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W. R. WYNNE.

MECHANICAL TOY.

No. 589,917. Patented Sept. 14, 1897.

Fig. 1

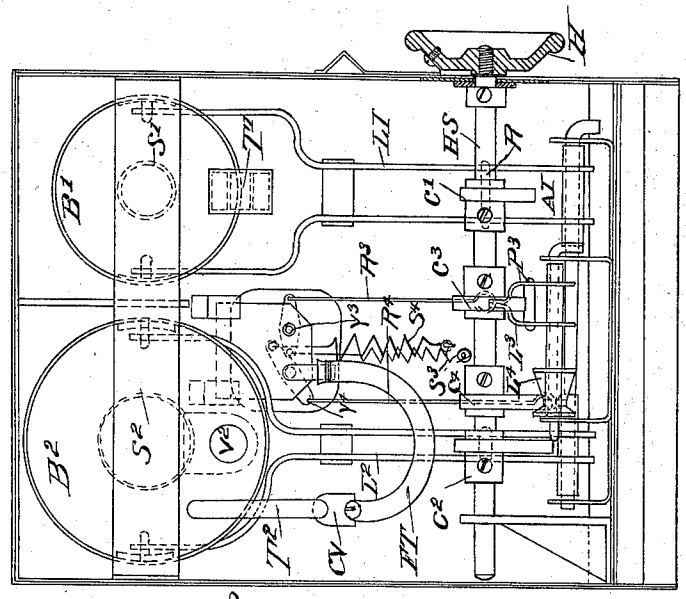
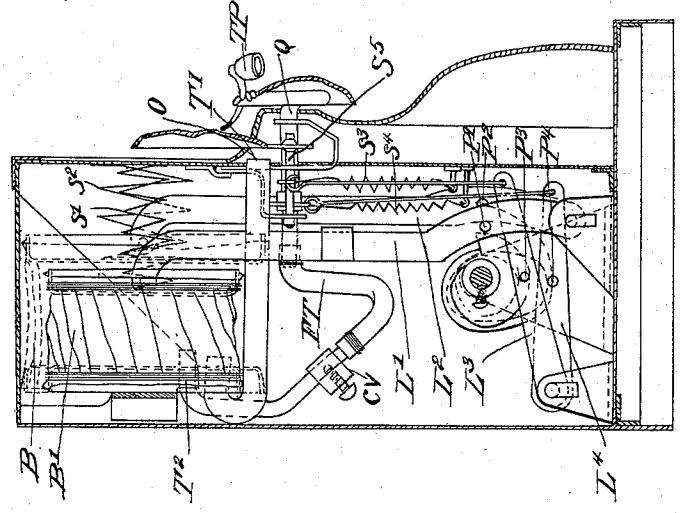


Fig. 2.



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Fig. 3.

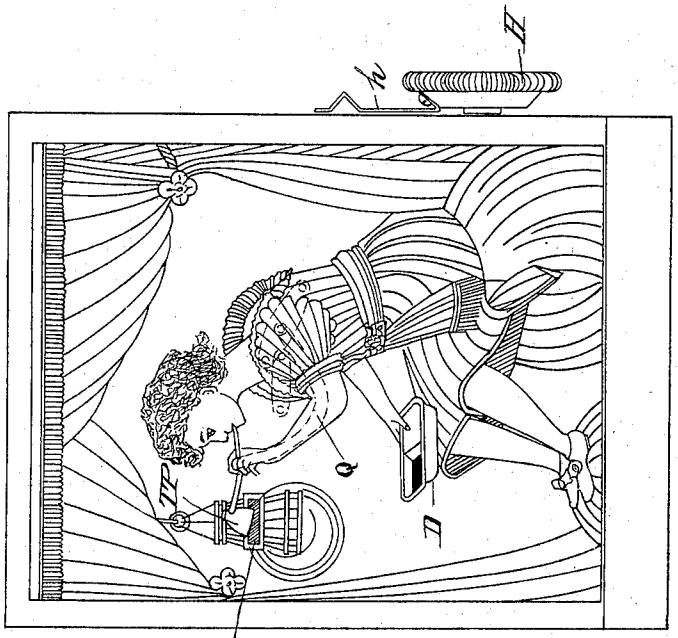
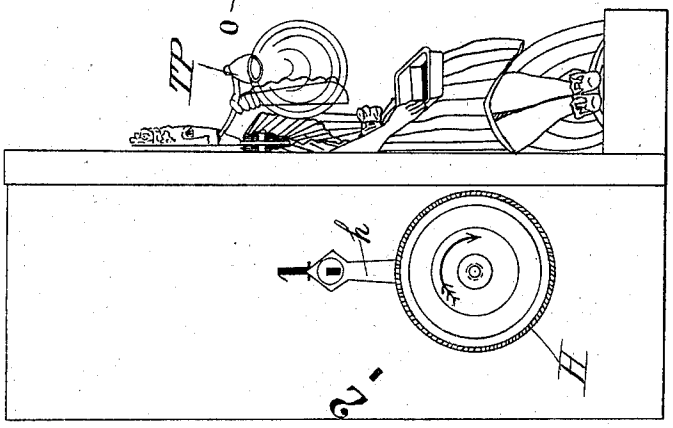


Fig. 4.



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FIG. 5

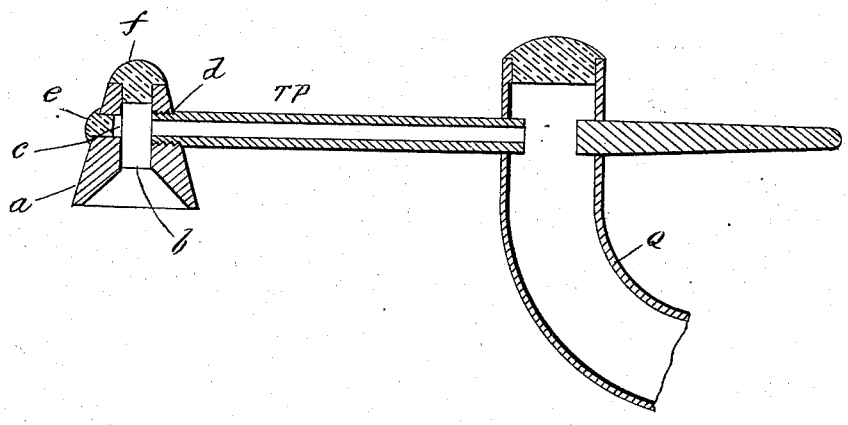
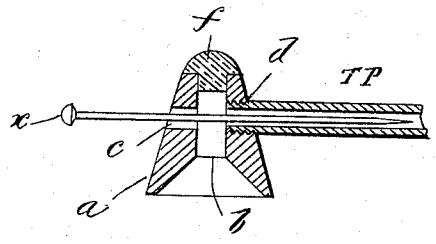


FIG. 6



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UNITED STATES PATENT OFFICE.

WILLIAM RICHARD WYNNE, OF LONDON, ENGLAND.

MECHANICAL TOY.

SPECIFICATION forming part of Letters Patent No. 589,917, dated September 14, 1897.

Application filed September 28, 1896. Serial No. 607,148. (No model.) Patented in England June 20, 1895, No. 12,007, and in Germany May 18, 1896, No. 86,808.

To all whom it may concern:

Be it known that I, WILLIAM RICHARD WYNNE, a subject of the Queen of Great Britain, and a resident of London, in the county of Middlesex, England, have invented certain new and useful Improvements in Mechanical Toys, (for which I have received Letters Patent in Great Britain, under date of June 20, 1895, No. 12,007, and in Germany, No. 86,808, dated May 18, 1896,) of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof, in which similar letters of reference indicate corresponding parts wherever found throughout the several views.

This invention consists of a new mechanical toy, which is designed to represent a figure blowing bubbles, smoking a pipe or cigar, or engaged in any similar occupation.

The invention is fully disclosed in the following specification, of which the accompanying drawings form a part, in which—

Figure 1 is a back elevation of my improved mechanical toy, with the back of the casing removed; Fig. 2, a sectional side elevation; Fig. 3, a front view thereof, and Fig. 4 a side view.

In the practice of my invention, reference being made to Figs. 1 and 2, I provide a hand-wheel H, with which is connected an indicating-pointer *h*, and said hand-wheel is attached to or formed on a horizontal shaft HS, upon which suitably-shaped cams C′, C^2, C^3, and C^4 are fixed.

When the shaft HS is revolved, the cams rub against the cross-pins P′, P^2, P^3, and P^4 of their respective levers L′, L^2, L^3, and L^4 and move them in opposition to the power of the springs S′, S^2, S^3, and S^4, acting on their respective levers.

To cheapen the manufacture of this shaft, cams, and hand-wheel, I sometimes cast the shaft, cams, hand-wheel, and pointer in one piece.

The cam C′, here shown fixed to the shaft by a set-screw, moves the vertical lever L′, which is pivoted at A′ at its lower end, and at its upper end is connected with the bellows B′, inflating the bellows and compressing the spring S′ at the back of the bellows.

When the cam C′ moves round to such a position that the spring is able to act, the bellows suddenly discharges its contents through the bent tube T′, with its mouth fixed on a level with the bowl of the tobacco-pipe at its highest position, and if a bubble has been formed upon the bowl of the tobacco-pipe it is blown off clear of the figure.

The cam C^2 actuates the larger bellows B^2 in a similar manner, but the air from this pair of bellows is discharged through the pipe T^2, past the controlling-valve CV, through the flexible connecting-tube FT into the movable arm of the figure and through the stem into the bowl of the tobacco-pipe TP in Fig. 2.

An inwardly-opening valve V^2 in Fig. 1 is provided at one end of the bellows B^2 to prevent soap solution being drawn up through the tobacco-pipe into the bellows during the inflation, and this valve I preferably make of thin sheet india-rubber of the shape shown at V^2.

The controlling-valve CV serves to reduce the area of the air-pipe T^2 and prevents the sudden bursting of the newly-formed bubble when the bellows B^2 is being closed by the spring S^2.

Instead of employing the controlling-valve here shown I sometimes use an equivalent mechanical obstruction, such as a plug of cottonwood in the air-pipe, or I make the hole through the stem of the tobacco-pipe of so small a size that it in itself prevents the air from the bellows flowing so rapidly as to burst the newly-formed bubble.

The cam C^3 moves the head of the figure through the lever L^3, connecting-rod R^3, and double-ended lever Y^3, the spring S^3 opposing the motions of the lever L^3. The head is fixed upon the rocking shaft S^5, pivoted as shown in Fig. 2.

The cam C^4 produces the movements of the arm of the figure and the tobacco-pipe by means of the lever L^4 and spring S^4, acting through the double-ended lever Y^4 and the connecting-rod R^4.

The air-tube Q (shown in dotted lines following the shape of the arm in Fig. 3) is bent at right angles to the arm and forms the shaft which transmits the movements of the double-ended lever Y^4 to the arm, and the flexible

tube FT enables air from the bellows B^2 to be delivered to the tobacco-pipe through the arm in any position.

In Figs. 5 and 6 I have shown the construction of the toy tobacco-pipe which I have found advantageous in practice, similar letters in the drawings referring to similar parts. I make in the piece of metal *a*, shaped to form the bowl of the tobacco-pipe, two holes at right angles to each other, *c* and *d*, which pass entirely through the bowl. The lower end of hole *b* I enlarge conically to form the inside of the bowl of the pipe. One end of the other hole, *c*, I tap internally with a small screw-thread, (shown at *d*.) I form a corresponding screw at the stem of the pipe TP and solder the stem of the bowl together. I force a current of air through the pipe during the soldering operation to prevent the solder filling up the small aperture of the bowl and stem. I then fill up the other ends of the two holes *b c* with a cement *e f*, unaffected by the soap solution, such as shellac or beeswax. In Fig. 6 is shown the manner of cleaning the pipe of any hardened soap solution. The filling *e* is removed and a pin *x*, a piece of wire, is then passed into the pipe and stem. When thoroughly cleaned, the pin is removed and the hole is again filled with cement.

The working of the toy is as follows: By turning the indicating-pointer *h* on the hand-wheel H in the direction of the arrow, Fig. 4, toward the mark "2" on the side of the case, the cam C′ inflates the bellows B′ and the cam C^2 inflates the bellows B^2 and the cam C^3 allows the head of the figure to be moved down into its lowest position by the spring S^3. The cam C^4 forces the arm of the figure downward until the bowl of the pipe dips into the soap solution placed in the dish D and then allows the spring S^4 to lift it up until the stem of the tobacco-pipe comes in contact with the lips of the figure. When the pointer reaches the mark "2," the lever L′ is released by the cam C′ and the bellows B′ is closed by the spring S′ behind it. A bubble then forms on the bowl of the tobacco-pipe, the size and color of the bubble being determined by the relative diameter of the pipe-bowl and the capacity of the bellows B′. To obtain brilliantly-colored bubbles of small size, it is necessary that the pipe-bowl shall take up a very small quantity of the soap solution, and this I attain by forming one side of the vessel containing the soap solution parallel to the lip of the bowl of the tobacco-pipe when the pipe is in its lowest position. As soon as the bubble has reached the desired size and brilliancy, the hand-wheel is turned around farther until the pointer is over the mark "1." This causes the cam C′ to release the bellows B′ and a puff of air is discharged at the level of the junction of the pipe-bowl and the bubble through the orifice O, as shown in Figs. 2 and 3. The sudden puff of air detaches the bubble and throws it off clear of the toy. At the same moment the arm of the figure is lowered and the head is lifted up, producing on an observer the impression that the figure is looking up to follow the course of the bubble in the air.

Having fully described my invention, I claim as new and desire to secure by Letters Patent—

1. In a bubble-blowing or similar toy, the combination with a suitable horizontal shaft, provided with four cams, of four suitably-mounted levers which are operated by said cams, two bellows in operative connection with two of said levers, and a toy figure one arm and the head of which are operated by the other two levers, substantially as shown and described.

2. In a bubble-blowing or similar toy, the combination with a suitable horizontal shaft, provided with four cams, of four suitably-mounted levers which are operated by said cams, two bellows in operative connection with two of said levers, and a toy figure one arm and the head of which are operated by the other two levers, said arm of said figure being hollow and provided with a pipe which is held in the hand, and one pair of said bellows being provided with means for discharging air through the arm and pipe, substantially as shown and described.

3. In a bubble-blowing or similar toy, the combination with a suitable horizontal shaft, provided with four cams, of four suitably-mounted levers which are operated by said cams, two bellows in operative connection with two of said levers, and a toy figure one arm and the head of which are operated by the other two levers, said arm of said figure being hollow and provided with a pipe which is held in the hand, and one pair of said bellows being provided with means for discharging air through the arm and pipe, and said bellows being also provided with means for regulating the amount of air discharged, substantially as shown and described.

4. In a mechanical toy, the combination with a suitably-mounted horizontal shaft provided with four cams, of four suitably-mounted levers, two pairs of bellows which are operated by two of said levers, and a toy figure provided with a movable hollow arm, and a movable head, and a toy pipe held in the hand of the arm, said parts being in operative connection, and said bellows being provided with means for discharging air through said arm and said pipe, substantially as shown and described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of the subscribing witnesses, this 1st day of September, 1896.

WILLIAM RICHARD WYNNE.

Witnesses:

WALTER WILLIAM WYNNE,

BRYAN HARRY GOWER.