May 24, 1932. N. M. SLEEPER 1,859,805

TOY AIRPLANE

Filed Feb. 24, 1930

FIG. 2.

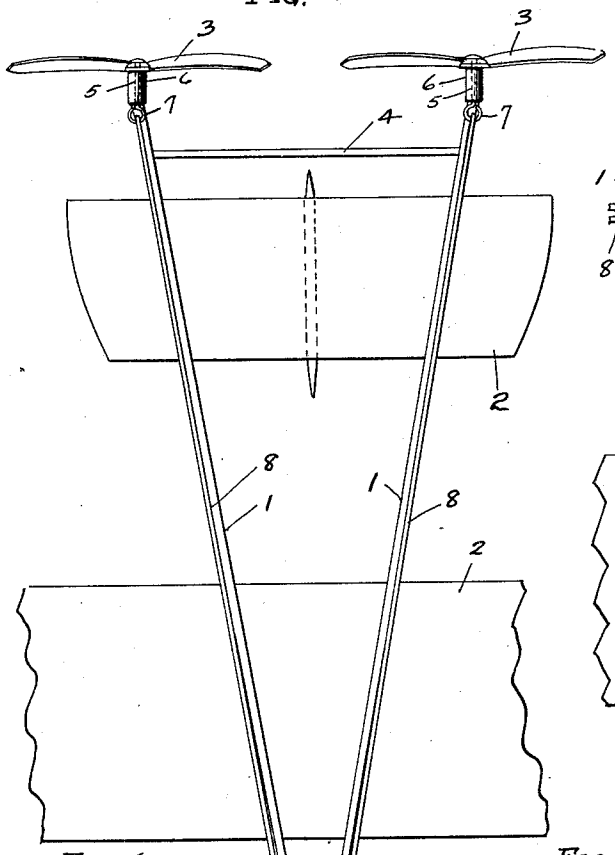


FIG. 1.

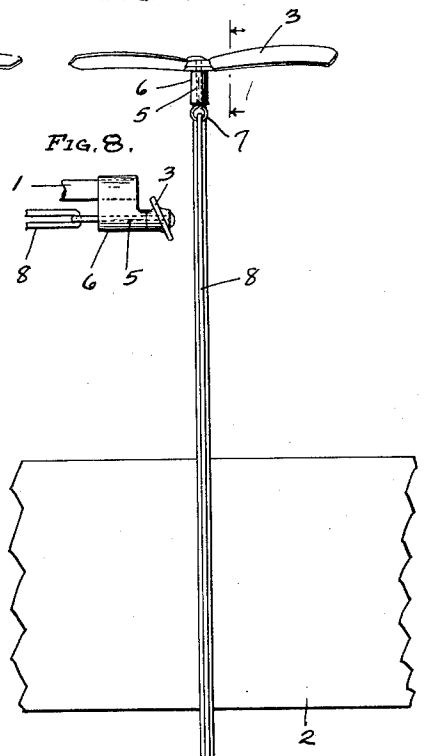


FIG. 8.

FIG. 6

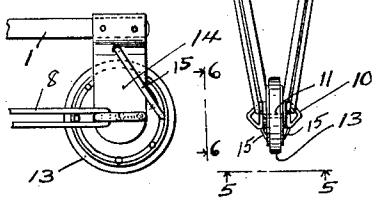


FIG. 3

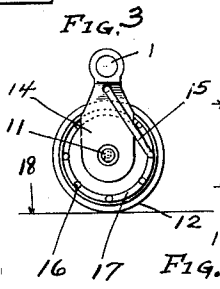


FIG. 4.

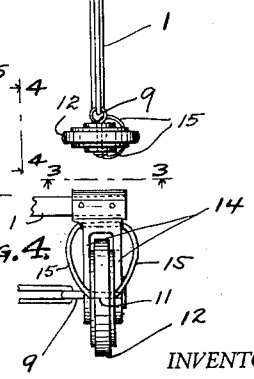


FIG. 7.

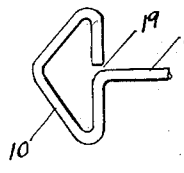
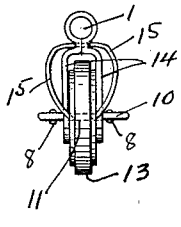


FIG. 5



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UNITED STATES PATENT OFFICE

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TOY AIRPLANE

Application filed February 24, 1930. Serial No. 430,790.

This invention relates to toy airplanes such as are motivated by one or more long elastic bands which are twisted many times so as to spin the propeller or propellers when untwisting.

The objects of the invention are to provide a simple means of twisting the rubber bands and reduce the operation from a tiresome task to one of great simplicity taking but a few minutes' time.

Briefly described, the invention comprises providing a friction wheel adjacent the ends of the bands to be twisted, arranged in such a manner that upon rolling the wheel over the arm or along a board, the rubber bands are twisted.

In the drawings Fig. 1 is a plan view showing a single propeller type of toy airplane equipped with my winding apparatus, and

Fig. 2 shows the invention fitted to a twin propeller plane.

Fig. 3 is an enlarged view of the rear end of the plane of Fig. 1 as seen from the line 3—3.

Fig. 4 is an enlarged side view of the twisting roller as seen from the line 4—4 of Fig. 1.

Fig. 5 is an enlarged end view of Fig. 2 as seen from the line 5—5.

Fig. 6 is an enlarged side view of the twisting wheel arrangement of Fig. 2 as seen from the line 6—6 thereof.

Fig. 7 is a greatly enlarged view of the loop at the end of the winding wheel axle of Fig. 2.

Fig. 8 is an enlarged view of Fig. 1 as seen from the line 8—8 thereof.

Since the arrangement of frame or fuselage, wings, stabilizers, etc. in toy airplanes may take a great variety of forms and have no bearing on the invention, these have simply been shown in the drawings as a longitudinal stick or rod 1 forming the fuselage with supporting surfaces 2 attached and with one or more propellers 3 rotatably supported at one end of the frame.

In Fig. 2 the double propeller type, the frame is V-shaped and connected by a cross brace 4.

The propellers are mounted on short axles 5 which pass through a hub 6 and at the rear of the hub the axle is formed into a loop 7 to receive one or more endless elastic bands 8 which extend along the frame and engage a loop (9 in Fig. 1 and 10 in Fig. 2) formed on the projecting axle 11 of a special winding wheel (12 in Fig. 1 and 13 in Fig. 2) preferably provided with a soft rubber rim.

With reference to Figs. 1, 3 and 4, the winding wheel 12 is rotatably supported in brackets 14 in a manner to rotate in a plane extending transversely of the frame 1 so as to directly wind up or twist the rubber bands as the wheel is revolved, and to prevent reverse spinning of the wheel I provide a pair of bent spring wire arms 15 anchored to the bracket and bearing against opposite sides of the wheel disk so as to spring into any of a series of holes or depressions 16 formed in a groove 17 around it.

By the construction shown, if the wheel as seen in Fig. 3 is rolled to the right along a surface 18 such as a board or the arm of a person, the small wheel will make a great many revolutions to wind up the band or bands and will be stopped from reverse movement by the spring wire arms 15. During the operation of winding the propeller will be held from turning by the fingers or any other suitable means.

In the construction of Fig. 2 the axle of the winding wheel is carried between the arms 14 of a bracket secured to the frame as in Fig. 1 but is arranged to run in a plane extending longitudinally of the airplane frame or fuselage and its wire axle carrying the loops 10 at the outer ends extends transversely to the extension of the rubber bands 8.

The loops are triangular in form as shown in Fig. 7 and may be sprung open at one

point as at 19 for the insertion of the bands engaged in common with the loops on the propeller wire axles, and the wheel is provided with the spring wire or other ratchet mechanism 15 as described for Fig. 1 to permit one way revolution of the wheel only, though on account of the form of the loops 10 the bands will be wound up or twisted as the wheel is revolved notwithstanding that the axle extends transversely to the run of the bands, and as the pull of the bands is at the end of the conical loops forward of the center of the axle the device is self locking and will ordinarily not require the ratchet device 14.

With either construction, the propellers are held, the roller is smartly rubbed along a surface a few times and the bands are completely twisted so that the toy is ready to fly. The frictional rubber rim of the winding roller is of considerable importance both in getting sufficient grip as the resistance of the bands increases, as well as to prevent injury to furniture or other finished surfaces upon which the toy may be rubbed by children in winding.

It will be evident from the disclosure that various minor modifications may be made without altering the mode of operation within the scope of the appended claims.

I claim:

1. In a toy airplane provided with a propeller motivated by a twisted rubber band, means for twisting the band comprising a roller rotatably mounted at the end of the airplane remote from the propeller, means for connecting the band to the roller for twisting upon revolving the roller, said roller being arranged and adapted for rolling along a surface to twist the rubber band, and means to prevent the roller from unspinning after twisting the band.

2. In a toy airplane provided with a propeller motivated by a twisted rubber band, means for twisting the band comprising a roller rotatably mounted at the end of the airplane remote from the propeller, means for connecting the band to the roller for twisting upon revolving the roller, said roller being provided with a friction rim and arranged and adapted for rolling along a surface to twist the rubber band, and means to prevent the roller from unspinning after twisting the band.

3. In a top airplane provided with a propeller motivated by a twisted rubber band, means for twisting the band comprising a roller rotatably mounted at the end of the airplane remote from the propeller, an axle on the roller provided with a loop for connecting the band to the roller for twisting upon revolving the roller, said roller being arranged and adapted for rolling along a surface to twist the rubber band, and means to prevent the roller from unspinning after twisting the band.

4. In a toy airplane provided with a propeller motivated by a twisted rubber band, means for twisting the band comprising a roller rotatably mounted at the end of the airplane remote from the propeller, means for connecting the band to the roller for twisting upon revolving the roller, said roller being arranged and adapted for rolling along a surface to twist the rubber band, a double arm bracket between the arms of which said roller is mounted, and a spring ratchet carried by said bracket operative against the side of the roller to prevent unwinding movement of the roller.

5. In a toy airplane provided with a propeller motivated by a twisted rubber band, means for twisting the band comprising a roller rotatably mounted at the end of the airplane remote from the propeller, means for connecting the band to the roller for twisting upon revolving the roller, said roller being arranged and adapted for rolling along a surface to twist the rubber band, a double arm bracket between the arms of which said roller is mounted, and a two-arm spring ratchet carried by said bracket operative against both sides of the roller to prevent unwinding movement of the roller.

6. In a toy airplane provided with a pair of propellers at one end of the fuselage motivated by rubber bands stretched to the other end of the fuselage, a friction wheel rotatably mounted on the latter end of the fuselage to revolve in a plane extending longitudinally of the fuselage, an axle secured to the wheel extending beyond both sides thereof and provided with loops at its ends engaging rubber bands from each propeller respectively, and a pair of ratchet arms engaging opposite sides of the wheel to prevent turning of the wheel in one direction.

7. In a toy airplane provided with a pair of propellers at one end of the fuselage motivated by rubber bands stretched to the other end of the fuselage, a friction wheel rotatably mounted on the latter end of the fuselage to revolve in a plane extending longitudinally of the fuselage, an axle secured to the wheel extending beyond both sides thereof and provided with loops at its ends engaging rubber bands from each propeller respectively, a circular groove around opposite sides of said wheel formed with a series of depressions therein, and a pair of ratchet arms engaging the depressions in said circular grooves formed in the wheel to positively prevent turning of the wheel in one direction.

8. In a toy airplane provided with a pair of propellers at one end of the fuselage motivated by rubber bands stretched to the other end of the fuselage, a friction wheel

rotatably mounted on the latter end of the fuselage to revolve in a plane extending longitudinally of the fuselage, an axle secured to the wheel extending beyond both sides thereof and provided with loops at its ends engaging rubber bands from each propeller respectively, said loops being substantially triangular in form with a side thereof extending perpendicularly of the axle equidistant on opposite sides thereof and the bands engaging the loops adjacent an end of the perpendicularly extending side.

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