

W. MEIER.
 ROTARY FAN.

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983,389.

Patented Feb. 7, 1911.

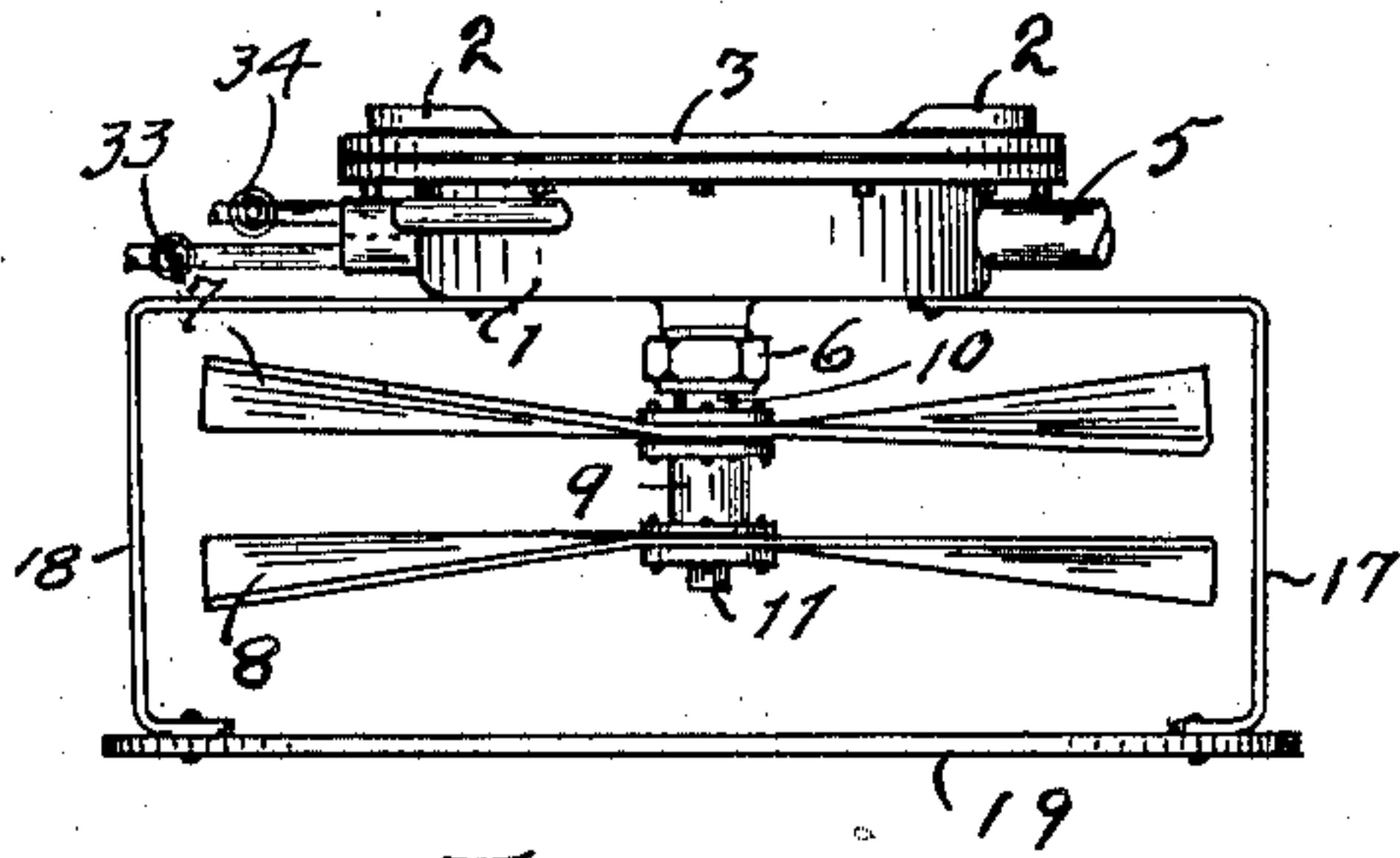


Fig. 1.

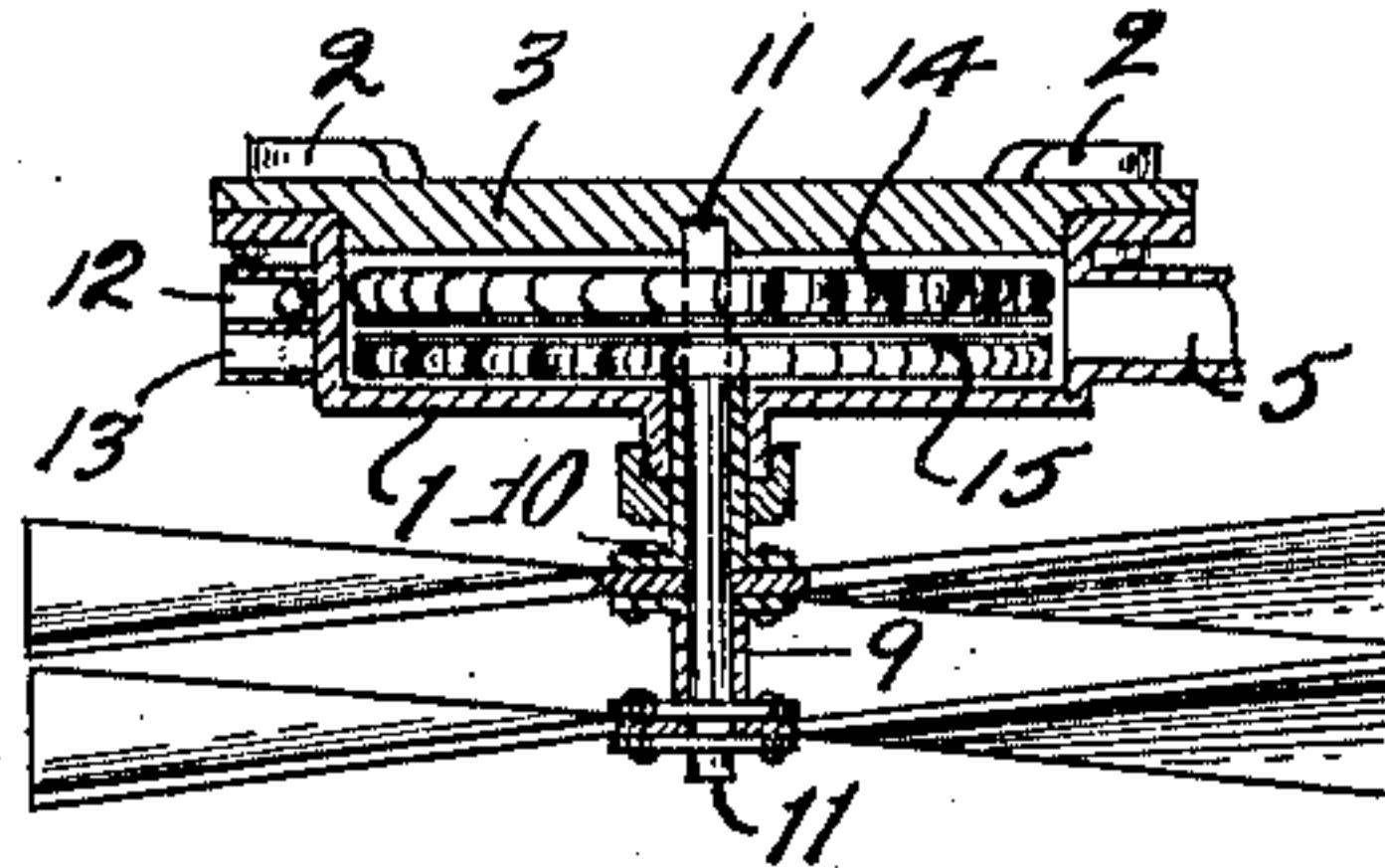


Fig. 2.

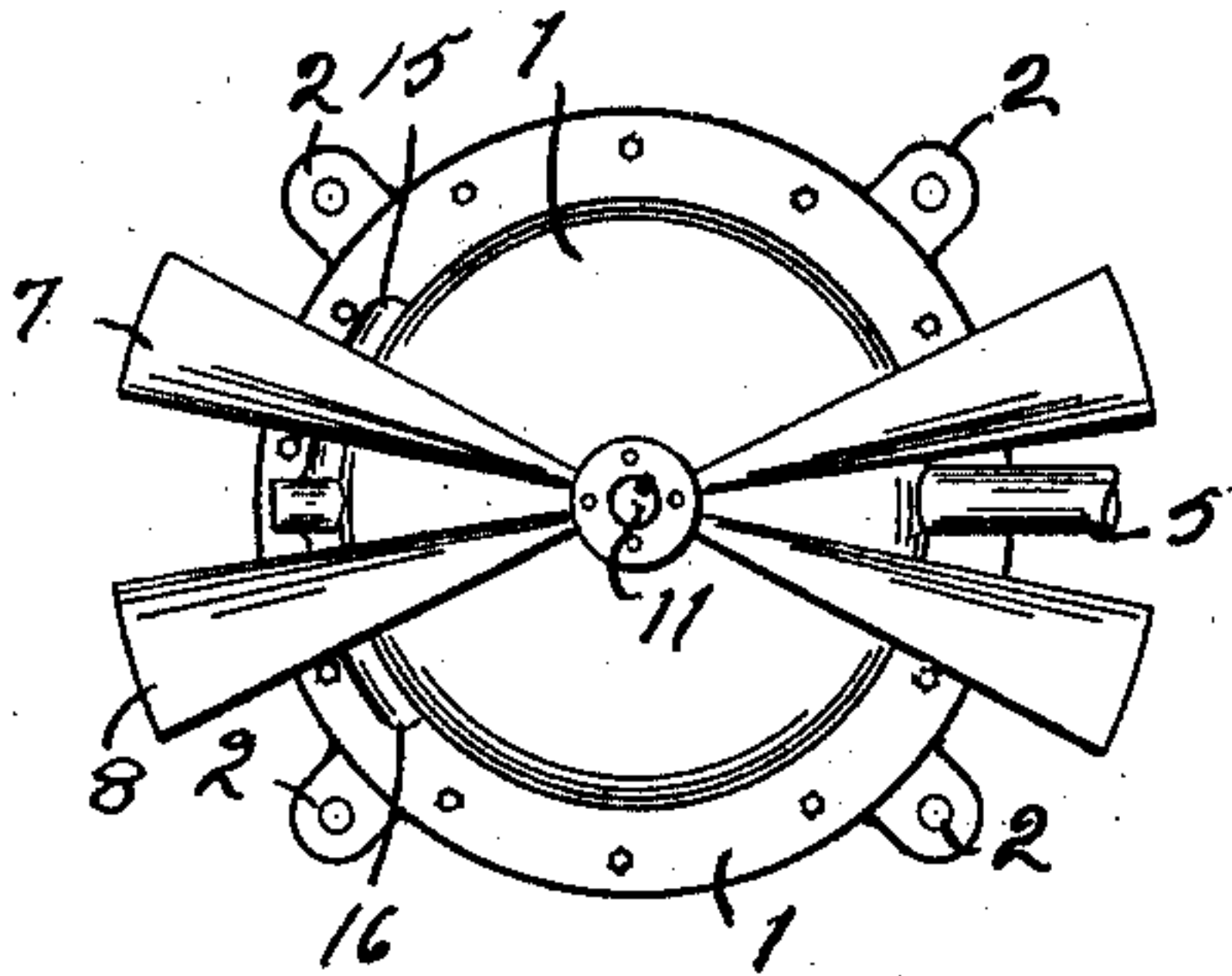


Fig. 3.

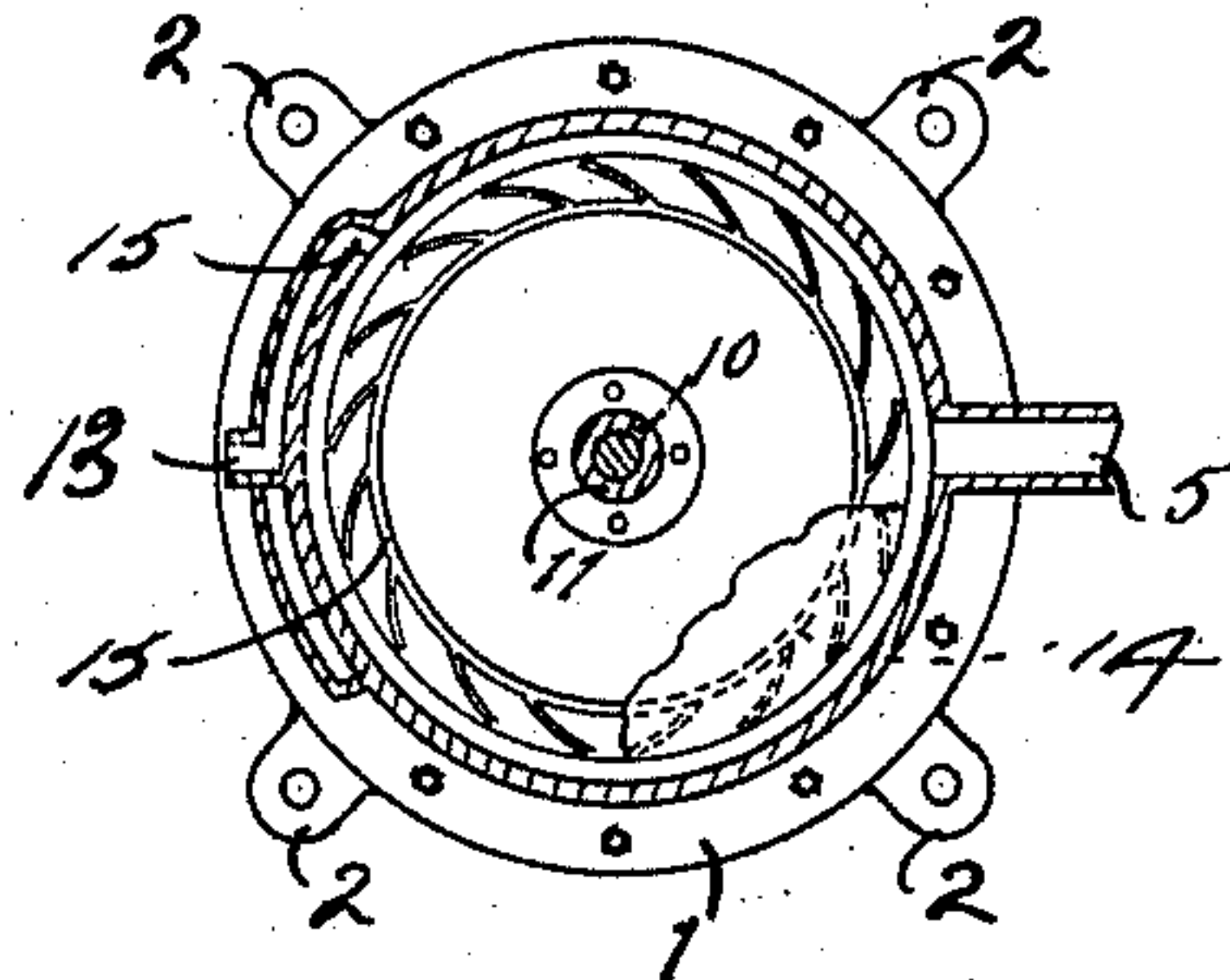


Fig. 4.

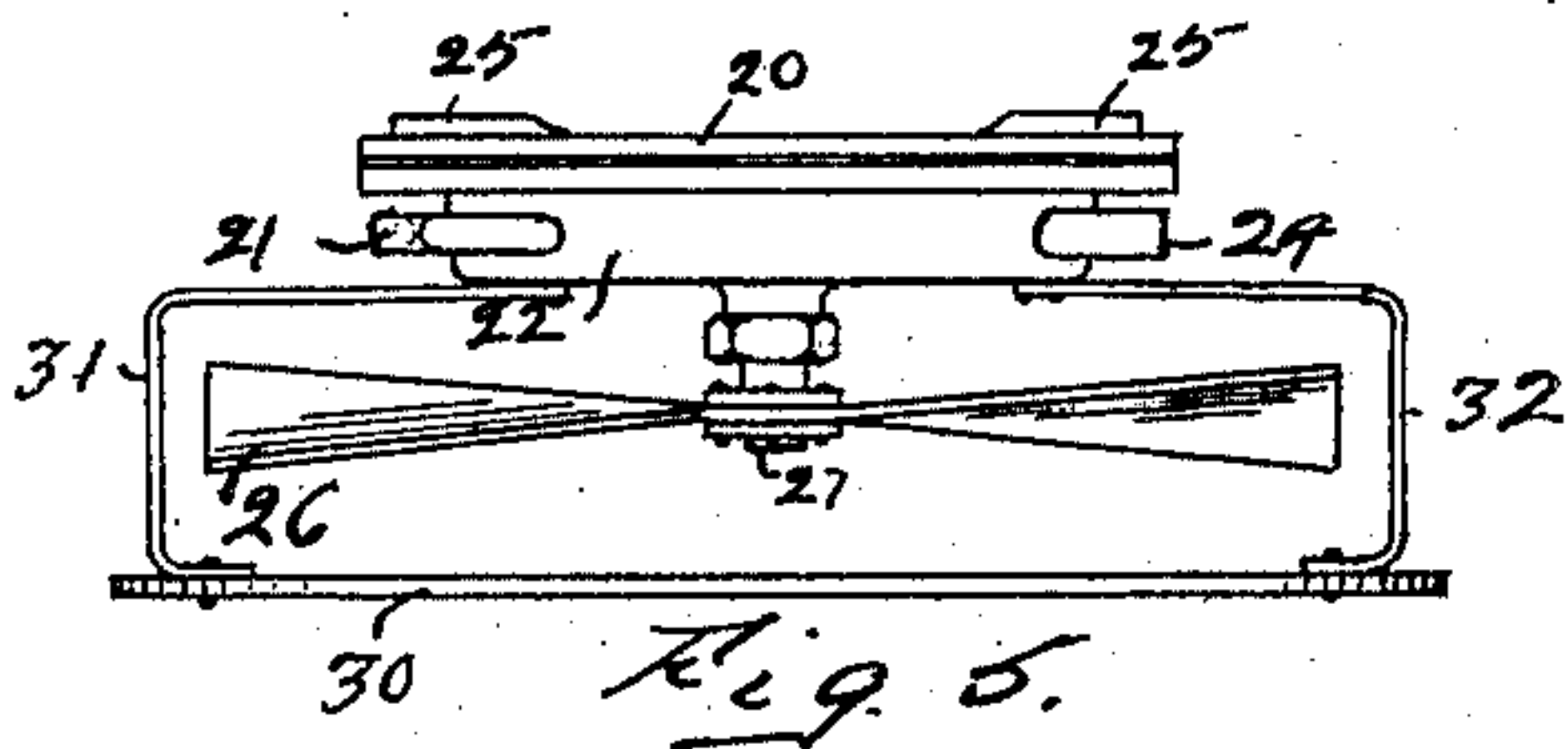


Fig. 5.

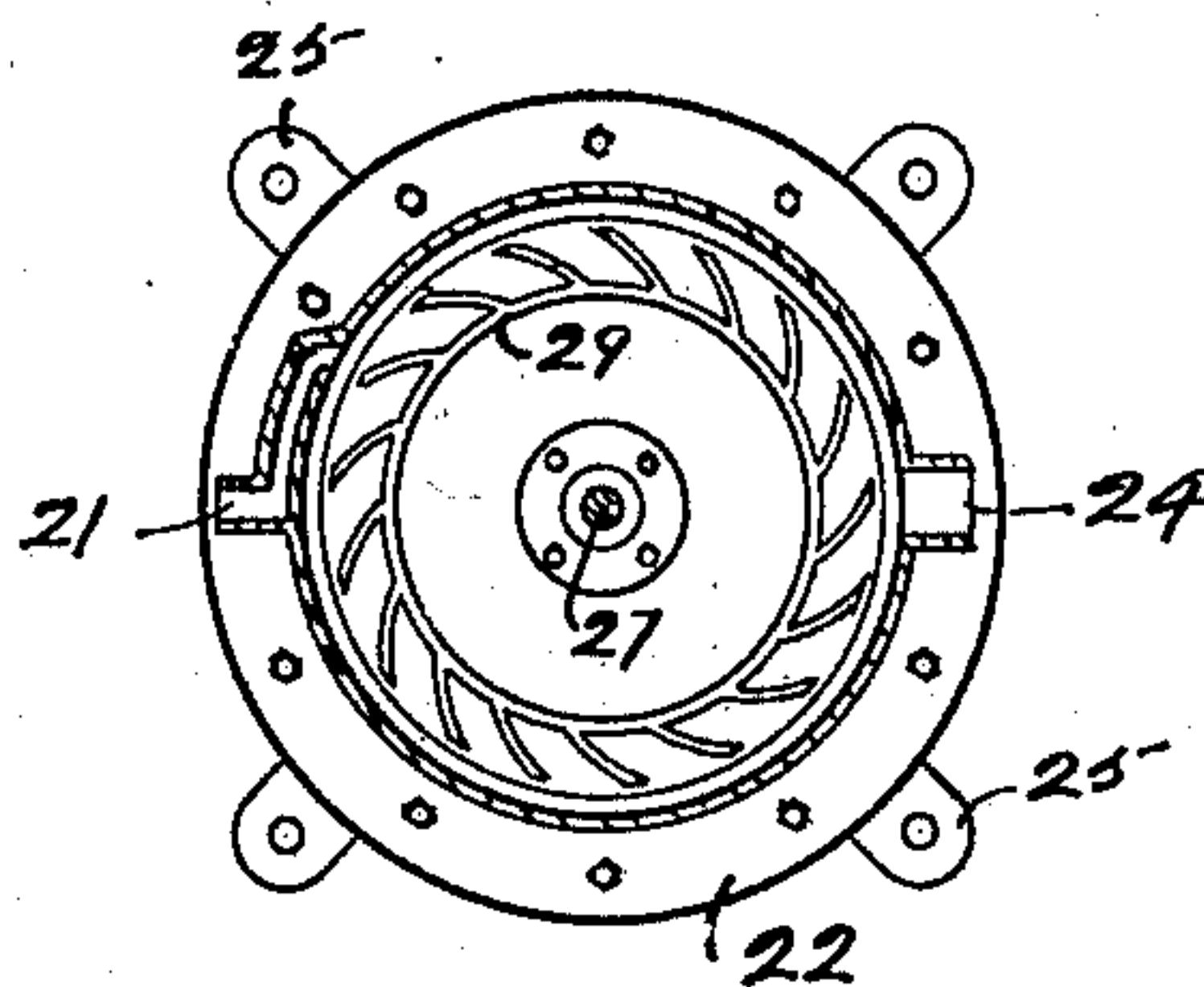


Fig. 6.

WITNESSES:

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ROTARY FAN.

983,389.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILLIAM MEIER, a citizen of the United States of America, and a resident of Blackhawk county, Iowa, have invented certain new and useful Improvements in Rotary Fans, of which the following is a specification.

My invention relates to improvements in rotary fans, and the object of my improvement is to supply means for driving the same by means of the use of a fluid under pressure, such as steam, compressed air or other similar power. This object I have accomplished by the mechanism which is hereinafter fully described and claimed, and which is illustrated by the accompanying drawings, in which:

Figure 1 is a side elevation of my improved device having a plurality of fans. Fig. 2 is a central vertical axial section of the chamber and bearings, showing the contained shaft, sleeve and turbine-wheels in elevation. Fig. 3 is an under plan view of my said device. Fig. 4 is a horizontal section of the turbine-chamber. Fig. 5 is a side elevation of my improved device, having a single fan thereon. Fig. 6 is a horizontal section of the turbine-chamber shown in Fig. 5.

Similar reference numerals designate corresponding parts throughout the several views.

The turbine-chamber is composed of a top plate 3 and a hollow casing 1 secured tightly together, the plate 3 having ears 2 whereby it may be secured to a supporting-body. A rotary shaft 11 has bearings in said plate 3 and casing 1, and projects outwardly therefrom. A fan 8 is secured to the projecting end of said shaft, while a sleeve 10 incloses and is rotatable upon a part of said shaft above the fan 8. Another fan 7 is secured to said sleeve and to a collar 9, the latter rotatable therewith upon the shaft. Upon that part of the sleeve which extends within said casing, a turbine-wheel 15 is secured, while a turbine-wheel 14 of the same dimensions is secured to said shaft 11 above the upper end of said sleeve. Said turbine-wheels are mounted for reverse rotation. Nozzles 12 and 13 open into said casing and are adapted to deliver jets of a fluid under pressure against the periphery of each turbine-wheel 14 and 15 respectively, appropriately to rotate said wheels in opposite

directions. Shut-off cocks 34 and 33 control the delivery of said nozzles respectively. An exhaust-port 5 in said casing, has a larger area of orifice than the combined areas of the delivery orifices of said nozzles, and is thus fit to void the chamber of the fluid as rapidly as the same is brought therein.

Since the fans rotate in opposite directions, their joint action is to cause their axially-directed air-currents to oppose each other with a resultant driving of the joint current radially outward, which more thoroughly distributes the moving air throughout a room. To aid in this result, I suspend a deflecting-shield 19 of disk-form below the fan 8 and across its axis of rotation, the disk being supported by hangers 17 and 18 from the casing 1, and the said disk or shield arrests any movement of the air and tends to aid in diverting the current from the fans to their sides. Either fan may be driven alone, by closing the shut-off cock of the nozzle of the turbine which drives the other fan. The device is useful in creameries, or other rooms where an equable diffusion of air without strong drafts is desired.

In Figs. 5 and 6 is shown my device with a single turbine-driven fan 26, the fan being mounted on the shaft 27 which rotates in bearings in the chamber 20—22. A turbine 29 on said shaft in said chamber, is driven by a jet impinging upon it from the nozzle 21, the exhaust leaving by the port 24, and the lugs 25 supporting the device. Hangers 31—32 support an interposed shield 30 below the fan 26.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is:

1. In combination, an inclosed chamber, a rotary shaft seated therein and projecting therefrom, a fan secured to the projecting part of said shaft, a rotary sleeve inclosing a part of said shaft both within and without said chamber, a fan mounted on said sleeve without said chamber, a turbine-wheel mounted on said sleeve within said chamber, a turbine-wheel mounted on said shaft within said chamber, an exhaust-port in said chamber, and nozzles entering said chamber adapted to convey to and deliver jets of a fluid under pressure against the peripheries of said turbine-wheels tangentially,

said nozzles being inclined suitably to adapt them to deliver said fluid to rotate said turbine-wheels in opposite directions.

2. In combination, an inclosed chamber, 5 a rotary shaft seated therein and projecting therefrom, a fan secured to the projecting part of said shaft, a rotary sleeve inclosing a part of said shaft both within and with- 10 out said chamber, a fan mounted on said sleeve without said chamber of the same dimensions as the first-mentioned fan, turbine-wheels of the same dimensions in said chamber adapted for opposite rotations, one of 15 them mounted on said shaft and the other on said sleeve, an exhaust-port in said chamber, and nozzles in said chamber adapted to deliver a fluid under pressure to said turbine-wheels to rotate them with the same velocity in opposite directions.
- 20 3. In combination, an inclosed chamber, a rotary shaft seated therein and projecting therefrom, a fan secured to the projecting part of said shaft, a rotary sleeve inclosing a part of said shaft both within and with- 25 out said chamber, a fan on said sleeve, turbine-wheels in said chamber one mounted on said shaft and the other upon said sleeve, an

exhaust-port in said chamber, nozzles entering said chamber adapted to convey to and deliver jets of a fluid under pressure against 30 the peripheries of said turbine-wheels, and means for shutting off the current of said fluid through either of said nozzles separately.

4. In combination, an inclosed chamber, a 35 rotary shaft seated therein and projecting therefrom, a fan secured to the projecting part of said shaft, a rotary sleeve inclosing a part of said shaft both within and with- 40 out said chamber, a fan on said sleeve, turbine-wheels in said chamber one mounted on said shaft and the other upon said sleeve, an exhaust-port in said chamber, nozzles entering said chamber adapted to convey to 45 and deliver jets of a fluid under pressure against the peripheries of said turbine-wheels, and a deflecting-body supported over and across the axis of rotation of said fans.

Signed at Waterloo, Iowa, this 13th day of May, 1909.

WILLIAM MEIER.

Witnesses:

G. C. KENNEDY,
O. D. YOUNG.