

Two Christmas Toys

by L. R. Butcher

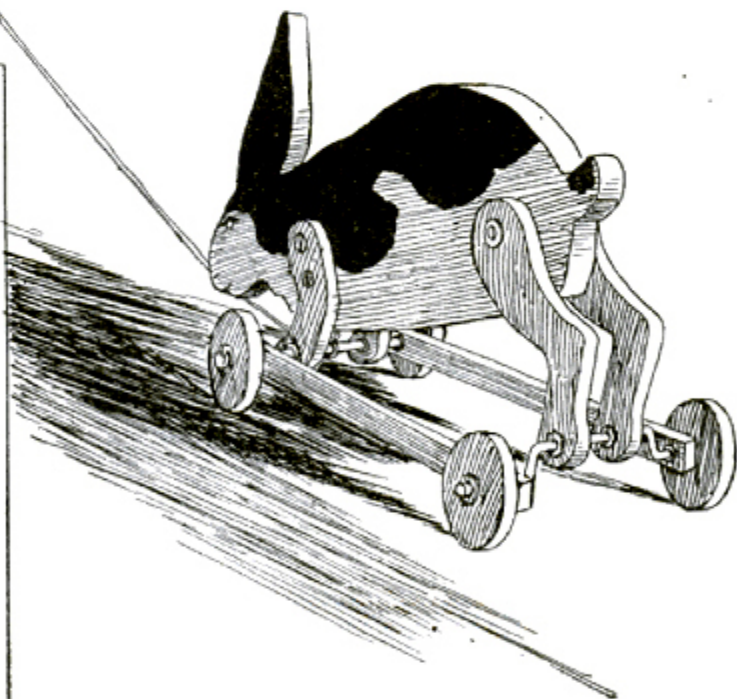
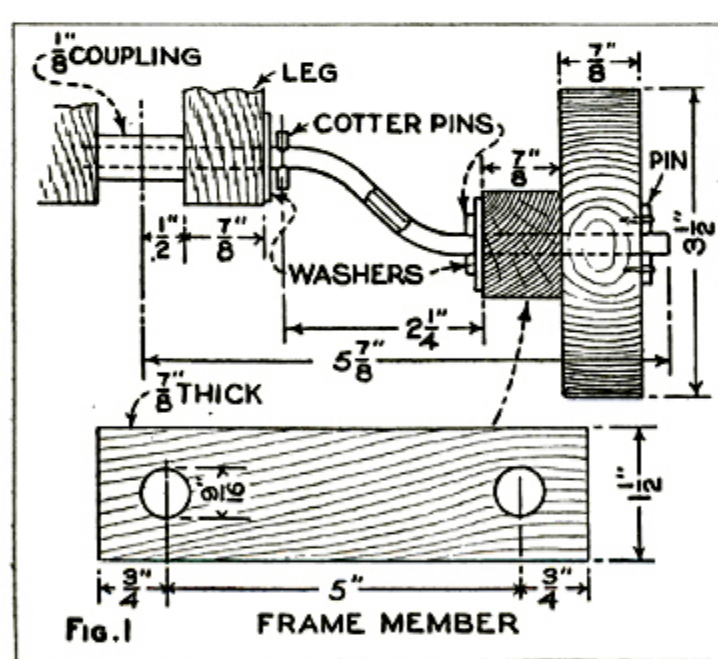
Two Simple Toys, the Hopping Rabbit and the Walking Duck, That Can Be Made by Anyone Handy with Tools, and Will Delight the Children on Christmas Morning



VERY few tools and but common material are required for the construction of the toys described in this article. The first is a hopping rabbit in which an eccentric axle attached to the hind legs gives motion to the body as the toy is pulled along.

The rear axle of the toy, Fig. 1, is made from two pieces of $\frac{1}{8}$ -in. pipe bent to give the 1-in. offset, and threaded at the inside ends, where they are joined, between the rear feet, with a $\frac{1}{8}$ -in. pipe coupling. This construction allows the toy to be assembled after the axle pieces have been bent. The legs are kept from working out on the axle by $\frac{1}{2}$ -in. plain washers, secured by small cotter pins. The front axle is a straight piece of $\frac{1}{8}$ -in. pipe, of the same over-all length as the assembled rear axle.

A scroll, or band, saw is needed to cut out the body and legs. The approximate form of the body is obtained by dividing an 8 by 10-in. sheet of paper into 1-in. squares and sketching the shape, following Fig. 2 closely. A paper pattern may be cut and used as a guide in the layout of the body, or the layout may be done directly on the 1-in. board chosen for the body. The material for body and legs should be



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close-grained and free from knots and cracks. The two pairs of legs are laid out in a manner similar to that followed in shaping the body. The location of the pivot points for the legs is given in the illustration. The holes at the feet are $\frac{9}{16}$ in. in diameter, while those at the upper ends are large enough to accommodate $\frac{1}{4}$ -in. bolts.

A frame member on each side of the toy spaces the axles to a distance of 5 in. from center to center. These members are assembled just inside of the wheels, and are kept in place by washers secured by cotter pins. Wheels, $3\frac{1}{2}$ in. in diameter and of clear-grained wood, are slipped on just outside of the frame members. The wheels are kept in place by washers and cotter pins on the front axle, but at the rear of the toy, the axle is made to turn with the wheels by omitting the washers outside of the wheels. A staple on

provision being made for pivoting at this point. White paint for the body and legs and red for the wheels make an attractive color scheme. The body markings should be made with black paint. A looped cord

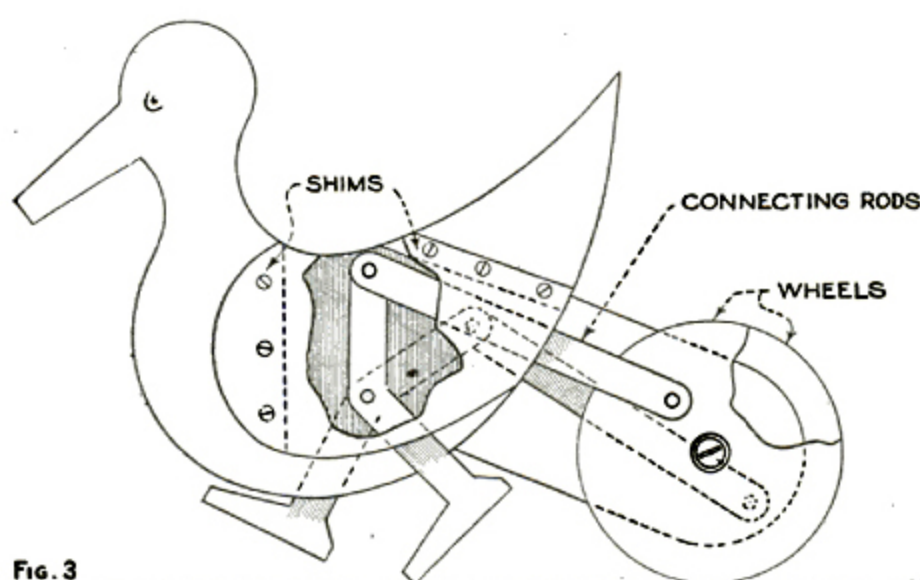


Fig. 3

ASSEMBLED VIEW OF DUCK

attached to the front axle provides the means whereby the toy is drawn along.

The toy illustrated in Figs. 3 and 4 has mechanical legs, which work in a lifelike manner as the toy is pulled along. Although the legs do not touch the floor, the duck appears to be trotting along after the youngster pulling it. The construction is very simple; no springs are used in it, and the finished toy is sturdy and almost unbreakable.

The layout of the body is shown in Fig. 4. By crosshatching a 10 by 12-in. sheet of paper into 1-in. squares, the approximate shape of the toy is easily sketched. While the shape may be only approximated, the two centers shown should be laid out with some care. The other parts of the toy are made to work from these centers. After the paper pattern has been marked, the shape may be transferred to the material used for the body. In order that the wheels may be far enough apart so that the toy will not tip over, it is best to use 2-in. material for the body. On each side of the toy, a wooden wing is nailed on. These are made of 1-in. wood and covered by a sheet-metal of the same shape. The pivot points for the legs should be laid out on the wing covering. As the legs and connecting rods work between the wings and the wing covers, there must be some clearance. This clearance is obtained by placing cardboard shims between the metal and the wood. The shapes of these shims should be such that they do not interfere with the concealed leg mechanism. In Fig. 3 the approximate shape of the shims is given. One is placed

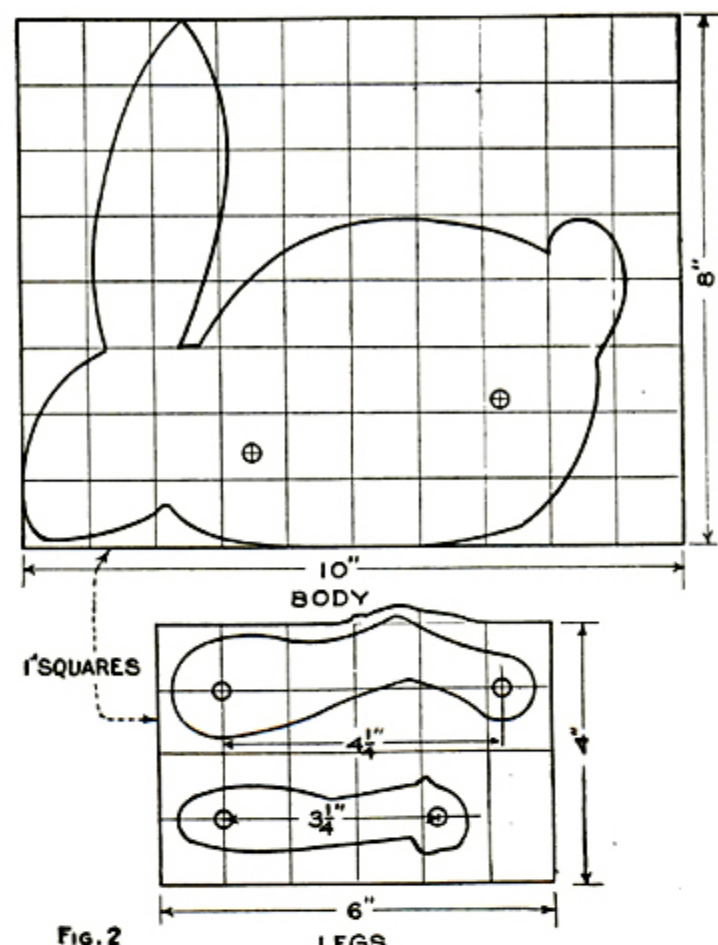


Fig. 2

each side of the axle will hold the cotter pins tightly.

The rear legs are pivoted to the body with an ordinary $\frac{1}{4}$ -in. bolt. A washer, placed between each of the legs and the body, helps to reduce friction. The front legs are fastened firmly to the body, no

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at the forward end of the wing and the other at the tail. Figs. 4, 6 and 7 give the

surface of the wheel. A washer is placed between the inside of the wheel and the

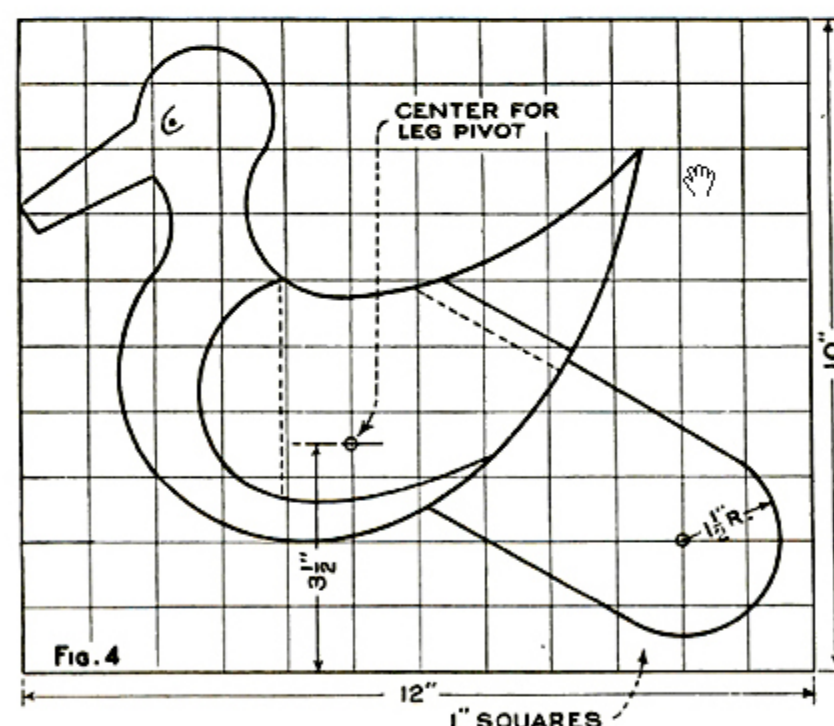


Fig. 4

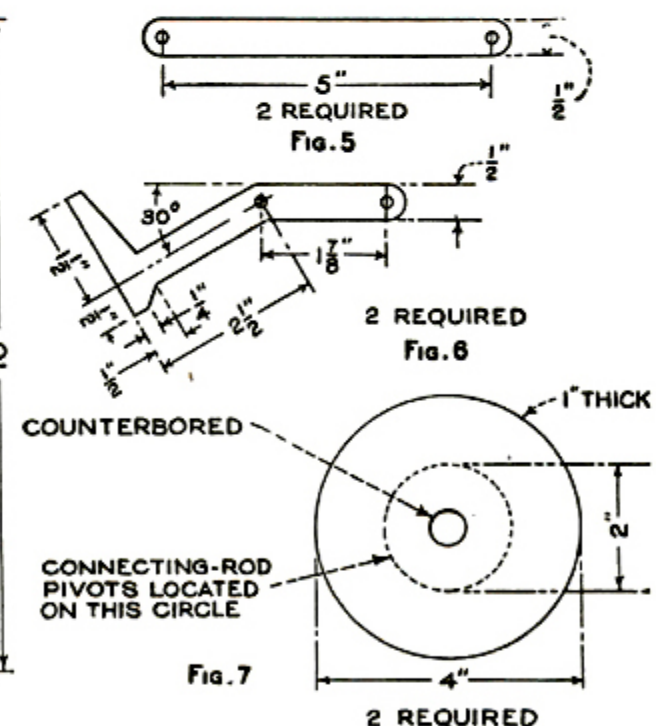


Fig. 5

Fig. 6

Fig. 7

shapes and dimensions of the wheels and leg pieces. Two of each of these shapes will be needed as the leg mechanism is the same on both sides. The legs and connecting sheet metal, (Fig. 5) are cut from stiff metal, while the wheels are made of 1-in. wood. The legs are pivoted to the inside of the metal shields on either side of the duck by a rivet, according to the centers marked in Fig. 4. One end of each connecting rod is pivoted to the upper end of the leg with a rivet and the other end of the arm to the wheel, 1 in. off center. The wheels must be counterbored slightly to bring the head of the center fastening screws below the outer

body, and another between the screw head and the outside of the wheel.

The two wheels work independently of each other. If they are placed so that the eccentric points are exactly opposite, the leg on one side of the duck will be drawn back while the other is extended. All pivot points must work freely if the toy is to operate satisfactorily.

A handle made of $\frac{1}{8}$ by 1-in. flat iron, ending in a loop for the hand, is fastened to the front of the toy. By painting the toy with contrasting colors, the representation will be more lifelike, but the coloring is a matter of individual taste, and is left to the artistry of the maker.