

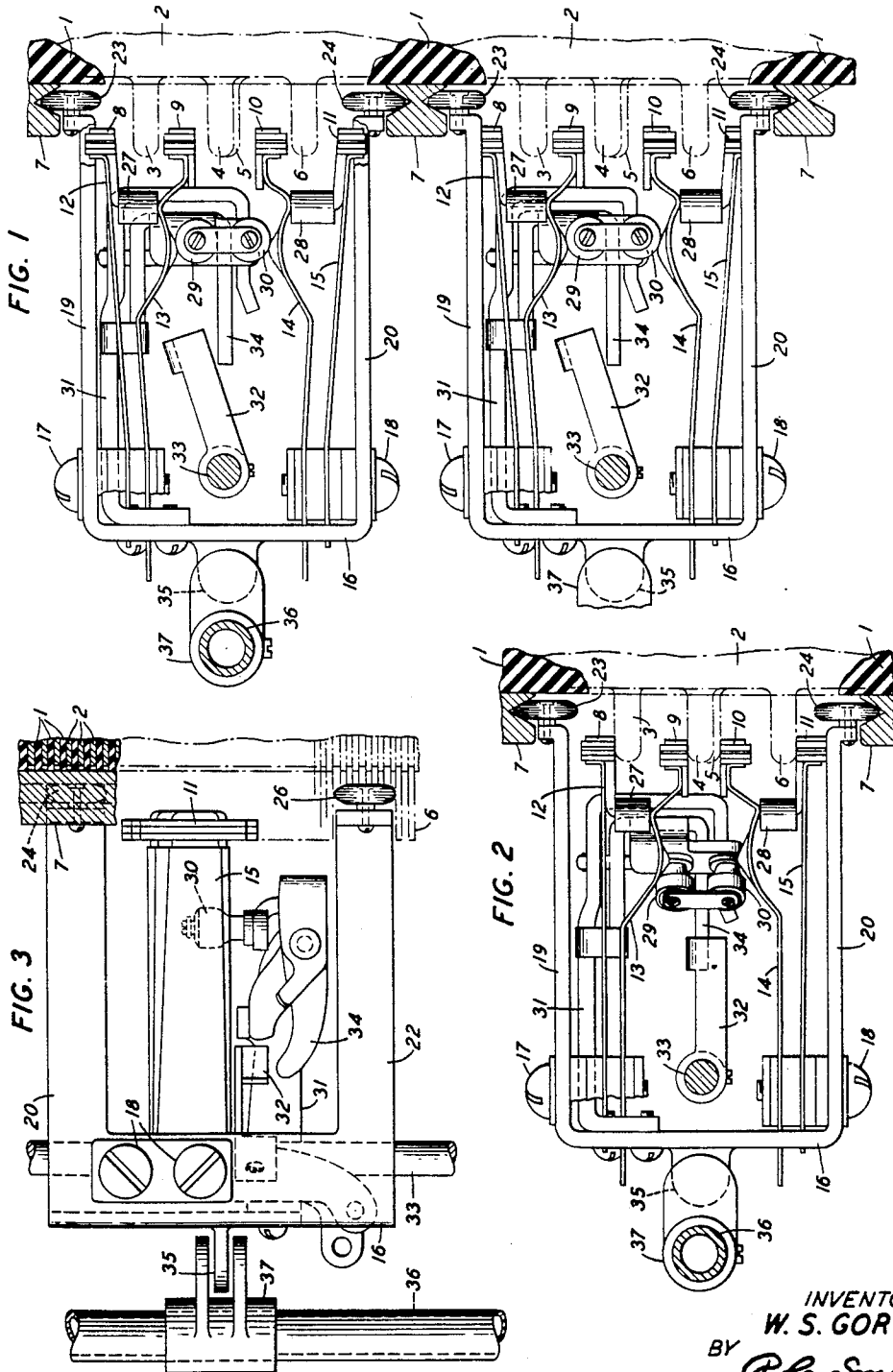
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SELECTOR SWITCH

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SELECTOR SWITCH

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6 Claims. (Cl. 179—27.53)

This invention relates to telephone apparatus and has for its object to provide an improved panel type selector switch.

It has long been known that telephone connections completed over base metal contacts have a tendency to be noisy and that much of this noise is due to vibration outside of the switch itself. This is particularly true in the case of panel type switches in which, due to the structure of the switch, the absolute motion of the elevator rod, due to such vibration, differs from the absolute motion of the panel bank, resulting in relative motion between the two.

In accordance with the present invention this relative motion is greatly reduced by supporting the brushes from the bank itself.

More specifically, the brushes are supported from a carriage which moves on tracks secured to the panel bank.

In accordance with one specific form of the invention the tracks are in the form of metal strips having V-shaped grooves in the sides thereof and are cemented to the face of the bank, while the carriage has four legs terminating in rollers which roll in the grooves. The legs have sufficient pressure against the grooves to hold the brush set in place against vibration. The carriage is provided with a projection which enters a yoke mounted on the drive rod and by which the brush set is positioned. The space between the arms of the yoke is sufficient to permit the drive rod to drop back in the usual manner without the yoke coming into contact with the projection on the brush.

The invention will be more clearly understood from a consideration of the following description in connection with the drawing in which:

Fig. 1 is a top view of two idle brush carriages and a portion of the panel bank;

Fig. 2 is a top view of a single brush set in operative condition; and

Fig. 3 is a side view of one of the brush carriages of Fig. 1.

For a disclosure of the operating mechanism for a selector switch of the type to which the present invention is applicable, reference may be made to U. S. Patent No. 1,196,482, granted to J. N. Reynolds, August 29, 1916.

The terminal bank of a panel type switch is made up of alternate strips of insulating material 1, usually impregnated paper, and metal strips 2 having terminals projecting therefrom. It is to be noted that the impregnated paper strips 1 extend beyond the edges of the metal strips 2. Three or four terminal strips make up

a terminal set, depending on the circuits associated with the switch.

In the drawing, sets of four terminals are shown which may be identified as tip terminals 3, hunting terminals 4, sleeve terminals 5 and ring terminals 6. These terminal sets are arranged one above another in vertical rows over which the brush sets are moved by power-driven brush rods.

Between each row of terminal sets a track 7 is cemented, the edges of the insulating strips affording a good holding surface for the cement. These tracks have a tapered groove along each side, preferably having a V-shaped cross-section.

The brush set comprises four brushes 8, 9, 10 and 11 embedded in shoes of insulating material and mounted on springs 12, 13, 14 and 15. Springs 12 to 15 are insulatedly secured to the brush carriage by screws 17 and 18.

The brush carriage comprises a U-shaped base plate 16, and four legs 19 to 22 formed integrally with the sides of the base plate. On the ends of the legs 19 to 22 are mounted rollers 23 to 26 which roll in the grooves of the tracks 7. The legs 19 to 22 are adjusted to exert suitable forces outward against the tracks so that there is no looseness or shaking of the brush set.

Springs 12 to 15 are adjusted so that their resiliency forces springs 12 and 13 toward springs 14 and 15. Insulating studs 27 and 28, mounted on springs 12 and 15 hold these springs in spaced relation with springs 13 and 14. The latter springs are normally held apart by the roller cams 29 and 30 which are rotatably mounted on a support 31 secured to the base 16. A tripping finger 32 carried by trip rod 33 acts on arm 34 to remove the cams 29 and 30 from between springs 13 and 14 and to permit the brushes 8 to 11 to make contact with their associated terminals as described in the above-identified patent.

On the base 16 of the brush carriage is formed a tongue 35 and on the usual brush rod 36 is secured a yoke 37 in position to engage the tongue 35, forming a coupling so that when the brush rod is moved upward or downward it moves the brush set with it. As disclosed in the Reynolds patent referred to, the brush rod is held in any off normal position by a pawl, so that the brush rod, after the upward motion ceases following its hunting operation, drops back a short distance until it rests on the pawl. Therefore, the distance between the arms of the yoke 37 is made slightly more than the thickness of the tongue 35 plus the distance that the brush rod

36 drops back so that, when the brush rod is at rest there is no contact between the yoke 37 and the tongue 35 and therefore no transfer of vibration from the rod to the brush set. While there will be conductors connecting the brush set with conductors carried in the drive rod, their vibration conductive effect on the brush set is negligible when sufficiently flexible conductors are employed.

While the rollers 23 to 26 and V-shaped grooves have been shown as the preferred form of engagement between the brush carriage and the tracks 7, it is to be understood that other arrangements might be employed without departing from the spirit of the invention.

What is claimed is:

1. In an automatic switch, a panel bank of sets of terminals arranged in rows, brush sets for engaging said sets of terminals, brush rods for moving said brush sets over said rows of terminals, carriages supporting said brush sets, and means secured to the face of said panel bank resiliently engaged by said carriages for holding said brush sets in contact with individual terminal sets independent of said brush rods.

2. In an automatic switch, a panel bank of sets of terminals arranged in rows, brush sets for engaging said sets of terminals, brush rods for moving said brush sets over said rows of terminals, and means for holding said brush sets in contact with individual terminal sets, independent of said brush rods, comprising tracks secured to the face of said bank intermediate said rows of terminal sets and a carriage for each brush set having legs engaging said tracks.

3. In an automatic switch, a panel bank of sets of terminals arranged in rows, brush sets for engaging said sets of terminals, brush rods for moving said brush sets over said rows of terminals, and means for holding said brush sets in contact with individual terminal sets, independent of said brush rods, comprising tracks

cemented to the face of said bank intermediate said rows of terminal sets and a carriage for each brush set having legs engaging said tracks.

4. In an automatic switch, a panel bank of sets of terminals arranged in rows, brush sets for engaging said sets of terminals, brush rods for moving said brush sets over said rows of terminals, and means for holding said brush sets in contact with individual terminal sets, independent of said brush rods, comprising grooved tracks secured to the face of said bank intermediate said rows of terminal sets and a carriage for each brush set having flexible legs and rollers mounted on said legs and rolling in said grooves, said legs exerting a resilient pressure through said rollers on said tracks.

5. In an automatic switch, a panel bank of sets of terminals arranged in rows, brush sets for engaging said sets of terminals, brush rods, means for holding said brush sets in contact with individual terminal sets independent of said brush rods comprising tracks secured to said bank intermediate said rows of terminal sets and a carriage for each brush set having legs engaging said tracks, and tongue and yoke connections between said carriages and said brush rods for moving said brush sets over said rows of terminals.

6. In an automatic switch, a panel bank of sets of terminals arranged in rows, brush sets for engaging said sets of terminals, brush rods, means for holding said brush sets in contact with individual terminal sets independent of said brush rod comprising tracks secured to said bank intermediate said rows of terminal sets and a carriage for each brush set having legs engaging said tracks, and tongue and yoke connections between said carriages and said brush rods for moving said brush sets over said rows of terminals, said yoke being of sufficient width to completely disengage said tongue when at rest.

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