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G. W. PRICE
TRANSMISSION LINE SWITCH

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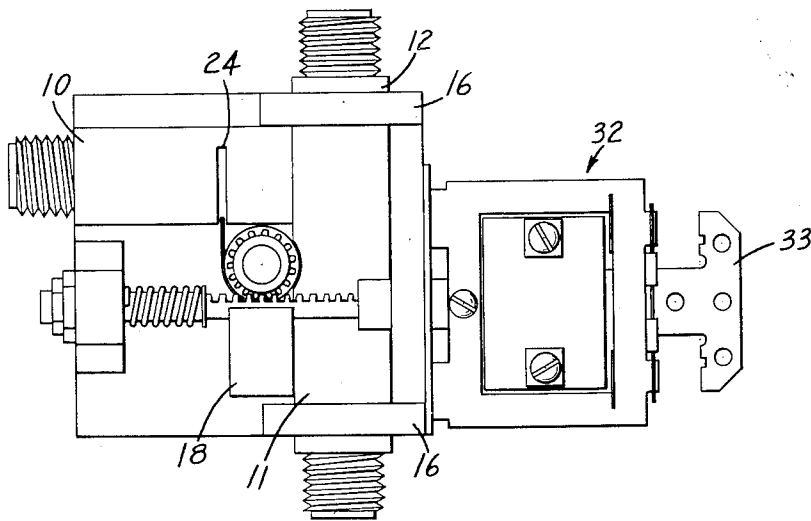


FIG 1

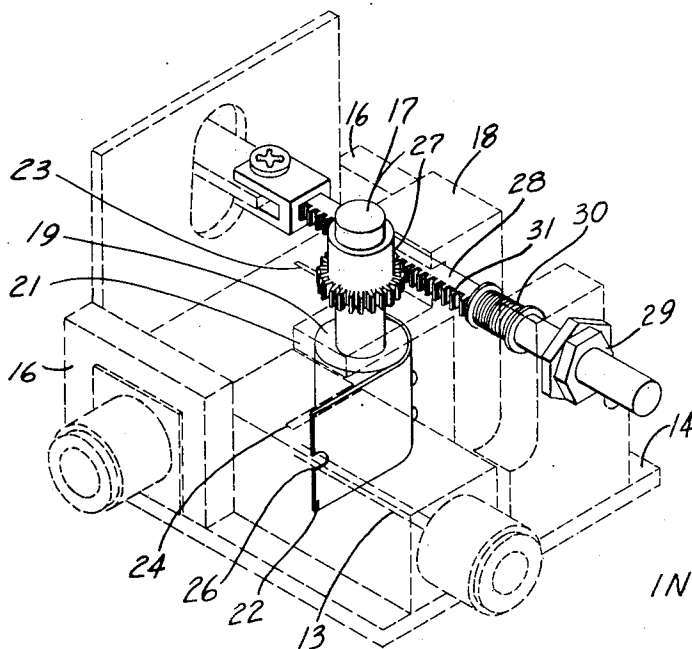


FIG 2

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TRANSMISSION LINE SWITCH

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4 Claims. (Cl. 200—6)

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This invention relates in general to switching mechanisms, and in particular to a "push-to-transmit" switch.

For purposes of economy and space saving it is often desirable to use a single antenna for both reception and transmission of radiant energy. When only one antenna is used it becomes necessary to alternatively connect the transmitter and the receiver to the antenna for reception and transmission. Various methods of switching have been devised but it is an object of this invention to provide a new switch which is simple and easy to operate.

A further object of this invention is to provide a two-way switch which is solenoid controlled for push-to-talk transmission.

Yet another object is to provide a two-way switch which is simple and economical to manufacture and operate.

A feature of this invention is found in the provision for a pivotably supported shaft which has a pair of shorting bars connected to the periphery thereof. The shorting bars are received within a pair of slots formed in the transmitting and receiving wave guides, respectively. A ratchet wheel operatable in response to a solenoid rotates the shaft from a first position in which the transmitter wave guide is shorted, to a second position where the receiver wave guide is shorted. The solenoid operates in response to a push button controlled by the operator.

Further objects, features, and advantages of this invention will become apparent from the following description and claims when read in the light of the drawings in which:

Figure 1 is a top plan view of the push-to-talk switch of this invention; and,

Figure 2 is an isometric-phantom view of the invention illustrating the movable parts of the invention.

Referring to Figure 1, a wave guide T is formed from the receiving wave guide 10, the transmitting wave guide 11, and the antenna wave guide 12. The outer ends of each wave guide are threaded for receiving additional wave guide sections thereon. The wave guides are the coaxial type and contain center conductors 13, which are illustrated in Figure 2. A base plate 14 is connected to the bottom of the wave guide T-section and holding brackets 15 extend up therefrom for maintaining the T section in a fixed spatial relationship with the base plate.

Pivotably supported in the base plate 14 at a position adjacent the junction of wave guide sections 10 and 11 is a shaft 17. An upright sup-

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port member 18 has an extending portion 19 through which the shaft 17 passes and acts as a bearing member. A center portion 21 of the upright shaft 17 is of a larger cross sectional area and substantially fills in the space between the center line of the shaft 17 and the side walls of wave guide sections 10 and 11.

Bolted or otherwise fastened to the large portion of the shaft 17 is a flexible, thin shorting bar 22. The ends of shorting bar 22 are received in slots 23 and 24 formed, respectively, in the wave guide sections 10 and 11. A center conductor engaging slot 26, is formed at either end of the shorting bars 22 for engaging the center conductor 13 of the wave guide. The shorting bar 22 is of such a length that when the shaft 17 is rotated counterclockwise with respect to Figure 1 the receiving wave guide is unobstructed, and radiant energy may pass therethrough from the antenna wave guide 12. When the shaft 17 is rotated to its full clockwise position with respect to Figure 1 the shorting bar 22 engages the center conductor 13 of the receiving wave guide, while at the same time removing the shorting bar from the transmitting wave guide 11 and thus allowing radiant energy from the transmitting wave guide to pass to the antenna wave guide section 12. Thus the inventor has provided means for switching from reception to transmission by merely controlling the angular position of shaft 17.

Supported adjacent the upper end of shaft 17 is a gear 27. A ratchet 28 is supported in bearings 29 for axial movement thereof. The teeth 31 of the ratchet 28 engage the teeth of gear 27 for controlling its angular position. A spring 30 tends to rotate the shaft 17 in a counter-clockwise direction with respect to Figure 1. The opposite end of ratchet 28 is connected to an electric solenoid, designated generally as 32. An external electrical circuit is connected to the solenoid 32 and moves the armature 33 from an open to a closed position, thus controlling the armature 33 of the solenoid 32 by means including an electrical switch which allows the switch to be changed from a reception to a transmission state. The spring 30 moves the switch to the open or reception position when the armature 33 is not energized.

This switch may also be used with a hollow wave guide which has no center conductor. The slot 26 would not be cut into the shortening bar 22 and the bar 22 would substantially block the cross sectional area of the wave guide when in the closed condition. The other end of the short-

ing bar would then allow radiant energy to pass through its wave guide.

Although this invention has been described with respect to a preferred embodiment thereof, it is not to be so limited as changes and modifications may be made therein which are within the full intended scope as defined by the claims.

I claim:

1. A two-way switch for a wave guide T-section having an antenna leg, a receiver leg, and a transmitter leg comprising, a base plate connected to said T-section, an upright shaft pivotably supported on said base plate adjacent the junction of the T-section between the receiver and transmitter legs, a flexible shorting member connected to the periphery of said shaft and both ends extending tangentially therefrom, transverse slots formed in the wave guide legs which are adjacent the shaft, the ends of said shorting member received in said slots, driven means on said shaft, and driving means connected to said driven means for rotating said shaft.

2. A two-way wave guide switch for switching power through a T-shaped coaxial wave guide formed with an antenna leg, a receiver leg, and a transmitter leg comprising, a base plate connected to said wave guide and extending outwardly therefrom, a shaft rotatably supported in said base plate adjacent the junction of the receiver and transmitter legs of the wave guide, a slot formed in the receiver and transmitter legs of the wave guide, a flexible conducting member connected to the periphery of said shaft, the end of said flexible member extending into the slots formed in the receiver and transmitter wave guides, center conductors within the transmitter

and receiver legs, said flexible member formed with arcuate slots at either end thereof for engaging the center conductors of the receiver and transmitter legs, and means for driving said shaft.

3. Means for switching power in a T-shaped coaxial section having an antenna leg, a receiver leg, and a transmitter leg, and a transverse slot formed in the receiver leg and the transmitter leg comprising, a shaft supported adjacent the junction of the receiver and transmitter legs, a flexible conducting member attached to said shaft and both ends extending tangentially therefrom into the slots formed in the receiver and transmitter legs; said flexible member being of a length such that when one end thereof is engaging the center conductor of one of the wave guide legs the other end is out of engagement with the center conductor of the other wave guide leg, and means for rotating said shaft to move said flexible member from engagement with one center conductor to engagement with the other center conductor.

4. Apparatus according to claim 3 wherein the ends of said flexible member are formed with arcuate slots for receiving the center conductors of the receiving and transmitting legs therein.

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