

Oct. 12, 1965

H. W. SARGENT, JR

3,211,830

PAY TELEVISION SWITCHING APPARATUS

Filed May 1, 1961

4 Sheets-Sheet 1

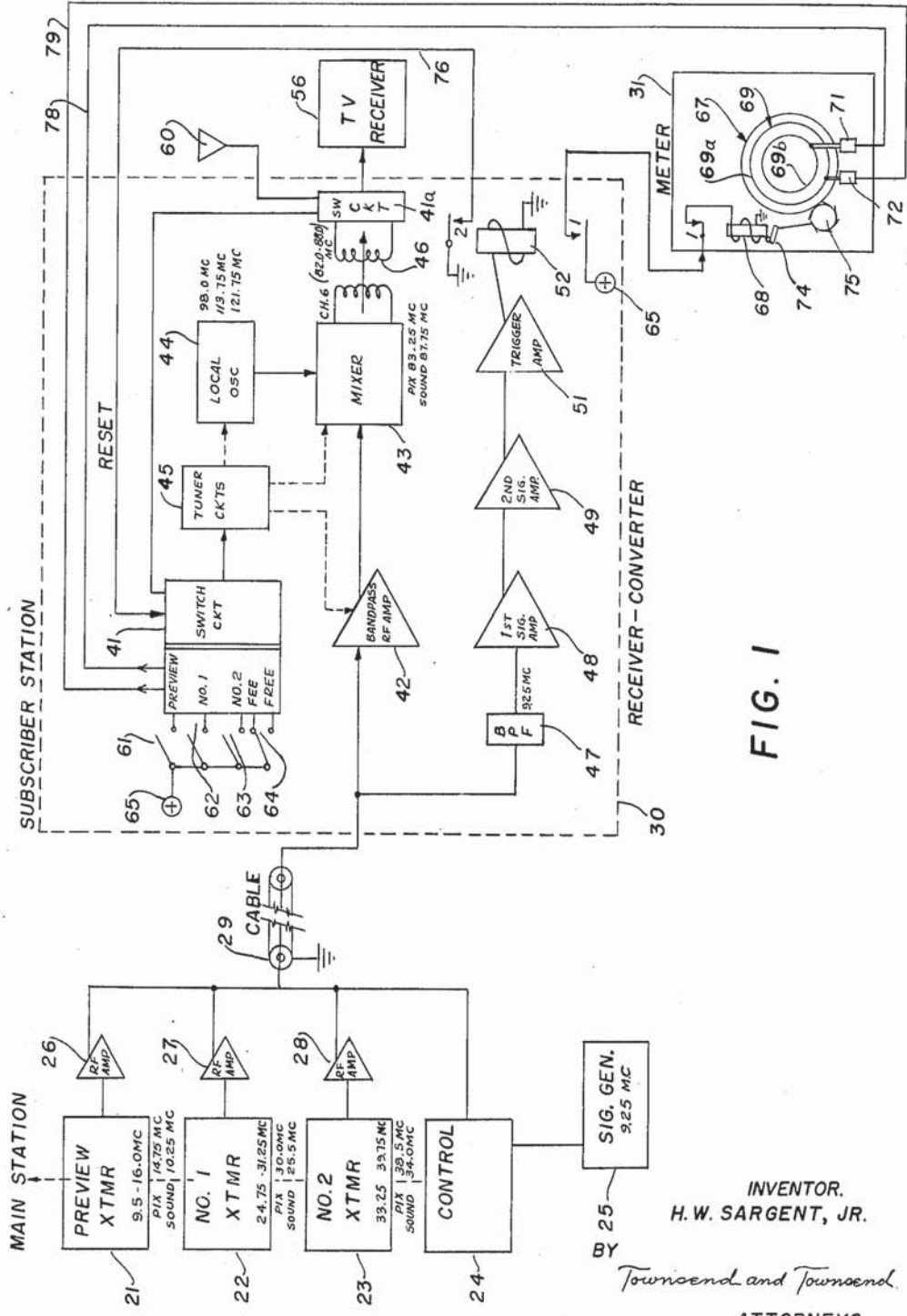


FIG. 1

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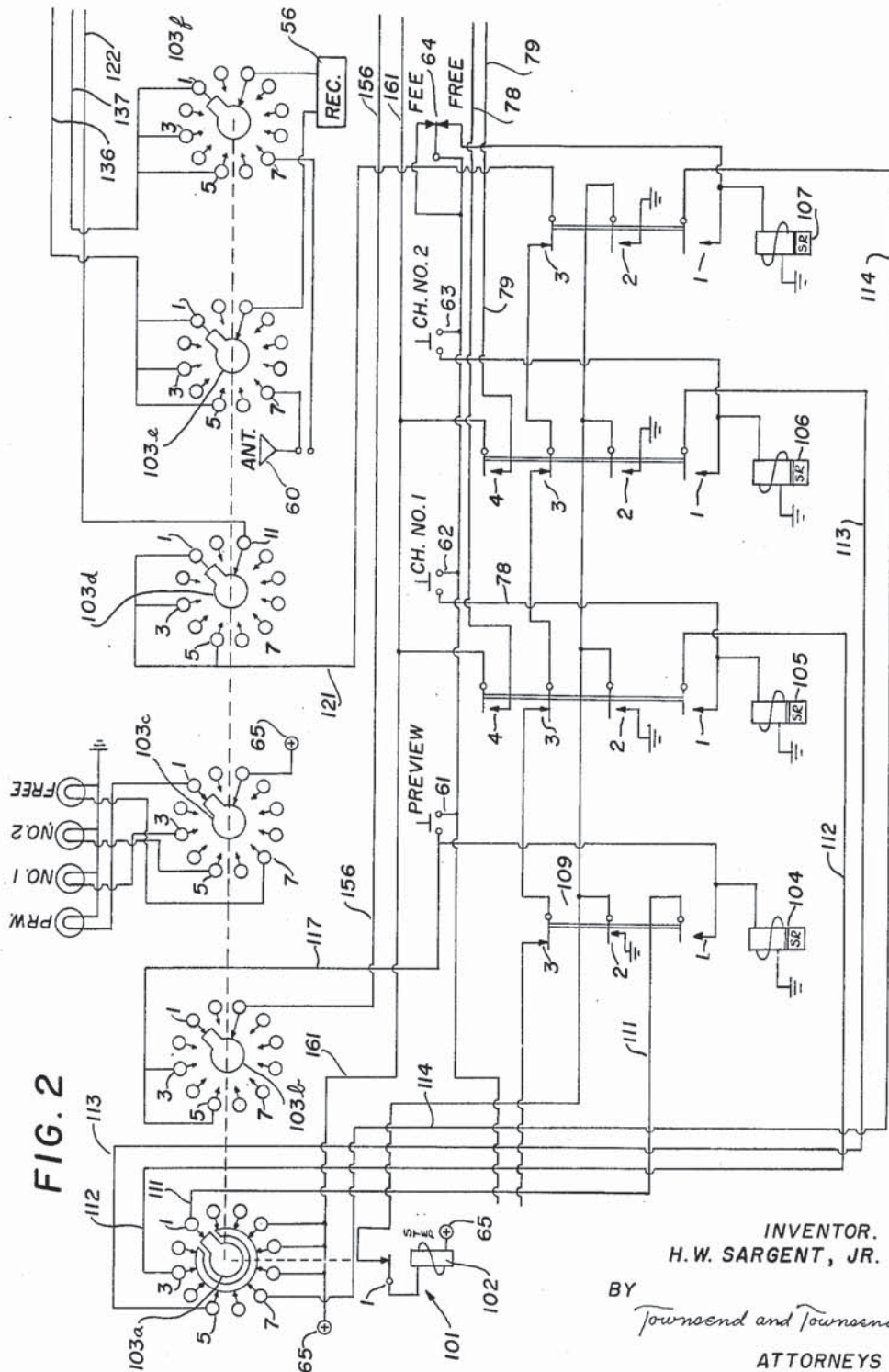
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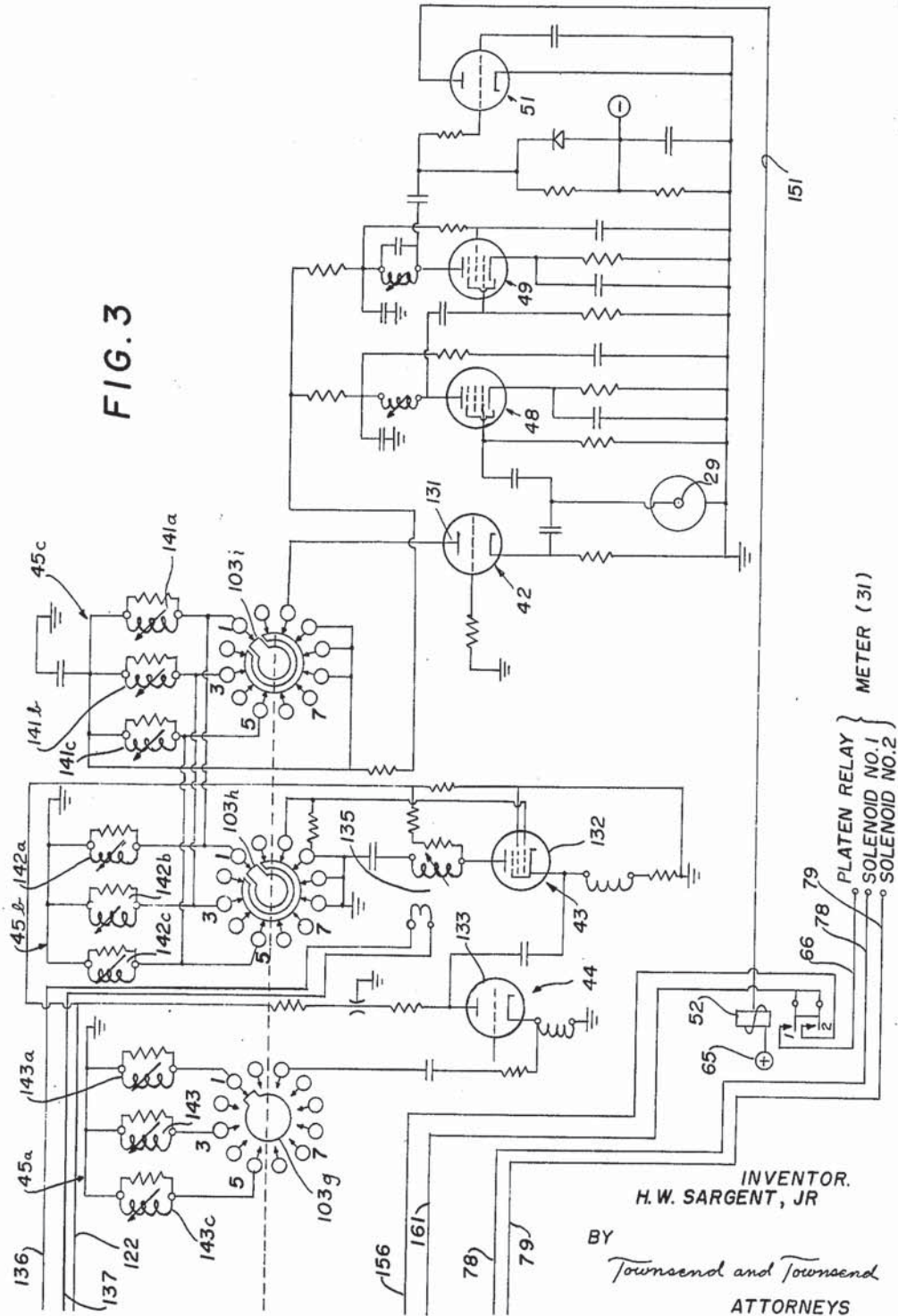
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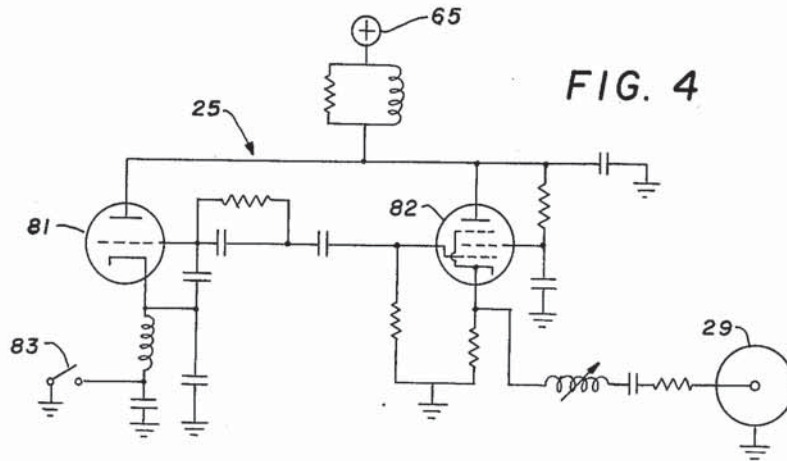


FIG. 4

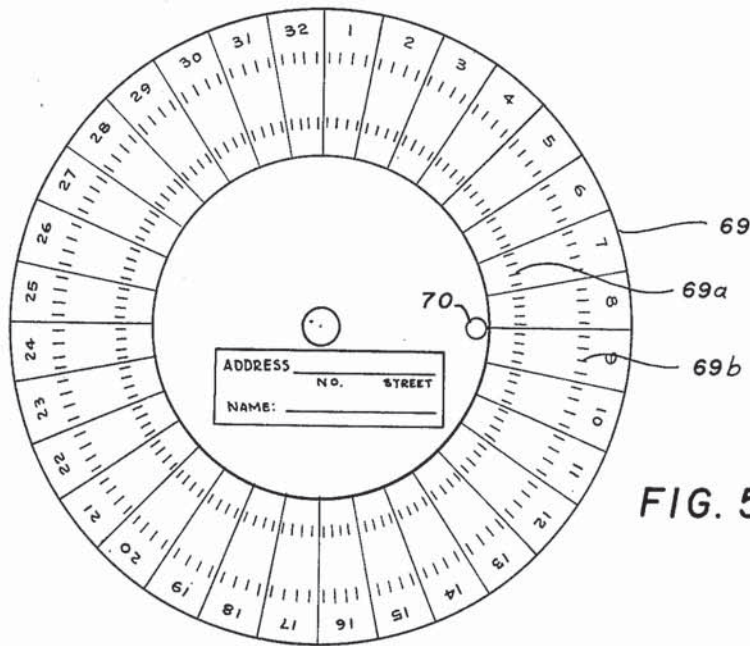


FIG. 5

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### PAY TELEVISION SWITCHING APPARATUS

Horace William Sargent, Jr., Little Rock, Ark., assignor,  
by mesne assignments, to Subscription Television, Inc.,  
New York, N.Y., a corporation of Delaware  
Filed May 1, 1961, Ser. No. 106,799  
1 Claim. (Cl. 178-6)

This invention relates to pay television systems and more particularly to a wired pay television system.

The increasing attention being given to pay television systems in the last few years and the advent of a number of ambitious test projects that have been approved by the FCC make it quite clear that widespread interest is present in means and methods for adding pay television channels to the existing free commercial system. Indicative of the interest and activity in this area are numerous publications and patents that are directed to different or alternative systems. The most prominently publicized systems to date are those which use complex electronic circuitry for interleaving the pay TV program carriers between channels assigned for commercial television broadcasting and equally complex circuitry to detect the signals at a subscriber's receiver upon the actuation of a charge signal by manual keying or deposit of coins.

Exemplary of these types of systems is the one proposed by Zenith and described in general terms in the December 1960 issue of Fortune Magazine at page 133. Their so-called Phonevision system garbles broadcasts before transmission and ungarbles them at the receiver. It does so by delaying certain of the scanning lines relative to the horizontal synchronizing pulses. Instead of sending the square waves that are used to break up the picture horizontally, a coded signal, that differs for each program, is sent. Additionally, the audio portion is scrambled by raising the frequency a preselected amount. A decoder at the subscriber's television set responsive to a coded signal unscrambles the pay program, punches a billing tape to coincide with the price for the program and records the information on a magnetic tape inside the decoder.

The disadvantages of non-wire pay television systems have been discussed at length in the literature. Briefly, all require complex electronic components to unscramble the garbled signals. Beyond the circuit complexity required, they have to be carefully tailored to an already overcrowded commercial television spectrum. They must not interfere with the allocated commercial channels nor the intermediate carrier frequencies in the 21-25 mc. and 41-45 mc. ranges that are variously employed in current commercial operations.

Quite aside from the economic disadvantages of the complex circuitry which must be provided at each subscriber's set, certain practical disadvantages are also present. For one thing, in most non-wire systems, the decoder and other subscriber set equipment is located on the subscriber's television receiver and entry to the subscriber's house must be had in order to service or check on the billing information. This causes an inconvenience to the subscriber and should be avoided if possible. Other coded systems rather employ billing tapes that are sent in at the end of the month by the subscriber or are actuated by coins which adds to the inconvenience but still requires periodic inspection. Then too, non-wired systems also reflect the transmission characteristics of free commercial broadcasting, including ghosts, interfering signals, etc. Poor transmission characteristics are not accepted happily by home users in the case of free or commercial television programs, and there will probably be even more objections when the programs are paid for.

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vides top quality transmissions so as to minimize complaints and maintain customer relations at a reasonably good level. Aside from these factors, a practical disadvantage of radio wave transmitted pay television carriers is that approval of the Federal Communications Commission must be obtained. This restricts design freedom and increases the economic cost.

As can be appreciated from the foregoing comments, from a practical design and customer relations standpoint wired pay television systems are definitely superior to RF transmission systems. Wired systems require no FCC approval and are relatively unaffected by weather and other transmitting difficulties. On the other hand, many previously proposed wire systems, such as that being currently promoted by Paramount Pictures, have certain unique disadvantages of their own. For one thing, the cost of installing an individual transmission link to each subscriber's home has been difficult to overcome economically. The need for service men to periodically collect the monies deposited in the coin demand box inside the subscriber's home also argue against widespread acceptance.

The principal object of the present invention is to provide a pay television system which overcomes the practical and economic difficulties of both the RF transmission and wired transmission systems heretofore developed. Generally speaking, the present invention not only provides an economically competitive pay television system, but does so with relatively simple electronic equipment that is easy to service, easily expanded to a larger number of pay channels and programs, and has maximum security built into it.

The exemplary pay television system constituting the present invention is designed to provide a preview and two pay television programs. The carriers for these three programs are transmitted in distinct bands over a common cable to all subscribers' receivers. The individual decoding and selecting apparatus at each subscriber's station consists basically of a receiver-converter or subscriber system and meter and charging apparatus. The receiver-converter system is attached to the rear of the home receiver whereas the meter is preferably placed on an outside wall of the subscriber's home for ready access by service personnel. The receiver-converter requires only a source of alternating voltage, attachment to the coaxial cable from the main station and to the receiver antenna input terminals.

The subscriber selects the one of the three channels that he desires to monitor by pressing a push button in the receiver-converter for free viewing and another for the specific pay channel desired. This selects the desired program channel and its carriers and converts them to an empty channel in the tuner of the receiver front end. The particular channel to which it is converted depends upon the local area but channel 6 is used illustratively throughout the following description since it is not assigned for commercial telecasting. If the channel the subscriber has selected is the Preview channel, there is no charge made and the subscriber may obtain information about the programs offered on the two pay television channels, the charges therefor and announcements of future programs that are to be available. If the subscriber then desires to view a program on one of the two pay television channels, he actuates the appropriate push button switch to convert the selected pay channel to exemplary channel 6 in his own receiver tuner for viewing.

This selection also applies a control signal to the meter apparatus attached to the outside of his residence to mark a charge card for subsequent billing. The meter ap-

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