(No Model.)

C. F. FOGG.

AIR COMPRESSOR.

No. 493,263. Patented Mar. 14, 1893.

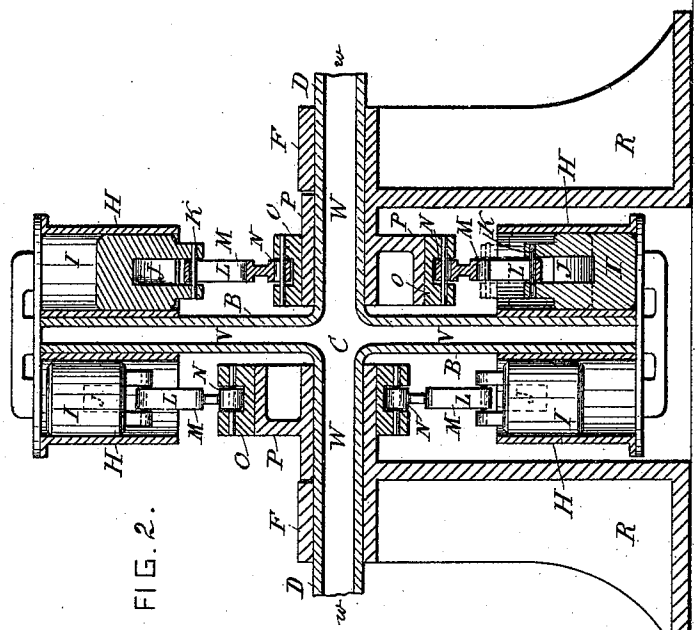

FIG. 2.

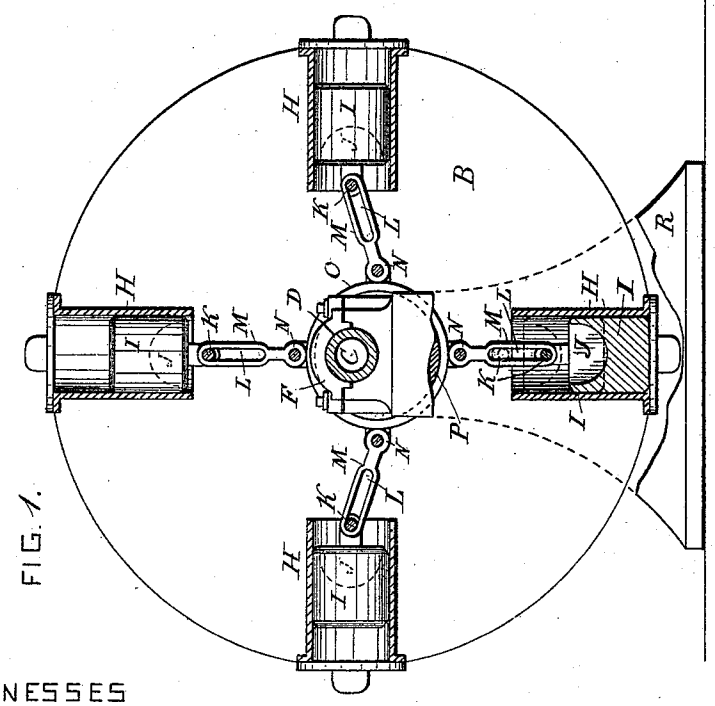

FIG. 1.

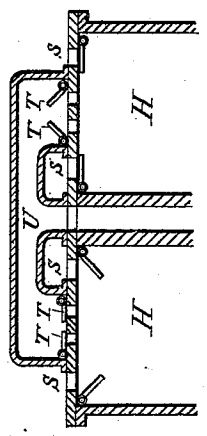

FIG. 3.

WITNESSES

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AIR-COMPRESSOR.

SPECIFICATION forming part of Letters Patent No. 493,263, dated March 14, 1893.

Application filed March 13, 1889. Renewed October 23, 1890. Again renewed April 19, 1892. Serial No. 429,707. (No model.)

To all whom it may concern:

Be it known that I, CHARLES FREDERICK FOGG, of the city, county, and State of New York, have invented certain new and useful Improvements in Air-Compressors, of which the following is a specification.

The object of my invention is to compress air by centrifugal force alone, without the aid of any leverage, or any other force or power, except the motive power necessary to revolve the disk or arms of my compressor.

To attain the desired end, my invention consists in a revoluble disk or hub provided with radiating arms having air passages therethrough, secured to a hollow shaft with which said passages communicate, or its equivalent, resting upon a supporting base, said disk or arms carrying one or more cylinders, provided at their outward heads with ingress valves for the admission of air, and egress valves into a chamber communicating with passages in the supporting disk or arms; weighted plungers or pistons fit within the cylinders, and said plungers or pistons are connected to a yoke encircling a stationary eccentric, all of which will be hereinafter first fully described, and then pointed out in the claims.

In the accompanying drawings, in which similar letters of reference indicate corresponding parts:—Figure 1 is a side elevation and partial section of the compressor. Fig. 2 is an axial sectional view of the same. Fig. 3 is an enlarged sectional view of a portion of two cylinders opposite to each other, one on either side of the disk, showing the ingress and egress valves, and their action; the air chamber, and central air passage in the disk.

The disk B, is constructed of iron or other suitable material, and of sufficient thickness to accommodate the air passages, V. In the center of the disk is a hole, C, through which runs the hollow shaft, D, which is supported by a base, R, to which it is secured by caps, F. The disk B is so constructed that it carries one or a series of cylinders, H, which may be either cast with the disk, or made separate therefrom, and secured thereto in any suitable manner. The cylinders are placed upon one or both sides of the disk, preferably on both sides, in which case they are arranged in pairs, opposite to each other. Within these cylinders are placed weighted plungers or pistons, I, provided with cavities, J, in their bases or inner extremities, so as to accommodate the connecting rods, M, having slots, L, through which a pin K, passes, the inner extremities, N, of said rods being pivoted to the yoke, O, which encircles a stationary eccentric, P. At the outward extremity of each cylinder, H, are ingress valves, S, opening into the cylinder, and egress valves, T, into an air chamber, U, leading into the air passage, V, running in the disk, B, to the hollow W in shaft D. *w*, *w*, are the outlets from said shaft.

When constructed and arranged in accordance with the foregoing description, the operation of my device is as follows:—The disk B is made to revolve by the application of power to shaft, D, by means of the pulley. As the disk revolves, air rushes into the cylinder, H, through valves, S, and when compressed, through the egress valves, T, into the air-chamber, U, thence into the air passage, V in the disk, into and through the hollow shaft, D, out at *w*, *w*. As the disk revolves, the centrifugal force throws the weighted plungers or pistons, I, toward the periphery of the disk, thereby compressing the air in the cylinders, and when the air thus compressed is under pressure equal to the centrifugal force of the weighted plungers at a given speed, the latter are not forced or held against the cushion of compressed air by any leverage, but only by centrifugal force, and recede easily to the full extent of their strokes, the cavities, J, enable the slotted connecting rods, M, to enter the plungers as particularly illustrated in the lower right-hand cylinder in Fig. 2.

It is obvious that the cylinders and plungers or pistons, describe different circles as the disk revolves; that of the plungers being eccentric to the circle described by the periphery of the disk, and thus the plungers or pistons are compelled to change their positions in the cylinders, through the medium of their connections to the yoke surrounding the stationary eccentric. As a consequence, air is admitted and expelled alternately into and from the opposite cylinders; that is, while air is entering one cylinder, it is being expelled from the opposite cylinders and when

the disk has made a complete revolution, each of the cylinders has received and expelled air once.

My object in having the stationary eccentrices located as particularly illustrated in Fig. 2, the center of one eccentric at the side of the main shaft opposite to the other, is to balance the disk as nearly as possible, reducing the friction, and enabling me to attain any required speed.

I have shown my device as consisting of a hollow disk, supporting the cylinders, H, but it is obvious that hollow arms radiating from a hub upon the hollow shaft D, might be substituted for such disk, without departing from the spirit of my invention, and oscillating cylinders might be substituted for the fixed cylinders.

Having now fully described my invention, what I claim as new therein, and desire to secure by Letters Patent, is—

1. The combination with a revoluble disk or arms provided with air passages, as set forth, and bearing a series of cylinders adapted and arranged to revolve therewith, of weighted plungers or pistons, playing in said cylinders, said pistons being connected by means of slotted links to a revoluble yoke, eccentrically located to the shaft of the disk, whereby the pistons will be drawn inward by the positive connections but driven outward by the centrifugal force alone, without leverage the whole mounted upon a supporting base, substantially as shown and described.

2. The combination with a revoluble disk or arms wherein are air passages, to which disk or arms are secured cylinders, as set forth, of weighted plungers or pistons fitting within said cylinders, and connected by means of links to a strap or yoke encircling a stationary eccentric through which the shaft of the disk passes, whereby said plungers will be driven outward by centrifugal force alone, but drawn inward by positive connections substantially as shown and described.

3. The combination with a revoluble disk or arms provided with air passages, as set forth, and mounted upon a hollow shaft, of a series of cylinders secured to said disk or arms, and arranged to revolve therewith, and weighted plungers or pistons, playing in said cylinders, said plungers being thrown outward by centrifugal force alone, and drawn inward by positive connections between said pistons and a yoke or strap encircling a stationary eccentric through which the disk shaft passes, said connections consisting of slotted links pivoted at one extremity to the yoke, and connected to the pistons by pins passing through the slots, substantially as shown and described.

4. The combination with a rotatable disk or arms mounted upon a hollow shaft and bearing a series of cylinders having air passages communicating with a hollow shaft, and ingress and egress valves controlling said passages of pistons located in said cylinders, said pistons being connected to a revoluble yoke by means of slotted links whereby they will be positively drawn inward, but will be driven outward by centrifugal force alone without any leverage, substantially as shown and described.

5. The combination of a revoluble disk or arms, having radial air passages therein, and bearing a series of cylinders; weighted plungers or pistons fitting into said cylinders, and arranged to rotate therewith in a circle eccentric to the circle of rotation of the disk or arms, so that the plungers or pistons will be driven outward by centrifugal force alone; and drawn inward by positive connections to an eccentric, and egress valves communicating with an air chamber connecting cylinders on both sides of the disk or arms and leading to a central air passage or passages running through the disk or arms and opening into a hollow shaft, substantially as herein described.

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