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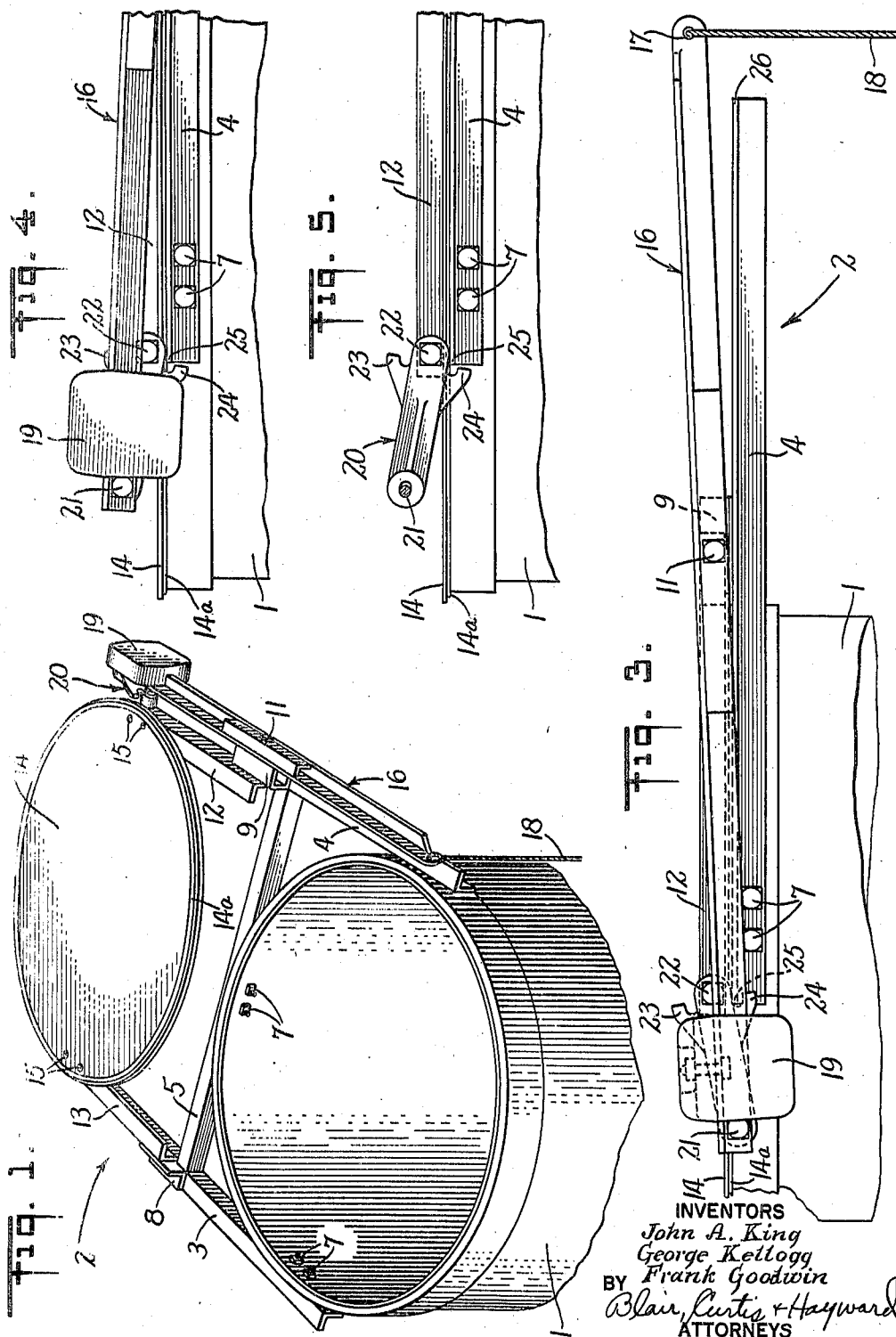
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COVER MECHANISM

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COVER MECHANISM

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8 Claims. (Cl. 98—59)

This invention relates to mechanism for moving a body to either of two positions and automatically locking it in such positions, and more particularly to mechanism for covering and uncovering the top of a smokestack.

It is an object of the invention to provide improved mechanism of this type and to provide an improved smokestack cover of simple construction and one which is simple to operate.

Other objects will be in part obvious and in part pointed out hereinafter.

In the accompanying drawings, in which are shown one or more of the various possible embodiments of this invention,

Figure 1 is a top perspective view of a smokestack cover and operating mechanism embodying the invention shown attached to a smoke stack and with the cover in uncovering position;

Figure 2 is a top elevation of the mechanism shown in Figure 1 but showing the cover in its covering position;

Figure 3 is a side elevation of Figure 2;

Figure 4 is a detail of a locking mechanism embodying the invention; and

Figure 5 is a section taken on line 5—5 of Figure 2.

Referring to Figures 1 and 2, at the top of a smokestack 1 is secured a supporting structure generally indicated at 2 and comprising parallel angle irons 3 and 4 secured together by cross angle irons 5 and 6. The supporting structure is secured to the smokestack near its top at three places as by bolts, indicated at 7. Secured to the top of the angle irons 3 and 4 and oppositely disposed are bearing supports 8 and 9 which pivotally support, by means of stud bolts 10 and 11, two levers 12 and 13 in the form of angle irons. A smokestack cover 14 is conveniently secured to these two levers as indicated at 15 and is provided with a drip ring 14a that comes down over the stack top.

The construction thus far described provides for supporting the cover 14 in such a manner that it may be moved from its covering position, as shown in Figure 2, to its uncovering horizontal position, as shown in Figure 3. Further, the cover in moving from one position to the other passes through a dead-center position so that, depending on which side of the dead-center position the cover lies, gravity acts to move it to the corresponding position. This tendency of the cover to assume either of its two positions after passing through the dead-center position will be referred to as an overbalancing action or characteristic, and whereas in the present em-

bodiment this overbalancing effect utilizes the force of gravity it may be accomplished in other ways, as by known spring-operated overcentering mechanisms.

5 The mechanism for operating the cover from one position through dead-center to cause the cover to take its other position comprises, in the present embodiment, an operating lever generally indicated at 16 and pivotally supported intermediate its ends by stud bolt 11 and bearing support 9. This pivot support permits free relative movement between the lever 16 and the supporting lever 12. The operating lever 16 is provided at the righthand end, as shown in Figure 3, with a hole 17 to which an operating line or chain 18 is attached, and which line extends to the base of the stack where the line may be manually pulled to swing the lever past its dead-center position. The other end of the operating lever 16 is counterweighted by a weight 19 secured to the lever so that the lever is overbalanced in the same sense that the cover 14 is overbalanced. Thus when the lever 16 is moved from a position corresponding to the covering position of the cover through dead-center it is urged by the force of gravity to assume a position corresponding with the uncovering position of the cover, and vice versa. And here, too, although in the present embodiment the force of gravity is used to accomplish this overbalancing effect, it may be accomplished by known spring-actuated overcentering mechanisms.

The operating lever 16 is connected to operate the cover 14 from its one position to its other position by means of a link generally indicated at 20, and shown in detail in Figures 4 and 5. The link 20 is pivotally connected with the weighted end of the lever 16 by means of a stud bolt 21 and to the supporting lever 12 by means of a stud bolt 22. In the present embodiment, the pivot connection between the link and the operating lever 16 is made loose, and the length of the link 20 is selected so that the operating lever 16 may pivot past and to either side of the plane of the supporting lever 12 and cover 14. This action is shown in Figures 3 and 4 and provides for the operation of locking means carried by the link to lock the cover against inadvertent movement from either of its two positions. The locking means as disclosed in the present embodiment are ears 23 and 24 located on either side of the link 20. As shown in Figure 3, the ear 24 latches with the latch forming end 25 of angle iron 4, and is urged into such locking position by the overbalancing effect of the oper-

ating lever 16 pivoting the link 20 about its pivot 22 after the cover 14 has reached its covering position.

The cover may be unlocked and moved to its uncovering position simply by pulling the line 18, which action first pivots the lever 16 to pivot the link 20 about its pivot 22 to the position shown in Figure 4 while the cover 14 remains stationary. This unlocks the ear 24 from the framework 2. Further pivoting of the lever 16 causes the link 20 to pick up its loose connection at the pivot 21 and thereafter the cover 14 is raised by the lever 16 and link 20. If the line 18 is pulled rapidly enough, the momentum of the parts carries the cover and lever 16 past and to the other side of their dead-center positions so that now both the cover 14 and the lever 16 are overbalanced and are urged toward their uncovering positions as shown in Figure 1.

After the cover and operating lever 16 pass through dead-center the movement of lever 16 to its uncovering position is restrained by means of the line 18 and the overbalanced action of the cover causes it to pivot with respect to the operating lever to pass to the opposite side of the plane of the lever and to pivot the link 20 about its pivot 21 to position the ear 23 of the lock in unlocking position. Further relative movement of the cover with respect to the operating lever causes the link 20 to pick up the cover again so that as the lever 16 lowers to its uncovering position under the restraining influence of the line 18, the unlocking position of the ear 23 is maintained, and it passes a latch 26 on the angle iron 4 as the cover 14 comes to rest on the top of the angle irons 3 and 4. But because the lever 16 is overbalanced it continues to pivot after the cover has stopped and pivots the link 20 about its pivot 22, thereby locking the ear 23 over the latch 26 to lock the cover in its uncovering position.

The foregoing locking and unlocking operation is obtained by providing the cover 14 and the lever 16 with overbalancing tendencies in the same sense or direction and by providing for a driving connection between the lever and cover, which connection has sufficient play to permit relative movement between the operating lever and the cover and utilizes such relative movement to operate the locking mechanism.

Further, the pivoting action of the cover permits the use of the drip ring 14a without interfering with the covering and uncovering operations.

As various embodiments might be made of this invention, and as various changes might be made in the construction herein described, all without departing from the scope of the invention, it is to be understood that all matter herein set forth or shown in the accompanying drawings is to be interpreted as illustrative and not in a limiting sense.

We claim:

1. A smokestack cover comprising, in combination, a support adapted to be secured to a smokestack in the proximity of the top thereof, a cover movably mounted on said support and movable between a covering and an uncovering position and overbalanced with respect to a dead-center position intermediate said covering and uncovering positions to assume either of said covering or uncovering positions, pivoted lever means mounted on said support for moving said cover to its positions, an operating lever pivotally mounted on said support and movable to two

positions corresponding to the covering and uncovering positions of said cover and overbalanced with respect to said dead-center position to assume either of said two positions, operating means for pivoting said operating lever from either of its two positions past dead-center to shift the operating lever to the other of its two positions, a driving connection between said operating lever and said pivoted lever means whereby said operating lever is adapted to move said pivoted lever means from one of its positions through dead-center, said driving connection being loose to permit relative movement between the operating lever and pivoted lever means, locking means operatively connected to and swingable with said operating lever for locking unlocking said cover in either of its two positions and operated by said operating lever as it moves relative to said pivoted lever when said pivoted lever is in a state of rest in either of its two positions.

2. A smokestack cover comprising, in combination, a support adapted to be secured to a smokestack in the proximity of the top thereof, a cover movably mounted on said support and movable between a covering and an uncovering position and overbalanced with respect to a dead-center position intermediate said covering and uncovering positions to assume either of said covering or uncovering positions, an operating lever pivotally mounted on said support and movable to two positions corresponding to the covering and uncovering positions of said cover and overbalanced with respect to said dead-center position to assume either of said two positions, operating means for pivoting said lever from either of its two positions past dead-center to shift the lever to the other of its two positions, a driving connection between said lever and said cover whereby said lever is adapted to move said cover from one of its positions through dead-center, said driving connection being loose to permit relative movement between the operating lever and cover, locking means operatively connected to and swingable with said operating lever, said locking means being operated to lock said cover in either of its two positions by said operating lever as it moves relative to said cover under the influence of its overbalancing action when said cover is in a state of rest and in either its covering or uncovering positions, and said locking means being operated to unlock said cover by said operating lever as it moves relative to said cover under the influence of said operating means when said cover is in said state of rest in either its covering or uncovering positions.

3. A smokestack cover construction comprising a cover movably mounted with respect to said smokestack and urged past a dead-center position to move either to a covering or uncovering position, overcentering means for moving said cover from the one to the other of its respective positions and comprising a lever pivoted intermediate its ends and weighted at one end whereby when moved past a dead-center position said lever is urged to either of two positions corresponding to those of said cover, a single cord attached to the other end of said lever for moving it from the one position through dead-center position whereby the lever is shifted to its other position, a link loosely connecting the weighted end of said lever with said cover whereby movement of said lever moves said cover, and means operated by the pivoting action of said link with respect to said lever and cover to lock and unlock said cover in either of its two positions.

4. A smokestack cover construction comprising, in combination, a support adapted to be secured to the top of a smokestack, a cover pivotally mounted on said support to pivot about an axis perpendicular to the axis of the smokestack from uncovering to covering position, and vice versa, a lever pivotable about an axis coincident with the axis of said cover, operating means to pivot said lever, a link connecting one end of said lever with said cover, locking means carried by said link to lock with said support when said cover is in either of its two positions, said locking means being operated by the action of gravity on said lever to lock, and by the action of said operating means on said lever to unlock; and a drip ring on said cover adapted to encircle the top of said smokestack when said cover is in covering position.

5. A smokestack cover comprising, in combination, a support adapted to be secured to a smokestack near the top thereof, a cover mounted on said support to pivot about a horizontal axis and overbalanced to move past dead-center to assume either a horizontal position covering the smokestack or an uncovering horizontal position to the side of said stack, a lever pivoted intermediate its ends about an axis coincident with the axis of said cover and overbalanced to move past dead-center to assume positions corresponding to the covering and uncovering positions of said cover, operating means for pivoting said lever from either of its two positions past dead-center and against the overbalancing pull of said lever to shift it to the other of its two positions, a link loosely connecting said lever with said cover whereby movement of said lever from either of its two positions moves the cover correspondingly, locking means carried by said link to lock with said support when said cover is in either of its covering or uncovering positions, and operated to locking position by the overbalancing action of said lever, and to unlocking position by the overbalancing action of said cover.

6. Linkage mechanism for moving a member between one of two positions and for automatically locking it in said positions, comprising, a first member movable between a first position and a second position, overbalancing means for positively urging said member to either one of the said positions after passing an intermediate dead-center position, an operating member pivotally mounted to move between positions corresponding to said first and second positions and urged toward either one of said positions after passing through dead-center, means forming a loose driving connection between said operating member and said first member whereby said first member may be moved against said overbalancing means from its one position past dead-center and whereby said operating member and said first member are permitted free limited relative movement, and locking means operatively connected to and swingable with said operating member for locking and unlocking said first member in either its first or second positions and operated by said operating member as it moves relative to said first member when said first member is in a state of rest in either its first or second positions.

7. A smokestack cover comprising, in combination,

a support adapted to be secured to a smokestack in the proximity of the top thereof, a cover mounted on said support and movable between a covering position and an uncovering position, an operating lever pivotally mounted on said support and movable between two positions corresponding to the covering and uncovering positions of said cover and overbalanced with respect to a dead center position between said two positions to assume either of said two positions, operating means for operating said lever from either of its two positions past dead center to shift the lever to the other of its two positions, a driving connection between said lever and said cover whereby said lever is adapted to move said cover between its covering and uncovering positions, said driving connection being loose to permit relative movement between said operating lever and cover, locking or unlocking means for locking said cover in either of its positions, said locking means being operatively connected to and swingable with said operating lever and being operated to locking positions by said operating lever as it moves relative to said cover while said cover is at a state of rest in one of its two positions and while said operating lever is moving to its corresponding position, and operated to unlocking positions by movement of said operating lever relative to said cover while said cover is in a state of rest and in one of its two positions and while said operating lever is being moved out of its corresponding position.

8. A smokestack cover comprising, in combination, a support adapted to be secured to a smokestack in the proximity of the top thereof, a cover movably mounted on said support and movable between a covering and an uncovering position and pivoted lever means mounted on said support and mechanically connected to said cover for moving said cover to its covering and uncovering positions and said pivoted lever means being overbalanced with respect to a dead-center position, intermediate positions corresponding to said covering and uncovering positions to assume either of said positions, an operating lever pivotally mounted on said support and movable to two positions corresponding to the covering and uncovering positions of said cover and overbalanced with respect to said dead-center position to assume either of said two positions, operating means for pivoting said lever from either of its two positions past dead-center to shift the lever to the other of its two positions, a driving connection between said operating lever and said pivoted lever means whereby said operating lever is adapted to move said cover from one of its positions through dead-center, said driving connection being loose to permit relative movement between the operating lever and pivoted lever means, locking means operatively connected to and swingable with said operating lever for locking said pivoted lever means in either of its two positions and operated by said operating lever as it moves relative to said pivoted lever means when said pivoted lever means is in a state of rest in either of its two positions.

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