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B. H. SHAPIRO ET AL

2,411,596

TOY

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2 Sheets-Sheet 1

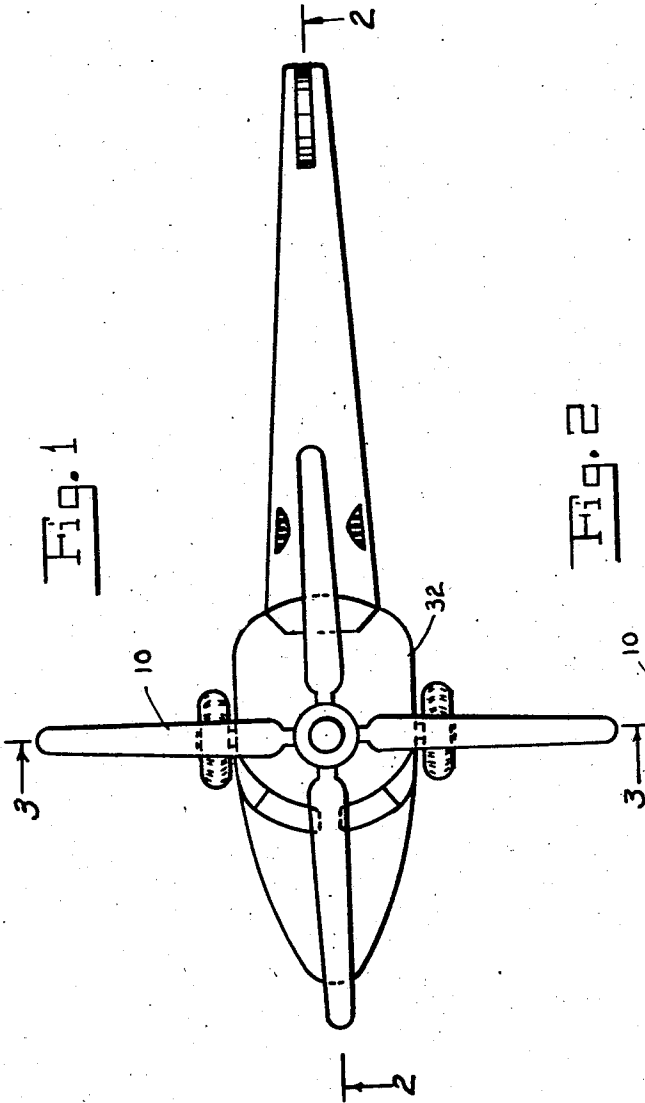
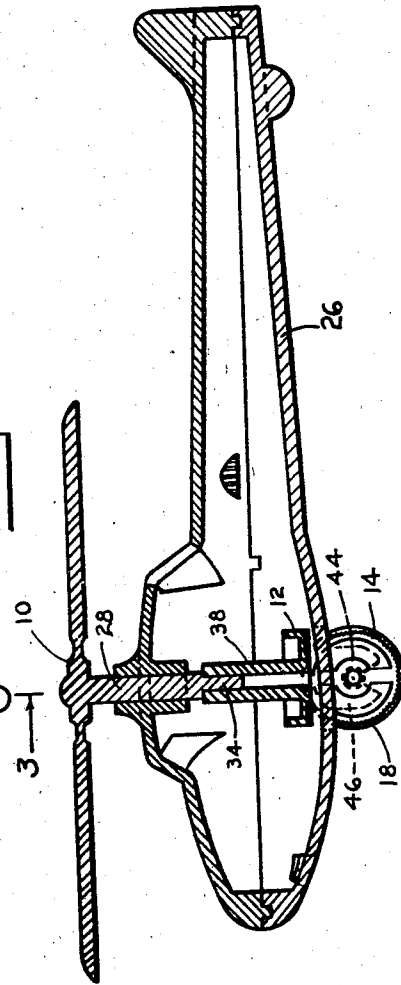


Fig. 2



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Fig. 3

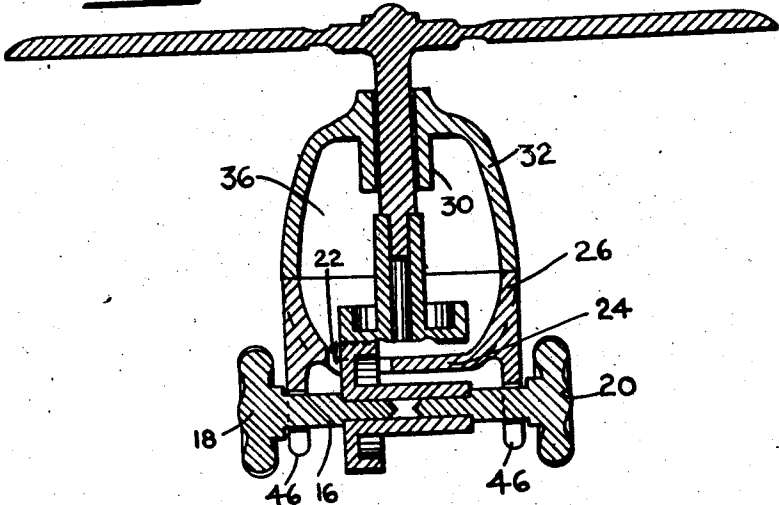
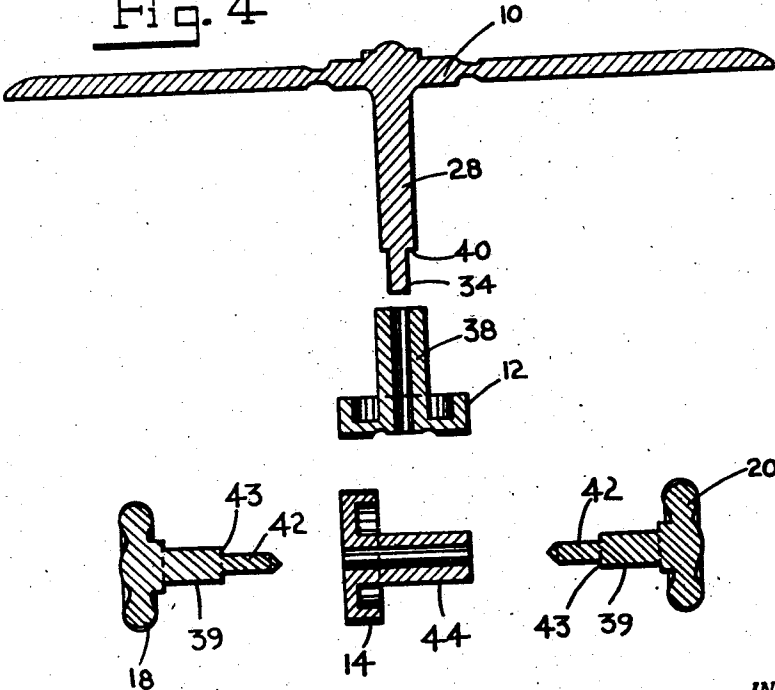


Fig. 4



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TOY

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4 Claims. (Cl. 46-205)

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The present invention relates to a toy and more particularly to a pull toy in the form of a helicopter, the blades of which are rotated by the movement of the carrying wheels when the toy is pulled along a flooring.

The parts comprising the toy of the present invention are each preferably molded from a plastic material. The movable parts of the toy comprise a member forming helicopter blades and which member is journaled for rotation in the fuselage of the helicopter to simulate the action of this type of airplane. The helicopter blades are operatively connected to the supporting wheels of the helicopter so as to be driven thereby as the toy is pulled and moves along and on a floor.

These elements are necessarily of such construction that they cannot be ordinarily molded in one piece from a plastic material. The present invention therefore contemplates the provision of a method of manufacturing such operative elements from parts that may be molded from a plastic material and assembling them in the toy as units.

These and other and further objects of the present invention will be clear from the following description and the drawings appended thereto in which

Fig. 1 is a plan view of a pull toy helicopter according to our invention;

Fig. 2 is a section on the line 2-2 of Fig. 1;

Fig. 3 is a section on the line 3-3 of Fig. 1;

Fig. 4 is an exploded sectional view of the parts which are assembled to form: the helicopter blade and its frictional driving member, the axle, supporting wheel and blade driving member assembly.

Referring now to the drawings, the elements of the toy helicopter are formed from a plastic material which is molded into the desired form. It will of course be understood that the various elements of the helicopter are molded by conventional dies, which form no part of the present invention.

Referring to Figs. 3 and 4 the helicopter blade 10 is provided with the driven disc 12 which is engaged by the driving disc 14 carried on the axis 16 on which the helicopter supporting wheels 18 and 20 are mounted. As the helicopter is pulled along the floor or support on which it is carried, the wheels 18 and 20 rotate to drive the disc 14 which extends through the opening 22 in the floor 24 of the under member 26 of the fuselage. The driven disc 12 extending down from the axle 28 of the blades 10 is fric-

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tionally engaged by the driving disc 14 to be rotated thereby and correspondingly rotate the shaft 28 which is journaled in the boss 30 moulded in the upper member 32 of the fuselage.

It would be difficult and extremely costly, even if it were possible, to mould from a plastic a unitary member comprising the helicopter blade 10 and frictionally driven disc 12. It would similarly be extremely difficult and costly, if at all possible, to mould from a plastic material a unitary structure comprising the toy carrying wheels 18 and 20 and the frictional driving member 14.

In order to form these members from parts that may each be molded from a single die, we construct the blades 10 from a member having the shaft 28 from the end of which there extends a shaft 34 of reduced diameter. The axle or shaft 28 is inserted into the opening in the boss 30 to extend into the interior 36 of the upper section 32 of the fuselage. The upwardly extending sleeve 38 of the driven disc 12 is then arranged on the shaft 34 against the shoulders 40 and cemented thereto by any suitable means. Each element of the blade assembly may thus be molded from a single die and when assembled in the upper section 32 of the fuselage cannot be removed therefrom, the blades 10 and shaft 28 serving as stop members against the boss 30.

Each wheel 18 and 20 is likewise made in a single die and has extending therefrom an axle forming element 39 from each of which the reduced shaft 42 extends. The driving disc 14 is made in the same die that the driven disc 12 is made and also has a sleeve 44 extending therefrom.

The wheels and disc driving member are assembled on the lower section 26 of the fuselage by inserting a shaft 39 in one of the carrying members 46 extending down from the section 26. Each shaft 42 is inserted in the sleeve 44 with the disc 14 extending up through the opening 22 and the sleeve 44 and pins 42 cemented together, the shoulders 43 bearing against the driving disc 14 and its sleeve 44. The thus formed wheel, axle and driving disc assembly unit is held in place by the wheels 18 and 20 which serve as stops against the downwardly extending carrying members 46.

The lower and upper sections 26 and 32 are then cemented together to form the completed helicopter toy.

It will be understood that, if desired, the driving discs 12 and 14 may be formed from gear

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members instead of the frictional discs illustrated.

It will be apparent that each of the elements comprising our toy helicopter may be molded in a corresponding die from a plastic material and readily assembled together to form a comparatively inexpensive helicopter pull toy, the blades of which will be rotated upon moving the toy on a supporting surface.

We claim:

1. In a pull toy in the form of a helicopter, the parts of which are each molded from a plastic material, a blade member, an upper fuselage section, a boss in the upper fuselage section, said blade member having a shaft journaled in the boss and extending into the interior of the upper fuselage member, a driven means having a sleeve for receiving and securing therein the said shaft on the blade member extending in the interior of the upper fuselage section, a lower fuselage section having carrying means extending downward therefrom and having an opening in the floor thereof, a wheel on each side of the fuselage and having a shaft journaled in the carrying means and a driving means having a sleeve, said

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driving means being open to receive and secure therein at each side thereof each shaft on the wheels, said driving means extending through the opening in the floor of the lower fuselage section in engagement with the driven means, the upper and lower sections of the fuselage being secured together.

2. The toy of claim 1, said driven and driving means comprising discs in frictional engagement.

3. In a toy molded from a plastic material, a pair of wheels, each having a shaft extending therefrom, and a driving means open at each end for receiving therein at each side thereof the shaft of each wheel, said shafts being cemented in the opening to form a wheel and axle assembly having an intermediate driving means mounted thereon.

4. The toy of claim 3 said driving means comprising a disc having a sleeve extending therefrom.

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