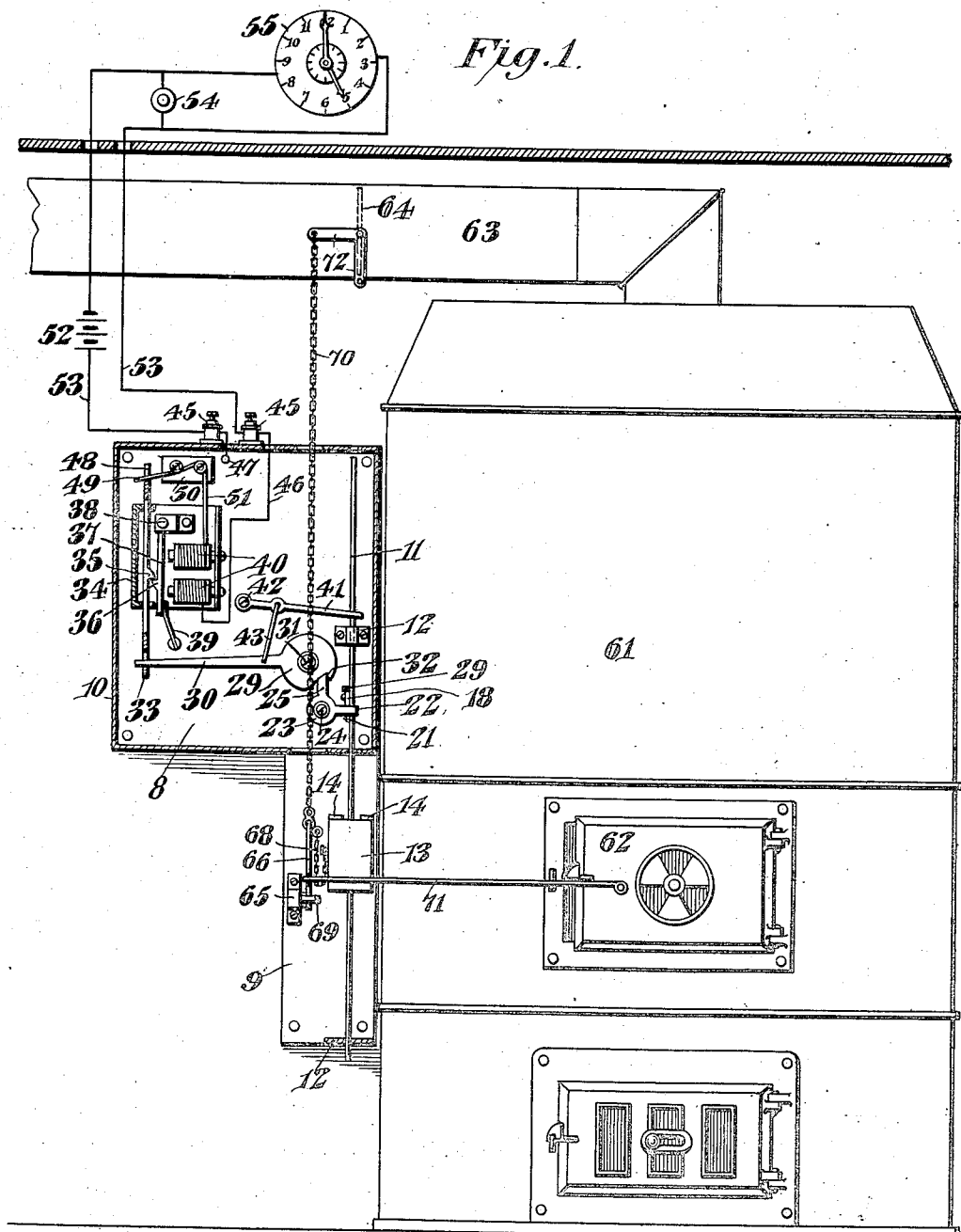


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MECHANISM FOR OPERATING DRAFT CONTROLLING MEANS AND OTHER DEVICES.
APPLICATION FILED JAN. 31, 1908.

935,719.

Patented Oct. 5, 1909.

2 SHEETS—SHEET 1.



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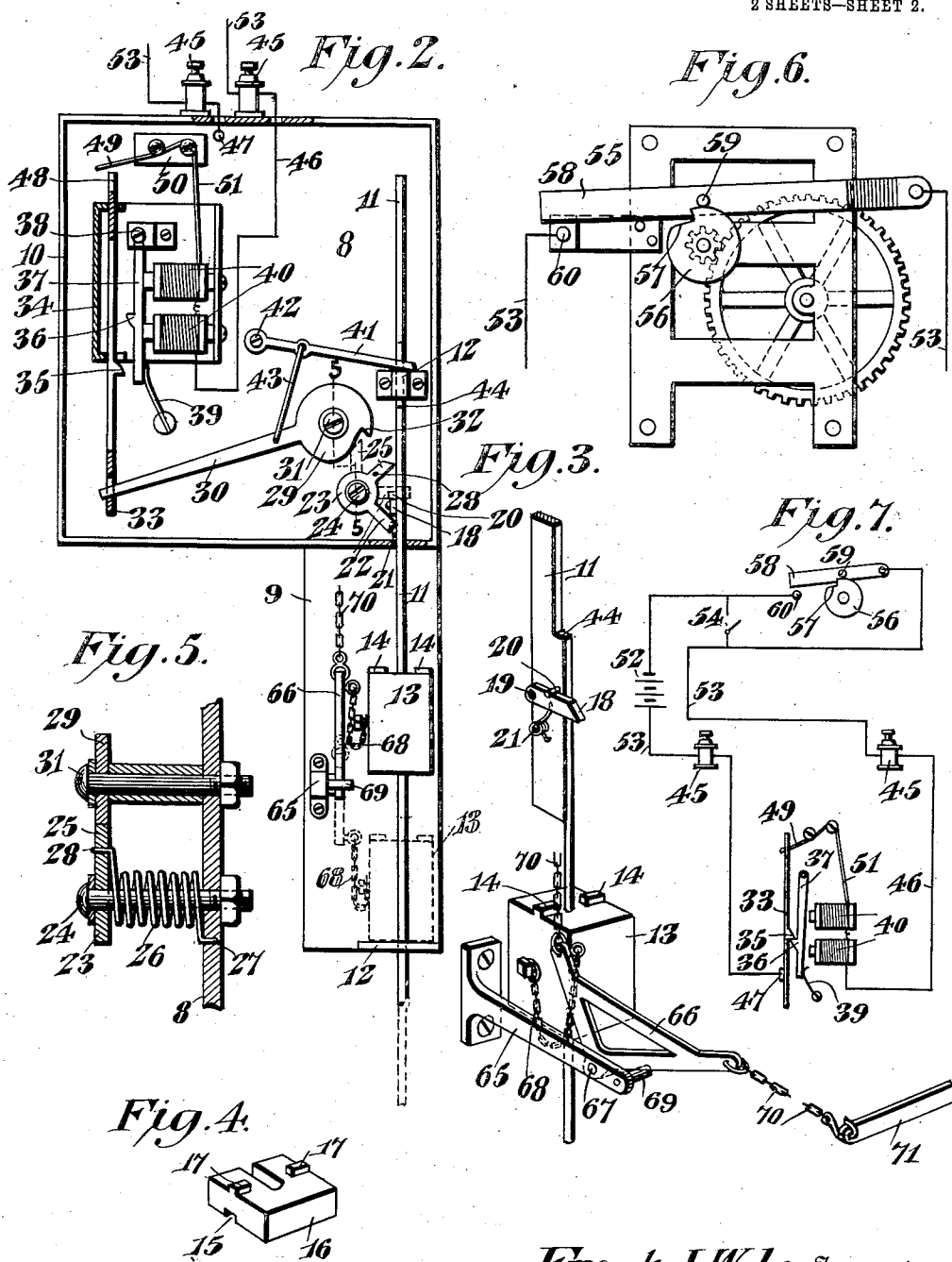
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UNITED STATES PATENT OFFICE.

FRANK J. WOLF, OF BROOKLYN, NEW YORK.

MECHANISM FOR OPERATING DRAFT-CONTROLLING MEANS AND OTHER DEVICES.

935,719.

Specification of Letters Patent.

Patented Oct. 5, 1909.

Application filed January 31, 1908. Serial No. 413,714.

To all whom it may concern:

Be it known that I, FRANK J. WOLF, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented a new and useful Mechanism for Operating Draft-Controlling Means and other Devices, of which the following is a specification.

The present invention relates to means for automatically effecting the operation of various devices and for the purposes of illustration, the present embodiment is disclosed in connection with draft regulating mechanism, to which it is particularly adapted, but to which it is not necessarily limited.

One of the principal objects of the present invention is to provide novel, simple and practicable means in which a powerful actuating device or member can be employed, and to provide mechanism whereby the movement of such device or member can be effectively controlled by a comparatively weak force.

The preferred embodiment of construction is illustrated in the accompanying drawings wherein:

Figure 1 is a front elevation of a heating furnace, showing the mechanism connected to the draft controlling means for a furnace. Fig. 2 is a front elevation of the mechanism on a slightly enlarged scale, illustrating the parts when the same are being operated. Fig. 3 is a detail perspective view of the actuating member. Fig. 4 is a detail view of an additional weight that may be applied thereto. Fig. 5 is a sectional view substantially on the line 5—5 of Fig. 2. Fig. 6 is a detail view of a portion of the clock mechanism, showing the circuit closer of the same. Fig. 7 is a diagrammatic view illustrating the circuit.

Similar reference numerals designate corresponding parts in all the figures of the drawings.

In the embodiment disclosed, a base plate 8, preferably of sheet metal, is employed that has a depending extension 9. The base plate 8 preferably constitutes the rear wall of a casing 10, in which the greater portion of the mechanism is located. An actuating member is employed in the form of a vertically reciprocatory slide rod 11, guided in suitable bearings 12 mounted on the base plate 8 and its extension 9 and having a weight 13 fastened thereto. The weight, as shown, is provided on its top with lugs 14,

which are arranged to engage in sockets 15 formed in additional weights, one of which is shown at 16 in Fig. 4, said weights being also provided with upstanding lugs 17. Thus the weight of the actuating member may be varied as found necessary or convenient. This weight member is movable downwardly from a set position, and is returnable to said set position. The slide rod 11 thereof carries a dog 18 pivoted thereto, as shown at 19, the upward movement of said dog being limited by a pin 20 against which it is yieldingly held by a spring 21. This dog, when the actuating member is in its set position, engages over the horizontal arm 22 of a locking device 23 that is in the form of a bell crank, pivoted as shown at 24 on the base plate 8, and having an upstanding arm 25. A spring 26, shown in Fig. 5, that surrounds the pivot 24, has one end engaged, as shown at 27 in the base plate, the other end being engaged, as shown at 28 in the locking device. It will be evident therefore that the actuating member when it moves downwardly, will swing the locking device 23 until the dog 18 disengages from the arm 22, whereupon the spring 26 will immediately return said locking device to its normal position. When the actuating member is moved upwardly, the dog 18 will swing downwardly so that it will readily pass the arm 22.

In order to hold the locking device 23 and consequently the actuating member against movement, a latch is employed comprising a head 29 and a lever arm 30, the head being pivoted as shown at 31 to the base plate and having a seat or shoulder 32 in which the upper end of the arm 25 engages. It will be noted, however, that the seat or shoulder 32 is located below the pivot 31. Therefore if the latch 29—30 is free, the actuating member will move downwardly because the pressure brought against the locking device 23, will cause the latch to swing until the arm 25 disengages from said seat or shoulder. Controlling means is therefore employed for the latch. As shown, this controlling means consists of a vertically reciprocatory slide 33 engaged with the free end of the lever arm 30 and operating in a guide-way 34 secured to the base. The slide 33 has on one side a shoulder 35, beneath which engages a shoulder 36 carried by a swinging armature bar 37. The armature bar is pivoted at its upper end, as shown at 38, and a

spring 39 bears against its lower end to hold the shoulder 36 beneath the shoulder 35. The armature 37 is in coaction with an electro-magnet 40, suitably secured to the base plate. Consequently it will be evident that if the electro-magnet is energized, the armature 37 will be drawn toward the same, thus carrying the shoulder 36 out of the path of movement of the slide 35. The slide thereupon moves downwardly so that the latch 29—30 can turn, releasing the locking device, which in turn, will permit the actuating member to move downwardly. As already stated, the locking device immediately returns to its normal position, but the latch remains in an inoperative position, as will be evident by reference to Fig. 2. In order to effect the movement of the latch to its interlocking engagement with the locking device, a swinging arm 41, pivoted at one end, as shown at 42, has a link connection 43 with the lever arm 30. This arm 41 extends into the path of movement of a shoulder 44 formed upon the slide rod 11 of the actuating member. Therefore when said actuating member is elevated, the shoulder 44 engaging the free end of the arm 41, swings said arm upwardly which in turn swings the latch until the shoulder 32 thereof is engaged with the upper end of the arm. To do this, the dog 18 moves a slight distance above the arm 22 so that when the actuating member moves downwardly until the dog 18 rests upon the arm 22, the shoulder 44 will be sufficiently lowered to permit the arm 41 to drop downwardly, when the latch is free. The return movement of the latch elevates the slide 33, carrying the shoulder 35 above the shoulder 36.

Mounted on the casing 10 is a pair of binding posts 45. One of these binding posts has an electrical connection 46 with the electro-magnet, the other binding post, as shown at 47, is grounded on the base plate 8. Consequently the slide 33 will be in electrical communication with said binding post. This slide has its upper end notched, as shown at 48, and is movable into and out of engagement with a spring 49 carried on an insulator block 50 secured to the base plate 8. The spring 49 is electrically connected, as shown at 51 to the electro-magnet. It will thus be evident that as long as the slide is elevated, and is in engagement with the spring 49, an electrical circuit will be established between the binding posts and the electro-magnet, but when the slide moves downwardly, as shown in Fig. 2, said slide disengages from the spring 49, and immediately breaks the circuit. Any suitable source of electrical energy as 52 is connected by a circuit 53 with the binding post 45, and located in the circuit 53 are suitable circuit closers or controlling devices. Thus a push button 54 is shown, and also a clock or time

movement 55, which has an automatic circuit closer. As shown in Fig. 6, this time movement 55 operates a suitable cam 56, which is provided with a notch 57. A lever 58, pivoted on the frame, has a pin 59 that rides upon the cam. This lever is connected to one line of the circuit 53, as indicated in Fig. 6, while a contact pin 60 disposed in the path of movement of the lever, is connected to the other line of the circuit 53. It will thus be evident that the cam is rotated by the time movement and when the notch 57 thereof passes beneath the pin 59, the lever 58 will drop, and engaging the pin 60, will close the circuit. It will be evident that this cam may be adjusted after the manner of an ordinary alarm clock. Moreover, the clock and push button or any suitable controlling means can be located at any point desired, and the source of electrical energy may be of any suitable character. For instance, in actual use, the ordinary bell battery of the house has been successfully employed.

While the mechanism may be utilized for operating a large number of different devices, it is shown in the present instance in connection with a heating furnace 61, having a door 62, and a smoke pipe 63 in which is located the usual controlling valve 64. The extension 9 is provided with a bracket 65 and a bell crank 66 pivoted as shown at 67 thereto has a cable or chain connection 68 with the weight 13 of the actuating member. The outward movement of the bell crank is limited by a suitable stop 69. Chains or cables 70 are connected to the different arms of the bell crank 66. One of these chains is adapted to be attached to a rod 71 fastened to the door 62. The damper is provided with exposed angularly disposed arms 72 and the other chain or cable 70 can be attached to either arm of said bell crank. In this arrangement, the mechanism is used substantially as follows. At night, the fires are suitably banked, and if desired, the door 62 is left open, and the damper 64 closed. The actuating member is then moved to its set position, whereupon it will automatically lock. The chains are connected as illustrated in Figs. 1 and 3. The clock 55 having been set to permit the circuit closer to be operated at a predetermined time, it will be evident that when said time arrives, the circuit will be closed, whereupon the electro-magnet 40 will be energized. Immediately therefore the slide 33 will be released, and the weight of the actuating member will cause the locking device to disengage the latch, because of the offset arrangement of the shoulder 32 from the pivot 31. The actuating member being therefore released, will drop and the chain 68 is of sufficient length to permit it to gain considerable headway, so that the bell crank 66 is given a

sudden movement. This causes the door 62 to close and the damper 64 to open. The result is that the fire will burn up and if the device is arranged to be operated in the early morning, the house will be heated by the time the occupants arise. The furnace is then fixed for the day, the chain 70 is detached from the arm 71, and the chain is engaged with the horizontal arm for the arm that is disposed in alinement with the damper. When therefore it is desired to close the damper 64, it is only necessary to operate the push button 54, whereupon the mechanism will again be actuated, and this time the damper will be closed, without the necessity of the occupant of the house going into the furnace room. This mechanism has proven to be entirely practicable. It can be used with any type of furnace, being made in different sizes and being so constructed that additional weight may be employed on the actuating member if desired. While electrical mechanism is employed, because of the holding mechanism for the actuating member, a strong current is not necessary, and as already stated, the ordinary bell battery of the house may be sufficient. In this connection, it is to be noted that the current is only utilized for an instant, for the circuit is automatically broken by the operation of the device. Moreover in this mechanism, the chains connected to the devices to be operated do not pass over pulleys, but constitute direct connections between the actuating crank and said devices. The structure, however, is furthermore not necessarily limited to furnaces, but may be utilized in a large number of different ways.

From the foregoing, it is thought that the construction, operation and many advantages of the herein described invention will be apparent to those skilled in the art, without further description, and it will be understood that various changes in the size, shape, proportion and minor details of construction, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is:—

1. In mechanism of the character described, the combination with an actuating member movable from and to a set position, of an automatically restored locking device for holding it in its set position, a dog movably mounted on the actuating member and engaging the locking device when the member is in set position, said dog being arranged to be engaged by and moved out of the path of the locking device as the member is restored to set position, and means for controlling the movement of the locking device.

2. In mechanism of the character described, the combination with an actuating weight

member movable from and returnable to a set position, of a swinging locking device for holding it in its set position, a dog pivoted on the actuating member and engaging the locking device, a spring pressing on the dog 70 to permit the same to yield when passing the locking device upon re-setting the member, and means detachably engaging the locking device to prevent its movement.

3. In mechanism of the character described, 75 the combination with an actuating member movable from and to a set position, of a locking device for holding it in its set position, said locking device being moved to an inoperative position by the actuating member on 80 its movement, means for automatically returning the locking device to an operative position after its operation by the actuating member, and means for holding the locking device against movement by the actuating 85 member to hold said member in its set position.

4. In mechanism of the character described, the combination with an actuating member movable from and returnable to a set position, of a swinging locking device that engages the member to hold it in its set position, said locking device being swung to an inoperative position by the member on its 90 movement, a spring connected to the locking device for automatically returning it to an operative position after its movement by the actuating member, a latch that detachably engages the locking device to hold the same against movement by the actuating member, 95 and means for operating the latch to release the holding device. 100

5. In mechanism of the character described, the combination with a reciprocatory actuating weight member movable from and returnable to a set position, of a dog pivoted 105 on the member, a locking device pivoted alongside the member and comprising a bell crank, one arm of which engages the dog, said locking device being swung by the 110 weight member on its movement, a spring connected to the locking device to return it after it has been swung by the actuating member, a latch detachably engaging the other arm of the locking device, and means 115 for controlling the movement of the latch.

6. In mechanism of the character described, the combination with an actuating member movable from and returnable to a set position, of a locking device for holding it in its 120 set position and actuated thereby upon its movement, a pivoted latch that detachably engages the locking device to hold it and thereby the member, and means engaging the latch for preventing its movement, the pivot 125 of said latch being located out of line with the points of engagement of the holding means and locking device with the latch, whereby the locking device automatically 130 moves the latch and releases itself from the

same when said latch is released from its holding means.

7. In a mechanism of the class described, the combination of a movable actuating member, of a locking device detachably engaging the same and operated thereby, a latch detachably engaging the locking device and having a tendency to gravitate to releasing position, means for holding the latch against movement, and an electrically-released and spring-operated element for operating the said holding means and arranged to impart an impulse to the latch to release the same from the locking device.

8. In mechanism of the character described, the combination with a movable actuating member, of a locking device detachably engaging the same and operated thereby, a swinging latch that detachably engages the locking device, said latch having a lever arm, a reciprocatory slide connected to the arm, an electro-magnet, an armature cooperating with the magnet and detachably engaging the slide, and means for energizing the magnet to move the armature and disengage it from the slide.

9. In mechanism of the character described, the combination with a weighted reciprocatory actuating member having a slide rod, of a dog pivoted on the slide rod, a locking device for the actuating member comprising a bell crank, one arm of which engages and is operated by the dog, a spring for holding the locking device in a predetermined position, a pivoted latch having a shoulder that detachably engages the other arm of the locking device, a reciprocatory slide engaged with the latch and having a shoulder, an electro-magnet, a swinging arm having a shoulder that detachably engages the shoulder of the slide, means for energizing the electro-magnet including a circuit, and means for breaking said circuit when the electro-magnet is operated.

10. In mechanism of the character described, the combination with an actuating member, of a locking device for holding the member against movement, a latch for the locking device movable into and out of engagement therewith, and means operated by the actuating member for moving the latch into engagement with the locking device.

11. In mechanism of the character described, the combination with an actuating member, of a swinging locking device for holding the member against movement, a pivoted latch for the locking device movable into and out of engagement therewith, and a swinging arm operated by the actuating member and connected to the latch for moving the latch into engagement with the lock-

ing device when the actuating member is moved to a predetermined position.

12. In mechanism of the character described, the combination with an actuating member comprising a weighted slide rod movable from and returnable to a set position, of a swinging locking device for holding it in its set position, said device being moved by the actuating member on its movement from the said set position, a swinging latch movable into and out of engagement with the locking device for preventing its movement, electrically operated means controlling the movement of the latch, a shoulder carried by the slide rod, and a swinging arm operated by the shoulder upon the movement of the actuating device to its set position, said arm being connected to the latch and moving the same into engagement with the locking device.

13. In mechanism of the character set forth, the combination with an actuating member movable from and returnable to a set position, of a swinging locking device engaging and operated by the actuating member on the movement of the latter from its set position, a latch detachably engaging the locking device for preventing its movement by the actuating member, and means for moving the latch to disengage it from the locking device and permit the movement of the latter by the actuating member.

14. In mechanism of the character described, the combination with a reciprocatory weighted actuating member, of a bell crank, a cable connection between the bell crank and member, a device to be operated having angularly disposed arms, and means for connecting the bell crank to either of said arms.

15. In a mechanism of the class described, the combination of an actuating member, a locking device for releasably holding the same in set position and constructed to be automatically restored upon the re-setting of the member, electrical operating means including a circuit, a member controlled by the electrical means and arranged to release the locking device, and a spring included in the said circuit and normally engaging the element and adapted to be disengaged therefrom after the locking device is released for opening the circuit.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

FRANK J. WOLF. [L.S.]

Witnesses:

GEORGE M. SCHINZEL,
PAULINE E. WITTE.