

No. 877,790.

PATENTED JAN. 28, 1908.

M. MINTZ.
AUTOMATIC ELECTRIC SWITCH.

APPLICATION FILED MAY 15, 1906.

2 SHEETS—SHEET 1.

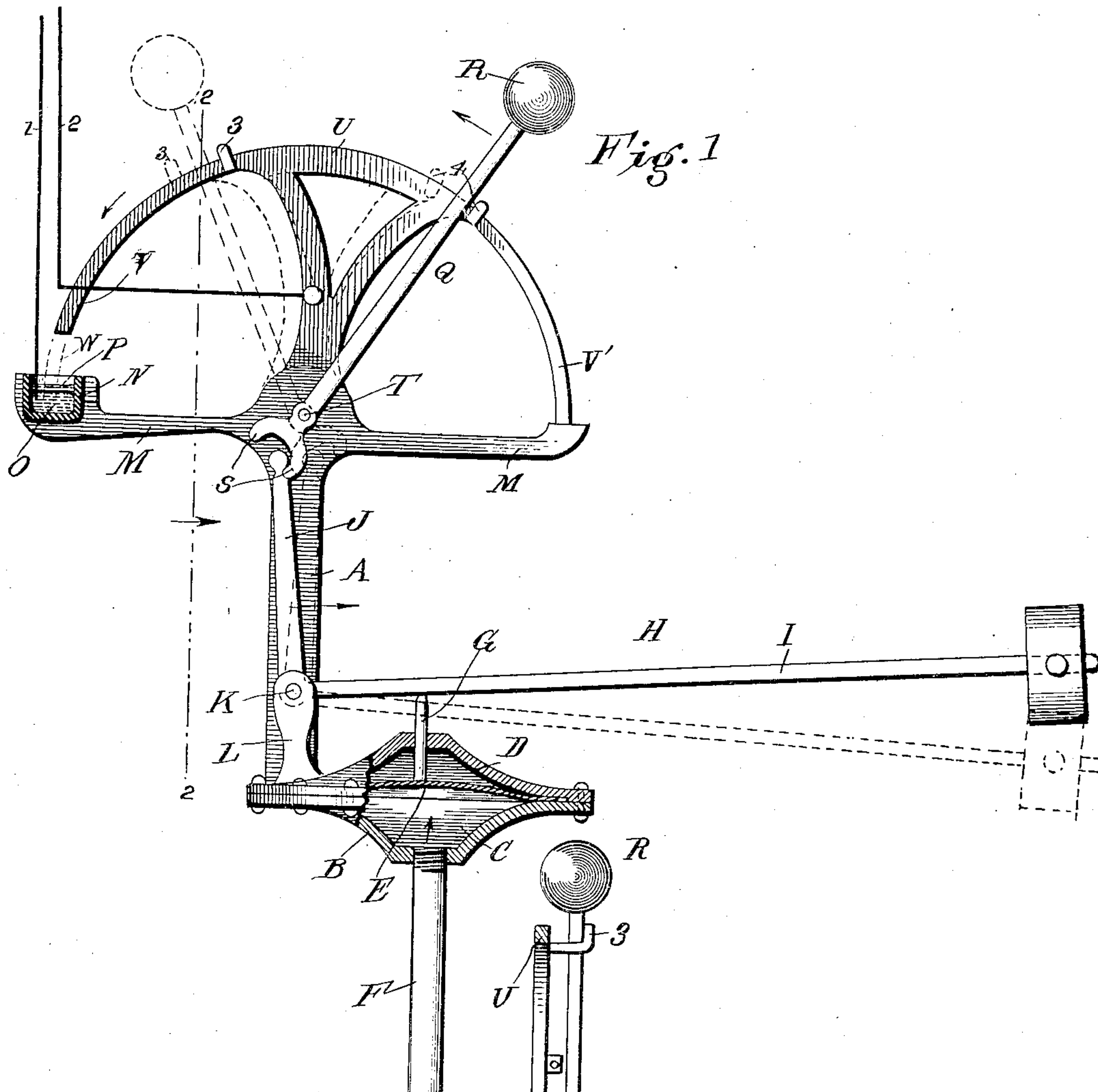
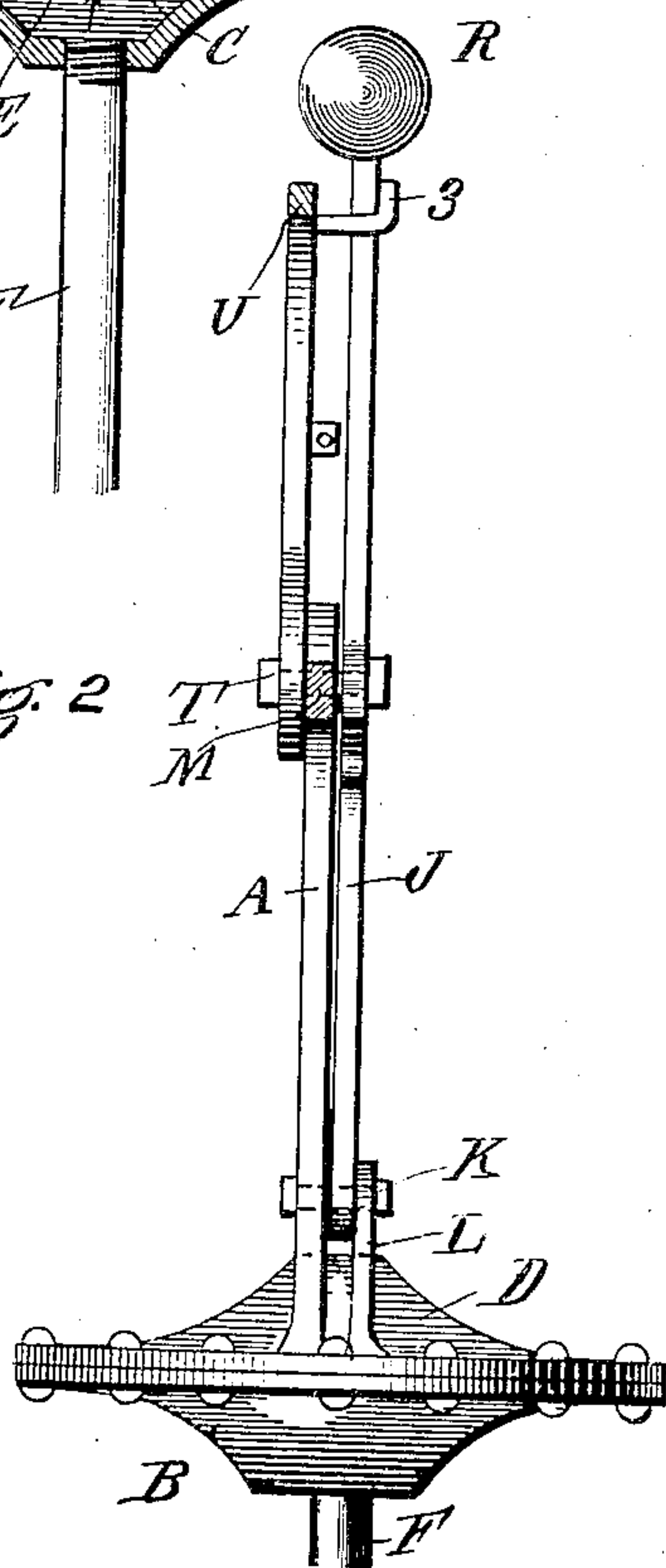


Fig. 2



WITNESSES
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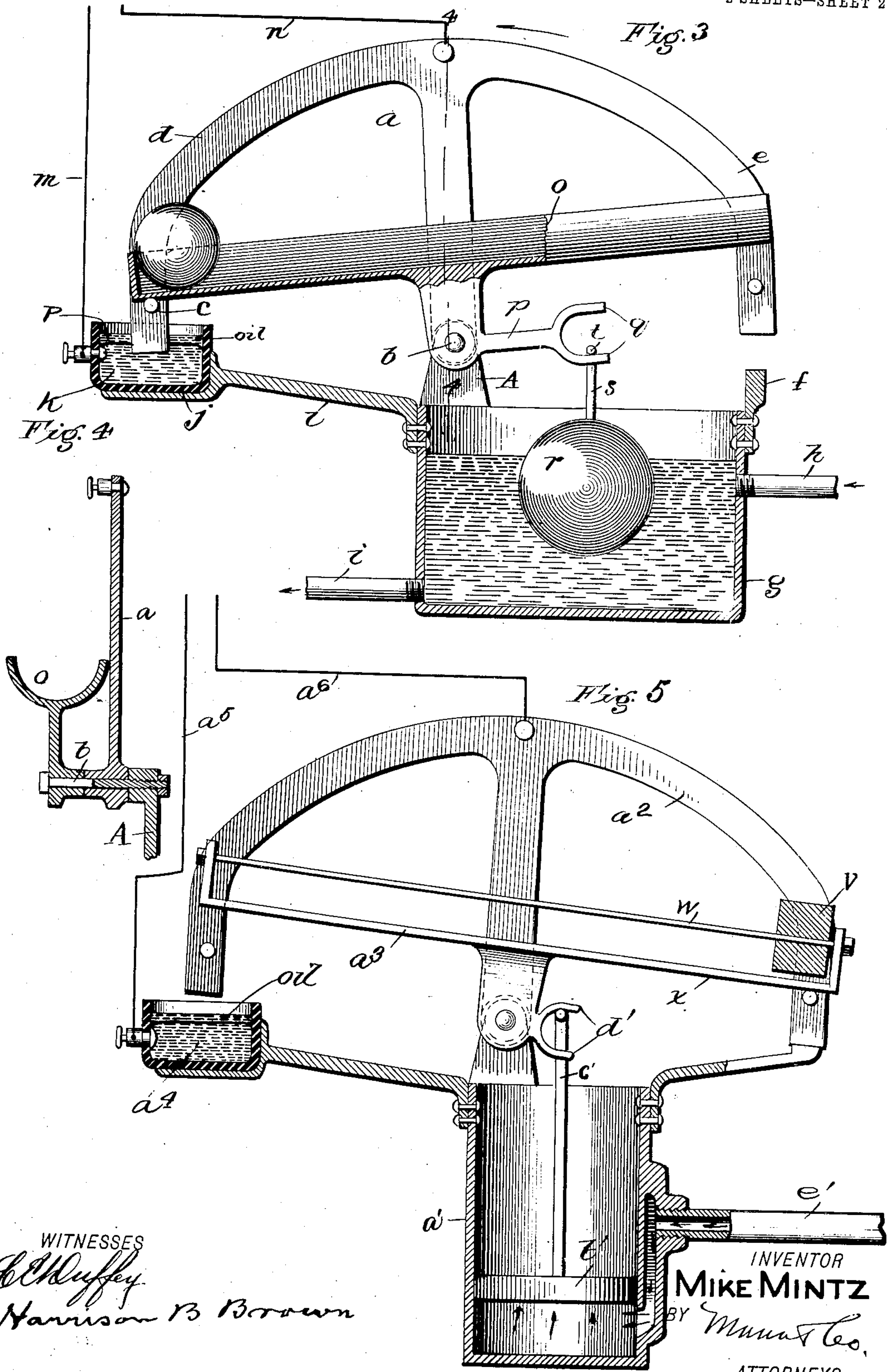
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WITNESSES
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UNITED STATES PATENT OFFICE.

MIKE MINTZ, OF ROCK ISLAND, ILLINOIS.

AUTOMATIC ELECTRIC SWITCH.

No. 877,780.

Specification of Letters Patent.

Patented Jan. 28, 1908.

Application filed May 15, 1906. Serial No. 316,925.

To all whom it may concern:

Be it known that I, MIKE MINTZ, a citizen of the United States, and a resident of Rock Island, in the county of Rock Island and State of Illinois, have invented a new and Improved Automatic Electric Switch, of which the following is a specification.

My invention relates to switches adapted for automatically opening or closing an electric circuit, and has for its object means peculiar in nature, employing fixed and movable contacts, and means whereby to accelerate circuit closing action, of the movable contact over movement imparted thereto by the switch opening means.

The invention consists of novel and improved means, designed, chiefly to obviate sparking upon opening and closing, or cutting in and out action of switch contacts, employed in high voltage circuits.

My invention is illustrated by the several views of the accompanying drawing, in which—

Figure 1 is a side elevation, part in section. Fig. 2 is a transverse sectional view, taken on line 2—2 of Fig. 1. Fig. 3 is a view similar to Fig. 1, and part in section, showing another comprehension of my invention. Fig. 4 is a detail transverse sectional view, taken on line 4, 4 of Fig. 2, and Fig. 5 is a like view, part in section, showing another form comprehended under the broad scope of my invention.

In the practice of my invention I employ a suitable body portion A, having support upon a casing B. The interior of the casing B is divided into separate chambers C, D, by any suitable diaphragm E. Open passage-way is had with the casing chamber C, through a suitably connected pipe F.

G denotes a pin, or stem arranged with its lower end secured to, or resting upon the upper, or chamber D side, of the diaphragm E. The upper end of the pin G is extended projecting loosely through the top, or chamber D side of the casing, as shown by Fig. 1, and said projecting end of the pin G arranged in contact with the lower side of an oscillatory lever H, consisting of a weighted arm I having a laterally disposed arm J. The lever is provided with fulcrum support at K on any suitable support.

It is designed to provide rigid oppositely

projecting arms M, on the body-portion A, one of which is fashioned into cup-shape, as indicated at N, adapted for containing a body of mercury O, having an oil surface P. The other arm N is constructed with its outer end adapted to provide a stop-device, to limit movement of an oscillating member, described farther on.

Q denotes an arm having its upper end provided with a suitable weight R, and its lower end fashioned into suitably spaced forks S.

The arm Q is supported near its lower end by a pivot T, located on the body portion A, suitably above the free end of the arm J, and the free end of said arm is made projecting into the space between the forks S of the weighted arm Q, adapted for operative engagement with the forks S as will be understood.

U denotes a conductive member, fashioned into any suitable form. The member U is arranged with free oscillatory support on the body portion A, which may be located in horizontal plane with the pivot T, and is constructed with an arm V adapted to dip into the body of mercury O in the cup N, as indicated by dotted lines W, Fig. 1, when said member is oscillated as indicated by the arrow.

V' is an arm constructed to provide a stop-device adapted for engagement with the adjacent arm M, of the body-portion A.

In further carrying out my invention it is designed to have the body of mercury O, in the cup N, form a terminal or contact in circuit with a conductor 1.

2 denotes a similar construction, having suitable conductive connection with the oscillatory member U.

In further description of my invention, constructed as illustrated in Fig. 1, I would say that it is designed to have the pipe F extended providing open communicating passage-way between the chamber C, in the casing D, and any air, gas or water storage tank, steam boiler, &c., whose predetermined high or low pressure conveyed into the casing chamber C, shall effect operation of the diaphragm E, for the purpose hereinafter appearing.

I would next call attention to lugs or shoulders 3, 4, spacedly located on the os-

cillatory member U. The lugs are made projecting adapted to be engaged by the weighted arm Q, when same is adjusted.

My circuit closer is designed for use in the automatic opening or closing of a circuit, leading through the conductor 1, body of mercury O, oscillatory member U, and the conductor 2.

The conductors 1 and 2 are arranged, one extending from any desired electrical supply, and the other thereof, leading to the translating machine or device, as for instance, a motor providing power for a pump adapted to store fluid or gas into a desired vessel or tank, having open communication, through a pipe F, with the casing chamber C.

The device above mentioned may be an electro magnetically operated valve arranged to cut off feed of water into a steam boiler, or a similar valve located in a fluid or gas passage-way, between the storing apparatus and the vessel or tank, it being understood that the pipe F shall provide necessary communication between said vessel or tank, and the casing chamber C.

In Fig. 1 of my drawings, the oscillatory member U is shown adjusted with its circuit completing arm V withdrawn from the body of mercury O, thereby opening the circuit 1, 2, and the diaphragm E shown bulging or lifted by force of predetermined pressure in the casing chamber C, during which the current supply is desired to be cut out. Now it is apparent that upon pressure in the casing chamber C being reduced to a predetermined degree, permitting the diaphragm E to gradually resume normal position, that the weighted arm I of the lever H will operate by gravity, tilting the lever-arm J, and thereby through the latter's engagement with the forks S of the weighted arm, Q, operate, adjusting the weighted arm until same has passed vertical position. Further movement of said weighted arm will be accelerated due to gravity, engage the lug or shoulder 4, on the oscillatory member U, and by force of impact thus imparted, oscillate the member U, quickly plunging its conductive arm V, into the body of mercury O, thereby securing completion of the circuit 1, 2, cutting in the source of electrical supply.

In the comprehension of my invention illustrated in Fig. 4 of my drawing, *a* denotes an oscillatory member having free tilting action on a supporting fulcrum *b*. The member *a* is provided with projecting pins or shoulders *c*, a conductive arm *d*, and an arm *e* adapted for engagement with a stop device *f*.

The stop device may be arranged on a liquid containing tank *g*, having connected therewith, high and lower arranged pipes respectively, *h*, *i*.

j denotes a suitable cup for containing a

body of mercury *k* with an oil surface as shown, the cup *j* being supported by an arm *l*, secured to any suitable base. Conductive wires *m*, *n*, are arranged in circuit with the body of mercury *k*, and the oscillatory member *a*, the same constituting circuit connection between the electrical supply and translating machine or device hereinbefore described in the statement referring to the form of my invention illustrated in Fig. 1.

O denotes an oscillating device, constructed trough shape in cross-section, see Fig. 4, the same being supported on a pivot *b*, and constructed with a longitudinally disposed arm *p*, having forks *q*, at its free end.

The tank *g* is designed to contain a predetermined level of fluid flowing thereinto and therefrom, through the pipes *h*, *i*.

In the tank *g*, I arrange a float *r*, having a stem *s*, the latter being provided with a suitable head *t*, adapted for engagement with the upper or lower fork *q*, on the arm *p*, upon the rising or lowering fluid level in the tank *g*, as will be understood.

In the trough shaped device *o*, I arrange a suitable ball *u*, designed to roll from end to end of the trough imparting accelerated oscillating movement thereto, by force of gravity, after the ball has rolled along beyond a point vertically over the pivot support *b* of the trough.

Obviously the accelerated movement thus imparted to the trough by rising and lowering action of the float *r*, the oscillatory member *a* is imparted operation quickly opening or closing the circuit *m*, *n*, the same as effected by the form of circuit closer shown by Fig. 1.

In Fig. 5 I illustrate another comprehension of my invention, the same differing from the construction of apparatus illustrated in Figs. 1 and 3, in the employment of a weight *v* having free sliding movement on a rod *w*, having support at the ends of an oscillatory device *x*, the latter, save being adapted to provide support for the rod *w*, is constructed in all other respects, substantially the same as the similar operating feature illustrated in Fig. 3.

For operation of the circuit closing device illustrated in Fig. 5, I may employ diaphragm or float devices with suitable connecting means, or a cylinder *a'* and piston *b'*, the latter being provided with a headed rod *c'*, adapted for suitable connections with a forked device *d'*, forming a part of the oscillatory member *x*.

For operation of the piston *b'*, its cylinder *a'* is made communicating through connecting passage-way *e'*, with any desired tank retort, maintaining predetermined pressure through power means electrically operated as hereinbefore referred to, or for preserving water level in steam boilers as will be understood.

In Fig. 5, *a*² and *a*³, the mercury terminal

a^4 and circuit a^5 , a^6 are substantially the same feature, functionally.

My improved automatic electric switch will be understood from the above description.

What I claim is—

The combination in a circuit closer, of a stationary body-portion, a mercury contact and a spacedly located stopping device on the body-portion, an oscillatory conductive member, said conductive member having pivotal support on the body-portion, spacedly located shoulders on said oscillatory member, an upwardly projecting arm with pivotal support on the body-portion, said arm being constructed at its upper end and made forked at its lower end, and being also ar-

ranged, adapted to contact one, or the other shoulders, on said oscillatory member, thereby adjusting it by gravitating movement of the weighted end of said pivoted arm, the oscillatory arm and the weighted lever being concentrically pivoted, and means adapted in operation, to engage the forked end of said pivoted arm, swinging it beyond a vertical position, thereby effecting relatively quickened movement of said conductive oscillatory member, by gravitating impact engagement therewith, of the weighted end of said pivoted arm.

MIKE MINTZ.

Witnesses:

F. C. DOWNS,
A. B. NICHOLS.