

Feb. 26, 1952

V. A. PETERSON
AMUSEMENT DEVICE FOR TESTING
A PERSON'S TIMING ABILITY

2,587,381

Filed Nov. 29, 1946

2 SHEETS—SHEET 1

Fig. 1.

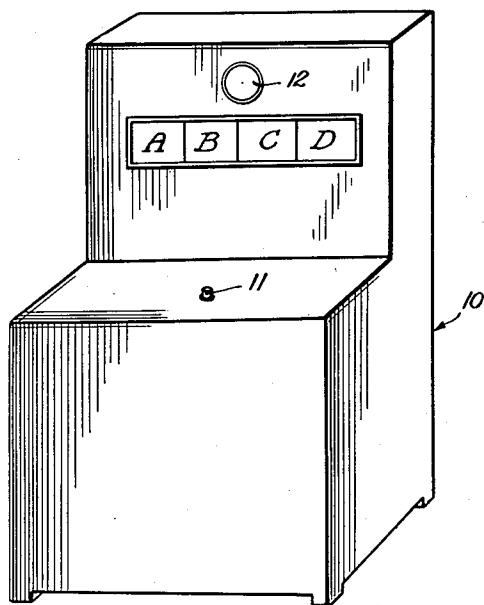
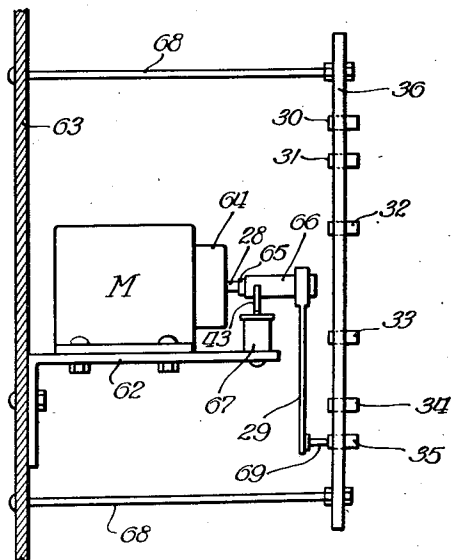


Fig. 3.



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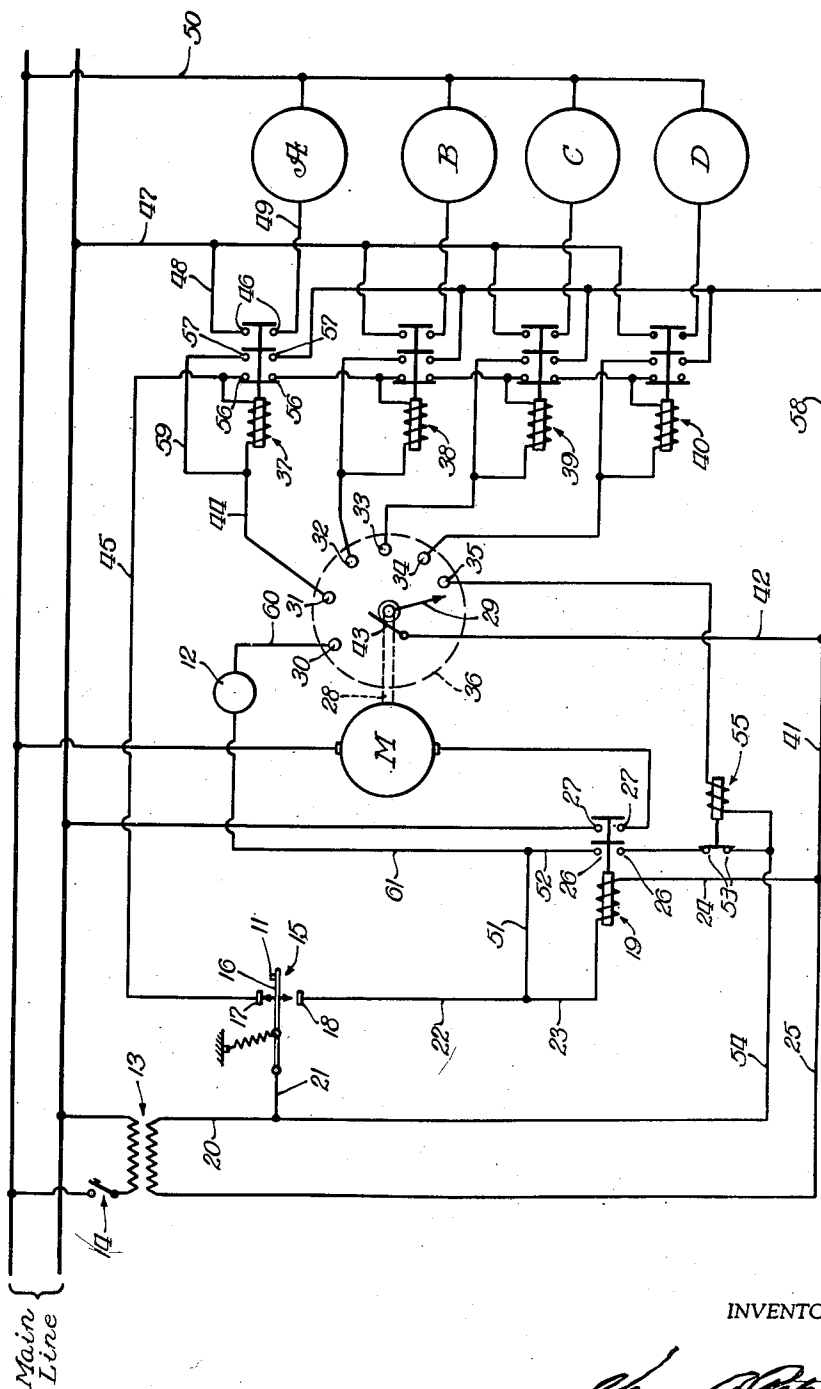
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2 SHEETS—SHEET 2

Fig. 2.



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AMUSEMENT DEVICE FOR TESTING A
PERSON'S TIMING ABILITY

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7 Claims. (Cl. 273-1)

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The present invention relates to an amusement apparatus and more particularly to an apparatus for testing one's timing ability.

An object of the invention is to provide an apparatus which, by simple manipulation of control means, will present a signal of the character depending upon how long a period of time the control means is engaged by the operator.

Other objects and advantages of the invention will be apparent from the following description taken in conjunction with the accompanying drawings wherein the preferred form of the invention is disclosed.

Referring to the drawings:

Fig. 1 is a perspective view of the exterior of the amusement apparatus of the invention.

Fig. 2 is a wiring diagram illustrating the electrical circuits which are provided for actuating and controlling the apparatus.

Fig. 3 is a view partly in section of the unit comprising the motor, contact arm and contact disk of the apparatus.

In the embodiment illustrated, the apparatus is housed in a cabinet 10 having positioned thereon a control button 11 of a control switch hereafter referred to. The length of time the control button is depressed determines, by means of the apparatus of the present invention, which signal A, B, C or D will be energized. A pilot light 12 is provided for a purpose hereinafter to be described.

Referring to the wiring diagram shown in Fig. 2, if an alternating current is used as the energy source, the control circuits of the apparatus are energized through a transformer 13, the primary of which is connected to the main line and the secondary of which is connected to the control circuits. The apparatus is conditioned for operation upon closing of the switch 14 which may be positioned in any convenient location on the exterior or interior of the cabinet.

The control button 11 is connected to and actuates the double throw switch 15, the center pole 16 of which is spring urged normally against upper contact 17 of the switch 15. The depression of the control button 11 breaks the connection between the pole 16 and contact 17 and effects a connection between the pole 16 and lower contact 18 of the switch 15.

To start the apparatus, the control button 11 is depressed to effect connection between the pole 16 and lower contact 18 of the switch 15. When this connection is effected, a circuit is completed through the winding of solenoid 19, thus energizing this solenoid. This circuit is completed from the transformer 13 through lines 20 and 21, pole 16, contact 18, lines 22 and 23, the winding of solenoid 19, and lines 24 and 25 back to the transformer. The energization of solenoid 19 closes contacts 26 and contacts 27, the closing of the contacts 27 resulting in the energization of motor

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M. Connected to a shaft 28 driven by the motor is a contact arm 29 which is rotated upon energization of the motor.

The rotation of the contact arm 29 results in the contact of the arm successively with contacts 30, 31, 32, 33, 34 and 35 positioned on a disk 36 of insulating material such as fiber or the like. Contacts 30, 31, 32, 33 and 34 are spaced equally apart.

When the operator releases the control button 11, the connection between pole 16 and the lower contact 18 of the switch 15 is broken and the pole 16 is urged to engage the upper contact 17 of the switch 15. When pole 16 engages upper contact 17, one of the solenoids 37, 38, 39 or 40 will be actuated, depending upon which contact (31, 32, 33, or 34) the contact arm 29 is passing over at the time pole 16 engages contact 17. For example, if the contact arm 29 is passing over or is about to pass over contact 31 when the connection is made between pole 16 and contact 17 of switch 15, solenoid 37 will be energized. The circuit for the energization of solenoid 37 may be traced from the transformer through lines 25, 41 and 42, contact 43 on the shaft of contact arm 29, contact arm 29, contact 31, line 44, the winding of solenoid 37, line 45, contact 17 and pole 16 of switch 15, and lines 21 and 20 back to the transformer.

The energization of solenoid 37 results in the closing of contacts 46 thereby causing energization of signal A by completing the circuit from the main line through lines 47 and 48, contact 46, line 49, signal A and line 50 back to the main line. The signal A may be any electrically actuated signal, for example an electric light.

By reason of a locking circuit for the solenoid 19, this solenoid will remain energized even after the contact between pole 16 and contact 18 of the control switch 15 is broken upon release by the operator of the control button 11. This locking circuit can be traced from the transformer through lines 25 and 24, the winding of solenoid 19, lines 23, 51 and 52, contacts 26 of solenoid 19, normally closed contacts 53 of a solenoid 55 and lines 54 and 20 back to the transformer. Accordingly, the motor will continue to rotate the contact arm 29 until the contact arm has engaged contact 35, which results in the energization of solenoid 55 and consequently the opening of contacts 53 to thereby break the circuit through the winding of the solenoid 19. Therefore, when the contact arm 29 engages the contact 35, solenoid 19 will be de-energized, thus breaking contacts 27 in the motor circuit and resulting in the stopping of the motor.

The passing of contact arm 29 over contacts subsequent to the contact controlling the energized signal solenoid (for example the solenoid 37) will not result in the energization of the subsequent signal solenoids. Thus, assuming again

that signal solenoid 37 has been energized, the energization of this solenoid opens contacts 56 thus breaking the circuit to all of the solenoids following solenoid 37.

A locking circuit for each signal solenoid results in the energized solenoid remaining actuated even after the contact arm 29 has left the contact controlling that solenoid and until the pole 16 of control switch 15 again engages the lower contact 18 of the switch or until switch 14 is opened. The locking circuit for solenoid 37 is through contacts 57 which are closed upon energization of solenoid 37. This locking circuit may be traced from the transformer through lines 25, 41 and 58, contacts 57, line 59, the winding of solenoid 37, line 45, contact 17 and pole 16 of switch 15, and lines 21 and 20 back to the transformer.

The operation of the remaining signal solenoids and the signals which they control is the same as the operation of signal solenoid 37 and signal A. Accordingly, the description of the operation of signal solenoid 37 and the circuits controlling and controlled by this solenoid should suffice.

Upon start of rotation of the contact arm 29, it first passes over contact 30 which results in the short energization of pilot light 12. It will be assumed that the operator will maintain control button 11 depressed at least until the pilot light is energized so that the operator has an indication of the starting of rotation of the contact arm 29. On the foregoing assumption, the circuit through the pilot light can be traced from the transformer through lines 25, 41, 42, contact 43, contact arm 29, contact 30, line 60, pilot light 12, lines 61, 51, and 22, contact 18 and pole 16 of switch 15, and lines 21 and 20 back to the transformer. Contact arm 29 is positioned so that it cannot be seen by the operator, but by observing the energization of the pilot light, the operator can estimate the time it will take for the contact arm to reach any desired contact 31 to 34.

With alternating current as the source of energy, a hysteresis or synchronous electric motor, particularly a single phase, self-starting motor of a known type having high synchronous torque and a starting torque of the same order of magnitude may be employed.

If direct current is employed as the source of the electrical energy, obviously the transformer 13 will be unnecessary and the lines 20 and 25 can be connected directly to the main line, the line 25 preferably being connected to the main line through switch 14. When direct current is used, any suitable constant speed direct current motor can be employed.

The spacing between contacts 35 and 30 is such as to allow the motor and contact arm to come up to full speed before the contact arm passes over contact 30. By having all of contacts 30 to 34 spaced an equal distance, the operator can judge, after some experience, the length of time it will take for the contact arm 29 to reach any desired contact after the contact arm has passed the contact 30 for the pilot light.

Preferably a speed reducer is interposed between the motor and the contact arm in order that the contact arm will operate at a sufficiently slow speed to enable the operator to properly control the apparatus. It has been found that a speed of two revolutions per minute of the contact arm is satisfactory.

In Fig. 3 there is disclosed more or less dia-

grammatically the mounting of the motor M, contact arm 29 and disk 36 inside of the cabinet 10. The motor is mounted in any suitable manner upon a platform 62 attached in any convenient manner to a side wall 63 of the cabinet 10. The motor drives shaft 28 through a speed reducer 64. Secured on shaft 28 is an insulating sleeve 65 over which is secured a conducting sleeve 66 to which is attached in any suitable manner the contact arm 29. Mounted on an insulating block 67 on the platform 62 is contact 43 which engages the conducting sleeve 66 associated with the contact arm 29. The contact disk 36 containing the contacts 30 to 35 may be attached in any suitable manner, for example by rods 68, to the side wall 63 of the cabinet. The contact arm 29 carries a brush 69 which engages the contacts on the disk 36 as the contact arm is rotated. The solenoids, switches and signals may be mounted in the cabinet in any suitable manner.

Obviously, the control button 11 and switch 15, as well as the pilot light and signals can be placed remotely from the remaining apparatus and need not be incorporated on or within the cabinet.

For purposes of simplification, only four signals and their associated solenoids and contacts have been shown, but it will be understood that any desired number may be used. For example, if desired, a signal corresponding to each letter of the alphabet may be employed. In this instance, with the contact arm travelling two revolutions per minute, the time interval between the closing of each contact would be about $\frac{1}{2}$ second.

In order that relatively small solenoids may be used, where the ordinary 110 volt alternating current supply is available, the step-down transformer 13 is employed to reduce the voltage in the controlling circuits to 25 volts or less, for example to as low as 6 volts. Obviously, if desired, the motor and/or signals if operated at a lower voltage than 110 volts also could be connected to the main alternating current line through a step-down transformer.

It will be apparent that other forms of the invention could be made and it is not intended to limit this invention to the specific form shown.

I claim:

1. In an amusement device, a motor, control means, movable to a motor starting position from which it is later released, a holding circuit energized by movement of said control means to motor starting position, said holding circuit when energized preventing interruption of the actuation of said motor after release by the operator of said control means, a contact arm connected to said motor and adapted to be rotated by said motor, contacts arranged to be successively engaged by said contact arm when the latter rotates, signal means, means connected with each of said contacts for actuating said signal means, only one of said signal means being selectively actuated upon release of said control means, the signal means actuated depending upon which contact is engaged or is about to be engaged by the contact arm when the control means is released, means for preventing actuation of any other of the signal means while the selected signal is still actuated, and means to deenergize said holding circuit for stopping said motor after said contact arm has engaged all of said contacts.

2. In an amusement apparatus, a motor, control means movable to a motor starting position

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from which it is later released, a contact arm connected to said motor and adapted to be rotated by said motor, contacts arranged to be successively engaged by said contact arm as the latter rotates, signal means, means connected with each of said contacts for actuating said signal means upon release of said control means, the signal means actuated being determined by the contact engaged or about to be engaged by the contact arm at the time the control means is released by the operator, means for preventing actuation of any other of the signal means and means for stopping said motor only after the contact means has contacted all of said contacts.

3. In an amusement apparatus, a motor, control means movable to a motor starting position from which it is later released, a holding circuit energized by movement of said control means to motor starting position, said holding circuit when energized preventing interruption of the actuation of the motor after release of the control means, a contact arm connected to said motor and adapted to be actuated by said motor, a series of contacts arranged to be successively engaged by said contact arm, signal means, means for manually releasing said control means, means connected with said contacts for actuating one of a number of said signal means upon manual release of the control means from motor starting position, the signal means actuated being determined by the contact about to be engaged or engaged by the contact arm at the time the control means is released, means for preventing actuation of any other of the signal means while the selected signal means is still actuated and means to deenergize said holding circuit for stopping said motor after said contact arm has engaged all of said contacts.

4. In an amusement device, a motor, control means, movable to a motor starting position from which it is later released, a holding circuit energized by movement of said control means to motor starting position, said holding circuit when energized preventing interruption of the actuation of said motor after release of said control means, a contact arm connected to said motor and adapted to be rotated by said motor, contacts arranged to be successively engaged by said contact arm when the latter rotates, signal means, means connected with each of said contacts for actuating said signal means, only one of said signal means being selectively actuated upon release of said control means, the signal means actuated depending upon which contact is engaged or is about to be engaged by the contact arm when the control means is released, means for preventing actuation of any other of the signal means while the selected signal is still actuated, a pilot light, a contact connected therewith and positioned in advance of the other contacts, said contact arm when rotated engaging the pilot light contact before engaging the contacts for the signal means, the engagement of the contact arm with the pilot light contact energizing the pilot light when the control means is actuated, and means for stopping said motor after said contact arm has engaged all of said contacts.

5. In an amusement device, a motor, control means movable to a motor starting position from which it is later released, a holding circuit energized by movement of said control means to motor starting position, said holding circuit when energized preventing interruption of the actuation of said motor after release of said control means, a contact arm connected to said motor and adapted to be rotated by said motor, contacts arranged to be successively engaged by said contact arm when the latter rotates, signal means, means connected with each of said contacts for actuating said signal means, only one of said signal means being selectively actuated upon release of said control means, the signal means actuated depending upon which contact is engaged or is about to be engaged by the contact arm when the control means is released, means for preventing actuation of any other of the signal means while the selected signal is still actuated, and an additional contact positioned to be engaged by the contact arm after the other contacts have been so engaged, the engagement of the contact arm with said additional contact being adapted to actuate means to de-energize the motor.

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6. In an amusement apparatus, a motor, control means movable to a motor starting position from which it is later released, a contact arm connected to said motor and adapted to be rotated by said motor, contacts arranged to be successively engaged by said contact arm as the latter rotates, signal means, means connected with each of said contacts for actuating said signal means upon release of said control means, the signal means actuated being determined by the contact engaged or about to be engaged by the contact arm at the time the control means is released, means for preventing actuation of any other of the signal means while the motor is still operating, means for stopping said motor only after the contact means has contacted all of said contacts, and an additional contact positioned to be engaged by the contact arm after the other contacts have been so engaged, the engagement of the contact arm with said additional contact being adapted to actuate said means for stopping the motor.

7. In an amusement apparatus, a motor, control means movable to a motor starting position from which it is later released, a contact arm connected to said motor and adapted to be actuated by said motor, a series of contacts arranged to be successively engaged by said contact arm, signal means, and means connected with said contacts for actuating one of a number of said signal means upon release of the control means, the signal means actuated being determined by the contact which is engaged or about to be engaged by the contact arm when the control means is released, said control means comprising a two-position switch, said switch when in one position energizing means for actuating the motor, means for completing the circuit for the energization of the selected signal means, and said switch when in the other position energizing said means for completing the circuit for the energization of the selected signal means.

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