Dec. 29, 1964 W. F. HELLMAN 3,162,980

TALKING DOLL AND THE LIKE

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Fig. 3

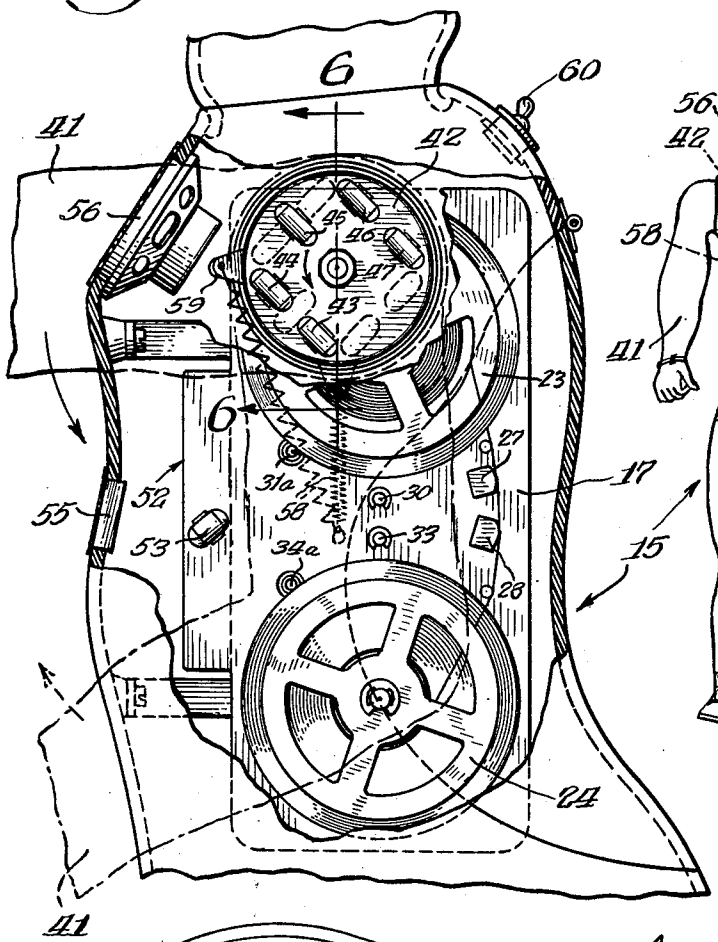
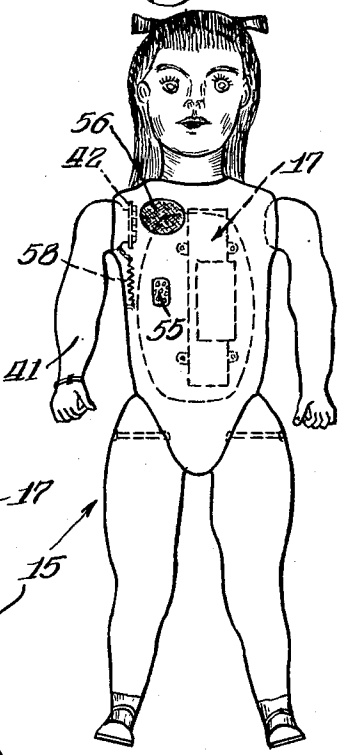


Fig. 1



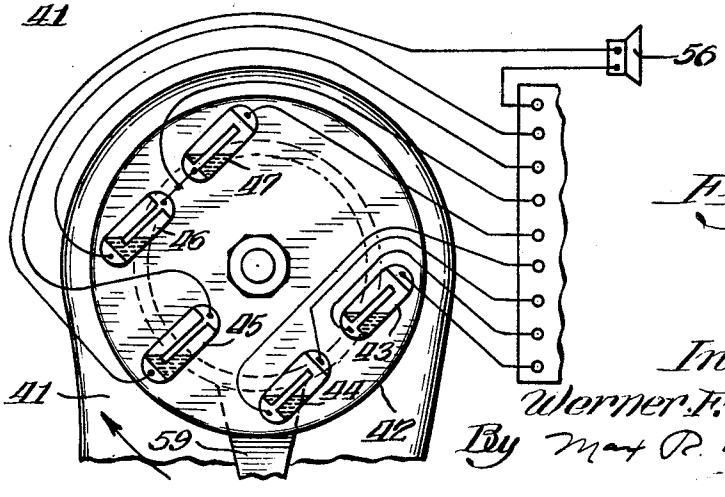


Fig. 8

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Fig. 2

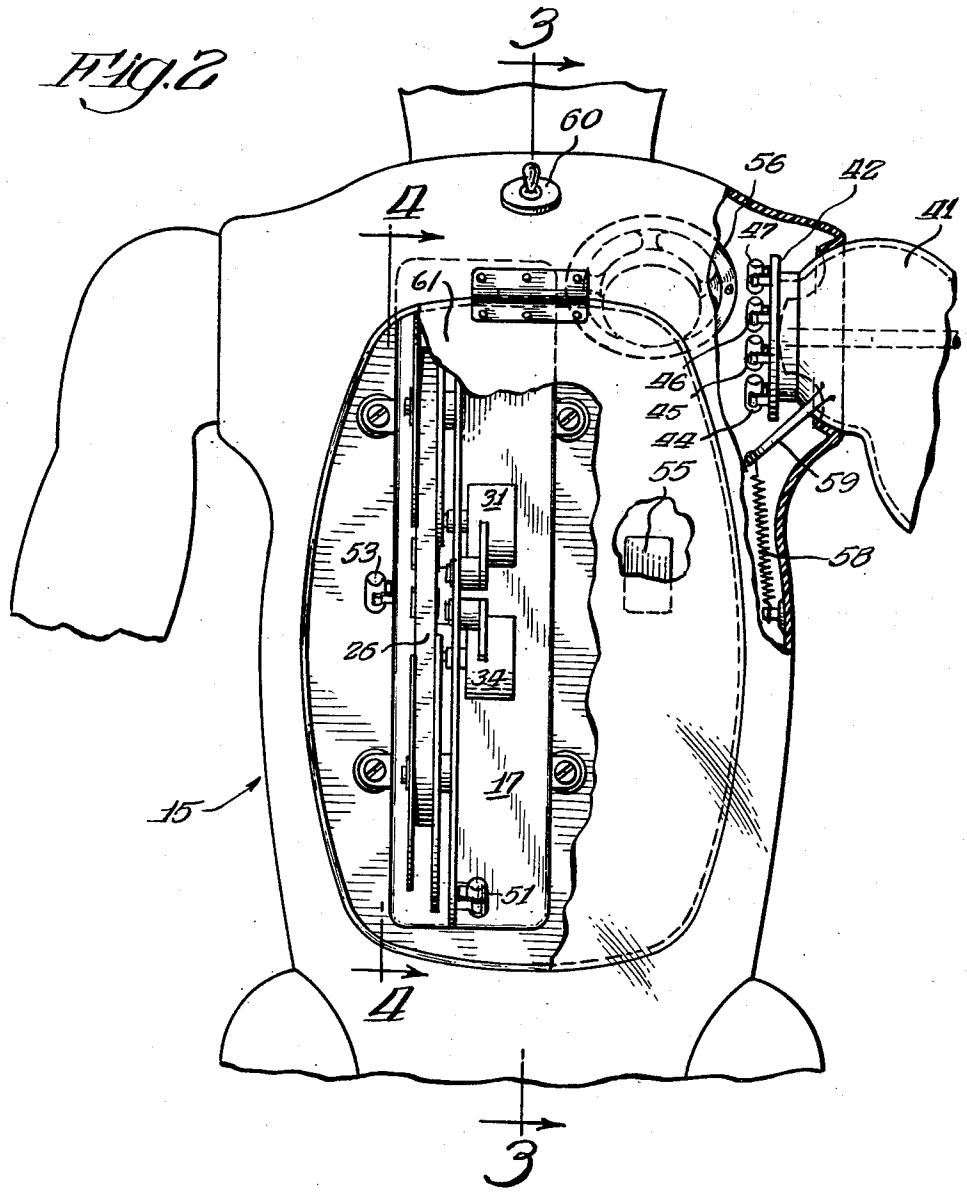

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Fig. 4

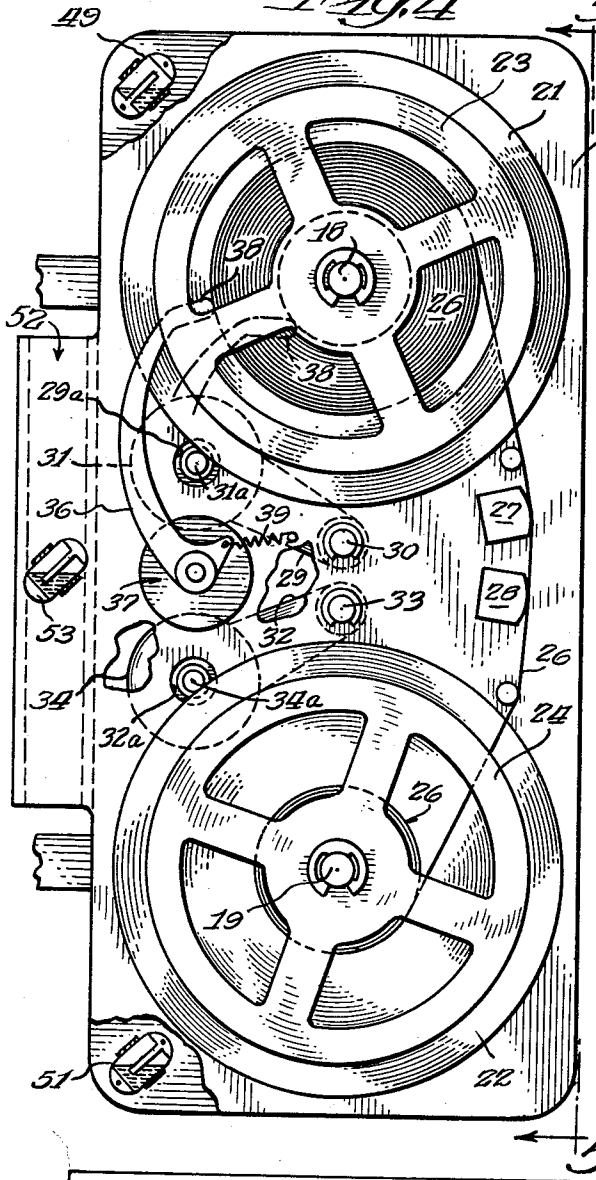
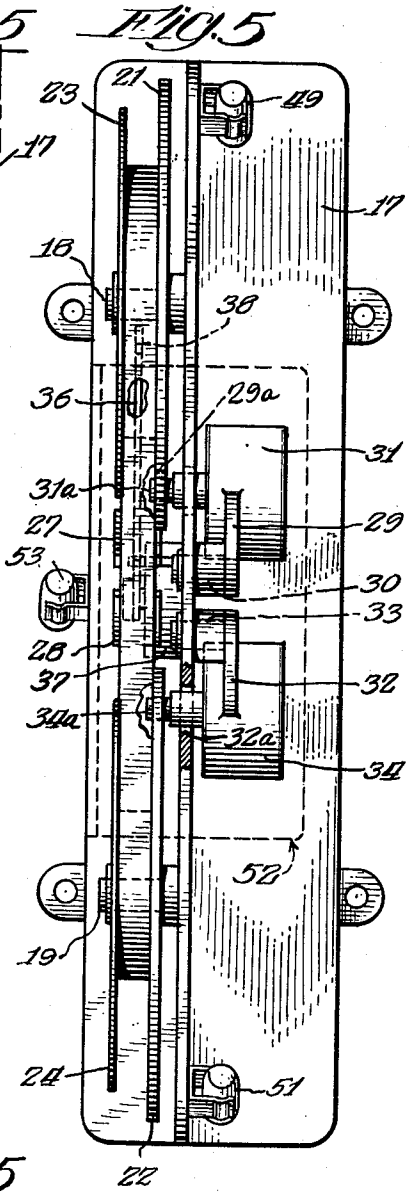


Fig. 5



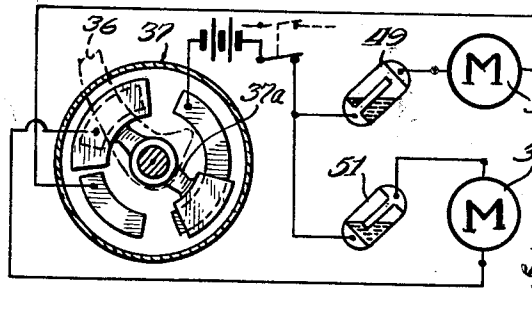


Fig. 9

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FIG. 10

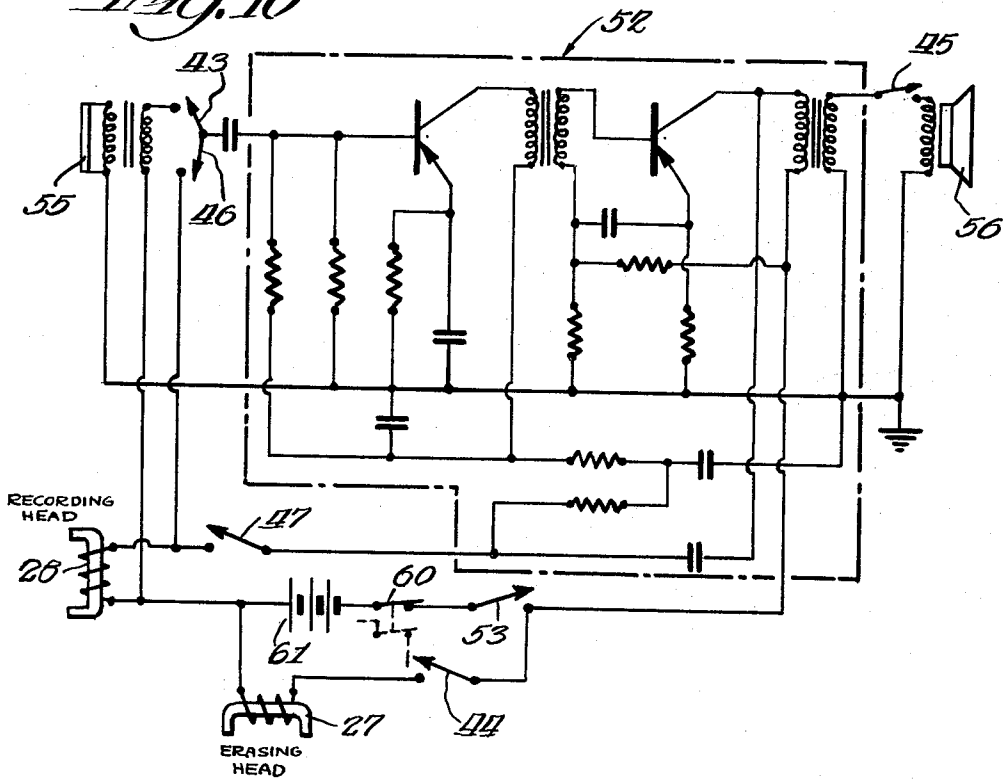


FIG. 6

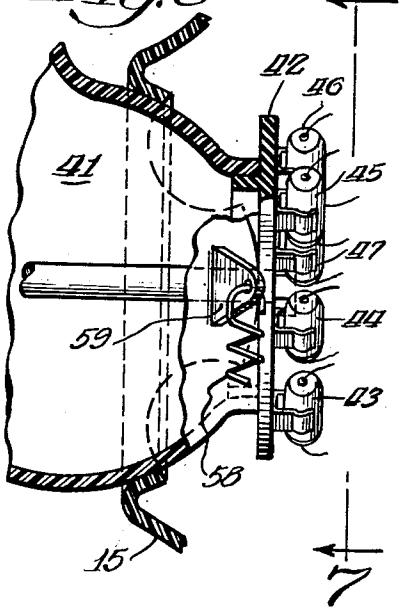
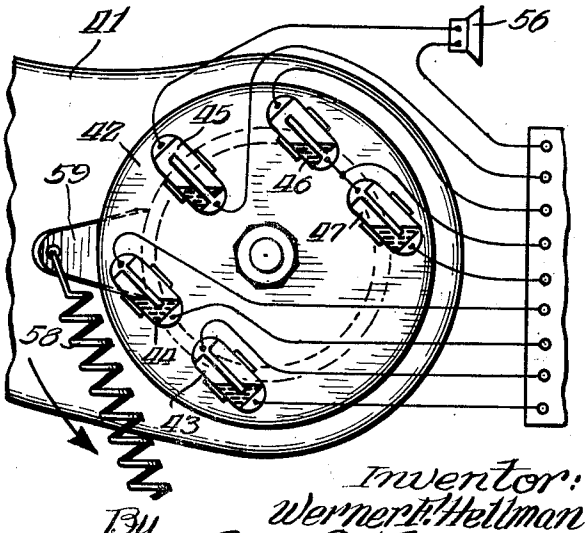


FIG. 7



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United States Patent Office 3,162,980 Patented Dec. 29, 1964

3,162,980

TALKING DOLL AND THE LIKE

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Filed July 6, 1961, Ser. No. 122,346
4 Claims. (Cl. 46—232)

My invention relates to talking dolls and the like.

One of the objects of my invention is the provision of a doll embodying sound recording means whereby a verbal or musical selection may be recorded on magnetic tape and thereafter reproduced or played back merely by changing the position of the doll.

Another object of my invention is the provision of a doll of the foregoing character in which recordings and playbacks may be effected unobstrucively merely by changing the position of the doll or by moving an appendage thereof, thereby avoiding any apparent manual manipulation of switches to condition electrical circuits to perform one function or the other.

A further object of my invention is the provision of a doll of the foregoing character embodying control means in electrical circuits responsive to changes in the positioning of the doll for controlling the respective circuits.

Still another object of my invention is the provsion of a talking doll of the foregoing character which is simple in construction, effiecient in operation and durable in service.

Other and further objects and advantages of my invention will become apparent from the following description when the same is considered in connection with the accompanying drawings in which:

FIGURE 1 is a front elevational view of a doll embodying my invention.

FIGURE 2 is a fragmentary rear elevational view, on an enlarged scale, of the torso portion of the doll and with certain parts removed and others broken away to illustrate details of construction.

FIGURE 3 is a vertical cross-sectional view taken substantially on line 3—3 of FIGURE 2.

FIGURE 4 is a side elevational view, on an enlarged scale, taken substantially on line 4—4 of FIGURE 2, with parts broken away to show details of construction.

FIGURE 5 is a side elevational view taken substantially on line 5—5 of FIGURE 4.

FIGURE 6 is a cross-sectional view, on an enlarged scale, taken substantially on line 6—6 of FIGURE 3, and showing the arm of the doll in raised position.

FIGURE 7 is an elevational view taken substantially on line 7—7 of FIGURE 6.

FIGURE 8 is a view similar to FIGURE 7 but showing the arm rotated 90° to down position.

FIGURE 9 is an electrical circuit diagram of the motor circuit, and

FIGURE 10 is an electrical circuit diagram of the recording and control apparatus embodied in my invention.

Referring to the drawings, the numeral 15 indicates generally a doll body, the torso portion of which is hollow to receive the recording and control apparatus hereinafter to be described. It will be understood that my invention contemplates the use of a doll body of substantial size, the doll body in the present instance having a total height of approximately 24 inches. The size affords sufficient capacity to conveniently receive the recording apparatus.

Received within the cavity of the torso portion is a transistorized tape recording unit of generally conventional construction, but which has been modified, as will be hereinafter explained, to adapt the same for its intended function.

The recording apparatus, the mechanical components of which are illustrated in FIGURES 4 and 5, includes a base 17 provided with suitable mounting means whereby the apparatus may be rigidly mounted within the body cavity of the doll.

Fixed on shafts 18 and 19 suitably journaled in the base 17 are friction discs 21 and 22 respectively, the discs being formed preferably of rubber or the like. Carried on said discs are reels 23 and 24 respectively, said reels being held against displacement by suitable C washers. As will be seen from the drawings, the reels 23 and 24 are of lesser diameter than the discs 21 and 22 for a purpose as will be hereinafter made clear. The reel 23 functions as a supply reel and carries a supply of magnetic recording tape 26, while the reel 24 functions as a take-up reel.

The tape 26 in the course of recording passes successively over the erasing head 27 and the recording head 28. Arm 29 is pivoted as at 30 and carries on its free end a rewind motor 31. The shaft 31*a* of the motor is arranged under certain conditions to engage the periphery of the disc 21 to effect rotation of same. Arm 32 is pivoted as at 33 and carries at its free end motor 34, the shaft 34*a* of which is adapted to engage against the periphery of disc 22. Motor 34 functions to drive disc 22 which is operative during recording and playback. The edges of the apertures 29*a* and 32*a* in the base 17 through which the shafts 31*a* and 34*a* project limit the movement of the arms 29 and 32 in directions away from their respective discs 21 and 22. Arm 29 is biased towards the friction disc 21. However, the weight of the motor 31 is sufficient to overcome the effect of the spring when the recording apparatus is disposed in an upright position corresponding to the vertical position of the doll. In such vertical position it will be apparent that the effect of gravity acting on the motor 34 will cause the shaft 34*a* to engage the periphery of disc 22 to drive the same.

An arm 36 is connected to the rotor 37*a* of a switch 37 for actuating the same. The arm 36 is arcuately shaped and has a terminal end 38 which is adapted to be received between the flanges of the reel 23 and to bear against the tape reeled thereon. A spring 39 biases the arm 36 in a direction towards the tape. As the diameter of the tape on the reel 23 increases or decreases, the arm 36 follows the peripheral surface of the roll of tape and effects actuation of the rotor 37*a* of switch 37 in a manner as will be hereinafter described.

As was hereinbefore noted, control of the recording circuits is effected by the manipulation of one of the appendages of the doll. In the present instance the right arm 41 of the doll carries a series of control switches which will be presently described. Suitably mounted at the end of the arm portion which is received within the shoulder socket of the body of the doll is a plate 42 (FIGURES 2, 7 and 8) on which is suitably supported a plurality of mercury switches 43–47 inclusive, which when rocked about the pivotal axis of the arm socket effect opening and closing of circuits, as will be hereinafter described. The arm 41 is normally biased to down position by a spring 58 and preferably carries a wristband for purposes of distinguishing the same from the inoperative arm.

Mounted on the base plate 17 are mercury switches 49 and 51. Said switches are connected in electrical circuit with the motors 31 and 34, as will be hereinafter explained.

A conventional transistorized amplifier 52 having a printed circuit is mounted on a suitable base which is suitably attached to the wall of the body within the cavity. The circuit of the amplifier is illustrated in FIGURE 10, the portion of which is of conventional arrangement being contained within the broken lines of FIGURE

10. Mounted on the base carrying the amplifying circuit is a mercury switch 53 which is arranged to open the circuit from the battery when the doll is disposed in a horizontal position and also to render the erasing head 27 ineffective.

A microphone 55 is disposed in the forward wall of the torso portion and is connected in electrical circuit with the recording apparatus. A speaker 56 is mounted in the forward wall of the body and is connected in circuit with the amplifier 52.

In the operation of my invention, if it is desired to effect a recording on the tape, the torso of the doll is disposed in a vertical position. In such position switch 51 is rendered effective and switch rotor 37*a* is disposed as illustrated in FIGURE 9, closing the circuit to motor 34 to energize the same. The action of gravity on motor 34 effects a driving connection between the shaft 34*a* and the periphery of friction disc 22 to cause the tape 26 to wind up on reel 24. Correspondingly, shaft 31*a* of the motor 31 swings downwardly disengaging shaft 31*a* from the periphery of disc 21. As will be apparent by reference to FIGURE 9, motor 31 at this point is de-energized, switch 49 being ineffective. Tape 26 will continue to wind on reel 24 unwinding from reel 23 until a certain predetermined point is sensed by the lever follower 38 so as to avoid run-out of the tape on reel 23.

It will be understood that as the supply of tape on reel 23 is progressively depleted, arm 36 will move clockwise, as viewed in FIGURE 4, correspondingly rotating the rotor 37*a* of switch 37 to open the circuit of motor 34 to arrest the same and prevent further unwinding of the tape. Correspondingly, when the doll torso is in a vertical position mercury switch 53 is rendered effective (FIGURE 4) to close the circuit to the amplifier 52 and also to close the circuit to the erasing head 27 rendering the same effective.

Assuming that there is a full supply of magnetic tape 26 on reel 23 and that the body of the doll is disposed in a vertical position, as has already been noted, motor 34 driving the take-up reel 24 is energized and the amplifying circuit and erasing head are rendered effective. In order to record on tape 26, arm 41 is required to be elevated to revolve the switches 43 through 47 from the position illustrated in FIGURE 8, corresponding to the normal down position of the arm, to the position illustrated in FIGURE 7 wherein switches 43, 44 and 47 are rendered effective and switches 45 and 46 are rendered ineffective. Switch 43 connects the microphone 55 into the circuit for recording. Switch 44 connects the erasing head 27 in the circuit, while switch 47 connects the recording head 28 in the recording circuit. Switch 45 when rendered ineffective disconnects speaker 56 from the circuit while switch 46 disconnects the recording head 28 from the play-back circuit. So long as arm 41 is maintained in elevated position, the circuit is conditioned, as above described, for recording of sound signals transmitted into microphone 55.

Assuming now that the child playing with the doll desires to discontinue recording, she merely releases the arm 41 which is returned to normal down position by the spring 58 connected to a lug 59 rigidly mounted on the arm. In such position, as illustrated by the broken lines in FIGURE 3, the switches 43 through 47 assume the relationships illustrated in FIGURE 8.

In order to effect a rewinding of the tape on the supply reel 23, the doll body is placed in a horizontal position on its back coresponding to a sleeping or reclining position. In this position switch 49 is rendered effective, closing the circuit to motor 31 and energizing the same to drive disc 21 in the manner hereinabove described. As the volume of tape on the supply reel 23 progressively increased, the follower 38 on arm 36 operates rotor 37*a* to open the circuit to motor 31, thereby arresting the rewinding of the tape. It will be understood that an interval of time sufficient to rewind the tape after recording must elapse before play-back can commence. It will be observed that the switch 37 makes it possible to have the doll in play-back or tape rewind position at any time desired without waiting for one reel to cut off.

Motor 34 operates at half the speed of motor 31. Accordingly, the speed of rewind of the tape 26 is at a rate twice that for recording or play-back.

In order to reproduce the sound recorded on the tape, the body of the doll is again moved to vertical position and motor 34 is thereby rendered effective to drive the take-up reel 24. With the arm in normal down position (FIGURE 8), switches 43, 44 and 47 are rendered ineffective and switches 45 and 46 are rendered effective. Accordingly, switch 45 connects the speaker 56 into the circuit and switch 46 connects the recording head 28 into the play-back circuit. Play-back of the tape continues until the follower 38 and lever 36 operate switch 37 to arrest the motor 34, or until the position of the doll is changed.

A double pole manual switch 60 which may be located on the back of the body is provided to control all of the circuits so as to permit the child to play with the doll without using the recording and play-back apparatus.

It will be understood that the erasing head 27 functions to erase recorded signals on the tape when the arm 41 is in raised position.

In horizontal position switch 53 cuts off the circuit to the amplifier so that in the event the tape is caused to be arrested for some reason, the complete mechanism is cut off. A hinged panel 61 is provided in the rear of the body to afford access to the recording apparatus, as for example, to change batteries or for other purposes.

It will be understood that my invention may be embodied in other forms or characters and is not necessarily limited only to dolls.

It will be understood that various changes and modifications may be made from the foregoing without departing from the spirit and scope of the appended claims.

I claim:

1. In a tape recording and play-back apparatus, a tape supply reel and a take-up reel, an electric motor for driving each of said reels, each of said motors being separately mounted on a pivoted arm and movable into and out of driving engagement with a respective reel, mercury switch means in electrical circuit with said motors, said switch means and said motors being responsive to changes in the physical positioning of said entire apparatus to render said supply reel or said wind-up reel selectively operative.

2. In combination with a doll body having at least one movable body appendage, tape recording and play-back apparatus mounted in said body, mercury switch means mounted in said body and on said appendage and in electrical circuit with said apparatus, the switch means on said appendage being revolvable about the axis of movement of said appendage, said switch means being rendered effective or ineffective in accordance with changes in the positioning of said body and said appendage to selectively render said apparatus effective for recording and ineffective for play-back or effective for playback and ineffective for recording.

3. In combination with a doll body having at least one movable appendage, tape recording and play-back apparatus mounted in said body, said tape recording and play-back apparatus having a tape supply reel and a take-up reel, an electric motor for driving each of said reels, each of said motors being separately mounted on a pivoted arm and movable into and out of driving engagement with a respective reel, mercury switch means mounted in said body and on said appendage and in electrical circuit with said motors, said switch means and said motors being responsive to changes in the positioning of said doll body and said appendage to render the supply reel or wind-up reel selectively operative.

4. In combination with a doll body having at least

one movable appendage, tape recording and play-back apparatus mounted in said body, said tape recording and play-back apparatus having a tape supply reel and a take-up reel, an electric motor for driving each of said reels, each of said motors being separately mounted on a pivoted arm and movable into and out of driving engagement with a respective reel, mercury switch means mounted in said body and on said appendage and in electrical circuit with said motors, said switch means and said motors being responsive to changes in the positioning of said doll body and said appendage to render the supply reel or wind-up reel selectively operative, a follower arm engageable with the tape carried on said supply reel, and switch means operated by said arm, said switch means being operative to shut off the motor driving said tape-up reel at a predetermined point to prevent run-out of the tape on said supply reel.

References Cited in the file of this patent

UNITED STATES PATENTS

2,212,623	Strauss	Aug. 27, 1940
2,310,037	Reno	Feb. 2, 1943
2,335,277	Heller	Nov. 30, 1943
2,457,699	Marsen	Dec. 28, 1948
2,555,800	Levine	June 5, 1951
2,561,602	Valentino	July 24, 1951
2,745,091	Leffler	May 8, 1956
3,080,679	Hardigan	Mar. 12, 1963

OTHER REFERENCES

Menard: "Fiat Final Report #705," published 1946 by the Field Information Agency, pages 4–23.