PATENT SPECIFICATION

Application Date: Oct. 26, 1933. No. 29,730/33. **420,549**

Complete Left: July 3, 1934.

Complete Accepted: Dec. 4, 1934.

PROVISIONAL SPECIFICATION.

Improvements relating to Electric Bells.

We, SIEMENS BROTHERS & Co., LIMITED, of Caxton House, Tothill Street, Westminster, London, S.W. 1, a Company registered under British Law, and EDMUND RAMSAY WIGAN, of 18, Cambridge Road, Lee, London, S.E. 12, a British subject, do hereby declare the nature of this invention to be as follows:—

This invention relates to electric bells.

It has in view arrangements whereby a satisfactory ring may be had with a reduction in rattle and chatter over that ordinarily obtaining and in which the adjustment of the bell is substantially independent of the operating current.

In electric bells as usually employed the movement of the striking arm carrying the hammer is limited either by the hammer striking the gong or by the armature of the electromagnet striking against one of the cores. In the present invention the striking arm is not rigid and other limiting means is employed. This means, which is fixed relative to the armature axis, takes effect on the striking arm at a point between the hammer and the point of attachment to the armature and is such as to bring about a flexing of the striking arm about the limiting means whereby the hammer continues in its motion to strike the gong. The armature may travel further thereby bringing about a re-flexing effect on the striking arm which may cause the hammer to leave the gong and may assist in the return movement of the armature.

The limiting means may take the form of stops between which the striking arm plays or the striking arm may be provided with flanges embracing a fixed part so as to allow of a definite limited movement of the striker. Adjustment of the limiting device may be provided for.

The bell may comprise one or two gongs on which the hammer plays and may be operated by alternating, pulsating or continuous current. With alternating or pulsating current, a satisfactory effect may be had over a wide range of frequency and power consumption without alteration of the adjustment of the limiting means. The invention is applicable to bells in general and has a special field of utility in connection with a telephone instrument.

Dated this 26th day of October, 1933.
SIEMENS BROTHERS & CO.
LIMITED,
By their Attorney,
F. A. LAWSON,
For Selves and Co-Applicant.

COMPLETE SPECIFICATION.

Improvements relating to Electric Bells.

We, SIEMENS BROTHERS & Co., LIMITED, of Caxton House, Tothill Street, Westminster, London, S.W. 1, a Company registered under British Law, and EDMUND RAMSAY WIGAN, of 18, Cambridge Road, Lee, London, S.E. 12, a British subject, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

The invention relates to electric bells.

It has in view arrangements whereby a satisfactory ring may be had over a greater range of frequencies and with a reduction of rattle and chatter compared with that ordinarily obtaining and whereby the adjustment of the bell is substantially independent of the operating current.

In electric bells as usually employed, the movement of the striking arm, that is the arm which carries the hammer, is limited in one or both directions, either by the hammer striking the gong or by the armature striking one of the cores of the electro-magnet. In the present invention the striking arm is not

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rigid and other limiting means is employed. This means, which is fixed relatively to the armature axis, takes effect on the striking arm at a point between the hammer and the point of attachment of the armature and is such as to bring about a flexing of the striking arm about the limiting means whereby the hammer continues in its motion to strike the gong. Since the movement of the striking arm is limited by this means, and not by the armature, the armature may continue to move to some slight extent, after the striking arm has struck the limiting means, whereby a re-flexing of the arm is brought about. This reflexing assists in the speedy leaving of the gong by the hammer, and may assist in the return movement of the armature.

In Figure 1 of the accompanying drawing the limiting means is shown to take the form of stops *sto* and *stp*, between which the striking arm, *str*, plays. In Figure 2 it is shown to take the form of flanges *fla* and *fln* slidably mounted upon the striking arm and embracing a fixed part such as *t*. By either of these means, it will be seen, a definite limited movement of the striking arm is obtained. In the Fig. 1 arrangement adjustment of the limiting device is provided by the screws *scr*, *sce*, and in the Fig. 2 arrangement by the fact that the flanges are slidable.

Figures 3, 4, and 5 illustrate, approximately, what appears to be the movement of the parts during one half period of vibration. In Figure 3 the striking arm *str* is passing through its middle position, in the direction indicated by the arrow, with a velocity which depends, inter alia, upon the turning force applied to the armature. In Figure 4 the striking arm has come up against stop *sto*, but the hammer *ha* continues its motion, this being permitted by the flexion of the striking arm about stop *sto* and the pivot *pi*. If the force, that is the energising current, is sufficient to carry the striking arm from one stop to the other, gongs, suitably placed at the ends of the path of overshoot, will be struck.

If the force is excessive, that is, if the energising current is strong, the armature may continue its movement, to some extent, after the striking arm has come up against the stop whereby a reflexion is produced as illustrated in Figure 5. This reflexion withdraws the hammer from the gong.

Figure 6 may be regarded as an illustration of a particular example. The energy stored in the striking arm, due to its reflexion aids the reversal of the armature velocity when the force acting thereupon reaches zero or is reversed. The numerals 1, 2, 3, indicate the positions reached in Figures 3, 4, and 5. The displacement of the hammer is measured along the ordinate, and time along the abscissa.

It is apparent that the invention may be applied to electric bells other than those having a rocking armature of the nature described. It may, for instance, be applied to electric trembler bells.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. An electric bell movement consisting of a hammer attached to a vibrating armature by means of a resilient carrying arm, characterised by limiting means adapted to act upon the carrying arm at some point between the hammer and armature.

2. An electric bell movement consisting of a hammer attached to a vibrating armature by means of a resilient carrying arm, characterised by adjustable stops situated between the hammer and armature and between which the carrying arm vibrates.

3. An electric bell movement according to Claim 1 substantially as described with reference to the accompanying drawing.

Dated this 3rd day of July, 1934.

SIEMENS BROTHERS & CO. LIMITED,
By their Attorney,
F. A. LAWSON,
For Selves and Co-Applicant.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1934

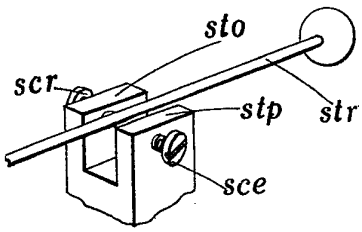

Fig. 1.

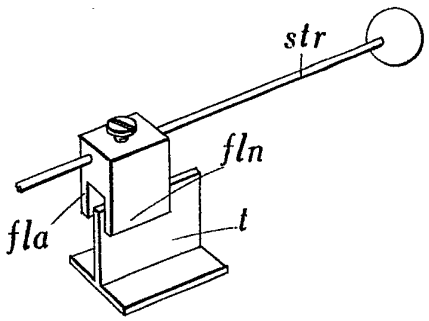

Fig. 2.

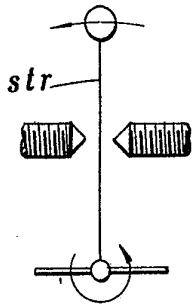

Fig. 3.

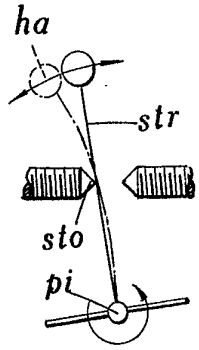

Fig. 4.

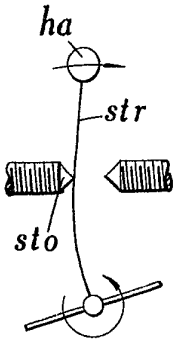

Fig. 5.

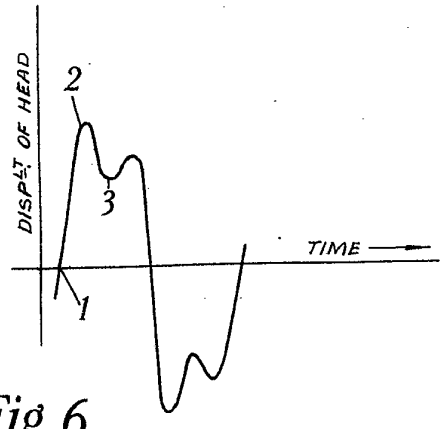

Fig. 6.

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