

No. 770,947.

PATENTED SEPT. 27, 1904.

W. C. WHETSTONE.
VENTILATING APPARATUS.

APPLICATION FILED OCT. 22, 1903.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.

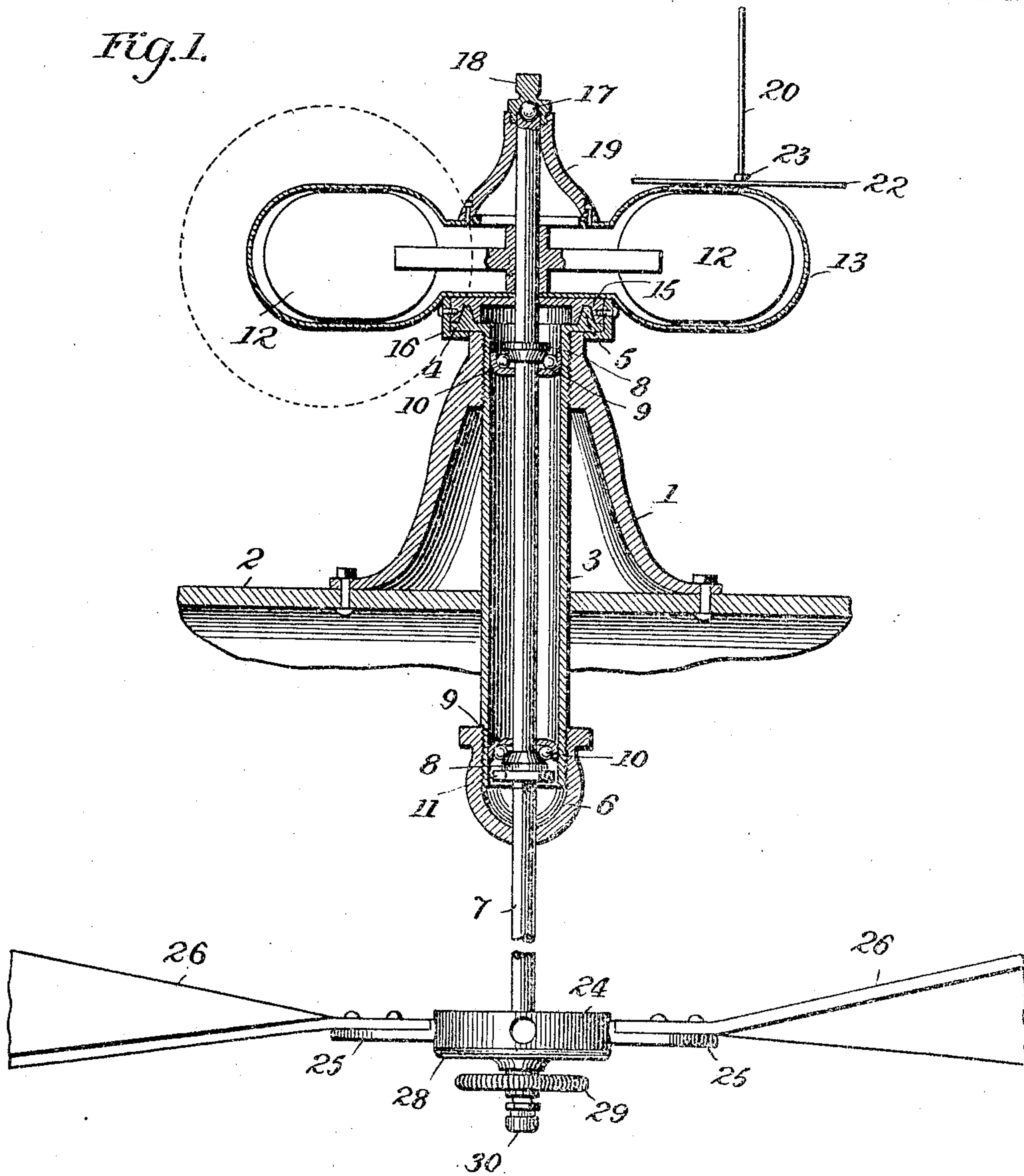
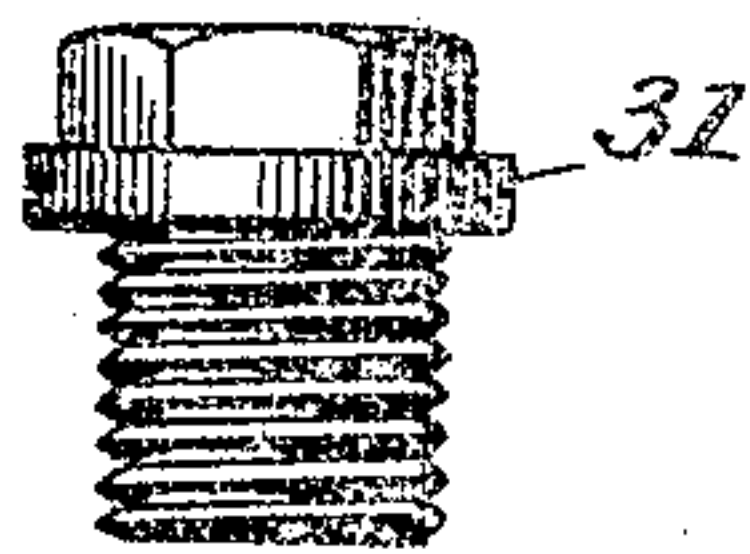


Fig. 6.



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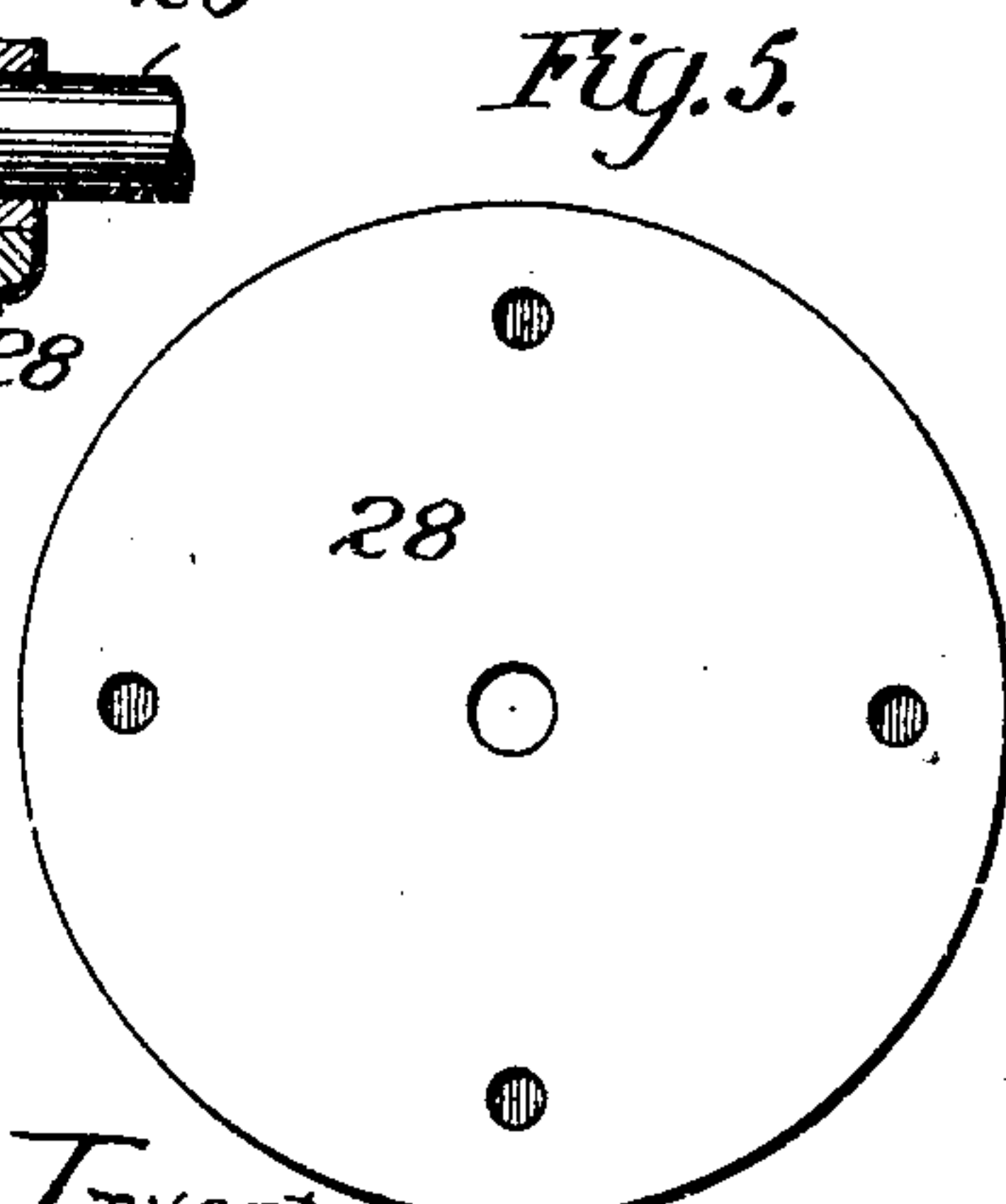
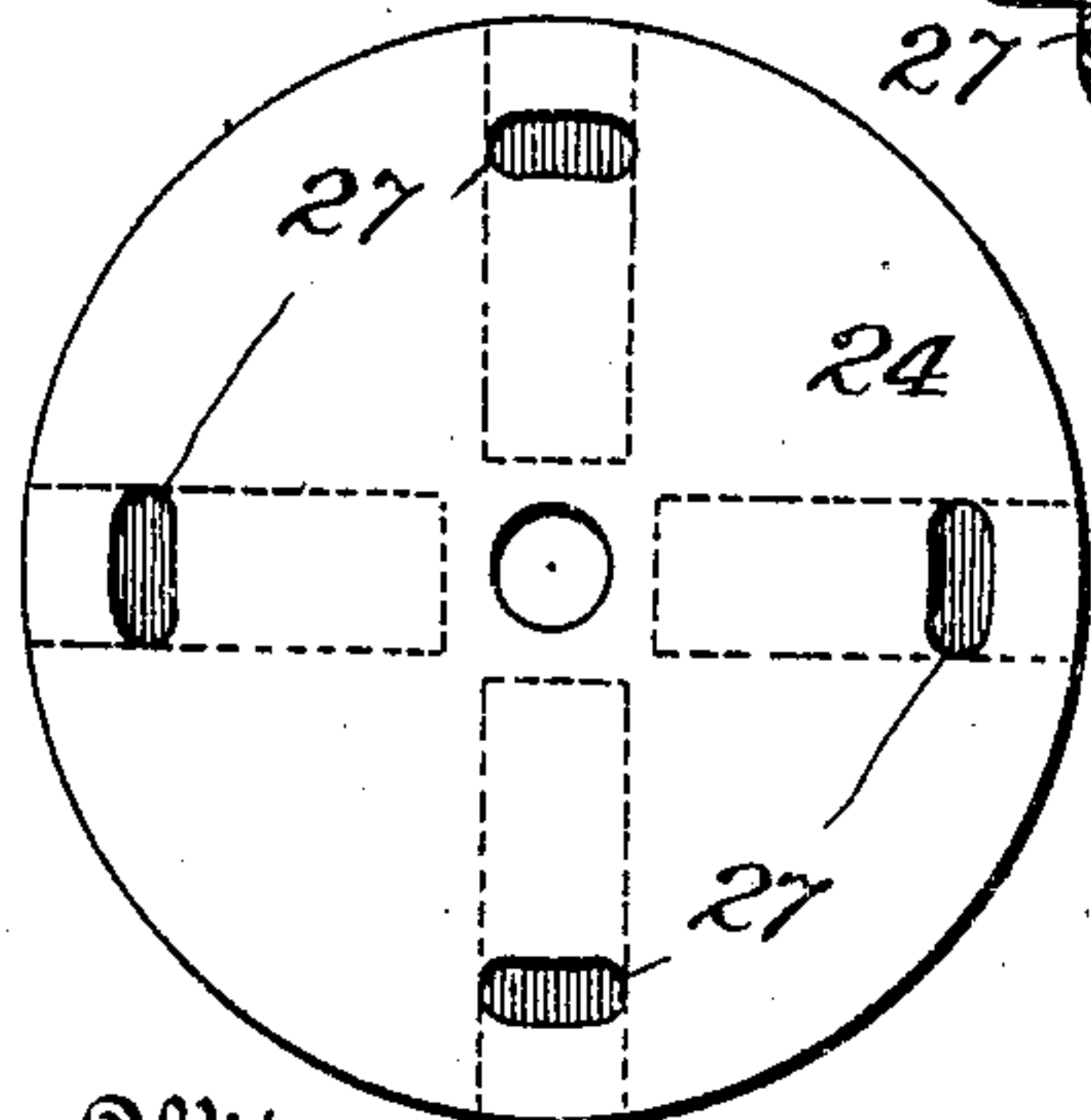
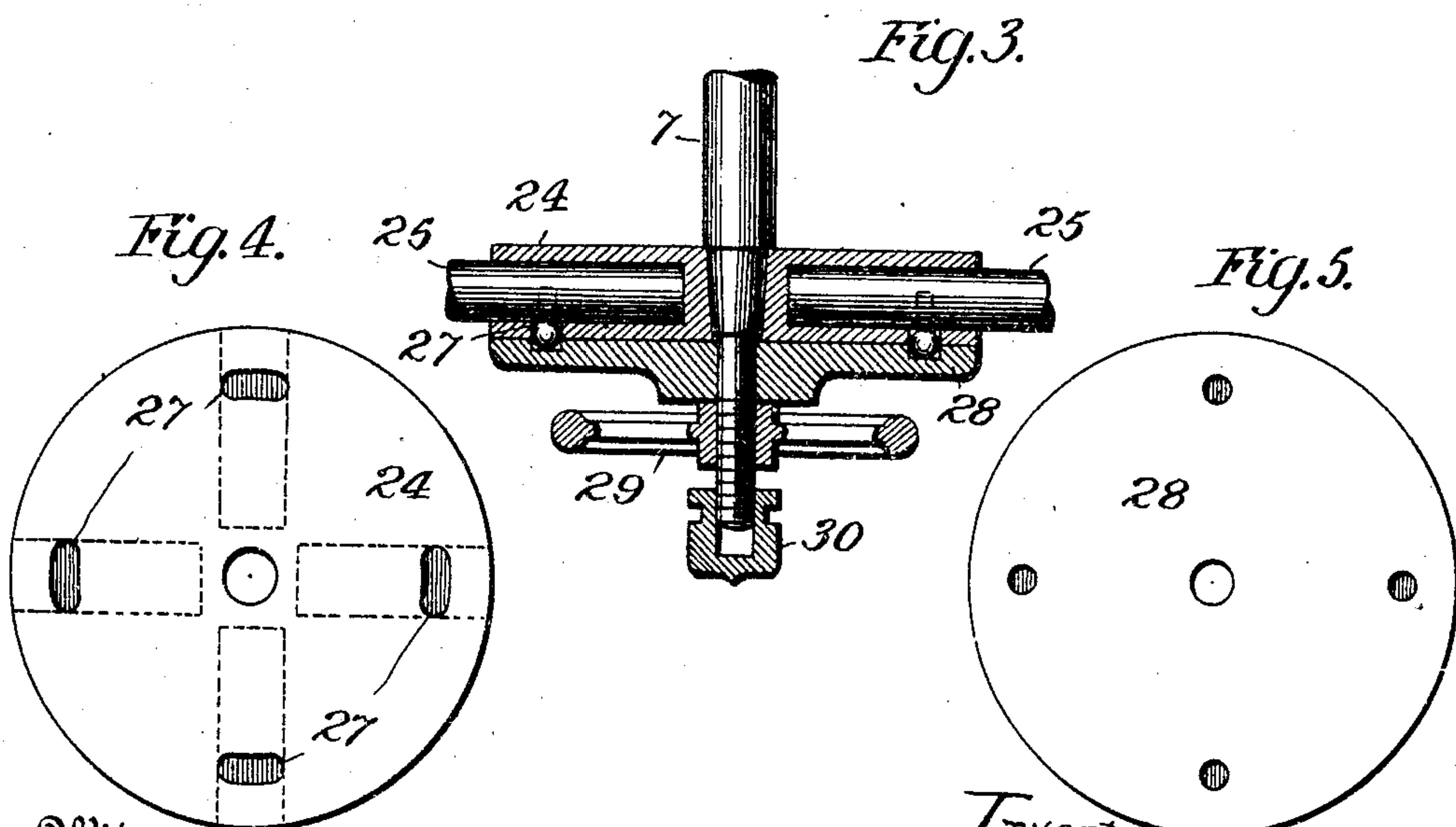
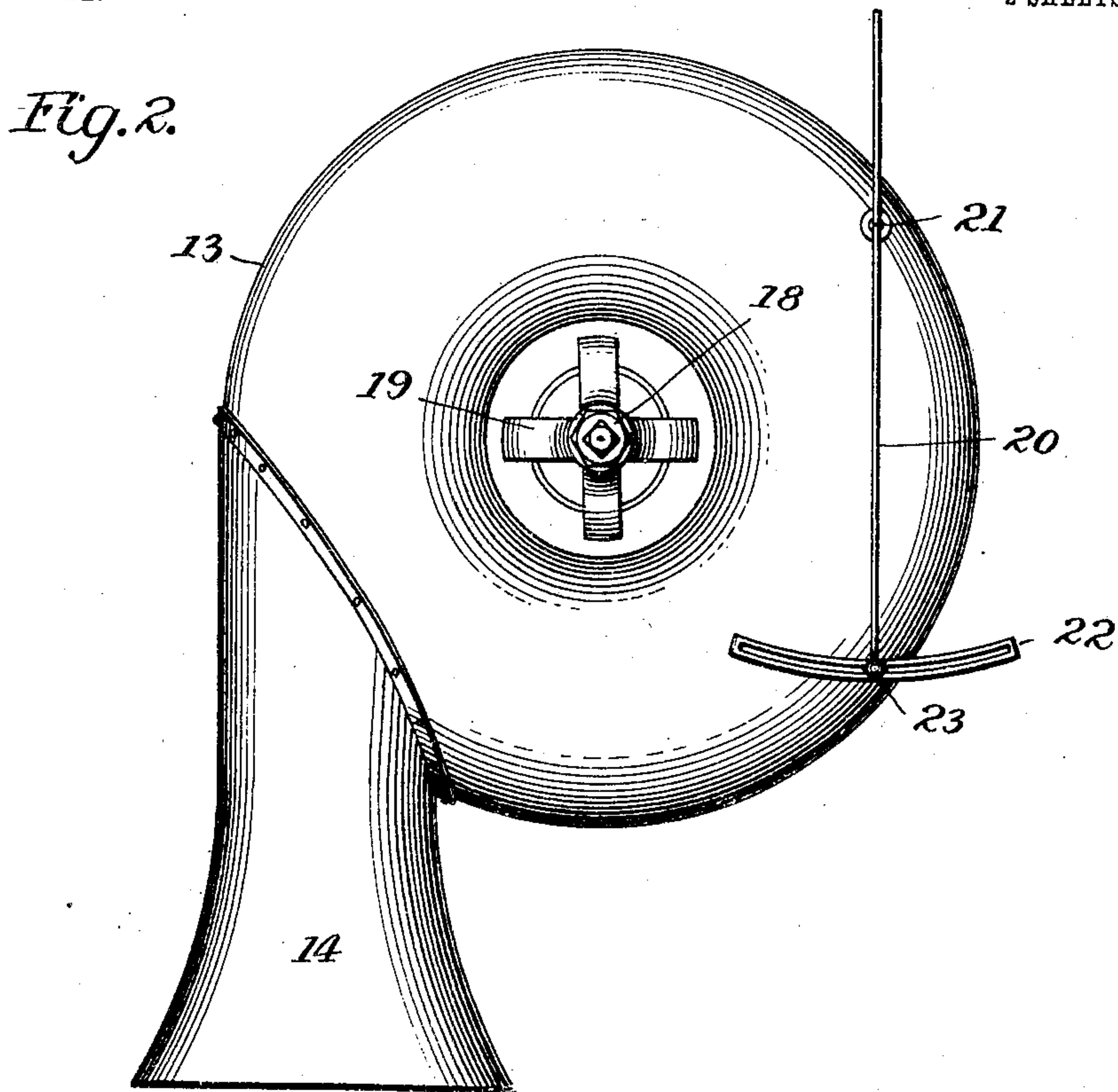
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

WILLIAM C. WHETSTONE, OF SAVANNAH, GEORGIA.

VENTILATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 770,947, dated September 27, 1904.

Application filed October 22, 1903. Serial No. 178,131. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM C. WHETSTONE, a citizen of the United States, residing at Savannah, Chatham county, State of Georgia, have invented certain new and useful Improvements in Ventilating Apparatus, of which the following is a specification.

The present invention relates to improvements in ventilating apparatus, and particularly to that class in which a rotary fan is employed; and one of the principal objects of the invention is to provide means whereby the blades of such a device may be simultaneously adjusted and the angle thereof with relation to the power-shaft varied.

While the invention is adapted for use for numerous purposes, it is particularly designed for use in the ventilation of railroad-cars, and such an embodiment of the invention is illustrated in the accompanying drawings and will be hereinafter particularly described.

In the accompanying drawings, Figure 1 is a vertical sectional view through a railway-car ventilator constructed in accordance with this invention. Fig. 2 is a plan view of the same. Figs. 3 to 5 are detail views of the blade-adjusting devices. Fig. 6 is a detail view of a plug for closing the upper end of the tubular support when the ventilating apparatus is removed.

Referring to the accompanying drawings, in the several views of which like reference characters designate corresponding parts, it will be seen that the apparatus is supported by a suitable base 1, provided with an expanded or flaring lower end, adapted to be firmly secured to the roof 2 of a railway-car, for example.

A passage through the upper end of the support 1 is provided with a suitable thread, with which engages an exterior thread, formed on a sleeve 3, near the upper end thereof. Said sleeve 3, which is of such length as to project the desired distance within the car, is provided at its upper end with an annular flange or secured to a plate 4, that is provided on its upper face with a rib 5, extending concentric with the axis of the sleeve 3. The lower end of the sleeve 3 is closed by a removable

cap 6, through which extends a shaft 7. The said shaft extends through the sleeve 3 and is provided at suitable points with cone-shaped bearing-collars 8, between which and cups 9, secured within the sleeve 3, are arranged suitable antifriction-balls 10. The lower ball-bearing cone is adjustable on the shaft 7, being held in the desired position by a lock-nut 11. To the shaft 7, above the support 1, is secured a motor or driving-fan 12, which operates within a casing 13, that is rotatable on said support 1 and provided with a funnel-shaped inlet 14. The inlet-piece 14 is detachably secured to the casing, so that it can be readily removed and replaced by another of different size or form, if desired.

As shown, a plate 15 is secured to the bottom of the casing 13 and is provided in its lower face with an annular groove or way into which extends the rib 5 on the support 1, said plate 15 being connected to the plate 4 of the support by angle-irons 16, which act to prevent vertical movement of the casing 13 from the support, but do not interfere with rotation of said casing.

In the upper end of the shaft 7 is formed a socket adapted to receive a ball 17, which is held in close contact with the shaft by an adjustable screw 18, mounted in the upper end of a frame 19, rising from the casing 13.

The casing 13 is provided with a vane 20, which is pivotally connected to the casing at 21 and is provided at one edge with a segmental guide 22, that engages a pin or stud 23 on the casing. By means of a lock-nut on the upper end of the pin 23 the vane 20 can be secured in any desired position.

To the shaft 7, near the lower end thereof, is secured a disk or hub 24, in which are formed a plurality of radial sockets, into which extend the arms or stems 25 of fan-blades 26. To each of said arms is secured a pin or stud that extends downwardly through a slot 27 in the lower face of the hub-disk 24 and is provided at its lower end with an enlarged head that fits snugly in a suitable socket formed in or is otherwise securely connected to an adjusting-plate 28, mounted to rotate about a central pivot or axis. The slots 27 extend

concentric with the axis or pivot about which the plate 28 turns, whereby when the said plate is adjusted about such pivot each of the stems of the fan-blades 26 will be axially rotated and the angle of said blades changed. A locking-ring 29 and nut 30 are provided for holding the plate 28 and the fan-blades in the desired position.

The operation of the apparatus herein described and the advantages thereof will be readily understood and appreciated. If used on a railway-car, the upper revoluble casing 13 is turned into such position that the mouth of the funnel-shaped inlet thereof will point in the direction in which the train is moving and the vane 20 secured in such position as to maintain the parts in said relation. If used in any other relation or condition, said vane will act to maintain the casing 13 in such position that the motor-fan will be driven by the wind or moving currents of air. The shaft 7 will transmit the power produced by revolution of the motor or driving-fan to the fan within the car or space to be ventilated. The extent of circulation or amount of air set in motion by the latter fan will depend on the relative positions of the blades thereof. By loosening the ring 29 and nut 30 the plate 28 can be rotated to adjust the fan-blades to the desired positions, and they can be secured in such positions by the ring 29 and nut 30. It will be noted that by such adjustment the positions of all of the blades 26 is simultaneously and similarly changed.

When the proper devices are removed, the opening in the top of the support 1 is closed by a suitable plug 31.

The air which operates the motor-fan 12 escapes from the casing 13 through a central opening in the top of the casing.

By mounting the vane 20 on the motor-casing in the manner described it is adapted to always properly position the said casing to maintain the mouth of the inlet-funnel directly in the path of the air-current. As before stated, the said funnel-shaped inlet is detachably connected to the casing, and in event of employing funnels of different sizes it is possible to so adjust the vane as to maintain the mouth of the funnel always in proper position.

Having thus described the invention and without intending to be limited thereby to the particular embodiment of the invention selected for purposes of illustration herein, what is claimed, and desired to be secured by Letters Patent, is—

1. In a ventilating apparatus, the combination with a shaft, and means for driving the shaft, of a hub secured to the shaft, a plurality of fan-blades revolubly mounted in bearings on said hub, a plate or disk rotatably mounted on the shaft and engaging the stem of each fan-blade, whereby as said plate is turned

about the shaft the angular position of the blades will be simultaneously changed, and means mounted on the shaft for locking said adjusting plate or disk against movement.

2. In a ventilating apparatus, the combination with a shaft, and means for driving the shaft, of a hub secured to the shaft, a plurality of fan-blades revolubly mounted in bearings on said hub and each having a pin or stud projecting laterally from its stem, a plate or disk loosely mounted on the shaft and engaging all of said pins, whereby as it is rotated the angular positions of all the blades will be simultaneously changed, and means for forcing said plate or disk into contact with an abutment on the shaft to prevent rotation thereof and hold the fan-blades in any adjusted position.

3. In a ventilating apparatus, the combination of a suitable support, a sleeve secured in and extending through said support, a casing revolubly mounted on and closing the upper end of said sleeve and provided with suitable openings, a shaft mounted in bearings within said sleeve and extending beyond the ends thereof, a removable cap surrounding the shaft and closing the lower end of the sleeve, the upper end of the shaft having a bearing against a projection on the casing, a motor-fan secured to the shaft within said casing, and a fan having axially-adjustable blades secured to the shaft below the said sleeve.

4. In a ventilating apparatus, the combination of a support provided with a vertically-extending passage, a sleeve secured in said passage and projecting above and below said support, ball-bearing cups arranged within said sleeve, an upwardly-extending rib arranged about the upper end of said sleeve, a casing having on its lower face a groove, into which said rib extends, and provided with a suitable inlet, a shaft extending through said casing and sleeve and provided within the latter with suitable cones adapted to cooperate with the ball-cups therein, a motor-fan secured to the shaft within the casing, a vane or blade mounted on and extending upwardly from the casing, and a fan having a plurality of axially-adjustable blades mounted on the shaft below the sleeve.

5. In a ventilating apparatus, the combination with a shaft extending through a wall of the compartment or space to be ventilated, a plurality of fan-blades connected to said shaft within said compartment or space, and a motor-fan secured to said shaft outside of said space or compartment, of a casing inclosing said motor-fan and mounted to revolve about the axis of said shaft, a funnel-shaped inlet detachably connected to said casing, and a vane or blade secured to said casing to maintain the inlet thereof in the path of the air-current, said vane or blade being adjustably connected to the casing.

6. In a ventilating apparatus, the combination of a shaft extending through a wall of the compartment or space to be ventilated, a plurality of fan-blades connected to the said shaft within the compartment or space, a motor-fan secured on said shaft outside of said compartment, a casing for said motor mounted to rotate about the axis of the shaft, a vane mounted on top of and extending upwardly from said casing, the vane being pivotally connected with the casing near one end, and means for securing the other end of the vane to the casing in either of several positions.

7. In a ventilating apparatus, the combination of a shaft extending through a wall of the compartment or space to be ventilated, a plurality of fan-blades connected to the shaft

within said compartment, a motor-fan secured on said shaft outside of said compartment, a casing for said motor mounted to rotate about the axis of the shaft, a vane pivotally mounted on said casing and provided at or near one end with a guide 22 extending concentric with the pivot and engaging a stud or pin on the casing, and means for locking said guide and the vane in any desired position.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

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Witnesses:

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GERARD TREANOR.