

Oct. 13, 1964

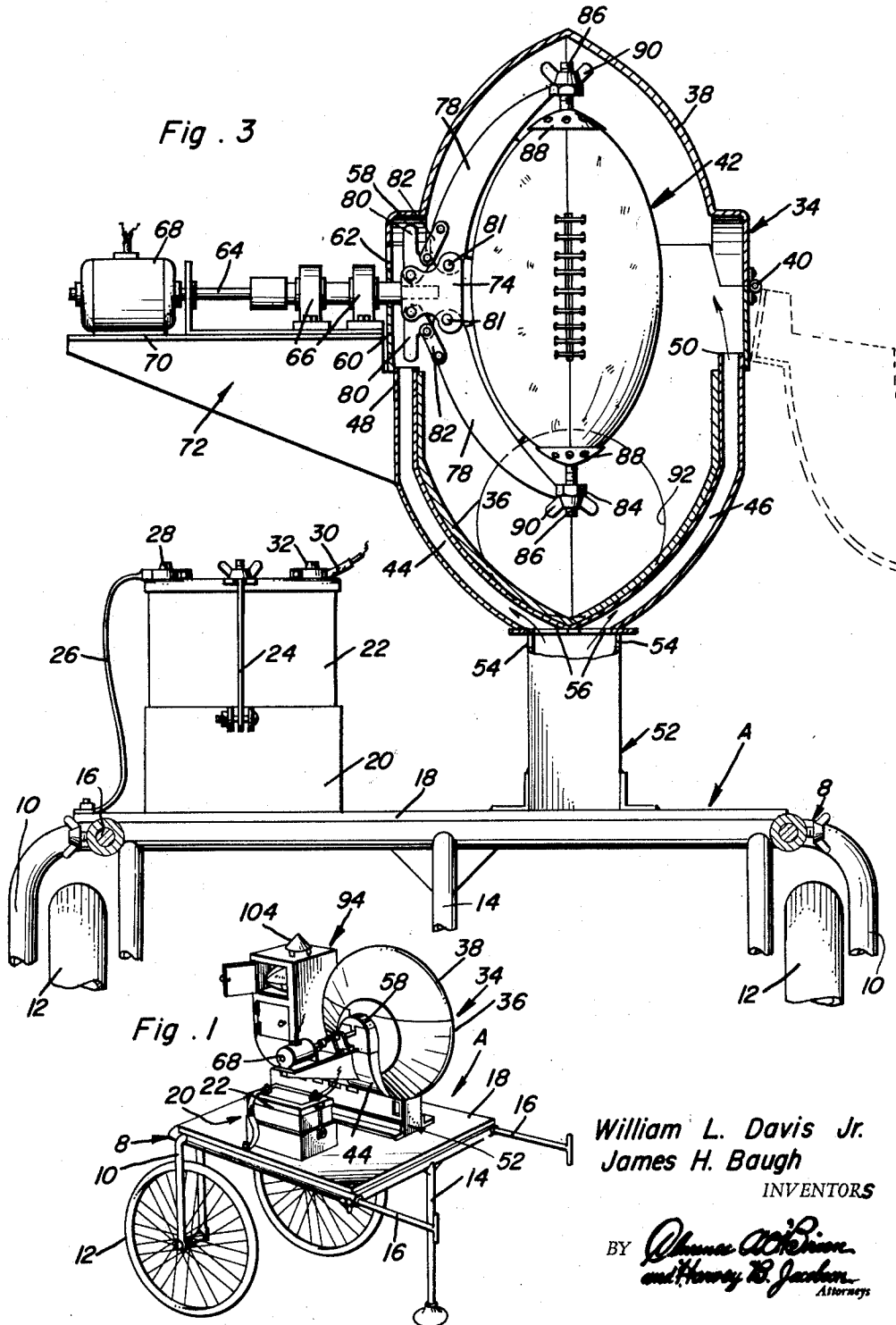
W. L. DAVIS, JR., ETAL

3,152,875

FOOTBALL DRIER

Filed June 15, 1962

2 Sheets-Sheet 1



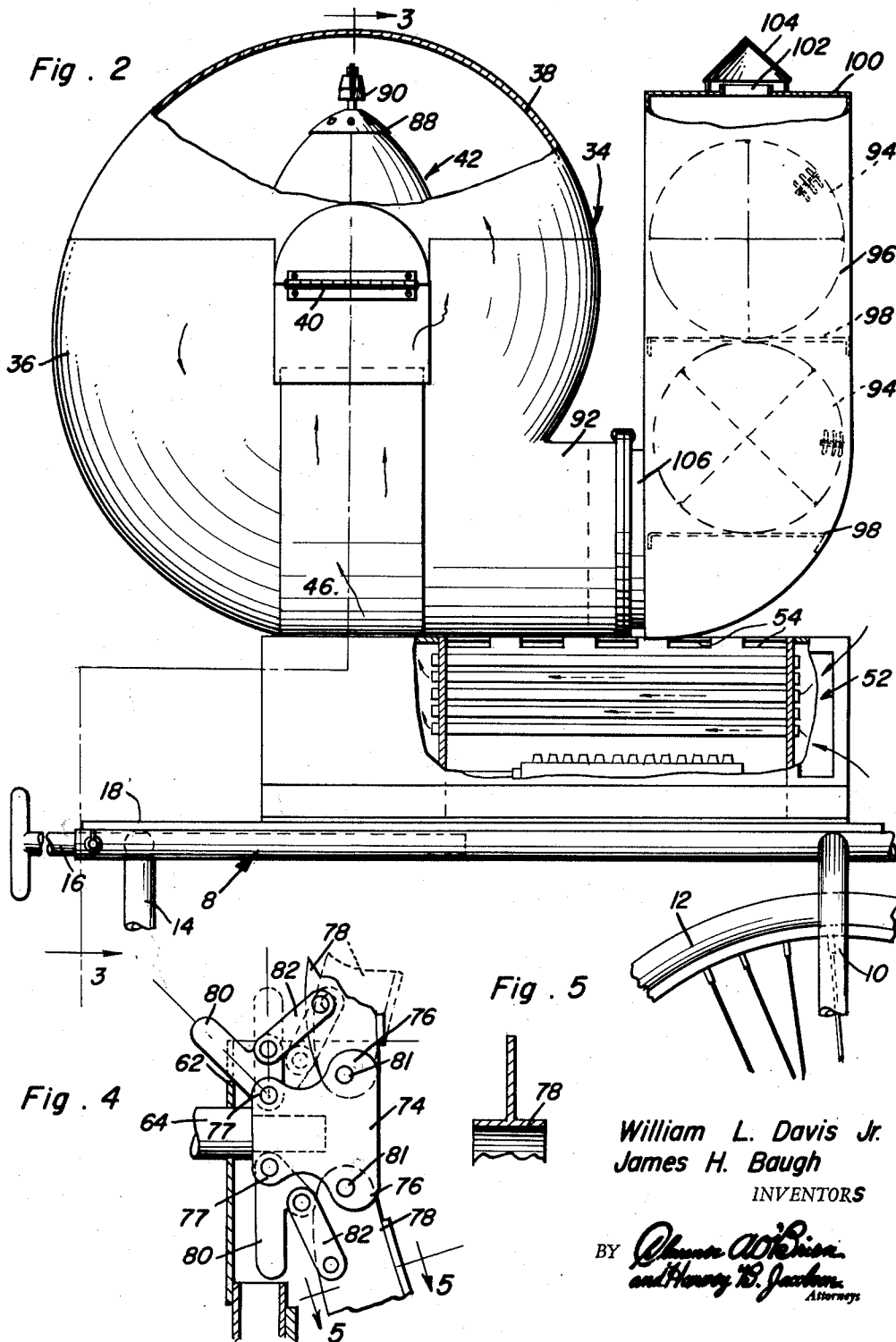
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3,152,875

FOOTBALL DRIER

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Filed June 15, 1962, Ser. No. 202,766

7 Claims. (Cl. 34-104)

The present invention relates to certain new and useful improvements in a portable apparatus which is expressly and structurally designed and adapted for drying a wet football which has been in play during the course of a football game and which may be, whenever necessary or desired, returned to the field for use.

Persons conversant with the art to which the present invention relates are aware that it has been and often still is the practice, when the football in play becomes too wet to handle, to wipe the ball with a towel and go ahead with the game. The fact that such a practice has posed a problem has resulted in an effort to solve it through the use of a portable on-the-field drier. Take, for example, the football drier in Patent 3,012,334 of William L. Davis, Jr., on which the present invention is an improvement, and it will be seen that it is old in the art to provide a portable housing, a hinged cover, means for directing heated air into the chamber of the housing, and means for moving the football in a manner to dry the surface by removing the accumulated moisture.

More particularly the present concept, while it involves an apparatus which is structurally and functionally analogous, has to do with a significant advance in the art which more aptly and effectively serves the purposes for which it is intended.

Ever since the drier in Patent 3,012,334 was worked out and experimented with, continuing efforts have been put forth to approach and solve the problem in a more effective and reliable manner. To the ends desired, and instead of using cooperating ball encompassing and turning rollers, ball holding means which is believed to be structurally unique has been perfected. Looking toward a satisfactory realization of the present improved aims, and as will be hereinafter more fully appreciated, the football is held by a rotatable clamp and rapidly spins longitudinally on its short axis. Consequently the ball itself is an important part of the device in that in conjunction with the associated elements it acts as an impeller and accomplishes a centrifugal air pump action which acts on an associated heat exchanger and also discharges the moisture laden air from the ball containing and drying chamber.

Another aspect of the invention has to do with a two-wheeled or an equivalent readily mobile cart having the ball drying apparatus thereon and wherein said apparatus is characterized by the aforementioned facilities and through the medium of which moisture is removed from the ball by evaporation due to heat and by centrifugal force due to the spinning action. Any appropriate heat source is employed and utilized in such a manner that heated air is drawn or sucked into the ball housing chamber. The ball and interrelated component parts (functioning as the aforementioned impeller) draws the heated air in and pumps or fans it out through a tangential exhaust.

Briefly summarized the invention is characterized by a suitable mobile manually maneuvered vehicle having a platform. The enclosure or housing is mounted atop the platform and provides a chamber and the driven end of a motor operated shaft projects into the space of the housing and is equipped with clamp means. The clamp means serves, when the cover of the housing is opened, to permit access to be had thereto whereby the ball may be quickly positioned, rotatably spun and the moisture disposed of in part by the centrifugal action, the heated air, which is

sucked in at the same time, assisting in the ball drying step.

The invention also features a storage facility in which one or two ready-to-use balls are located in readiness for expedient use.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a view in perspective on a small scale of the ball drying apparatus constructed in accordance with the present invention and showing the same set up for use;

FIGURE 2 is a view on a sufficiently large scale, with parts broken away and shown in section, to illustrate significant component parts of the overall apparatus;

FIGURE 3 is a section on the vertical line 3-3 of FIGURE 2 with certain parts shown in elevation;

FIGURE 4 is a view on a slightly larger scale and fragmentarily shown and appearing in section and elevation and showing the safety latching means for the toggle-like ball clamp arms; and

FIGURE 5 is a section on the line 5-5 of FIGURE 4.

With reference first to FIGURE 1 A designates a suitable cart-type vehicle which is manually maneuverable. This vehicle comprises an appropriate frame 8 having forks 10 supporting free turning rubber-tired wheels 12. The numeral 14 designates a prop and the numeral 16 designates the handles or handle bars. The platform or table atop the frame is denoted at 18. Assuming that electrical energy will be required the numeral 20 designates a box or holder for a storage battery 22 having hold-down bolts 24, a ground wire 26 from the battery post 28 and a current delivery conductor or wire 30 from the post 32.

The enclosure or housing denoted generally by the numeral 34 and which as will be evident from FIGS. 1 and 2 is generally circular (oblate spheroid or oblate ellipsoid) in elevation when considered from either left or right positions. This housing comprises a relatively fixed or stationary hollow bottom half-section 36 and a companion upper generally semi-circular half-section 38 which is hinged as at 40 (FIG. 3) so that it can be swung from the full line closed position and from left to right to the open phantom line position. When open the chamber for the football 42 is fully exposed. With further reference to FIG. 3 it will be noted that the hollow component members 44 and 46 to the left and right designate manifolds or ducts for delivering heated air into the ball chamber. The upper ends of the ducts are shown opening into the chamber space as at 48 and 50 in FIG. 3. Heated air is delivered from an appropriate source into the lower intake end portions of the respective ducts. Any suitable source of heat may be employed as for example the elongated box-like heat exchange unit 52. An appropriate kind of heat (electrical, gas or the like) may be confined in the heat exchange housing. The latter is provided at the upper portion thereof with exhaust ports 54 and with heated air discharge ports 56 which communicate with the ducts 44 and 46 inserted to deliver the heated air into the ball chamber. It will be observed in FIGS. 2 and 3 that the upper end 48 is in registry with suitably enlarged portions 58 and 60, 58 being a part of the cover 38 and 60 a part of the stationary section 36. The part 60 is provided with a keeper notch 62 which serves a purpose hereinafter described and which is above and in general alignment with the horizontal power delivery shaft 64. This shaft is mounted in suitable bearings 66 and is operated by a motor 68 carried by the hori-

zontal top portion 70 of an outstanding motor accommodation and supporting arm or bracket 72. The part 72 is a rigid component of the duct 44. The righthand end portion of the shaft projects into the chamber where it is provided with a suitable fixedly mounted but rotatable head 74 having bifurcated portions with suitably paired upper and lower ears 76 and 77 (FIG. 4) which serve a purpose now to be described. The ears 76 have the adjacent end portions of ball supporting and clamping arms 78 pivotally connected thereto as at 81. These arms are arcuate and conformable in shape to embrace the football in the manner shown. They are also T-shaped in cross-section. The ears 77 serve to accommodate selectively usable pivoted latches 80 which are shaped to accommodate links 82, these links being pivotally connected to the pivoted end portions of the latches 80. The outer free end portions of the arms 78 are provided with nut-like terminal portions 84 which accommodate screw-threaded shanks 86 carrying ball-end seating and retaining cups 88 which are adjusted and held in place by the wing nuts 90. As is evident from FIG. 3, when the arms 78 are in the coplanar cooperative ball-clamping and whirling position (as shown) the toggle links are in a locked condition and the ball (together with the arms 78, linkage means 80 and 82 and shaft driven head 74) becomes a component of an impeller.

The apparatus herein shown and described functions in approximately forty seconds and therefore it is necessary to have a very low moisture content within the housing itself. Water being one of the by-products of combustion, it is necessary to use the heat exchanger in order to convey low humidity air into the housing. Also by approximately regulating the amount of air which is being taken into the housing (as, for example, by fixing the caliber and arrangement of the heat-exchange tubes to achieve the desired result) the pressure within the housing is reduced and a partial vacuum is created; hastening the evaporative step. The manner in which the ball is held in the clamp appears to be unique in that it is spun on its short axis. In the spinning process, the ball becomes elongated and is therefore held even more tightly within the cups 88 supporting it. This factor, together with the fact that the toggle linkage on the clamp is forced into a tighter position by the spinning of the shaft, is considered to be a unique safety factor in this invention.

As will be evident the overall apparatus including the truck, battery, supported motor and other facilities is primarily intended to be used along the side lines of the football field, while the game is being played and, because of rain or snow, the football when too wet for practical use has to be dried. It will be evident that before opening the lid or cover means 33 the trip and latch-like safety lever 80 should be positioned in the keeper slot 62 in the manner shown in full lines in FIG. 4. Following this practice (as a safety measure) will prevent turning of the assembly when the clamp 78 is in an open position because, as is evident, the assembly will spin when the lid is open, but not until the clamp 78 is intentionally placed in a closed position. The ball holding or clamp means being equipped with holding cups is practical in that the cups are designed to fit the configuration of the ends of the football as brought out in FIG. 3. After placing the ball in the clamp means and closing up and tightening the clamp the housing is closed and the ball is ready to be whirled and dried. The motor is then started and this turns the ball holding and clamping assembly. The latter functions as an impeller, takes in air through the inlet openings 56 and ducts 44 and 46 (FIG. 3) and forces air from the housing 34 through the air discharge opening; that is, the tangential discharge neck 92 (see FIG. 2) forming a part of said housing. Moisture is expelled from the ball by a centrifugal force and the ball is further dried by the warm dry air entering the housing from the heat source. The partial vacuum created with-

in the housing causes an increased evaporation rate of the moisture within the housing and thus results in a more rapid drying of the ball. After the ball is dried the motor is stopped and the housing is opened and the ball is removed and if desired placed in the storage box or container 94 at the right in FIG. 2. This means comprises a suitable hollow auxiliary housing 96 with shelves 98 therein. The top wall 100 is provided with an exhaust port 102 and a cowl 104. Communication between the main and auxiliary housings is had by way of the connected necks 92 and 106.

It is to be pointed out that it is not normally possible for the user to encounter difficulty because of the fact that when the ball clamp is open (in the manner shown in solid lines in FIG. 4) the motor driven head and toggle means is locked in a safety position and injury is thus avoided. It is also to be pointed out that the fact that the centrifugal force which is induced causes the ball to become elongated and thus the end portions are fitted more tightly into the holding cups 88.

It is believed that a careful consideration of the specification in conjunction with the drawings will enable the reader to obtain a clear and comprehensive understanding of the construction and arrangement of component parts, the features and advantages and the mode of operation. Consequently, a more extended description is thought to be unnecessary.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. A football drying apparatus comprising a portable wheeled vehicle having a horizontal table, heat generating means mounted atop said table, a vertically disposed centrifugal-type blower supported atop said heat generating means, said blower embodying an oblate-spheroidal hollow housing marginally provided with a tangential dispensed air discharge neck, said housing also having heated air intake means communicable with said heat generating means and discharging into the hollow chamber of said housing, said chamber being of a size to permit a football to be confined for drying therein, said housing embodying a lower stationary section secured to said heat generating means, and a complementary upper section hingedly mounted on the lower section and providing an openable and closable cover section for said chamber, a motor and shaft supporting bracket secured to and projecting from a side of said housing above said table, a shaft parallel to and rotatably supported on said bracket and having an outer end connected to and rotated by a motor supported on said bracket, the inner end of said shaft passing into an axial portion of the chamber through opening means provided therefor, and a pair of arcuately curved coplanar arms confined in said chamber, said arms being radial to the axis of said shaft and having their inner adjacent ends pivotally joined to diametrically opposite sides of and rotatable with said inner end of said shaft, the outer ends of said arms having clamping means thereon to clampingly but releasably engage the respectively adjacent ends of the football, safety latches pivotally mounted within said chamber on the inner end of said shaft, said latches being disposed in a plane common to the plane of said arms, links interposed between said latches and arms and pivotally connected at their outer ends to the inner ends of the arms and also pivotally connected at their inner ends to their respectively cooperating latches, the upper part of the aforementioned stationary section being open and an upper edge thereof having a keeper notch located adjacent to said shaft, said keeper notch being closed by the cover section when the latter is in

its closed position and being uncovered and exposed for use when the cover section is open, whereby to permit one of the latches to be manually positioned and temporarily seated in said keeper notch and to thus prevent accidental rotation of the shaft.

2. The structure defined in claim 1, and wherein said clamping means comprises a pair of longitudinally spaced ball seating and holding cups adjustably mounted on the terminal outer ends of said arms, the arcuity of said arms being conformable with the side of the football proximal to said arms and being adapted to conformingly embrace said side of the football.

3. The structure defined in claim 1, and in combination, an auxiliary housing adapted to store at least one football after it has been dried and conditioned for ready reuse, said housing being situated adjacent said discharge neck and having an air intake neck communicatively joined to said discharge neck, having a hooded top vent for exhausting used air to the atmosphere, and also having door means which facilitates placing the football in the housing and subsequently removing the football therefrom.

4. A football drier comprising a centrifugal-type blower embodying an oblate-spheroidal hollow housing having a used air discharge neck joined tangentially to a peripheral portion of said housing and communicating with the internal chamber portion of said housing, said housing embodying cooperating stationary and movable sections, said movable section being hingedly mounted on the stationary section and providing an openable and closable cover for said chamber portion, one side wall of said housing having an axially disposed shaft opening, a power driven shaft exterior to said one side wall and having an end portion passing through said shaft opening and terminating at the central axial portion of said chamber, a pair of coplanar arms confined in said chamber, said arms being radial to the shaft and having their inner ends thereof pivotally connected to said shaft and rotatable in unison with said shaft, ball seating and clamping cups adjustably mounted on the outer ends of said arms, said cups when aligned with each other being adapted to clampingly engage the respectively cooperating ends of a football, a football having a lengthwise side positioned adjacent to and embraced by said arms and clamped between said cups and cooperating with the cups, arms, and shaft, whereby to spin the football and also to provide an impeller, a source of heat external to said housing and communicating with the chamber in said housing by way of heated air intake and delivery ducts provided in said housing, said impeller serv-

ing to circulate the air in said chamber and also serving to draw heated air through said ducts into said chamber.

5. The structure according to claim 4 and wherein the inner end of said shaft is provided with an adapter head, the inner ends of said arms being pivotally connected to the inner end of said shaft through the medium of said head, and toggle-type linkage means embodying paired links pivotally connected together, pivotally connected to said head, and also pivotally connected to the inner ends of said arms.

6. The structure defined in claim 5, and wherein said linkage means is provided with at least one safety latch member positioned in close proximity to said head and also the inner end of said shaft, said latch member being manually movable to a safety position when said cover is open, said stationary section having a keeper notch cooperatively proximal to the head and shaft and in which said latch member is releasably seated, whereby to prevent the shaft and said impeller from turning.

7. A football drier comprising a hollow oblate-ellipsoidal housing provided with hot air delivery ducts having intake ends communicating with air inlet ports provided in a peripheral portion of the housing, the discharge ends of said ducts terminating at the axial central area of the hollow chamber in said housing, said housing being further provided with a used air discharge neck communicatively joined to said peripheral portion and projecting tangentially therefrom, one side wall of said housing having an axially positioned shaft opening, a power driven shaft having an inner end portion projecting through said shaft opening into the aforementioned axial area of said chamber, a football located in said chamber, and means connecting the football to said inner end portion with the longitudinal axis of the ball at right angles to the long axis of said shaft, the size of said chamber being closely dimensioned and contoured relative to the size and shape of the ball to achieve a pumping effect, and the short axis of said ball coinciding to the short axis of the chamber, whereby the ball whirling around in the chamber becomes an impeller, centripetally draws air into the chamber through said ducts, and centrifugally drives the dischargeable air out through said discharge neck.

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