March 17, 1964 M. A. HAIN, JR 3,125,338

EXERCISE PLAY HELICOPTER

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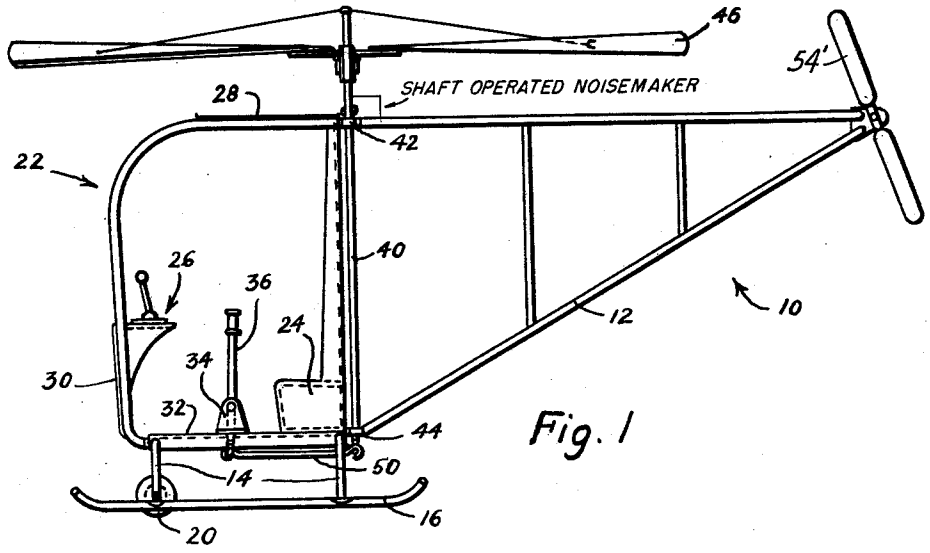



Fig. 1

Fig. 2

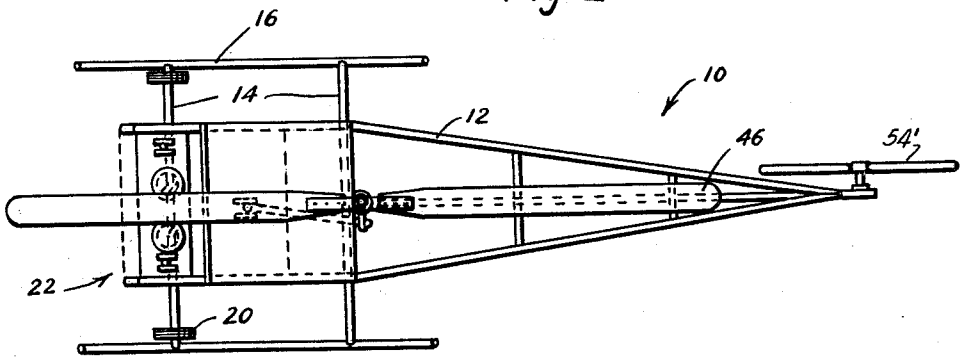
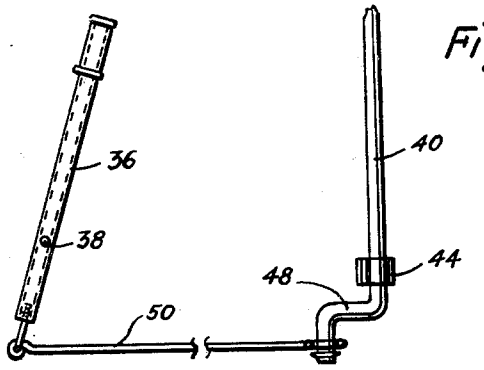



Fig. 7




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Fig. 3

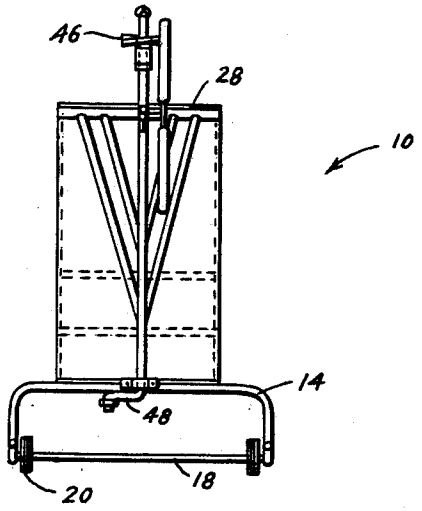



Fig. 4

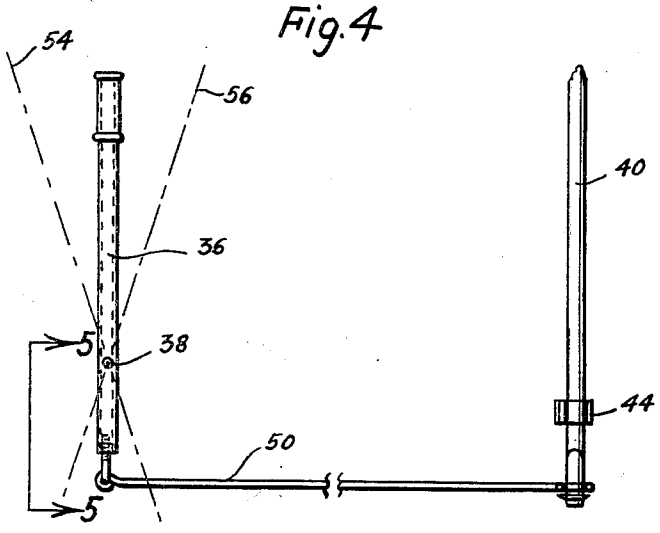
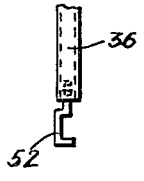



Fig. 5



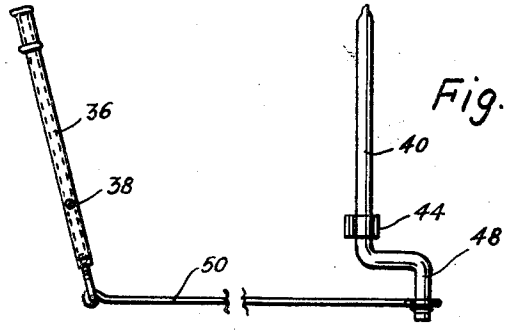




Fig. 6

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# 3,125,338
# EXERCISE PLAY HELICOPTER

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4 Claims. (Cl. 272—1)

This invention relates generally to an exercise play device and more particularly concerns a toy for use by children which simulates a full scale helicopter.

The invention disclosed herein is directed to a toy helicopter to be used by children who are approximately in the range of 3 to 7 years in age. It is constructed of inexpensive materials, durably built and pleasing in appearance. The toy is easily operated, and able to occupy the attention of a youngster for long periods of time. Further, it is completely safe as will be seen from the more complete description of the invention which follows.

The toy helicopter which comprises the basis of the present invention includes a framework of tubular construction which is similar in shape to that of a full scale helicopter. It further includes a cockpit at the forward end having a floor, a seat, a simulated instrument panel, and a control stick mounted upon the floor for oscillation. The frame or fuselage of the helicopter may be constructed of light tubing or of sheet material if preferred, and rests upon skids or runners which are mounted to its underside. Alternatively, the structure may be equipped with wheels for moving it about from place to place.

A substantially vertical shaft is mounted on the helicopter body for rotation and has a substantially horizontal rotor fixed adjacent its upper end. The bottom end of the vertical shaft is formed into an eccentric shape and is adapted to receive a rod member whose other end is connected to the control stick. A child may sit upon the seat in the cockpit, and by moving the control stick fore and aft will cause the rotor to rotate at a substantial speed dependent upon the speed with which the child moves the control stick. At the rear of the helicopter fuselage, a free turning tail rotor is mounted for rotation about a horizontal axis in a generally vertical plane parallel to the longitudinal axis of the helicopter. This rotor, which simulates the anti-torque rotor of a full scale helicopter, can only be turned by hand and is in no way connected with the control stick located in the cockpit of the helicopter.

Accordingly, it is an object of the present invention to provide a novel exercise device for children which simulates the operating characteristics of a full scale helicopter.

Another object of the present invention is the provision of a toy helicopter which comprises a frame, a rotor mounted on the frame for rotation, and a control stick mounted on the frame and connected to the rotor for rotating same.

A further object of the present invention is to provide a vertically disposed shaft having a rotor mounted at one end and formed eccentrically at the other end, and a rod member connected at one end to the eccentric portion of the shaft and at the other end to a control stick whereby oscillation of the control stick will rotate the shaft and the rotor mounted thereon.

Still a further object of this invention is the provision of a toy helicopter having a frame means including a pair of skid members for support thereof, a first rotor mounted about a substantially vertical axis and a second rotor mounted about a substantially horizontal axis.

Other objects and advantages of the invention will become more apparent when described in greater detail



with reference to the accompanying drawings, in which:

FIGURE 1 is a side elevation view of the toy helicopter which comprises the basis of the present invention;

FIGURE 2 is a top plane view of the helicopter illustrated in FIGURE 1;

FIGURE 3 is a rear elevation view of a helicopter illustrated in FIGURES 1 and 2;

FIGURE 4 is a side elevation view of the control means of the present invention in its neutral position;

FIGURE 5 is a view taken along lines 5—5 of FIGURE 4 for showing in more particularity the hook member formed at the base of the control stick;

FIGURE 6 is a view similar to that shown in FIGURE 5, illustrating the control stick in its far forward position thereof;

FIGURE 7 is a view similar to that of FIGURE 4 showing the control stick in its rearwardmost position.

Referring now to the drawings, the toy helicopter of the present invention is generally shown at **10** and comprises a framework **12**. The framework may be constructed of lightweight tubing, for example, plastic or aluminum, although other materials might also be employed. It would also be within the scope of this invention to employ sheet metal or sheet plastic for enclosing certain portions of the framework, if desired.

The framework **12** includes two pairs of downwardly extending struts **14**, at the lower ends of which are suitably mounted, preferably by welding, a pair of skids or runners **16**. If desired, a crossbar indicated at **18** may be attached, at both ends, to the forward struts **14** adjacent the runners **16**. A pair of wheels **20** may then be mounted for rotation on the crossbar **18** thereby allowing the toy helicopter to be easily moved about from place to place.

A cockpit generally indicated at **22** is located at the forward end of the helicopter **10**. The cockpit includes a seat member **24** and a simulated instrument panel **26** which includes imitation switches and dials, respectively mounted and stamped thereon. Partially enclosing the cockpit **22** is a ceiling panel **28** suitably mounted to the framework at the top of the cockpit, a front panel **30** and a floorboard **32**. Mounted centrally of the floorboard **32** is a pair of bracket members **34** which extend upwardly therefrom. A control stick **36** is positioned between the bracket members **34** and extends downwardly through a suitable opening formed in the floorboard. The control stick is pinned at **38** thereby allowing it to oscillate in a plane substantially parallel to the longitudinal extent of the toy helicopter.

A substantially vertical shaft member **40** is mounted to the framework **12** for rotation in bearings which are spaced apart and located at **42** and **44**. Adjacent the top of the shaft member **40** is mounted a rotor **46**. The bottom end of the shaft is eccentrically formed as at **48**, and pivotally mounted thereto is a rod member **50** which extends forwardly and is received by the hook **52** formed at the base of the control stick **36** and pivotally connected thereto.

A tail rotor **54'** is mounted for rotation about a substantially horizontal axis at the rear of the toy helicopter **10**. This rotor simulates the anti-torque rotor which is generally employed on full scale helicopters. The tail rotor is not geared to the main rotor because of its lowness to the ground which might tend to make the toy dangerous when used by children. Instead, it is freely mounted for rotation by hand and may be made of lightweight plastic or possibly rubber for purposes of safety.

The operation of the toy helicopter is a very simple one and is easily learned by children in that age group for which its use is contemplated. A child operating the helicopter sits in the cockpit **22** upon the seat member **24**, and by moving the control stick **36** forwardly and

rearwardly causes rotation of the shaft **40** and therefore also of the rotor **46**. FIGURE 4 shows the control stick in its neutral position, and it may be moved forwardly to a position indicated by the center line **54** and rearwardly to the position indicated by center line **56**. When the control stick is pushed forward to the position indicated by center line **54** in FIGURE 4, and as more clearly shown in FIGURE 6, it is caused to pivot about the pin **38** in counterclockwise direction as shown in FIGURE 6. The hook member **52** formed at the bottom of the control stick is thus moved rearwardly. The rod member **50** mounted to the hook member **52** likewise moves rearwardly thereby rotating shaft **40** about its axis by means of the eccentric portion **48**. When the control stick **36** is moved to its forwardmost position, as illustrated in FIGURE 6, the eccentric **48** is rotated to its rearwardmost position. Thereupon, the youngster pulls back on the control stick until it reaches the position indicated by the center line **56** in FIGURE 4 or as more clearly shown in FIGURE 7. In this instance, the control stick has pivoted in a clockwise direction about pin **38**, thereby moving the hook member **52**, the rod member **50**, and the eccentric **48** to the position shown in FIGURE 7.

As the eccentric **48** is moved from the position shown in FIGURE 4, then to that shown in FIGURE 6, then to that shown in FIGURE 7, the shaft **40** is caused to rotate and therefore, also the rotor **46** mounted adjacent the top end of the shaft. Continued oscillation of the control stick **36** will cause continued rotation of the rotor **46**, the speed of the rotor being controlled by the speed of oscillation of the control stick as operated by the youngster. A noise maker simulating the sound of an engine may be attached to the rotor shaft for a sound effect which would be pleasing to the youngster operating the toy.

The toy helicopter which has been described may be sold in its finished form or, if preferred, may be sold in kit form. All the sub-assemblies would be spot welded, prime coated, and painted with a good quality outdoor enamel. The sub-assemblies may then be assembled before sale as a finished unit or would be sold in kit form to be erected by the purchaser. In the latter event, the toy could be erected at home and would require only a wrench and a screw driver. The assembly could perhaps be accomplished by the child with help being supplied from an adult, and would require no more skill than that required for finishing a model automobile or airplane.

While the form of apparatus described herein constitutes a preferred embodiment of the invention, it is to be understood that the invention is not limited to this precise form of apparatus and that various changes may be made therein without departing from the scope of the invention which is defined in the appended claims.

What is claimed is:

1. A child's exercise and play device comprising a plurality of elongated tubular elements secured one to another so as to resemble the appearance of a helicopter including a cockpit portion and a fuselage portion, a sheet-like floor mounted in the cockpit, a simulated helicopter instrument panel mounted on said tubular elements within the cockpit, simulated instruments and switches mounted on the instrument panel, a shaft extending vertically from a point below the cockpit floor to a point outside and above the cockpit, a rotor resembling a helicopter rotor rigidly mounted on the shaft above the cockpit for rotation in a horizontal plane, an elongated control stick having a pivot pin extending therethrough at a point intermediate the ends of the stick, said stick being mounted by said pivot pin adjacent said cockpit floor so that a portion of the stick below the pivot pin extends through and beneath the floor, an eccentricity integrally formed on said vertical shaft at a point thereon below the cockpit floor, a rod extending beneath the cockpit floor connecting the control stick to the shaft eccentricity and a seat so positioned on said cockpit floor adjacent the control stick that a child while sitting on said seat can rotate the simulated helicopter rotor by oscillating the control stick, thereby providing exercise and amusement for himself.

2. A child's exercise and play device as set forth in claim 1 wherein a noisemaker responsive to the rotation of the rotor is attached to the rotor shaft providing a sound effect pleasing to a child operating the device.

3. An exercise and play device for children comprising a plurality of elongated bars secured to one another so as to resemble the appearance of a helicopter including a cockpit portion of such dimensions as to give entrance to at least one child, sheet material secured to the bars partially enclosing said device, a flexible rotor resembling a helicopter rotor mounted on a vertical shaft supported by said bars for rotation in a horizontal plane above the cockpit, a floor mounted in the cockpit, a child receiving seat mounted on said floor, a helicopter control stick-like exercise stick mounted on the floor adjacent the seat by a point intermediate the ends of the stick and means interposed between the stick and the rotor whereby oscillation of the stick rotates the rotor providing exercise and amusement for a child.

4. A child receiving exercise and play device comprising a floor, a ceiling and a plurality of walls defining a simulated helicopter cockpit, a plurality of bearings mounted one above another adjacent one of said walls, a shaft mounted for rotation in the bearings, said shaft extending above the ceiling and below the floor, a flexible rotor resembling a helicopter rotor mounted on the shaft adjacent the upper end thereof above the cockpit ceiling, an exercise stick extending above, through and beneath the cockpit floor, a crank-like eccentric formed on said shaft adjacent the lower end thereof, and a rod pivotably connecting the eccentric to the exercise stick at a point beneath the cockpit floor, whereby oscillation of the stick by a child during exercise rotates the rotor.

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