March 17, 1959 A. E. GOLDFARB 2,877,931

WATER GUN

Filed May 31, 1955

FIG. 1.

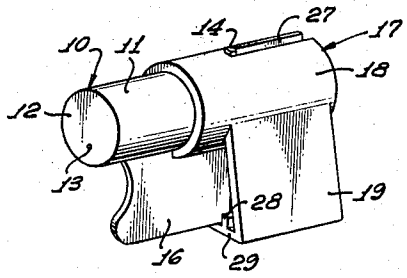


FIG. 2.

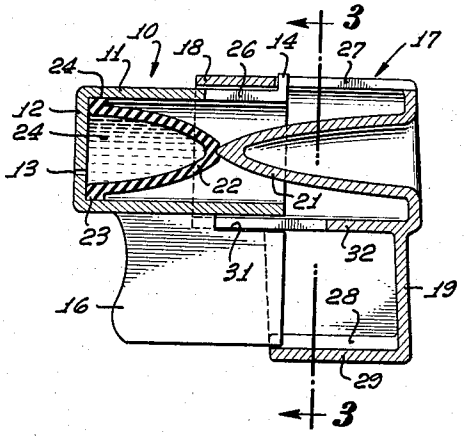


FIG. 3.

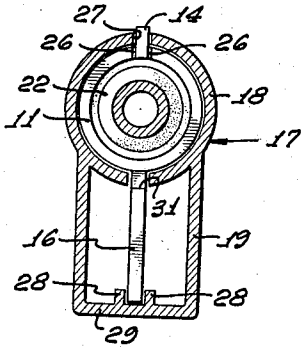


FIG. 4.

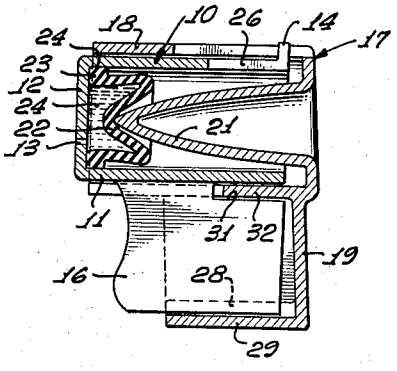
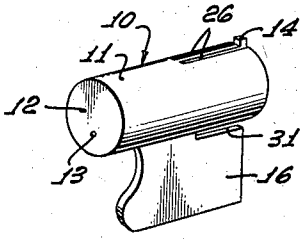


FIG. 5.



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WATER GUN

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3 Claims. (Cl. 222—79)

The present invention relates to a liquid squirting device, and more particularly to a water gun for ejecting a stream of water through a hole in the end of the gun barrel.

Toys and novelties should of necessity be made of rugged and economical construction. Liquid or water squirting devices, for example, should be designed for rough usage and economical mass production. This calls for relatively few parts, easily fabricated of tough, low cost materials, preferably by mass production method, and readily assembled with a minimum of labor.

Accordingly, it is an important object of my invention to provide a liquid squirting device of rugged and economical construction.

Another object is to provide a water gun designed for rough usage and economical mass production.

A further object is to provide a water gun made of a minimum number of parts, capable of inexpensive fabrication from tough materials, and capable of ready assembly with the requirement of a minimum amount of labor.

Additional objects will become apparent from the following description.

Broadly stated, the liquid or water squirting device of my invention comprises the following. A barrel is provided with a pinhole through a wall in the front end of the barrel. A resilient thimble of a plastic or rubbery material is positioned in the front end of the barrel to form a liquid-tight chamber communicating with the atmosphere through the pinhole. The barrel is slidably or telescopically mounted in a holder member. The holder member is provided with a projection extending into the rear of the barrel to the thimble. As the barrel is forced into the holder, the projection forces the wall of the thimble toward the front end of the barrel, and liquid is squeezed from the chamber in the barrel through the pinhole to the atmosphere.

For reasons of economy in fabrication and assembly of the parts of my invention I prefer to cast the barrel as a single unit, together with the front wall and any auxiliary, trigger, guide or slide means, of a synthetic plastic material. Similarly, I prefer to cast the holder member, together with the projection and any auxiliary, guide, side and grip means, as a single unit of synthetic plastic material. The thimble preferably is dimensioned to fit tightly in the barrel without the use of cement.

A more detailed description of a specific embodiment of my invention is given with reference to the drawing wherein:

Figure 1 is a perspective view showing an assembled water gun;

Figure 2 is a side elevational view in cross-section showing the barrel fully extended in the holder;

Figure 3 is a cross-sectional view taken on the line 3—3 of Figure 2 showing guide and slide means for the trigger and the barrel;

Figure 4 is a side elevational view in cross-section showing the barrel fully retracted in the holder; and

Figure 5 is a perspective view showing the barrel unit of the water gun.

In the embodiment shown in the drawing, the barrel member **10** is cast as a single unit consisting of hollow gun barrel **11**, and end wall **12** in the end of the gun barrel, a pinhole **13** through the end wall **12**, a stop protuberance **14** at the top rear of the barrel and a trigger and guide plate **16** extending from the bottom of the barrel. The barrel member **10** preferably is cast from a tough synthetic plastic or synthetic resin material.

Similarly, the holder member **17** is cast as a single unit consisting of a cylindrical chamber **18**, a grip portion **19**, and a projection **21**. The holder member **17** also preferably is cast from the same tough material used for the barrel member **10**.

The resilient thimble **22** preferably is made of a water resistant synthetic plastic or synthetic rubber material. The thimble **22** contains an annular bead or base **23** containing a flat surface **24** adapted to forcefully engage the interior annular surface of the barrel **11**. This engagement results from an exertion of radial forces at the base **23** of the thimble because of the resiliency of the thimble material. The engagement of the interior surface of the barrel is sufficiently tight to form a watertight seal and thus a water chamber **24** communicating with the atmosphere only through pinhole **13**.

The top of the barrel **11** is provided with parallel slits **26** to impart resiliency to the protuberance **14**. This arrangement permits protuberance **14** to be depressed so that barrel member **10** can be fitted into holder member **17** so that barrel **11** is telescopically slidable in cylindrical chamber **18**. Protuberance **14** then extends through slot **27** (Figure 1) to limit the extension of barrel **11** in cylindrical chamber **18**.

Parallel rails **28** are formed on the inside of bottom **29** of the grip portion **19** to guide the movement of trigger plate **16**. A slit **31** is formed in the trigger plate **16** adjacent barrel **11** to cooperate with the ledge **32**, at the bottom of cylindrical chamber **18** and act as guide means for barrel **11** in chamber **18**. Slit **31** and ledge **32** nest and act as a stop when the barrel is retracted.

It will be observed that the water gun is a snap assembly without the use of glue or outside fastening devices. The resilient bulb or thimble **22** acts as a spring to push the barrel **11** out from the handle or holder member **17** when finger pressure is released from the trigger or guide plate **16**. The thimble **22** acts as a water container, cylinder and piston device, and a return spring. It seals itself against the front end wall **12** and the sides of the barrel **11**.

When barrel **11** is retracted into chamber **18**, by pulling on trigger plate **16**, while grip portion **19** is held against movement, elongate conical projection **21** is forced against the wall of thimble **22** as shown in Figure 4. The thimble wall is forced toward the front end of the barrel **11** and water under pressure is squirted from the water-containing chamber **24** into the atmosphere through pinhole **13**. The water chamber **24** is refilled by dipping the front end of the barrel **11** beneath the surface of a body of water and releasing the pressure on finger plate **16**. The resiliency in thimble **22** forces its walls back to their normal, conical shape in barrel **11**, as shown in Figure 2, and water is sucked into water chamber **24** through pinhole **13**. The thimble **22** again is reloaded and barrel **11** again is extended for squirting.

It will be observed that I have provided a liquid squirting device of rugged, economical construction, designed for mass production at low material cost and for ready assembly at low labor cost.

The foregoing description is primarily for explanatory purposes, and is given to illustrate a specific embodiment of my invention. It is understood that many variations and modifications in the structure, design and details of the water gun described above will occur to one skilled in the art. Accordingly, it is understood that such changes in the specific embodiment illustrated and described above may be made within the scope of the appended claims without departing from the spirit of the invention.

What I claim is:

1. A water gun comprising a resilient thimble, a barrel member and a holder member in which the barrel member is telescopically mounted, the barrel member being cast as a unit and having a wall at the front end of the barrel with a pinhole through the wall, a plate extending from the bottom of the barrel serving as a trigger and guide means and a protuberance projecting from the top of the barrel serving as a slide and stop means; the thimble being of generally elongated conical shape and positioned coaxially with the barrel in the front end thereof with its apex extending toward the rear of the barrel and its annular base sealing off a liquid-tight chamber communicating with the atmosphere through the pinhole; and the holder member being cast as a unit and having a cylindrical chamber for telescopically receiving the barrel and a grip portion for slidably receiving the plate extending from the bottom of the barrel, the cylindrical chamber being provided with a slot on the top thereof for slidably receiving the protuberance projecting from the top of the barrel, a generally elongated conical re-entrant projection extending from the rear wall of the cylindrical chamber coaxially with the thimble and with its apex adjacent that of the thimble when the barrel is in its most extending position, and guide means inside the grip portion of the holder member for guiding the plate extending from the bottom of the barrel when the barrel is forcefully telescoped inside the cylindrical chamber of the holder member for squeezing water from the thimble as the re-entrant projection forces the apex of the thimble toward the front of the barrel.

2. In a water gun, a one-piece holder having an open-ended recess formed therein, a one-piece barrel member slidable in said recess, said barrel member having a wall provided with a free edge portion in said recess, parallel slots in said wall from said free edge and defining therebetween a resilient finger, a projection on the end of said finger, and a closed-end slot in a wall of said recess, said projection being guidingly received by said closed-end slot, and means for expelling fluid from said barrel member when said barrel member is moved inwardly of said recess.

3. In a water gun, a generally cylindrical tubular barrel member having one end wall and open at the other end, a small opening in said end wall, a resiliently collapsible but normally distended open-ended thimble in said barrel with the open end thereof abutting the inner face of said end wall, the open-end portion of said thimble fricitonally and sealingly engaging the inner surface of said tubular barrel, a holder having a recess slidably receiving said open end of said tubular barrel, a projection on said holder extending through said open end of said barrel into engagement with said thimble whereby the resilience of said thimble urges said barrel outwardly of said recess, and stop means limiting outward movement of said barrel to a position wherein said projection still engages said thimble to hold the open end thereof against the inner face of said end wall.

References Cited in the file of this patent

UNITED STATES PATENTS

687,367	Barton	Nov. 26, 1901
1,180,857	Lefever	Apr. 25, 1916

FOREIGN PATENTS

593,216	France	May 16, 1925