

A. E. MILLER.
DISPLAY RACK.

APPLICATION FILED MAY 15, 1911.

Patented June 3, 1913.

3 SHEETS-SHEET 1.

1,063,925.

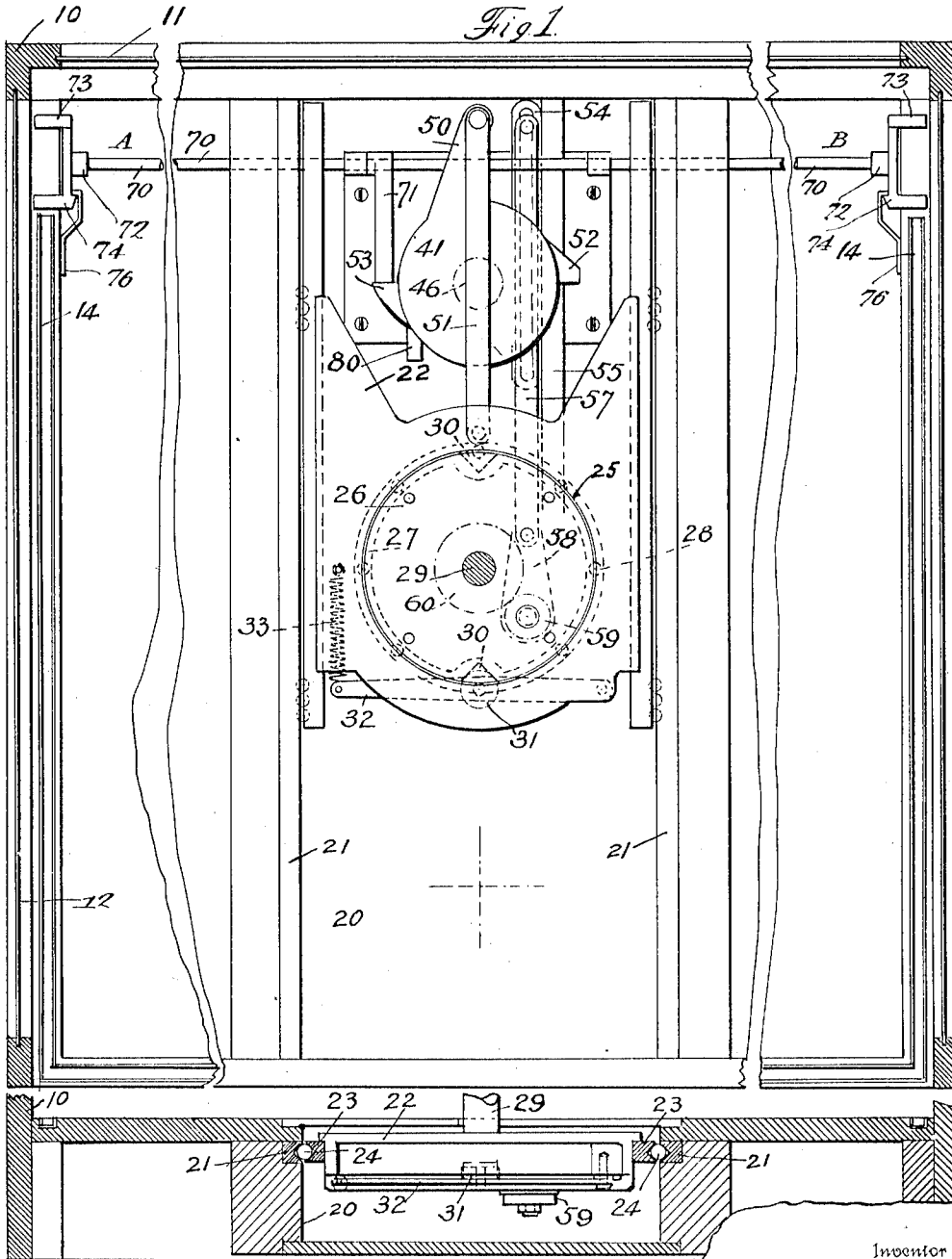


Fig 2.

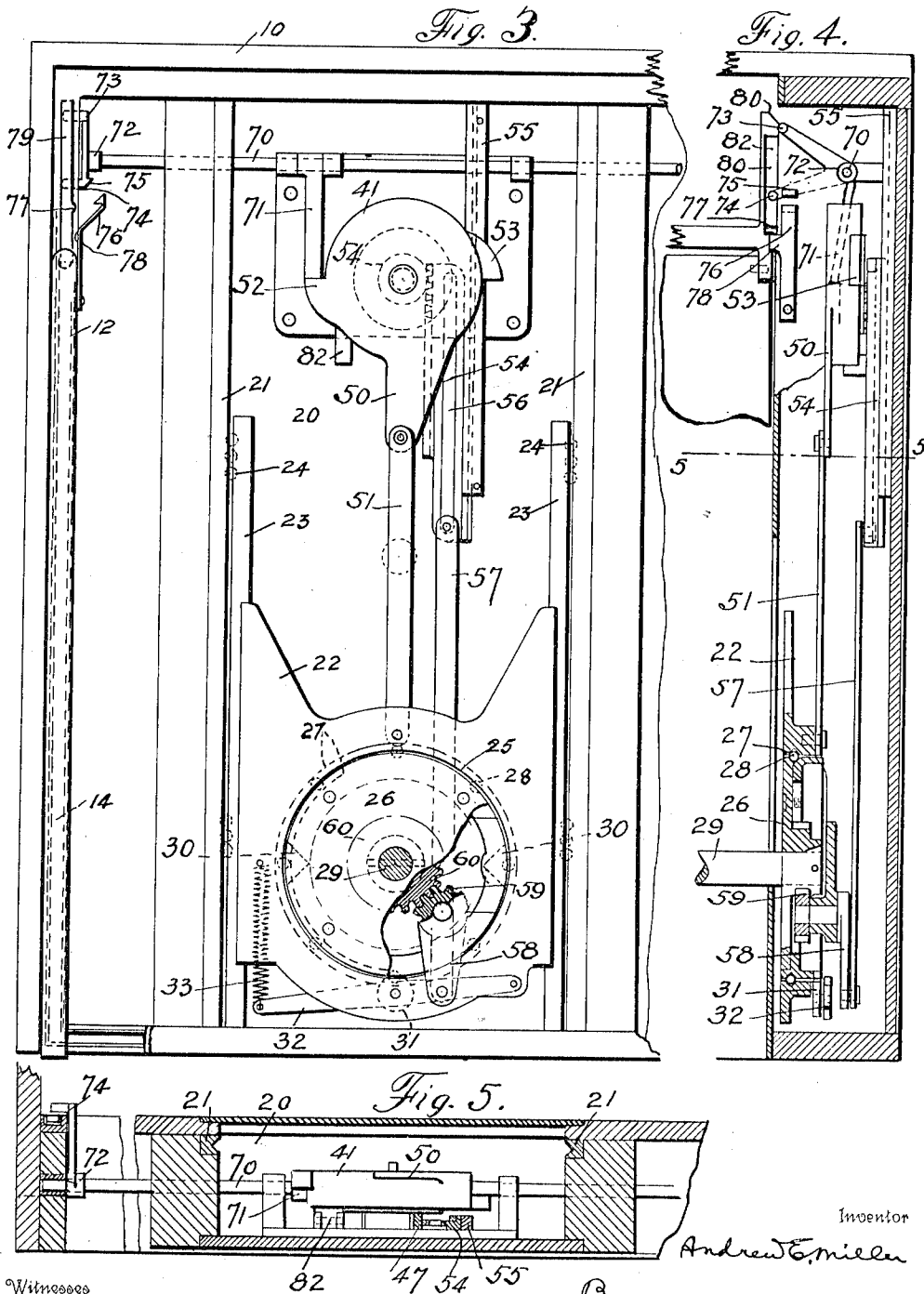
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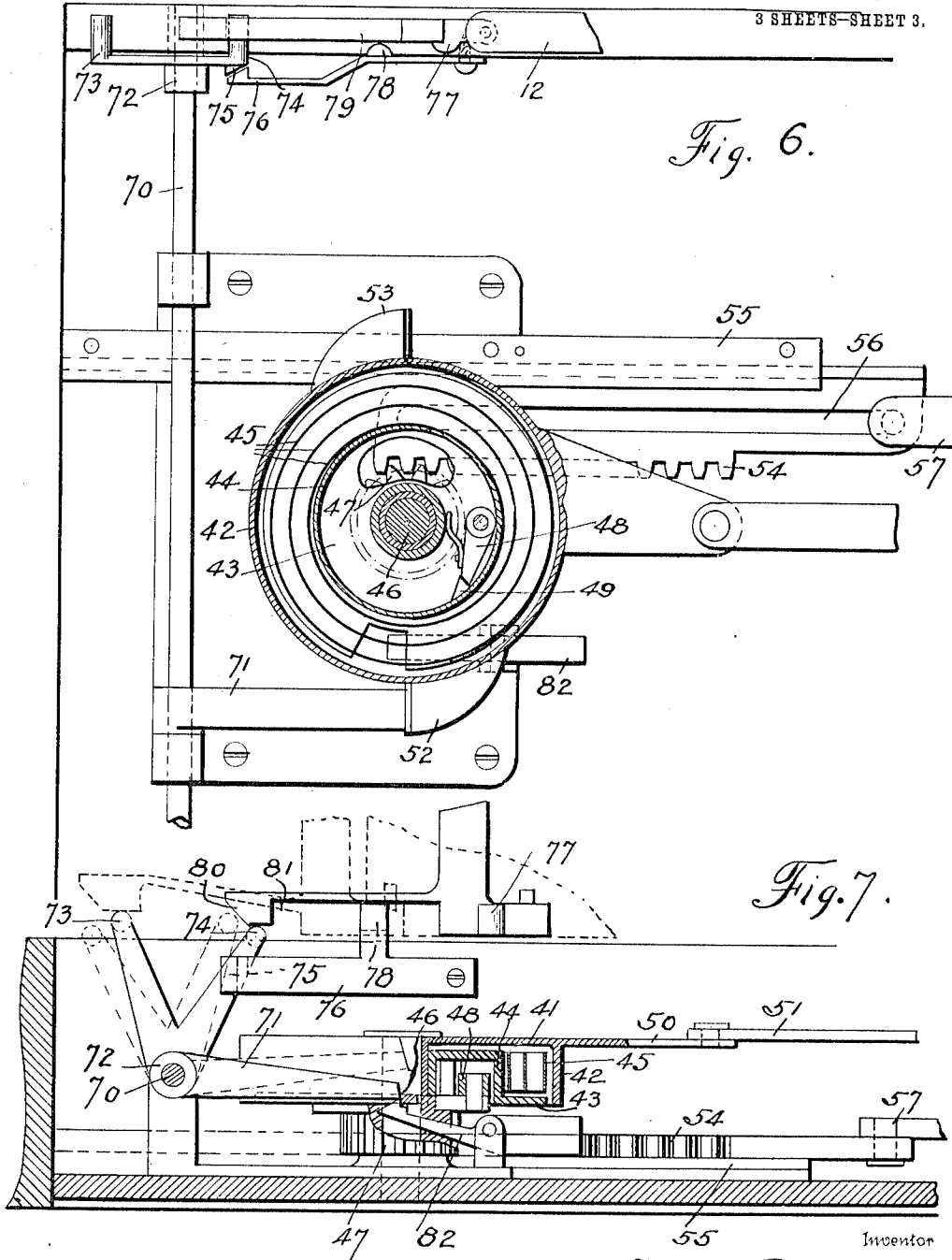
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Witnesses

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DISPLAY-RACK.

1,063,925.

Specification of Letters Patent.

Patented June 3, 1913.

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To all whom it may concern:

Be it known that I, ANDREW E. MILLER, a subject of the King of Great Britain, residing in the city of Baltimore and State of Maryland, have invented new and useful Improvements in Display-Racks, of which the following is a specification.

This invention relates to certain new and useful improvements in display racks for garments and the like.

One of the objects of the invention is to provide improved means whereby the garments may be conveniently and compactly stored in dust proof cases, and yet be readily accessible for exhibiting to a customer by a salesman.

A further object is to provide improved means for automatically moving the rack back and forth in the case.

A further object is to provide doors for closing the front of the case, and connections operated by said doors for effecting the automatic movement of the rack.

A further object is to provide a spring motor for reciprocating the rack and means for automatically maintaining the tension on said motor.

A further object is to provide improved means for locking the rack either in its forward or rearward position.

The invention will be hereinafter fully set forth and particularly pointed out in the claims.

In the accompanying drawing:—Figure 1 is a top plan view of a case with my improved display rack therein, parts of the case being broken away, and other parts shown in section. Fig. 2 is a transverse sectional view of the lower portion or bottom of the case. Fig. 3 is a plan view illustrating the rack and its supporting carriage in the forward position. Fig. 4 is a longitudinal sectional view of Fig. 3. Fig. 5 is a transverse sectional view on the line 5—5 of Fig. 3. Fig. 6 is a detail plan view illustrating the spring motor. Fig. 7 is a detail sectional view illustrating said motor.

Referring to the drawing, 10 designates a case of any suitable or preferred construction provided with the glass panels 11 and the doors 12, said doors normally closing the front opening 13 but adapted to slide in suitable guides 14 adjacent the sides of the case.

The bottom of the case is provided with a channel 20 the upper edges of which are provided with guides 21 between which the carriage 22 of the display rack is mounted to reciprocate. It will be noted that the carriage 22 is provided with grooved sides 23 which coöperate with the guides 21 to form ball races for anti-friction balls 24 whereby the friction between the sliding parts is greatly reduced. Said carriage is provided with a central opening 25 to receive a disk 26, the abutting edges of said opening and said disk being grooved to form races 27 for anti-friction balls 28 indicated in dotted lines in Figs. 1 and 3, and held in position by suitable cages (not shown) in a manner well known in the mechanical arts. Said disk is rigidly secured to and supports a standard 29 to which the usual arms are secured from which the garments are suspended, said arms not being illustrated. The periphery of the disk 26 is provided with opposite notches 30 which are engaged by a roller 31 carried by a lever 32 held normally against the disk by a spring 33. This arrangement is for the purpose of preventing a too rapid rotation of the disk when the garments supported by the rack are being displayed. It will be understood in this connection that this construction is merely illustrative and I do not desire to limit myself thereto as any form of locking device may be employed.

For the purpose of reciprocating the carriage back and forth between the guides 21 I employ a motor of any suitable or preferred construction. For the purpose of illustration I have illustrated in the drawings a spring motor consisting of a top disk 41 having a side wall 42, and a concentric lower disk 43 having a side wall 44. A suitable spring 45 is located in the space formed between the walls 42 and 44 and its ends connected respectively to said walls. The disk 41 is provided with a bearing sleeve mounted on a stud 46 and a pinion 47 is mounted to rotate on the stud below said sleeve. A pawl 48 is pivotally mounted on said pinion, the free end of said pawl being normally held in engagement with a shoulder 49 by means of a suitable spring. The disk 41 is provided with an arm 50 connected by means of a link 51 with the carriage 22, and said disk is also provided with stop lugs 52, 53, in different horizontal planes. The pinion 49

is engaged by a rack bar 54 slidably mounted in a suitable guide 55 and provided with a longitudinal slot 56. A link 57 is provided at one end with a stud engaging said slot 56, the other end of said link engaging a radial arm 58 on a rotatable pinion 59 supported by the carriage. The disk 26 is provided on its under side with a pinion 60 meshing with teeth in the pinion 59, the pinion 60 being illustrated as just double the dimensions of pinion 59, whereby a single rotation of the pinion 60 will effect two rotations of the pinion 59. It will be understood, however, that I do not desire to limit myself to these proportions.

Extending transversely of the case is a rock shaft 70 provided with a latch 71 adapted to engage either of the lugs 52 or 53 to form an abutment therefor. To each end of said rock shaft is rigidly secured a member 72 formed with diverging arms 73, 74 said arm 73 being provided with a lug 75 adapted to be engaged by a spring hook 76 secured to the side wall of the case. Each of the doors 12 are provided with a lug 77 which engages a complemental lug 78 on the spring 76 whereby said spring may be moved outwardly to permit disengagement of the lug 75. The lug 77 is carried by a projecting member 79 which is loosely connected to the door, said member being provided with a beveled end 80 and a recess 81.

In practice when the doors 12 are arranged across the front opening the spring latches 76 on each side of the case are in engagement with the lugs 75 of the respective members 72 adjacent the corresponding sides of the case, as indicated at A and B, respectively. When it is desired to display the goods on the rack the attendant slides the doors along the guides 14 in the usual way, the usual practice being to slide one door panel at a time, two panels being required to close the front opening. When the first panel is slid back the lug 77 of member 79 at A, for instance, disengages the catch 76 from the lug 75 of the adjacent member 72 and the beveled end 80 of the member 79, because of the slight resiliency of the latter, and the resistance imparted by the interlocking lug 75 and catch 76 at B, will ride over and rest upon the end of the arm 73 as shown in dotted lines Fig. 7. At this stage of the operation the only thing that prevents movement of the rock shaft 70 is the latch 76 engaging member 72 at the side B. When the second panel is opened, however, the lug 77 of member 79 at B, disengages catch 76 from the lug 75 of the adjacent member 72. Thereupon the beveled end 80 of member 79 on the B side engages the adjacent member 73 and moves the member 72 into the position indicated in dotted lines (Fig. 7) thereby rocking the shaft 70. By this movement

the latch 71 is raised out of engagement with the lug 53 of the top disk of the motor. Just as soon as the lower edge of the latch 71 clears the lug 53, the spring 45 rotates the top disk, and through the movement of the radial arm 50 which is connected to the carriage by link 51, said carriage is moved forward automatically. When the member 72 at B, is rocked as above described, the arm 74 of each member 72 is within the recess 81 of its adjacent member 79, and the arm 73 outside of the recess beneath the end 80. When the parts are in these positions the latch 71 is held in the path of the lug 52 and arrests further movement of the disk 41, whereupon the carriage is locked in its forward position. In this position each arm 72 is locked by the shoulder 80 of its respective member 79 at both A and B. When it is desired to return the carriage to its rearward position the attendant moves either of the door panels outwardly. Assuming the door at A is the first thus operated, the shoulder 81 of member 79 at A will engage the adjacent member 74 and rock the shaft 70, thereby depressing the latch 71, whereupon spring 45 will again rotate disk 41. As the shaft 70 is rocked the arm 73 at B is moved to the position shown in full lines, Fig. 7. The latch 71 is thus held in position to intercept the lug 53 as it comes around, and the parts will then be in the positions maintained before the doors were opened. The door B can then be closed, the member 79 passing over end of arm 74 as indicated in full lines, Fig. 7. Thus it will be seen that the motor cannot be released when the carriage is in the rearward position until both doors are completely open, nor can it be released when the rack is in the forward position until the doors have been moved forward. It is the intention to maintain sufficient tension upon the spring to reciprocate the carriage back and forth, and in order to increase the tension on the spring it is only necessary to revolve the disk 26 and pinion 60 which would ordinarily take place in displaying the goods. In this manner the rack 54 is reciprocated through arm 57 and member 59, resulting in rotation of the lower disk 43, through pinion 49, and pawl 48, thereby increasing the tension on spring 45. A pawl 82 is arranged to engage a notch in the lower disk 43 when an initial tension has been placed upon the spring by a half turn of pinion 59. When the carriage returns to its rearward position the link 57 moves the rack and through the latter rotates pinion 47 to its initial position, whereupon the pawl 48 will be in a position to engage the ratchet tooth 49 upon a repetition of the operation.

Having thus explained the nature of my invention and described an operative manner of constructing and using the same, al-

though without attempting to set forth all of the forms in which it may be made or all of the forms of its use, what I claim is:—

1. A display rack comprising a rack supporting member, actuating means for moving said rack supporting member to forward and rearward positions in said case, and means for controlling said actuating means. 5
2. A display rack comprising a rack supporting member, a motor for imparting reciprocatory movements to said member, and means intermittently operated for controlling said motor. 10
3. A display rack comprising a rack supporting member, a motor for imparting reciprocatory movements thereto, a rock shaft provided with means for controlling the operation of said motor, and means for intermittently actuating said rock shaft. 15
4. A display rack comprising a rack supporting member, a motor for imparting reciprocatory movements thereto, means for controlling the operation of said motor, and means for intermittently actuating said controlling means. 20
5. A display rack comprising a rack supporting member, actuating means for moving said rack supporting member to forward and rearward positions in said case, means for controlling said actuating means, and means for intermittently operating said controlling means. 25
6. A display rack comprising a rack supporting member, actuating means for moving said rack supporting member to forward and rearward positions in said case, means for normally locking said actuating means and means for intermittently releasing said actuating means from said locking means. 30
7. A display rack comprising a reciprocable rack supporting member, a motor for reciprocating the same, means for normally locking said motor, and means for releasing the motor from its locking means. 35
8. A display rack comprising a reciprocable rack supporting member, a rotatable disk, connections between said disk and said member, and means for actuating said disk. 40
9. A display rack comprising a reciprocable rack supporting member, a rotatable disk, means for automatically rotating said disk, connections between said disk and said member, and means for normally locking said disk against rotation. 45
10. A display rack comprising a reciprocable rack supporting member, a rotatable disk, connections between said disk and said member, means for interrupting the rotation of said disk, and means for disengaging said disk from said interrupting means. 50
11. A display rack comprising a reciprocable rack supporting member, a rotatable disk, connections between said disk and said member, said disk being provided with peripheral stop lugs, a pawl adapted to intercept the path of movement of said lugs, and means for moving said pawl. 55
12. A display rack comprising a reciprocable rack supporting member, a rotatable disk provided with stop lugs, connections between said disk and said member, a rock shaft, a pawl secured to said rock shaft and adapted to intercept the path of movement of said lugs, and means for actuating said rock shaft. 60
13. A display rack comprising a reciprocable carriage, a rack rotatably supported thereby, a rotary member actuated by the rotation of said rack, a spring motor for reciprocating said carriage, and means operated by said rotary member for increasing the tension on the spring of said motor. 65
14. A display rack comprising a reciprocable carriage, a disk rotatably mounted in said carriage, a rack carried by said disk, a spring motor for reciprocating said carriage, and means operated by said disk for increasing the tension on the spring of said motor. 70
15. A display rack comprising a reciprocable carriage, a rack rotatably supported thereby, a motor for reciprocating said carriage, and means operated by said rack for increasing the power of said motor. 75
16. A display rack comprising a reciprocable rack supporting member, a motor for reciprocating the same, means for increasing the power of said motor, and means carried by said rack supporting member for controlling said power increasing means. 80
17. A display rack comprising a reciprocable carriage, a rack rotatably supported thereby, a motor for reciprocating said carriage, a reciprocating member for increasing the power of said motor, and means operated by said rack for actuating said reciprocating member. 85
18. A display rack comprising a reciprocable carriage, a rack supported thereby, a motor for reciprocating said carriage, a reciprocating member for increasing the power of said motor, and means supported by the carriage for actuating said reciprocating member. 90
19. A display rack comprising a reciprocable carriage, a rack rotatably supported thereby, a rotatable member actuated by the rotation of said rack, a motor for reciprocating said carriage, a reciprocating member for increasing the power of said motor, and means connected with said rotatable member for actuating said reciprocating member. 95
20. The combination with a case, and movable doors therefor, of a rack-supporting member, actuating means for imparting reciprocatory movements thereto, and means operated by said doors for controlling said actuating means. 100

21. The combination with a case, and doors therefor, of a reciprocable rack supporting member, a motor for reciprocating said member, and means operated by said doors for controlling the operation of said motor.

22. The combination with a case, and movable doors therefor, of a reciprocable rack supporting member, a motor for reciprocating the same, a rock shaft provided with means for controlling the operation of said motor, and means connected to said doors for actuating said rock shaft.

23. The combination with a case, and movable doors therefor, of a rack supporting member, actuating means for imparting reciprocatory movements to said member, means for normally locking said reciprocating means against movement, and means carried by said doors for controlling said locking means.

24. The combination with a case, and movable doors therefor, of a reciprocable rack supporting member, a motor for reciprocating said member, means for normally locking said motor, and means controlled by said doors for releasing said motor from its locking means.

25. The combination with a case, and movable doors therefor, of a reciprocable rack supporting member, a rotatable disk, connections between said disk and reciprocatory member, means for rotating said disk, whereby reciprocatory movements are imparted to said member, means for normally locking said disk, and means carried by said doors for releasing said disk from its locking means.

26. The combination with a case, and movable doors therefor, of a reciprocable rack supporting member, a motor for reciprocating the same, a rock shaft provided with means for controlling the operation of said motor, means for locking said rock shaft, means connected with said doors for releasing said rock shaft from its locking means, and means also carried by the doors for actuating said shaft.

27. The combination with a case, and movable doors therefor, of a reciprocable rack supporting member, a motor for reciprocating the same, a rock shaft provided with means for controlling the operation of said motor, a spring latch adapted to lock said rock shaft, and means connected with one of said doors for disengaging said latch and subsequently actuating said rock shaft.

28. The combination with a case, and movable doors therefor, of a reciprocable rack supporting member, a motor for reciprocating the same, a rock shaft provided with means for controlling the operation of said motor, said rock shaft being provided with spaced apart arms, locking means engaging one of said arms, and means connected

with one of said doors for disengaging said locking means from the arm in engagement therewith, and subsequently moving the other arm to actuate said rock shaft.

29. The combination with a case, and movable doors therefor, of a reciprocable rack supporting member, a motor for reciprocating the same, a rock shaft provided with means for controlling the operation of said motor, said rock shaft being provided with arms one of which is provided with a lug, a spring latch adapted to engage said lug, and means connected with one of said doors for disengaging said latch from the lug of the first arm and subsequently moving the other arm to actuate said rock shaft.

30. The combination with a case, and movable doors therefor, of a reciprocable rack supporting member, a motor for reciprocating the same, a rock shaft provided with means for controlling the operation of said motor, said rock shaft being provided with arms, locking means engaging one of said arms, and a member connected with one of said doors, for disengaging said locking means and subsequently moving the other arm to actuate said rock shaft.

31. The combination with a case, and movable doors therefor, of a reciprocable rack supporting member, a motor for reciprocating the same, a rock shaft provided with means for controlling the operation of said motor, means for locking said rock shaft when the doors are closed, and means for disengaging said locking means and actuating said rock shaft when the doors are opened, said disengaging means including means for locking the rock shaft while the doors are open.

32. The combination with a case, and movable doors therefor, of a reciprocable rack supporting member, a motor for reciprocating the same, a rock shaft provided with means for controlling the operation of said motor, said rock shaft being provided with arms, a latch for engaging one of said arms, and a member secured to one of said doors and provided with means for disengaging said latch from its arm, said member being provided with means for subsequently moving the other arm and then locking the same.

33. The combination with a case, and a plurality of doors therefor, of a reciprocable rack supporting member, means for reciprocating said member, a rock shaft controlling said reciprocating means, means for locking said rock shaft, and means connected with said doors for disengaging said locking means and subsequently actuating said rock shaft, when all the doors have been opened, the last mentioned means including means for disengaging said lock and subsequently actuating said rock shaft when either door has been started toward its closed position.

34. The combination with a case and a plurality of doors therefor, of a reciprocable

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rack supporting member, means for reciprocating said member, a rock shaft controlling said reciprocating means, two arms at each end of said rock shaft, locking means at 5 each end of the rock shaft normally engaging one of said arms at each end of the rock shaft, and means carried by each door for disengaging the locking means contiguous thereto, the lock disengaging means of 10 either door being arranged to engage the other contiguous arm of the rock shaft to actuate and subsequently lock the latter after the lock disengaging means of the other door has been operated, whereby said rock 15 shaft cannot be actuated until all of the doors have been opened or either door started toward its closed position.

35. The combination with a case and a plurality of doors therefor, of a reciprocable rack supporting member, means for reciprocating said member, a rock shaft controlling said reciprocating means, means for locking 20 each end of said rock shaft, and means carried by each door adapted to first unlock the adjacent end of the rock shaft, and subsequently actuate the latter and then lock 25

the same, whereby said rock shaft cannot be actuated until all of the doors have been opened or either door started toward its closed position. 30

36. The combination with a case, and a plurality of doors therefor, of a reciprocable rack supporting member, means for reciprocating said member, a rock shaft controlling said reciprocating means, a plurality of arms 35 secured to each end of said rock shaft, means for locking one of said arms at each end, means carried by each door to disengage said locking means, said disengaging means including means for moving and subsequently 40 locking the other arm of the rock shaft contiguous thereto, whereby said rock shaft can not be actuated until all of the doors have been opened or either door started toward its closed position. 45

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ANDREW E. MILLER.

Witnesses:

JOHN J. WAGNER,
LEE I. HERTT.