The straight vertical portion 16 of the operating member is adapted to move parallel to the vertical end of the housing for the safety mechanism and is guided thereon by lugs 17 which are preferably formed integral with the housing 1. At the lower end of the operating member 12 I provide an antifriction roller 18 which is pivoted by means of a pin 19 and may be mounted in any suitable manner. It will be noted that the roller 18 extends beyond the surface of the vertical portion 16 of the operating member 12 in order that it will roll along the surface of the housing 1 and will not allow the operating member 12 to come into frictional engagement with said surface of the housing 1.

At the lower extremity of the operating member 12 I provide a foot treadle 20 which is adapted to receive an eye-bolt and nut connecting it to the padlock by means of a chain or other suitable connection. The eye-bolt 11 has connected thereto a chain 21 which is adapted to engage the padlock of a switch stand to lock the switch handle 22 which is mounted upon a switch stand 23 adjacent the switch safety mechanism. The switch handle 22 is mounted in the usual manner in the fulcrum head 25 which in turn is keyed and pinned to the target shaft 24.

When it is desired to operate the device the operator removes the padlock from engagement with the switch stand releasing the handle 22, then treads upon the foot

treadle 20 thereby forcing the operating rod 10 downwardly, which in turn forces the operating rack 9 downwardly and operates the gear 8 thereby operating the plunger rack 7. The plunger rack 7 operates the interlocking plunger 5 and thereby permits the throwing of the switch in the usual manner, thus allowing the handle 22 and target shaft 24 to be operated properly.

Thus it is seen that my new improved operating means is simpler, less expensive and easier to operate and keep in repair than the devices now used. It also allows the housing 1 to be entirely closed and dispenses with the slot therein which is objectionable, owing to the fact that the inside safety mechanism is not thereby protected sufficiently from the weather, and from obstacles such as snow, dirt or gravel, which may cause it to become inoperative.

The foot treadle may be formed integral with the operating member 12 or may be formed separate and securely fastened thereto. By constructing the device in the manner shown, it is readily seen that it can be easily operated and that it has many advantages over the old style means of operating the same class of safety mechanisms.

The particular shape of the operating member 12 may be modified if desired, and I do not therefore wish to be confined to the exact details shown.

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

1. A switch safety device comprising a switch stand, interlocking mechanism for said switch stand, means for operating said interlocking mechanism comprising a housing, a gear in said housing, an operating rack adapted to mesh with said gear, an operating rod attached to said operating rack and means entirely outside of said housing and connected to said operating rod for actuating said operating rack, substantially as and for the purposes set forth.

2. A switch safety device comprising a switch stand, interlocking mechanism, a housing, a gear mounted in said housing, an operating rack adapted to mesh with said gear and provided with an operating rod, an outside operating member adapted to be connected to the end of said operating rod, an anti-friction roller pivotally mounted on said operating member adapted to engage the outside of said housing, said operating member when forced downwardly to actuate said gear, substantially as and for the purposes set forth.

3. A switch safety device comprising interlocking mechanism, a switch stand, a housing, a gear mounted in said housing, an operating rack adapted to mesh with said gear and means entirely outside said housing for operating said operating rack, substantially as and for the purposes set forth.

4. A switch safety device comprising a switch stand, interlocking mechanism comprising a housing, a gear mounted therein, an operating rack adapted to mesh with said gear, means on the outside of said housing for operating said operating rack, and lugs on the outside of said housing to form a guide for said operating means, substantially as set forth.

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