June 5, 1934. W. H. KYTE 1,962,094

DOOR CONTROLLING MEANS FOR SCHOOL WARDROBES

Filed March 12, 1932 3 Sheets-Sheet 1

Fig. 1.

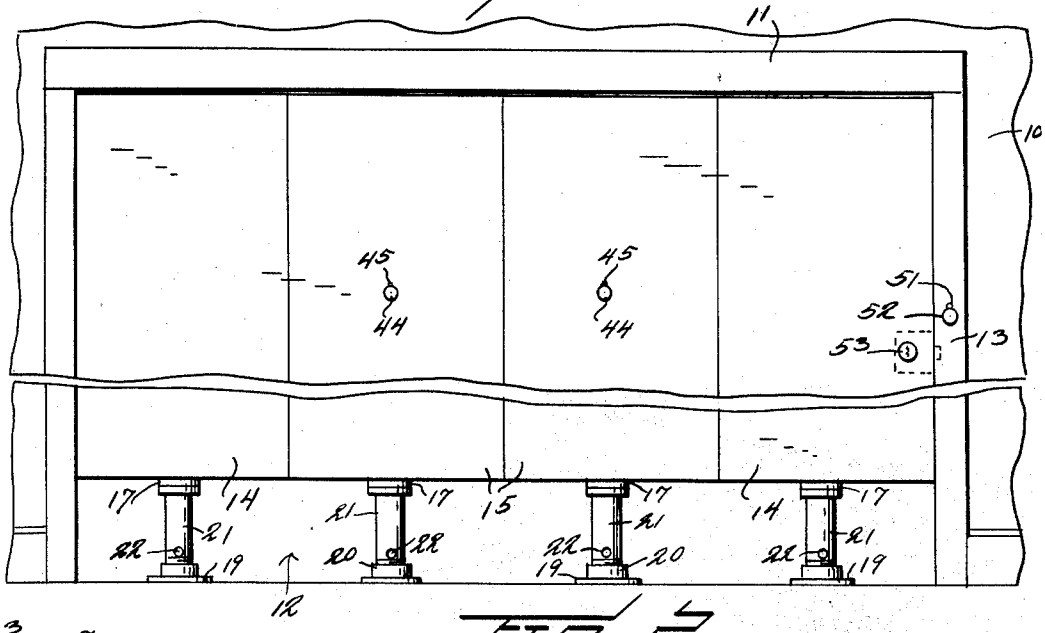
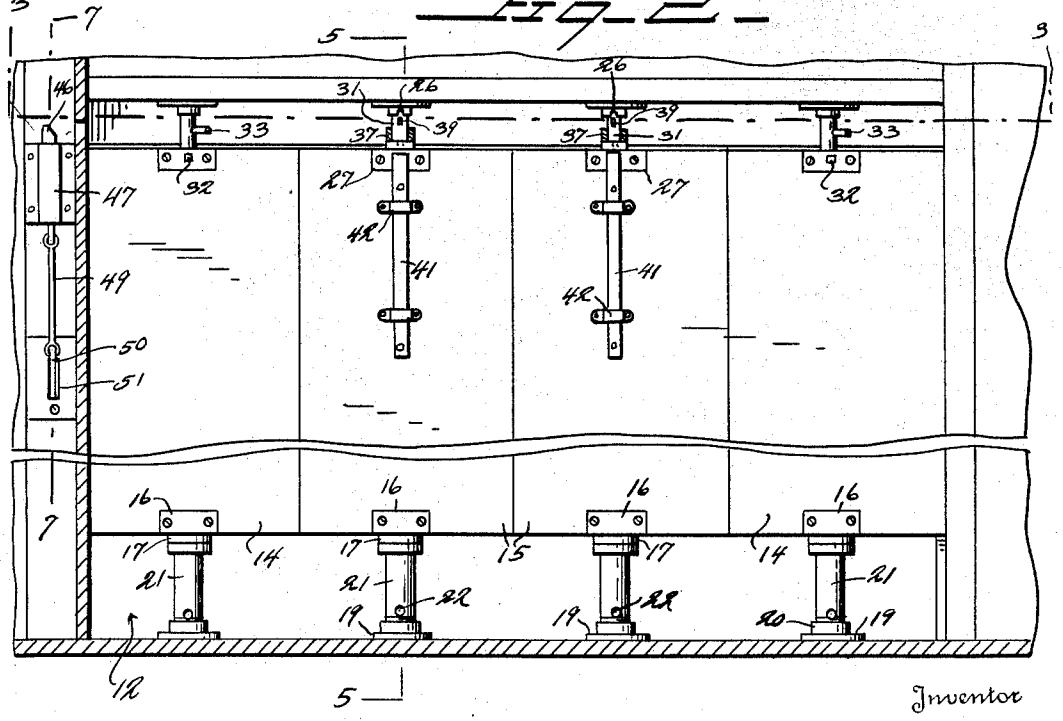


Fig. 2.



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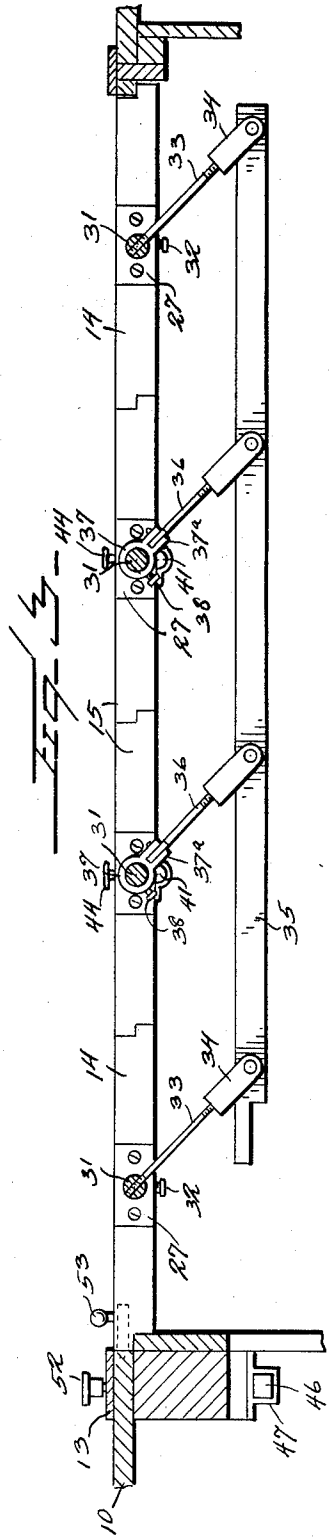
By Watson E. Coleman

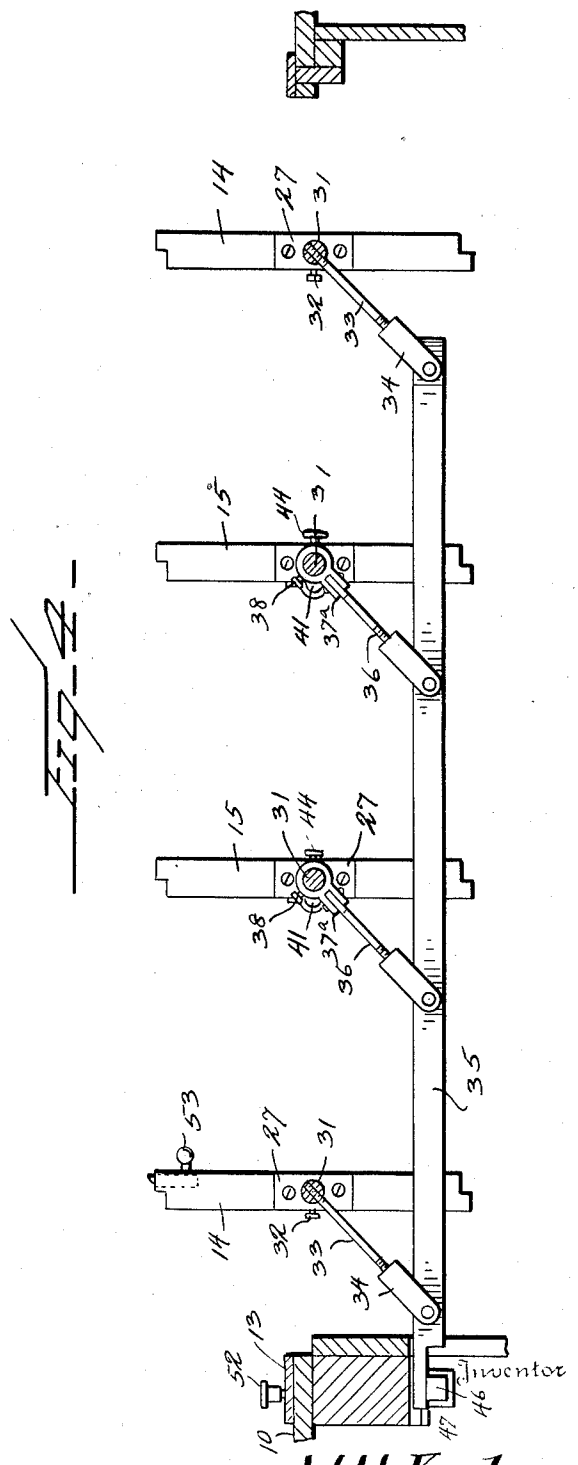
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DOOR CONTROLLING MEANS FOR SCHOOL WARDROBES

Filed March 12, 1932 3 Sheets-Sheet 2





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DOOR CONTROLLING MEANS FOR SCHOOL WARDROBES

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Fig. 5

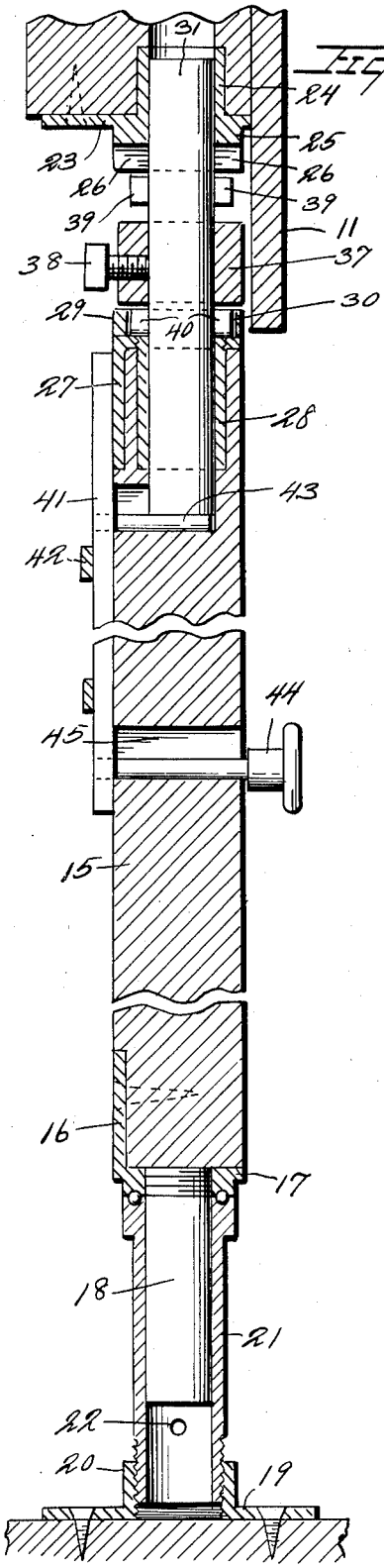


Fig. 6

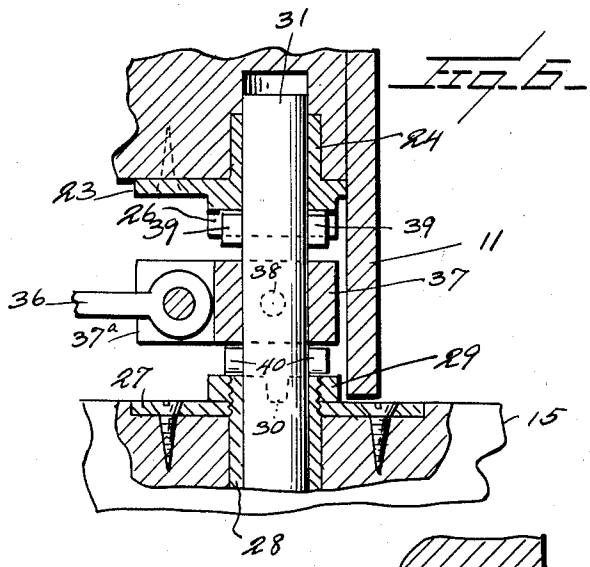


Fig. 8

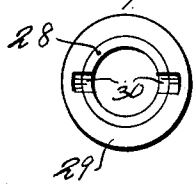
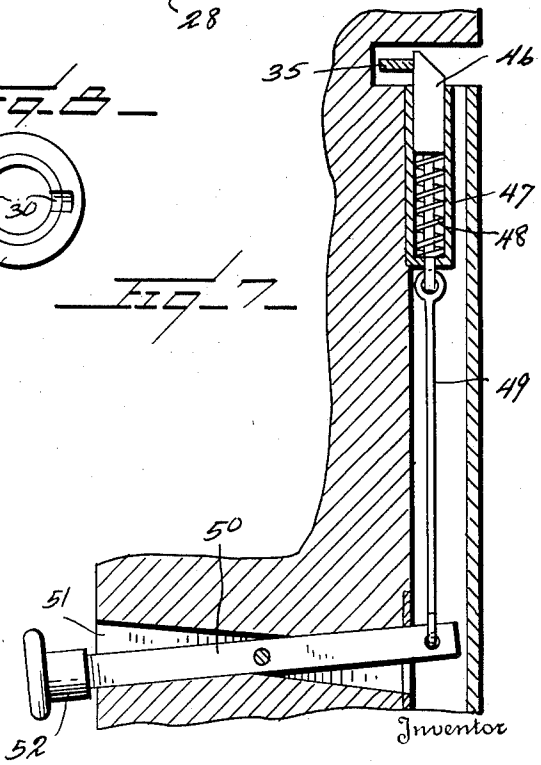


Fig. 7



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UNITED STATES PATENT OFFICE

1,962,094

DOOR CONTROLLING MEANS FOR SCHOOL WARDROBES

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Application March 12, 1932, Serial No. 598,467

17 Claims. (Cl. 20—16)

This invention relates to doors and door controlling means and particularly to means for controlling the doors of wardrobes or cloak-rooms in schools, the wardrobes of this character being provided with a plurality of swinging doors and provided with means whereby all of the doors may be opened or closed by the opening or closing of a master door which is operated normally by the teacher or by a class monitor, the doors when closed lying flush with each other so that, if desired, when closed they may be used as blackboards.

Doors of this character are installed in many school rooms but, as at present installed, they are open to the objection that the operating mechanism is disposed largely within the door itself so that the doors have to be hollow and this makes the doors expensive to construct, expensive to install and makes it difficult to adjust or repair the mechanism.

One of the objects of the present invention is to eliminate the necessity of disposing any of the operating mechanism within the door itself, thus simplifying the construction and cheapening the installation without in any way affecting the full operativeness of the structure.

A further object is to provide in connection with means whereby all of the doors may be operated from a master door, means whereby one or more individual doors may be opened or closed independently of the master door so that scholars arriving late or leaving early may get their wraps without the co-operation of the teacher or monitor.

A still further object is to provide means to prevent any actuation of the master operating mechanism when one of the independently operable doors is opened or prevent the closing of an ordinarily independently operable door when all of the doors are being opened or have been opened by the master door.

A still further object is to provide for adjusting the operating arms angularly with reference to the trunnions of the individual doors and for adjusting the length of the operating arms so as to compensate for any inequalities or differences between doors or for warping or shrinking of the doors and to provide that the doors when closed shall be absolutely flush with each other.

A still further object is to provide improved means whereby each individual door may be vertically adjusted so as to bring them exactly in horizontal line with each other.

Other objects will appear in the course of the following description.

My invention is illustrated in the accompanying drawings, wherein:—

Figure 1 is a front elevation of a school room wall with a wardrobe or cloak-room having a plurality of doors, the doors being closed;

Figure 2 is a rear elevation of the structure shown in Figure 1, the connecting link of the doors being omitted and the arms being in section;

Figure 3 is a longitudinal horizontal section approximately on the line 3—3 of Figure 2 and showing the doors closed;

Figure 4 is a like view to Figure 3 but showing the doors in their opened positions;

Figure 5 is a vertical section on the line 5—5 of Figure 2, the door being closed;

Figure 6 is a vertical section of the upper portion of Figure 5 but showing the door swung to its opened position;

Figure 7 is a sectional view approximately on the line 7—7 of Figure 2.

Figure 8 is a top plan view of the annular element carried upon the upper edge of the door.

Referring to Figures 1 and 2, 10 designates the wall of the school room and 11 the framing defining the wardrobe recess 12, one jamb of the recess being designated 13. Disposed within the frame 11 and when closed flush therewith are a plurality of doors designated 14 and 15. Two doors 14 are shown and two doors 15, it being understood that all of the doors are of the same general character but that the doors 15 are individually openable when desired. It is to be further understood that while I have shown four doors closing the wardrobe, any number of doors may be used and that there may be any desired number of individual openable doors as, for instance, one or more and that these last named doors may be placed either in conjunction with each other or in spaced relation to each other.

Each door, as illustrated in Figure 5 which shows one of the doors 15 is supported at its lower end upon an angle iron 16 which is less in length than the width of the door as shown in Figure 2, this angle iron having the annular bearing 17 and being threaded for the vertical pintle 18. The lower edge of the door is spaced from the floor and to support the door, there is provided for each door an annular base plate 19 having an upwardly extending screw-threaded portion 20 within which the sleeve 21 has screw-threaded engagement. The sleeve is provided with an opening 22 whereby a wrench may be applied to thus adjust the sleeve vertically and thus raise or lower the door to bring it into proper

alinement with the remaining doors. Ball bearings are provided between the upper end of the sleeve 21 and the lower face of the annular bearing 17.

Above the center of each door, the lintel of the frame 11 is provided with a plate 23 having the upwardly extending socket 24 which extends into the lintel. The lower face of each plate has the downwardly extending hub 25 notched at diametrically opposite points as at 26. The upper end of the door carries upon it an angle iron 27 less in length than the width of the door, this angle iron being attached to the face and upper edge of the door by screws or any other suitable means and this angle iron carrying the downwardly extending sleeve 28. The upper face of the angle iron carries upon it the annular portion 29 formed with the two diametrically disposed notches 30 as shown in Figure 8.

Extending upward through the sleeve 28 and into the sleeve or socket 24 of each door is a pintle 31. On the master door 14 and on all of the other doors 14, this pintle is held clamped to the sleeve 28 by means of a set screw 32, but in all the doors 15 which are designed to be individually operated, this pintle 31 is loose within the sleeve 28. Extending outward from the pintle of the master door is an arm 33 which, as illustrated in Figures 3 and 4, is simply screw-threaded into the pintle. The same construction may be used for all the other doors 14. This arm 33 at its extremity is screw-threaded and carries upon it the bifurcated head 34. Pivoted within these bifurcated heads of the arms of the doors 14 is an operating rod or connecting rod 35.

The doors 15 are also provided with arms 36 of the same general character as the arms 33 and provided with the bifurcated adjustable heads 36 which are pivoted to the operating rod 35 but preferably the means whereby these arms 36 are connected to the pintles of the doors 13 is slightly different from the connection of the arms 33 to the pintles of the doors 14.

On the pintles 31 of the doors 15 there are provided collars 37 which are held in adjusted position upon the pintles by means of the set screws 38 so that these collars may be rotatably adjusted around the pintles and then held rigidly with the pintles when they have been fully adjusted.

The pintles 31 and the collars 37 of the doors 15 are vertically movable within the sleeves 28 and sockets 24 and, as shown in Figures 5 and 6, each of the pintles 31 of the doors 15 is provided with the laterally projecting lugs 39 which when the pintle 31 is raised, as shown in Figure 6, moves upward into the notches 26, thus locking the pintle from rotation. When the pintle is lowered, however, it may rotate freely. These pintles 31 of the doors 15 also carry upon them the diametrically projecting lugs 40, as shown in Figures 5 and 6 and disposed below the lugs 39. These lugs 40 are adapted, when the pintle is lowered, to engage within the notches 30 formed in the upper end of the sleeve 28. Thus when the pintles of the doors 15 are lowered, the doors are positively engaged with the pintles. When the pintles of the doors 15 are raised, the pintles are disengaged from the doors but engaged against any rotary motion by the notches 36.

It is to be noted that the heads 34 on the arms 36 of the doors 15 have the slots to receive the bar 35 of such size that these heads have a certain amount of play or oscillation on the connecting rods 35 so as to permit all the arms 36 on doors 15 to oscillate vertically with reference to the connecting or operating rod 35. This permits the upward or downward movement of the pintle 31 of the doors 15. This is further permitted by the fact that the arms 36 of the doors 15 are pivoted between the ears 37*a* projecting from the collar 37 as shown in Figure 6. This is not necessary, however, with regard to the arms 36 which extend from the pintles 31 of the doors 14. For the purpose of shifting the pintles 31 of the doors 15 upward whenever it is desired to release the doors 15 from their engagement with the operating rod 35, I have provided for each of the doors 15 a vertical slide 41, this slide being mounted in guides 42 upon the inner face of the door and this slide carrying the laterally projecting pin 43, as shown in Figure 5, extending into a recess formed in the door and extending beneath the pintle 31 so that the pintle 31 rests upon the finger 43. The slide 41 is disposed upon the inside face of the door and the lower end of this slide is connected to an operating knob 44 mounted upon the outer face of the door 15, this knob having a shank extending through a slot 45 formed in the door and this shank engaging the lower end of the slide 41.

When a pupil desires to open one of these doors 15, therefore, he lifts up on the knob 44. This raises the corresponding pintle 31, carrying the lugs 40 up out of engagement with the locking notches 30 and then the door may be rotated upon its pintle independently of any other door. As soon as the door has been slightly rotated, the lugs 40 will travel around on the upper face of the portion 29 as shown in Figure 6 and the pintle will be held in this upwardly raised position until the door has been brought back to its closed position again.

When one of these doors 15 has been opened, it is desirable to provide means for preventing the actuation of all of the doors by means of the master door 14 and to this end I have provided the lugs 39 which act to prevent any rotation of the pintle 31 which has been raised and thus prevent the longitudinal movement of the operating bar 35 until the opened door 15 has been returned to its closed position.

For the purpose of preventing the closing of any one door, after all of the doors have been fully opened, I provide a locking device shown in Figures 2 and 7 and comprising an upwardly extending bolt 46, this bolt being disposed within a bolt casing 47 and urged upward by a spring 48. The end face of the bolt is beveled as usual with latch bolts of this character. The lower end of the bolt is connected by a rod 49 to an operating lever 50, operating within a slot 51 formed in one of the jambs of the door, the lever having a knob 52 upon the exterior of the door jamb. When this knob is raised, the latch bolt 46 is withdrawn. When the knob is released, the latch bolt is projected. This latch bolt is disposed in the path of movement of one end of the locking rod 35 as shown in Figure 4 and when the doors have been fully opened, the locking rod will be moved over laterally and then forced inwardly past the latch 46 as shown in Figure 4 and the latch will spring back over this locking rod and thus prevent the outward movement of the operating rod and prevent any of the doors being shifted to a closed position until this latch has been retracted.

Thus at recess it may be presumed that all the scholars desire to get their coats and hats. The

monitor opens all of the doors by opening the master door, the coats and hats are secured and during this period, the scholars cannot slam the doors to and possibly injure some scholar who is attempting to get his clothes out of the wardrobe. When all the scholars have secured their hats, the monitor may then depress the latch and shift all of the doors to a closed position or the wardrobe doors may be left open until the scholars have returned and hung their clothes up within the wardrobe. Then the monitor will close all of the doors but with the construction which I have described if all of the doors are opened by the door controlling mechanism, then they are latched in this open position and cannot be closed again until the latch is released. When all of the doors are closed, they will be latched in this closed position by a latch 53 on the master door 14, as shown in Figure 1. This may be either a simple latch or it may be a lock, in which case, none of the doors 14 can be opened nor can all of the doors be opened simultaneously unless the monitor or teacher unlocks the master door. Assuming that all the doors are closed and locked or latched closed in this position, yet the doors 15 may be independently opened by raising up on the knob 44 which will release the selected door 15 from the operating means and permit this door 15 to be turned to an open position, the mechanism acting at the same time to lock the door from any possible actuation so that the doors 14 cannot be opened until the doors 15 have been returned to their closed position. Once the doors 15 have been closed, however, then the operating mechanism is placed again in action and all of the doors may be opened by the actuation of the master door.

It will be noted that all of the door mechanism is disposed upon the exterior of the door. There is no concealed mechanism, the doors can be simple, plain doors of a relatively cheap character and at the same time access may be had to the operating mechanism at any time to repair it. If the doors become slightly warped or out of proper alinement, they can be readily adjusted by loosening said set screws 38 for the doors 15 or loosening the set screws 32 for the doors 14, whereupon the doors may be shifted into the proper position and then again latched. The arms 33 are preferably adjustable as to length, though I do not wish to be limited to this feature. While I have not shown this feature, yet it is obvious that those faces of the doors confronting the school room may be utilized as blackboards. The knobs 44 under these circumstances may be lowered to any desired extent and the blackboard faces disposed above the knobs 44.

As illustrated in Figures 1 and 2, the lower edges of the doors are raised above the sill of the wardrobe so as to permit a circulation of air beneath the doors and up through the wardrobe, this class of wardrobes or closets in schools having their wardrobe spaces ordinarily provided with flues to permit this circulation of air. This in some States is required by law. It will be seen that this mechanism permits any door to be raised or lowered to bring it into alinement with the other doors, doors may be adjusted to bring them flush with other doors when the doors are closed and the operating mechanism may be so adjusted as to work with ease and certainty.

While I have illustrated a form of construction which I believe to be particularly effective, I do not wish to be limited thereto as obviously the construction might be modified in many minor particulars without departing from the spirit of the invention as defined in the appended claims.

I claim:—

1. In a structure of the character described, a plurality of doors mounted for swinging movement, controlling means operatively connected to all of the doors for simultaneously swinging all of the doors to an open or a closed position, means whereby a selected door may be detached from its engagement with the controlling means to permit it to be independently swung from a closed to an open position, and means for automatically locking the controlling means from actuation when the selected door has been swung from its closed toward its open position, said locking means becoming inoperative when the door has returned to its closed position.

2. In a structure of the character described, a plurality of doors mounted for swinging movement, controlling means operatively connected to all of the doors for simultaneously swinging all of the doors from an open to a closed position, means whereby a selected door may be detached from its engagement with said swinging means to permit it to be independently swung, single means for latching all of the doors in an opened position, and means acting to prevent the disengagement of a selected door from the controlling means when the controlling means has been swung to an open door position.

3. In a structure of the character described, a plurality of doors having vertical medially disposed pintles operatively supported to permit the doors to swing in a horizontal plane, arms extending radially outward from the uppermost pintles of the doors, a controlling rod extending parallel to the doors when closed and pivoted to the extremities of said arms whereby to cause the simultaneous opening or closing of all of the doors when one of said doors is closed or opened, and means disconnecting a certain door from operative rotative engagement with its upper pintle to permit the door to be independently swung upon its pintles from an open to a closed position.

4. In a structure of the character described, a plurality of doors and a frame supporting the doors, a pair of vertically disposed pintles for each door and supporting the doors in said frame for rotary movement in a horizontal plane, the upper pintle of a certain door being mounted for limited vertical movement with relation to this door, the upper pintles for the remaining doors being engaged with said doors for rotary motion therewith and against independent vertical movement, arms projecting from the upper pintles of the last named doors, a collar mounted upon the pintle of the independently actuatable door, an arm pivoted to the collar for movement in a vertical plane, an operating rod pivoted to all of said arms whereby, when one door is operated, all of the other doors will be operated simultaneously, the pintle of the independently operable door having operative rotative engagement with its door when the pintle is lowered, but the pintle when raised disengaging its rotative engagement with the door, and means for raising the pintle comprising a slide having operative engagement with the pintle and mounted on the door, and a handle whereby the slide may be manipulated, the handle being disposed on the front of the door.

5. In a structure of the character described, a plurality of doors and a frame supporting the doors, a pair of vertically disposed pintles for each door and supporting the doors in said frame for rotary movement in a horizontal plane, the

upper pintle of a certain door being mounted for limited vertical movement with relation to this door, the upper pintles for the remaining doors being engaged with said doors for rotary motion therewith and against independent vertical movement, arms projecting from the upper pintles of the last named doors, a collar mounted upon the pintle of the independently actuatable door, an arm pivoted to the collar for movement in a vertical plane, an operating rod pivoted to all of said arms whereby, when one door is operated, all of the other doors will be operated simultaneously, the pintle of the independently operable door having operative rotative engagement with its door when the pintle is lowered, but the pintle when raised disengaging its rotative engagement with the door, means for raising the pintle comprising a slide having operative engagement with the pintle and mounted on the door, a handle whereby the slide may be manipulated, the handle being disposed on the front of the door, and means for locking the other doors from movement when the independently operable door has been opened comprising a member carried by the shiftable pintle and operatively engageable with the lintel of the door to prevent rotation of the pintle and of its collar and arm when the pintle is lifted.

6. In a structure of the character described, a door frame, a plurality of doors, pintles for the doors, arms extending from the pintles, a controlling rod pivotally connected to all of said arms whereby all of said doors may open or close simultaneously, and means for latching said controlling rod in a position with the doors open including a spring projected latch having a beveled face against which the controlling rod engages as the door reaches its door opening position to thus depress the latch and pass behind it, and means disposed upon the outer face of the frame for releasing said latch.

7. In a structure of the character described, a door frame having a lintel and a sill, a plurality of doors, lower pintles operatively supported upon the sill upon which the doors are carried, upper pintles engaged with the doors and operatively supported by the lintel, collars mounted on the upper pintles, arms pivoted to the collars, and a controlling rod pivoted to said arms, the arms being formed of adjustable sections and the collars being adjustable around the pintles.

8. In a structure of the character described, a frame having a sill and lintel, a plurality of doors each having a supporting pintle operatively engaged with the sill, each door having an upper pintle operatively supported in the lintel, arms extending from the upper pintles, a controlling rod pivotally connected to all of said arms whereby the doors will open and close simultaneously, means at all times engaging certain of the doors with their respective pintles for common rotary movement, a certain other door being normally engaged with its pintle for rotary movement therewith but being disengageable therefrom, and manually operable means on the front of said door whereby it may be temporarily disengaged from its pintle and swing thereon independently of its connecting rod and the other doors.

9. In a structure of the character described, a door frame having a sill and a lintel, a plurality of doors disposed within the frame, all the doors having lower supporting pintles and having upper pintles operatively supported in the lintel, each door having an operating arm whereby it may be swung around the axis of its pintle to an open or closed position, the operating arm of a certain door being normally in engagement with but disengageable from the door to permit the independent rotational movement of the said certain door, the operating arms of the other doors being at all times engaged therewith for common rotary movement, a controlling rod pivotally connected to the arms of all of the doors whereby the opening of one door will cause the operation of all of the doors, and means operated from the front of the independently movable door whereby it may be temporarily disconnected from the arm to permit the free independent movement of the said door, and means locking the arm of said independently operable door from movement when the said last named door is independently operated, the locking of said arm preventing the operation of the other doors.

10. In a structure of the character described, a door frame having a lintel and a sill, a door coacting with the frame, a lower pintle supporting the door and mounted upon the sill, an upper pintle having vertical movement independent of the door, manually operable means for lifting the pintle relative to the door, the door and the pintle having interlocking rotative engagement with each other when the pintle is lowered but being free from engagement when the pintle is raised whereby said door may be rotated independently of any rotation of the pintle, and means whereby the door may be rotated from a distance.

11. A structure of the character described, comprising a door frame including a lintel and a sill, a plurality of doors disposed within the frame, each of said doors having a lower supporting pintle operatively carried by the sill, each of said doors having an upper pintle, the lintel having bearings for the upper pintles, arms carried by the pintles of all of the doors, a controlling rod pivotally connected to all of said arms whereby all of the doors may be simultaneously opened or closed, the pintle for a certain door being vertically shiftable, manually operable means for lifting the pintle relative to the door, the shiftable pintle and its door having interlocking rotative engagement with each other when the pintle is lowered but the pintle being freed from its rotative engagement with the door when it is raised whereby when the pintle is raised, the door may be rotated independently of all other doors.

12. A structure of the character described, comprising a door frame including a lintel and a sill, a plurality of doors disposed within the frame, each of said doors having a lower supporting pintle operatively carried by the sill, each of said doors having an upper pintle, the lintel having bearings for the upper pintles, arms carried by the pintles of all of the doors, a controlling rod pivotally connected to all of said arms whereby all of the doors may be simultaneously opened or closed, the pintle for a certain door being vertically shiftable, manually operable means for lifting the pintle relative to the door, the shiftable pintle and its door having interlocking rotative engagement with each other when the pintle is lowered but the pintle being freed from its rotative engagement with the door when it is raised whereby when the pintle is raised, the door may be rotated independently of all other doors, means on the pintle acting when the pintle is raised to have interlocking engagement with the bearing for the pintle to thus lock the pintle from rotary

movement and thus lock all of the doors from movement until the pintle is again lowered and operatively engaged with the door.

13. A structure of the character described, comprising a door frame having a lintel and a sill, a plurality of doors disposed between the lintel and sill, bearings rotatively supporting the lower end of each door, a pintle for the upper end of each door, bearing members disposed in the lintel and with which said pintles are rotatively engaged, certain of the doors having their pintles at all times rotatively engaged therewith, said pintles having outstanding arms, and certain other doors having their pintles operatively engaged therewith and said pintles being vertically shiftable, the pintles of the last named doors having means thereon to interlock with their doors when the pintles are lowered to thus rotatively engage the pintle with the door, manually operable means upon the face of a certain door whereby the pintle may be raised or lowered, and means carried on the pintle and on the corresponding bearing member whereby when the pintle is raised, it is locked from rotation, the pintle of said certain door having a collar thereon provided with an arm, and a controlling rod operatively connecting the arms of all of the doors whereby said doors may open or close simultaneously, and means for latching one of said doors in a closed position.

14. In a structure of the character described, a door, a sill, and means for supporting the lower end of the door upon the sill for rotation comprising a base, a sleeve having screw-threaded engagement with the base whereby as the sleeve is rotated, it will be raised or lowered, a member carried on the lower edge of the door and having a downwardly extending pintle received in said sleeve, and anti-friction bearings between the upper end of the sleeve and said member.

15. In a structure of the character described, a door frame, a plurality of doors, pintles supporting the doors within the frame, means exterior to the doors for connecting all of the doors together for simultaneous movement toward a closed or open position, manually operable means on the rear faces of certain doors whereby the doors may be disconnected from the said means connecting the doors to permit certain doors to be independently opened or closed, the means on the rear faces of said certain doors being connected to operating members on the fronts of the said certain doors, and means on the door frame releasably locking all of said doors in an opened position.

16. In a structure of the character described, a door, a door frame, an upper pintle for the door, an arm extending from the pintle, a set screw engaging the door with the pintle and holding the door in adjusted relation upon the pintle, and a longitudinally shiftable operating bar to which the extremity of the arm is pivotally connected.

17. In a structure of the character described, a door frame, a door therein, a pintle supporting the lower end of the door, a pintle engaging the upper end of the door and the door frame, the pintle being vertically shiftable with relation to the door, means mounted on the door for vertically shifting the pintle, means locking the pintle to the door when it is lowered but releasing operative engagement between the pintle and the door when the pintle is raised, and door swinging means operatively connected to the pintle.

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