March 15, 1960 G. WINTRISS 2,928,208

PNEUMATIC SOUND MAKER ASSEMBLY

Filed June 26, 1956

Fig. 1

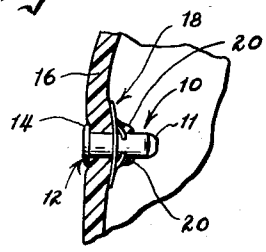


Fig. 2

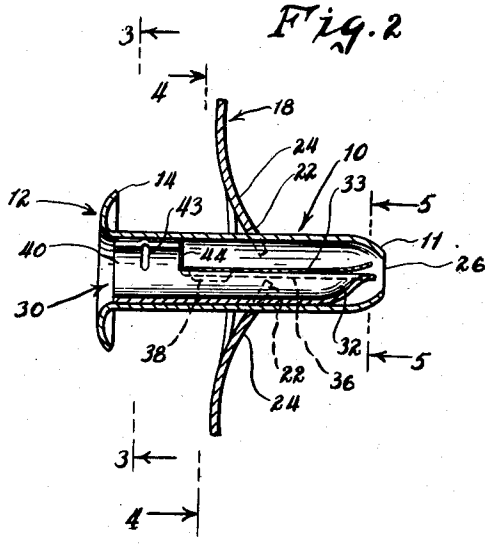


Fig. 3

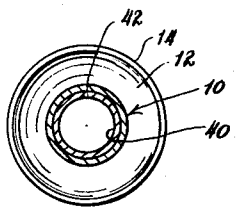


Fig. 4

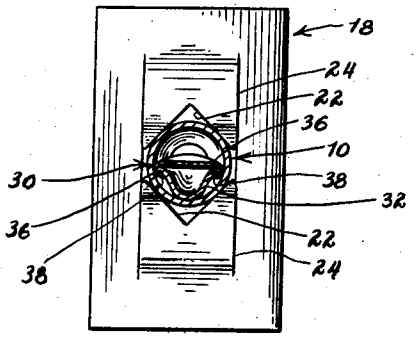
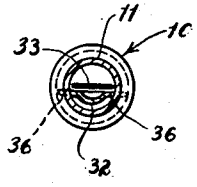


Fig. 5



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PNEUMATIC SOUND MAKER ASSEMBLY

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8 Claims. (Cl. 46—180)

This invention relates to pneumatic sound maker assemblies and to an improved construction which makes possible the connection of a pneumatic sound maker to a hollow toy more quickly and at reduced expense in manufacture. The construction lends itself more especially to the assembly of the sound maker with the toy by machinery of the punch-press type.

It is an object of this invention to provide an improved construction for a pneumatic sound maker, of the reed and channel type, with retaining means for securing the sound maker to the skin of a hollow toy, such as a doll or animal which is squeezed to expel air through the sound maker. The invention is intended primarily for hollow toys having a relatively thick vinyl skin which enables the toy to hold its shape without stuffing or any inside support.

In the preferred construction of the invention the sound maker is carried by a holder having a blunt nose, which can be pushed through the skin of the toy, and a flange at the rearward end of the holder for contact with the outside surface of the skin. The holder is secured in place, in the preferred construction, by a Tinnerman nut, or similar fastening, pressed against the inside surface of the skin.

Other objects, features and advantages of the invention will appear or be pointed out as the description proceeds.

In the drawing, forming a part hereof, in which like reference characters indicate corresponding parts in all the views;

Figure 1 is a fragmentary, sectional view through a skin of a toy with the sound maker assembly of this invention secured in place;

Figure 2 is an enlarged sectional view of the sound maker assembly shown in Figure 1; and

Figures 3, 4 and 5 are enlarged sectional views on the lines 3—3, 4—4 and 5—5, respectively, of Figure 2.

Figure 1 shows a holder **10** having a blunt nose **11** at its forward end and a flange **12** at its rearward end. The flange is preferably of one-piece construction with the rest of the holder **10** and it is constructed with a convex outer surface so that its peripheral edge **14** can embed itself slightly into the surface of a skin **16** of the toy to which the invention is connected.

The holder **10** is forced through the skin **16** by pressure applied from the flange end. A fastening device **18**, preferably a Tinnerman nut, is located behind the skin **16** in alignment with the holder **10**. This nut **18**, and the skin **16**, rest on the support or anvil of a machine of the punch-press type; and the holder **10**, carried on the reciprocating element of the machine, is forced through the skin **16**, and through the center opening of the nut **18**. The vinyl, or other material, displaced from the skin **16**, is extruded through the clearances of the nut **18** around the holder **10** in the form of a flash **20**.

The nut **18** has faces **22** (Figure 2) which engage the outside surface of the holder **10** to wedge the nut

in position on the holder. These holder-engaging faces **22** are at the inner ends of tabs **24** displaced from the body of the nut **18** in a manner well understood in the art. The nut **18** will grip the holder **10** at any region along the holder, and the impression of the skin **16** (Figure 1) between the flange **12** and nut **18**, depends upon the force supplied to the holder by the machine which pushes it through the skin and into the nut. This can be adjusted to suit the resilience of the skin **16** and other factors at the option of the manufacturer.

The blunt nose **11** has a center opening **26** (Figure 2) for the flow of air into and out of the holder **10**. This opening **26** does not fill up with material from the skin **16** because the material is torn by the insertion of the holder and the blunt nose **11** prevents the edges of the opening **26** from acting as a cutting die. The partial dome contour of the blunt nose **11** provides the mechanical strength for piercing the skin **16** without danger of deforming the forward edge of the holder **10**, even though the holder is made of very light gauge metal.

A reed and channel sound maker **30** is located within the holder **10**. The channel is indicated by the reference character **32**, and the reed by the reference character **33**.

The channel **32** has outwardly projecting flanges **36** (Figure 4) and there are tabs **38**, on the reed **33**, bent downwardly and inwardly around the flanges **36** for securing the fixed end of the reed to the channel. This construction is similar to that illustrated in my Patent No. 2,590,743, dated March 25, 1952.

The sound maker has a tubular portion **40** with an open seam **42** (Figure 3) with edges that are preferably squeezed toward one another when the tubular portion **40** is pressed into the holder **10**. Thus, the resilience of the tubular portion **40**, which tends to expand its diameter to a value somewhat larger than the inside diameter of the holder **10**, provides friction for keeping the sound maker in the holder **10**.

In the construction illustrated, there are circumferentially extending corrugations **43**, displaced outwardly in at least the upper part of the tubular portion **40** for making the sound maker fit snugly in the holder **10** in spite of substantial manufacturing tolerances in the construction of the parts.

An upwardly turned tab **44**, at the fixed end of the reed **33**, prevents entrance of air into the tubular portion **40** above the reed. The forward end of the channel **32** contacts with the inside wall of the blunt nose **11** for limiting the extent to which the sound maker can be inserted into the holder **10**, but the flanges **36** on the channel hold the channel in position where the reed **33** has clearance from the sides of the holder **10**.

Figure 4 shows the edges **22** above and below the holder **10** and each with surfaces at substantially right angles to one another. This leaves clearance above and below the holder **10**, and on both sides of the holder for the extrusion, through these clearances, of the material displaced from the opening through which the holder passes.

The preferred construction of the invention has been illustrated and described, but changes and modifications can be made, and some features can be used in different combinations without departing from the invention as defined in the claims.

What is claimed is:

1. A pneumatic sound maker assembly for connection with a wall of a toy, including a sleeve for holding a sound maker, an outwardly extending flange at the outer end of the sleeve, the other end of the sleeve for a limited axial distance being of progressively less diameter and forming a blunt nose of substantial mechanical strength for piercing the wall of the toy when forced against an imperforate area of the wall, the blunt nose

having a central opening therein for the passage of air through the sleeve, a sound maker enclosed within the sleeve, and a fastening device on the sleeve and comprising a plate of spring metal with a middle opening, and lugs formed by slits through the plate on different sides of the opening, the opening between the lugs when in their unstressed condition being slightly smaller than the sleeve so that the sleeve displaces the lugs when the sleeve is thrust into the opening and the lugs jam against the sleeve to prevent retrograde movement of the fastening on the sleeve, the slits and the clearances opened up by the displacement of the lugs providing clearance around the sleeve for flash displaced from the wall of the toy by the piercing of the wall with the blunt nose of the sleeve, said fastening means being movable along the outside surface of the sleeve toward the flange for clamping the wall of the toy against the flange.

2. The pneumatic sound maker assembly described in claim 1, and in which the sleeve is of circular cross section and the flange is of one-piece construction with the sleeve.

3. The pneumatic sound maker assembly described in claim 1, and in which the sound maker includes a reed and a channel by which the reed is held, the channel having a tubular portion at one end with an open longitudinal seam and an outside diameter slightly greater than the inside diameter of the sleeve before insertion in the sleeve whereby the tubular portion is under pressure in the sleeve to increase its friction with the inside wall of the sleeve.

4. The pneumatic sound maker assembly described in claim 3, and in which the channel has flanges extending outwardly beyond the reed and the flanges of the channel abut against the inside surface of the sleeve including the surface within the blunt nose of the sleeve to prevent displacement of the sound maker in the sleeve.

5. The pneumatic sound maker assembly described in claim 1, for connection with the wall of a hollow deformable toy made of plastic material, and in which the sleeve and flange are of one-piece, metal construction, and the fastening device has a generally concave face in front of the lugs that lock against the outside surface of the sleeve to prevent movement of the fastening device in a direction away from the wall and flange, and the fastening device has said clearance around the sleeve providing openings through which displaced material of the wall is extruded when the fastening device is thrust up against the inside of the wall to clamp the wall against the flange.

6. A pneumatic sound maker assembly for connection to a wall of a hollow deformable toy, said assembly including a sleeve having a cylindrical portion for holding a sound maker, an outwardly extending flange at one end of the sleeve, said flange being of one-piece construction with the cylindrical portion of the holder and extending radially outward and having a diameter substantially greater than the diameter of the cylindrical portion of the holder, the other end of the sleeve having a portion of progressively lesser diameter toward the end of the sleeve forming a blunt nose of sufficient mechanical strength to pierce the wall of the toy, when forced against an imperforate area of the wall when inserting

the assembly into the toy, a reed-and-channel sound maker located within the sleeve and gripped by the sleeve to prevent longitudinal displacement of the sound maker in the sleeve, and a clamping element on the sleeve and movable axially along the sleeve into clamping relationship with the inner surface of the wall of the toy at a substantial distance radially outward from the sleeve, said clamping element being shaped to leave clearance around at least a portion of the circumference of the sleeve for receiving material of the wall displaced therefrom by the piercing of the wall by said blunt nose.

7. The pneumatic sound maker assembly described in claim 6 for use with walls of plastic material, the sleeve being of circular cross section, the channel having a tubular portion at one end with an open longitudinal seam and an outside diameter which is originally larger than the inside diameter of the sleeve and which is compressed to fit within the sleeve whereby the resilience of the tubular portion exerts a constant force against the sleeve to provide increased friction for holding the channel against displacement, and flanges along an edge of the channel and extending outwardly beyond the reed and at least partly in position to contact with the wall of the sleeve within the blunt nose for determining the distance to which the sound maker can be inserted into the sleeve.

8. A pneumatic sound maker assembly for connection to a wall of a hollow deformable toy, said assembly including a sleeve having a cylindrical portion for holding a sound maker, an outwardly extending flange at one end of the sleeve, the other end of the sleeve having a portion of progressively lesser diameter toward the end of the sleeve forming a blunt nose of sufficient mechanical strength to pierce the wall of the toy, when forced against an imperforate area of the wall when inserting the assembly into the toy, an air-operated sound maker in the sleeve, and in which the flange curves outwardly and then forwardly with a component extending toward the blunt-pointed end of the holder, the peripherial edge of the flange being forward of the adjacent annular area of the flange whereby the peripherial portion of the flange exerts an increased and localized pressure remote from the edge of the pierced opening when the holder is clamped in the opening through said skin, and other means on the sleeve and movable into clamping relationship with the inner surface of the wall of the toy.

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