Feb. 13, 1923.

1,445,202.

F. W. COLBY.

TELEPHONE INDEX.

ORIGINAL FILED JULY 28, 1917.

Fig. 1.

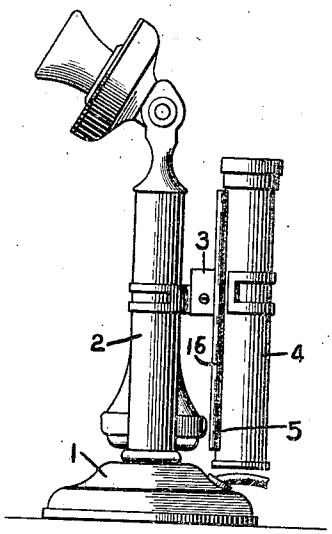


Fig. 2.

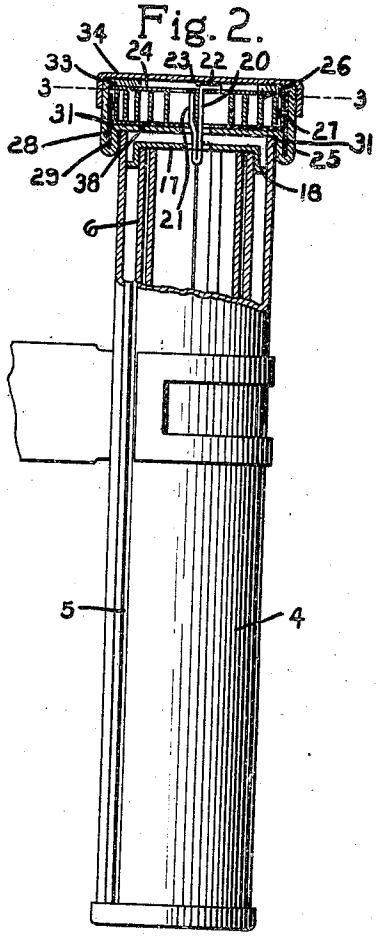


Fig. 3.

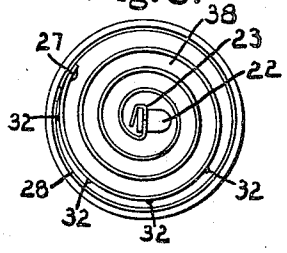


Fig. 4.

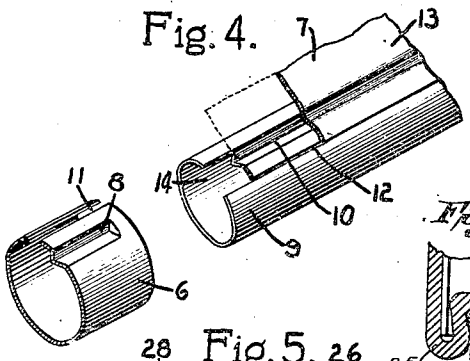


Fig. 7.

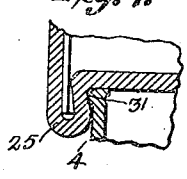


Fig. 5.

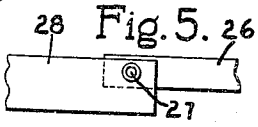
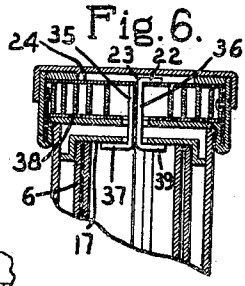


Fig. 6.



Inventor.
Frederick W. Colby
by Heard Smith & Tennant.
Atty's.

Patented Feb. 13, 1923. 1,445,202

UNITED STATES PATENT OFFICE.

FREDERICK W. COLBY, OF BOSTON, MASSACHUSETTS.

TELEPHONE INDEX.

Application filed July 28, 1917, Serial No. 183,270. Renewed January 10, 1923.

To all whom it may concern:

Be it known that I, FREDERICK W. COLBY, a citizen of the United States, and a resident of Boston, in the county of Suffolk, the State of Massachusetts, have invented an Improvement in Telephone Indexes, of which the following description, in connection with the accompanying drawing, is a specification, like characters on the drawing representing like parts.

This invention relates to, and has for its object improvements in telephone indexes of the type set forth in Patent No. 1,171,838 granted February 15, 1916, No. 1,234,874 granted July 31, 1917, No. 1,236,268 granted August 7, 1917 and No. 1,266,214 granted May 14, 1918 to the same inventor. These indexes are used to provide in accessible form a large number of telephonic addresses although, with slight modification, they may be adapted to a wide variety of uses, such as are set forth in the patents above mentioned.

Other objects of this invention will more fully appear from the following description of the accompanying drawings and will be set forth in the annexed claims.

The drawings disclose an illustrative embodiment of the invention. This embodiment is adapted for use with the usual type of telephone instrument, but it is to be understood that the invention is not confined to the exact features shown, and various changes may be made within its reasonable scope.

In the drawings:

Fig. 1 is a side elevation of a telephone instrument showing the improved index applied thereto:

Fig. 2 is a partial section through the device:

Fig. 3 is a section of the line 3—3 of Fig. 2, the cover, ring and disk being removed.

Fig. 4 is a perspective view of the novel locking members of the ribbed spool;

Fig. 5 is a detail of the union of the spring and its complementary member.

Fig. 6 is a sectional view similar to the sectional portion of Figure 2, of a modified form of post;

Fig. 7 is an enlarged detail sectional view showing the casing and cap in closed position.

This improved device is shown as attached to the conventional telephone instrument including a base 1 and standard 2, and, while this type is shown, it is obvious that it may readily be secured to and used with other forms. It is demountably clamped to the standard 2 by means of a suitable double clamp 3 which at one end embraces the standard and, at its other end, this novel device. The improved device primarily consists of a casing 4 preferably formed of a light sheet metal entailing, from a practical standpoint, the advantages both of great durability and lightness of weight. This casing has a longitudinal slot 5 which extends the length of the casing. Within this slot 5 is passed an indicia-bearing member which is preferably a piece of sheet material, such as paper, or a fabric, one end of which is secured to a member rotatably mounted within the casing 4. This rotatable member, which is termed a spool 6, is preferably similarly formed of a light sheet metal material. This construction permits the inexpensive and relatively simple production of these parts by a stamping process. The indicia-bearing member in this embodiment consists of a strip 7 of paper.

The means of attachment of the strip 7 to the spool 6 is an improved form of that shown in Patent No. 1,266,214 above mentioned. The spool is provided with a longitudinal rib 8 which is preferably formed by inwardly bending a longitudinal portion of the spool. A complementary spool member is provided co-operatively to function with the spool to retain the inner end of the indicia-bearing strip. This complementary member comprises a tube 9 having a correspondingly formed complementary inwardly turned rib which outwardly presents a groove 10 to receive the spool rib 8. The tube 9 is of such diameter that it may be removably positioned within the spool 6. The spool has a longitudinal slot 11 while the tube 9 is also provided with a

slot 12 which extends from its lower end to a point adjacent its top.

These slots and ribs in the tube and spool are so arranged that in assembled form the strip 7 of the paper enters the slot 12 in the tube, extends partially around the periphery of the tube and within the slot 11 in the spool. The section 13 of the strip which extends about the periphery of the tube is effectively clamped between the internesting rib and groove of the spool and tube. Preferably as shown in Fig. 4, the rib 8 of the spool terminates adjacent the lower edge of the spool so that this lower edge portion preserves its normal circular curvature. In this improved structure, a portion of the locking tube is cut away at its upper end leaving a space as at 14. At the moment of assembling this space is opposite the terminus of the rib 8 of the spool as shown in Fig. 4. This construction has proved advantageous in assisting the facile assembling of the device in that the lower edge of the strip 7 positioned on the tube may be inwardly pressed by the lower circular edge of the spool and permit the spool edge to pass easily over the strip 7 and its rib 8 into engagement with the tube groove without wearing away or tending to damage the edge of the strip as a result of repeated similar assemblings. Furthermore, the terminal edge of the cut away portion of the tube functions as a guide by which the strip may be properly positioned. The upper transverse edge of the strip is brought into alinement with the transversely extending edge of this tube portion and hence the strip is correctly alined for passage through the spool slot 11 and for subsequent winding about the spool. The lower end of the spool is closed by means of a cap, as in the said Patent No. 1,266,214, which effects a smooth running fit with the inside of the casing 4.

This strip-retaining spool is preferably rotatably suspended so that the strip is normally retained wound about the spool, but may be withdrawn through the casing slot 5 by means of a handle 16 which is too large to enter the slot 5.

The upper end of this spool is provided with a cap 17. The cap snugly fits over the exterior of the spool end and is retentively held thereon. This cap 17 is also provided with an annular flange 18, the extreme diameter of which is slightly less than the interior diameter of the casing 4 so that a smooth running guiding fit is effected at this end of the spool. The spool cap 17 is directly suspended from, and carried by, a post in the manner disclosed in the aforesaid Patent No. 1,266,214, so that the spool is not only suspended from the post, but also any torque set up in the post may constantly act upon the spool so that the strip is retained wound thereon. The post is preferably made from a single piece of metal stamped out and bent into the desired form. The stem 20 of the post is longer than the overlying stem 21 so that its upper end may be bent to form the lap 22 which is inserted in the eccentric slot 23 of the disk 24 carried in the spring chamber which is formed by the casing cap. The post is in turn suspended from this disk, and, because of the angular engagement of the slot 23 and the lap 22 of the stem 20, is rotatably carried thereby. As the portion of the post which passes through the disk is not in line with the axial center of the post, the slot 23 of the disk 24 is preferably cut off-center so that concentric rotation of the disk and post may be assured.

This post is rotatably mounted and held under adjustable tension within the spring chamber formed by the casing cap 25. Spring tension means are positioned within this chamber to co-operate with the post and then to govern normally the spool movement. A coiled spring 26 is preferably employed, one end being held in relatively fixed position while the other is secured to the rotatable post of the spool as shown. As disclosed in this preferred embodiment the spring 26 has a complementary spring member 28 secured thereto at the outer or fixed end as by a rivet 27. This complementary member is wider than the spring 26 so that a longitudinal portion may be seated in the annular recess 29 formed in the interior of the cap 25 by turning the circular wall of the cap 25 upon itself. The member 28 tensionably bears throughout its width against the inner face of the cap 25 and thus is held in constant frictional engagement therewith against any rotation induced by the torque of the coiled spring 26 which has its end secured to this member 28. Not only is this annular recess 29 thus formed but there is also provided a reinforced flange by which the cap snugly fits the upper end of the casing 4 and is held against the torque of the spring when wound up and yet may be manually turned to increase or decrease the effective spring tension acting upon the post. The other, or inner end of the coiled spring is preferably detachably secured to the post. The inner end portion of the spring is passed between the stems 20 and 21 of the post and the temper is removed from the end portion which is bent about one of the stems as shown in Fig. 3.

The disk 24 is made of relatively thin metal and is preferably given a smooth finish on its surfaces. Its under surface rests upon the upper edges of the convolutions of the coiled spring 26 by which it is held in substantially horizontal position in the upright casing. Further, the disk is of such diameter that it has a smooth guiding fit in the spring chamber and, due to the relative sizes, union

and positioning of the complementary member 28 and the coiled spring 26, the disk can not contact with the upper edge of the fixed complementary member 28, see Fig. 2, so that friction between a movable and fixed part is obviated hereat. A friction disk 38 is movably positioned on the base of the spring chamber formed by the casing cap 25. The lower edges of the convolutions of the coiled spring 26 bear upon the upper face of this movable disk, and thus friction between the movable coiled spring and the base of the cap 25 is reduced. This disk 38 is centrally apertured to permit the unrestricted movement therein of the stems of the suspended spool post.

It is in this spring chamber section of the device that exist the major portion of the improvements of this novel structure over former devices.

It has been found that, in turning over this annular cap wall to form the casing-engaging flange, there is a slight annular bulge adjacent the bend and that this resulted in a relatively constricted annular surface at the lower portion of the flange so that the upper end portion of the casing was not frictionally engaged by the annular face of this flange. Hence, the upper end of the casing has been provided with a plurality of outwardly extending projections annularly located just above that portion of the casing end which normally engages the constricted portion of the recess-forming flange of the cap. These annularly disposed projections 31 are preferably formed by punching out the end portion of the casing. These projections extend outwardly so that each engages a portion of the wider diametered annular surface of the inside of the cap flange. By the employment of this construction, upon accidental disengagement or dislodgment of the annularly engaging frictional surfaces of the cap and casing, the projections will engage the constricted annular portion of the cap and function to retain the cap upon the casing. In this improved device, the complementary spring member 28 is made of such a width and the coiled spring end is so secured thereto (see Figs. 5 and 2) that the top edge of the member 28 does not contact with the post-supporting disk 24. This disk, as above stated, is movable as are also the convolutions of the spring 26, and hence to reduce friction, it is preferable to retain the relatively fixed complementary member 28 out of contact with the disk 24.

A further improvement consists in the provision of a plurality of projections 32 on the outer convolution of the coiled spring. These projections effectually prevent the coiled spring, adjacent its riveted union to the member 28, from approaching so closely to the member 28 that a portion might tend to drop into the annular recess formed in the flange for the reception of the member 28. In this novel structure there is also provided a washer which is preferably in the form of a ring 33 which is positioned on the disk 24. This ring is of such thickness that the rotatable lap 22 of the post may not contact with the inner face of the casing cover 34. It has the added function of a movable washer and reduces friction between the rotatable disk 24 and the fixed cover 34.

In the form shown in Fig. 6 there has been disclosed a novel post construction. In this type the post can be formed of two separate pieces of metal which are rectangular in shape. An appreciable waste of material, in the production of these devices on a very large scale, is obviated by avoiding the stamping out of the irregularly shaped single piece post. Both the shorter stem 35 and the longer stem 36 of this post are substantially oblong. The shorter stem 35 is bent to form an arm 37 which is preferably secured permanently to the inner face of the spool cap 17. The longer stem 36 not only has an arm 39 similarly secured to the spool cap but also bears at its upper end a lap 22 which is adapted to be passed through the angularly shaped aperture 23 in the disk 24. The spool is thus suspended from the post and the post in turn is demountably secured to the disk 24 as the disk may be slipped off the lap 22. The post end of the coiled spring 26 is secured to the post as in the structure shown in Figs. 2 and 3. With the type of two-part post disclosed in Fig. 6, the aperture in the spool cap 17 may be of any simple form such as to permit the passage of the post therethrough. It is obvious, however, that the two-part post need not be passed through the spool cap 17 but may simply have the lower ends of its two stems fixedly secured to the upper face of cap 17. These two stems are secured to the cap 17 only a distance apart sufficient to permit the introduction and retention of the bent end of the spring 26 therebetween.

By the use of these improvements additional smoothness of operation has been secured, construction costs lessened, friction reduced and durability of the structure increased.

It is to be understood that the construction disclosed herein is illustrative but not restrictive and that the same may be modified within the meaning and scope of the claims which follow.

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

1. In a device of the class described, a cylindrical casing having a longitudinal slot, a member rotatably secured in said casing, a cap for said casing, a coiled

spring, said cap having an annular recess to receive and to retain one end portion of said spring, means to prevent the spring portions adjacent said retained portion from entering said annular recess, means for securing the opposite end of the spring to the rotatable member, and a flexible indicia-bearing means secured to said rotatable member and adapted to be drawn out through the casing slot against the tension of the spring and thereby returned when released.

2. In a device of the class described, a cylindrical casing having a longitudinal slot, a member rotatably secured in said casing, a cap for said casing, said cap having an annular recess, a coiled spring having one end secured to said rotatable member, a complementary spring member secured to the other end of said coiled spring, said complementary member being frictionally retained in said annular recess, a plurality of projections on the coiled spring adjacent the complementary member to prevent the coiled spring from entering the annular recess, and a flexible indicia-bearing means secured to said rotatable member and adapted to be drawn out through the casing slot against the tension of the spring and thereby returned when released.

3. In a device of the class described, a cylindrical casing having a longitudinal slot, a member rotatably secured in said casing, a cap for said casing, said cap having an annular recess, a coiled spring having one end of the spring secured to the rotatable member, a disk rotatably carried on the upper edges of the convolutions of said spring and carrying said rotatable member, a complementary spring member secured to the other end of said coiled spring, said complementary member being frictionally retained in said annular recess, said complementary member and the coiled spring being so secured together that the rotatable disk may not contact with the complementary member, and a flexible indicia-bearing means secured to said rotatable member and adapted to be drawn out through the casing slot against the tension of the spring and thereby returned when released.

4. In a device of the class described, a cylindrical casing, a flexible strip, a rotatable member adapted to have the strip normally wound thereabout, a supporting member rotatably mounted in said casing, a post stem having its upper end demountably engaging said supporting member and its lower end secured to said rotatable strip member, a complementary post stem secured to the rotatable strip member and extending adjacent and substantially parallel to said first-mentioned post stem, a spring having one end secured to the casing and the other end bent to be engaged and held between said post stems whereby the rotatable strip member is held under spring tension.

5. In a device of the class described, cylindrical casing having a longitudinal slot, a spring-controlled cylindrical spool longitudinally slotted and rotatable in said casing, a flexible strip to extend through the casing slot and be normally wound about the spool, a longitudinally slotted tubular member to fit within said spool, said tubular member having a longitudinal groove adjacent its slot, an inwardly projecting rib on said spool to be received in internesting engagement with said groove, the slots in said spool and tubular member being on opposite sides of said rib and groove engagement so that the inner end of the strip may extend through the spool and between the internesting portions of the spool and tubular member and through the latter, the end portion of the tubular member between its slot and groove being cut away to facilitate the clamping of the strip between said internesting members.

6. In a device of the class described, a cylindrical casing having a longitudinal slot, a spring-controlled cylindrical spool longitudinally slotted and rotatable in said casing, a flexible strip to extend through the casing slot and be normally wound about the spool, a longitudinally slotted tubular member to fit within said spool, said tubular member having a longitudinal groove adjacent its slot, an inwardly projecting rib on said spool to be received in internesting engagement with said groove, the slots in said spool and tubular member being on opposite sides of said rib and groove engagement so that the inner end of the strip may extend through the spool and between the internesting portions of the spool and tubular member and through the latter, and a guide on said tubular member whereby the strip may be transversely alined.

7. In a device of the class described, the combination of a longitudinally slotted casing and a cap therefor, an annular flange on said cap to engage the end portion of the casing, the flange having a lower constricted annular portion, and a plurality of projections adjacent the upper end of the casing to provide surfaces frictionally to engage the interior face of the annular flange and to cause the cap to be retained on the casing end.

8. In a device of the class described, a cylindrical casing having a longitudinal slot, a member rotatably secured in said casing, a cap for said casing, a coiled spring in said cap having one end secured thereto and the other to said rotatable member whereby the latter is held under spring tension, a flexible member secured to the ro-

tatable member and normally retained wound thereabout and adapted to be drawn through the casing slot, an annular flange on said cap having a lower constricted annular portion frictionally to engage the end portion of the casing, and a plurality of projections on the upper end of said casing frictionally to engage the flange of the cap whereby increased frictional surface engagement between the cap and casing is afforded and whereby, upon accidental disengagement, of said surfaces, said constricted flange portion will engage said projections and retain the cap on the casing.

In testimony whereof I have signed my named to this specification.

FREDERICK W. COLBY.