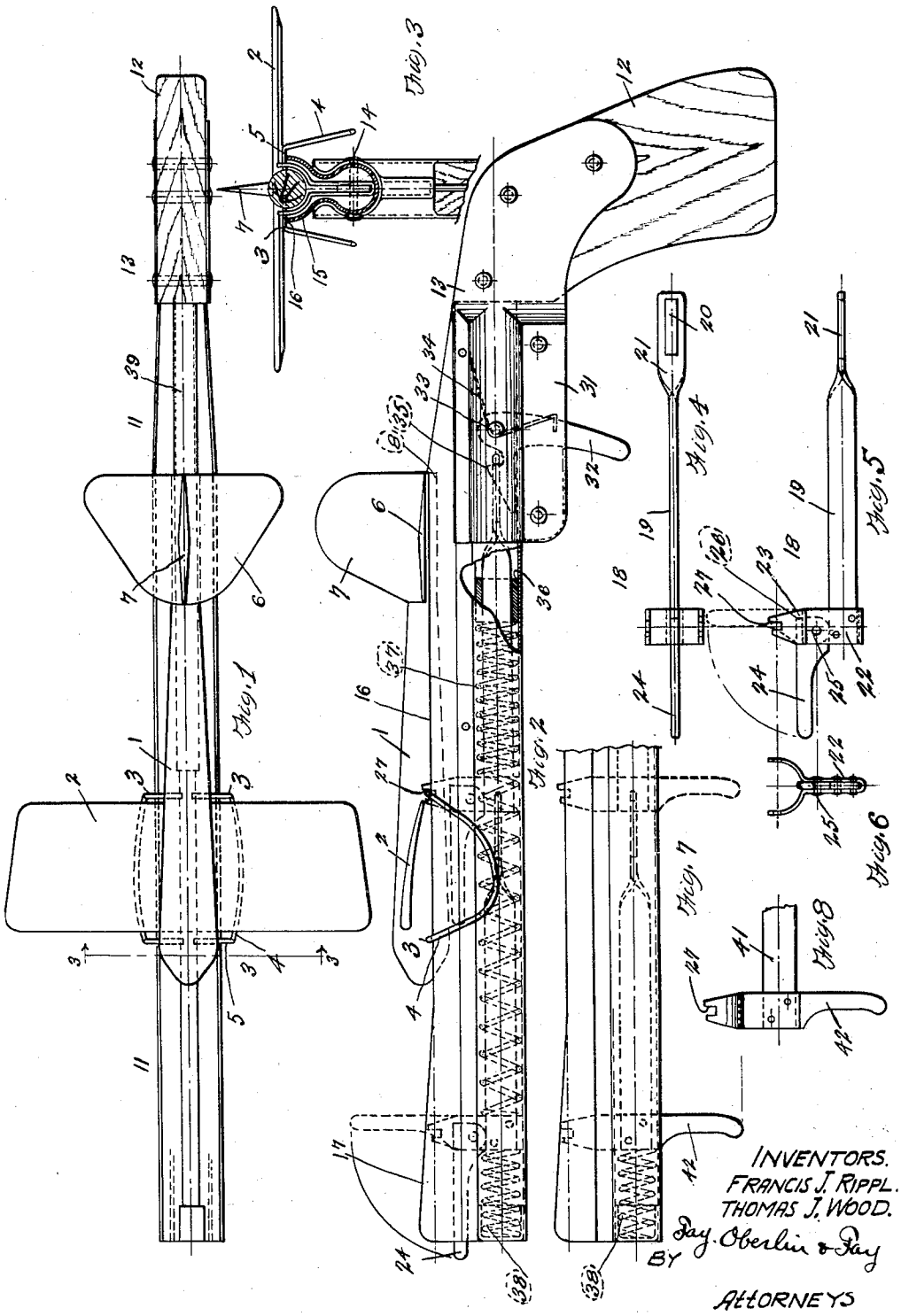
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MECHANICAL TOY

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MECHANICAL TOY

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This invention as indicated relates to a mechanical toy. More particularly it comprises a toy aeroplane with a launching device therefor. Novel features are involved in both the launching device or projector and the toy aeroplane and these features cooperate to bring about novel effects in flight of the projectile. The invention also includes the provision of an upwardly inclined "take-off" portion on the runway of the projector which serves to disengage the propelling means and at the same time gives the toy aeroplane an upward take-off angle preliminary to its leaving the runway. Another feature of the invention is the provision of a combined landing skid and launching means on the toy aeroplane which is adapted to cooperate with the upper edge of the runway and insure the uniform take-off of the same with each successive flight. Toy aeroplanes cooperating with projectors have heretofore been known but the same have been expensive in construction and without the special features of the present invention.

In addition to the features above described the present invention is one of great simplicity of construction, the projector being formed principally of light sheet metal stampings and the toy aeroplane of simple structural parts easily assembled and which may be made of wood or other material at a minimum cost. To the accomplishment of the foregoing and related ends, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawings and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawings:

Fig. 1 is a top plan view of the projector with the toy aeroplane assembled therewith; Fig. 2 is a side elevation of the structure shown in Fig. 1; Fig. 3 is a transverse sectional view taken along the line 3—3 shown in Fig. 1, looking in the direction of the arrows; Fig. 4 is a top plan view of the plunger; Fig. 5 is a side elevation of the plunger; Fig. 6 is a front elevation of the plunger shown in Fig. 5; Fig. 7 is a fragmentary side elevation showing a modified form of plunger; and Fig. 8 is an enlarged detail view showing the modified form of plunger.

As is clearly shown in Figs. 1, 2 and 3 of the drawings, the toy aeroplane comprises a body portion 1 or a fuselage having wings 2 adjacent the forward portion thereof and having landing gear in the form of wires 3 which are curved downwardly to substantially semi-circular form to provide landing skids 4 and which have laterally extending arms 5 at the ends of the curved portion connected with the fuselage in front and back of the respective wings which arms are designed to rest on top of the runway of the projector. The rearward pair of arms are adapted to engage with the launching device as will be presently explained. The downwardly projecting curved sections of the landing gear wire are inclined from each other slightly and serve to balance the toy aeroplane and also to key the structure upon the runway and to guide the same so that the toy aeroplane may be in perfect equilibrium as it is projected.

The body portion 1 of the plane may be formed of wood, (light wood such as balsa wood may be used), or any other suitable material, and the wing portion 2 thereof may be formed of a single piece which may be engaged through a suitable slot formed through the body adjacent its forward portion. The body portion is preferably given a stream line effect and its rearward portion is tapered and merges in a rudder section which preferably comprises a horizontal rudder 6 having a straight rearward edge and a substantially semi-circular forward edge and a vertical rudder 7 having a straight rearward edge and a curved forward and upper edge. The under side of the horizontal rudder may be provided with a bar 8, or extension of the body, adapted to take part of the impact and exert a braking effect as the toy aeroplane lands on the surface.

The preferred form of projector as illustrated comprises a barrel 11, stock or pistol

grip 12 and trigger housing 13. The barrel 11 is preferably formed of sheet metal having a substantially cylindrical lower portion 14 adapted to form a spring housing, and having a semi-cylindrical portion 15 on its upper side. This semi-cylindrical upper portion is of a size adequate to receive the lower half of the body portion of the toy aeroplane and the upper edges 16 of said section are intended to serve as the runway for the toy aeroplane. When the toy aeroplane is positioned on the upper surface of the runway, the horizontal arms of the wire landing skids are the only portions of the toy aeroplane in contact with the projector. It will be noted that the forward portion 17 of the upper edge of the run-way is given a rise or lift toward the front of the barrel and that this rise or inclination of the upper edge is of such degree that the aeroplane will be launched at the proper climbing angle when the projector barrel is held horizontally.

The launching of the toy aeroplane is directly brought about through the release of a spring pressed plunger 18. The preferred form of plunger construction is clearly shown in Figs. 4, 5 and 6 of the drawing, the plunger comprising a longitudinally positioned metal strip 19 of flat metal set vertically on edge at the forward end and twisted to horizontal position adjacent its rearward portion 21. The rearward end of the strip is formed with a slot 20 with which the trigger is adapted to engage. At the forward portion of the strip a fork 23 formed of a strip of sheet metal bent to substantially semi-circular shape is provided, said fork having a lower portion 22 formed with parallel sides which are engaged about the forward end of the vertical strip first described and riveted thereto and providing immediately above said strip a space within which a setting bar 24 is mounted upon a pivot pin 25. The setting bar is rounded at its forward lower corner and has a square shoulder 26 at its rearward corner forming a stop to prevent the bar being turned rearwardly past a vertical position.

Immediately above the setting bar, the arms of the fork of the plunger extend upwardly and outwardly forming a substantially semi-circular member adapted to engage closely within the semi-circular guide channel at the top of the projector. The ends of the fork each have a notch 27 so as to provide two prongs and the forward prongs being preferably of slightly less height than the rearward prongs. Both prongs are of a height to project above the upper edge of the straight main portion of the runway but will be beneath the top edge of the forward inclined portion of the run-way because of its increasing elevation. This relation of the prongs of the fork to the run-way provides for the automatic disengagement of the toy aeroplane arms from the prongs.

The body of the projector is preferably formed of a single piece of sheet metal which may be readily stamped into suitable shape. It also may be formed of two half sections which may be assembled by riveting or the like. The trigger housing 13 is formed of a pair of complementary extension plates and supply the means for fastening the barrel to the pistol grip handle 12. The lower portions 31 of the extension plates are suitably riveted together and provide a slot through which the trigger finger 32 projects. The cylindrical portion of the trigger housing is provided with a pivot pin 33 upon which the trigger is suitably mounted and upon which a coiled spring 34 is engaged, one end of said spring bearing against the upper edge of the cylindrical portion and the other end of the spring engaging the rearward portion of the trigger finger. A sear 35 of the usual form having a shoulder and a beveled portion in advance thereof is provided for engaging within the trigger slot of the plunger heretofore referred to. Within the barrel adjacent the rearward end a fixed collar 36 is provided through which the rearward portion of the plunger bar slides and which forms the stop against which the plunger spring 37 is adapted to be compressed. A buffer spring 38 is secured at the forward end of the spring housing and receives the shock of the impact of the plunger as it is brought to rest. The rearward portion of the spring housing may be closed by means of a strip of metal 39 which prevents free access to the trigger mechanism and prevents accidental discharge of the projector.

The projecting spring is of a length to hold the forward end of the plunger firmly against the buffer spring but of such construction as to permit the plunger to be easily retracted until the trigger slot may be engaged over the sear on the trigger. In the preferred form of construction, the plunger is set through the use of the setting bar 24 heretofore referred to. This arm normally is disposed in a horizontal position within the slot at the base of the runway but when the plunger is to be retracted said arm which projects slightly beyond the barrel when the plunger is in its forward position is bent upwardly to the position shown in dotted lines shown in Figs. 2 and 5 and the plunger is then moved rearwardly until its trigger notch engages over the sear. The setting lever is then pushed downwardly to a position within the slot as indicated. When in this position the prongs at the top of fork of the plunger project above the runway and the rearward pair of arms 5 of the wire landing gear are engaged in the notches of the fork. The device is now ready to be discharged and the pull on the trigger withdraws the sear from the

notch of the plunger and the spring propels the plunger and aeroplane forward. The aeroplane guide arms ride upon the upper edges of the runway and incline the miniature plane upwardly as it strikes the inclined forward portion of the runway and cause said arms to move upwardly out of engagement with the prongs of the plunger affording a free passage for the horizontal rudder at the rear of the miniature aeroplane.

In Figs. 6 and 7 the modified form of construction is illustrated, in which a plunger 41 is provided with a fixed downwardly projecting setting arm 42 which rides in a slot formed in the base of the spring housing. This form of construction is less desirable than the preferred form for the reason that injury may be caused through the operator holding his hand in the path of the setting arm.

Other modes of applying the principle of our invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any of the following claims or the equivalent of such stated means be employed.

We therefore particularly point out and distinctly claim as our invention:

1. A device of the character described having in combination a toy aeroplane having a body, wings and semi-circular wire members supported on horizontal arms and forming combined landing and launching gear, and a launching device providing parallel members forming a run-way between which the body is received and upon which the horizontal arms are adapted to simultaneously engage, and means for propelling said plane along said run-way and releasing the same.

2. A device of the character described having in combination a toy aeroplane having a body, wings and semi-circular wire members supported on horizontal arms and forming combined landing and launching gear, and a launching device providing parallel members forming a run-way between which the body is received and upon which the horizontal arms are adapted to simultaneously engage, and means for propelling said plane along said runway, said run-way having an upwardly inclined forward section to provide a climbing angle as the plane is launched.

3. A device of the character described having in combination a toy aeroplane having a body, wings and semi-circular wire members supported on horizontal arms and forming combined landing and launching gear, and a launching device providing parallel members forming a run-way between which the body is received and upon which the horizontal arms are adapted to simultaneously engage, and means for propelling said plane along said run-way and releasing the same, and means to release said propelling means.

Signed by us this 3rd day of December, 1928.

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