

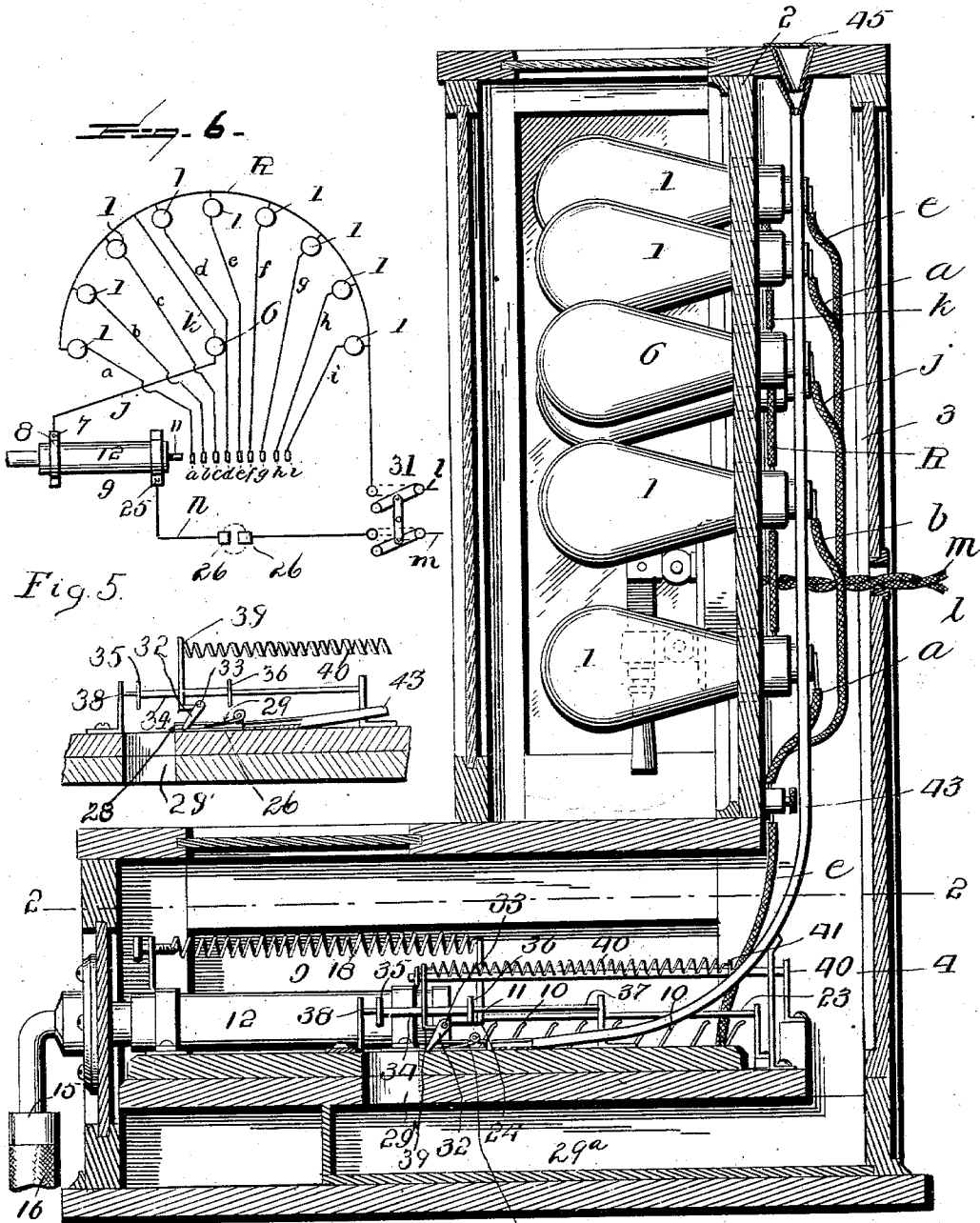
No. 741,080.

PATENTED OCT. 13, 1903.

S. M. TAYLOR.
COIN CONTROLLED TESTING MACHINE.
APPLICATION FILED JULY 30, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES

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Fig. 1. 29

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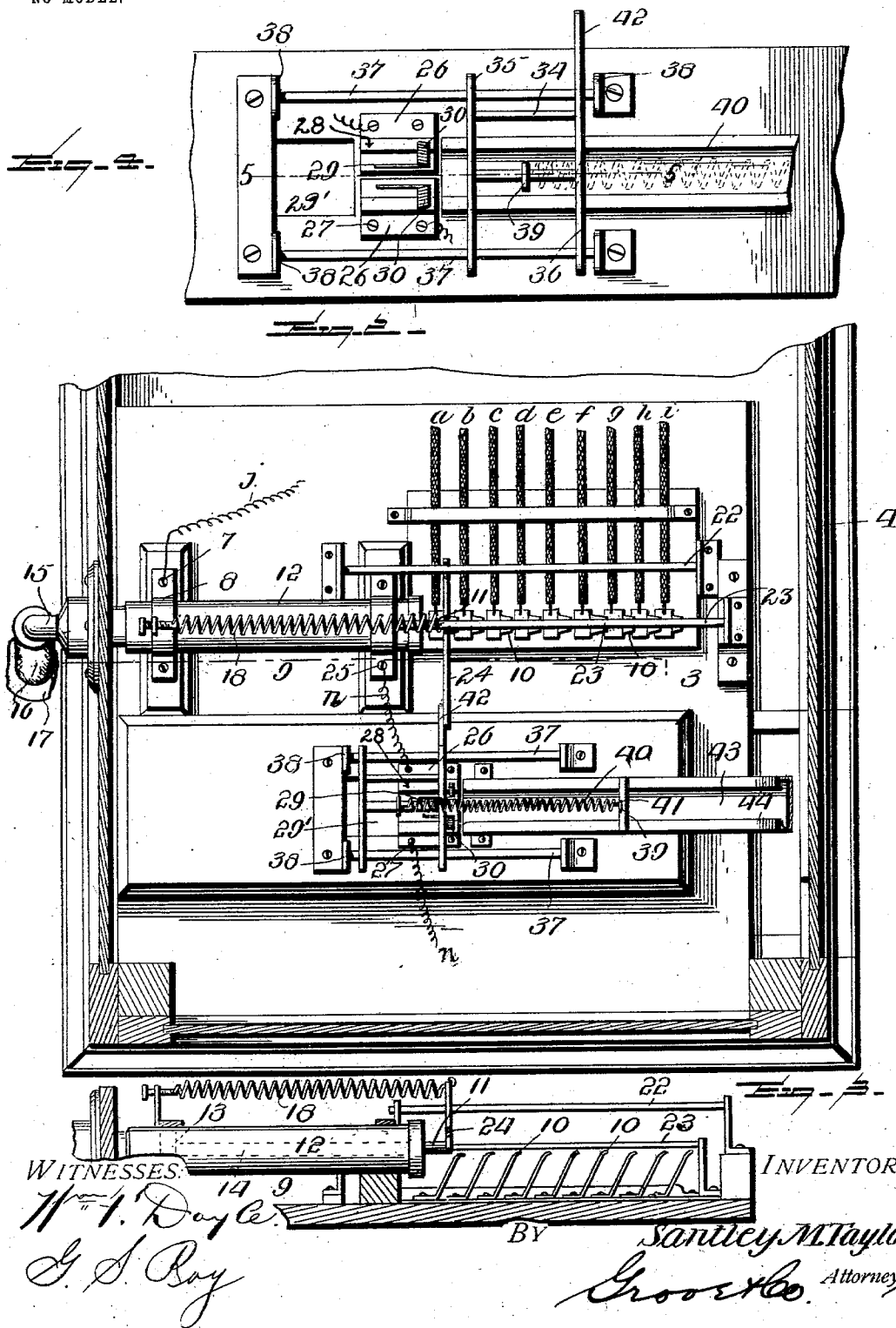
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UNITED STATES PATENT OFFICE.

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M. MERRILL, AND ANNIE F. HILLS, OF WASHINGTON, DISTRICT OF
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COIN-CONTROLLED TESTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 741,080, dated October 13, 1903.

Application filed July 30, 1902. Serial No. 117,684. (No model.)

To all whom it may concern:

Be it known that I, SANTLEY M. TAYLOR, a citizen of the United States, residing at Washington, District of Columbia, have invented certain new and useful Improvements in Coin-Controlled Testing-Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to check-controlled apparatus particularly of that type known as "check-in-circuit," and has special reference to an improved coin-controlled testing-machine, such as available for testing and measuring the strength of a person in various ways—such, for instance, as the force of a blow, the strength of pull or lift, the strength and capacity of the lungs, &c. However, the special purpose of the invention is to provide a coin-controlled testing-machine for indicating the various strengths of lung-power.

In carrying out the invention the same has in view the construction of a practical, effective, and attractive type of spirometer or lung-tester operated electrically and controlled through novel coin mechanism, whereby a prepayment is required before the machine is rendered available for testing purposes.

Another object of the invention is to associate with the machine a novel type of temporary circuit-maintainer, whereby the apparatus is set and maintained in an operative condition until it has been worked to the complete power or strength of the person operating the same.

With these and many other objects in view, which will more readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts, which will be hereinafter more fully described, illustrated, and claimed.

The essential features of the invention involved in the special objects above indicated are necessarily susceptible to a wide range of modification without departing from the

spirit or scope of the invention; but a preferred embodiment of the latter is shown in the accompanying drawings, in which—

Figure 1 is a sectional view of a coin-controlled spirometer or lung-testing machine embodying the improvements contemplated by the present invention. Fig. 2 is a horizontal sectional view on the line 2 2 of Fig. 1, exposing in plan the prime actuator, the succession of circuit-closers for the working circuits, and the preferable construction of coin-controlled circuit-maintainer. Fig. 3 is a detail sectional view on the line 3 3 of Fig. 2, illustrating more plainly the relation of the prime actuator to the succession of circuit-closers. Fig. 4 is an enlarged detail plan view of the temporary circuit-maintainer. Fig. 5 is an enlarged detail sectional view on the line 5 5 of Fig. 4, showing more clearly the construction of the temporary circuit-maintainer and the ejector cooperating therewith. Fig. 6 is a diagrammatic view showing the circuit-wire connections.

Like reference characters designate corresponding parts throughout the several figures of the drawings.

While the coin-controlled mechanism and the instrumentalities directly cooperating therewith constitute the basis of the present application, the preferred form of machine in connection with which the improvements are associated is shown in the drawings, and therefore exemplifies one of the preferred uses of the features covered by the present case.

The spirometer or lung-testing machine with which the coin mechanism is preferably employed embodies a series or group of separate and independent test-indicators which are separately brought into action according to the strength or force expended by the person using the machine. These indicators, which preferably consist of electric incandescent or glow lamps, may be tastefully grouped in an artistic arrangement.

In the drawings the series of electric lamps constituting the individual test-indicators are designated by the numeral 1, and each

represents one number of any scale of indications that may be determined upon for indicating different strengths of lung-power.

In the construction shown the test-indicating lamps 1 are grouped in a fanciful arrangement upon a supporting-base 2, arranged within the upright exhibiting-case 3 of the box-cabinet 4. In connection with the series of successive test indicators or lamps 1 there is also preferably employed an extra or additional lamp 6, constituting an annunciating-indicator for showing the machine to be in working condition until one or more of the lamps 1 have been operated. The test-indicating lamps 1 are separately and individually energized. This is preferably accomplished through the medium of a plurality of working circuits including a common return-wire R and respectively having the main circuit-wires *a b c d e f g h i* and others, according to the number of test indicators or lamps 1. Each of the main working circuits *a R b R c R*, &c., have the separate wires thereof connected to the terminals of one of the test indicators or lamps 1, so that each lamp has its own working circuit, and in connection with the separate working circuits for the test indicators or lamps 1 it should be noted at this point that the extra or additional lamp 6, which constitutes an annunciating-indicator, also has an independent working circuit, including the main circuit-wires *j k* and the said common return R, said main circuit-wires of the annunciating-indicating circuit being connected with the terminals of the lamp 6, and one of the said wires, conveniently designated as the wire *j*, has a permanent metallic connection 7 with a metallic part 8 of the prime actuator, which is designated in its entirety by the numeral 9.

The plurality of working circuits for the test indicators or lamps are normally open and have associated therewith a succession of circuit-closers, consisting of an alined series of upstanding contact-springs 10 and a traveling or movable contact 11, having a travel within the longitudinal plane of the alined series of said springs and movable into successive contact therewith. The springs 10 are of duplicate construction and arranged in regularly-spaced order upon a suitable supporting-base mounted within the box portion of the cabinet.

In adapting the coin-controlled means to a lung-testing machine such as shown in the drawings the prime actuator 9 is in the form of a pressure-operated device comprising an air-cylinder 12 and an operating-piston 13. The piston 13 is connected to one end of a stem 14, whose outer end or extremity preferably constitutes the traveling or movable contact 11 referred to. One end of the air-cylinder has fitted thereto an air-pipe connection 15, carrying a flexible blow-tube 16, provided with a mouthpiece 17 for the user of the machine. There is preferably associated with the operating-piston 13 a variable

resistance, consisting of a retractile spring 18, having suitable connection with the piston-stem and arranged in such a manner as to make it progressively more difficult to energize the separate test-indicating lamps. A cross-arm 24, carried at the outer end of the piston-stem 14, may be provided for engagement with suitable guide-rods 22 and 23 for steadying the reciprocatory movement of the piston-stem. Normally under the influence of the spring 18 the piston is retracted to its initial position, with the traveling contact 11 out of engagement with the first of the series of contact-springs 10. All of the working circuits for the test-indicators are therefore open or broken. The machine is connected up with any suitable source of electrical energy sufficient to energize the electric lamps, and in the construction shown the return-wire may be connected with one lead *l* from a source of electrical energy, while the other lead-wire *m* from the same source has a direct or branch wire connection *n* with a point of attachment 25 in metallic circuit or connection with both the traveling contact 11 and the permanent contact 7 for the wire *j* of the annunciating-indicator circuit. In the arrangement of wires shown in the drawings the metallic parts of the prime actuator 9 are utilized for the connections referred to. With a current-supply circuit thus established and in true working condition a circuit will necessarily be established to energize the annunciating-indicator 6, said circuit being completed through the wires *n*, the metallic cylinder 12, wire *j*, lamp 6, wire *k*, return R, and lead *l*. The establishment of this circuit by the glowing or lighting of the lamp 6 announces or indicates that the apparatus is in operative condition, so that it only becomes necessary for a person to blow through the tube 16 and force out the piston 13 as far as possible.

In the outward movement of the piston the traveling contact 11 first energizes the first of the series of contacts 10, thus completing the first working circuit—viz., wire *m n*, contact 11, first contact 10, wire *a*, first lamp 1, return R, and lead *l*. As the person is capable of moving the piston farther out the traveling contact 11 becomes successively engaged with the different contact-springs 10 for the separate working circuits, thus successively throwing the separate lamps into action to give different indications, according to the strength of the lungs. When the person releases the lung-pressure, the spring 18 sharply retracts the piston, and thereby automatically opens or breaks all of the working circuits which have been closed with the exception of the working circuit for the annunciating-signal 6. In connection with the operation described it should be observed that the traveling contact 11 as it moves into successive engagement with the different contacts 10 maintains contact with all of the previously-engaged springs 10, thus causing all of the

lamps which are energized to remain lighted until the lung-pressure is removed.

An important feature of the present invention resides in the provision of means whereby the annunciating-signal 6 will only be caused to glow when it is desired to use the apparatus, and the current-supply circuit will be broken when the machine is thrown out of use. This is accomplished through the medium of a temporary circuit-maintainer which is preferably of a coin-controlled form in order that the machine can be made of prepayment or coin-in-the-slot type. While different types of temporary circuit-maintainers may be employed for carrying out this part of the invention, for illustrative purposes the preferable form is disclosed in the present case.

The temporary circuit-maintainer shown in the drawings essentially consists of a coin-switch of the type known as "coin-in-circuit" and primarily consisting of a pair of duplicate oppositely-arranged fixed contact members 26. These contact members are arranged in spaced contacting relation and secured fast by screws or equivalent fastening means 27 to a suitable support within the box portion of the cabinet 3. These spaced fixed contact members are provided on the upper sides thereof with the inturned flanged coin-guides 28, which are adapted to receive the edges of the coin designed to cooperate with the said contact members to complete the current-supply circuit. The guideways provided by the flanged inturned guides 28 are open at both ends, so as to receive the coin at one end and permit of its discharge at the other through the drop-opening 29', which serves to deliver the used coin into the money-drawer or till 29^a, suitably arranged within the bottom portion of the cabinet and removable or replaceable in any desired manner.

In conjunction with the separate fixed contact members 26 of the circuit-maintainer or coin-switch there are preferably employed coin holders or retainers 29. One of these coin holders or retainers 29 is associated with each of the contact members 26 and essentially consists of a spring-arm having a coiled section 30 secured fast to the contact member or plate 26 and serving to normally press the spring-arm in a downward direction to engage the upper side of the coin and hold it in firm metallic contact within the flanged guides of the fixed members until the coin has served its purpose and the same is ready for ejection or discharge into the opening 29'.

In connection with the wiring of the machine the coin-switch described is interposed in the line of one of the leads and has connected, respectively, to the separate contact members 26 thereof the separate branches of the lead-wire *m n*. Also it may be desirable to associate with the main leads *l m* a two-point or other type of cut-out switch 31, which

may be used to throw the machine entirely in or out of action.

When the coin has served its purpose in connection with the other members of the coin-switch or circuit-maintainer, the invention contemplates means for automatically ejecting it out of engagement with the said contact members 26. This is preferably accomplished through the medium of an ejecting-dog 32. This ejecting-dog is of a pendent trailing type, having the point thereof arranged to move into the plane of and between the opposite fixed contact members 26 and having its upper end pivotally connected at 33 with a carrying-frame 34. This carrying-frame may be of any suitable construction, but is generally of the form shown, and consists of suitably-connected cross-bars 35 and 36, slidably mounted upon fixed guide-rods 37, arranged in opposite parallel relation and supported at their ends in upstanding brackets 38, mounted upon the base supporting the circuit-maintainer or coin-switch. The carrying-frame 34 has a reciprocatory or sliding movement upon the guides or guide-rods 37 and is provided with an upstanding adjusting-arm 39, at the lower end of which is preferably pivotally hung the said dog 32 and to the upper end of which is connected one end of an adjusting-spring 40, the other end of which spring is connected to a fixed point of attachment, as at 41, thus providing means for normally drawing the carrying-frame 34 in a direction away from and in rear of the coin-switch.

To provide means for actuating or moving the dog-carrying frame 34 in an opposite direction for ejecting the coin from the fixed switch members, an operative engagement is provided for between the said carrying-frame and the outer contact end of the piston-stem 14. This preferably consists of a tappet-arm 42, extended from any of the cross-bars of the said frame and lying in the path of any one of the cross-arms 24, carried by the said piston-stem. It will be obvious that when the piston-stem, with its traveling contact 11, moves out over the series of contact-springs 10 the carrying-frame 34 necessarily follows this movement under the influence of its adjusting-spring 40; but upon the return movement of the piston under the influence of the spring 18 the superior strength of said spring 18 causes the cross-arm 24 to pull against the arm 42 of the dog-carrying frame, thus moving the said frame toward the coin-switch and causing the point of the dog carried thereby to move forcibly against the coin and eject it from the members holding the same. This action throws the coin out of the fixed switch members, and thereby opens the current-supply circuit, thus preventing further operation of the apparatus until a new coin is introduced into the coin-chute 43.

The coin-chute 43 essentially consists of an open guideway or plate having the inturned

guiding-flanges 44 at the side edges thereof, and the innermost end of said chute terminates directly adjacent to the coin-switch with the flanges 44 thereof in register with the flanged guides 28 of the switch members 26, thus providing a continuous guideway for the coin directly into the said members 26 of the coin-switch. The other end of the coin-chute 43 leads in any suitable manner to the coin-slot 45, exposed in a convenient position upon the cabinet for the introduction of a coin or check of proper value. By reason of having the dog 32 pivotally supported at an angle it will be obvious that the same readily trails back over a coin which has passed into the fixed members of the coin-switch. When the coin is thus introduced and passes into the switch members, a circuit is established through the annunciating-signal 6, thus indicating that the apparatus is set ready for operation.

From the foregoing it is thought that the construction, operation, and many advantages of the herein-described coin-controlled testing-machine will be readily apparent without further description, and it will also be understood that various changes in the form, proportion, and minor details of construction may be resorted to without departing from the spirit of the invention or sacrificing any of the advantages thereof.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

1. In a coin-controlled testing-machine, a series of independent test-indicating electric lamps, a series of separate working circuits for the said lamps, a pressure-operated circuit-closing device having a movement to successively close the working circuits for the separate lamps to cause the latter to glow, a temporary circuit-maintainer arranged to receive the coin from the chute and having circuit connections common to all of the working circuits, and a coin-ejector actuated by said pressure-operated circuit-closing device and cooperating with the latter to open or break all of the circuits upon the release of pressure.

2. In a coin-controlled testing-machine, the combination of a series of independent test-indicating electric lamps, a separate annunciating-lamp, a series of separate working circuits for the test-lamps, a pressure-operated circuit-closing device having means for successively closing the working circuits for the test-lamps to cause the latter to glow, a temporary circuit-maintainer arranged to receive the coin and comprising means for temporarily establishing and maintaining a closed circuit through the annunciating-lamp, and a coin-ejector actuated by the pressure-operated circuit-closing device and cooperating with the latter to open all of the aforementioned circuits upon the release of pressure.

3. In a coin-controlled testing-machine, a

series of test-indicating electric lamps, a plurality of working circuits for the said test-indicating lamps, each circuit including a contact-spring, and all of said contact-springs being arranged in spaced relation in a row, a cylinder-and-piston pressure-operated device, the piston of which is provided with a stem carrying a traveling contact for moving over the series of contact-springs, a variable resistance for the piston and its stem, a separate annunciating-indicator electric lamp having a working circuit including metal parts of the pressure-operated device, the current-supply connections including a common return for all of the lamp-circuits and a connection with the metallic parts of the pressure-operated device, and a coin-in-circuit switch included in the line of said current-supply circuit connections.

4. In a coin-controlled testing-machine of the class described, the combination with the coin-chute, the devices to be operated, circuit connections therefor, and the current-supply circuit connections, of a coin-in-circuit switch arranged in register with the inner terminal of the coin-chute as a continuation thereof, and comprising opposite spaced fixed contact members having upstanding inturned coin-guides, and a coin holding or retaining spring-arm associated with each contact member and arranged to press upon the coin.

5. In a coin-controlled testing-machine of the class described, the combination with the coin-chute, the devices to be operated and the current-supply circuit connections, of a coin-in-circuit switch arranged to receive the coin from the coin-chute, and an automatically-operating coin-ejector having a pivotal tripping-dog working into the plane of the switch members.

6. In a coin-controlled testing-machine of the class described, the combination with the coin-chute, the devices to be operated, and the current-supply circuit connections, of a coin-in-circuit switch arranged to receive the coin from the chute, an automatically-adjusted reciprocatory carrying-frame having a pivotal tripping-dog working into the plane of the switch members.

7. In a coin-controlled testing-machine of the class described, the combination with the indicating devices and the circuits therefor, of a pressure-operated device having a circuit-closing member common to the several circuits for the indicating devices, a coin-in-circuit switch arranged to receive the coin from the chute and a reciprocatory coin-ejector operating in one direction by the said circuit-closing member, and a spring for moving the ejector in an opposite direction.

8. In a coin-controlled testing-machine of the class described, the combination with the indicating devices, and the working circuits therefor, of a pressure-operated device having a traveling contact for said working circuits, said pressure-operated device also having a

5 movable arm, a coin-in-circuit switch arranged to receive the coin from the chute, a reciprocatory frame carrying a tripping-dog for the coin and having a tappet-arm cooperating with that of the pressure-operated device, and a spring connected with said frame for moving the same in one direction.

In testimony whereof I affix my signature in presence of two witnesses.

SANTLEY M. TAYLOR.

Witnesses:

S. A. TERRY,
JAS. E. EVANS.