Oct. 17, 1950 C. G. MEYER 2,526,495

GRIP TESTING DEVICE

Filed Dec. 20, 1946 5 Sheets-Sheet 1

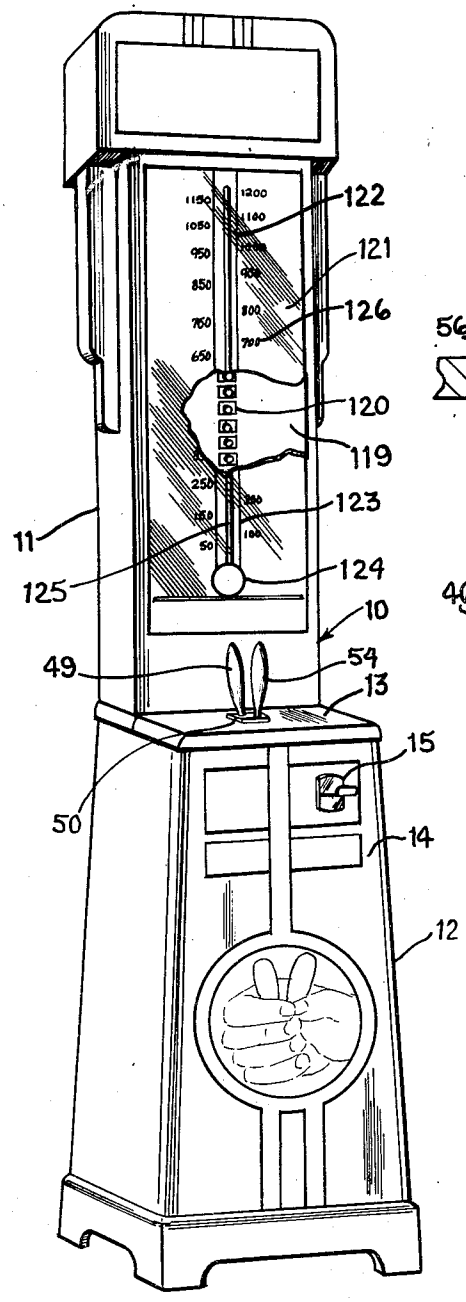



Fig. 1.

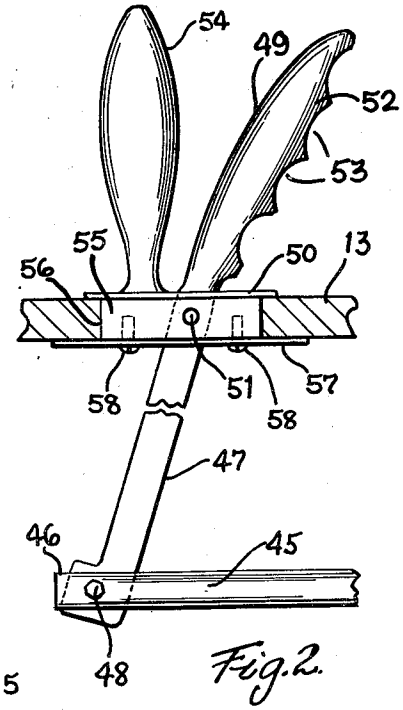



Fig. 2.

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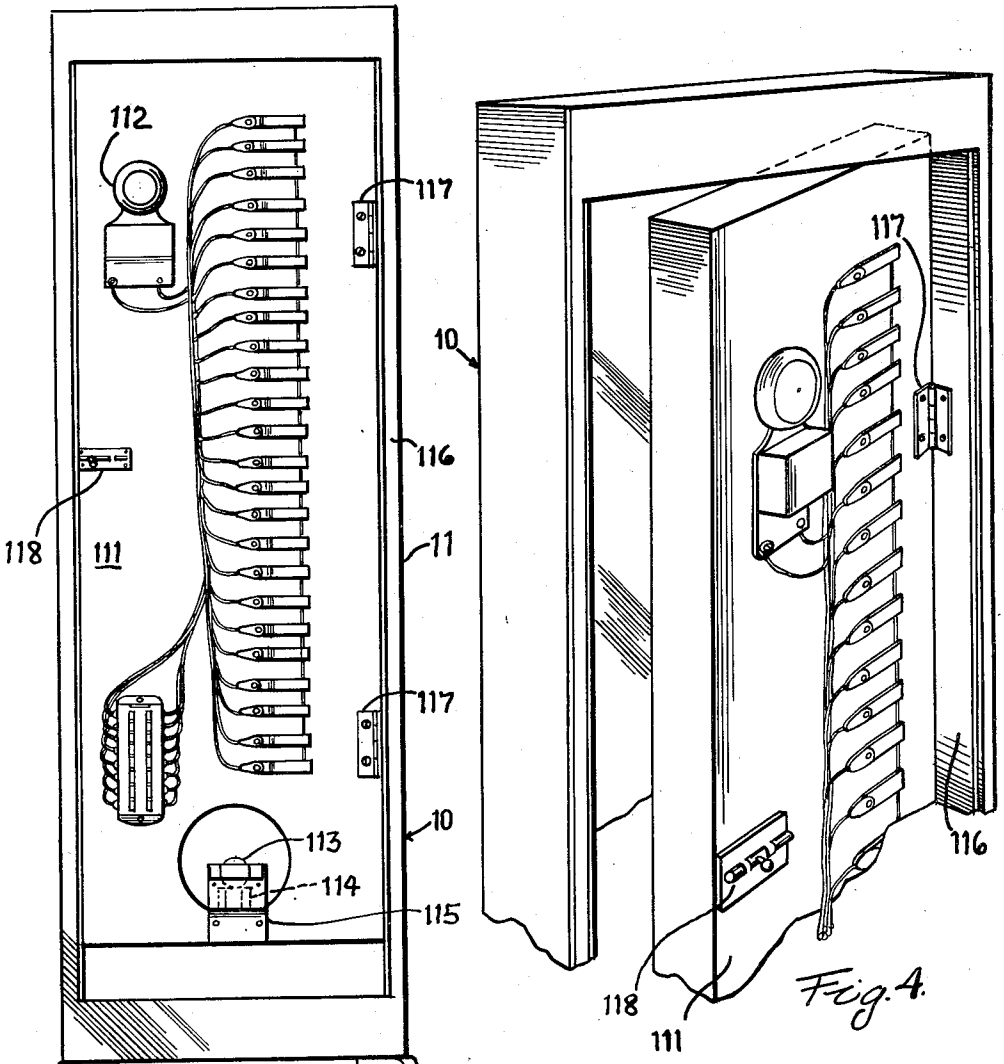



Fig. 4.

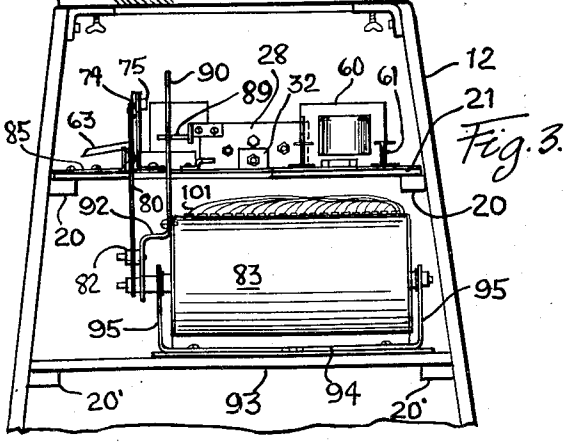



Fig. 3.

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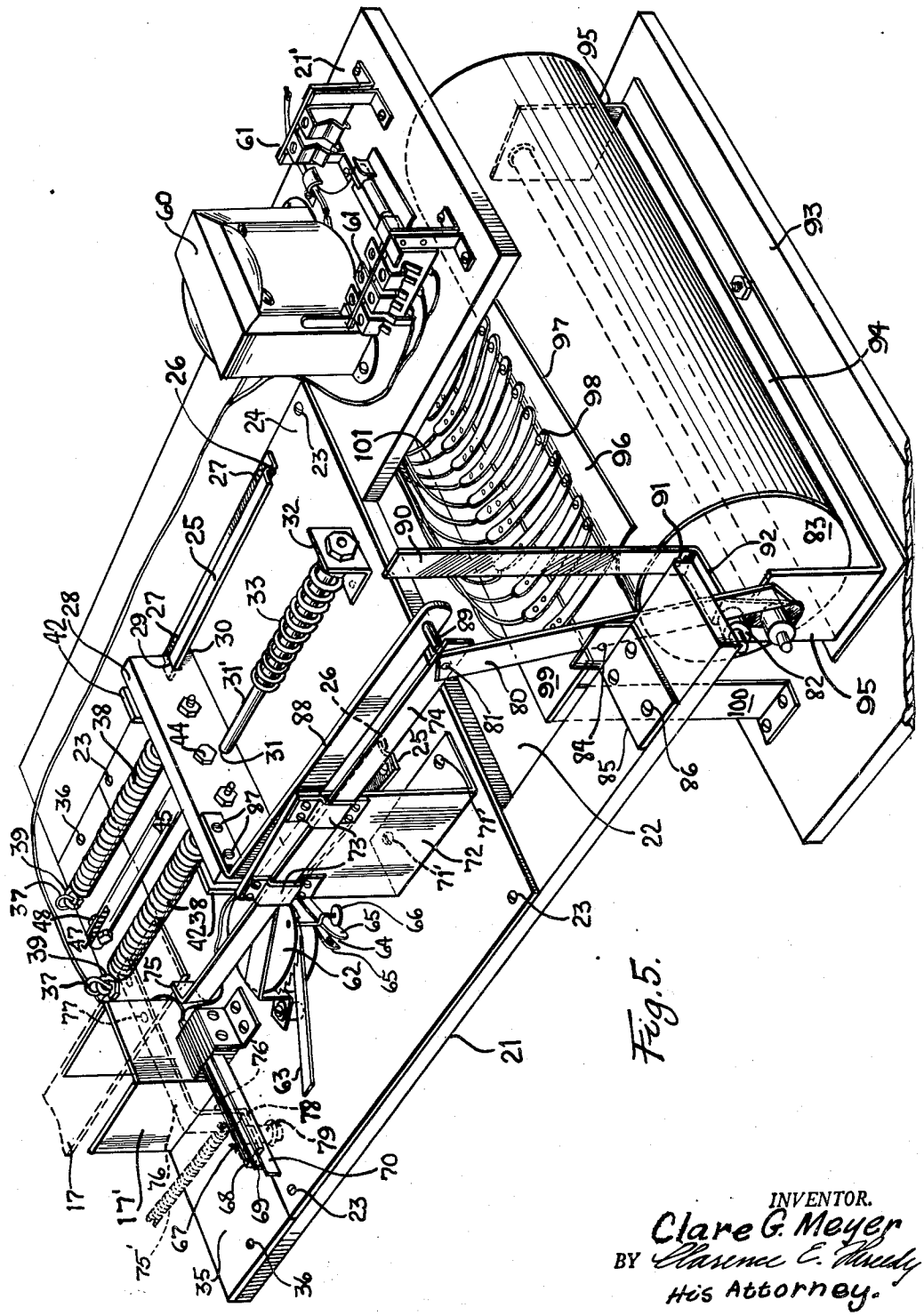


Fig. 5.

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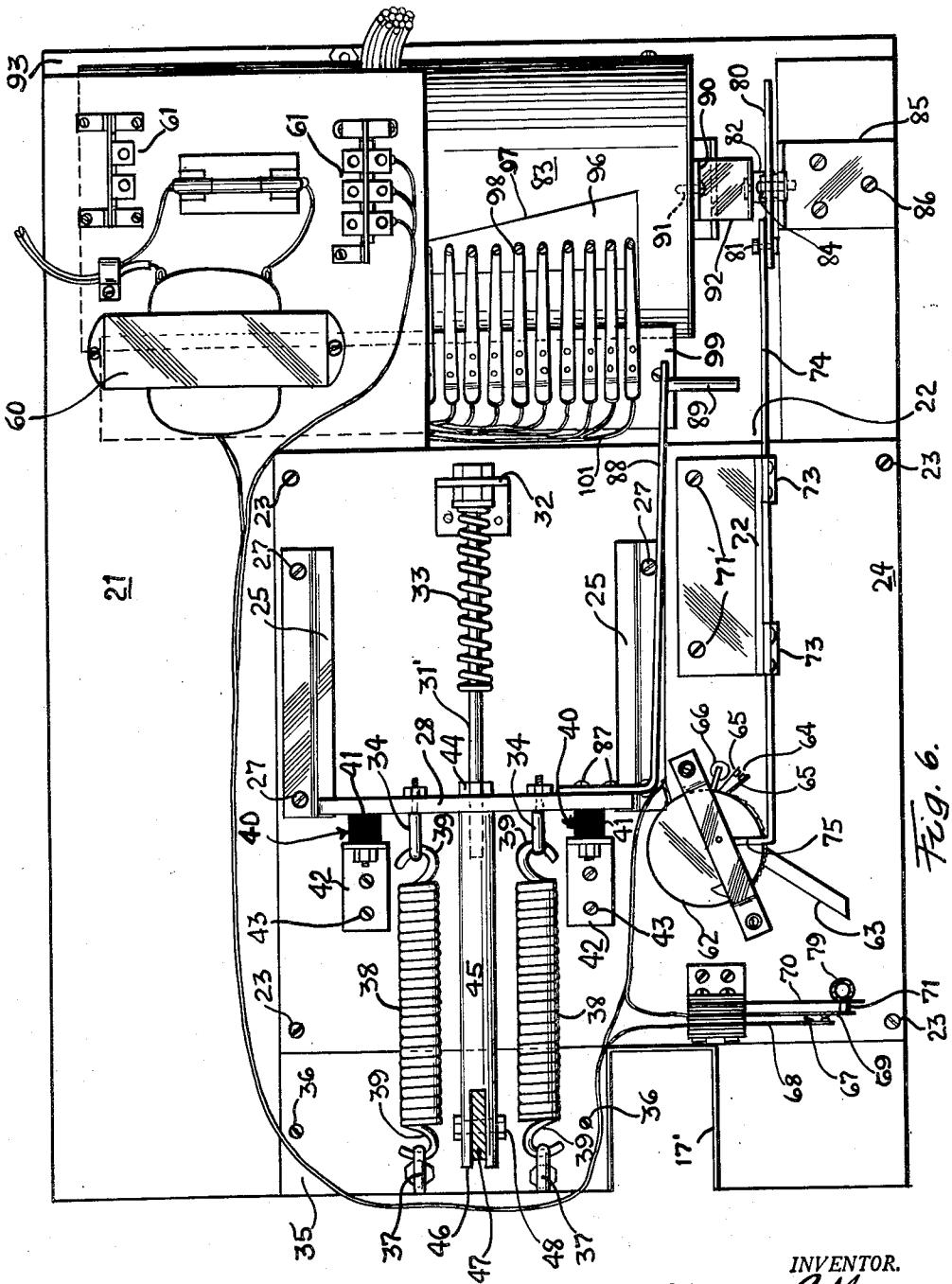


Fig. 6.

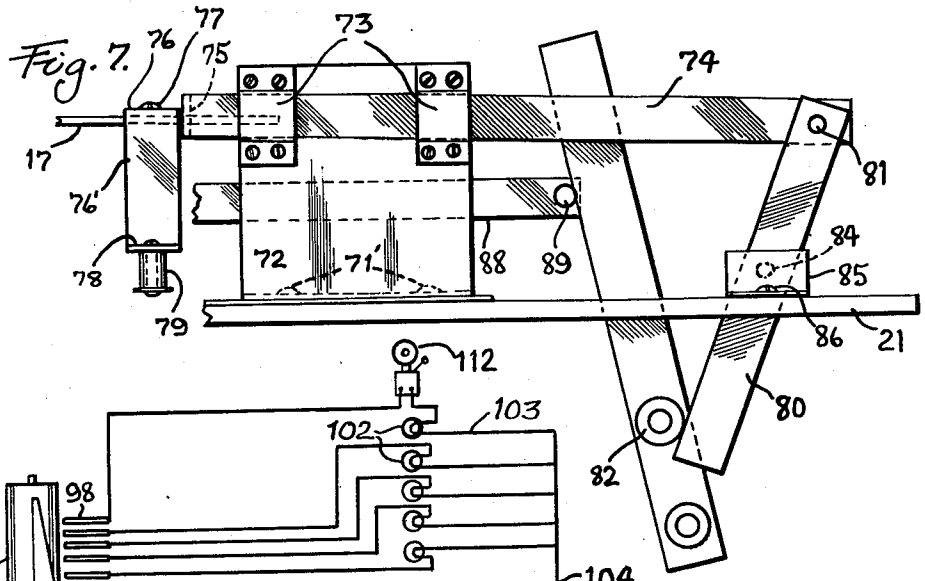
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Oct. 17, 1950 C. G. MEYER 2,526,495

GRIP TESTING DEVICE

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Fig. 7.



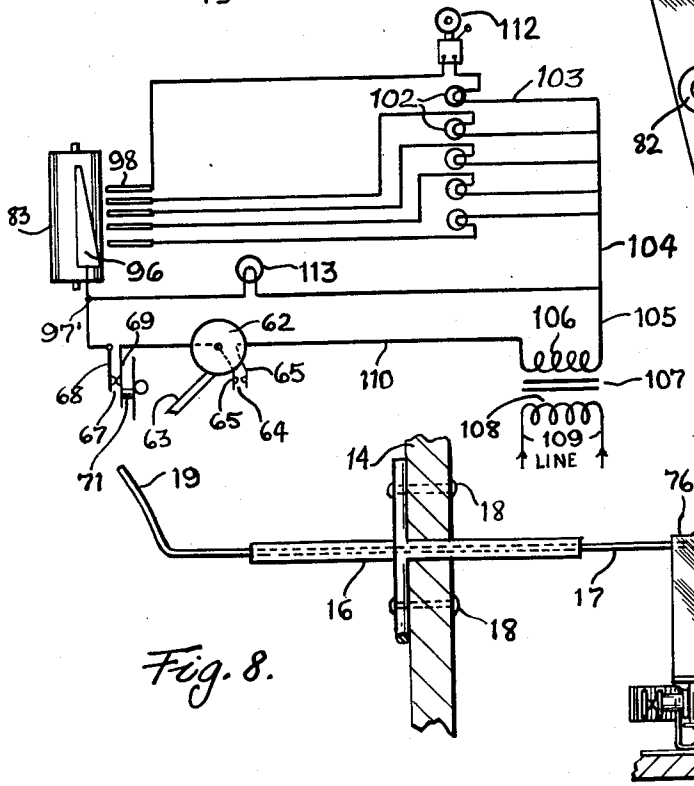




Fig. 9.

Fig. 8.

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Patented Oct. 17, 1950 2,526,495

# UNITED STATES PATENT OFFICE

2,526,495

## GRIP TESTING DEVICE

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Application December 20, 1946, Serial No. 717,473

7 Claims. (Cl. 73—380)

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My invention relates to grip testing devices.

More specifically the invention relates to an apparatus having a plurality of electric bulbs arranged in alignment to the rear of a glass panel having superimposed over the aligned bulbs a picture or outline of a thermometer, whereby when the gripping apparatus of the device is actuated and by reason of such actuation, these light bulbs are successively illuminated, they will simulate the rise of mercury in the thermometer.

In this aspect of the invention, the object is to provide a device of the character hereinafter described which will be simple in construction, economical in manufacture, and easy of operation, together with the object of affording pleasure as well as amusement to the operator.

Other objects will appear hereinafter.

The invention consists in the novel combination and arrangement of parts to be hereinafter described and claimed.

The invention will be best understood by reference to the accompanying drawings showing the preferred form of construction, and in which;

Fig. 1 is a perspective view of an apparatus embodying my invention and with a face panel thereof partly broken away;

Fig. 2 is a side elevational view of the gripping members embodied in the invention;

Fig. 3 is a fragmentary rear view of the apparatus illustrated in Fig. 1 with the back wall or rear panel removed;

Fig. 4 is a fragmentary back perspective view of the apparatus shown in Fig. 1 illustrating a hinged mounting panel in partly open position;

Fig. 5 is a perspective view of the gripping device and light bulb control mechanism embodied in the invention;

Fig. 6 is a plan view of the same;

Fig. 7 is a side elevational view of certain resetting mechanism embodied in the invention;

Fig. 8 is a fragmentary sectional detail view of a coin slide embodied in the invention; and

Fig. 9 is a diagrammatical plan view of an electric circuit embodied in the invention.

The several objects of my invention are accomplished by the preferred form of construction illustrated in the accompanying drawings, in which drawings a cabinet is indicated at 10. This cabinet comprises an upper section 11 and a lower section 12, the upper section 11 being stepped back from the top of the lower section 12 to provide an exposed top wall 13.

The front wall 14 of the cabinet 10 carries a coin slide 15. This coin slide 15 per se constitutes no part of the present invention. Any

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approved coin slide may be used. It is preferable that a coin slide of the construction shown in United States Patent No. 1,908,380, dated May 9, 1933, be employed, in which coin slide there is provided a guide structure 16 and a slide plate 17. The guide structure 16 is connected to the wall 14 by suitable bolts 18. This slide 17 provides a finger piece 19 and, like the slide of the patent referred to, has a coin receiving aperture (not shown) in which the coin is deposited in order to condition the aparatus for operation.

The lower section 12 of the cabinet 10 provides oppositely disposed supporting cleats 20 on which is removably supported a mounting plate 21. This mounting plate 21 has a cutout portion 22 for reasons hereinafter more apparent.

On this mounting plate 21, there is secured, as by means of screws 23, a substantially flat plate 24. On this plate 24, and arranged in confronting relation with respect to each other are guide bars 25, providing, together with the plate 24, guiding grooves 26. These guide bars 25 are secured to this plate 24 by means of screws 27. These guide bars 25 are included as a part of a pressure grip resisting apparatus comprising an elongated bar 28 having cutout portions 29 for the passage of the bars 25 and to provide projections 30 which project into the guiding grooves 26. Formed in this bar 28 is an opening 31, through which projects a shaft 31' fixed to and carried by a bracket 32, in turn secured to the plate 24 by spot welding or the like. Loosely mounted on this shaft 31' is an expansion spring 33.

Secured to the bar 28 are eyelet bolts 34. Secured to a plate 35, in turn connected as at 36 to the mounting plate 21, are eyelet bolts 37 spaced substantially from the eyelet bolts 34 and connected to such bolts 34 by means of complementary springs 38. These springs 38 have connection with their respective eyelet bolts, through the medium of the hook-shaped ends 39 thereof. Suitable cushioning stops 40 are provided to limit the movement of the bar 28 relative to the guide bars 25. This cushioning stopping means includes a pair of rubber studs 41 supported by brackets 42 connected to the plate 24 as at 43.

Secured to the bar 28 as at 44, and extending rearwardly therefrom between the springs 38, is a connecting rod 45, bifurcated as at 46. Positioned in this bifurcation 46 is a link 47 (Figs. 2 and 6). This link 47 is pivotally connected to the rod 45 by means of a pintle 48.

The upper end portion of the link 47 terminates into a gripping bar 49. The link 47 projects

through an escutcheon plate 50 provided by the top wall 13 and is pivoted to this escutcheon plate 50 by means of a pintle 51. The rear face 52 of the gripping bar 49 is provided with undulations 53 to correspond to the shape and curvature of that portion of the fingers of the hand by which this bar is gripped.

A complementary gripping bar 54 is provided and this bar 54 is disposed forwardly of the bar 49 and formed as an integral part of the escutcheon plate 50. This escutcheon plate 50 provides a reduced portion 55 which fits into an opening 56 formed in the top wall 13, and is secured in this opening by means of a plate 57 secured to the reduced portion 55 by means of screws 58.

The plate 21 provides a portion 21' on which are mounted a transformer 60 and wire terminals or clamps 61 which afford connection for the circuit wires hereinafter more fully explained in reference to Fig. 9. This transformer 60 and wire terminals or clamps 61 constitute no part of the present invention and are shown for illustrative purposes only.

On the plate 24 is mounted a spring timing device 62 of a well known construction, including a reset arm 63 and a switch unit 64 comprising contact fingers 65 normally moved into contact with respect to each other by a bearing roller 66. This timing device 62 per se constitutes no part of the present invention and, for that reason, only so much of the timing device has been illustrated as necessary for an understanding of the operation herein.

On this plate 24 and insulated therefrom is a switch 67 comprising spring switch leaves 68 and 69. Adjacent this switch 67 is a flexible pressure leaf 70 having a projection 71 formed of insulating material and adapted, when bearing against the switch leaf 69, to move the latter into contact with the switch leaf 68, the flexing of this leaf 70 being effected as hereinafter more fully described.

On the plate 24 is secured as at 71' an upstanding plate 72. On this plate 72 there are provided bearing brackets 73 which slidably support a reset rod 74. One end portion of this reset rod 74 is angled to provide a lateral extension 75 adapted to be engaged (Fig. 7) by an arm 76 carried by the slide plate 17 as at 77. This arm 76 provides a depending finger 76' having a horizontal extension 78 carrying a roller 79 adapted to engage the leaf 70 for flexing the same in a manner to close the switch 67.

A link 80 is pivotally connected to the opposite end portion of the reset rod 74 as at 81. This link 80 extends downwardly through the cutout portion 22 of the plate 21 and is adapted to have bearing engagement with a roller 82 carried by a drum 83 hereinafter more fully set forth. This link 80 is pivoted as at 84 to a bracket 85 connected as at 86 to an adjacent portion of the plate 21.

Secured to the bar 28 as at 87 and extending rearwardly therefrom is a pusher arm 88 having a lateral pin 89 adapted to engage an upstanding arm 90 secured as at 91 to the drum 83 and having a lateral extension 92 carrying the roller 82.

The lower section 12 of the cabinet 10, beneath the cleats 20, provides a second pair of cleats 20' which removably support a mounting plate 93. On this plate 93 is a U-shaped bracket 94, the limbs 95 of which rotatably support the drum 83.

This drum 83 carries a contact plate 96 having a slanting edge 97 for successive engagement with a plurality of contact fingers 98. The drum 83 is formed of non-conductive material. These contact fingers 98 are carried by a mounting board 99 of non-conductive material, and this mounting board 99 is supported from the plate 93 by feet 100. These contact fingers 98 are each connected to circuit wires 101.



These circuit wires 101 are connected to one side of electric bulbs 102 (Fig. 9), the opposite sides 103 of the bulbs being connected to a common conductor 104 in turn connected to one side 105 of the secondary coil 106 of a transformer 107, the primary side 108 of the transformer 107 being connected to the power line 109.

The opposite side 110 of the secondary coil 106 has connection with one of the contact fingers 65 of the switch 64, the other contact finger 65 being connected to the switch leaf 69 of the switch 67. The switch leaf 68 of this switch 67 is connected to the plate 96 as at 97'.

In Fig. 9, this circuit just described has been diagrammatically illustrated and while I have shown only five lamps in this circuit, it is to be understood that the circuit will employ the number of lamps as are mounted on the panel 111.

Referring to Fig. 9, the uppermost of the lamps 102 has incorporated in its circuit an electric bell 112 for reasons hereinafter more fully explained. Shunted across the secondary coil 106 of the transformer 107 is an electric bulb 113. This bulb 113 is arranged in the socket 114, carried as at 115 by the panel 111. This panel 111 is hinged to an adjacent side wall 116 by means of hingles 117 and latched in closed position by means of a suitable latch 118.

The face 119 of the panel 111 is provided with recesses 120, into which the sockets (not shown) carrying the bulbs 102 are adapted to be mounted. These bulbs 102 are arranged in alignment with respect to each other to the rear of a glass 121. The major portion of this glass 121 is opaque.

A longitudinal medial portion 122 thereof is semi-transparent and is designed to represent a thermometer 123 with an enlarged area 124 representing the mercury bowl, and an area 125 representing the channel through which mercury in a thermometer ordinarily rises. The glass 121 has digits 126 appearing thereon to indicate the degree of grip pressure. The light bulb 113 is disposed to the rear of the area 124 representing the mercury bulb.

The coin slide plate 17 is returned to its normal position by means of a spring 75', fragmentarily illustrated in Fig. 5 and showing one end connected to the arm 76, while the opposite end is intended to be connected in any suitable manner to an adjacent portion of the front wall 14 of the cabinet section 12. Coins from the slide 17 are intended to drop into a coin channel 17' from whence they will pass into a suitable receptacle (not shown).

The operation of my device is as follows. An operator will deposit a coin in the coin slide 15, which coin permits the slide plate means, shown in the United States Patent No. 1,908,380, to be moved inwardly. As the coin slide 15 is moved inwardly, the roller 79 will move away from the leaf spring 70, thus permitting the spring leaves 68 and 69 to move from contact with respect to each other to open the switch 71. Continued inward movement of the slide 17 brings the roller 79 into contact with the reset arm 63 of the spring timing device 62 and, in a well known manner, the reset arm 63 will then close the switch 64, but as the switch 67 is

opened, the circuit to the light bulbs 102 is broken.

Continued inward movement of the slide 17 brings the depending finger 76' into contact with the lateral extension 75 of the reset rod 74. Movement of this rod 74 by inward movement of the slide 17 pivots the link 80 and the pivotal movement of this link 80, by reason of the bearing engagement between the lower end portion of the link 80 and the roller 82, will rotate the drum 83 in an anti-clockwise direction, as viewed in Fig. 5, to move the plate 96 from engagement with the contact fingers 98.

The operator now firmly grips the bars 49 and 54 and presses the same together, thereby to pivot the link 47 in a direction to move the bar 28 relative to the guide bars 25 in a direction to move the pin 89 into contact with the arm 90, whereby to rotate the drum 83 a distance commensurate with the movement of the bar 28 relative to the guide bars 25.

As the drum 83 is rotated, the contact fingers 98 will successively engage the plate 96 after the spring 17' has returned the slide 17 to its outermost position, to a position where the roller 79 will bear against the spring leaf 70 to close the switch 67. After the contact fingers 98 successively engage the plate 96, the electric bulbs 102 will be successively illuminated to symbolize the rise of mercury in the thermometer and, at the same time, to indicate the gripping pressure applied to the bars 49 and 54, as measured by the digits 126.

If the operator is successful in illuminating all of the bulbs 102, when the uppermost of these bulbs is illuminated, the bell 112 will be energized and audibly announce that the operator has moved the pressure device, including the bar 28, to its maximum position.

As the drum 83 is rotated in a clockwise direction, as viewed in Fig. 5, the bearing engagement between the roller 82 and the lower end portion of the link 80 will reset the reset bar 74 to its original normal position.

By providing the hinged panel 111, replacement of the bulbs 102 may be conveniently made as and when required.

As soon as the switches 67 and 64 are closed, the area 124, symbolic of the mercury bulb of the thermometer, will be illuminated by the electric bulb 113 and this illumination will continue until the circuit is broken by the opening of the switch 64.

While I have illustrated and described the preferred form of construction for carrying my invention into effect, this is capable of variation and modification without departing from the spirit of the invention. I, therefore, do not wish to be limited to the precise details of construction set forth, but desire to avail myself of such variations and modifications as come within the scope of the appended claims.

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

1. A grip testing device comprising a panel having a plurality of electric bulbs arranged in spaced relation thereon, an electric circuit for said bulbs and means for controlling said electric circuit, said means including a plurality of contact fingers, a rotatable drum having a contact plate thereon adapted to successively engage said fingers, and hand grip pressure actuating means for rotating said drum in a direction to contact the plate thereof successively with said contact fingers.



2. A grip testing device comprising a panel having a plurality of electric bulbs arranged in spaced relation thereon, an electric circuit for said bulbs and means for controlling said electric circuit, said means including a plurality of contact fingers, a rotatable drum having a contact plate thereon adapted to successively engage said fingers, hand grip pressure actuating means for rotating said drum in a direction to contact the plate thereof successively with said contact fingers, and coin controlled means for rotating said drum in an opposite direction to move the plate of the drum from contact with said contact fingers.

3. A grip testing device comprising a panel having a plurality of electric bulbs arranged in spaced relation thereon, an electric circuit for said bulbs and means for controlling said electric circuit, said means including a plurality of contact fingers, a rotatable drum having a contact plate thereon adapted to successively engage said fingers, and hand grip pressure actuating means for rotating said drum in a direction to contact the plate thereof successively with said contact fingers, said hand grip pressure actuating means including a pair of hand gripping bars movable relative to each other under hand gripping pressure and means for resisting movement of said bars.

4. A grip testing device comprising a panel having a plurality of electric bulbs arranged in spaced relation thereon, an electric circuit for said bulbs and means for controlling said electric circuit, said means including a plurality of contact fingers, a rotatable drum having a contact plate thereon adapted to successively engage said fingers, hand grip pressure actuating means for rotating said drum in a direction to contact the plate thereof succesively with said contact fingers, and coin controlled means for rotating said drum in an opposite direction to move the plate of the drum from contact with said contact fingers, said hand grip pressure actuating means including a pair of hand gripping bars movable relative to each other under hand gripping pressure and means for resisting movement of said bars.

5. A grip testing apparatus comprising a cabinet having a panel the major portion of which is opaque and with the minor area thereof semi-transparent, said semi-transparent area simulating a thermometer, a mounting panel to the rear of said opaque panel, a plurality of electric bulbs arranged in aligned spaced relation with respect to each other carried by said mounting panel to the rear of said semi-transparent area, an electric circuit for said bulbs, and means for successively illuminating said electric bulbs, said means including a plurality of stationary contact fingers, a rotatable plate adapted to successively engage said contact fingers and grip pressure actuating means for rotating said plate in said successive engagement with said contact fingers.

6. A grip testing apparatus comprising a cabinet having a panel the major portion of which is opaque and with the minor area thereof semi-transparent, said semi-transparent area simulating a thermometer, a mounting panel to the rear of said opaque panel, a plurality of electric bulbs arranged in aligned spaced relation with respect to each other carried by said mounting panel to the rear of said semi-transparent area, an electric circuit for said bulbs, means for suc-

cessively illuminating said electric bulbs, said means including a plurality of stationary contact fingers, a rotatable plate adapted to successively engage said contact fingers and grip pressure actuating means for rotating said plate in said successive engagement with said contact fingers, and coin controlled means for rotating said drum in an opposite direction to move the plate of the drum from contact with said contact fingers.

7. A grip testing apparatus comprising a cabinet having a panel the major portion of which is opaque and with the minor area thereof semi-transparent, said semi-transparent area simulating a thermometer, a mounting panel to the rear of said opaque panel, a plurality of electric bulbs arranged in aligned spaced relation with respect to each other carried by said mounting panel to the rear of said semi-transparent area, an electric circuit for said bulbs, and means for successively illuminating said electric bulbs, said means including a plurality of stationary contact fingers, a rotatable plate adapted to successively engage said contact fingers and hand grip pressure actuating means for rotating said plate in said successive engagement with said contact fingers, said hand grip pressure actuating means including a pair of hand gripping bars movable relative to each other under hand gripping pressure and means for resisting movement of said bars.



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## REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

| Number | Name | Date |
|---|---|---|
| 459,465 | Allen | Sept. 15, 1891 |
| 737,296 | Taylor | Aug. 25, 1903 |
| 748,683 | Amond | Jan. 5, 1904 |
| 1,181,226 | Kenyon | May 2, 1916 |