

April 5, 1938.

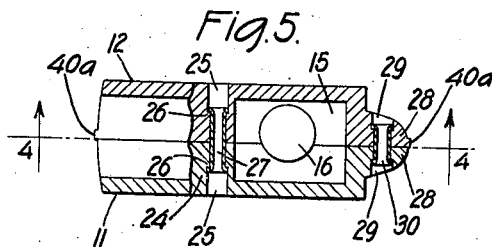
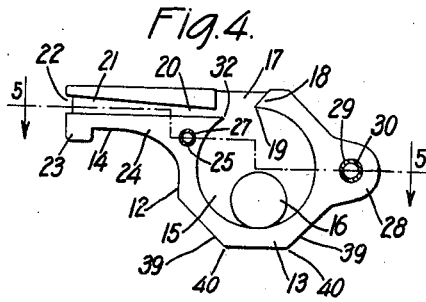
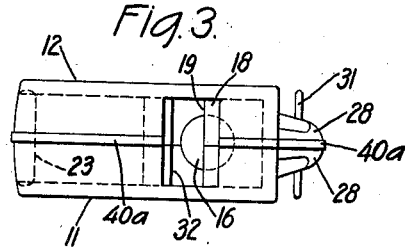
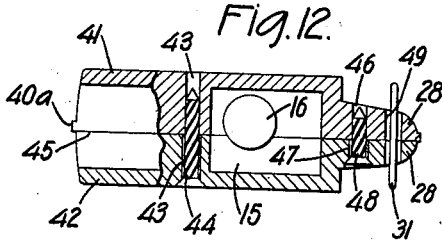
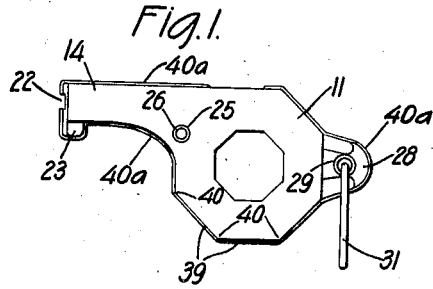
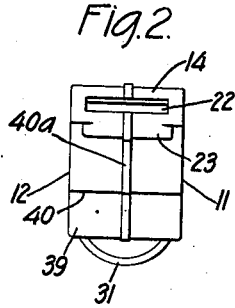
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2,113,396

WHISTLE

Filed Nov. 2, 1935

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

Fig. 6.

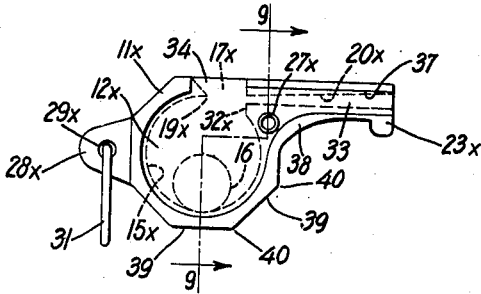


Fig. 7.

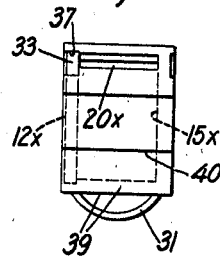


Fig. 8.

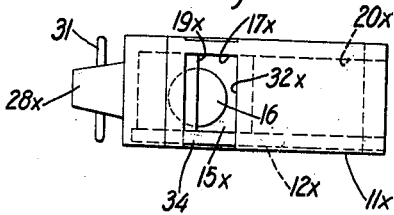


Fig. 9.

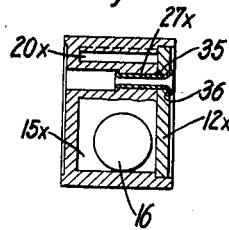


Fig. 10.

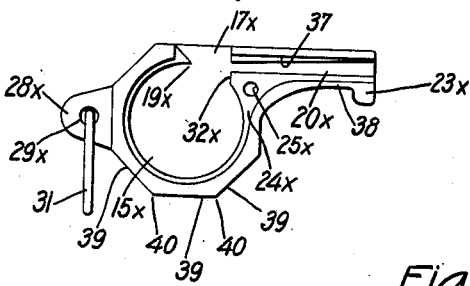


Fig. 11.

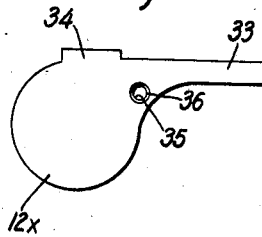
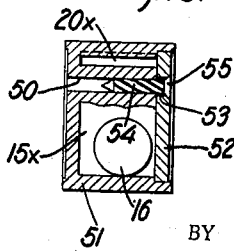


Fig. 13.



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# UNITED STATES PATENT OFFICE

2,113,396

## WHISTLE

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Application November 2, 1935, Serial No. 47,934

7 Claims. (Cl. 116—137)

This invention relates to the fabrication of whistles, especially to a whistle of the type characterized by a body having a cavity in which a separately formed armature is vibratable by blowing into the cavity through suitably disposed orifices, and particularly to such a whistle molded from a thermosetting or thermoplastic material.

In various known whistles of this character, the conventional structure comprises an integral formation of the walls completely surrounding the body cavity and operating orifices with the exception of a lateral opening which is left to permit the introduction of the armature, the latter desirably taking the form of a spherical member made of felt, pith, cork or similar material which cannot conveniently be emplaced prior to, or during the molding operation. The last named opening leading to the body cavity only, is eventually closed by a plate or closure in the fabrication of these known whistles.

A whistle structure of the above character is satisfactory in operation, yielding a strong, clear trilling sound, but its fabrication involves certain operations which are somewhat costly and require a degree of skill and refinement in work greater than are available with operatives of the class usually employed in the fabrication of such articles, which only find a market at prices with a very limited spread for profit.

Among these sources of undesirable expense may be noted the difficulties in providing and manipulating the cores which represent, in the molding operations, the eventual orifices of the structure, and particularly the throat or elongated air-passage confined in the long, narrow mouthpiece, and also the mural orifice which provides for suitably directed impact of the air-blast against the usual sharp edge or sound-producing member of the whistle, and also provides for the final escape of the spent air.

An object of the present invention is to provide a whistle which embodies the desirable characteristics of the above described type, and which can be fabricated with less expense, thereby affecting favorably the spread between cost of production and the price at which such whistles can be marketed.

In pursuance of the above general object, another object is to provide a bi-part whistle, comprising symmetrically disposed side members, between the mutually contiguous faces of which are formed and enclosed not only the body cavity but also the aforesaid throat passage in the mouthpiece, and its associated sound-producing

parts around the mural orifice, such as the conventional sharp edges.

Still another object of the invention is to provide means for securing these complementary sections of the whistle together in such fashion that their assembly and securement can be effected by inexpensive means, applied in a unitary operation by workers having only average mechanical skill and experience.

Other objects and advantages of the invention will appear as the description of the particular physical embodiment selected to illustrate the invention progresses, and the novel features of the invention will be particularly pointed out in the appended claims.

In describing the invention in detail, and the particular physical embodiment thereof selected to illustrate the invention, reference will be had to the accompanying drawings, and to the several views thereof, wherein like characters of reference designate like parts, and in which:

Fig. 1 is a view in side elevation of a whistle in the fabrication of which the present invention has been embodied;

Fig. 2 is a view thereof in front elevation;

Fig. 3 is a plan view of the same;

Fig. 4 is a view in longitudinal vertical section taken on the mid-plane line 4—4 of Fig. 5;

Fig. 5 is a view in horizontal section on the line 5—5 of Fig. 4;

Fig. 6 is a view in side elevation of a modification;

Fig. 7 is a view in front elevation of the whistle shown in Fig. 6;

Fig. 8 is a plan view thereof;

Fig. 9 is a vertical, sectional view on the irregular line 9—9 of Fig. 6;

Fig. 10 is a view like Fig. 6 but with one of the component members removed;

Fig. 11 shows said last-named component, separately;

Fig. 12 is a fragmentary, detail view in vertical, longitudinal section of a whistle resembling that of Fig. 5, but with modified securement means; and

Fig. 13 is a cross-sectional view similar to that of Fig. 9 but illustrating the type of securement screw shown in Fig. 12.

In a now-preferred embodiment of the invention, selected for illustration and description, the parts designated by the reference characters 11 and 12 respectively, constitute a pair of elongated members, adapted and intended to be assembled to form a whistle, for which purpose they are made preferably as substantially sym-

metrical halves of the whistle, each half conforming sensibly to the shape of the member 12, which is shown separately in the sectional view of Fig. 4, so that a description of this member will suffice to permit ready understanding of both members, any desirable differences in the structure of the halves being noted as the description proceeds.

Each half includes a body portion 13 and a mouthpiece or throat portion 14, and in the body portion of each member is formed a drum-shaped cavity 15 adapted to receive loosely the vibratable armature 16 in the manner usual in such whistles. The body portion also has an upper mural orifice 17, at one margin of which is formed a V-shaped sound-producing part 18, having its sharp edge 19 disposed in opposition to the delivery end of a throat or passage 20, formed in the mouthpiece 14, and the other end 21 of which is of suitably greater cross-section at the mouth 22, as is usual in whistles. The lower lip 23 is also of conventional form.

In a shoulder portion 24, intermediate the body and mouthpiece is provided a transverse bore 25, formed with a shoulder 26, which is shown most clearly in Fig. 5, and when the members 11 and 12 are assembled, a tubular rivet 27 is set in the bore 25 and headed over the shoulders 26 as illustrated to hold the members 11 and 12 in assembled relation.

The members 11 and 12 may desirably be formed with complementary lug portions 28, having bores 29, which register, as indicated, and have shoulders like those at 26, against which are upset the ends of a tubular rivet 30, the latter aiding to hold the members in assembled relation, and at the same time serving as a reinforcement of the lugs, when provided with a ring 31 (see Fig. 2) for convenience in the use of such a whistle.

It is apparent from the foregoing disclosure that the present invention provides a whistle with halves or members which are provided with complementary cavities, channels, and orifices that cooperate in the finished article to receive the vibratable armature and to permit operation of the whistle in the usual manner, with a resultant clear, strong, trilling sound that is equal in volume and attention-arresting quality with whistles of much more expensive construction.

No experience and no special skill are required in the assembly of the components 11 and 12, as the simple insertion of the rivets 27 and 30 insures proper registry of the halves, and when the rivets are being set, as in an ordinary two-plunger riveting machine, the operator can complete the assembly of a whistle with a single stroke of the press. The bores 25 and 29 of the two members constitute complementary jig formations whereby the members may be mechanically registered at two points, thereby assuring complete registration.

On account of the communicating relationship of the throat-channel 20 and the mural orifice 17, with the body cavity 15, a simple form of die suffices in the molding operation, and if the members 11 and 12 be made symmetrical as shown, the same type of die can be used for molding each of the halves or members.

Although I have illustrated and described one particular physical embodiment of my invention and explained the principle, construction, and mode of operation thereof, nevertheless, I desire to have it understood that the form selected is merely illustrative, and does not exhaust the pos-

sible physical embodiments of the idea of means underlying my invention.

In Figs. 6 to 11 inclusive I have illustrated a modified embodiment of the invention in which the member 11x is similar in general contour to the whistle component member 11 already described, and is formed with a body cavity 15x, in communication with which are provided a throat passage 20x and a wall opening 17x, similar in general arrangement and purpose with the similarly designated parts of the whistle shown in Figs. 1 to 5 and already described.

The following differences of structure are to be noted, however, viz.:

The whistle component member 11x is made of sufficient breadth to contain the entire body cavity 15x and the entire throat passage 20x; the sharp sound-producing edge 19x is also made therewith as an integral part, smooth and continuous throughout; and the lug 28x is not divided and therefore may be provided with an unlined bore 29x, as shown, the tubular rivet 30 of Fig. 5 being omitted.

Instead of providing a ridge such as that shown at 32 in Fig. 4, to prevent escape of the armature through orifice 17, as in Fig. 5, a clear-cut, straight wall is formed at 32x (see Fig. 10).

In this form of the invention, provision is made of a complementary member 12x in the form of a flat plate of suitable size and contour to serve as a closure for the body cavity 15x, the throat passage 20x and the side of the wall-opening 17x, and for this purpose includes a body portion, which is designated by the reference character 12x in Fig. 11, and a throat-cover portion 33, while a lug 34 constitutes a side wall for the wall opening 17x.

This member has also an orifice 35 with a shoulder 36, adapted to register with a bore 25x in the shoulder 24x of member 11x, to receive a rivet 30 like that in Fig. 5, by which the securing of the parts 11x and 12x in assembled relation is effected.

The member 12x may desirably be set into the face of the member 11x, preferably flush therewith, as illustrated, and for this purpose the material of the outer face of member 11x is relieved, presenting a seat 37, surrounded by a shoulder 38, against which the closure 12x is snugly fitted, and is there held by the rivet 30, this arrangement having been devised by me to permit the natural shrinkage which may eventually be expected in the dimension of an article of originally plastic origin in the present state of the plastic art.

This shrinkage, in prior art structures of the same general type, caused a loosening of the relatively small closure plates mentioned in the opening paragraphs of this application, which were usually screwed into a threaded seat, with resultant loss of the closure plate and armature, and consequent destruction of the whistle.

In the various forms illustrated, it will be observed that a positive, separately formed securing device is provided, of which the tubular rivets 27 and 27x are merely illustrative forms, it not being intended to exclude the use of other forms of securing.

As a desirable modification of the securing means, for example, I have illustrated in Fig. 12 a known type of self-tapping screw 44 inserted in a suitable bore 43 in the whistle body members 41 and 42. Preferably the bore portion formed in the member 41 is of such diameter that when the screw 44 is thrust therewith it will exercise a

self-tapping action in known fashion, the diameter of the bore portion in the member 42 being slightly larger, to avoid separating action, as between the members 41 and 42, along their mutually contiguous surfaces defined by the line 45.

These members are formed each with part 28 of an attachment lug having a bore 46, 47 into which is driven a self-tapping screw 48, which acts, just as does the screw 44, to hold the members together, this screw being spaced from the other screw just as the rivet 30 is spaced from the rivet 27 in the form of whistle shown in Fig. 5.

As the screw 48 is solid, however, a separate attachment bore 49 is formed in the lugs 28 to receive the attachment ring 31. In other respects the whistle illustrated in Fig. 12 may be regarded as identical in structure with that of Figs. 1 to 5 inclusive.

So also, with respect to the modification illustrated in Fig. 13, the general structure of the whistle there shown in section may desirably be identical with that shown in detail in Figs. 6 to 11, or be substantially like that structure, with the exception that the bore 50, instead of being fitted with a tubular rivet, as in Fig. 9, is of uniform size through the member 51, and adapted to receive a self-tapping screw 54, while the cover member 52 has an orifice 53, of slightly larger diameter than that of the bore 50, to permit an easy fit therein of the shank of screw 54, being countersunk to receive the bevelled head 55 of the screw 54, as is the bore 43 in Fig. 12.

In the whistle illustrated in the drawings, it will be observed, further, that the periphery of the whistle is of a polygonal form, and embodies facets 39 which lie in planes transversely disposed with respect to the length of the whistle, and which meet in boundary lines 40 that are parallel with the axis of molding withdrawal so that the withdrawn article needs practically no finishing, but presents glossy plane facet components and clearly defined edges therebetween.

This is characteristic of both forms illustrated, and in the instance of the form shown in Figs. 1, 2 and 3, where the bisecting plane is disposed longitudinally, I prefer to provide at least one of the halves with a low peripheral ridge 40a which masks the dividing line, and may desirably extend around the entire periphery of the article.

It will be evident from the foregoing disclosure, that the several forms of the invention illustratively set forth are characterized by the similar advantages of sturdiness and compactness in structure, with attractiveness in appearance, and by structural improvements which permit enhanced ease of fabrication and resultant economy that is reflected in a desirably increased spread between cost of manufacture and the price at which these whistles are marketable.

I claim:

1. As an article of manufacture, a whistle fabricated in a plurality of sections made of molded plastic material; said whistle being characterized by having said sections secured together by a plurality of separately formed fastening devices, at spaced regions within the body of said sections, and free from projections beyond the surface of said sections.

2. A whistle characterized by the elements combined and cooperating as set forth in claim

1, and further characterized by having said elements embodied in substantially symmetrical complementary members each provided with a plurality of bores, one in said body portion, and another, spaced therefrom, near an end of said body, each bore having a securement rivet, and the rivet in said end bore being tubular, to receive an attachment ring, and to serve as a reinforcement against wear thereby.

3. A whistle characterized by the elements combined and cooperating as set forth in claim 1, and further characterized by having said elements embodied in substantially symmetrical complementary members with a peripheral line of division, and at least one of said members having a ridge masking said division line.

4. As an article of manufacture, a whistle fabricated in a plurality of sections made of molded plastic material and characterized respectively by a polygonal periphery having component facets extending transversely of the length of said whistle and parallel with the axis of molding withdrawal, whereby the withdrawn product embodies smooth plane component facets with rectilinear boundaries.

5. A whistle formed of originally plastic material and comprising as elements a body portion formed with a body cavity and a vibratable armature confined therein, said body portion having a mural orifice formed at one side with a sharp sound-producing edge, said whistle comprising also a mouthpiece with a throat passage through which a blast of air may be delivered across said orifice against said edge, and said throat passage having a delivery opening through a wall of said mural orifice opposite said edge, said wall being formed in part substantially at right angles to the general axis of said throat passage, and having a portion, below the passage, jutting toward said opposite sharp edge.

6. A whistle comprising a pair of substantially similar sections formed of plastic molded material, tubular rivets holding said sections in assembled relation and a ring member for receiving a flexible retaining element; said sections having aligned apertures therein receiving said rivets and said sections being formed to cooperate in providing a body portion having a sound chamber therein, a mouthpiece having a passage therein communicating with the sound chamber and a lug projecting from the body portion; one of said rivets being arranged in said lug and pivotally securing said ring thereto.

7. As an article of manufacture, a whistle fabricated of a pair of substantially similar sections formed of plastic molded material, said sections being held in assembled relation and having a ring member for receiving a flexible retaining element; said sections being formed to cooperate in providing a body portion having a sound chamber therein and a mouth piece having a passage therein communicating with the sound chamber; said sections also having means disposed at the end of the mouth piece adjacent the sound chamber for effecting the registry of said sections for facilitating the assembly thereof, said sound chamber portion having at the point opposed to the mouth piece projecting lugs each having apertures in registry with the other for receiving the said ring.

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