(No Model.)

C. H. FOLGER.

ELECTRICAL APPLIANCE.

No. 494,098. Patented Mar. 21, 1893.

Fig. 1.

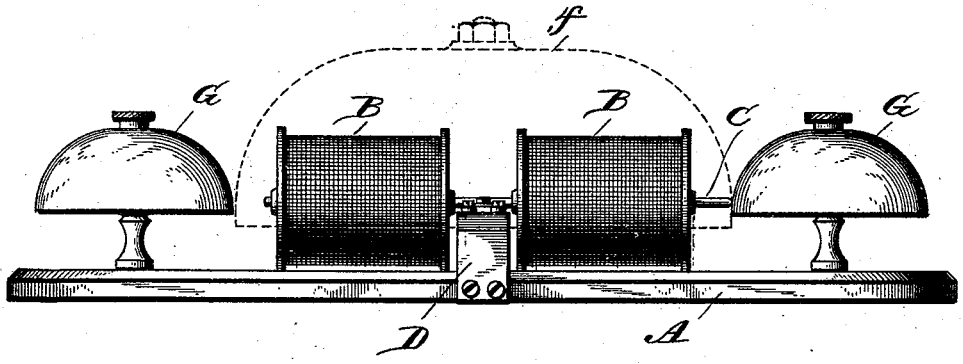


Fig. 2.

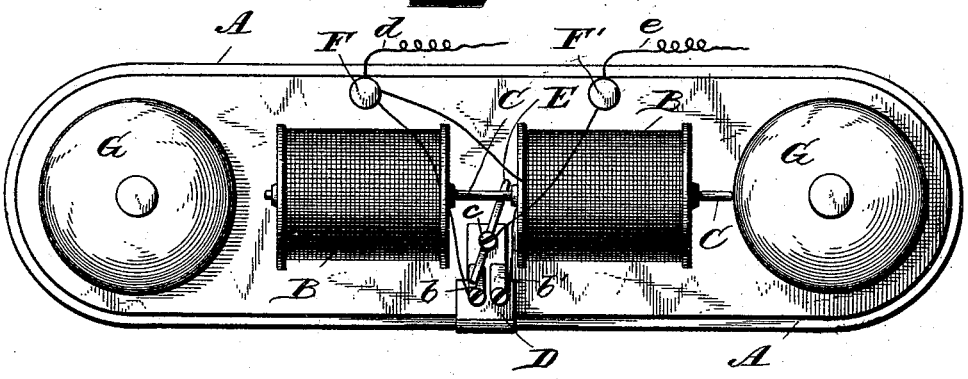


Fig. 3.

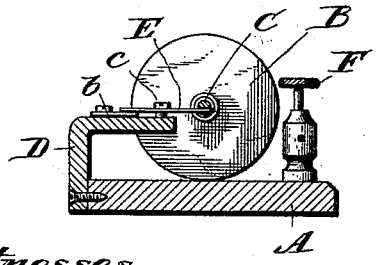
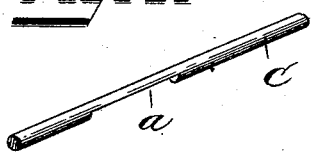


Fig. 4.



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UNITED STATES PATENT OFFICE.

CHARLES H. FOLGER, OF CINCINNATI, OHIO, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE CINCINNATI NOVELTY MANUFACTURING COMPANY, OF SAME PLACE.

ELECTRICAL APPLIANCE.

SPECIFICATION forming part of Letters Patent No. 494,098, dated March 21, 1893.

Application filed September 5, 1892. Serial No. 445,077. (No model.)

To all whom it may concern:

Be it known that I, CHARLES H. FOLGER, a citizen of the United States, residing at Cincinnati, county of Hamilton, and State of Ohio, have invented certain new and useful Improvements in Electrical Appliances, of which the following is a full, clear, and exact description, reference being had to accompanying drawings, forming part of this specification.

My invention relates to an electric appliance designed to give a constant reciprocating motion to a plunger or rod which movement of the rod can be used directly to ring a bell or operate a pump or by appropriate change of direction to perform many useful operations as will be readily understood.

I have illustrated my improvements in connection with the ringing of a bell but do not wish to be limited to this adaptation of my device alone. The motion to the reciprocating rod is obtained by a pair of electro-magnetic solenoids alternately acting upon the rod or plunger which reciprocates longitudinally through the center of the solenoids and the rod is arranged to shift directly by its own movement the current from one solenoid to the other.

Electric bells as heretofore usually constructed have employed electro-magnets, to the armatures of which the bell clappers have been directly or indirectly attached. In order to obtain a continuously ringing bell with such constructions it is necessary to use a vibrating spring for the path of the current, inasmuch as with the use of rigid contact points the vibration of the armature takes place within such narrow limits that such arrangement is impractical. Where springs are used the tension of the springs needs frequent adjustment and such bells need constant watching to keep them in perfect condition. With my arrangement however adapted to the ringing of a bell no springs of any kind are required and the movement of the plunger acts directly on the switch to change the current from one solenoid to the other.

In the drawings, Figure 1 is a side elevation of my device arranged to ring a pair of bells. Fig. 2. is a top plan view of same. Fig. 3. is a central cross section of same. Fig. 4 is a perspective view of the plunger or rod.

A is a suitable base piece upon which the operating parts are mounted.

B. B. are a pair of electro-magnetic solenoids arranged in proximity to each other with their longitudinal axes in line.

C. is a plunger or rod which is arranged to reciprocate longitudinally through both solenoids. This plunger C. is cut away as shown in Fig. 4. to form a groove *a*.

D. is an arm or support secured at one side of the base piece A. about midway between the solenoids. Upon the top of the support are mounted two metallic contact pieces *b*, *b'*, preferably of platinum. At the outer end of the arm D. is pivoted the switch E. the outer end of this switch being arranged to engage within the groove *a*, of the rod C.

F and F' are two binding posts which are connected with the two poles of the battery by wires *d* and *e*.

G G are a pair of bells arranged at the ends of the base piece A. or if desired a single bell shown by dotted lines *f*. (Fig. 1) can be used. The two solenoids are wound in the same direction and one end of each coil is connected with the binding post F. while the other ends of the coils are connected respectively with the contact pieces *b*. and *b'*. The other binding post F' is connected with the switch E. at its pivotal point *c*. It will be manifest from this construction as the current is sent through either solenoid the rod C will be attracted thereby and by the movement of the rod the switch E will be shifted to break the connection through the attracting solenoid and complete the connection through the other, when the rod will be in turn attracted by it, and as long as the current is kept up the reciprocating motion of the rod will be constant. The length and rapidity of the stroke of the rod will depend on the distance between the contact pieces *b*, *b'* which can be adjusted with relation to each other when desired.

The gongs G. G. are arranged so as to be within the limit of the stroke of the rod so as to ring continuously as long as the current is

passing or a single gong may be employed as before described. Instead or ringing a bell or pair of bells, piston rods may be secured to the ends of rod C. and a double acting pump operated or the character of the motion of the rod may be changed in any well known mechanical way to operate within limits almost any kind of light machinery, the size of the coils being proportioned to the work to be performed.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

The combination, with the two axial solenoids wound in the same direction, of the rod or plunger C common to both solenoids, stops to limit the throw of the rod in both directions, the groove *a*, cut in said rod, switch E pivoted upon a suitable support, and contact surfaces *b*, *b'*, each in electrical connection with the coil of its respective solenoid, said switch being in electrical connection with one pole of the circuit, while the solenoid coils are both in connection with the other pole, whereby the reciprocation of the rod will shift the current from one solenoid to the other, substantially as shown and described.

CHARLES H. FOLGER.

Witnesses:
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