No. 665,858. Patented Jan. 15, 1901.

W. H. ALDRICH.

WIND WHEEL.

(Application filed Aug. 12, 1899.)

(No Model.) 3 Sheets—Sheet 1.

Fig. 1

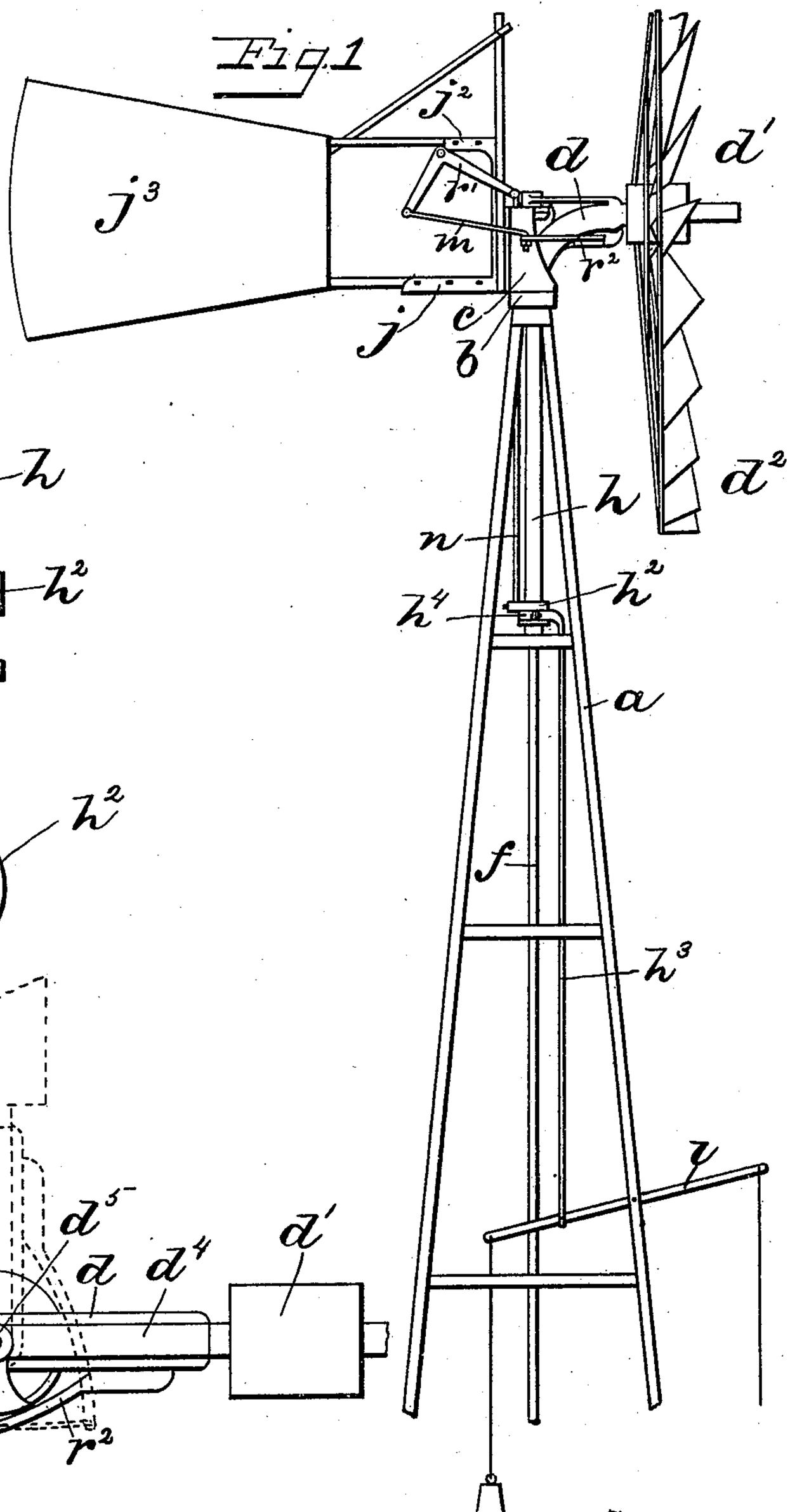

Fig. 13

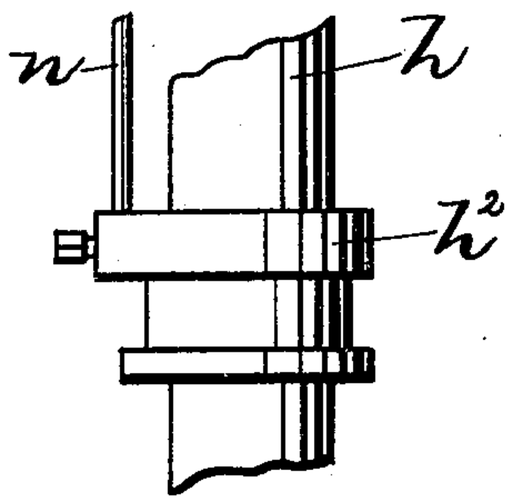

Fig. 14

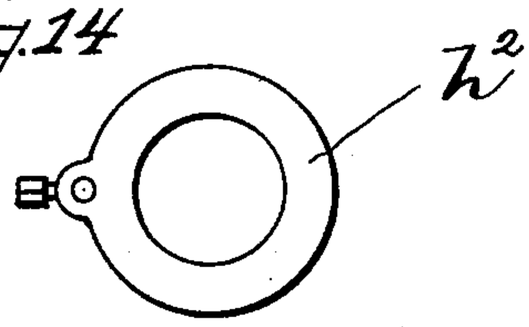

Fig. 4

Witnesses

F. L. Walker

Earl G. Welch

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3 Sheets—Sheet 2.

Fig. 2

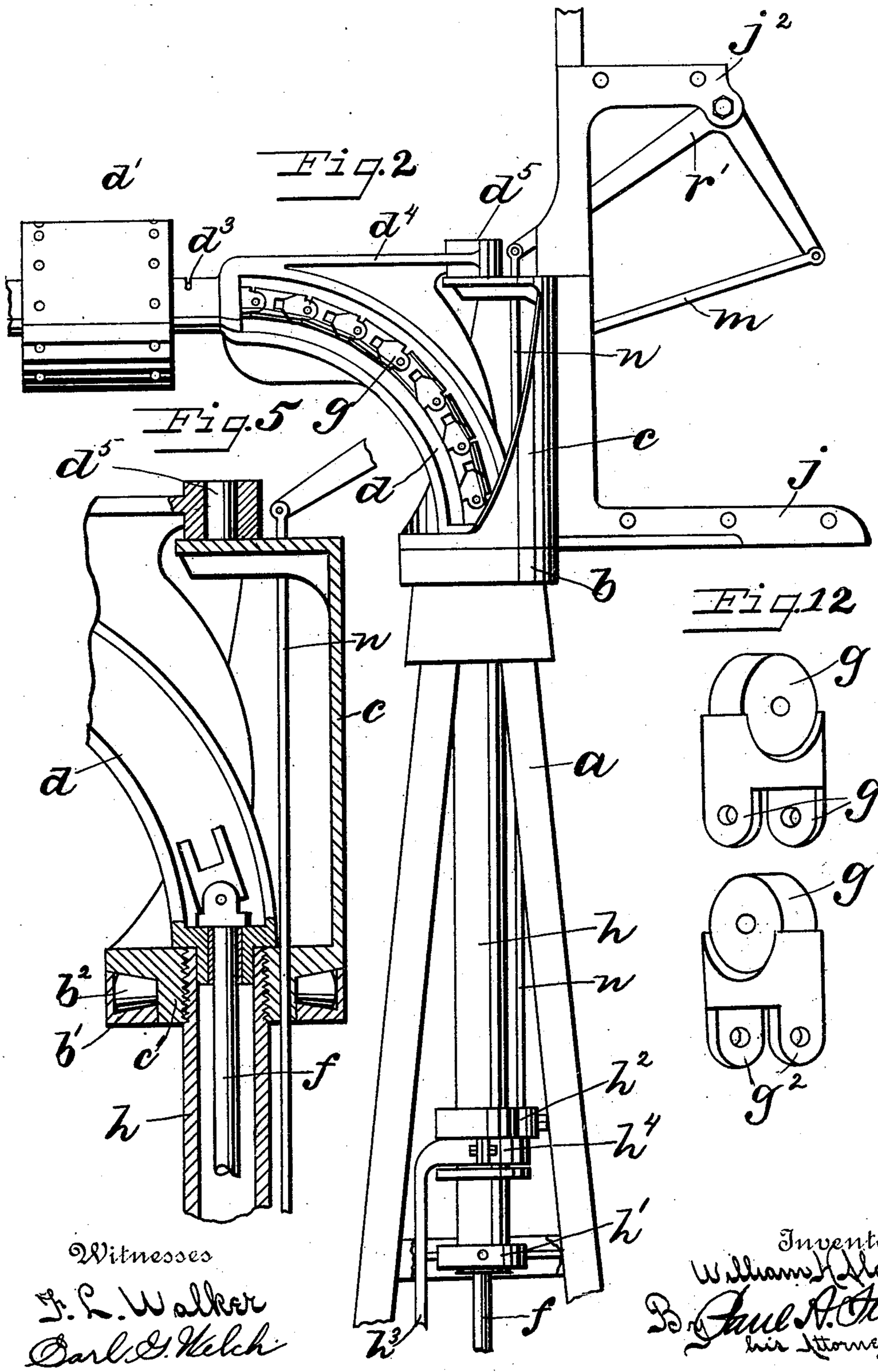

Fig. 5

Fig. 12

Witnesses

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No. 665,858. Patented Jan. 15, 1901.

W. H. ALDRICH.

WIND WHEEL.

(Application filed Aug. 12, 1899.)

(No Model.) 3 Sheets—Sheet 3.

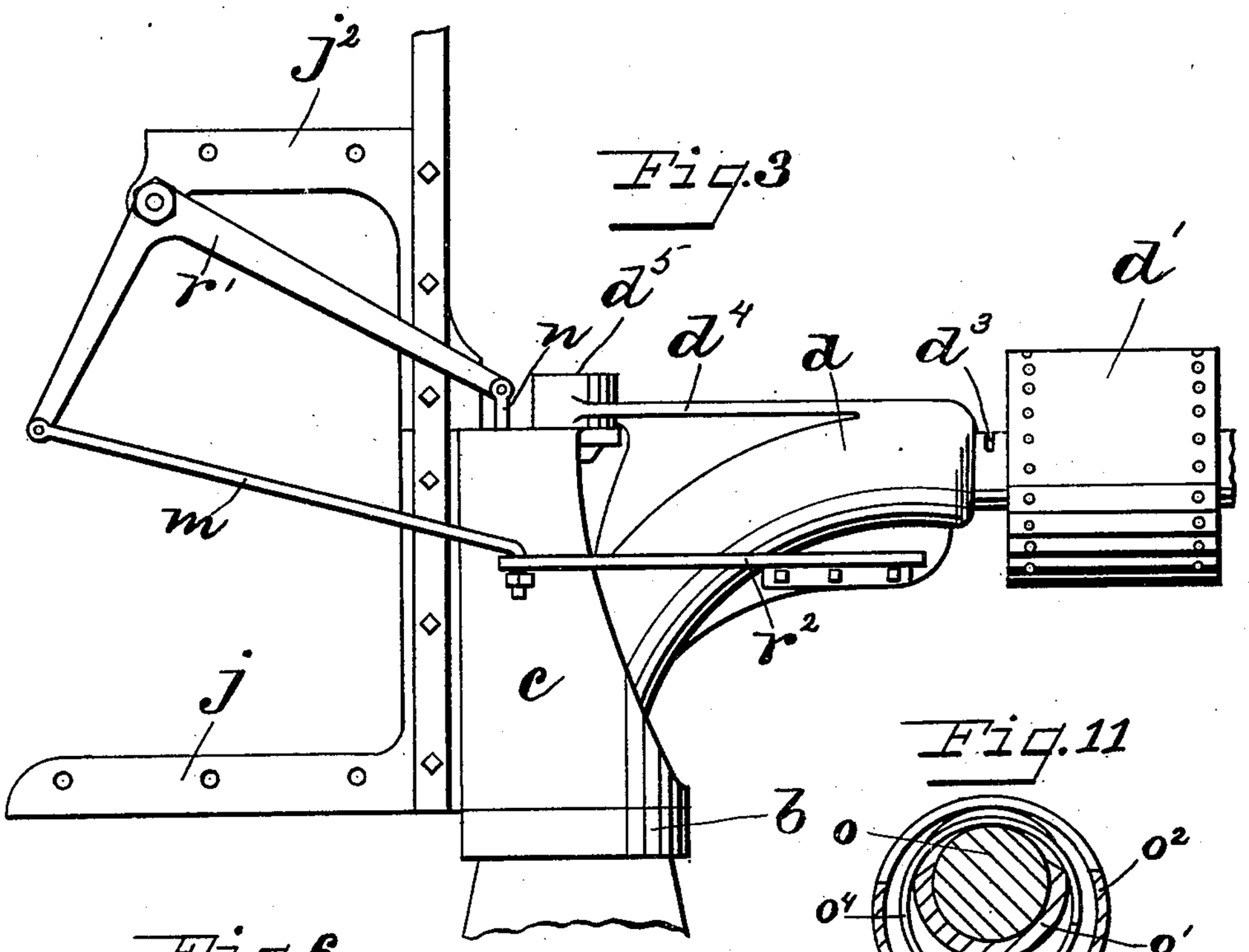

Fig. 3

Fig. 11

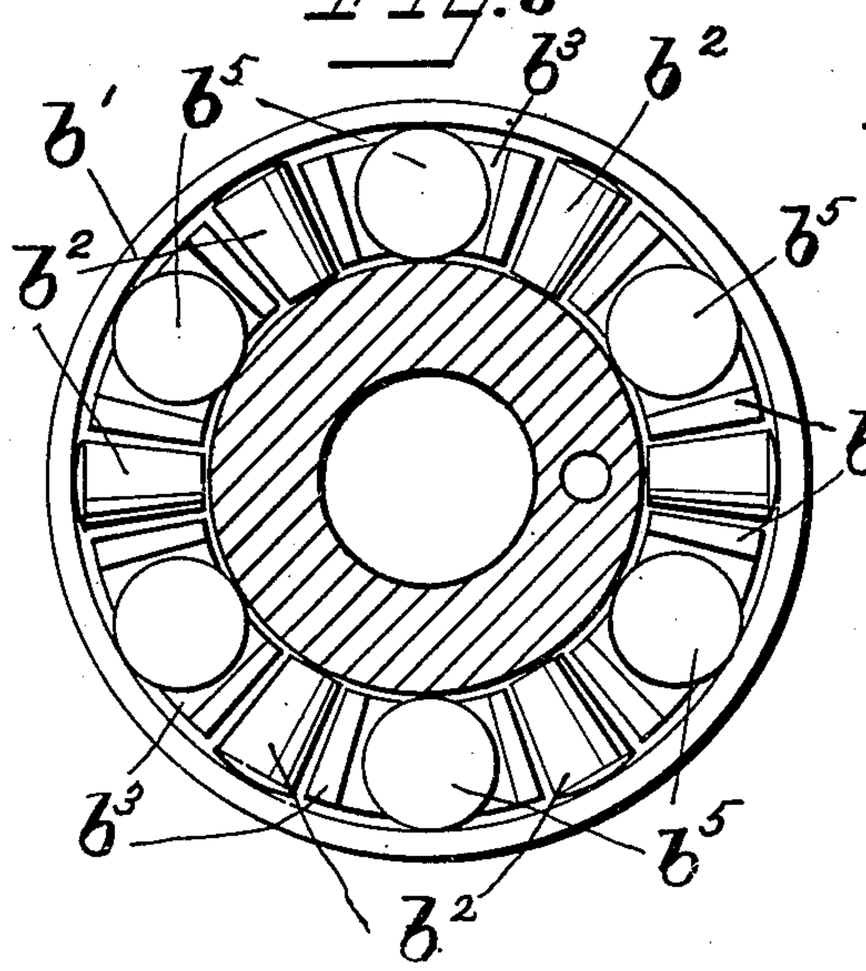

Fig. 6

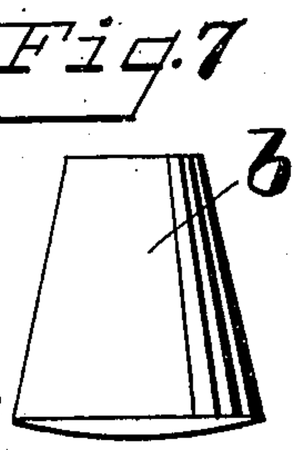

Fig. 7

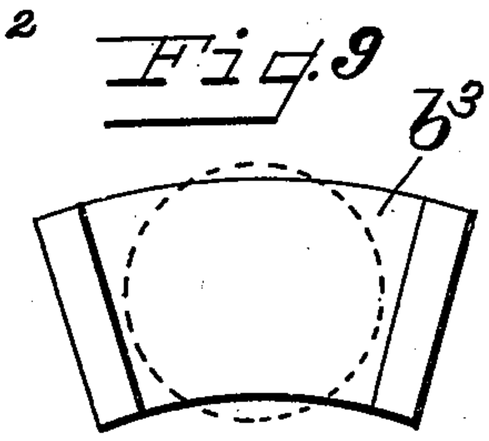

Fig. 9

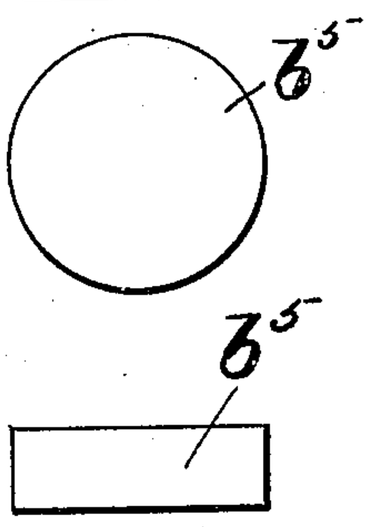

Fig. 8

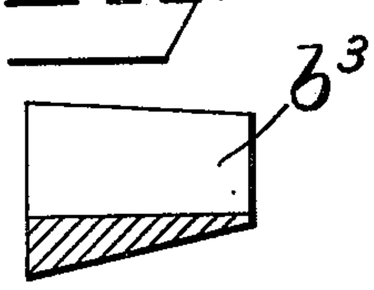

Fig. 10

Witnesses
E. L. Walker
Earl G. Welch

By his Attorney
Inventor
William H. Aldrich
Paul A. Staley.

UNITED STATES PATENT OFFICE.

WILLIAM H. ALDRICH, OF SPRINGFIELD, OHIO.

WIND-WHEEL.

SPECIFICATION forming part of Letters Patent No. 665,858, dated January 15, 1901.

Application filed August 12, 1899. Serial No. 726,970. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. ALDRICH, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Wind Engines or Motors, of which the following is a specification.

My invention relates to improvements in wind engines or motors, and it more particularly relates to that form of wind engines or motors known as "vertical" wind-engines.

My invention consists in the constructions and combinations of parts hereinafter shown and described.

In the accompanying drawings, Figure 1 is a side elevation of my device. Figs. 2 and 3 are side elevations of the engine. Fig. 4 is a plan view of the engine. Fig. 5 is a sectional view of parts of said engine. Fig. 6 is a plan view of the roller-bearing table which supports the engine. Figs. 7, 8, 9, and 10 are detail views of parts of said table. Fig. 11 is a sectional view of a self-oiling device. Fig. 12 is a detail view of parts of the flexible shaft. Figs. 13 and 14 are detail views of the pipe and movable collar.

Like parts are represented by similar letters of reference in the several views.

In the construction of my engine I employ a frame of angle-iron a, which vertical frame supports a table b, formed with a casing b', having the bottom of said casing inclined to fit the rollers b^2. Between the rollers b^2 I use U-shaped separators b^3 to maintain said rollers in their relative positions, and within the separators are placed disks b^5, said separators being formed with their bottoms inclined, as shown in Fig. 9, and said disk fitting into said separators extend beyond the same at each side thereof, as shown in Fig. 9. There is a space between each of said separators, as shown in Fig. 6, permitting a slight circumferential movement of each roller and disk independent of the others, making the bearings more easily operative, especially where the movement of the casing c is slight.

The casing c supports the shaft-casing d, and said casing is formed so that the disks serve as a roller-bearing between the boss c' of the casing c and the casing b' of the table b, and the rollers b^2 form a bearing between the bottom of the casing c and the bottom of the table b, as shown in Figs. 5 and 6. Said shaft-casing d is supported in said casing c, as shown in Fig. 5, in such a manner that said shaft-casing d may move through an arc of ninety degrees. At the top of said shaft-casing there is formed or cast an upper support d^4, which is pivoted to the casing c at d^5. The horizontal wind-shaft supporting the hub d' of the wheel d^2 fits into the upper part of said shaft-casing d, and in the lower part of said casing is fitted the vertical shaft f. Connecting these two shafts I employ a flexible shaft g for the purpose of transmitting power from the horizontal wind-shaft through an arc of ninety degrees to the vertical shaft f. It consists of members each formed with a tongue g' at the top and projections g^2 at the bottom thereof, the tongue g' of one member fitting between the projections g^2 of the next member, the tongue being pivoted between said projections. The pipe h is screwed into the bottom of the boss c', extending downwardly and having a bearing in a stationary collar h', which collar is fastened by lugs to the angle-frame, and through this pipe the shaft f extends. A loose collar h^2 fits over said pipe, and fastened to said collar the rod n extends upwardly to the top of said engine. A split collar h^4, fitting over said collar h^2, receives the end of the rod h^3.

The hand-lever i is pivoted to the frame of the tower and has a weight attached to one end and a string or wire to the other end, as shown in Fig. 1, and the lower end of the rod h^3 is pivoted to said hand-lever between its stationary support and weighted end, said arrangement being for the purpose of locating it some distance from the ground to avoid its being interfered with, the string or wire being preferably tied to the frame of the tower or other structure, out of ordinary reach.

Extending from the side of the casing c are projecting arms j and j^2, which support a tail-vane j^3. On the projecting arm j^2 there is pivoted the projecting arm r and a crank-lever r', one arm of said lever being connected to the top of the rod n and the other arm connected to the link m, which link is fastened to an arm r^2, which projects from the shaft-casing d. A self-oiling feeder is employed at d^3 on said wind-shaft. This oiling device consists of a casing o^2, forming at its bottom

a receptacle for the oil. Through the bushing o' and through said casing there is cut a slit, and through the slit of the bushing o' I pass a ring o^4, which fits over the shaft o, as fully shown in Fig. 11, so that when the shaft revolves it will revolve the wire ring o^4, which will bring the oil from the receptacle to the shaft o.

It will readily be seen that in operation the entire mechanism of the engine, being supported on the casing c, can be moved without undue friction, so that the wind-shaft of the engine will be kept in line with the direction of the wind, and said engine will easily move to allow for changes in wind. By depressing the lever i the rod h^3, moving the split collar h^4, will cause the collar h^2 and its connecting-rod n to be thrown upwardly, and thereby the crank-lever r' will be moved, and by means of the link m and the projecting arm r^2 the shaft-casing d can be turned through an arc of ninety degrees until the wind-shaft of the wheel or disk d^2 is thrown out of the line of direction of the wind, and thereby the engine is rendered inoperative. As shown in Fig. 4, the wind-shaft and hub of the wheel, together with the shaft-casing, will assume a position almost at right angles to the normal position of said shaft.

Having thus described my invention, I claim—

1. In a wind engine or motor, a horizontal, a vertical and flexible shaft connected, forming one continuous shaft as described, a stationary table, a casing to support said engine, independent roller and disk bearings between said table and casing, separators adapted to permit a slight circumferential movement of each roller and disk independent of the others, substantially as specified.

2. In a wind engine or motor, a wind-wheel, a horizontal shaft on which said wheel is mounted, a vertical shaft and a curved shaft connecting said horizontal and vertical shaft, so formed as to rotate with same, a stationary table, a casing to support said engine, roller-bearings between the top of said table and the bottom of said casing, separators between said rollers, and disks in said separators to form a bearing between the inner side of said table and the disk of said casing, said separators being adapted to permit a slight circumferential movement of each roller and disk independent of the others, a swinging casing mounted on said first-named casing, having bearings therein for said shafts and means for moving said swinging casing and its shafts for the purpose of rendering the engine inoperative, substantially as specified.

3. In a wind engine or motor, a wind-wheel, a horizontal shaft on which said wheel is mounted, a vertical shaft and a flexible shaft connecting said horizontal and vertical shafts forming one continuous shaft, a stationary table, a casing to support said engine, roller-bearings between the top of said table and the bottom of said casing, separators between said rollers and disks in said separators to form a bearing between the inner side of said table and the side of said casing, said separators being adapted to permit a slight circumferential movement of each roller and disk independent of the others, a swinging shaft-casing mounted on said first-named casing having bearings therein for said shafts, a pipe fastened to the bottom of said first-named casing and extending downwardly through said table, a stationary collar forming a bearing for said pipe, a movable collar on said pipe, a split collar on said movable collar, a laterally-extending arm attached to said swinging casing, a bell-crank lever pivoted to an extension of said first-named casing, a connecting-rod between one arm of said casing crank-lever and said laterally-extending arm, a downwardly-extending rod, one end of which is pivoted to the other arm of said bell-crank lever and the other end to said movable collar, another downwardly-extending rod attached to said split collar, a hand-lever pivoted to a stationary support and a weight attached to one end and a flexible attachment at the other end thereof, said second-named downwardly-extending rod being pivoted to said hand-lever between the weighted end and its stationary support, substantially as specified.

In testimony whereof I have hereunto set my hand this 7th day of August, A. D. 1899.

WILLIAM H. ALDRICH.

Witnesses:
EARL G. WELCH,
BORDER BOWMAN.