No. 624,299. Patented May 2, 1899.

B. E. CHOLLAR.

ELECTROMAGNETIC ACTUATING DEVICE.

(Application filed Oct. 28, 1898.)

(No Model.)

Fig. I.

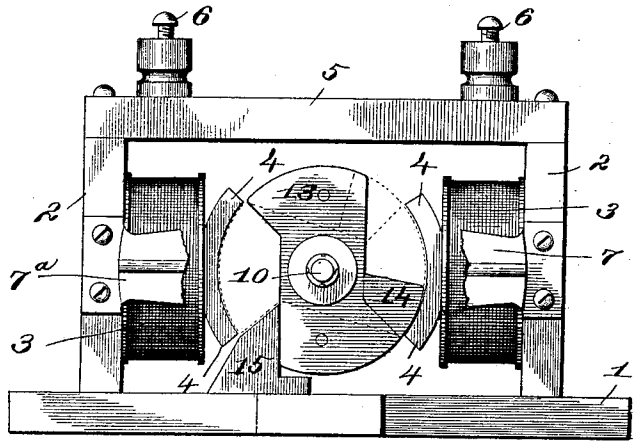


Fig. II.

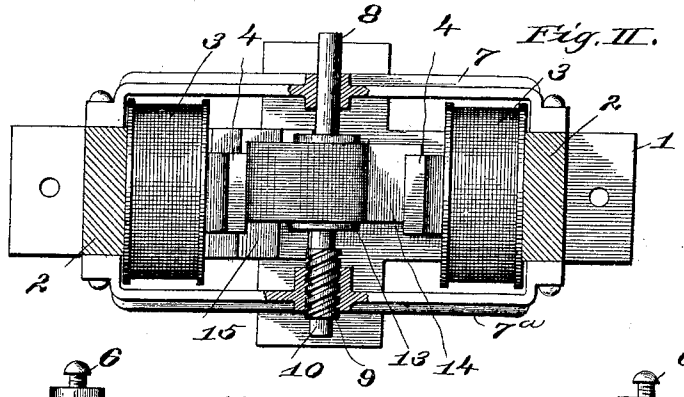


Fig. III.

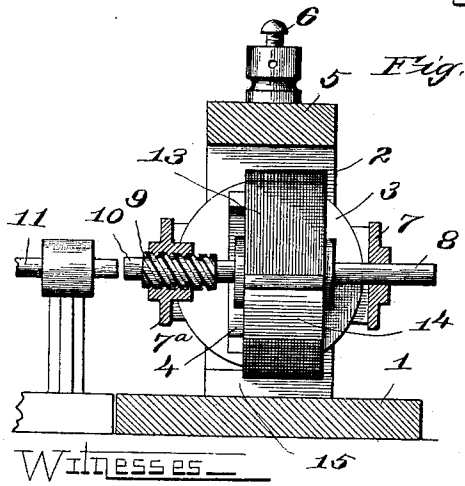
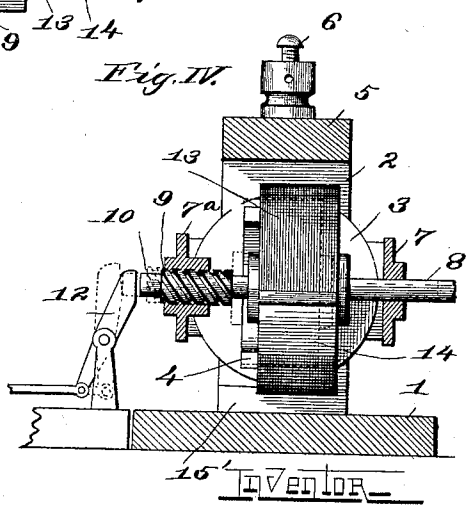


Fig. IV.



Witnesses—

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BYRON E. CHOLLAR, OF ST. LOUIS, MISSOURI.

ELECTROMAGNETIC ACTUATING DEVICE.

SPECIFICATION forming part of Letters Patent No. 624,299, dated May 2, 1899.

Application filed October 28, 1898. Serial No. 694,806. (No model.)

To all whom it may concern:

Be it known that I, BYRON E. CHOLLAR, a citizen of the United States, residing at the city of St. Louis, in the State of Missouri, have invented certain new and useful Improvements in Electromagnetic Actuating Devices, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

It is the object of my invention to provide a device capable of transmitting motion and which is controlled by an ordinary electromagnet. This object is accomplished by suspending an armature within a magnetic field in a manner that will cause it to move endwise when the current is turned on. The said armature is preferably placed out of direct line of the magnetic field and adapted to be drawn into such direct line of attraction when the current is on.

The details of construction are hereinafter specifically described and claimed.

Referring to the drawings, Figure I illustrates a side view, partly broken away, of my invention. Fig. II illustrates a top view thereof, with the standards shown in section, to show the journals of the armature. Fig. III is a vertical cross-section showing how the motion of the armature-axle is applied. Fig. IV is a similar view only showing the motion transmitted to a lever.

1 is the base on which the device is supported.

2 are uprights which carry the magnetic coils 3, and 4 are the extensions of the core, adapted to be magnetized.

5 is a cross-piece furnished with binding-screws 6, to which are attached the wires (not shown) connected with a source of electricity and through which the current is carried to the coils 3.

7 are side supports, in which is journaled the armature-shaft 8. One end of this shaft is furnished with a worm-screw 9, which engages in worm-thread in the support 7^a, so that on the partial revolution of the shaft 8 the end 10 is carried forward or backward. It is adapted to impinge on a bar 11, suitably supported and impart motion thereto. In Fig. IV, I have shown a lever 12 instead of a bar 11.

13 is an armature secured to the shaft 8. It is supplied with a weight 14 of some material which is not susceptible to the magnetic attraction and which is adapted to keep the armature normally against the check 15 when there is no current of electricity passing through the coils 3. It will be observed that when the armature is in this position it is somewhat out of the line of the two plates 4, (see Figs. II, III, and IV,) but when the current is turned on and the armature is revolved into the magnetic field it is directly in the line of force, as is shown by the dotted lines in Fig. IV. The check 15 also serves to limit the vibration of the armature when the current is on, as is shown by dotted lines in Fig. I.

Instead of a weight 14 used for the purpose of returning the armature when the current is off I can substitute a suitable spring.

It is obvious that this device is capable of use for many purposes and that it may be controlled by a key placed at any remote distance. I have used it successfully in regulating the gas-pressure in large cities by connecting the rod 11 with a water-valve which directly controls the said gas-pressure. It may also be under direct control of an automatic electric switch, and consequently serves for use as a safety-governor. The specific means for accomplishing such use will be made the subject of independent applications.

I claim as my invention—

1. The combination of an electromagnet, and a vibratorily-mounted armature, said armature having a shaft mounted in a bearing in such a manner that the shaft is caused to move endwise when said armature is rocked by the energizing of said electromagnet.

2. The combination of an electromagnet, a vibratory armature, a shaft on which said armature is mounted, supports for said shaft, and a worm carried by said shaft adapted to move in a bearing conforming thereto, whereby said shaft is moved endwise in the rocking of said armature under the attraction of said electromagnet.

3. The combination of an electromagnet, a vibratory armature so hung as to be normally out of the direct line of magnet-field of said electromagnet, a shaft on which said armature is mounted, a worm carried by said shaft,

supports for said shaft, a bearing in one of said supports conforming to said worm, and a weight carried by said armature, the whole being so constructed that the attraction of said electromagnet causes said armature to be drawn into their direct line of magnetic field to move said armature-shaft endwise.

4. An electromagnet comprising a base, uprights, cross-piece having binding-screws, magnetic coils having core extensions, side supports, armature-shaft journaled in the supports and having one of its ends connected with one of the supports by worm-screw and worm-thread, the armature mounted on the shaft, the check adapted to limit the movement of the armature in both directions, and means for keeping the armature against the check, when the armature is in normal position; substantially as described.

BYRON E. CHOLLAR.

In presence of—
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