MOUTHPIECE FOR SOUND PRODUCING DEVICES

Filed Nov. 22, 1940
UNITED STATES PATENT OFFICE

2,296,785

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Application November 22, 1940, Serial No. 366,556

11 Claims. (Cl. 46—180)

This invention relates to sound producing devices, and more particularly to a mouthpiece assembly for the same.

The primary object of my invention is to generally improve sound producing devices such as toy horns, and more particularly the mouthpiece for the same.

Heretofore, such mouthpiece assemblies have been made up of four or more parts. There is a metallic reed which is usually disposed collaterally of a metallic sound channel having a contact ledge for supporting the reed. This channel and reed assembly as sealed into and carried by a suitable washer or other circular carrier, which in turn is fitted into the tubular outside body of the mouthpiece. The latter is ordinarily made of wood. Inasmuch as the wooden piece is "turned" to desired shape, it is limited to a configuration such that all transverse sections through the mouthpiece are circular.

In accordance with one object of my invention, the construction of the mouthpiece assembly is simplified so as to require only two parts, one being the body of the mouthpiece, and the other being the reed. The mouthpiece is so shaped as to form the desired sound channel and contact ledge for the reed, as well as means to receive and frictionally hold the reed at one end.

A further object is to facilitate manufacture of the body of the mouthpiece, and I find that this may be done by molding the same directly to finished shape. In accordance with further features and objects of the invention, the mouthpiece may be molded out of any of the common, available plastics, thus providing a structure possessing a greatly improved and more costly appearance than the common wood mouthpiece heretofore employed. Despite the use of a more costly and desirable material, the complete mouthpiece assembly made in accordance with the present invention may be manufactured and sold at a cost less than that of the four-part wood mouthpieces heretofore employed.

Still another object of the invention is to so design the mouthpiece that it may be molded between the halves of a simple two-part mold without necessitating special collapsible or retractable cores or the like.

To the accomplishment of the foregoing and such other objects as will hereinafter appear, my invention consists in the mouthpiece assembly and its elements and their relation one to the other, as hereinafter are more particularly described in the specification and sought to be defined in the claims. The specification is accompanied by a drawing, in which:

Fig. 1 is a perspective view showing the mouthpiece end of a horn embodying the mouthpiece of the present invention;

Fig. 2 is a longitudinal section taken in the plane of the line 2—2 of Fig. 1;

Fig. 3 is a horizontal section taken in the plane of the line 3—3 of Fig. 2;

Figs. 4, 5, 6 and 7 are transverse sections taken in the planes of the lines 4—4, 5—5, 6—6, and 7—7, respectively, of Fig. 2; and

Fig. 8 is a schematic section explanatory of the manner in which the mouthpiece may be molded in a two-part mold.

Referring to the drawing, and more particularly to Fig. 1, the sound producing device here illustrated is a horn comprising a generally conical body H, only the small end of which is shown, and a mouthpiece M, the large end of which is dimensioned to frictionally receive the small end of the horn H. The horn body may be made of any suitable sheet material such as cardboard, metal-foil coated paper, sheet metal, or the like.

The mouthpiece M is molded of a suitable plastic, and may accordingly be made transparent or colored, and its appearance may be enriched by various marbelized finishes frequently employed with such materials. Moreover, because of the nature of the molding operation, the exterior of the mouthpiece, particularly at the larger end 12, may be ornamentally fluted, thus further improving the appearance of the same.

Referring now to Figs. 2 through 7 of the drawing, the mouthpiece assembly is made up of a single integrally molded body of plastic and only one additional part, specifically the reed 14 which is stamped out of thin resilient sheet metal, in accordance with known practice. The reed is preferably tapered in outline, as is most clearly shown in Fig. 3. It overlies a suitable reed contact ledge 16 extending longitudinally along each side of the mouthpiece. The space or sound channel 18 beneath the reed is blocked at the movable end of the reed by a lower partition or wall 20, while the space 22 above the reed is blocked at the stationary end of the reed, by an upper partition or wall 24. The contact ledge 16 supports and limits the reed against downward movement, and it will be understood by those skilled in the art, that the resulting arrangement will produce a desired vibration of the reed when air is blown into the small end 25 of the mouthpiece. From one viewpoint, it may be explained that the reed contact ledges 16, the forward or...
lower partition wall 20, and the lower half of
the mouthpiece, combine to form a sound channel
beneath the reed, which sound channel corre-
spends to that heretofore provided by a special
trouch-shaped metal fitting or channel. It will
also be understood that while I have referred to
two, and "moving", or to the spaces "above" and "below" the reed, these
terms are employed merely for convenience,
because the mouthpiece will operate regardless of
the position in which it is held.

The molded mouthpiece is further provided with grooves to receive and frictionally hold the reed in proper operating position. For this purpose, the mouthpiece is provided with grooves 28 best shown in Figs. 4 and 6, said grooves being disposed between the upper partition 24 and the ends of the reed contact ledges 16. In assembling the mouthpiece, the reed is inserted into the recep-
tive channels 28 through the large end of the
mouthpiece, and because of the tapered shape of
the reed, it may be pushed firmly into position
until the edges of the reed are tightly frictionally
held in the grooves 28.

The manner in which the mouthpiece may be
molded in a single operation between the halves
of a simple two-part mold, is schematically illus-
trated in Fig. 8, referring to which it will be seen
that the outside shape of the mouthpiece is de-
termined by the mold portion 30. A part of the
interior of the mouthpiece is shaped by a core
32 fixedly mounted on the mold part 34. The
core 32 shapes the large end of the mouthpiece and the sound passage 18 (Fig. 2). A core 36 is
fixedly mounted in the portion 30, and shapes the
small end of the mouthpiece and the air passage
22 (Fig. 2). The space between core 32 and the
end of core 36 forms the upper partition wall
24, while the space between the core 36 and the
end of core 32 forms the lower partition wall 20.
Core 32 is naturally tapered to follow the general
contour of the mouthpiece. Core 36 departs from
the natural contour of the mouthpiece in order to
make it possible to withdraw the core from the
molded piece.

Thus, referring to Fig. 2, the top surface 40 of
the air passage 22 extends axially or evenly con-
verges toward the axis of the mouthpiece when
moving from right to left, in Fig. 2. Thus the air
passage 22 above the reed is approximately semi-
cylindrical, instead of being enlarged toward the
left, and in practice is preferably slightly semi-
frusto-conical converging toward the left, i. e.,
opposite to the usual shape.

The outer wall may be flattened as indicated
at 42 in order to conserve material, and also
because the flattening of the mouthpiece at 42
cases the same to fit the mouth more comfort-
ably. The internal surface 44 at the small end
of the mouthpiece is brought to semi-cylindrical
shape, or may even converge toward the axis of the
mouthpiece when moving from right to left, as
viewed in Fig. 2, all for the same reason, that is
to facilitate withdrawal of the core 30 (Fig. 8)
upon opening of the mold. The schematic show-
ing of Fig. 8 has been simplified by omitting
the gate for the admission of the molding ma-
terial, but it will be readily understood that a series
of mold cavities may be provided in a single mold
with appropriate radial or branched gates leading
to each of the cavities, preferably along the part-
ing face 46 of the die. It will also be understood
that while I have illustrated the cores 32 and 36 as fixed cores formed directly and integrally
with the mold, in practice either of these cores
or both may be made movable to facilitate sepa-
ration and discharge of the molded pieces from
the mold. Even in such case, however, the mold
remains of simple type in that the cores are solid,
one-piece cores, the movement of which is per-
pendicular to the parting face, or parallel to the
direction of the mouthpiece, at the opening of the
die when the die is being opened, so that the cores may be secured
to and moved by a core plate as a direct incident
to the normal operation of the mold.

It is believed that the construction, operation,
and method of making my improved simplified
mouthpiece, as well as the many advantages
thereof, will be apparent from the detailed de-
scription thereof. The mouthpiece is attractive
and costly in appearance, and has a smoother and
more comfortable feel to the lips. It is also
more sanitary in that its polished, water-proof
surfaces, may be readily cleaned. It is inexpen-
sive to manufacture, despite the cost of the mold-
ging material, because the molding operation pro-
vides everything needed in the mouthpiece ex-
cept the reed itself, and the latter is readily
inserted in place with a minimum of labor.

It will be apparent that while I have shown and
described my invention in a preferred form,
many changes and modifications may be made
in the structure disclosed, without departing from
the spirit of the invention as sought to be
defined by the following claims.

I claim:
1. A molded mouthpiece assembly for a sound-
producing device, said mouthpiece assembly com-
prising only two main parts, one being a mouth-
piece made of a single piece of molded plastic,
and the other being made of thin sheet material
and comprising a reed, the configuration of said
mouthpiece being such as to provide means to
hold the reed at one end, and a sound channel
of desired shape disposed collaterally of said
reed.

2. A molded mouthpiece assembly for a sound-
producing device, said mouthpiece assembly com-
prising only two main parts, one being a mouth-
piece made of a single piece of molded plastic,
and the other being made of thin sheet material
and comprising a reed, the configuration of said
mouthpiece being such as to provide means to
hold the reed at one end, and a sound channel
of desired shape disposed collaterally of said
reed.

3. A mouthpiece assembly for a toy horn, said
mouthpiece assembly comprising only two main
parts, one being a mouthpiece made of a single
piece of molded plastic, and the other being made
of thin sheet material and comprising a reed, the
inside of said mouthpiece having grooves for fric-
tionally receiving and holding one end of the
reed.

4. A mouthpiece assembly for a toy horn, said
mouthpiece assembly comprising only two main
parts, one being a mouthpiece made of a single
piece of molded plastic, and the other being made
of thin sheet material and comprising a reed, the
inside of said mouthpiece assembly having a reed
contact ledge for supporting the reed, means
blocking the space beneath the ledge at one end
of the reed, and means blocking the space above
the ledge at the opposite end of the reed.

5. A mouthpiece assembly for a toy horn, said
mouthpiece assembly comprising only two main
parts, one being a mouthpiece made of a single
piece of molded plastic, and the other being made of thin sheet material and comprising a reed, the inside of said mouthpiece assembly having means blocking the space beneath the reed at one end of the reed, and means blocking the space above the reed at the opposite end of the reed.

6. A mouthpiece assembly for a toy horn, said mouthpiece assembly comprising a mouthpiece made of a single piece of molded plastic, and a reed, said mouthpiece being generally tubular and wholly surrounding said reed, the inside of said mouthpiece having a reed contact ledge for supporting the reed, means blocking the space beneath the ledge at one end of the reed, and means blocking the space above the ledge at the opposite end of the reed, said mouthpiece having grooves for frictionally receiving and holding one end of the reed.

7. A mouthpiece assembly for a toy horn, said mouthpiece assembly comprising a mouthpiece made of a single piece of molded plastic, and a reed, said mouthpiece being generally tubular and wholly surrounding said reed, the inside of said mouthpiece having a reed contact ledge for supporting the reed, means blocking the space beneath the ledge at one end of the reed, and means blocking the space above the ledge at the opposite end of the reed, said mouthpiece having grooves for frictionally receiving and holding one end of the reed, the internal parts of the mouthpiece being so shaped as to converge toward the axis of the mouthpiece from both ends, thereby facilitating molding of the same.

8. A molded mouthpiece assembly for a sound-producing device, said mouthpiece assembly comprising a single piece of molded plastic and a reed, the molded plastic piece being generally tubular and wholly surrounding said reed, said piece including a lower partition wall near the mouth end of the mouthpiece, an upper partition wall nearer the opposite end of the mouthpiece, and a reed contact ledge extending longitudinally of said mouthpiece between the top of the lower partition wall and the bottom of the upper partition wall.

9. A molded mouthpiece assembly for a sound-producing device, said mouthpiece assembly comprising a single piece of molded plastic and a reed, the molded plastic piece being generally tubular and wholly surrounding said reed, said piece including a lower partition wall near the mouth end of the mouthpiece, an upper partition wall nearer the opposite end of the mouthpiece, and a reed contact ledge extending longitudinally of said mouthpiece between the top of the lower partition wall and the bottom of the upper partition wall.

10. A molded mouthpiece assembly for a sound-producing device, said mouthpiece assembly comprising a single piece of molded plastic and a reed, said reed being tapered in outline, and wholly surrounding said reed, said piece including a lower partition wall near the mouth end of the mouthpiece, an upper partition wall nearer the opposite end of the mouthpiece, and a reed contact ledge extending longitudinally of said mouthpiece between the top of the lower partition wall and the bottom of the upper partition wall.

11. A molded mouthpiece assembly for a sound-producing device, said mouthpiece assembly comprising a single piece of molded plastic and a reed, said reed being tapered in outline, and wholly surrounding said reed, said piece including a lower partition wall near the mouth end of the mouthpiece, an upper partition wall nearer the opposite end of the mouthpiece, and a reed contact ledge extending longitudinally of said mouthpiece between the top of the lower partition wall and the bottom of the upper partition wall.

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