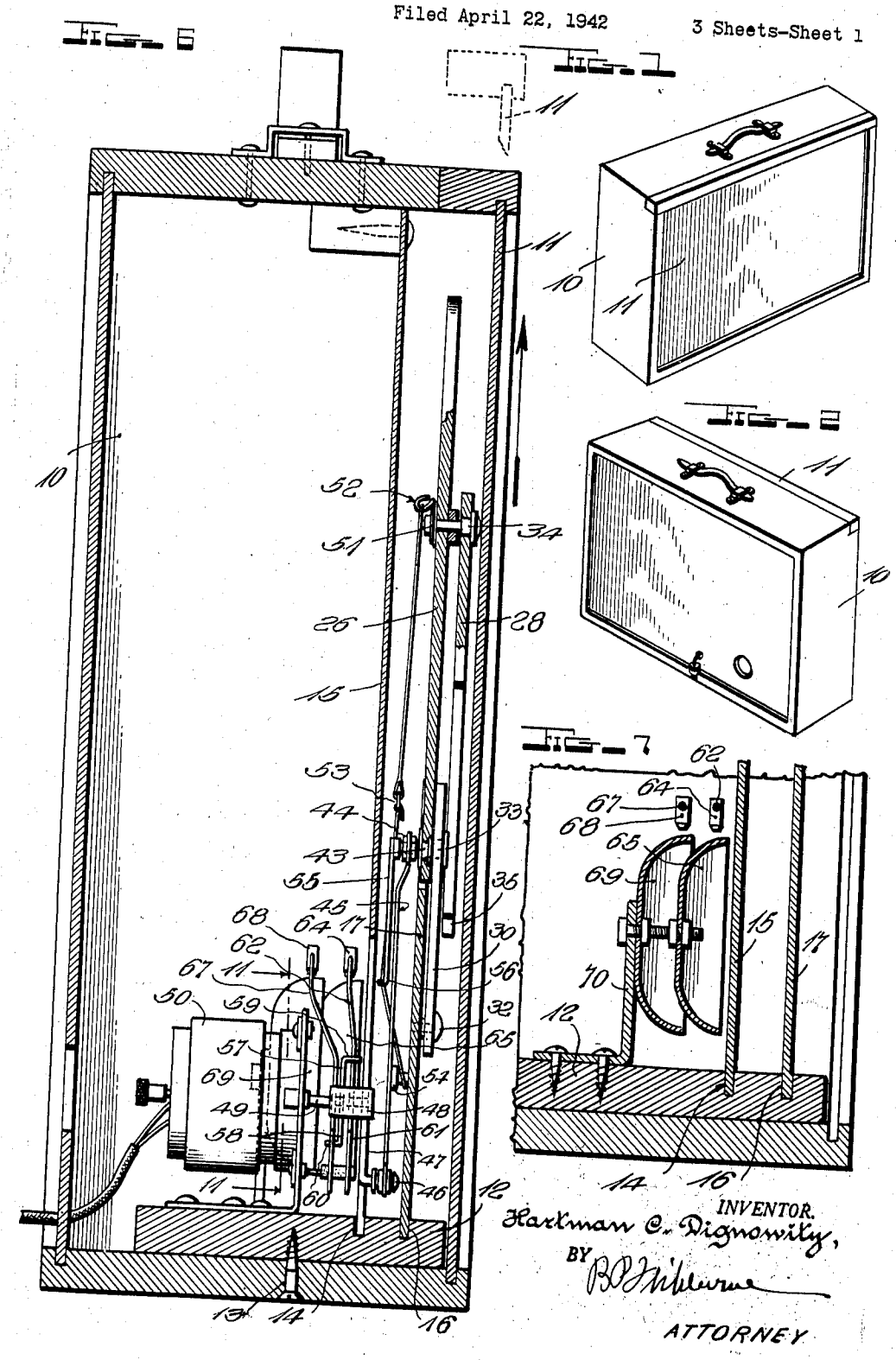
Dec. 8, 1942. H. C. DIGNOWITY 2,304,344

EDUCATIONAL APPLIANCE

Filed April 22, 1942 3 Sheets-Sheet 1



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FIG. 3

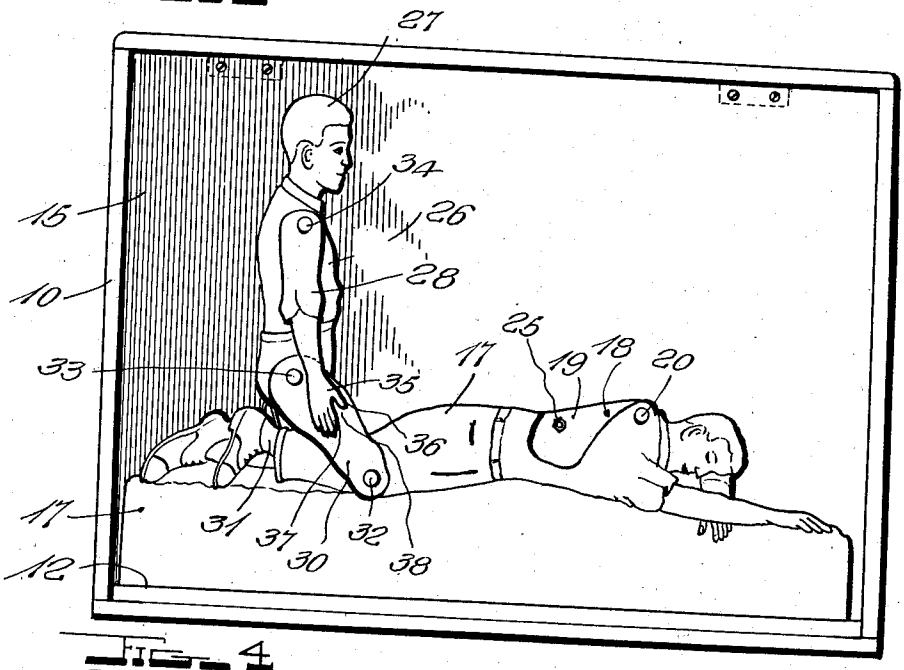
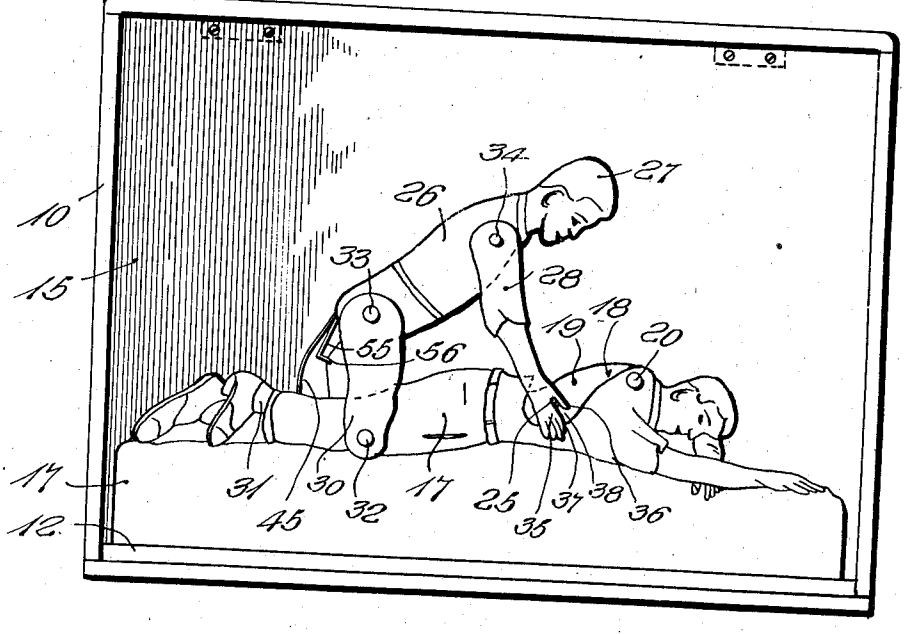


FIG. 4



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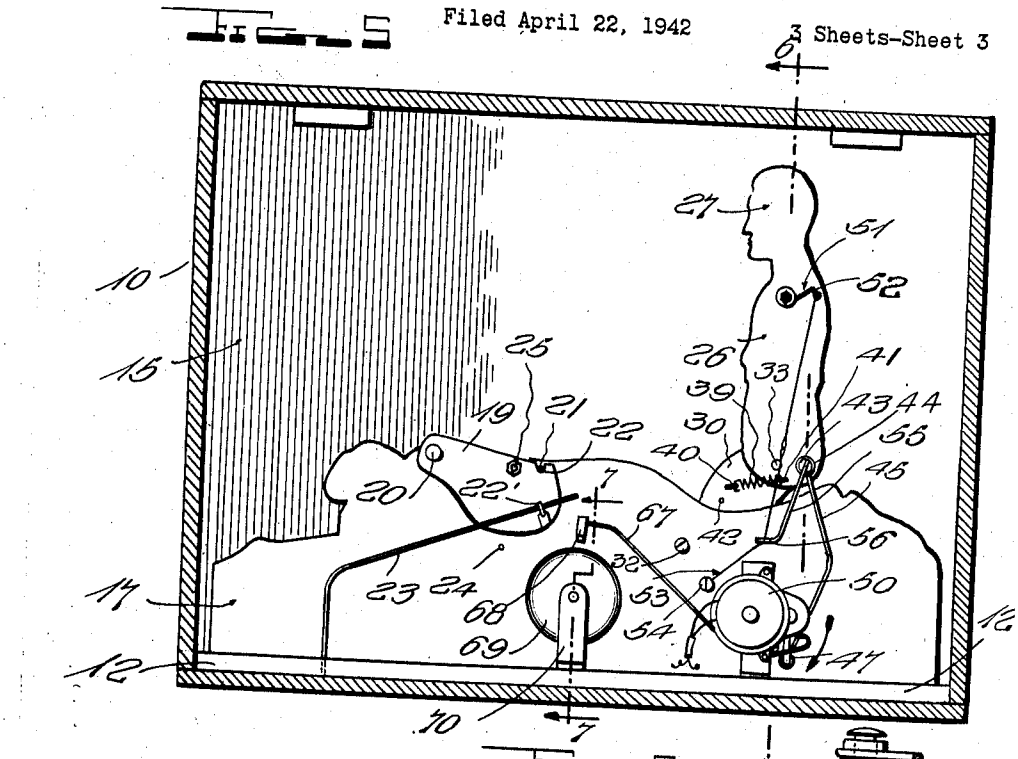


FIG. 5

FIG. 9

FIG. 6

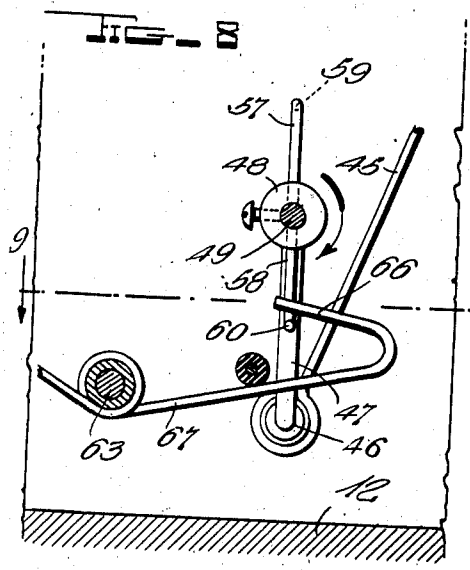


FIG. 8

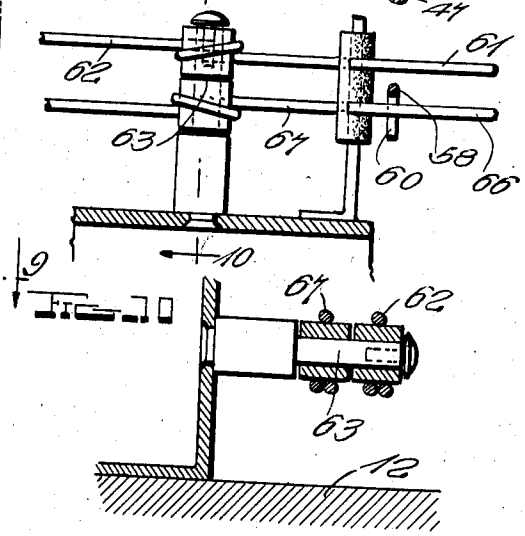


FIG. 10

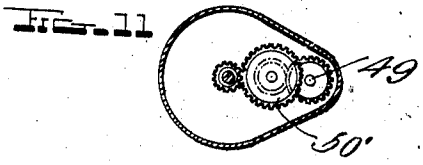


FIG. 11

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UNITED STATES PATENT OFFICE

2,304,344

EDUCATIONAL APPLIANCE

Hartman C. Dignowity, Alexandria, Va.

Application April 22, 1942, Serial No. 440,071

17 Claims. (Cl. 35—17)

My invention relates to an educational appliance.

An important object of the invention is to provide an applience of the above-mentioned character for use in teaching artificial respiration.

A further object of the invention is to provide an applience of the above-mentioned character which will teach the manner of applying pressure or weight to the victim and the time intervals or rhythm of such applications.

A further object of the invention is to provide an appliance of the above-mentioned character, the teachings of which are interesting and may be readily understood.

A further object of the invention is to provide an appliance of the above-mentioned character which is of simplified construction and automatic in operation.

A further object of the invention is to provide an appliance of the above-mentioned character which will provide a signal at intervals for controlling the actions of the operator treating the victim.

Other objects and advantages of the invention will be apparent during the course of the following description.

In the accompanying drawings forming a part of this application and in which like numerals are employed to designate like parts throughout the same,

Figure 1 is a front perspective view of apparatus embodying my invention, the door of the casing being closed,

Figure 2 is a similar rear perspective view of the same,

Figure 3 is a front elevation of the apparatus, the door of the casing being removed, and the operator shown in the upright position,

Figure 4 is a similar view, showing the operator shifted to the forward inclined position,

Figure 5 is a rear elevation of the apparatus, the casing being shown in section,

Figure 6 is a vertical transverse section taken substantially on line 6—6 of Figure 5,

Figure 7 is a transverse vertical section taken on line 7—7 of Figure 5,

Figure 8 is a rear side elevation of an operating crank, associated elements being partly broken away,

Figure 9 is a horizontal section taken on line 9—9 of Figure 8,

Figure 10 is a detailed section taken on line 10—10 of Figure 9, and,

Figure 11 is a vertical section taken on line 11—11 of Figure 6.

In the drawings, wherein for the purpose of illustration is shown a preferred embodiment of my invention, the numeral 10 designates a case having its front side open and covered by a door 11, which is removable. Mounted upon the bottom of the case is a base 12 held in place by screws 13 or the like, and this base has a longitudinal vertical groove 14 to receive a vertical plate or sheet 15 preferably having an outer polished surface and preferably black, to provide clear visibility for the associated parts. The base 12 is provided with a forward longitudinal vertical groove 16 for holding a vertical plate or sheet 17. This vertical plate is provided upon its front face with the representation of a human figure, such as a man as the victim, lying horizontally upon his stomach. The representation of the man, for the purpose of illustration, is in the embodiment of a photograph but the same can be formed by other means such as a figure or statue. The sheet 17 has an opening 18 formed therein which extends from a point near the front of the stomach of the figure up and through the back and shoulders of the figure. Behind the plate 17 is a vertically swinging plate or back portion 19, having its front face provided with the representation of the back and other portions of the body, removed by the opening 18. The plate 19 and the associated plate 17 represent the entire body portion of the figure. The back portion 19 is pivoted at 20, to swing vertically, and its upward movement is limited by a stationary pin 21 carried by the plate 17 and adapted to engage the end wall of a slot 22, fomed in the free end of the back portion 19. The back portion 19 has a hook 22' arranged upon its rear side and attached thereto near its lower edge, and this hook slidably receives a curved spring 23, the lower end of which is anchored in the base 12. The downward movement of the back portion 19 is limited by a stationary pin 24 attached to the plate 17. Extending forwardly from the pivoted back portion 19 and through and beyond the opening 18 is a horizontal pin 25, rigidly mounted upon the swinging back portion 19. When the pin 25 is depressed, the swinging back portion 19 is also depressed.

The numeral 26 designates the body portion of the operator, 27 the head, 28 the arms, 30 the thighs or upper portions of the legs, and 31 the lower portions of the legs. The operator is illustrated as straddling the victim and the lower

portions 31 of the legs are arranged upon opposite sides of the victim, only one lower leg portion 31 and one arm being shown. The lower leg portion 31 is stationary and is carried by or formed upon the stationary plate 17. The upper leg portion or thigh 30 is separate from the lower leg portion 31 and is pivoted thereto at 32, and the upper leg portion 30 is pivoted to the body portion 26, as shown at 33. These pivots correspond to the knee joint and hip joint of a man. The arm 28 is pivotally secured to the upper portion of the body 26 by a pin or pivot element 34, the inner end of which extends to the rear side of the body portion 26. The arm 28 is rigidly secured to the pin 34. The arm 28 is provided with a hand 35 and the arm and hand are shown in the position to properly apply pressure for producing artificial respiration. The arm is straight and the thumb 36 is shown disposed upon the edge of the forefinger and slightly spaced from it. The forefinger 37 is moved into engagement with the pin 25 and serves to guide this pin into the space 38 between the thumb and forefinger. A generally horizontal retractile coil spring 39 is arranged upon the rear face of the body portion 26 and thigh 30 and is secured to a hook 40, carried by the thigh and has its opposite end secured to a hook 41, secured to the lower extremity of the body portion. A stop pin 42 is mounted upon the thigh 30 and extends upon its rear face and limits the forward movement of the thigh by contacting with the upper edge of the plate 17. The spring 39 tends to swing the body portion 26 upon its pivot 33 to cause the body portion to assume an upright position when the body portion moves rearwardly from the back of the victim.

Means are provided to effect the movement of the body portion 26, comprising a headed pin 43, which is arranged upon the rear side of the body portion 26 near its lower extremity and rigidly secured thereto. A sleeve or collar 44 is pivoted upon this headed pin and is rigidly secured to a stiff connecting link or rod 45, the lower end of which is pivotally mounted upon the pin 46 of a crank 47. This crank is rigidly secured to a head or sleeve 48, in turn clamped upon a rotary shaft 49, which is driven by a constant speed electric motor 50, through suitable speed reduction gearing 50', see Figure 11. While I prefer to drive this shaft by an electric motor it may be driven by any other suitable means, such as a spring motor, or it may be manually turned.

The arm 28 is rigidly secured to the pin 34, as stated, and the rear end of this pin has a crank 51 rigidly secured thereto, having a loop 52 at its free end to which is secured a flexible cable 53 or any other flexible non-extensible element. The lower end of this flexible cable is attached to a stationary pin 54, secured to the plate 17. A crank 55 is rigidly attached to the headed pin 43 and therefore remains in a fixed angular position with respect to the body portion 26 and this crank is provided with an eye or loop 56, slidably receiving the flexible element or cable 53.

The head or sleeve 48 carries diametrically oppositely arranged radial arms 57 and 58 having laterally extending trips 59 and 60, extending in opposite directions. The trip 59 is arranged to detachably engage and depress a lateral extension 61 of a vertically swinging rod 62, pivoted at 63. The rod 62 carries a striker 64 to impinge against a gong 65. The trip 60 is arranged to detachably engage and depress a lateral extension 66 carried by a rod 67 mounted upon the pivot 63. The rod 67 carries a striker 68 to impinge against a gong 69. The gongs 65 and 69 are mounted upon a common support 70 and these gongs produce different tones. The gongs are alternately sounded in succession upon each half revolution of the shaft 49.

The operation of the appliance is as follows:

When the motor is set into action the shaft 49 is rotated at a constant speed, in a clockwise direction as viewed from the rear of plate 17, Figures 5 and 8. The speed of rotation of this shaft is such that the gong 65 is sounded at equal intervals fifteen times during each minute, while the gong 69 is sounded at equal intervals fifteen times during each minute. In the starting of the cycle of operation of the appliance, the body portion 26 is in the upright position and as the shaft 49 turns, the crank 47 raises the rod 45, which causes the body portion 26 to move forwardly and incline downwardly and the forefinger 37 contacts with the pin 25 and the pin is guided into the recess 38. Further turning of the shaft 49 causes the body portion 26 to move further forwardly and downwardly and the back portion 19 is depressed. As the shaft 49 continues to turn, the pin 46 passes the upper dead center and the rod 45 moves downwardly, causing the body portion 26 to rise and move rearwardly and the hand 35 releases the pin 25 and the back portion 19 rises to the normal elevated position and the body portion 26 returns to the upright starting position. When the body portion 26 is in the upright position the arm 28 is generally vertical, and when the body portion is inclined forwardly and downwardly, the pin 43 turns counterclockwise, Figure 5, swinging crank 55 in the same direction. This crank then pulls upon the flexible element 53, swinging crank 51 downwardly, which swings the arm 28 upwardly. The movement of the arm is therefore effected by the relative angular positions of the body portion. The arm 28 gravitates to the lowered position when the pull upon the flexible element is released. When the body portion 26 moves forwardly and downwardly sufficiently to depress the back portion 18 and at the end of the depressing stroke, the gong 65 is sounded, and when the body portion 26 reaches the starting upright position the gong 69 is sounded. A signal is therefore produced at substantially the end of the travel of the body portion 26 in opposite directions. The purpose of this is to produce time intervals or rhythm for the action of the operator and for the depression of the back portion of the victim by the operator. As is well known, in producing artificial respiration the back of the patient should be depressed at regular intervals corresponding as nearly as possible to the time intervals of normal respiration. In the production of artificial respiration the palms of the hands are placed on the small of the back of the victim with the fingers resting upon the ribs, the little finger just touching the lowest rib with the thumb and fingers in the natural position and the tips of the fingers just out of sight. By watching the operation of the machine a learner will see that the arms are held straight and are swung forwardly slowly and the weight of the body of the operator is gradually brought to bear in a downward direction upon the small of the back of the victim. Care should be taken not to apply too much pressure or weight upon the victim. The time and motion of the operator is taught by the sounding of the bells. The timing or rhythm of the operator and of the pressure applied to the victim should not be broken when changing operators.

The victim should be kept warm even after breathing starts and the victim should not be allowed to get up after breathing starts as he needs quiet and rest. If the victim is moved artificial respiration should be continued during the moving period. Artificial respiration should be continued until the victim is pronounced dead by a competent doctor.

It is to be understood that the form of my invention herewith shown and described is to be taken as a preferred example of the same and that various changes in the shape, size, and arrangement of parts may be resorted to without departing from the spirit of my invention or the scope of the subjoined claims.

Having thus described my invention, what I claim is:

1. In an instruction appliance, means forming the representation of a human figure lying down, said means embodying a movable back portion, means forming the representation of a human figure giving artificial respiration including a movable body portion, an arm pivoted to the body portion, means operated by the arm to move the back portion, and means to move the body portion.

2. In an instruction appliance, means forming the representation of a human figure lying down with the back up, said means including a movable back portion, means forming the representation of a human figure giving artificial respiration arranged to engage and move the movable back portion, and means to move the second named means.

3. In an instruction appliance, means forming the representation of a human figure, said means including a movable back portion, means forming the representation of a human figure giving artificial respiration arranged to move the movable back portion, means to move the second named means so that it will move the back portion at intervals, and a signal to indicate the cycle of operation of the second named means.

4. In an instruction appliance, means forming the representation of a human figure, said means embodying a movable back portion, means forming the representation of a human figure giving artificial respiration, said second named means including a pivoted body portion, an arm pivoted to the body portion and having a hand, a pin secured to the back portion to be detachably engaged by the hand, a flexible element connected with a fixed part and connected with the pivoted arm to move it, means connected with the body portion and slidably engaging the flexible element, and means to move the body portion.

5. In an instruction appliance, means forming the representation of a human figure, means forming the representation of a second human figure giving artificial respiration and acting upon the first named means, the second named means comprising a body portion and arm, and means to move the body portion toward and from the human figure.

6. In an instruction appliance, means forming the representation of a human figure, means forming the representation of a human figure giving artificial respiration and acting upon the first named means, the second named means embodying a pivoted leg portion, a body portion pivoted upon the leg portion, means to swing the leg portion and body portion as a unit toward and from the second named means and to swing the body portion with relation to the leg portion, and an arm carried by the body portion.

7. In an instruction appliance, means forming the representation of a human figure lying down, means forming the representation of a human figure giving artificial respiration arranged near the first named means, the second named means comprising a pivoted leg portion, a body portion pivoted upon the leg portion, an arm pivoted upon the body portion, means to swing the leg portion and body portion and arm as a unit toward and from the second named means and to swing the body portion with relation to the leg portion and the arm with relation to the body portion.

8. In an instruction appliance, means forming the representation of a human figure, means forming the representation of a human figure giving artificial respiration arranged near the first named means, said second named means comprising a pivoted body portion, means to swing the body portion toward and from the first named means, an arm carried by the body portion and movable with relation thereto, and means operated by the pivotal movement of the body portion to swing the arm with relation to the body portion.

9. In an instruction appliance, means forming the representation of a human figure, means forming the representation of a human figure giving artificial respiration arranged near the human figure, the second named means comprising a movable body portion, an arm carried by the body portion and movable with relation thereto, an element connected with the arm to move it when the element is pulled, means moved by the body portion and engaging the element to pull it, and means to move the body portion.

10. In an instruction appliance, relatively stationary means forming the representation of a human figure, means forming the representation of a human figure giving artificial respiration arranged near the first named means, the second named means comprising a body portion, means to pivotally support the body portion, means to swing the body portion upon its pivot, an arm pivoted upon the body portion, a flexible element connected with the arm to move it and connected with the relatively stationary means, and an element connected with the body portion and having a fixed relation thereto to turn therewith and slidably engaging the flexible element.

11. In an instruction appliance, means forming the representation of a human figure, means forming the representation of a human figure giving artificial respiration, the second named means comprising a leg portion, a body portion pivoted upon the leg portion, a spring connected with the body portion to move it in one direction with relation to the leg portion, a reciprocatory element connected with the body portion at a point spaced from the pivot of the body portion to move the body portion and the leg portion as a unit and to turn the body portion upon its pivot with relation to the leg portion and in opposition to the spring, an arm pivoted to the body portion, a flexible element connected with the arm to move it upon its pivot, and an element carried by the body portion and having a fixed relation thereto to turn therewith and slidably engaging the flexible element.

12. In an instruction appliance, means forming the representation of a human figure including a body portion, an arm pivoted upon the body portion, a flexible element connected with the

arm to swing it upon its pivot, a fixed element connected with the flexible element, an element carried by the body portion and having a fixed relation thereto to swing therewith and engaging the flexible element, and means to pivotally support the body portion and swing the same upon its pivot.

13. In an instruction appliance, means forming the representation of a human figure lying down, means forming the representation of a human figure giving artificial respiration, means to move the second named means toward and from the figure, and means to produce a signal when the operator reaches substantially the end of its movements.

14. In an instruction appliance, means forming the representation of a human figure lying down upon the stomach, said means including a vertically movable back portion to be depressed and having an engaging part, means forming the representation of a human figure giving artificial respiration and kneeling over the first named means, the second named means embodying a body portion, a pivoted leg portion pivotally supporting the body portion, an arm pivotally mounted upon the body portion and detachably engaging the engaging part of the back portion, means to swing the body portion in a substantially vertical plane, means to swing the arm in a substantially vertical plane with relation to the body portion, the combined swinging movements of the body portion and arm causing the arm to engage the engaging part and depress the body portion and subsequently release the engaging part so that the body portion returns to the raised position.

15. In an instruction appliance, means forming the representation of a human figure lying upon the stomach, said means comprising a back portion having an engaging part, means to pivotally support the back portion, yielding means to move the back portion to the raised position, means forming the representation of a human figure giving artificial respiration and kneeling over the first named means, the second named means comprising a lower stationary leg portion, an upper leg portion pivoted near its lower end to the lower leg portion, a body portion pivotally mounted upon the upper end of the upper leg portion, an arm pivoted to the body portion, means to move the body portion and upper leg portion so that the body portion assumes a substantially upright position remote from the back portion and then a lowered inclined position nearer the back portion, means to swing the arm with relation to the body portion when the body portion moves toward the back portion so that the arm is brought adjacent to the back portion and will engage the engaging part of the back portion and depress the back portion, the arm being separated from the engaging part of the back portion and arranged remote from the back portion when the body portion is in the upright position.

16. In an instruction appliance, means forming the representation of a human figure lying upon the stomach, said means including a vertically movable back portion adapted to be depressed, means to raise the back portion, a pin carried by the back portion to move it, means forming the representation of a human figure giving artificial respiration, the second named means including a pivoted leg portion, a body portion pivotally mounted upon the leg portion, an arm pivotally mounted upon the body portion and having a hand provided with a slot to receive the pin, means to move the leg portion and body portion so that the body portion assumes a substantially upright position remote from the back portion and subsequently swing the body portion downwardly nearer the back portion, means to swing the arm with respect to the body portion so that the hand is brought adjacent to the back portion when the body portion is swung toward the back portion and the pin caused to enter the slot in the hand and the hand depress the back portion, the arm being remote from the back portion when the body portion is in the upright position and the hand separated from the pin.

17. In an instruction appliance, stationary means forming the representation of a human figure lying upon its stomach, said means including a pivoted back portion to be depressed, means to raise the pivoted back portion, a pin carried by the pivoted back portion, means forming the representation of a human figure giving artificial respiration, said second named means including a lower leg portion, means to pivotally connect the leg portion with the stationary means, a body portion pivotally mounted upon the upper end of the leg portion, an arm pivotally mounted upon the body portion and having a hand provided with a slot to receive a pin, a rotary shaft disposed beneath the pivoted body portion, means to drive the rotary shaft, a crank driven by the rotary shaft, a stud rigidly mounted upon the body portion and spaced from the pivot between the body portion and the leg portion, a link pivotally connected with the crank and pivotally connected wtih the stud, a crank connected with the pivoted arm to move it, a flexible element connected with the crank, a stationary element mounted upon the stationary means and connected with the flexible element, and a crank rigidly mounted upon the stud and having an eye to slidably receive the flexible element.

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