July 12, 1938. G. F. SCHUMACHER 2,123,664

AIR WHISTLE AND CONTROL MEANS THEREFOR

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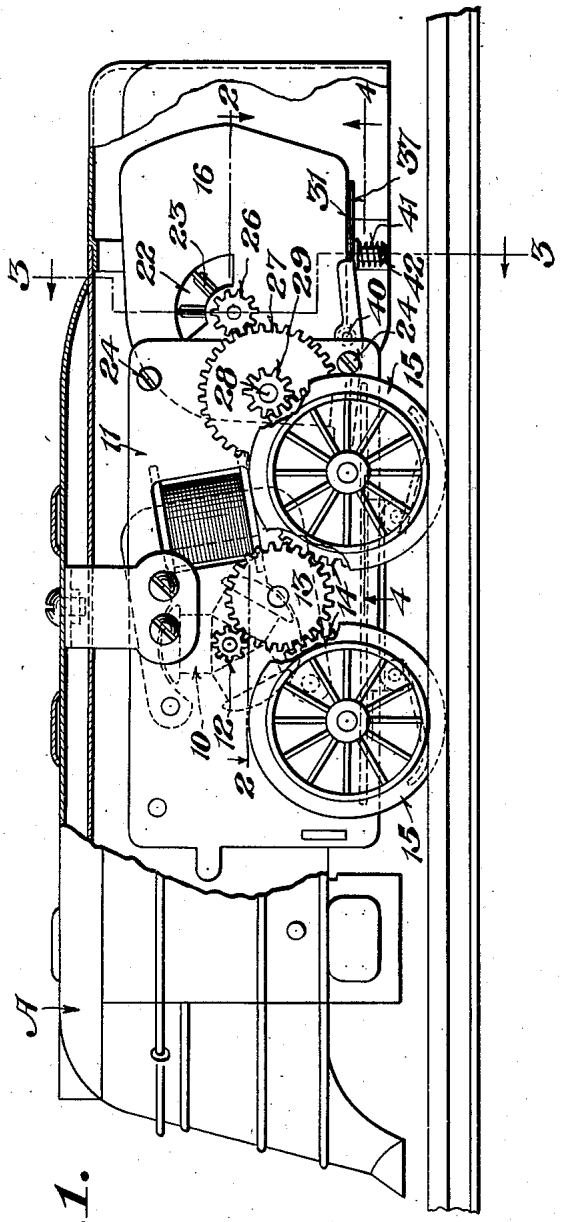

Fig. 1.

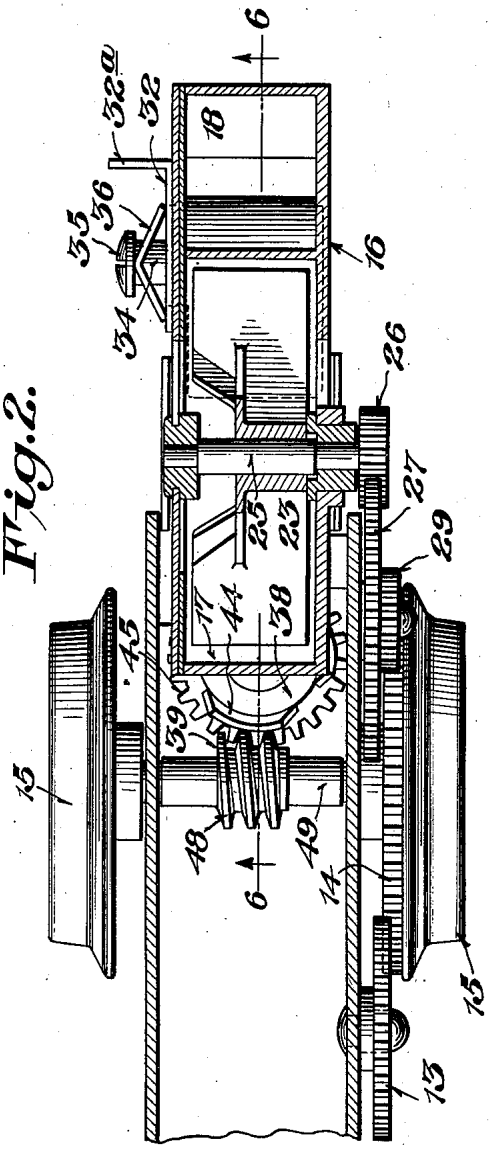

Fig. 2.

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Fig. 4.

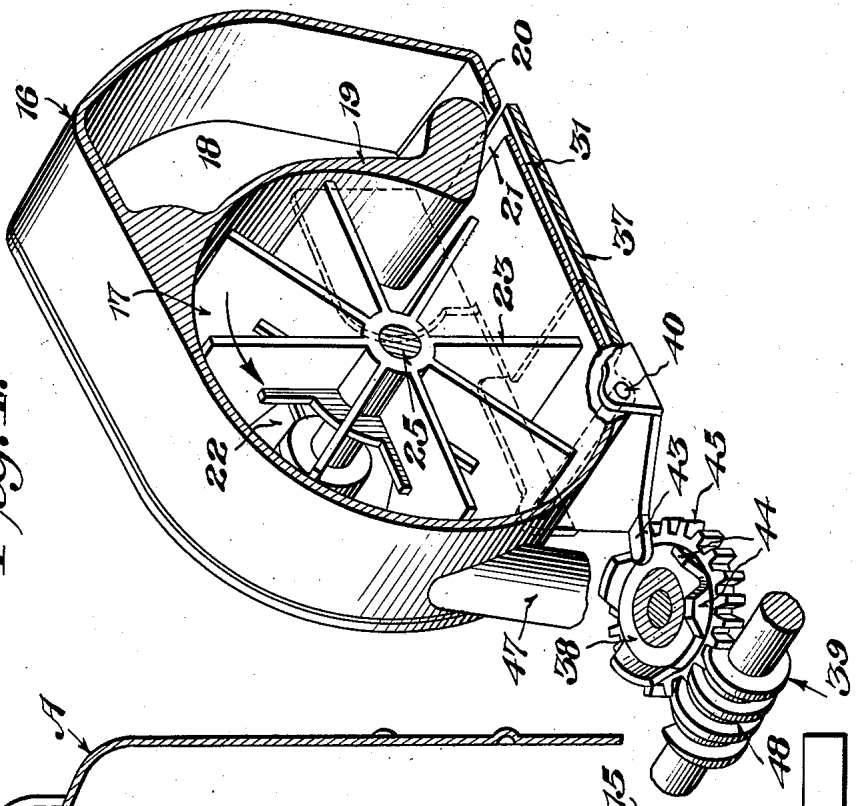

Fig. 5.

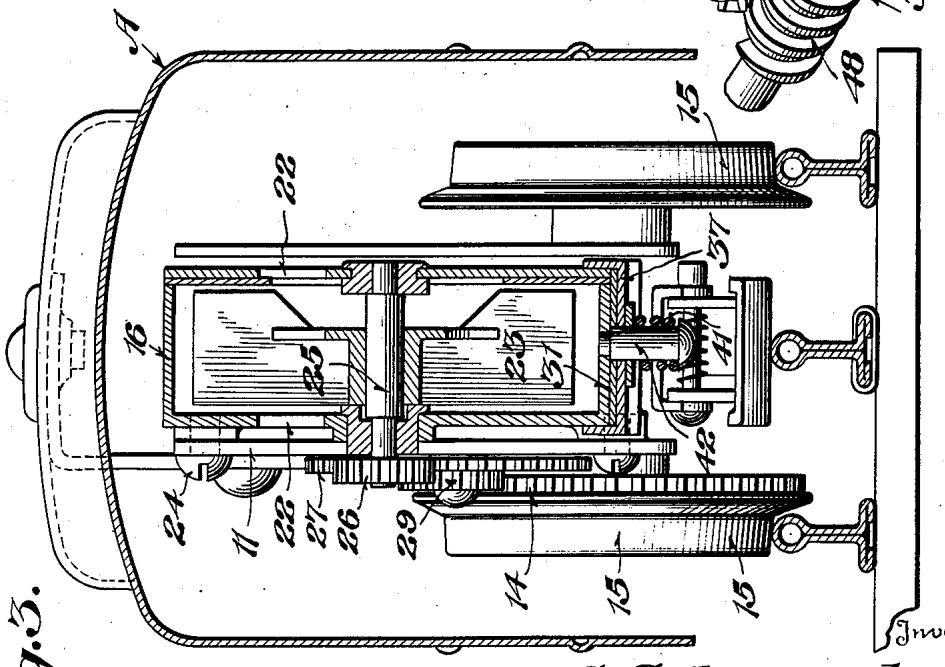

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Fig. 5.

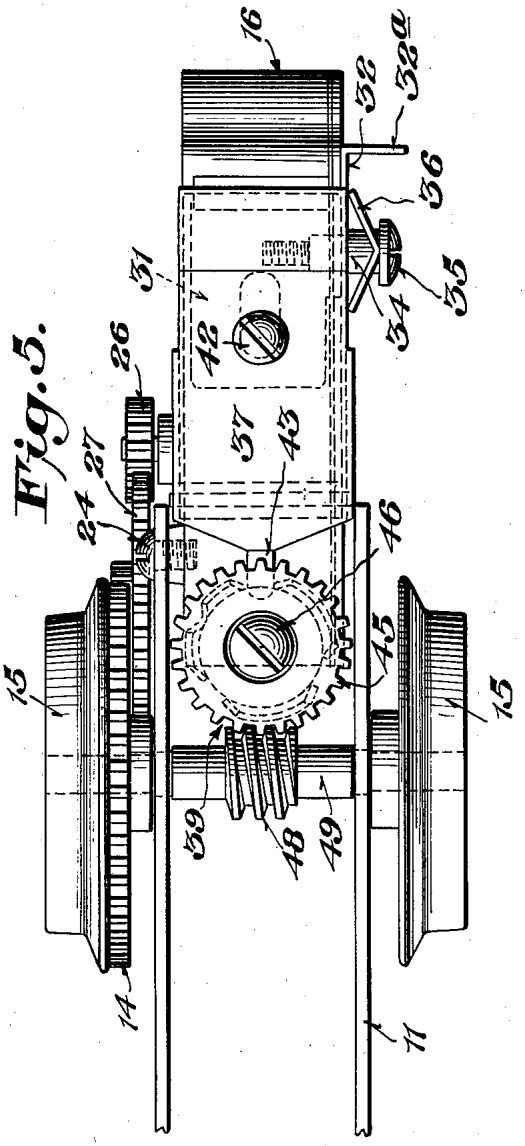


Fig. 7.

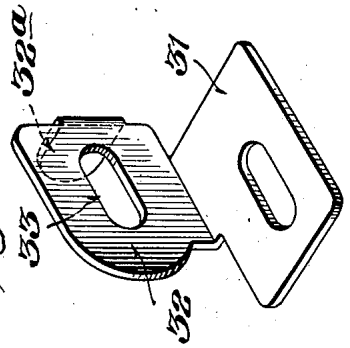
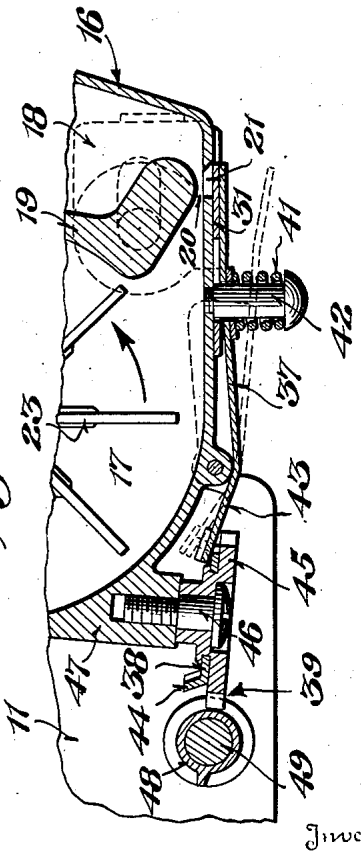


Fig. 6.



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Patented July 12, 1938

2,123,664

UNITED STATES PATENT OFFICE

2,123,664

AIR WHISTLE AND CONTROL MEANS THEREFOR

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Application May 5, 1937, Serial No. 140,968

9 Claims. (Cl. 116—58)

This invention relates to air whistles and to control means therefor, and has for its general object to provide an improved air whistle of the type including a fan or blower for producing the required flow of air for its actuation, and to provide a novel control means therefor to cause it to sound a blast, or a series of blasts, of predetermined duration.

While the present whistle is capable of general use, one particular use of the same is upon toy locomotives to simulate the whistle of a standard locomotive, and in this connection one special object of the invention is to provide a whistle embodying a construction whereby it may readily and easily be produced at a cost sufficiently low to permit its use upon relatively low cost toy locomotives and the like.

Another object of the invention is to provide a whistle embodying a construction whereby it may readily and easily be applied to toy locomotives of known designs without requiring changes in the toy locomotive construction.

Another object of the invention is to provide a whistle which operates with sustained volume and resonance.

Another object of the invention is to provide a simple, inexpensive, yet entirely practicable control means for the present whistle which, as in the case of the whistle, is capable of ready application to a toy locomotive and which is operable to cause the whistle to sound a blast, or a series of blasts, of predetermined duration.

Another object of the invention is to provide a simple means manually operable at will to render the whistle operative and inoperative regardless of operation of its control means.

With the foregoing and other objects in view, which will become more fully apparent as the nature of the invention is better understood, the same consists in the novel features of construction, combination and arrangement of parts as will be hereinafter more fully described, illustrated in the accompanying drawings and defined in the appended claims.

In the accompanying drawings, wherein like characters of reference denote corresponding parts in the different views:

Figure 1 is a side elevation of a toy locomotive equipped with the present whistle and control means therefor according to one practicable embodiment of the invention, parts being broken away to disclose other, underlying parts.

Figure 2 is a horizontal section on the line 2—2 of Fig. 1.

Figure 3 is a transverse section on the line 3—3 of Fig. 1.

Figure 4 is a sectional perspective view of the whistle and its control means.

Figure 5 is a bottom plan view of what is shown in Fig. 2.

Figure 6 is a section on the line 6—6 of Fig. 2; and

Figure 7 is a perspective view of the manually operable part to render the whistle operative and inoperative.

Referring in detail to the practicable embodiment of the invention illustrated in the drawings, A designates generally a toy electric locomotive which may be of any design suitable to have the present whistle and control means mounted thereon and which includes, as usual, an electric motor, designated generally as 10, mounted in a frame 11 and having on its armature shaft a pinion 12 operating through an idler gear 13 in mesh with gears 14 on the locomotive drive wheels 15 to drive said wheels.

The present whistle comprises a closed casing 16 having therein, at one end thereof, a fan chamber 17 and, at its other end, a pressure chamber 18, in major part separated from the chamber 17 by a partition 19. However, as best shown in Figs. 4 and 6, the partition 19 is spaced at its bottom a small distance upwardly from the bottom of the casing 16 to provide a narrow passageway, designated as 20, affording communication between the fan and pressure chambers 17 and 18.

In the bottom wall of the casing 16, directly beneath the passageway 20, is an opening 21 which is narrow and otherwise of suitable size, shape and design such that air flowing from the casing 16 therethrough produces a whistling sound.

In the side walls of the fan chamber portion of the casing 16 are openings 22 for the admission of air to said fan chamber, and within said fan chamber is a fan 23 of any suitable type for producing a flow of air from said fan chamber to the passageway 20 and the opening 21 and through said passageway to the pressure chamber 18.

When the fan 23 is in operation, air is drawn into the fan chamber 17 through the openings 22 and is delivered through the passageway 20 to the opening 21 and to the pressure chamber 18. If the opening 21 is covered or otherwise blanked the whistle will not operate, and in that event the pressure chamber 18 serves to reduce back pressure against the fan 23. If, on the other

hand, the opening 21 is uncovered, air will issue therethrough from the fan and the pressure chambers with a whistling sound, the pressure developed in the air chamber 18 causing the whistling sound produced to be resonant and to have sustained volume even though there may be slight variations in the speed of rotation of the fan.

One side and the top, bottom and end portions of the whistle casing 16 may be cast in one piece and the other side of said casing may be made removable to permit insertion of the fan 23; or, said fan casing may be economically produced in any other suitable manner. Likewise, the fan itself may be cast or economically produced in any other suitable manner. In any event, it is apparent that the whistle includes primarily only a casing and a fan and that these are readily capable of such economical production and assembly as to permit of their use, from an economical point of view, on low cost products such as toy locomotives. On the other hand, it is equally apparent that the whistle may be produced in a form to render it suitable for general use, as, for example, on large locomotives, boats and the like.

The power plants of toy locomotives are more or less standardized and the frames thereof usually include a pair of side plates spaced a definite distance apart. These side plates afford convenient supports between and upon which to mount the present whistle. Accordingly, in producing the present whistle for use upon toy locomotives, its casing 16 is formed of a width such that it may readily be disposed between the side plates of the locomotive power plant frame. Space is available between the side plates at the rear end of the frame to accommodate one end portion of the whistle casing, and in accordance with the present invention the front or fan chamber end portion of the whistle casing 16 is disposed between said frame side plates and is secured therebetween by screws 24 passed loosely through openings in said side plates and threaded into said casing. Alternatively, the casing 16 may be mounted on the locomotive in any other suitable location and in any other desired manner.

The fan 23 is mounted upon a shaft 25 which is journaled in suitable bearings in the side walls of the casing 16 and which, at one end, projects beyond the related side of the casing 16 for connection in any suitable manner with any suitable driving means for effecting rotation of said fan. In the present instance, the projecting end of the shaft 25 carries a pinion 26 which is in mesh with a gear 27 rotatably mounted on a stub shaft 28 carried by one of the side plates of the frame 11, and there is formed with or fixed to the gear 27 a pinion 29 which is in mesh with the gear 14 on one of the locomotive drive wheels 15. Therefore, whenever the locomotive A is in motion traveling along its track rails 30, the fan 23 is driven.

To render the whistle manually operative and inoperative at will, a plate 31 is slidably disposed against the bottom of the casing 16 for forward and rearward movement relative to said casing to uncover and cover the opening 21. As a convenient means of slidably mounting said plate, the same may be provided with a side extension 32 disposed against one side of the casing 16 and said extension may have therein an elongated slot 33 in which may be disposed a shouldered stud 34 which may be threaded into the casing. Moreover, as a convenient means of holding the plate 31 in its operative and inoperative positions, the stud 34 may have a head 35 and between said head and the side extension 32 may be disposed a spring element 36 of any suitable type to press the extension against the side of the casing and thus cause movement thereof to be frictionally resisted. On the side extension 32 is a finger-piece 32a for effecting sliding movement of the plate 31.

The present means for controlling the number and the duration of blasts emitted by the whistle comprises a member 37 movable to cover and uncover the opening 21 when the plate 31 is in its position uncovering said opening; a cam 38 for moving said member 37, and a driving means 39 for said cam. In the present instance the member 37 is in the form of a plate disposed beneath the whistle casing 16 in underlying relationship to the plate 31 and pivoted as at 40 near its front end to a front end portion of the whistle casing 16 for vertical swinging movement whereby its rear end portion, which underlies the opening 21, may be swung upwardly to close said opening and downwardly to uncover said opening. Normally the plate 37 is urged upwardly by a suitable spring 41 which, in the present instance, is a coil spring interposed between the under side of said plate and the head of a stud 42 which is carried by the bottom wall of the whistle casing and extends through slots in the plates 31 and 37.

At its rear end the plate 37 is provided with a finger 43 with which cooperates the cam 38. The cam 38 underlies the finger 43 and in the present instance is in the form of a substantially horizontally disposed, rotatable disk having upstanding marginal lobes or protuberances 44 for direct engagement and coaction with the finger 43. As the disk rotates the lobes or protuberances 44 thereof successively engage and raise the finger 43 and thus swing the plate 37 to uncover the opening 21. Depending upon the number, the spacing and the circumferential extent of the lobes or protuberances 44, and assuming rotation of the cam disk at a constant rate, the whistle obviously will be caused to sound a blast, or a series of blasts, of predetermined sequence and duration.

In the present instance the cam 38 is carried by a worm gear 45 which is rotatably mounted upon a stud 46 threaded into a boss 47 on the casing 16 and which is driven by a worm 48 mounted on one of the locomotive axles 49. Thus, during travel of the locomotive along its track, the whistle will be periodically operated in accordance with the control thereof afforded by the cam 38.

Without further description it is thought that the features and advantages of the invention will be readily apparent to those skilled in the art, and it will of course be understood that changes in the form, proportion and minor details of construction may be resorted to, without departing from the spirit of the invention and scope of the appended claims.

I claim:—

1. An air whistle comprising a casing having an air emission opening, means for generating air pressure in said casing, a member manually operable to cover and uncover said opening, a driven member, and means operable by said driven member to cover and uncover said opening during time periods of predetermined sequence and duration when said manually operable member is in its position uncovering said opening.

2. An air whistle comprising a casing having a pressure chamber and an opening for emission of

air from said chamber, means for supplying air to said chamber, a member slidable on the casing and manually operable to cover and uncover said opening, a member pivoted on the casing for covering and uncovering said opening when said slidable member is in uncovering relation thereto, means tending constantly to swing said pivoted member to cover said opening, and driven means for effecting swinging movement of said pivoted member to uncover said opening during time periods of predetermined sequence and duration.

3. A whistle comprising a casing to be supplied with an operating fluid, said casing having a fluid emission opening, a member manually operable to cover and uncover said opening, a second member for covering and uncovering said opening when said first member is in uncovering relationship thereto, means tending constantly to move said second mentioned member to cover said opening, and driven means operatively connected with said second mentioned member and effective to move the latter to uncover said opening during time periods of predetermined sequence and duration.

4. A whistle as set forth in claim 3 in which the manually operable member is disposed between the casing and the second mentioned member.

5. A whistle as set forth in claim 3 in which the manually operable member comprises a plate slidably mounted between the casing and the second mentioned member.

6. A whistle as set forth in claim 3 in which the manually operable member is disposed between the casing and the second mentioned member and in which the second mentioned member is pivoted for swinging movement toward and from the casing to cover and uncover the air emission opening.

7. In a toy locomotive, an air whistle comprising a casing having an air emission opening, a fan for forcing air through said opening, means for driving said fan, a plate slidably mounted on the casing for manual adjustment to cover and uncover said opening, a member pivotally mounted intermediate its ends on said casing for rocking movement to cover and uncover said opening when said plate is in uncovering relationship thereto, a rotatable disk having cam formations thereon cooperating with said pivoted member to rock the same, and means for rotating said disk.

8. In a toy locomotive, an air whistle comprising a casing having an air emission opening, means for forcing air from said casing through said opening, a member manually operable to cover and uncover said opening, a second member pivotally mounted intermediate its ends and having one end portion thereof disposed to be moved toward and from the casing to cover and uncover said opening by pivotal movements of said member, and driven cam means for actuating said second member.

9. In a toy locomotive, an air whistle comprising a casing having an air emission opening, means for forcing air from said casing through said opening, a member slidably mounted on said casing for adjustment to cover and uncover said opening, a second member operable to cover and uncover said opening when said first mentioned member is in uncovering relationship thereto, and driven cam means for actuating said second mentioned member.

GUY F. SCHUMACHER.