

No. 645,575.

Patented Mar. 20, 1900.

R. C. STEWART, JR. & W. A. STEWART.

JAIL.

(Application filed Dec. 28, 1899.)

(No Model.)

2 Sheets—Sheet 1.

FIG. 3.

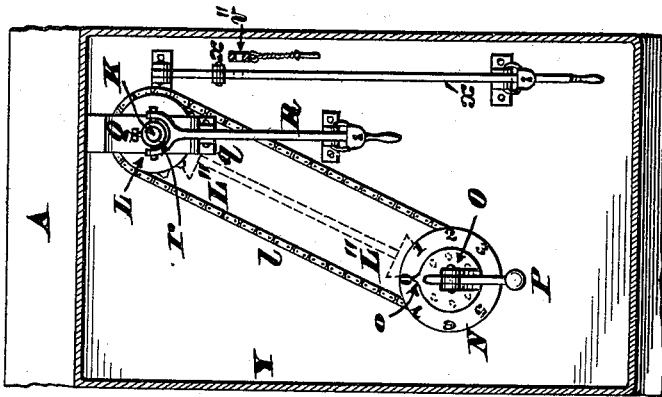


FIG. 4.

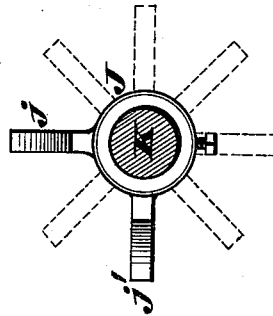


FIG. 1.

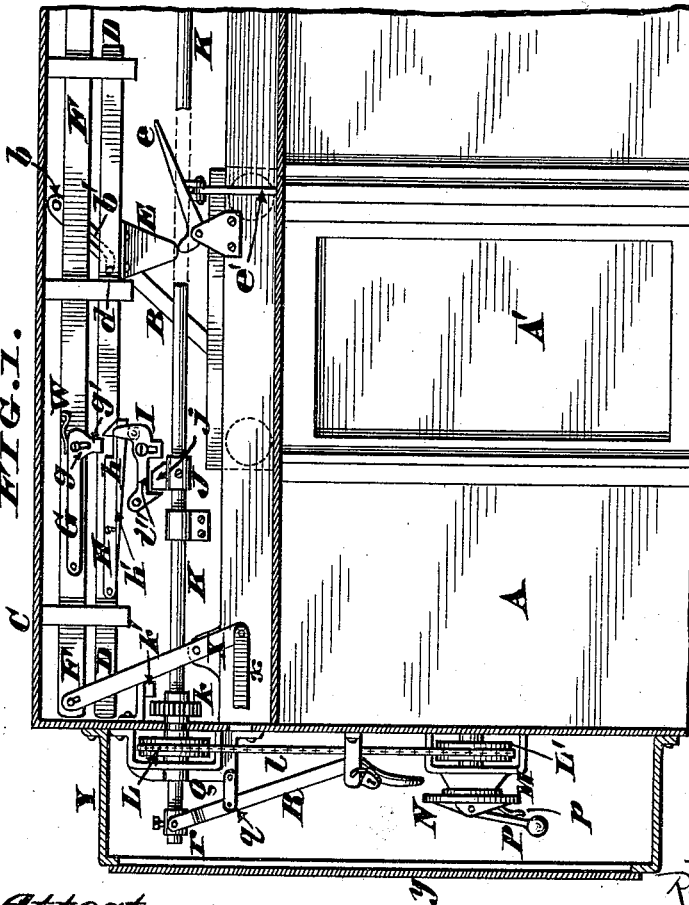
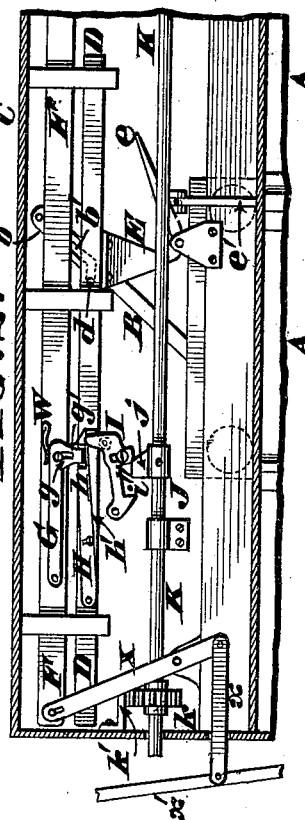


FIG. 2.



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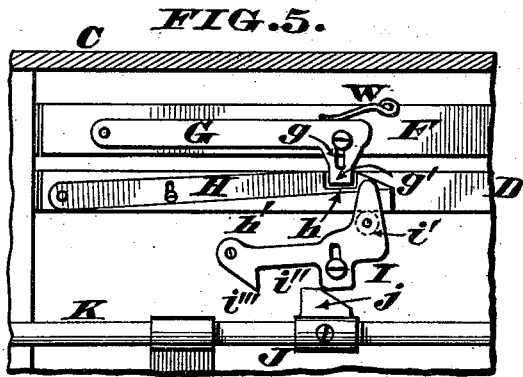
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**JAIL.**

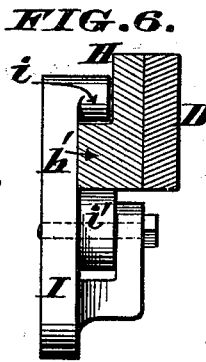
(Application filed Dec. 28, 1899.)

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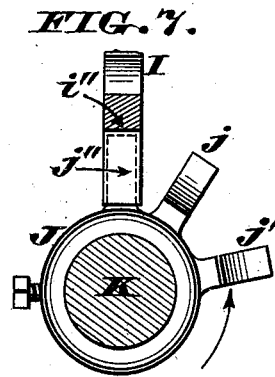
**2 Sheets—Sheet 2.**



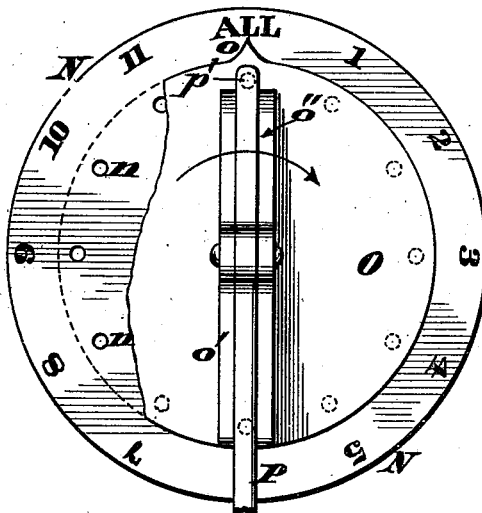
**FIG. 8.**



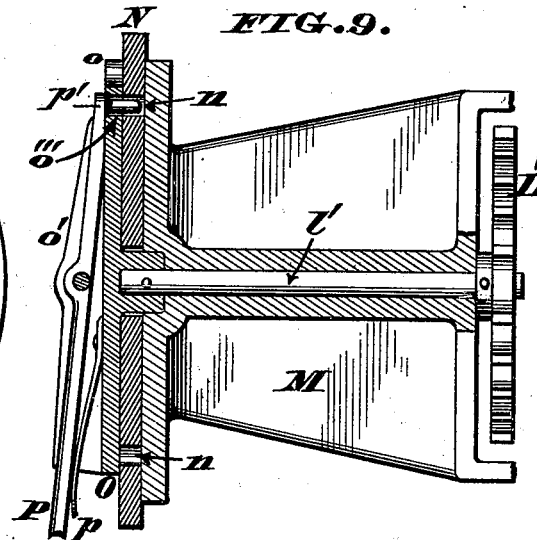
**FIG. 6.**



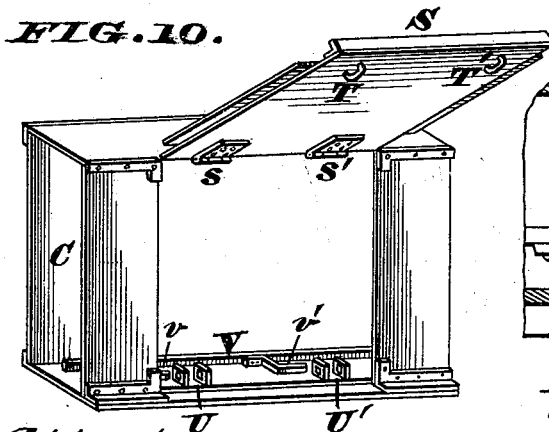
**FIG. 7.**



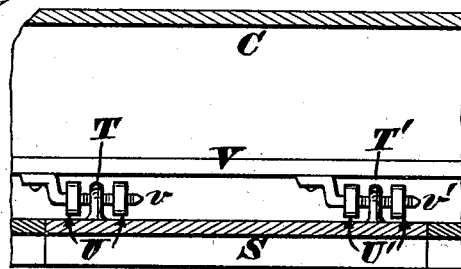
**FIG. 8.**



**FIG. 9.**



**FIG. 10.**



**FIG. 11.**

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# UNITED STATES PATENT OFFICE.

RICHARD C. STEWART, JR., AND WALLACE A. STEWART, OF COVINGTON,  
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## JAIL.

SPECIFICATION forming part of Letters Patent No. 645,575, dated March 20, 1900.

Application filed December 28, 1899. Serial No. 741,846. (No model.)

*To all whom it may concern:*

Be it known that we, RICHARD C. STEWART, Jr., and WALLACE A. STEWART, citizens of the United States, residing at Covington, in the county of Kenton and State of Kentucky, have invented certain new and useful Improvements in Jails; and we do hereby declare the following to be a full, clear, and exact description of the invention, reference being had to the accompanying drawings, which form a part of this specification.

In Letters Patent No. 584,610, granted to us June 15, 1897, we have claimed certain mechanism that first unlocks and then opens either one or a number of cell-doors leading into a common corridor or passage-way of a jail or prison; but this mechanism involves the use of a separate reciprocating bar for each cell, and as these bars must be arranged one above another in an overhead casing it is evident the latter must be quite high to contain all the bars necessary for operating forty or fifty doors. Still, such a large casing can be provided for in building new roomy prisons; but to adapt said mechanism to old contracted jails where space is very limited the height of the casing must be reduced accordingly. Therefore we have devised the present improvement, which is more simple than our old mechanism, occupies less space, and is more readily operated, as hereinafter more fully described.

In the accompanying drawings, Figure 1 is a sectionized elevation showing our improved door-operating mechanism so set as to close and lock a cell-door. Fig. 2 shows enough of said mechanism to indicate how a certain shaft is shifted longitudinally to raise a lifter and engage a coupler with a catch. Fig. 3 is a vertical section showing a sprocket-gearing that operates the mechanism. Fig. 4 is an enlarged transverse section of the shaft, taken in the plane of one of a number of winged collars attached to it. Fig. 5 is a greatly-enlarged elevation of the lifter, coupler, and catch in the same engaged position shown in Fig. 2. Fig. 6 is an enlarged end elevation of said lifter and coupler. Fig. 7 is another transverse section of the shaft and one of its winged collars, the latter being now disen-

gaged from the lifter. Fig. 8 is an enlarged front elevation of a dial attached to the driving-sprocket. Fig. 9 is a vertical section through said dial. Fig. 10 is a perspective view showing a hinged flap of the casing swung up. Fig. 11 is an enlarged horizontal section showing said flap closed and locked.

Referring to Figs. 1, 2, and 3, A represents one of any suitable number of cells arranged along one side of a prison-corridor, and A' is a sliding door guarding the entrance to said cell, said door being hung on rollers and adapted to be opened, closed, and locked by means substantially the same as those shown in our Patent No. 624,565, granted to us May 9, 1899, the effective member of said means being a lever B, pivoted within a casing C at *b* and furnished with an angular slot *b'*, traversed by a pin *d*, projecting rearwardly from a secondary reciprocating bar D. Again, this bar D has a trip E, that operates a lever *e*, from which is hung a lock-bar *e'*, the operation of said levers, pin, trip, and lock-bar being the same as the corresponding devices described in our patent just referred to. Of these secondary reciprocating bars one must be provided for each cell; but each bar is only long enough to effect the desired movements and has means for ready coupling to the main reciprocating bar F, the latter running the entire length of the casing C, so as to operate all the doors on one side of the corridor or passage-way. Furthermore, this main bar F is moved back and forth by a lever X, coupled by a rod *x* to a hand-lever *x'*, housed within a box Y, closed by a lid *y*, the key of which is kept by the jailer or other officer.

Pivoted to the bar F is a catch G, slotted near its free end, as at *g*, and having a stump *g'*, adapted to be engaged by a notch *h* in the upper edge of a coupler H, the latter being pivoted to the secondary reciprocating bar D and having a flange *h'* along its lower edge, which flange is confined between a lug *i* and roller *i'* of a lifter I. (See Fig. 6.)

Lifter I is suitably pivoted within the casing and is notched on its lower side, as at *i''*, the object of this notch being to permit the free turning of a collar J, provided with one or two radial wings *j j'*. (Shown in Figs. 4 100

and 7.) One collar must be provided for each cell-door, and they are secured to a common shaft K, which is preferably tubular and extends the entire length of the casing C, a stop-wheel *k* being secured to this shaft and capable of being arrested by a rigid detent *k'*, fastened to the end of the casing. Again, this shaft carries a sprocket-wheel L, around which is passed a chain *l*, communicating with a driving-sprocket L' at one end of another shaft l'. (Shown only in Fig. 9.) Shaft l' is journaled in a bracket M, to the end of which latter is secured a numbered dial N, having a perforation or socket *n* for each of said numbers. Secured to the end of shaft l' and rotating against the dial N is a disk or wheel O, having an index *o* and a pair of parallel flanges *o'* *o''*, between which are fitted a handle P and spring *p*, the object of the spring being to maintain said handle in such a position as to cause its pin *p'* to pass through a perforation *o'''* of said disk and then engage with one of the sockets *n* of the dial, thereby locking the shaft l' and sprocket-wheel L' in any desired place.

The upper sprocket-wheel L is housed within a bracket Q, to which is connected a link *q*, attached to a lever R, coupled to a collar *r* near the end of shaft K, this collar being so arranged as to permit free turning of said shaft, but compelling it to shift back and forth in unison with the motion of said lever.

S in Figs. 10 and 11 is a flap secured to the casing C by concealed hinges *s* *s'* and having a pair of staples T T', capable when said flap is closed of entering between two pairs of perforated lugs U U', projecting up from the bottom of said casing. V is a rod adapted to be shifted longitudinally within the casing and having bolts *v* *v'*, that engage with said staples and lugs in the manner shown in Fig. 11. One of these flaps is to be arranged over each cell-door, so as to permit the ready inspection and oiling of the operative parts of the mechanism, the end of the locking-bar V *v* *v'* being perforated, as shown at *v''*, so as to be readily coupled to the lever *x'* when said bar is to be shifted to an engaged or disengaged position. This perforation *v''* is shown in Fig. 3.

W is a spring that retains the catch G in its normal or depressed position.

In constructing and fitting together the various component members of our improved mechanism the following precautions must be observed: First, the dial N must be so graduated as to have one number for each door to be operated, and in some cases it may have one additional degree marked on it—thus “0,” as in Fig. 3—to indicate that none of the doors are under the control of the mechanism, thereby giving a starting-point to turn the disk O from, or the dial may be marked “All,” as in Fig. 8, to show that every door can be operated simultaneously by the mechanism; second, the stop-wheel *k*

must have one groove in it for each division of the dial, and the devices for communicating motion from said dial attachment to the shaft K must be of such a positive character as to preclude the possibility of slipping, as the wheel *k* and disk O must turn in perfect unison with each other to produce the desired result; third, when the dial is marked “All” each collar J must have two radial wings, as shown at *j* *j'* in Figs. 4 and 7, but if it is not desirable to open all the doors simultaneously then one wing on a collar will be sufficient; fourth, when the various collars J are mounted upon the shaft K care must be taken to have their wings stand at the proper inclination, so as to agree with the numbered degrees on the face of the dial. Thus in Fig. 3 the dial has eight numbered divisions, and for this reason the collars should be so secured as to cause their respective wings to occupy the positions indicated by the dotted lines in Fig. 4; but in Fig. 8 the dial has twelve divisions, and the wings of the twelve collars should be set at angles of thirty degrees. Assuming now that these adjustments have been properly carried out and that the index *o* in Fig. 3 indicates “0” on the dial N the shaft K will be in such a position as to render the wings of all the collars inoperative; but when it is desired to open any door the lower end of handle P is forced back to disengage its pin *p'* from that socket *n* in line with said zero-mark, and then the disk O is rotated until said index points to a number corresponding with that of the cell-door—say “5,” for example. Handle P is then liberated, thus leaving the spring *p* at liberty to rock said handle on its pivot and cause the pin *p'* to enter a socket in line with number “5,” and thereby lock the shaft l' and sprocket-wheel L' in this new position. In thus rotating shaft l' and wheel L' the other shaft K and wheels *k* L have been turned exactly to the same degree and the wing of the fifth collar has been brought to the position indicated by the dotted lines *j''* in Fig. 7, or, in other words, the wing is now vertical and occupies the notch *i''* of the lifter I. The next step consists in forcing the shaft K back a limited distance by means of the lever R, which shifting produces the following results, to wit: First, the proper groove of the stop-wheel *k* is traversed by the detent *k'*, thereby locking the shaft K and preventing its accidental turning in either direction; second, the collar-wing *j* now impinges against the lifter I, thereby raising its free end and causing the notch *h* of the coupler H to admit the stump *g'* of the catch G. (See Figs. 2 and 5.) It is evident the two bars D and F are now securely coupled together, and any forcing back of the upper or main bar F will cause the lower or secondary bar D to recede in unison therewith, and in so doing the trip E operates in the same manner as the trip described in our patent of May 9, 1899—that is

to say, it so shifts the lock-bar  $e'$  as to unlock the door  $A'$  and permit it being immediately opened by the lever  $B$ . This opening is effected by the pin  $d$  traversing the slot  $b'$  of lever  $B$  in the same way as the pin and slotted lever in our patent just alluded to.

By simply reversing the above-described operations the door is closed and locked and all parts of the mechanism restored to their normal positions.

As the shaft  $K$  is drawn forward to the position in Fig. 1 the leading edge of the wing  $j$  strikes against the spur  $i'''$  of the lifter  $I$ , thereby rocking it on its pivot and causing the lug  $i$  to draw the coupler  $H$  down with a positive motion by slipping along the tapering flange  $h$ . Consequently there is no danger of the coupler being out of its proper place when the shaft  $K$  is again forced back.

In case of a fire or other emergency that necessitates the prompt liberation of the prisoners without taking time to open the cell-doors successively the pointer can be set to "All" on the dial, and then a single retraction of the bar  $F$  will unlock every door under the control of our mechanism. Again, any number or all the cell-doors may be simultaneously unlocked and shifted aside in the morning preparatory to letting the prisoners out for the day, and the doors may remain in this open position until the prisoners are again confined for the night. During this interim an unruly prisoner can be shut in his cell and the door closed behind him and locked by hand in the manner fully explained in our Patent No. 624,565. At the moment of thus closing the door independently of the mechanism contained within the guard-box  $Y$  the secondary reciprocating bar  $D$  for this special cell is, through the instrumentality of the lever  $B$ , shifted toward said box, and hence any rigid connection of said bar with the main reciprocating bar  $F$  would render the entire mechanism inoperative; but the slot  $g$  and spring  $W$  afford a yielding coupling between these two reciprocating members and permit the secondary bar  $D$  to be shifted as far as may be necessary without injuring any part of the mechanism. During some part of this closing operation the stump  $g'$  may bear on the coupler  $H$  near its pivoted end; but as the bar  $D$  is shifted along said stump will ride upon said coupler until the notch  $h$  is reached, at which time the spring  $W$  will compel said stump to automatically engage with said notch, and thus temporarily unite the bars  $D$  and  $F$ . Again, by tapering the flange  $h'$ , as more clearly shown in Fig. 5, it will be constantly clamped between the lug  $i$  and roller  $i'$  within the limited swing the lifter  $I$   $i'$  permits the coupler  $H$  to take.

The dotted lines  $L''$  in Fig. 3 indicate that the chain and sprockets may be dispensed with and the motion be imparted from shaft  $L'$  to shaft  $K$  by another shaft with bevel-

sprockets, chains, bevel-gears, and connecting-shaft may be dispensed with and a graduated disk may take the place of the sprocket-wheel  $L$  at the end of shaft  $K$ , a groove being cut across the face of the disk directly in line with each graduation. A spring-pressed or gravitation pawl would be arranged to engage with either one of said numbered grooves when the disk is turned around as far as desired, the turning in this case being effected by a simple crank attached to the end of said shaft  $K$ . Furthermore, the pawl should be of such a size as to engage with the groove both when the shaft is advanced and retracted, as this construction enables the wheel  $k$  and detent  $k'$  to be dispensed with, or, in other words, the graduated wheel will perform the twofold duties of a dial and stop-wheel. Finally, the shaft  $K$  and its attachments can be employed with any approved means for opening, closing, and operating the locking appliances of a sliding or hinged door; but as a matter of convenience we have shown said attachments in connection with our patented mechanism that has proved itself to be reliable under all conditions of service.

We claim as our invention—

1. In a jail-door-operating mechanism, the main reciprocating bar  $F$ , provided with catch  $G$   $g$   $g'$ , the secondary reciprocating bar  $D$ , provided with the coupler  $H$   $h$   $h'$ , and appliances for opening, closing, locking and unlocking a door; the lifter  $I$ , for causing said coupler to engage with said catch, and a device for bringing said lifter into action, substantially as described.

2. In a jail-door-operating mechanism including main and secondary reciprocating bars adapted to be coupled together, in the manner described; a rotary and longitudinally-shiftable shaft armed with a winged collar, that effects said coupling in the way explained.

3. In a jail-door-operating mechanism including main and secondary reciprocating bars adapted to be connected together by catches, couplers, lifters, and winged collars on a rotary and longitudinally-shiftable shaft, a dial attachment that indicates the angular position of each collar.

4. In a jail-door-operating mechanism including main and secondary reciprocating bars, catch, coupler, winged collar, and shaft, arranged as herein described, a stop-wheel on said shaft and a fixed detent that engages with said wheel.

5. In a jail-door-operating mechanism including a rotary and longitudinally-shiftable shaft armed with a winged collar; a sprocket-wheel on said shaft, a chain connecting said sprocket with another sprocket, and a dial attachment applied to the driving-sprocket.

6. In a jail-door-operating mechanism a shaft armed with a winged collar and sprocket-wheel  $L$ , a chain  $l$  connecting said wheel with another sprocket  $L'$ , attached to a shaft  $L''$ ;

a disk or wheel O fastened to said shaft, and provided with an index *o*, perforation *o'''*, spring-actuated handle P *p*, and a fixed dial N, having sockets or holes *n*, in line with its  
5 numbers.

7. The casing C, provided with perforated lugs U U', and a longitudinally-shiftable rod V, having bolts *v v'*, and the flap S, hinged to said casing, and provided with staples T,

T', which, when said flap is closed, fit between 10 said lugs and admit said bolts *v v'*.

In testimony whereof we affix our signatures in presence of two witnesses.

RICHARD C. STEWART, JR.  
WALLACE A. STEWART.

Witnesses:

JAMES H. LAYMAN,  
ERNEST G. SIMON.