

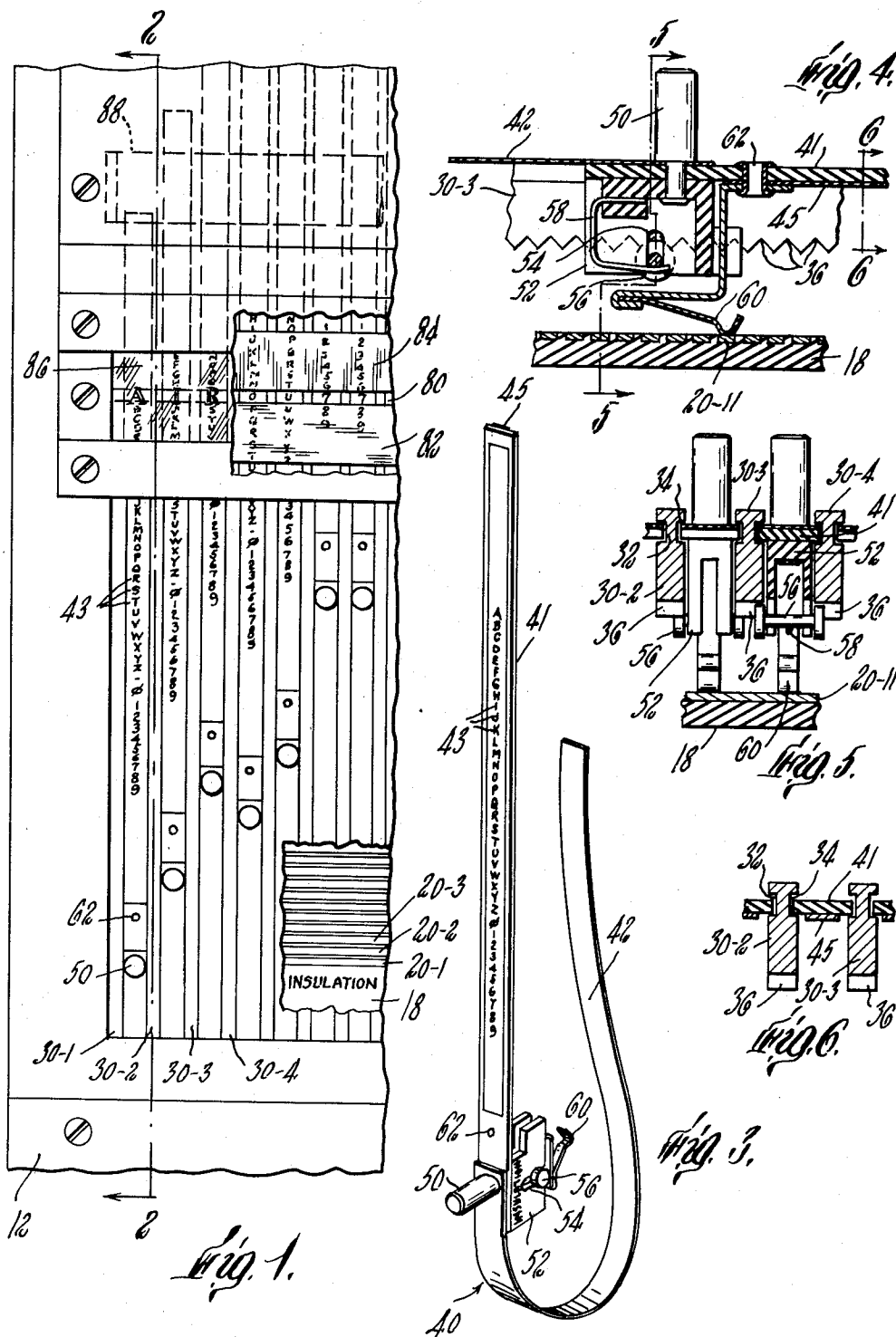
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AN WANG ETAL
MULTIPLE SLIDE SWITCH

3,146,320

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2 Sheets-Sheet 1



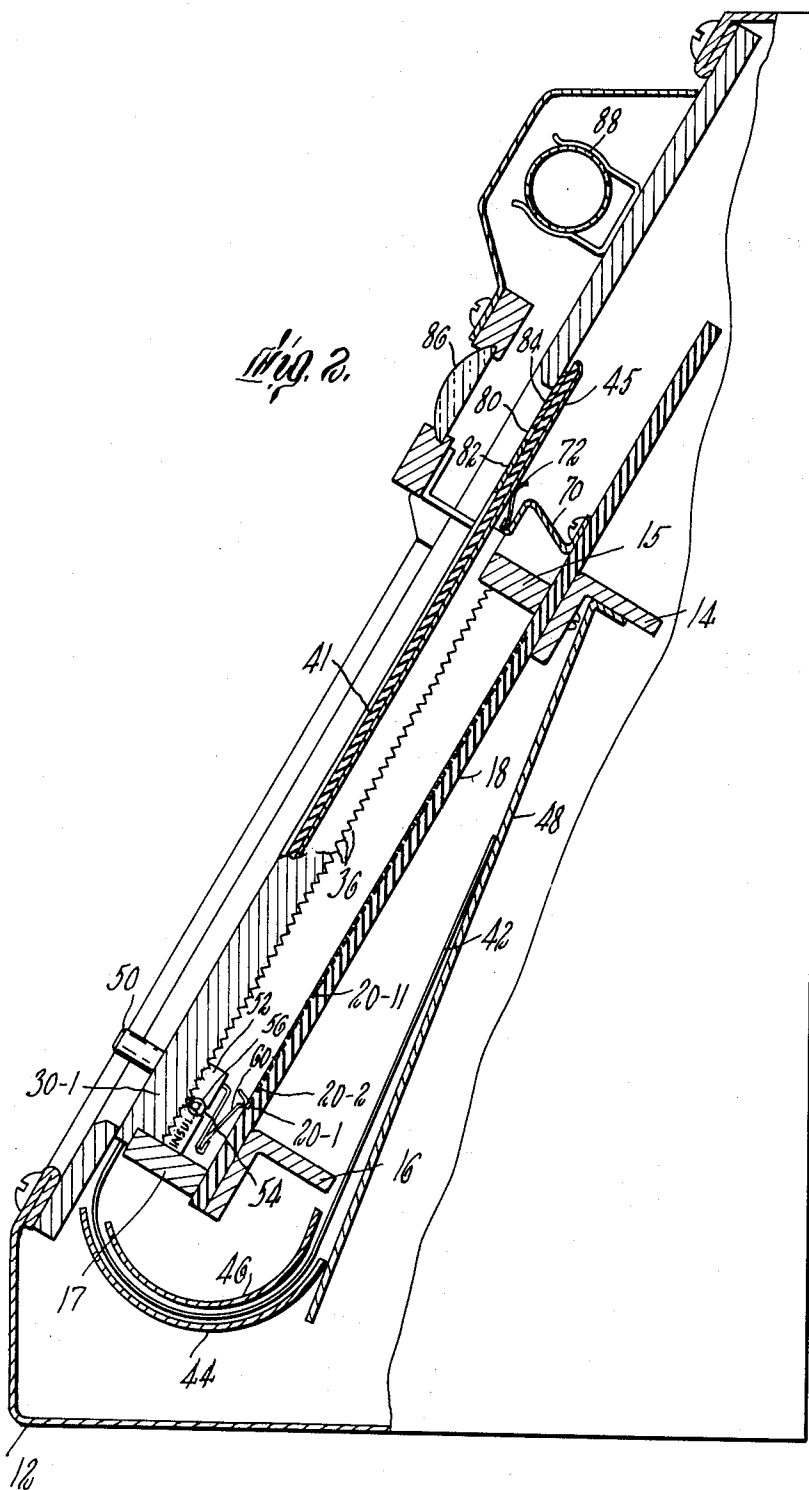
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MULTIPLE SLIDE SWITCH

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3 Claims. (Cl. 200—5)

This invention relates to electric switches and more particularly to a multiple slide switch especially useful in data transmission apparatus.

In data transmission apparatus in which the information to be transmitted is arranged by connecting a multiplicity of terminals in a predetermined sequence by switching, there has arisen a need for compact switching systems wherein, for example, the entire alphabet plus numbers and punctuation, can be accommodated a sufficiently large number of times to provide adequate message content. Since it requires at least fifty symbols to define a single unit of a conventional message, and this must be multiplied by the number of units desired, say upwards of fifty as a practical minimum, conventional switching systems which might be used for such purposes are of such great bulk as to make them impractical for most uses.

Accordingly, it is an object of the present invention to provide a multiple switching system of practical size and configuration, so that a full range of symbols is available at each of separate switches, with the switches being of such configuration that in excess of fifty may be accommodated in a length of but about two feet.

This has been accomplished by providing a novel multiple slide switch assembly having a multiplicity of spaced parallel switch supporting elements with multi-position slide switches therebetween, so that each slide switch can be accommodated in excess of fifty symbols. The slides are arranged in grooves between their supports, so that their movable contactors contact a selected one of a plurality of transversely extending terminal strips, and through an insulated conducting strip on the slide, connects it to a fixed contactor associated with a specific slide. The slides are arranged to be of substantially greater length than their supports, so that the space between the supports is always closed by a slide regardless of its switching position, with at least one end of the slide preferably being flexible for coiling within the switch housing. Suitable indicia, for example, letters, numbers, or the like, are arranged on a slide to define its position, in cooperation with the spacing of the terminal strips and suitable detents to establish a predetermined connection between a terminal strip and a fixed contactor. Knobs are provided on the strips for moving them to a desired position as defined by their indicia, so that an appropriate message may be defined by the plurality of switches and thereafter electrically transmitted in any known manner.

Various other objects and features of the invention will become apparent from the following description of a preferred embodiment of the invention, together with the accompanying drawings, wherein:

FIG. 1 is a partial front elevation of the multiple slide switch of the invention;

FIG. 2 is a cross sectional side elevation of the switch of FIG. 1 taken on the line 2—2 thereof;

FIG. 3 is an isometric view of the slider of the switch of FIGS. 1 and 2;

FIG. 4 is an enlarged cross sectional elevation of a portion of the switch of FIGS. 1 and 2 taken on the line 2—2 of FIG. 1; and

FIGS. 5 and 6 are enlarged cross sectional details of a portion of the switch of FIGS. 1 and 2, taken on the lines 5—5 and 6—6 of FIG. 4.

Referring to the drawings, the multiple slide switch

2

of the invention includes a housing 12 with a pair of longitudinally extending members 14, 16 supporting an insulating board 18 having a multiplicity of terminal strips 20-1, 20-2, . . . preferably at least about fifty in order to accommodate the letters of the alphabet, the numbers and certain other useful symbols. The terminal strips 20-1, 20-2 . . . , are spaced from and parallel to one another and extend in a common plane for the entire length of the switch assembly. Their ends are connected to apparatus suitable for generating electrical signals as required, for example, teletype or other code generating means well known to those skilled in the art.

Another pair of longitudinal members 15, 17 extend along members 14, 16 respectively on top of board 18. On these members are supported a plurality, preferably at least about fifty, spaced parallel switch supporting elements generally designated 30-1, 30-2, These supporting elements extend across the terminal strips generally perpendicular thereto and are, in effect, arranged in a plane spaced from the plane of the terminal strips. The supporting elements are all identical, and, as may best be seen in FIGS. 2, 4, 5 and 6, are provided with grooves 32, 34 on their opposite sides and a serrated lower edge providing detents 36.

A series of slides are provided as the switching elements, with a single slide, generally designated 40, being provided between each pair of supporting members 30. As may best be seen in FIGS. 2 and 3, the slides 40 are elongated members of substantially greater length than the switch supporting members 30 and are preferably made up of two elongated pieces attached together in end to end relationship. One of said pieces 41, the uppermost in FIGS. 1-3, is of relatively rigid insulating material with indicia 43 spaced along it on one side and an electrically conducting strip 45 insulated from the supporting elements 30 extending along the other side facing the terminal strips 20. The other of said pieces 42 is flexible, and may be either of metal or plastic, for coiling within housing 12, for which purposes suitable guides 44, 46, 48 are provided. The two strip portions are attached together by a rivet 50, which also serves as a knob for moving the strip as well as for an attachment for the detent engaging mechanism. The latter consists of a frame member 52 having a pair of slots 54 carrying the axle of a pair of detent engaging rollers 56, with said rollers being urged inwardly against said detents by a spring 58 also carried by frame member 52.

A movable contactor 60 is also provided generally midway along slide 41 adjacent the end of its conducting strip 45, said contactor being electrically connected to the end of said strip by a grommet 62 and having a resilient foot adapted to engage one only at a time of said terminal strips when the detent engaging rollers of a slide are in position in a detent.

A series of fixed contactors 70 is also provided, with one of said fixed contactors being mounted adjacent one end and between each of supporting members 30 with its resilient foot 72 in sliding contact with conducting strip 45 on the lower side of slider portion 41. Thus by positioning slider 40, any one of terminal strips 20-1, 20-2, . . . may be electrically connected through said slider strip 45 to the fixed contactor 70 associated with that slider.

In order to provide means for defining the position of each of the slides in terms of the indicia thereon to enable the desired terminal strip to be connected to the appropriate fixed terminal, an indexing means is provided extending longitudinally of the switches transversely of the sliders beyond the end of bar 15 adjacent the rigid end portion 41 of the slider. Such means preferably takes the form of a slot 80 between spaced strips 82, 84 of transparent plastic, which may be tinted with a color

3

better to distinguish slot 80. Further to increase the readability of the indicia on the slides, a cylindrical lens 86 is mounted on housing 12 over slot 80 throughout its length, and a similarly extended electric lamp 88 may also be used better to illuminate said indicia.

The novel multiple slide switch of the invention is operated simply by moving each of sliders 40, until the desired message appears in slot 80. Usually, a message is composed beginning at the left, utilizing such indicia as may be desired to complete it. Since the terminal strips 20-1, 20-2, . . . carry the indicia information, with the complete range of indicia in coded form and in the same physical arrangement as on sliders 40 appearing thereon, i.e., strip 20-1 corresponds to the letter "A," 20-2 corresponds to "B" and so forth, and the terminal strip, detent and indicia spacing all equal, with the appearance of a specific symbol in slot 80 defining the position of movable contactor 60 on the terminal strip corresponding to that symbol, the moving of a slider will cause an electrical signal corresponding to the symbol appearing in slot 80 to appear at the fixed contactor 70. By arranging all of the sliders to produce a desired message, the electrical signals corresponding thereto thus appear in order along the fixed contactors 70. These may be connected in any suitable manner to a remote reproducing device by which the message may be displayed or otherwise utilized.

Thus it will be seen that the invention provides a novel switch assembly especially useful in a telecode transmitter whereby a manually composed message is electrically coded for transmission to a remote receiver. Various modifications of the invention, within the spirit thereof and the scope of the appended claims will occur to those skilled in this art.

We claim:

1. A multiple slide switch assembly comprising a plurality of co-planar spaced elongated parallel terminal strips, a plurality of spaced parallel switch supporting elements extending across said terminal strips generally perpendicular thereto, an elongated slide of substantially greater length than said switch supporting elements extending between each of adjacent pairs of said switch supporting elements and supported for movement in a direction transversely across said terminal strips, said slides having adjacent one end indicia spaced therealong and an electrically conducting surface insulated from said supporting elements, the other end of said slides being flexible for coiling thereof within said housing, movable contactor means mounted generally midway along each of said slides and electrically connected to said conducting surface for contacting said terminal strips, fixed contactor means adjacent said one slide end for contacting said conducting surface, means extending parallel to said terminal strips across said slides defining the position of said slides relatively to an indicia on each of said slides, with said terminal strips being spaced by a distance defined by the distance between said indicia, and means for independently moving each of said slides selectively to connect a terminal strip to a fixed contactor means at a defined position of an indicia on a slide to establish a plurality of connections between said terminal strip and said fixed contactor means predetermined by the indicia of a plurality of said slides.

2. A multiple slide switch assembly comprising a plurality of co-planar spaced elongated parallel terminal strips mounted in said housing, a plurality of spaced parallel switch supporting elements extending across said terminal strips generally perpendicular thereto, said supporting

4

elements having opposed slide supporting grooves and detent means extending therealong, an elongated slide extending between each of adjacent pairs of said switch supporting elements and slidably supported in said opposed grooves for movement in a direction transversely across said terminal strips, said slides having indicia spaced therealong and an electrically conducting surface insulated from said supporting elements, movable contactor means and detent engaging means mounted on each of said slides and electrically connected to said conducting surface for contacting said terminal strips, fixed contactor means for contacting said conducting surface, means extending parallel to said terminal strips across said slides defining the position of said slides relatively to an indicia on each of said slides, with said terminal strips and said detent means being spaced by a distance defined by the distance between said indicia, and means for independently moving each of said slides selectively to connect a terminal strip to a fixed contactor means at a defined position of an indicia on a slide to establish a plurality of connections between said terminal strip and said fixed contactor means predetermined by the indicia of a plurality of said slides.

3. A multiple slide switch assembly comprising a housing, a plurality of co-planar spaced elongated parallel terminal strips mounted in said housing, a plurality of spaced parallel switch supporting elements extending across said terminal strips generally perpendicular thereto and mounted in a plane spaced from the plane of said terminal strips, said supporting elements having opposed slide supporting grooves and detent means extending therealong, an elongated slide of substantially greater length than said switch supporting elements extending between each of adjacent pairs of said switch supporting elements and slidably supported in said opposed grooves for movement in a direction transversely across said terminal strips, said slides having adjacent one end on one side indicia spaced therealong and on the other side of said one end an electrically conducting surface insulated from said supporting elements and extending along said slide on the side thereof facing said terminal strips, the other end of said slides being flexible for coiling thereof within said housing, movable contactor means having detent engaging means mounted generally midway along each of said slides and electrically connected to said conducting surface for contacting said terminal strips, fixed contactor means mounted in said housing adjacent said one slide end for contacting said conducting surface, means extending parallel to said terminal strips across said slides defining the position of said slides relatively to an indicia on each of said slides, with said terminal strips and said detent means being spaced by a distance defined by the distance between said indicia, and means for independently moving each of said slides selectively to connect a terminal strip to a fixed contactor means at a defined position of an indicia on a slide to establish a plurality of connections between said terminal strip and said fixed contactor means predetermined by the indicia of a plurality of said slides.

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