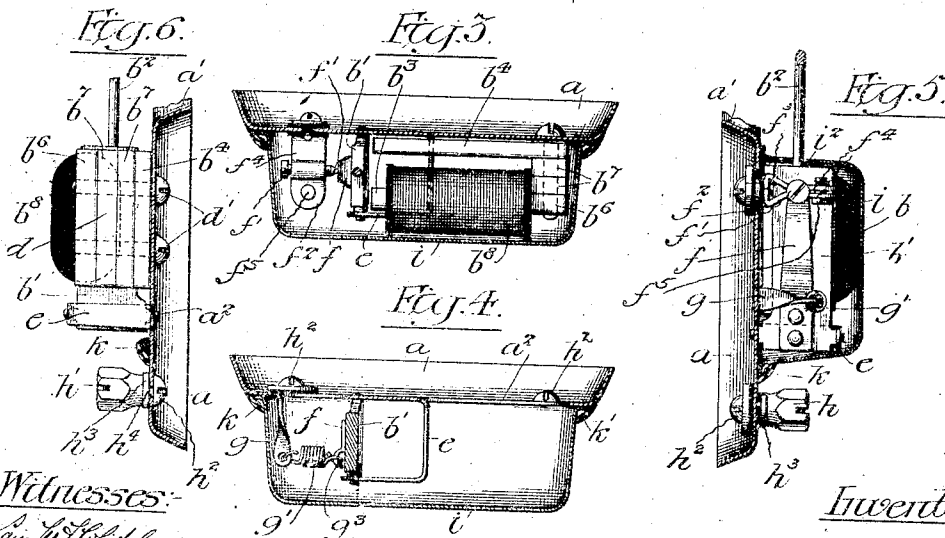
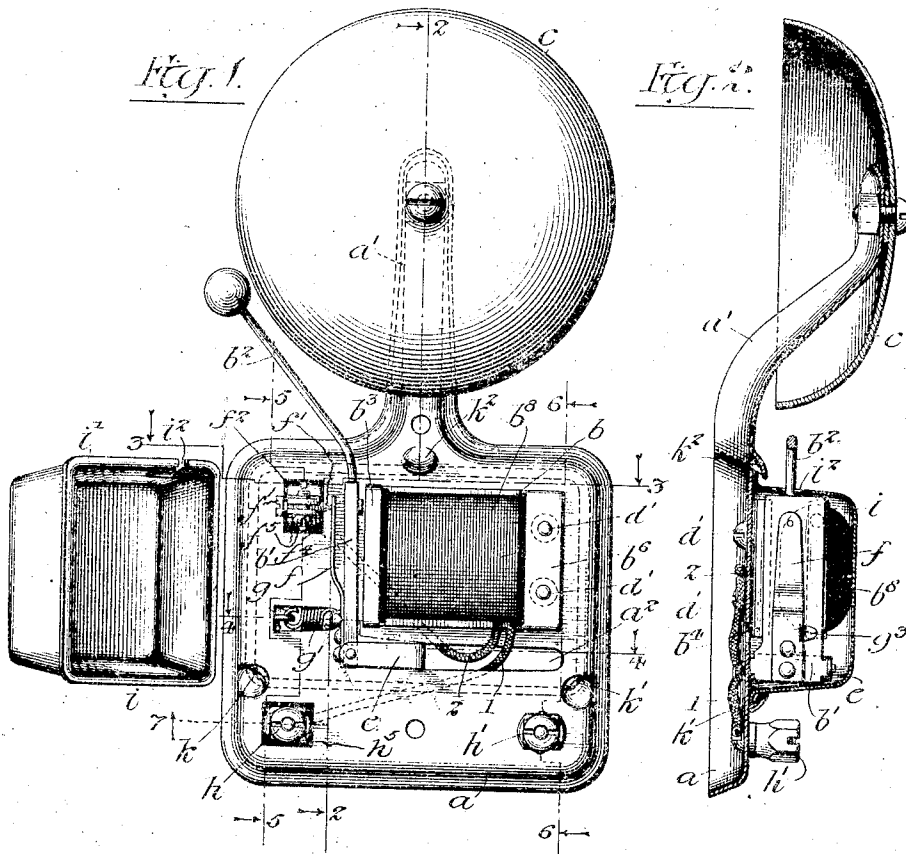


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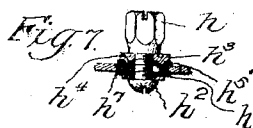
E. B. CRAFT.
ELECTRIC BELL.

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UNITED STATES PATENT OFFICE.

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ELECTRIC BELL.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, EDWARD B. CRAFT, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Electric Bells, of which the following is a full, clear, concise, and exact description.

My invention relates to an electric bell, and has for its object to provide an improved device which will be light, strong, efficient in operation, and very cheap and simple to manufacture. In the device of my invention the parts are made as far as possible of sheet-metal stampings and punchings, the base being stamped out from a metal plate and having portions struck up therefrom to form a mounting for the armature, an anchor-post for the spring, and ears for engaging and holding the rim of a stamped sheet-metal cover. The iron parts of the magnet and its armature may be made of flat punchings, assembled, as hereinafter set forth, and the wires from the magnet-helix may be led through the base through space which is left in the striking up of the portions thereof before mentioned. The contact-post may also be made of a punching having two upright arms with a bearing for the contact-pin formed by the inner sides of the arms, and a screw for binding the arms together to lock the contact-pin in position.

I will describe my invention by reference to the accompanying drawings, wherein—

Figure 1 is a view in front elevation of an electric bell embodying my invention with the cap for the base removed. Fig. 2 is a longitudinal sectional view on line 2 2 of Fig. 1. Fig. 3 is a cross-sectional view of the base and the mechanism carried thereby on line 3 3 of Fig. 1. Fig. 4 is a similar view on line 4 4 of Fig. 1. Fig. 5 is a longitudinal sectional view of the base and its associated apparatus on line 5 5 of Fig. 1 and looking toward the right in said figure. Fig. 6 is a similar view on line 6 6 of Fig. 1 looking toward the left, and Fig. 7 is a detail sectional view of the binding-post.

The same characters of reference are used to designate the same parts in each of the figures of the drawings.

The base *a* of the bell-frame, which is stamped sheet metal, supports an electromagnet *b*, having an armature *b'*, carrying a

tapper *b²*, adapted to sound a gong *c*, mounted upon the neck *a'* of the base. The core *b³* of the magnet, which is preferably a flat metal punching, is united with the return pole-piece *b⁴* at the rear by a heel-piece *d*. This heel-piece, as shown, may comprise a rearward extension *b⁵* of the core *b³*, and two metal strips or fillers *b⁶* *b⁷*, interposed between the said extension and the rear portion of the return pole-piece, the said parts being secured together and to the base *a* by suitable means, such as screws *d'* *d'*, which may pass through the base *a*, return pole-piece *b⁴*, strips *b⁶* *b⁷*, and core extension *b⁵* in the order named. By virtue of the above arrangement I am enabled to construct a very efficient magnet with very little expense, as all the parts of the magnet may be of flat punchings. The armature *b'* of said magnet *b* is adapted to be supported by the base *a* and bracket *e* and is also preferably formed of a metal punching. The bracket *e* is struck up from the material of the base and a portion thereof bent back to lie in a plane approximately parallel to that of the base *a*, the armature *b'* being pivotally mounted, as shown, between the free end of said bracket and the base. The armature is adapted in its attractive movement to open a switch-contact included serially in the circuit of the magnet *b*. The armature may carry a contact-spring *f*, which when the armature is retracted will engage an adjustable contact-anvil *f'*, carried by the support *f²*, mounted upon, but insulated from, the base *a*. The spring *f* is adapted upon the attraction of the armature *b'* to move out of engagement with its anvil *f'* to open the circuit of magnet *b*, whereupon the armature would be retracted to close contacts *ff'*. A vibratory movement is thus imparted to the armature and bell-tapper in the well-known manner.

The support *f²* for the contact-anvil *f'* may comprise a base *f³*, carrying upright arms *f⁴* *f⁴*, preferably formed integrally therewith and bent inward near the base to lie close together. The contact pin or screw *f'* is adjustably mounted between the inner sides of said arms, preferably in a bearing formed by struck-out portions of the arms, said portions being screw-threaded to permit adjustment of the contact-screw *f'*. A set-screw *f⁵* is also provided for the arms, passing through the free ends thereof and adapted to draw

said arms close together to bind the same against the sides of said contact pin or screw, and thus to lock the same in its adjusted position. The support f^2 may be provided with lugs struck down from the base f^3 thereof, said lugs being adapted to enter slots or depressions in the base of the bell to prevent the device from turning. An insulating-washer is interposed between the support and its lugs and the base of the bell, as shown.

An anchor-post g is struck up from the material of the base a , and a retractile spring g^3 , extends from said post to the armature b' , said spring being connected with the armature preferably by being secured to a hook g^3 , carried by the spring f , mounted upon the armature b' .

Near the lower extremity of the base a is mounted a pair of binding-posts h h' , the binding-post h being insulated from the base and connected with a conductor 1, which passes along the back of the base through the opening a^2 therein made by the formation of bracket e and thence to one terminal wire of the helix b^3 of magnet b , the other terminal of said helix being connected with a conductor 2, which passes out through the opening a^2 in the base and into connection with contact-anvil f' of spring f . The spring f being connected by armature b' with the base a completes the circuit between the posts h h' , since post h is mounted directly upon the base a . The binding-posts h h' may comprise a screw h^2 , passing through the base a with a clamping-nut h^3 fitting thereon to hold the screw in place. The clamping-nut h^3 is provided with a lug or lugs h^4 h^4 upon the bottom thereof, adapted to enter depressions or slots in the base a in opposite sides of the screw h^2 to lock the screw and nut in position and prevent the same from turning. The screw h^2 also carries a supplemental binding-nut, as usual. The binding-post h is provided in addition to the mechanism just described with insulating-washers h^5 h^5 between the clamping-nut and base and between the head of the screw and base, as shown. The washer h^5 in the assembly of the parts of the binding-post is engaged by the lugs h^4 of the clamping-nut h^3 and depressions formed by said lugs in the upper surface thereof, while at corresponding points on the lower surface of the washer portions are struck out to form lugs h^7 h^7 , which enter the slots in the base. With this construction the screw and clamping-nut are firmly held in place to prevent turning of said screw, and said parts are completely insulated from the base. The base may be provided with a cap i of stamped sheet metal adapted to conceal and protect the apparatus mounted upon said base with the exception of the binding-posts h h' . Said cap has an outwardly-extended rim or flange i' , adapted to fit closely against the base. An opening i^2 is provided in the cap, through

which the tapper-arm may pass, the opening being of sufficient size to permit free movement of the tapper. Ears k k' k^2 are struck up from the material of the base and are adapted to engage the flange i' of the cap i to hold the cap in place. The ear k^2 may be located in position to engage the rim or flange upon the upper wall of the cap near the mid-die, while the ears k k' may engage the flange i' upon the lower wall of the cap at opposite ends thereof. In fitting the cap in place the rim or flange upon the lower wall of the cap is first forced under the ears k k' and a slight pressure applied to the upper wall of the cap to spring the flange or rim upon said wall under the ear k^2 .

I claim—

1. In an electric signal device, the combination with a sheet-metal base, of an electromagnet supported thereby comprising a flat punched core, a helix surrounding the core, a flat punched return pole-piece, a heel-piece uniting the core and pole-piece comprising a number of punched metal strips between the core and pole-piece, said parts being fastened together and to the base, an armature for said magnet, a bracket struck up from the material of the base and forming a support for said armature, the wires leading to said helix passing through the opening in the base made by the formation of said bracket, and a switch-contact operated by said armature in its movement.

2. In an electric signal device, the combination with a stamped sheet-metal base, of an electromagnet supported thereby, a core for said magnet, a helix surrounding said core, an extension of said core at the rear, a return pole-piece, metal strips between said extension and pole-piece, means for fastening said core extension, strips and pole-piece together and to the base, said parts of the magnet being formed of metal punchings, an armature for said magnet also formed of a metal punching, a bracket struck up from the material of the base, a portion thereof being bent rearwardly into a plane approximately parallel to the base, said armature being pivoted between the free end of said bracket and the base, the wires leading to said helix passing through the opening made by the formation of said bracket, and contacts operated by the armature in its movement.

3. In an electric signal device, the combination with a sheet-metal base, of an electromagnet carried by the base having a core and return pole-piece formed of metal punchings, an armature for said magnet, a bracket struck up from the base and bent rearwardly, the armature being pivoted between the free end of said bracket and the base, the wires leading to said helix passing through the opening made by the formation of said bracket, and contacts operated by said armature in its movement.

4. In an electric signal device, the combination with a sheet-metal base, of an electromagnet carried by the base having a core and return pole-piece formed of metal punchings, an armature for said magnet, a bracket struck up from the base and bent rearwardly, the armature being pivoted between the free end of said bracket and the base, an anchor-post struck up from the base, a coiled retractile spring connecting said post and armature, and contacts operated by the armature in its movement.

5. In an electric signal device, the combination with a sheet-metal base, of an electromagnet supported thereby, an armature for said magnet, a bracket struck up from the material of the base and cooperating with the base to form a pivotal support for said armature, a helix for said magnet, the wires leading thereto passing through the opening in the base made by the formation of said bracket, contacts operated by the armature in its movement, ears struck up from the material of the base, and a stamped sheet-metal cap for said base having a rim adapted to be engaged by said ears to hold said cap in place.

6. In an electric bell, the combination with

a sheet-metal base, of an electromagnet supported thereby, an armature, core and return pole-piece for said magnet formed of flat metal punchings, a bracket struck up from said base and cooperating therewith in the support of said armature, a helix surrounding the core of said magnet, the wires leading to said helix passing through the opening left by the formation of said bracket, contacts operated by said armature in its movement, a tapper carried by the armature, a gong adapted to be struck by said tapper, an anchor-post struck up from said base, a retractile spring extending from said post to the armature, and a stamped sheet-metal cap fitting upon the base over the operating parts of the bell, said cap being held in place by ears struck up from said base engaging the rim of said cap.

In witness whereof I hereunto subscribe my name this 7th day of September, A. D. 1904.

EDWARD B. CRAFT.

Witnesses:

EDWIN H. SMYTHE,
WILLIAM S. DUNCAN.