June 24, 1941. J. J. KUHN ET AL 2,247,027

DIALING TOOL

Filed Dec. 20, 1938

FIG. 1

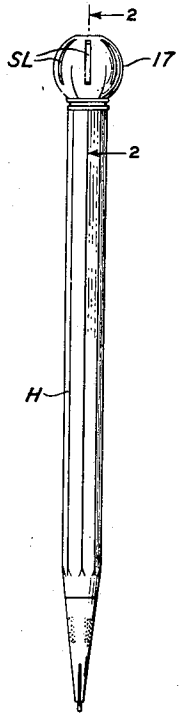


FIG. 2

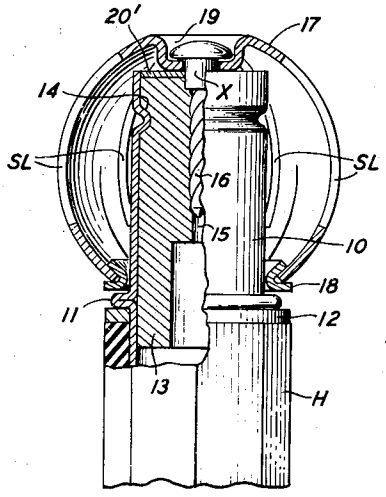


FIG. 4

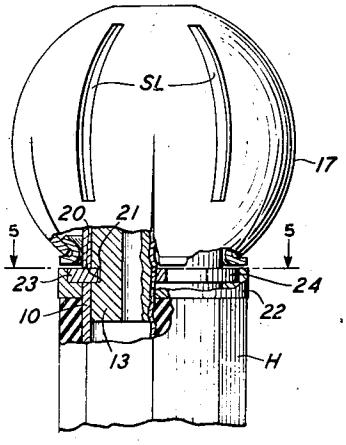


FIG. 5

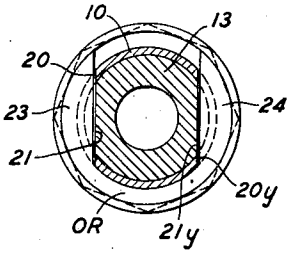
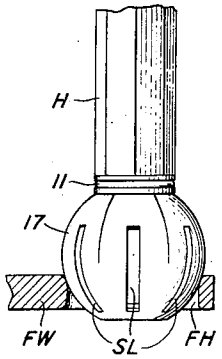


FIG. 3



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DIALING TOOL

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4 Claims. (Cl. 179—90)

This invention relates to dialing tools used for actuating telephone call transmitters of the finger-wheel operated type.

The object of the invention is to improve the construction and operation of such dialing tools and decrease their noise level when brought into contact with the finger-holds of the transmitter finger-wheel.

In the drawing:

Fig. 1 is a view of the dialing tool combined with a mechanical pencil;

Fig. 2 is an enlarged partial view thereof shown in section taken on line 2—2 of Fig. 1;

Fig. 3 is a partial enlarged view showing the sphere-shaped shell in engaged relation with one of the finger-holds of a dial finger-wheel;

Fig. 4 is an enlarged view of a modification; and

Fig. 5 is a cross-sectional view taken on line 5—5 of Fig. 4.

In the dialing tool of the invention the metallic sleeve 10 which may form a part of any well-known mechanical lead propelling mechanism is provided with a shoulder or equivalent abutting portion 11 resting on a metallic washer 12, in turn abutting against the end of the pencil handle H which may be made of a non-metallic material. In the sleeve 10 is inserted a plug member 13 made preferably of a relatively soft metallic material such as aluminum. This plug extends a comparatively short distance below the top end of the pencil handle H for reenforcing the sleeve 10 at this point. The plug 13 is provided with a substantially V-shaped groove 14 into which the sleeve 10 is crimped for preventing relative movement between this plug and the sleeve 10.

The plug 13 is provided with a longitudinal centrally disposed hole 15 for receiving a screw 16 having a collar portion X to serve as pivot engaging one of the polar openings in a spherically-shaped shell 17. The other polar opening, as shown in Fig. 2, is fitted with a bearing in the form of a ring 18 of substantially V cross-section rotatably engaging the sleeve 10 which thus serves as a second pivot for the shell, the shell 17 being provided with a recess 19 for receiving the head of the pivot screw 16, while a washer 20' disposed between the shell 17 and the aluminum plug 13 serves as an end-thrust bearing therebetween.

The shell 17 is provided with a plurality of equally spaced slots SL which, when the shell is inserted in one of the finger-holds FH, for example, in the transmitter finger-wheel FW, extend substantially at equal distances from the point of contact of the shell with the edge of the finger-holds in the finger-wheel FW as shown in Fig. 3, the slots SL being provided to prevent the vibration of the shell when brought into contact with the finger-holds so as to reduce its noise level, while the shoulder portion 11 formed with the sleeve 10 prevents the longitudinal movement of the sleeve into the handle H of the pencil and the consequent forcing of the ring or bearing 18 of the shell 17 into contact with the washer 12 thus assuring free rotation of the shell on its pivots.

In the modification shown in Figs. 4 and 5, the sleeve 10 and the plug 13 are provided with two diametrically disposed parallel slots 20, 21 and 20Y, 21Y, which may be cut in the sleeve 10 and the plug 13 after the crimping operation of the sleeve into the V-shaped recess 14 of the plug. A cup-shaped ring 22 abuts against the top end of the pencil handle H as shown in Fig. 4 and the prongs 23 and 24 of an open ring OR engage the slots 20—21 and 20Y—21Y of the sleeve 10 and the plug 13, the ring OR being afterward inserted into the cup-shaped ring 22 which thus holds this ring in engaged relation in the diametrically disposed slots 20—21 and 20Y—21Y of sleeve 10 and plug 13.

The construction of the modification above described effectively prevents the movement of the sleeve relative to the pencil handle H when the spherically-shaped shell 17 is brought in engagement with the finger-wheel holds and thereby prevents the shell being forced against the rim of ring 22 which would prevent the free rotation of the shell 17 on its pivots.

It is understood that minor changes may be made to the dial tool of the invention without departing from the scope of the appended claims.

What is claimed is:

1. In a dialing tool, a handle having a sleeve extending from one end thereof, a spherically-shaped shell having two polar openings, one of the openings engaging said sleeve, a plug fitted in said sleeve, and means secured to said plug and engaging the second opening to serve as a second pivot for said shell.

2. In a dialing tool, a handle having a sleeve extending from one end thereof, a spherically-shaped shell having two polar openings and a recess concentric to one of the openings, one of the openings engaging said sleeve, a plug secured in said sleeve, and a screw secured in said plug and engaging the other opening to serve as a second pivot for said shell, the head of said screw being located in said recess.

3. In a dialing tool, a handle having a sleeve extending from one end thereof, a ring resting

against said handle, means carried by said sleeve cooperating with said ring for holding the sleeve against movement relative to said handle upon a force applied thereto, a spherically-shaped shell having two polar openings forming bearings, one of said bearings rotatably engaging said sleeve and means carried by said sleeve rotatably engaged by the other bearing.

4. In a dialing tool, a spherically-shaped shell having two polar openings and a recess concentric to the upper opening, a spindle for said shell having a reduced portion and a shoulder portion, the reduced portion engaging the polar opening concentric to the recess, said reduced portion having a head within the recess for cooperation with said shoulder portion for holding said shell against movement longitudinally on said spindle, said spindle being formed with a portion for engaging a handle.

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