K. B. MILLER.

TELEPHONE SUPPORT.

APPLICATION FILED MAR. 21, 1910.

1,087,808.

Patented Feb. 17, 1914.

2 SHEETS—SHEET 1.

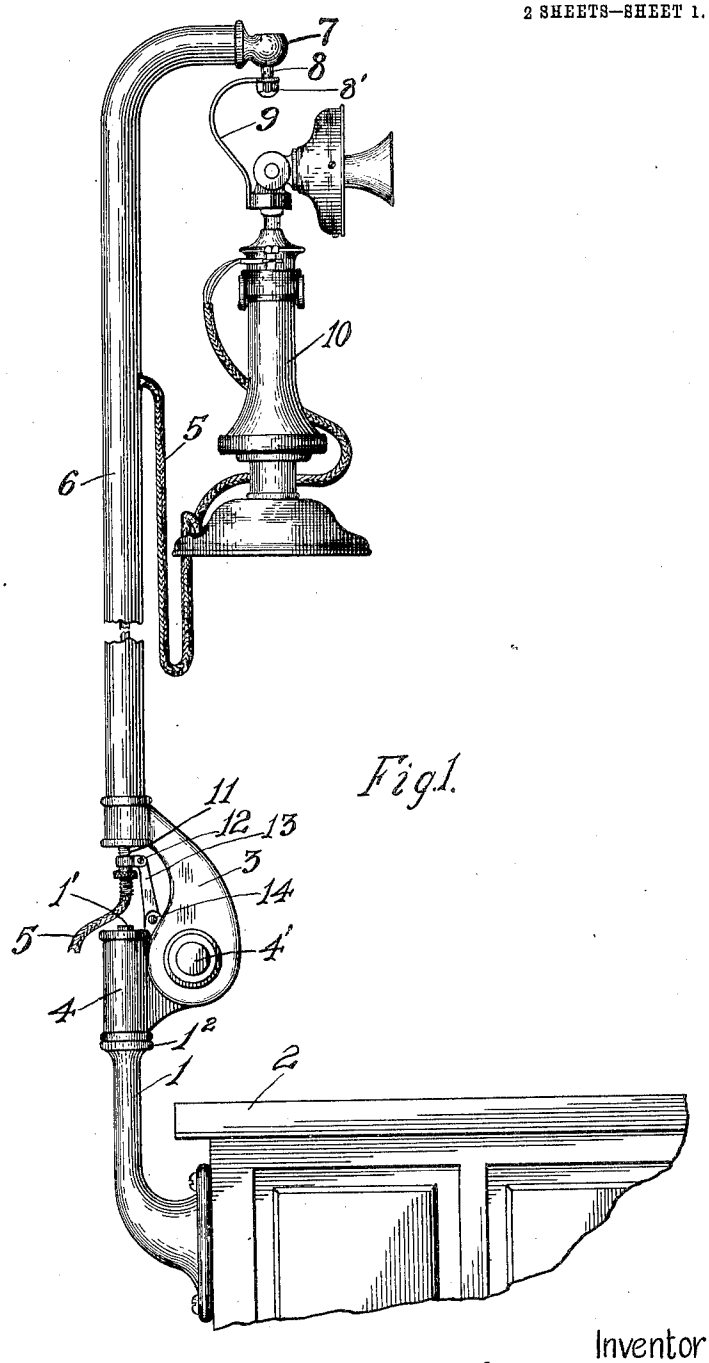


Fig. 1.

Witnesses:

Wm. L. Herdman.

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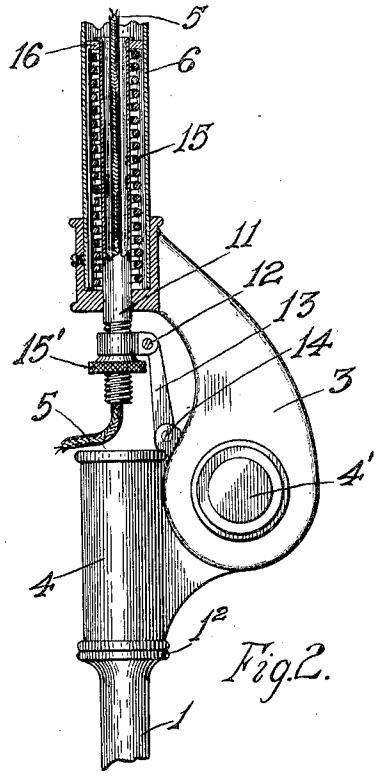


Fig. 2.

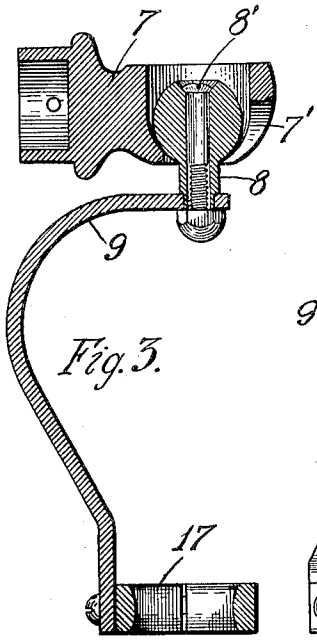
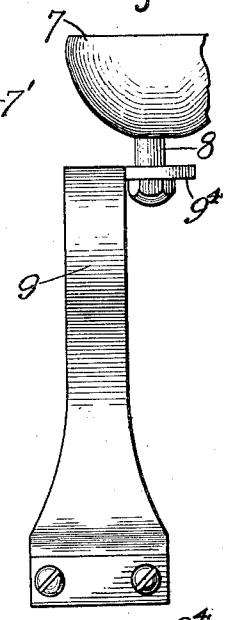


Fig. 3.

Fig. 4.



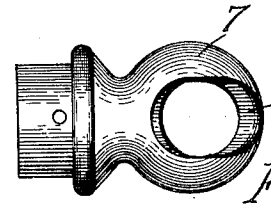


Fig. 5.

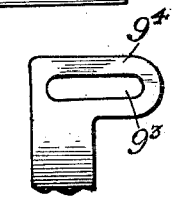


Fig. 8.

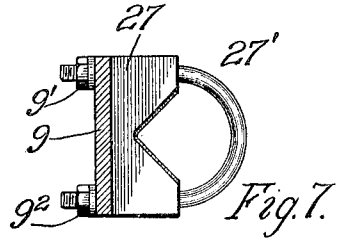


Fig. 7.

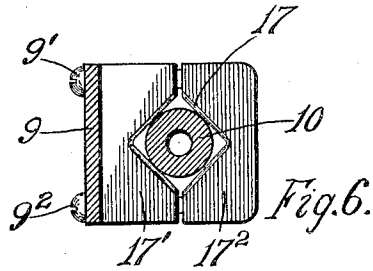


Fig. 6.

Witnesses:

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UNITED STATES PATENT OFFICE.

KEMPSTER B. MILLER, OF CHICAGO, ILLINOIS, ASSIGNOR TO McMEEN & MILLER, A COPARTNERSHIP COMPOSED OF SAMUEL G. McMEEN AND KEMPSTER B. MILLER, OF CHICAGO, ILLINOIS.

TELEPHONE-SUPPORT.

1,087,808. Specification of Letters Patent. **Patented Feb. 17, 1914.**

Application filed March 21, 1910. Serial No. 550,592.

To all whom it may concern:

Be it known that I, KEMPSTER B. MILLER, a citizen of the United States of America, and a resident of Chicago, county of Cook, and State of Illinois, have invented a new and useful Improvement in Telephone-Supports, of which the following is a specification.

My invention relates to telephone supports.

It has for its principal object the provision of a mounting for a desk stand or other form of telephone instrument which shall be of great simplicity, and which shall, by the force of gravity alone, normally maintain the telephone plumb and in convenient position for use and at the same time allow great flexibility of position while in use.

A further object is to provide for the disposal of the flexible conducting cords leading to the instrument in a manner that shall be at once sightly, convenient and as free as possible from liability to injury.

The device of my invention comprises an arm pivoted vertically upon a swivel base block; a spring with easily accessible adjustment axially disposed with relation to the arm, and so adapted as to balance the arm and its supported telephone at all times; and devices of articulation for the attachment of the telephone set at the free end of the arm, which will allow of a universal movement between the arm and the telephone set.

In the drawings which accompany and form a part of this specification—Figure 1 shows an assembly of the device complete with telephone set attached; Fig. 2 shows the details of the lower end of the arm and its mounting and adjusting elements; Fig. 3 shows a section of the outer end of the arm and supporting device; Fig. 4 shows another view of the parts shown in Fig. 3; Fig. 5 shows a view of the under part of the equipment-supporting element at the end of the arm; Fig. 6 shows a plan view of the clamp by which the telephone set is connected to the supporting device; Fig. 7 shows an alternative form of clamp. Fig. 8 shows a top view of the slotted portion of the curved arm of Figs. 3 and 4.

Like numerals refer to like parts throughout the several views.

An anchor post 1 is designed to be attached rigidly to a desk 2 or it may be attached to the wall or any convenient object. This anchor or swivel post may be of any design or convenient type, the sole requirement being that it comprise a vertical shaft 1′ and shoulder 1^2 to receive and sustain loosely and rotatively the base block 4. The movable arm 6 of the device is preferably tubular as shown, with lower and upper terminal castings, the lower casting 3 providing means for pivoting the tubular arm 6 to the base block 4, the upper casting 7 providing a means for attaching the telephone set to the outer end of the arm. The arm 6 is so pivoted with relation to the anchor post 1 that when it is in a vertical position the axis of the arm and axis of the stem 1′ coincide. A tube 11 passes through an opening in the lower end of the casting 3 and is threaded at its lower extremity, being flanged at its upper extremity, to engage the ring 16. A spring 15 surrounds the tube 11 and is compressibly held between the ring 16 and the casting 3. An adjusting nut 15′ is threaded on the lower portion of the tube 11 and is shouldered to carry the collar 12. This collar 12 is linked by means of the link 13 to the base block 4 at the pivot 14. The compression of the spring 15 is adjusted by means of the nut 15′. The design of the spring 15 for length and compression, the length of the link 13 and length of the threaded portion of the tube 11 shall be such as to admit of the compression being adjusted to balance the arm with its suspended telephone set in any of the positions which the arm is likely to assume in swinging upon the pivot bolt 4′ and at the same time without incurring the risk of any of the threaded portions of the tube 11 passing into the opening of the casting 3 when the arm is in a vertical position. The spring 15 should be in a condition of partial compression when the arm is in a vertical position, and the compressive force should increase as the arm swings downward, so as to balance as nearly as possible, at all points, the increasing turning moment, due to the increasing leverage of the weight of the telephone. This approximation need not be extremely close, as it is desirable that the joint at the bolt 4′ have considerable friction and the friction there should be sufficient to annul any difference there may be at any time between the tendency of the telephone set to fall under the pull of gravitation and the

tendency to rise under the pull of the spring 15. Of course an exact balance at all times is impossible, since the weight of the telephone set upon the arm varies from time to time with the removal and replacement of the receiver upon the switch hook, and the friction of the joint should always be sufficient to compensate for this.

In Figs. 3 and 4 the casting 7 is adapted to fit within the end of the arm 6 and is provided with a shoulder which rests against the outer edge of the arm. This casting comprises a cup-shaped socket provided with an oval aperture 7′ through which the stem of the ball 8 projects. The ball, together with its stem, is provided with a central hole through which it is attached by means of the bolt 8′ to the hanger 9, the lower end of the stem of ball 8 shouldered to fit into an aperture in the hanger 9. The casting 7 and ball 8 comprise a ball and socket joint and admit of the hanger 9 being moved in substantially all directions about the casting 7. For, as will be seen from Fig. 5, the opening 7′ through the casting 7 is considerably wider than the diameter of the stem of the ball 8 that projects therethrough, and is elongated, permitting of the ball and stem assuming an extreme position such that the axis of the bolt 8′ is parallel with the axis of that portion of the arm 6 which is at right angles to the major portion. The hanger 9 is provided with a clamp 17 comprising two portions 17′ and 17^2 adapted to be clamped by means of the screws 9′ and 9^2 about the stem or transmitter support of the desk set 10. This point of support for the desk set is, when the receiver is on the hook, not in a line with the center of gravity of the equipment and the set would not, therefore, hang plumb when supported from this point. To obviate this objection the hanger 9 is provided with an ear 9^4 integral therewith and at right angles to the body thereof; this ear is provided with an elongated opening 9^3 into which the stem of the ball 8 fits and by means of which the point of support of the telephone set with relation to the arm 6 may be shifted until the point falls on a line with the center of gravity of the telephone set with the receiver in place, and thereby permits of the set hanging plumb in any position which the arm may assume.

An alternative form of clamp is shown in Fig. 7 and comprises the staple 27′ and the clamp member 27. The ends of the staple 27′ are threaded to receive the nuts 9′ and 9^2 by means of which the telephone set may be clamped to the hanger 9.

The conducting cord 5 passes through the tube 11 and thence through the hollow arm 6 to a bushed opening in the arm near the telephone set, sufficient slack being left between the desk stand and the upper part of the arm to permit the telephone set to swing freely upon the ball and socket joint. By positioning the axis of the tubular arm 6 with respect to the axis of the pivotal bolt 4′ so that the axis of the arm will lie above that of the bolt when the arm is in or approaches its horizontal position, the clearance between the arm and the surface of the desk 2 is made larger to clear any obstructing articles on the desk. By this means an inconvenience of many existing telephone supports is avoided since it is not necessary to remove objects upon the desk surface from the path of the arm to permit the telephone set to be brought into a desirable position for use.

By the structure thus described the end of the supporting arm may be made to occupy any point in the surface of a hemisphere of which the arm itself may be any radius. The telephone set has a like field of movement.

Throughout this specification I have spoken of certain parts as castings, because they may be conveniently made in that manner; but it is obvious that these parts may be made by other processes than casting, such as drop forging or stamping, and I do not wish in any sense to be limited to the use of castings. Other obvious modifications may be made without departing from the spirit of my invention.

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

1. In a telephone support, a balanced arm, a socket upon the end of said arm; an aperture in said socket; a ball within said socket and supported thereby; a stem attached to said ball and extending through the aperture in said socket; a link provided with an ear at right angles thereto and integral therewith, said ear being provided with an elongated aperture for the adjustable attachment of the stem of said ball to said link; and a clamp attached to the free end of said link, adapted to engage a structural part of a telephone set.

2. In a telephone support, a stationary pivot; a rotatable base block mounted thereon; a tubular arm pivotally attached to said base block; a tube within said arm and carrying at its inner extremity a ring; a spring surrounding said inner tube and compressibly held between the lower extremity of said arm and said ring; a spring-adjusting nut upon the free end of said inner tube; a collar upon said nut and adjustably held thereby on said inner tube; a link attached to said collar and pivoted to said base block; and means at the free end of said arm for suspending a telephone set.

3. In a telephone support, a balanced arm; a portion of the outer extremity of said arm being bent at an angle with the major portion thereof; a socket rigidly at-

tached to the extremity of said bent portion; an elongated aperture in said socket; a ball provided with a stem within said socket and supported thereby, the stem portion of said ball extending through said aperture in said socket; a link provided with an ear at right angles thereto and integral therewith, said ear being provided with an elongated aperture, said link being attached to the stem of said ball adjustably along said aperture in said ear; and a clamp attached to the free end of said link and adapted to engage a structural part of a telephone set.

4. In a telephone support, a fixed base block having a vertical post, a swivel member fitted on said post for horizontal rotation, a hollow arm horizontally pivoted to said swivel member and having its main body displaced laterally out of line with said horizontal pivot, a spring within said arm connecting at one end with said arm, and having its opposite end free, and a tension member for said spring connected at one end with the free end of said spring and at the other with a point on said swivel member fixed as respects said horizontal pivot and laterally displaced therefrom, but in substantial alinement with said arm when the said arm occupies its vertical position, together with a telephone set carried at the outer end of said arm, and means for adjusting the length of the tension member to adjust the tension of the connecting spring, said means being located without the hollow arm and between the inner end thereof and the said fixed pivot of the tension member.

5. A telephone support comprising a fixed base block, a supporting arm universally swiveled on top of said support for unrestricted movement in a hemispherical space thereabove, and a telephone set connected laterally with the outer end of said arm by a universal connection permitting free, unretarded, and unrestricted movement thereof in a substantially hemispherical space below the said outer end of the arm, said joint comprising a socket member connected to the arm and having an aperture therethrough diverging from the bottom to the top and extending substantially vertically through said arm when said arm is in normal vertical position, and the bottom of which aperture is laterally enlarged and displaced from the vertical, together with a ball member seated in said aperture and connecting with the telephone set through the displaced bottom thereof.

6. A telephone support comprising a fixed base block, a supporting arm universally swiveled on top of said support for unrestricted movement in a hemispherical space thereabove, and a telephone set connected laterally with the outer end of said arm by a universal connection permitting free, unretarded, and unrestricted movement thereof in a substantially hemispherical space below the said outer end of the arm, said joint comprising a socket member connected to the arm and having an aperture therethrough diverging from the bottom upward, the bottom of which aperture is elongated forwardly in the vertical plane of the extended arm, together with a ball member seated in said aperture and connecting with the telephone set through the elongated bottom thereof.

7. A telephone support comprising a fixed base block, a supporting arm universally swiveled thereon for movement thereabove in a substantially hemispherical space, together with a telephone set freely suspended from the end of said arm by a connection having lateral bodily adjustment for the telephone set with respect to the end of said arm, without disturbing its vertical position whereby telephone sets of various dimensions may be freely balanced in a vertical position without alteration in the construction of said telephone support.

8. A telephone support comprising a fixed base block, a supporting arm universally swiveled thereon for movement thereabove in a substantially hemispherical space, together with a telephone set freely suspended from the end of said arm by a connection having lateral bodily adjustment for the telephone sets with respect to the end of said arm without disturbing its vertical position, whereby telephone sets of various dimensions may be freely balanced in a horizontal position without alteration in the construction of said telephone support, said connection including a hanger connecting the end of the supporting arm with the telephone set and having a horizontally arranged slot at one end thereof through which connection with the adjoining member is made.

Signed by me at Chicago, county of Cook and State of Illinois, in the presence of two witnesses.

KEMPSTER B. MILLER.

Witnesses:
LEONA J. EKSTROM,
WM. J. HERDMAN.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."