April 14, 1936. R. V. DIXN 2,037,460

MOTION DEVICE

Filed Nov. 3, 1933 8 Sheets-Sheet 1

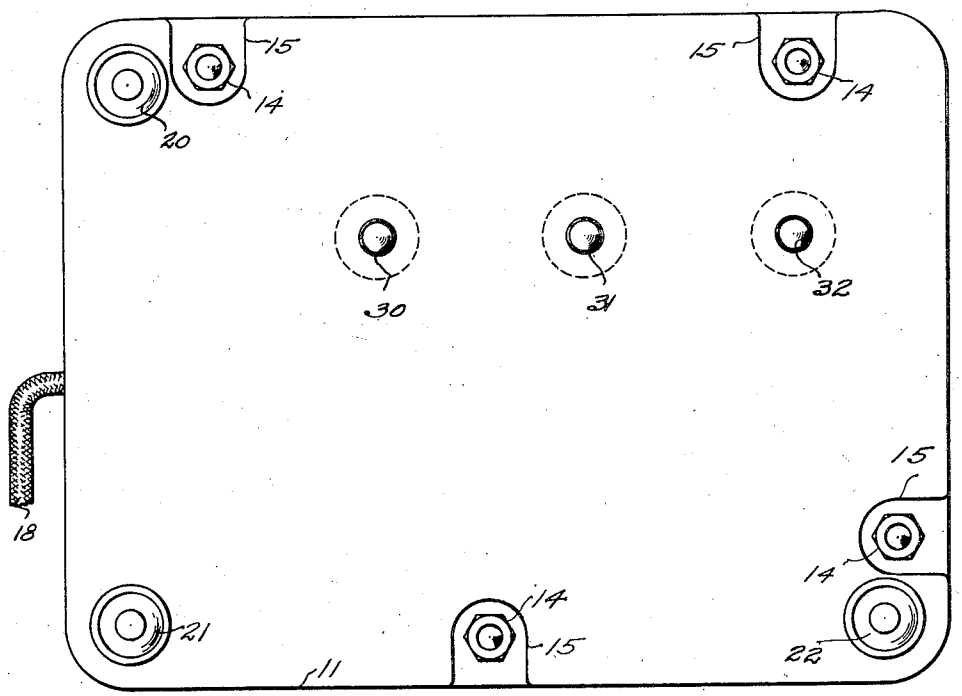


Fig. 1.

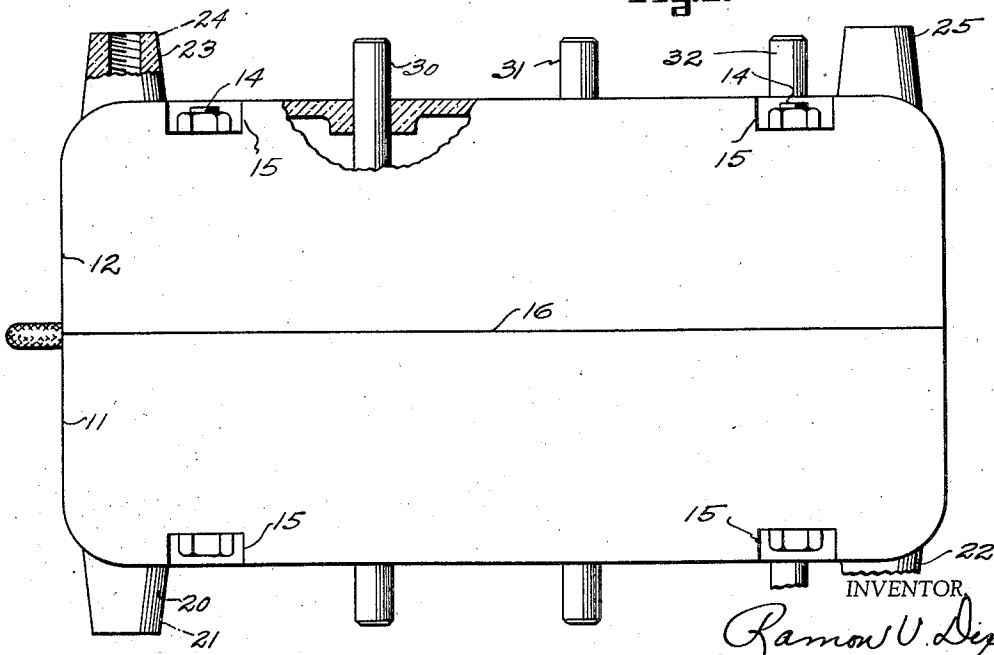


Fig. 2.

INVENTOR.
Ramon V. Dixn
BY
Daniel G. Cullen
ATTORNEY.

April 14, 1936. R. V. DIXN 2,037,460

MOTION DEVICE

Filed Nov. 3, 1933 8 Sheets-Sheet 2

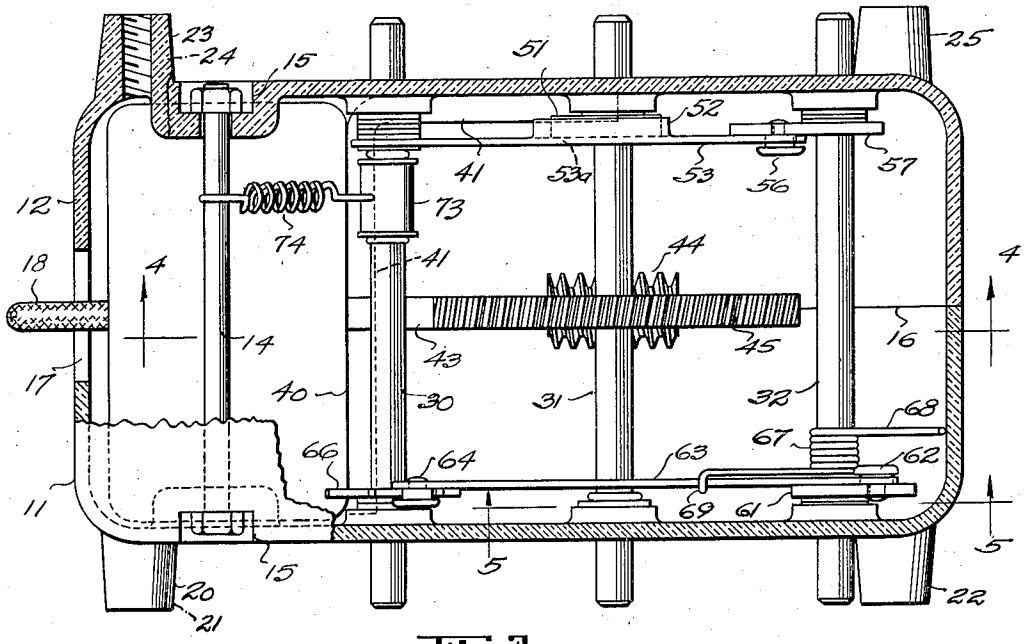


Fig. 3.

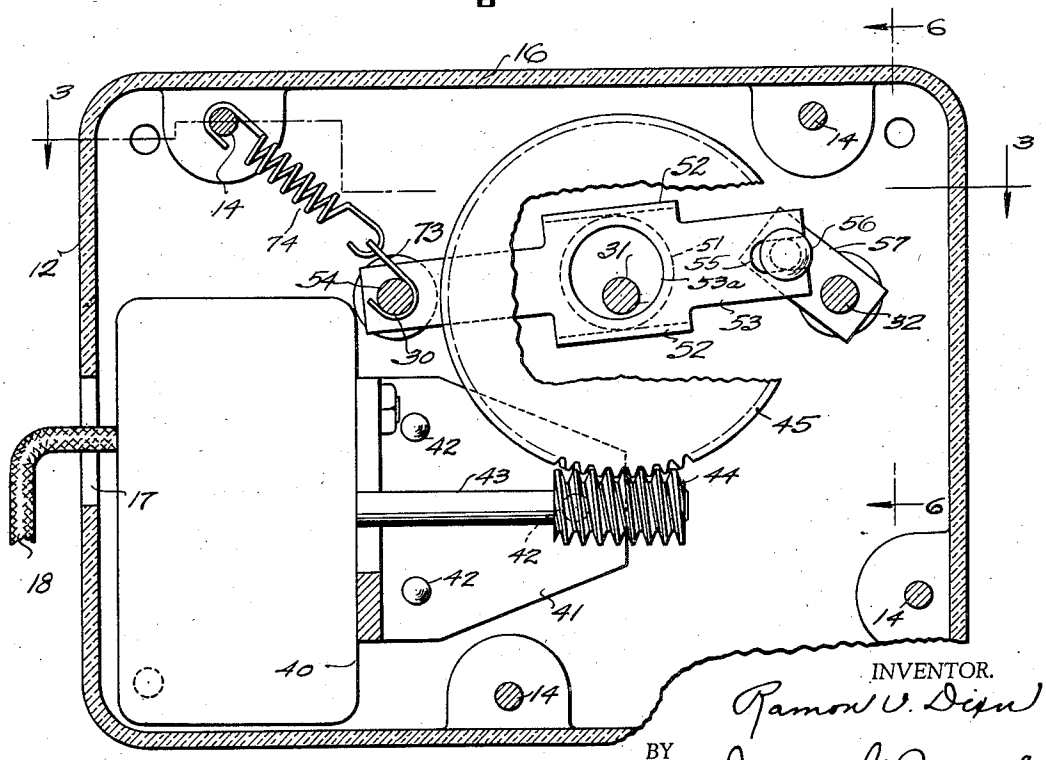


Fig. 4.

INVENTOR.
Ramon V. Dixn
BY
Daniel G. Cullen
ATTORNEY.

April 14, 1936. R. V. DIXN 2,037,460

MOTION DEVICE

Filed Nov. 3, 1933 8 Sheets-Sheet 3

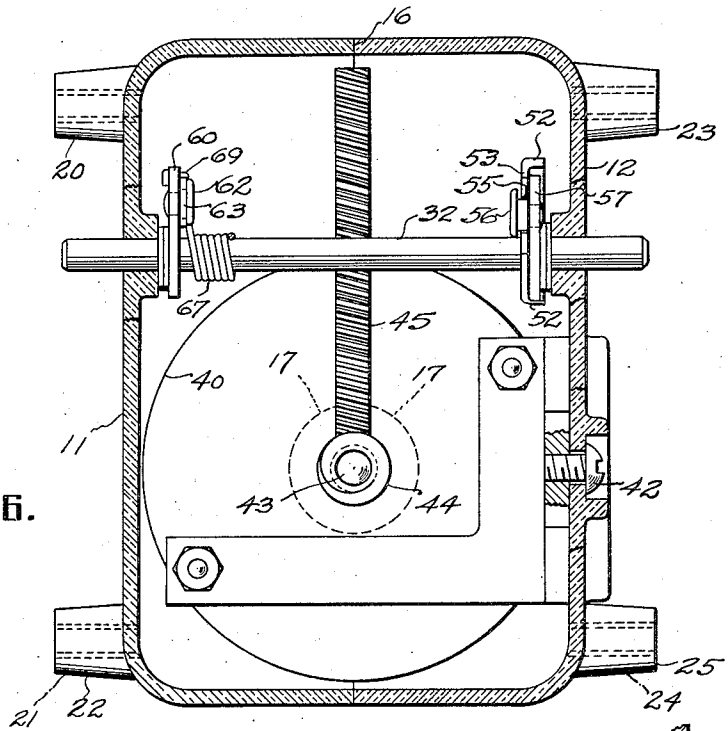


Fig.6.

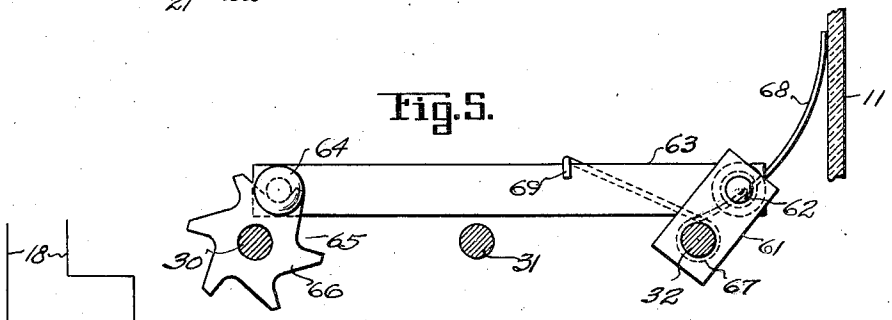


Fig.5.

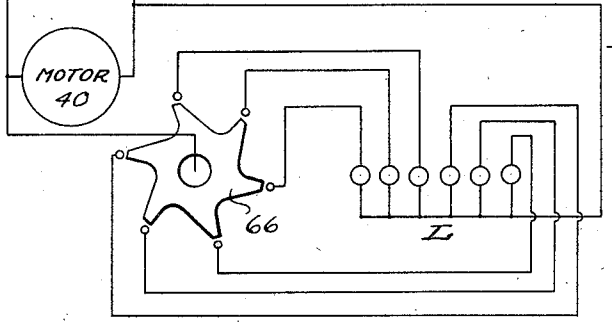


Fig.7.

INVENTOR.
Ramon V. Dixn
BY
Daniel G. Cullen
ATTORNEY.

April 14, 1936. R. V. DIXN 2,037,460

MOTION DEVICE

Filed Nov. 3, 1933 8 Sheets-Sheet 4

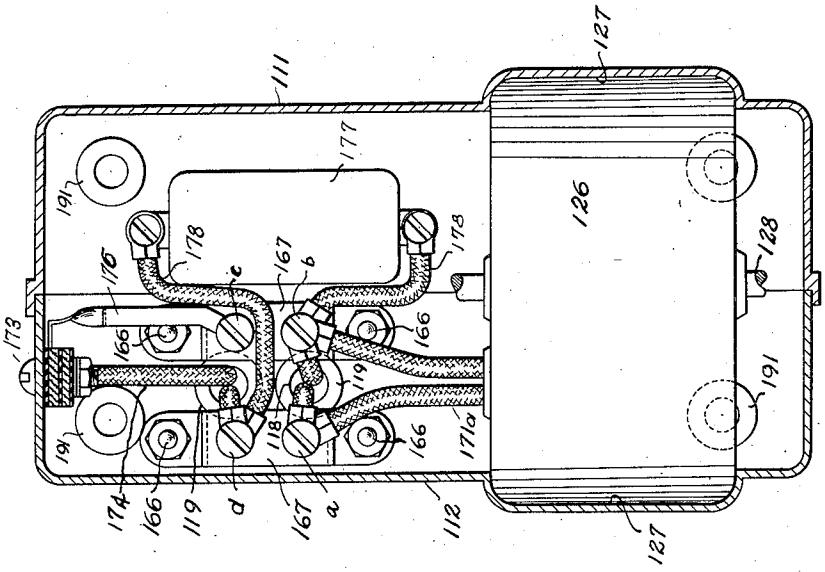


Fig. 9.

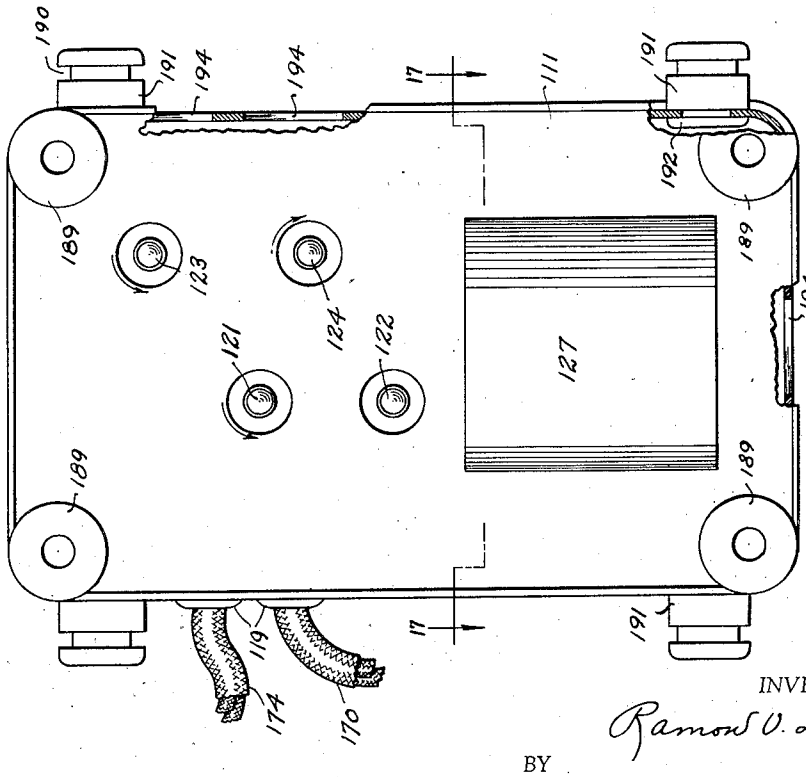


Fig. 8.

INVENTOR.
Ramon V. Dixn
BY
Daniel G. Cullen.
ATTORNEY.

April 14, 1936. R. V. DIXN 2,037,460

MOTION DEVICE

Filed Nov. 3, 1933 8 Sheets-Sheet 5

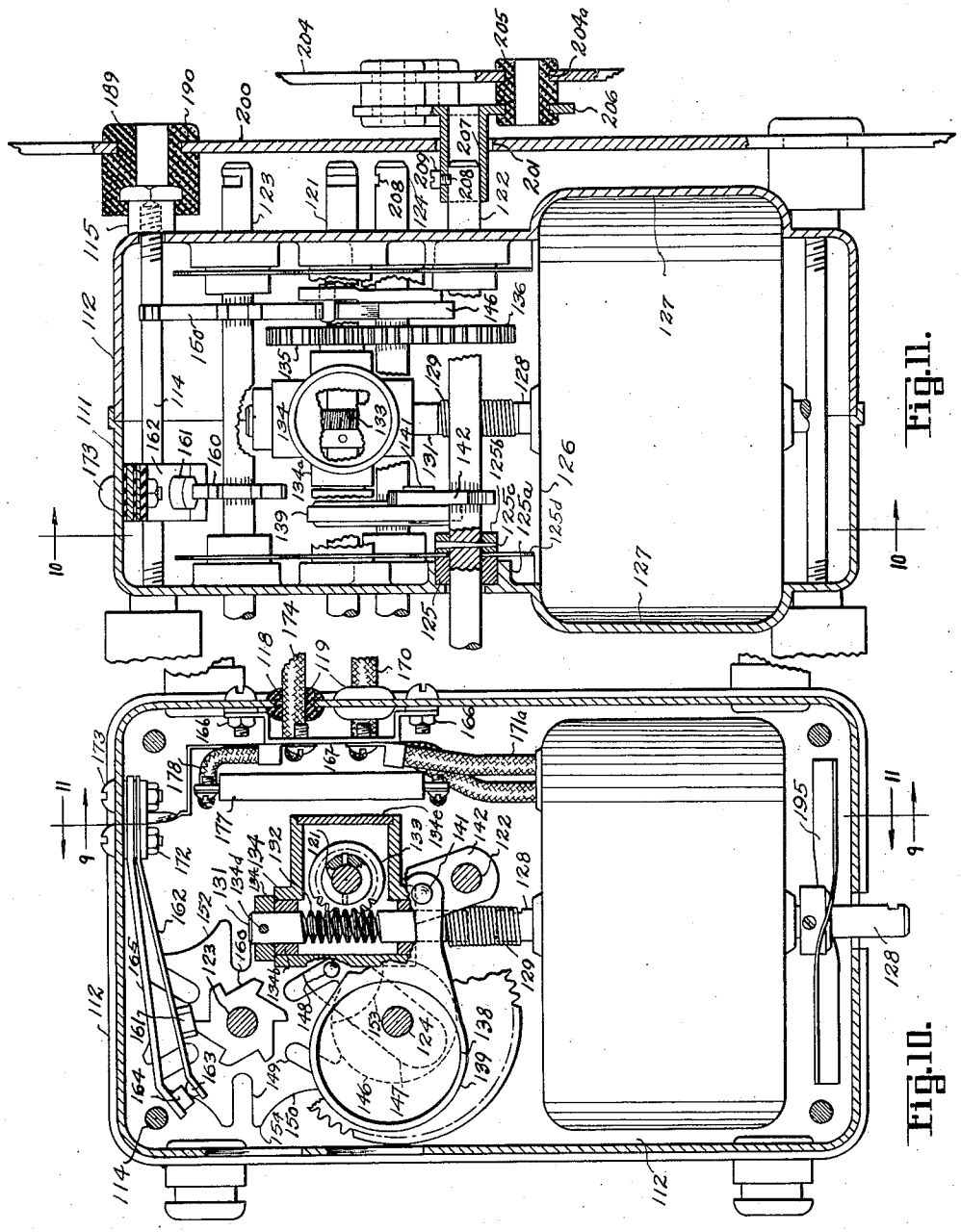


Fig. 11.

Fig. 10.

INVENTOR.
Ramon V. Dixn
BY
Daniel G. Cullen
ATTORNEY.

April 14, 1936. R. V. DIXN 2,037,460

MOTION DEVICE

Filed Nov. 3, 1933 8 Sheets-Sheet 6

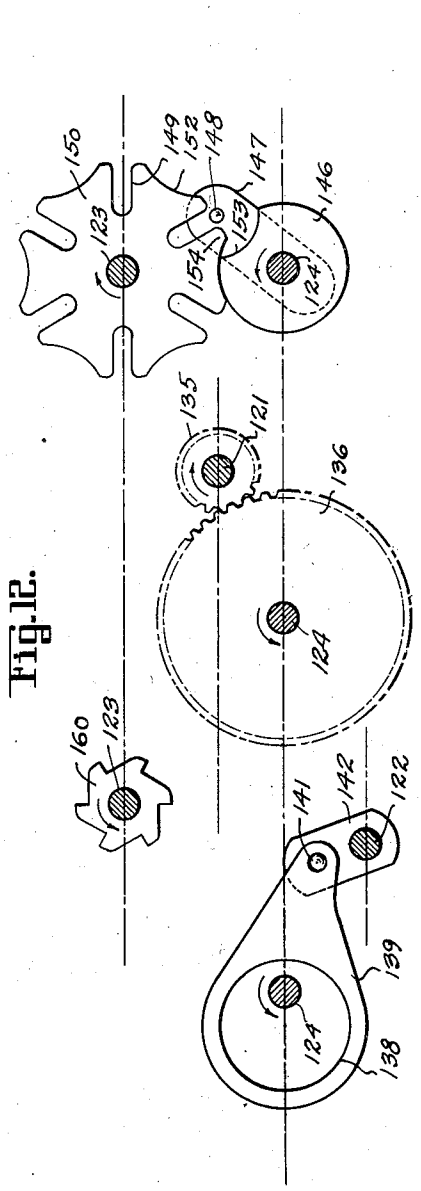


Fig. 12.

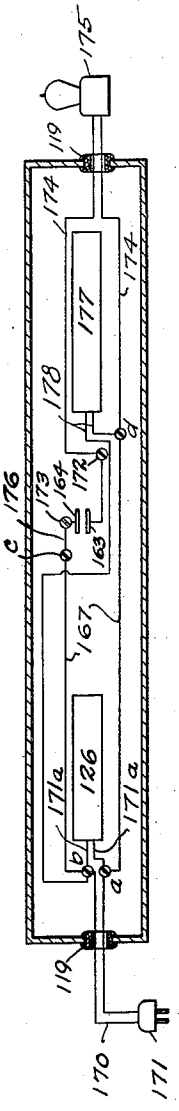


Fig. 13.

INVENTOR.

Ramon V. Dixn

BY Daniel G. Cullen

ATTORNEY.

April 14, 1936. R. V. DIXN 2,037,460

MOTION DEVICE

Filed Nov. 3, 1933 8 Sheets-Sheet 7

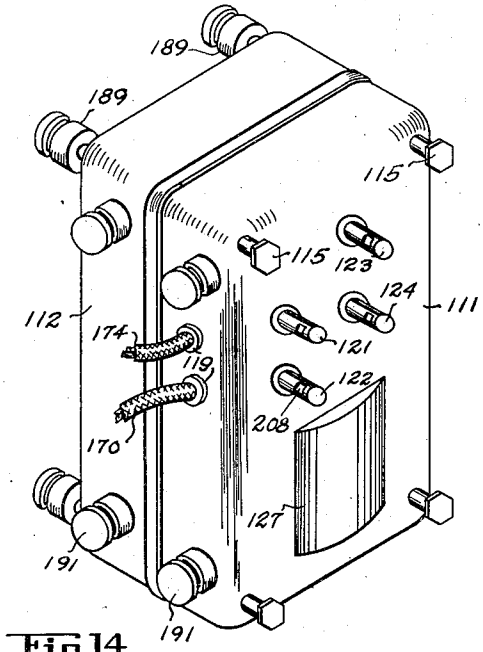


Fig.14.

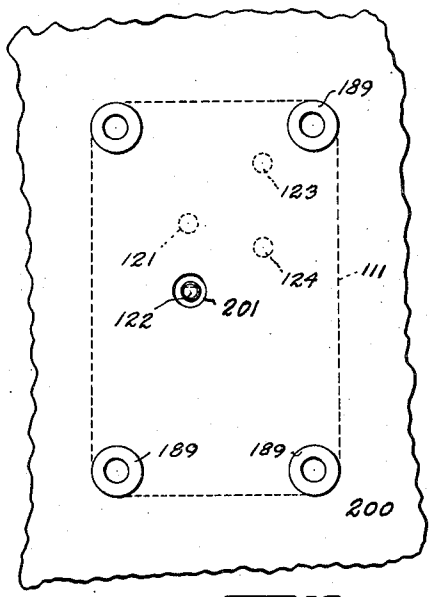
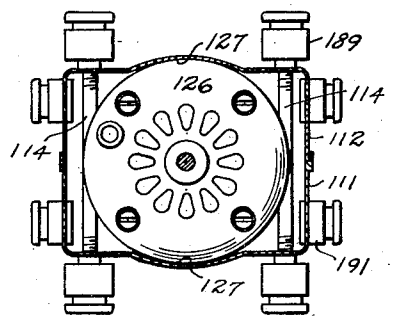


Fig.16.

Fig.17.



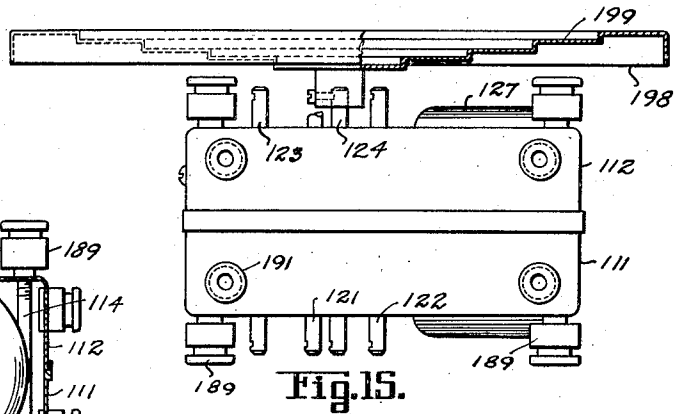


Fig.15.

INVENTOR
Ramon V. Dixn
by Daniel G. Cullen
ATTORNEY.

April 14, 1936. R. V. DIXN 2,037,460

MOTION DEVICE

Filed Nov. 3, 1933 8 Sheets-Sheet 8

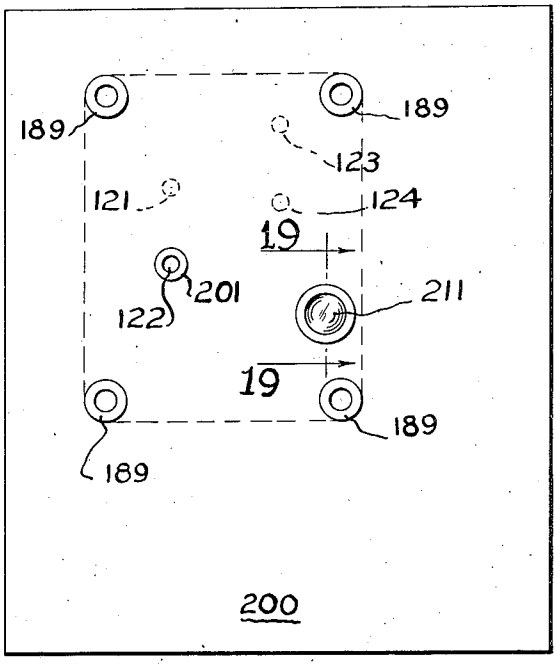


Fig. 18

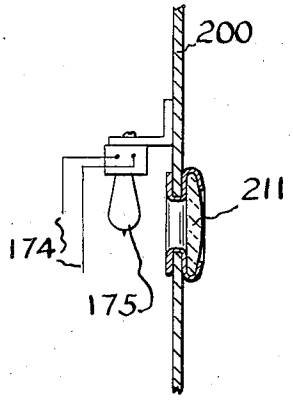


Fig. 19

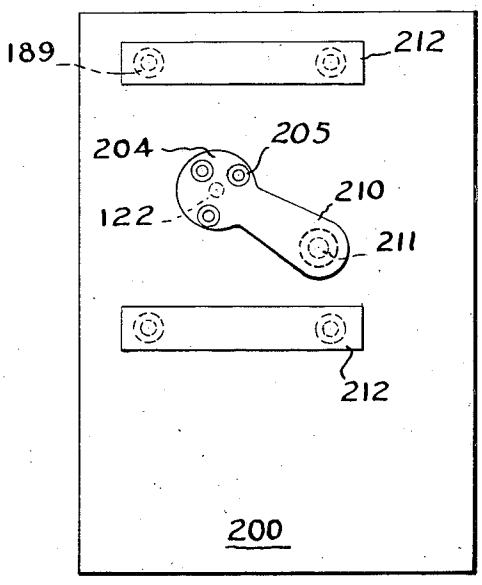


Fig. 20

INVENTOR.
Ramon V. Dixn
BY
Daniel G. Cullen
ATTORNEY.

Patented Apr. 14, 1936 2,037,460

UNITED STATES PATENT OFFICE

2,037,460

MOTION DEVICE

Ramon V. Dixn, Detroit, Mich., assignor to Motion, Inc., Detroit, Mich.

Application November 3, 1933, Serial No. 696,533

13 Claims. (Cl. 40—30)

This invention relates to motion devices and while it is described with reference to motion devices for animations, particularly for advertising and exhibition purposes, the embodiments of the invention need not be so confined but may be used wherever a motion device of the type illustrated will find application.

The principal object of the invention is to provide a simple and inexpensive motion device capable of producing a plurality of relatively selectable movements. The devices illustrated can produce the following motions; singly, or in combinations: (*a*) continuous rotary, (*b*) intermittent rotary, and (*c*) oscillatory rotary.

A further object of the invention is to provide a motion device which is readily detachable from and attachable to a display board and properly oriented with respect thereto, all without requiring the services of a skilled mechanic or electrician. A motion device thus constructed is particularly valuable since it permits an exhibitor, having only one such motion device, to use the same with a series of different displays, whereby he can change from one display to another, without losing the advantages of animation, and without being forced to the expense of hiring a skilled mechanic when changeover is desired.

A further object is to provide a motion device having a plurality of operating shafts of each of which, either or both ends can be utilized for animation, if desired. At some times, on one end of a shaft can be mounted an animation element, and on the other can be mounted a counterbalancing means. At other times, if desired, both ends of a shaft may be used for animation, in the event that opposite sides of a combined display are designed for animation.

A still further object is to provide, in combination with an animation motion device, means whereby in the assembly of the device to a display, proper coordination of the device and the animatable part of the display may be readily, easily, and accurately effected.

A still further object is to provide an animation motion device wherein the three movements above specified, or other equivalent movements, may be interchangeable and selectable, interchange and selection being effected easily and with simplicity.

A still further object is to provide an animation motion device producing concurrently several different motions, one or more of which may be selected and utilized at any one time, to animate one or more animatable parts simultaneously.

A still further object is to provide an animation motion device which is compactly designed, so that it can be concealed by a relatively small display panel, a part of which is to be animated.

A still further object is to provide an animation motion device wherein the parts are so constructed that the problem of lubrication is not presented, there being no lubrication required during the normal maintenance of the device.

A further object is to provide a motion device which can be operated while upright, to rotate an animatable part in a vertical plane, or while lying on its side to rotate an animatable part in a horizontal plane.

Still further objects will be readily apparent to those skilled in the art upon reference to the appended drawings showing an embodiment of the invention, hereafter described in detail. In these drawings,

Fig. 1 shows in elevation view, one form of motion device of the invention;

Fig. 2 is a plan view of the same;

Fig. 3 is a plan section, as if on line 3—3 of Fig. 4;

Fig. 4 is an elevational mid-section, as if on line 4—4 of Fig. 3;

Fig. 5 is a partial elevational section, as if on line 5—5 of Fig. 3;

Fig. 6 is a side section, as if on line 6—6 of Fig. 4;

Fig. 7 is an electrical diagram of the device of Figs. 1–6;

Fig. 8 shows in elevation view, a second form of motion device of the invention;

Fig. 9 is a side section of the same, as if on line 9—9 of Fig. 10;

Fig. 10 is an elevational section of the same, as if on line 10—10, Fig. 11;

Fig. 11 is a side section of the same, as if on line 11—11, Fig. 10;

Fig. 12 is a diagrammatical view of parts of the device of these figures;

Fig. 13 is an electrical diagram of the device of Figs. 8–12.

Fig. 14 is a perspective view of the motion device of Figs. 8–13;

Fig. 15 shows the device used with a horizontal turntable;

Fig. 16 is a front view of a panel having behind it a motion device of Fig. 14;

Fig. 17 is a section view, to half scale, as if on line 17—17, Fig. 8;

Fig. 18 shows how the panel of Fig. 16 may be used to form an animated flashing sign.

Fig. 19 is a section on line 19—19, Fig. 18.

Fig. 20 shows the panel of Fig. 18 equipped with a moving arm.

Figs. 1–7

Referring to the drawings, wherein like reference numerals refer to like parts, it will be seen that the motion device of Figs. 1–7 includes a casing made of two parts, referenced 11 (front) and 12 (back), these being joined by suitable transverse bolts, indicated at 14, and having their head and nut ends seated in recesses 15 formed in the walls of the casing sections. Suitable dowel pins are also provided on the juncture surface line 16 to align the casing sections properly with respect to each other when they are to be joined. At one side of the casing, cooperating notches 17 at the juncture surface line 16 provide an aperture through which may be passed a conductor 18 for conducting electrical current to the hereinafter described electrical parts disposed within the casing.

The device here shown is factory made and is intended to be used with any one of a number of factory made displays, and since it is a prerequisite that a display be properly oriented to the operating parts of the device, which happen to be shaft ends, means are provided for orienting the device here shown to a display so that proper connection may be effected readily and without difficulty, and such means will now be described.

The casing is provided with six through-tapped bosses 20 to 25 asymmetrically positioned to facilitate orientation thereto of a display, whose animatable part or parts is or are to be operatively connected to any one or ones of the three operating shafts 30, 31, 32, which are journalled in opposite casing walls, and whose ends project from the front and back of the casing, as indicated in Fig. 2. This construction insures the animatable part being properly oriented to the proper one of the ends of the three shafts.

The mechanism of the device will now be described.

Disposed within the casing and energized by the current fed thereto by the conductor 18 is a synchronous motor 40, supported in a suitable manner, as by means of a bracket 41 in turn secured to the casing wall by suitable fastening means, such as the studs 42. On the end of the motor shaft 43 is fixed a worm 44 in constant mesh with a helical gear 45 which is centrally and coaxially fixed to the continuous rotary shaft 31.

It will be observed that in the operation of the device, the shaft 31 rotates continuously and at a relatively slow speed compared with the speed of the motor, the speed reduction being effected through the medium of the worm and gear.

Fixed to and traversing the rotary shaft 31, and in back of the gear 45, is an eccentric plate 51 which fits within the cross head flanges 52 of an eccentric strap 53, these flanges being parallel to the axis of the rotary shaft 31 and being formed intermediate the ends of the eccentric strap, there being an aperture 53*a* in the cross head to provide clearance for the shaft 31.

One end of the eccentric strap is apertured at 54 to permit the passage therethrough of the intermittent rotary shaft 30 and the connection between the eccentric strap 53 and the shaft 30 provides a journal for that end of the eccentric strap. The other end of the eccentric strap is provided with a notch 55 through which is passed a pin 56 fixedly secured to the end of an oscillating arm 57 which in turn is fixed to the oscillating shaft 32. It will be apparent that rotation of the rotary shaft 31 causes the eccentric strap to rock on the axis of the intermittent rotary shaft 30 as a pivot, and that such rocking of the eccentric strap causes rocking of the arm 57 about the axis of the oscillating shaft 32 as a pivot, which, in turn, due to the fixed connection between the arm 57 and the shaft 32, causes a rocking or oscillating motion of the oscillating shaft 32.

Near the front of the casing there is fixed to the oscillating shaft 32 a second arm 61 (Fig. 5) whose free end is pivotally connected, by means of a pin 62, to the end of a reciprocating link 63. The other end of this link is provided with a pin 64 adapted to seat itself within the notches 65 of a six tooth ratchet 66, which is fixed to the intermittent rotary shaft 30. A coil spring 67, wound around the oscillating shaft 32 adjacent the arm 61, with one of its ends 68 engaged by a wall of the casing section 11 and with the other of its ends 69 engaging the link 63, biases the link 63 downwardly so that its pin 64 will be constantly urged towards the bottom of the notch 65 in the ratchet 66 in which this pin happens to find itself.

It will be apparent that the continuous rotation of the rotary shaft 31 and the oscillation of the oscillating shaft 32 will be translated into intermittent rotary motion of the intermittent rotating shaft 30, with the timing of the parts being as follows: Each rotation of the continuously rotating shaft, causes a back and forth oscillation of the oscillating shaft 32, and a 60° rotation of the intermittent rotary shaft 30.

In order to prevent overtravel of the intermittent rotary shaft 30, braking means therefor are provided, and the same includes a brake link 73 hooked around the shaft 30 and constantly pulled into braking position by a spring 74, one of whose ends is connected to the braking link 73 and the other of whose ends is hooked around one of the bolts 14 that secure casing halves to each other.

It will be observed from the foregoing that there is provided a simple, inexpensive motion device which can be operated economically on alternating current through the medium of the inexpensive synchronous motor 40 to provide three relatively selectable animation motions.

It will be also observed that these motions are concurrent, and therefore it can clearly be understood that two or more motions may be utilized at any one time, creating a display that is far more effective than if but one motion were provided for it.

Fig. 7 shows, diagrammatically, how the ratchet 66 may be utilized as a synchronized flasher device to flash the lamps L of the display through the medium of contacts engaged by the tips of the ratchet teeth, all to create a more effective display.

Figs. 8–13

The device of Figs. 8 to 13 functions like the device of Figs. 1 to 7 but is much simpler in its construction and therefore better adapted for commercial use. It includes a box-like casing made of two parts, referenced 111 and 112, of which the former is the front section and the latter is the rear section. The two sections are joined by suitable traversing bolts 114 having on their ends spacer-nuts 115.

Suitably positioned in the right side wall of the back section 112 are holes 118 lined with snap-in rubber grommets 119, these providing access holes for the two pairs of conductors which pass through the right side wall of the casing, one pair

going to the source of electrical supply and the other pair going to a lamp or lamps to be flashed by a part of the device, all as will be described more in detail at a later stage in this specification.

Passing through the front and back walls of the casing are four shafts referenced respectively 121, 122, 123, 124. These four shafts are the operating shafts of the device, and provide the following motions: 121—continuous rotary at a high speed; 122—oscillatory rotary; 123—intermittent or step-by-step rotary; and 124—continuous rotary at a low speed. Suitable bearings are provided for these shafts in the front and back walls of the casing, for journalling and thrust purposes and each bearing includes a bearing ring 125 fixed in a boss 125*a* of the casing, and a thrust collar 125*b* pinned to the shaft by a pin 125*c*, as shown in Fig. 11. Washers 125*d* separate the rings 125 from the collars 125*b*.

Disposed within the casing and energized by the current fed thereto from the source of supply, is a motor 126 contained and supported in wide shallow recesses 127 formed in the front and back walls, the motor having a vertical shaft 128 projecting from the upper and lower surfaces of the motor. To the upper end of the shaft 128, through the medium of a coil spring coupling 129 which compensates for shaft misalignments, is coupled a shaft 131 having thereon a worm 132 in constant mesh with a gear 133 fixed to the continuous rotary high speed shaft 121.

The shaft 131, its worm 132, and the gear 133, are disposed within a lubricant-filled sub-casing 134 which is secured with respect to the main casing by means of the shaft 121, which at its ends is journalled in the main casing, and which passes through bosses 134*a* in the sub-casing, the holes in the bosses providing a press fit between them and the shaft 121.

The shaft 131 is journalled in bearing rings 134*b* fixed in the sub-casing and is provided with a thrust collar 134*c* pinned thereto by a pin 134*d*, the bearing rings properly journalling the shaft 131 and also preventing escape of the lubricant in the casing, and the collars preventing endwise thrust of the shaft 131. The end of the casing is closed by a metal disk 134*e*, of the snap-in or "Welsh plug" type.

It will be observed that in the operation of the device, the shaft 121 rotates continuously at a relatively high speed, since it is permanently connected to the motor; the ratio of the speed of shaft 121 to that of the motor will of course be determined by the ratio of the worm and gear teeth, in accordance with the desires of the manufacturer of the device.

Fixed to and traversing the continuous rotary high speed shaft 121 and in back of the gear 133 is a pinion gear 135 in mesh with a large spur gear 136 fixed to the continuous rotary slow speed shaft 124 and the gear train thus created will provide for the shaft 124 a rotation in a direction opposite to and at a lower speed than that of the continuous rotary high speed shaft 121.

Fixed to and traversing the continuous rotary low speed shaft 124 is an eccentric 138 which fits within the hole of an eccentric plate 139, the latter at the end thereof remote from the shaft 124, being connected by a pin 141 to a rocker arm 142 which traverses and is fixed to the oscillatory rotary shaft 122.

It will be readily seen that the continuous rotation of the shaft 124 will cause the arm 142 to rock back and forth continuously, in turn causing constant oscillatory rotation of the oscillatory rotary shaft 122.

Fixed to and traversing the continuous slow speed rotary shaft 124 is a plate 146 to which is fixed an arm 147 provided with a pin 148 adapted to mesh with the slots 149 of a Geneva wheel 150 which in turn is fixed to and traverses the intermittent rotary shaft 123, the plate 146 and the Geneva wheel 150 being disposed immediately in back of the gear train 135, 136.

It will be seen that the constant rotation of the shaft 124 causes an intermittent rotary motion of the Geneva wheel 150 and accordingly of the shaft 123, and inasmuch as there are shown to be six equally spaced slots 149 on the Geneva wheel 150, it will be readily seen that the shaft 150 will rotate 60° in each step.

In order to provide an accurately indexed intermittent rotation for the shaft 123, indexing means are provided to lock the Geneva wheel and the shaft 123 fixed thereto in place at the end of each 60° rotation, and such indexing means will now be described. Between the slots 149 the Geneva wheel is formed with arcuate cutouts 152 which mesh with the edge of the plate 146, the latter having a cut out at 153 which permits the Geneva wheel teeth, 154, namely, the portions between the cutouts 152, to clear the edge of the plate 146, the whole operating in the following manner: As seen in Fig 12, the Geneva wheel is free to rotate clockwise by virtue of the fact that the tooth thereof receiving the pin 148 is in the clear space provided by the cutout 153. When the plate 146 rotates counterclockwise, the Geneva wheel rotates clockwise 60°, or until the pin 148 no longer is in a slot 149. At this time, the Geneva wheel will come to rest and it will be locked at rest for a moment, or indexed, due to the fact that the plate cutout 153 had cleared the tooth 154, leaving the edge of the plate 146 again in mesh with a cutout 152 in the Geneva wheel. The operation is such that the Geneva wheel is alternately locked by the edge of the plate 146 and freed by the cutout 153, so that the Geneva wheel can move intermittently, and yet be locked or indexed at the end of each step of rotation.

It will be apparent from the foregoing that the continuous rotation at high speed of the shaft 121 will be translated into continuous rotation in the opposite direction and at low speed of the shaft 124, into oscillatory rotation of the shaft the shaft 124 causes an intermittent rotary mory motion of the shaft 123, and that the timing of the step-by-step rotation corresponds to that of the oscillatory rotation.

In order to provide a properly timed and coordinated flasher effect, the indexing shaft 123 may be utilized as follows: Positioned upon the shaft 123 near the front of the casing is a spur tooth ratchet wheel 160 whose teeth are adapted to engage an insulating button 161 on the spring leaf 162 of a flasher, the leaf 162 having a contact 163 adapted to engage a contact 164 on a second leaf 165, the circuit through the contacts 163, 164, being closed and opened alternately in accordance with the intermittent rotation of the indexing shaft 123, to provide an intermittent make and break for the circuit controlled by the flasher, properly timed to the indexing rotation.

The electrical connections of the device are as follows: The device is provided with a plurality of bolt-studs 166 which mount bus bar straps 167 on the casing side adjacent the holes

118 and threaded into bosses of these straps are binding screws *a*, *b*, *c*, and *d*, to the former pair of which are connected the conductors 170 connected to the supply plug 171, the conductors passing through holes 118 and a grommet 119. The motor 126 is connected to these binding posts through its leads 171*a* and is accordingly placed across the line. The flasher anchorage comprises binding posts 172, 173; to the post 172 is connected one of the leads 174 which goes to the flasher lamp 175 outside of the casing through a hole 118; the other post 173 is connected by a bus bar 176 to the binding screw *c*. The flasher lamp 175 is connected in series with the flasher switch through the medium of the conductors 174, one of which is connected to the binding post 172 and the other of which is connected to the binding screw *d*, these conductors passing through a hole 118 and a grommet 119.

The flasher lamp is flashed through the medium of the interrupted circuit controlled by the flasher contacts 163, 164. A condenser 177 is connected across the flasher switch and lamp through the leads 178 which connect the condenser to the binding screws *b* and *d*.

The nuts on the ends of the bolts 114 which pass through the casing from front to back thereof are disposed in rubber blocks 189 and these have grooves 190 which permit a display panel or panels to be positioned along either the front or back wall, or both of the device, the display panel or panels in turn holding the device in place through the interlock provided by the fact that the edges of holes in the display wall are disposed in the grooves 190.

In the side walls of the casing there are a plurality of apertures into which are snapped rubber blocks 191 similar to those at 189, these blocks having grommet like ends 192, which anchor the rubber blocks 191 to the side walls of the casing at these points. These blocks may be utilized as panel connections or as cushion supports for the device in the event the device is disposed on a side for use with its motor shaft 128 disposed horizontally rather than vertically.

Under such circumstances it might be desirable to have an animation effect produced by the high speed motor shaft 128, and for this reason it is contemplated to extend the motor shaft 128 through the bottom of the casing, to provide a constantly rotating high speed shaft end, whose speed is greater than that of the shaft 121.

It will also be observed that the casing is provided with ventilating air ports 194 through which air for cooling the motor 126 may be circulated, the circulation being induced by the fan 195 on the motor shaft 128 near the casing bottom. These vent ports are large enough to facilitate inspection of the device, whenever desired.

In order to provide a further animation effect, the device may be used to rotate a horizontal turntable, as disclosed in Fig. 15, which shows a turntable 198 connected to an end of a shaft, such as shaft 124, so as to rotate slowly, the device lying on its back or front with its shafts 121–124 vertical, and cushioned on its blocks 189. The turntable is shown as having terraces 199 which facilitate centering of a load placed thereon. The importance of the thrust bearing arrangement at 125 for the shafts 121–124 is readily apparent in this connection, since these bearings will support the load on the table.

All display panels with which the device is to be used will have a hole or holes through which connection is effected to one or more of the shafts 121–124, in addition to the holes for the rubber blocks 189, and by virtue of the fact that the panel shaft holes will be properly preoriented to the panel block holes, and by virtue of the fact that the shafts 121–124 are asymmetrically positioned with respect to the blocks 189, it will be impossible for a device to be applied to any panel in any way but the proper way, for if it be applied improperly, the panel shaft hole or holes will not align with shaft ends, as would be the case if the device were applied to the panel in proper fashion.

To illustrate this feature, we have provided Figs. 11 and 16 which show a panel 200 having a single shaft hole 201 aligned with the oscillatory rotating shaft 122. Connection to the shafts 121, 123, and 124, cannot be effected, since the ends of these shafts are concealed by the panel 200. Connection to the shaft 122 may be effected through the hole 201 which exposes shaft 122.

It will be observed that a panel can be mounted properly only against one surface of a device, and cannot be applied properly to another surface. This feature is of importance since the angular movements of the opposite ends of the shafts, though they are complementary, are not identical, and very often a display will cooperate properly with one side of the device, but not with the other. For example, the panel 200 of Fig. 16, being designed to cooperate with the back end of shaft 122, can be properly applied to the back surface of the device; however, if it be applied to the front surface of the device, it will conceal all shaft ends and it will be obvious that the application is improper.

Fig. 11 shows how an animatable part 204 may be operatively connected through the hole 201 in panel 200 to the end of shaft 122. The animatable part is provided with a plurality of holes 204*a* properly and asymmetrically positioned to cooperate with similarly positioned rubber mounting blocks 205 (like the blocks 191) disposed on the disc part 206 of a coupler having a hollow collar 207 adapted to be projected through a panel shaft hole 201 and receive the end of a shaft 122. The shaft end has a flat seat 208 for a set screw 209 passed through the collar 207 which assures proper alignment and orientation of the shaft 122 to the collar 207, and in turn to the animatable part 204.

In Figs. 18–20, the animatable part 204 is shown as a moving arm having a shutter portion 210 adapted to cover a lens 211 behind which is supported a flasher lamp 175.

The arrangement is such that when the arm is swung down (full lines), the lens is covered, whereas, when the arm is swung up (as shown in dotted lines) the lens is exposed; the lamp is arranged to be dark when the lens is covered and to light when the lens is exposed.

It will be observed that the sign on panel 200 is equipped with sub-panels 212 mounted on and covering the rubber blocks 189 which mount the panel, the sub-panels having on their backs, pins fitted into the blocks 189.

The devices shown, as can by now be readily understood are universal in their use, in that they can be used in an infinite number of ways with display panels, and without inaccuracy of animation.

The devices shown represent improvements over the ones shown in my prior application Serial No. 657,649, filed February 20, 1933, of which the

present application may be regarded as a continuation in part.

Now having described an embodiment of the invention, reference will be had to the appended claims for a determination of the scope of the invention.

What I claim is:

1. A motion device including a substantially completely closed and sealed casing, parallel shafts passing therethrough and having protruding ends, an electric motor within the casing for continuously rotating one of said shafts, means within the casing translating the continuous rotation of that shaft into oscillatory rotation of a second shaft and into synchronously timed intermittent rotation of a third shaft, and synchronously timed switching means within the casing for causing synchronized flashing effects of an electric light outside of the casing and connected to the switch by a conductor passing through the casing.

2. A motion device including a substantially completely closed and sealed casing, parallel shafts passing therethrough and having protruding ends, an electric motor within the casing for continuously rotating one of said shafts, means within the casing translating the continuous rotation of that shaft into oscillatory rotation of a second shaft and into synchronously timed intermittent rotation of a third shaft, and synchronously timed switch means within the casing for causing synchronized flashing effects of an electric light outside of the casing and connected to the switch by a conductor passing through the casing, and means within the casing for electrically connecting the switch to the line conductors aforementioned.

3. A motion device including a substantially completely closed and sealed casing, through which protrude a plurality of shaft ends, an electrical motor within the casing for simultaneously providing the different shaft ends with different motions, synchronously timed switch means within the casing for causing synchronized flashing effects of an electric light outside of the casing and connected to the switch by a conductor passing through the casing, and means within the casing for electrically connecting the switch to the line conductors aforementioned.

4. In combination, a display board having a set of mounting formations, and one or more operator holes, an animatable part in front of said board, and a motion device in back of said board and having a substantially completely closed and sealed casing through which protrudes a plurality of shaft ends, an electrical motor within the casing for simultaneously providing the different shaft ends with different motions, means on the casing cooperating with the mounting formations of the board for mounting the casing with its shaft ends behind the board, and with one or more shaft ends in registry with one or more of the operator holes of the board, and means passing through the operator hole or holes for connecting the animatable part with, the shaft end or ends in registry therewith.

5. In combination, a display board having a set of mounting formations, and one or more operator holes, asymmetrically located with respect to the mounting formations, an animatable part in front of said board, and a motion device in back of said board, and having a substantially completely closed and sealed casing through which protrudes a plurality of shaft ends, an electrical motor within the casing for simultaneously providing the different shafts ends with different motions, means on the casing cooperating with the mounting formations of the board for mounting the casing with its shaft ends behind the board, and with one or more shaft ends in registry with one or more of the operator holes of the board, and means passing through the operator hole or holes for connecting the animatable part with, the shaft end or ends in registry therewith.

6. In combination, a display board having a set of mounting formations, and one or more operator holes, an animatable part in front of said board, and a motion device in back of said board and having a substantially completely closed and sealed casing through which protrudes a plurality of shaft ends, an electrical motor within the casing for simultaneously providing the different shaft ends with different motions, means on the casing cooperating with the mounting formations of the board for mounting the casing with its shaft ends behind the board, and with one or more shaft ends in registry with one or more of the operator holes of the board, and means passing through the operator hole or holes for connecting the animatable part with, the shaft end or ends in registry therewith, the animatable part being asymmetrically constructed with respect to the connecting means, and means for orienting the connecting means to the shaft end with which it cooperates.

7. A motion device including a substantially completely closed and sealed casing, shafts passing therethrough and having protruding ends, switching means within the casing for causing flashing effects of an electric light outside of the casing and connected to the switch by a conductor passing through the casing, and an electric motor and means within said casing for producing synchronized diverse rotary motions of said shaft ends and synchronized movement of said switching means which in turn produces synchronized flashing of said electric light.

8. In combination, a display board having a set of mounting formations, and one or more operator holes, an animatable part in front of said board, and a motion device in back of said board and having a plurality of diversely movable exposed shaft ends, means on said device cooperating with the mounting formations of the board for mounting the device behind the board and with one or more shaft ends in registry with one or more of the operator holes of the board, and means passing through the operator hole or holes for connecting the animatable part with the shaft end or ends in registry with said hole or holes, proper registry of a shaft end or ends with an operator hole or holes of said board being assured by proper pre-orientation of said mounting formations with respect to said hole or holes before the device is applied to the board.

9. In combination, a display board having a set of mounting formations, and one or more operator holes, each asymmetrically located with respect to the mounting formations, an animatable part in front of said board, and a motion device in back of said board and having a plurality of diversely movable exposed shaft ends, means on said device cooperating with the mounting formations of the board for mounting the device behind the board and with one or more shaft ends in registry with one or more of the operator holes of the board, and means passing through the operator hole or holes for connecting the animatable part with the shaft end or ends in registry with said hole or holes, proper registry

of a shaft end or ends with an operator hole or holes of said board being assured by proper pre-orientation of said mounting formations with respect to said hole or holes before the device is applied to the board.

10. In combination, a display board having a set of mounting formations, and one or more operator holes, an animatable part in front of said board, and a motion device in back of said board and having a plurality of diversely movable exposed shaft ends, means on said device asymmetrically located with respect to each of the shaft ends, and cooperating with the mounting formations of the board for mounting the device behind the board and with one or more shaft ends in registry with one or more of the operator holes of the board, and means passing through the operator hole or holes for connecting the animatable part with the shaft end or ends in registry with said hole or holes, proper registry of a shaft end or ends with an operator hole or holes of said board being assured by proper pre-orientation of said mounting formations with respect to said hole or holes before the device is applied to the board.

11. In combination, a display board having a set of mounting formations, and one or more operator holes, each asymmetrically located with respect to the mounting formations, an animatable part in front of said board, and a motion device in back of said board and having a plurality of diversely movable exposed shaft ends, means on said device asymmetrically located with respect to each of the shaft ends, and cooperating with the mounting formations of the board for mounting the device behind the board and with one or more shaft ends in registry with one or more of the operator holes of the board, and means passing through the operator hole or holes for connecting the animatable part with the shaft end or ends in registry with said hole or holes, proper registry of a shaft end or ends with an operator hole or holes of said board being assured by proper pre-orientation of said mounting formations with respect to said hole or holes before the device is applied to the board.

12. In combination, a motion device having a plurality of diversely rotatable exposed shaft ends, mounting means thereon asymmetrically located with respect to each of said shaft ends for mounting the device, a display board having a set of mounting formations cooperating with the mounting means of the device, and having an operator hole with which a proper and desired one of said shaft ends is registered merely by the operation of mounting the device with the mounting means and formations in cooperation, an animatable part operatively connected to said desired shaft end through said operator hole, the hole being properly located with respect to the mounting formations before assembly of the device with the board, whereby the proper one of said shaft ends will register with said hole when the device is mounted with said mounting means and formations in proper cooperation.

13. A plurality of substantially identical motion devices, each having a plurality of diversely rotatable exposed shaft ends and a set of mounting means thereon asymmetrically located with respect to each of said shaft ends for mounting the device, and a plurality of display boards with which said devices may properly and interchangeably be used, said display boards having identical sets of mounting formations cooperating with the identical sets of mounting means of the devices, each board also having an operator hole with which a proper and desired one of said shaft ends is registered merely by the operation of mounting a device on that board with its set of mounting means cooperating with that board's set of mounting formations, animatable parts for said boards operatively connected to the desired shaft ends through said operator holes, the holes in all boards being pre-oriented to the sets of mounting formations thereon before assembly of the devices with the boards, whereby the proper ones of said shaft ends will register with the proper holes of said display boards, when the devices are mounted on said display boards with said sets of mounting means and formations in proper cooperation.

RAMON V. DIXN.