

(No Model.)

G. CUMMING.
HAND BLOWER.

No. 301,967.

Patented July 15, 1884.

Fig. 3.

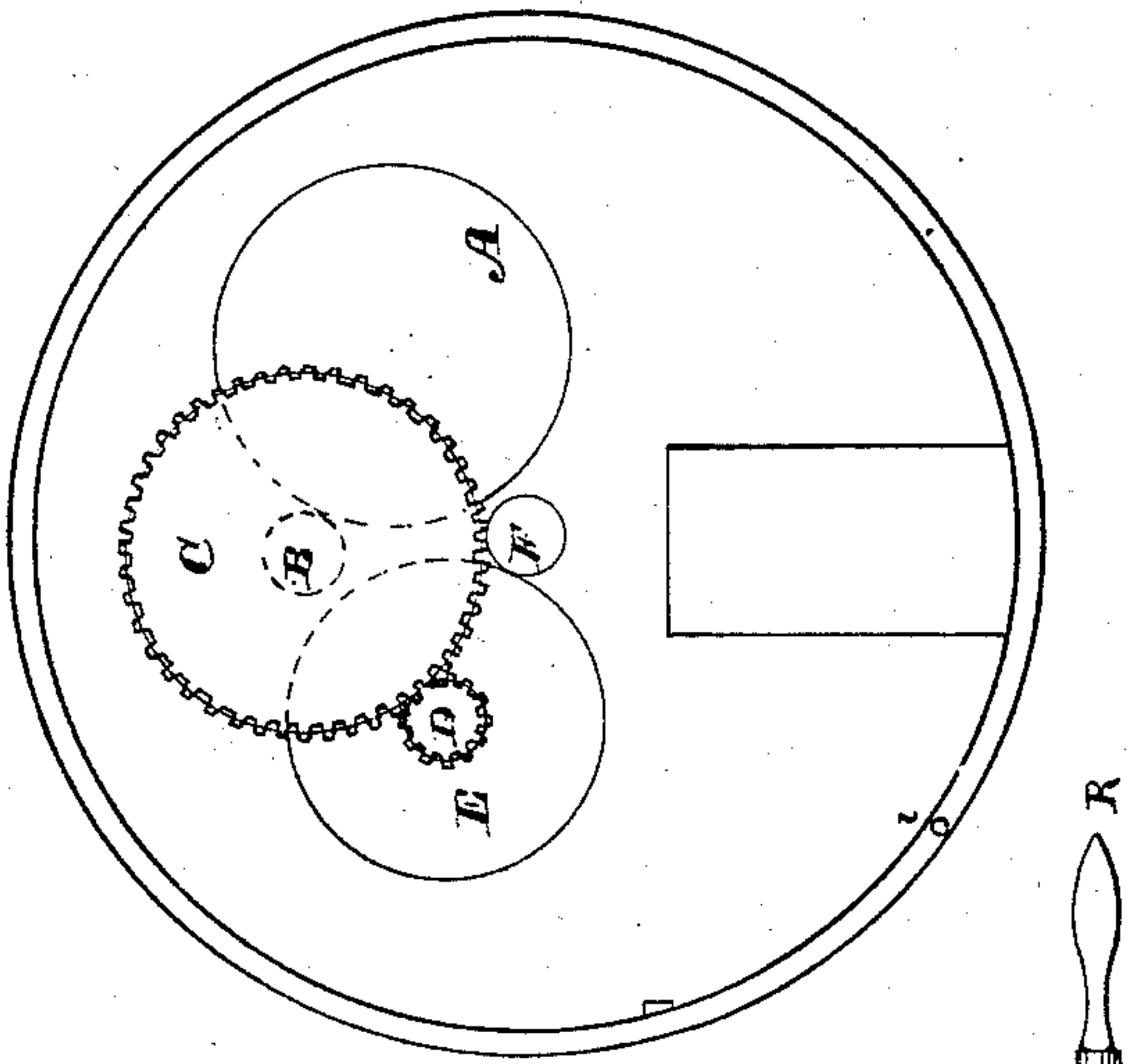


Fig. 2.

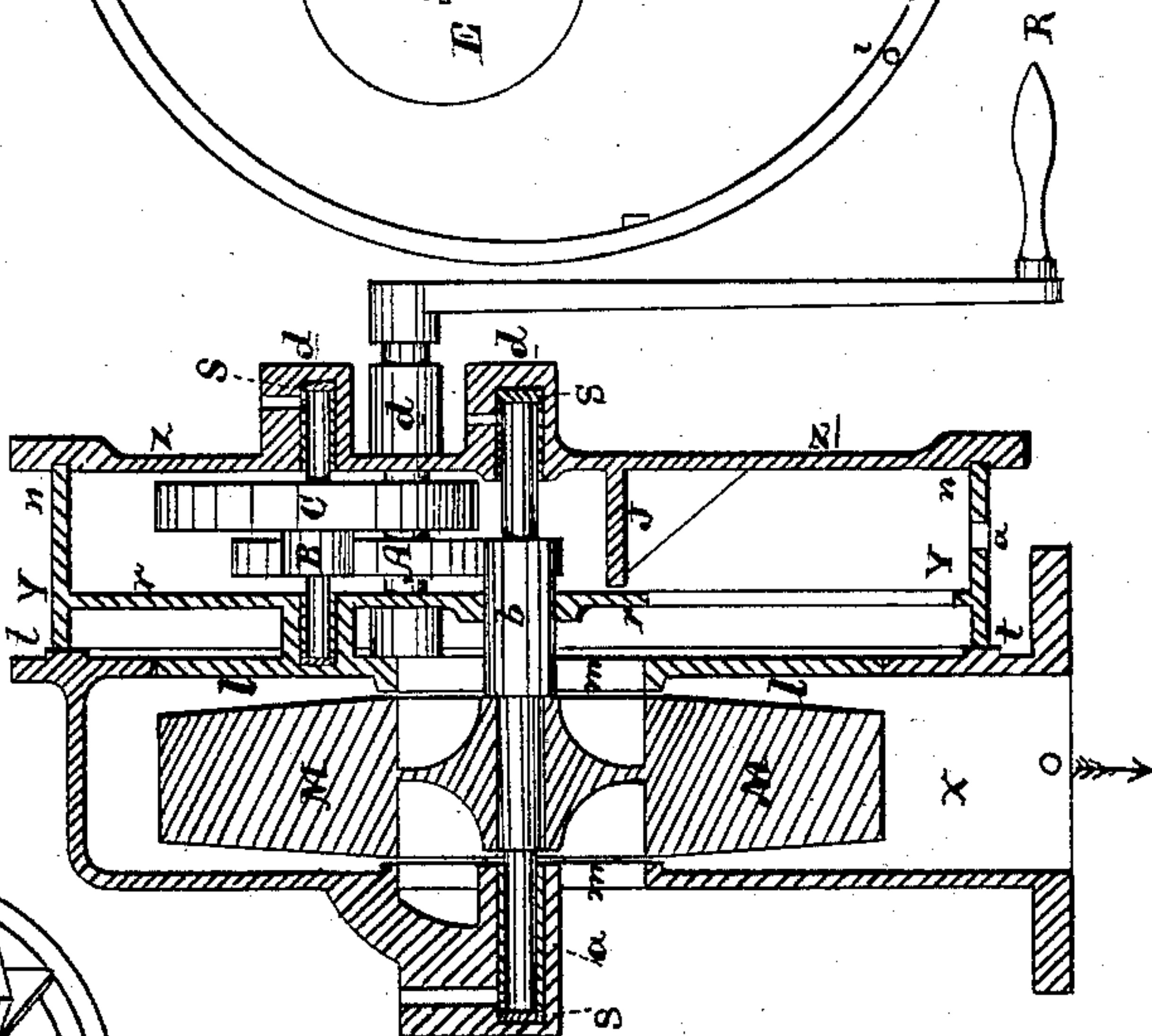


Fig. 4.

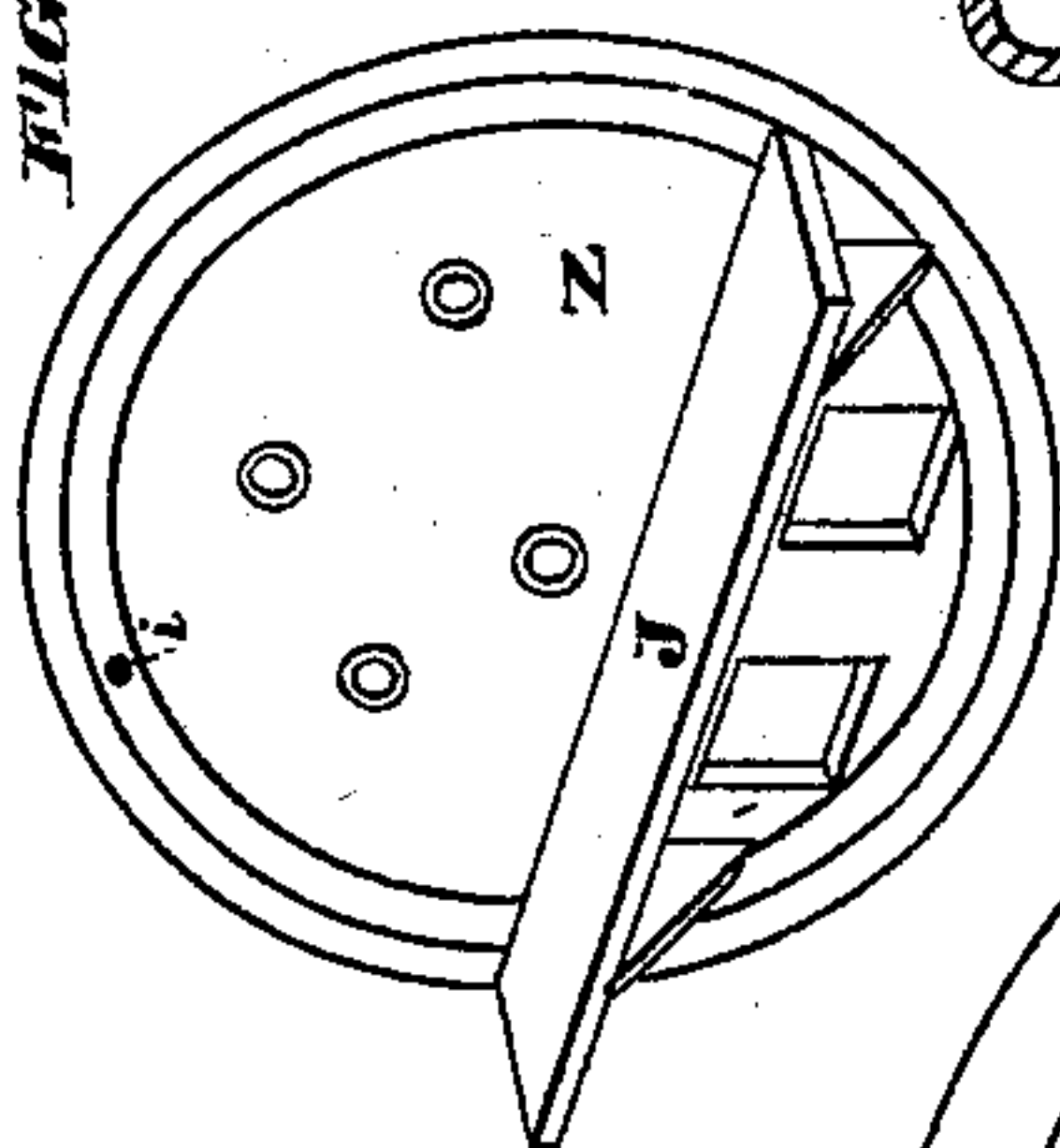
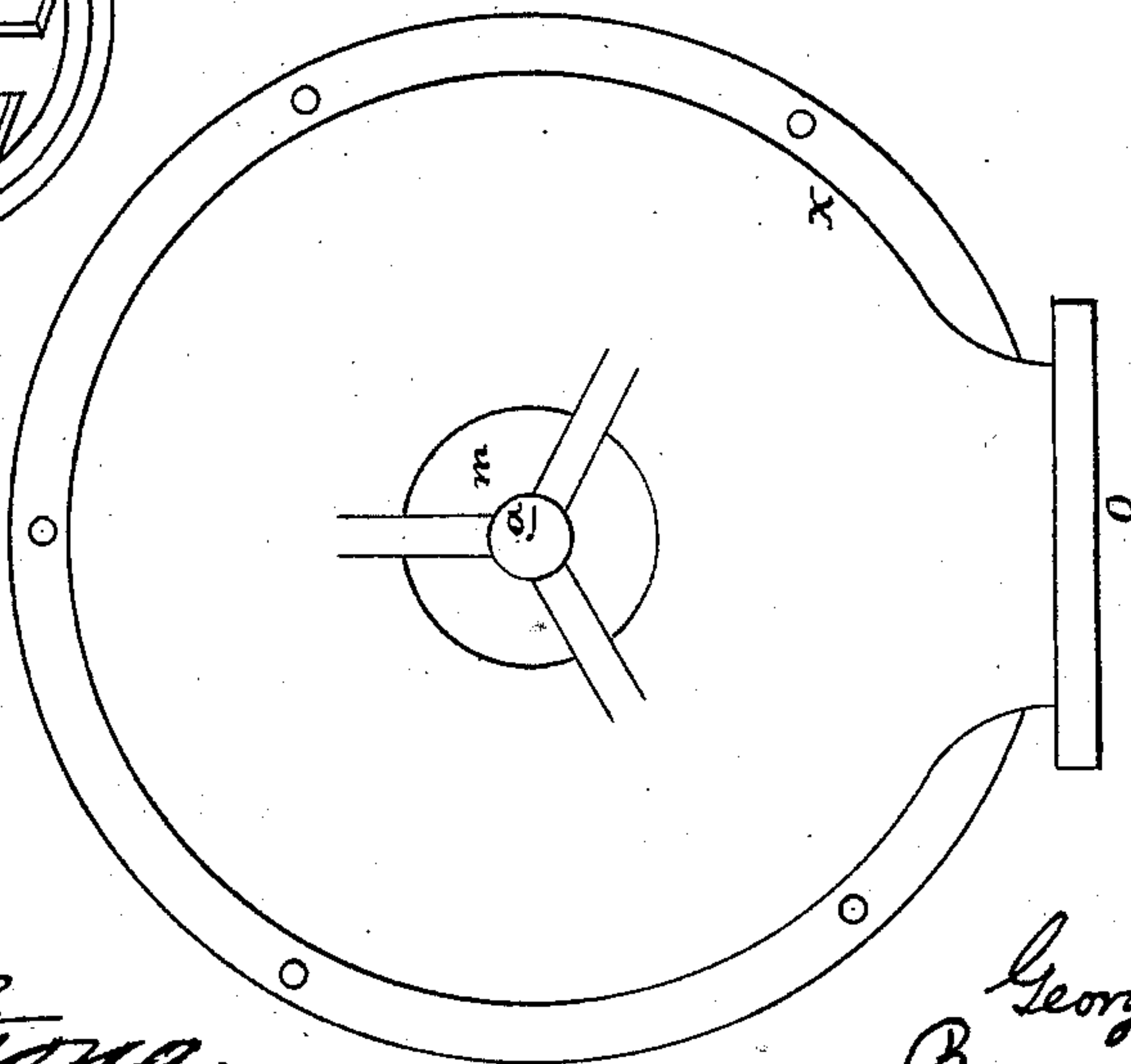


Fig. 1.



Witnesses,

Geo. H. Strong,
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UNITED STATES PATENT OFFICE.

GEORGE CUMMING, OF SAN FRANCISCO, CALIFORNIA.

HAND-BLOWER.

SPECIFICATION forming part of Letters Patent No. 301,967, dated July 15, 1884.

Application filed November 5, 1883. (No model.)

To all whom it may concern:

Be it known that I, GEORGE CUMMING, of the city and county of San Francisco, and State of California, have invented an Improvement in Hand-Blowers; and I hereby declare the following to be a full, clear, and exact description thereof.

My invention relates to certain improvements in hand-blowers; and it consists in the application of toothed gearing from the crank-shaft or point of application of the power employed through a train of toothed gear-wheels to the shaft which carries the fan; of the collection and casing in of all of the working parts of the apparatus, so that they are not exposed or widely separated; in a pin and means for keeping the casing holding the gears in its proper place, and of steel buttons in the ends or extremities of the bearings of the gear-spindles, in order to keep the gears in their proper longitudinal positions and take up end-play.

Referring to the accompanying drawings, Figure 1 represents a rear elevation. Fig. 2 represents a vertical section through the axis. Fig. 3 represents a front-elevation of the casing holding the gears with the cover removed.

Hand-blowers now in general use are driven either by a crank or else by a lever; but before the power is applied to the shaft carrying the fan it is transmitted through belts, bands, worm or friction gears, the fan and its casing being capable of separation from the rest of the parts of the blower. The driving apparatus, being connected by belts, bands, &c., is likewise separated, and also exposed. In my invention the fan and driving mechanism are contained in a case of peculiar construction, all the driving parts being protected without interfering with the free ingress of air to the fan.

Referring to the drawings, X, Y, and Z represent the three main parts of the frame, X being a circular flanged casing (represented in elevation by Fig. 1) with an outlet, O, flanged so as to bolt onto any pipe, to carry off the blast produced by the fan M, which is incased in it. There is a lug, *a*, cast upon one end of the fan-case, which is bored centrally, to act as a journal for the spindle carrying the fan, the opposite end having a journal-box, *b*,

as shown. Circular openings *m* in the ends of the fan-case allow air to enter. A circular flange is formed upon one end of the case, and this flange is drilled to receive bolts for bolting the casings Y and Z to it. A projection, *t*, is faced at right angles to the axis, so that the corresponding face of Y shall sit true upon it. A circular aperture, slightly larger than the fan diameter, is bored out of the flanged head to receive the projecting circular plate *l* of the part Y.

Y is a cylindrical shell, with a partition, *r*, dividing it in two parts. This partition has an opening, *p*, in it, to allow the air to pass through it on its way to the fan. A hole is also bored or cored in the center, to allow the fan-spindle to pass through. Connected to this partition by three lugs, which are bored and act as journals for the gear-spindles, is a circular plate, *l*, which serves to complete the fan-casing X, and also acts as an adjustment of the casing Y, from the fact that it is accurately fitted to the part bored for its reception in X, and serves to keep the axis of Y coincident with the axes of X and Z. There is a large circular hole in the center of this plate, to allow the air to pass through to the fan. The face *t* serves as a longitudinal adjustment.

Z is a circular cover, having a groove turned in it to fit the ring *n n* of Y. This groove serves to keep the axis of the cover coincident with those of X and Y. It has four lugs, *d*, cast upon it, which are bored to act as journals for the gear-spindles. It also has openings in it to allow the air to enter, and a shelf, J, cast upon it, which serves to entirely case in the gear-wheels, thereby keeping them free from dust and liability to accident. Bolt-holes are bored through it corresponding to those on the main flange of X, and it is bolted to said flange of X. A hole, *i*, is bored through the cover Z into the casing Y, and pin driven therein, so as to keep the gears in their proper position.

A is a large gear keyed on the crank-shaft. This drives the pinion B, which is cut on the shaft which carries the large gear C. This large gear C drives a pinion, D, cut on the shaft that carries the large gear E. This large gear E drives the pinion F, which is cut or keyed on the spindle carrying the fan. The

spindles which carry the gears and fan are run in journals which are brass bushed, and have steel buttons *s s* at their extremities, and are so adjusted that there is no lateral play of the fan or gears anywhere, the end bearing being entirely taken up by the buttons. This prevents end motion of the spindles, which, if allowed, would necessitate a greater depth of case and a wider separation of the gears to prevent their striking each other. By my construction I am enabled to run them very closely and compactly. The air enters the fan-chamber X through *m* on one side, and on the other side through the two openings in the cover Z, thence through P, thence through the opening in the circular plate *l* into the fan-casing X, and by the revolution of the fan M is driven through the opening O.

I am aware that fan-blowers have been driven by worm-gears and by pulleys and connecting-belts, by which the requisite speed is produced, and I do not claim such a construction.

What I claim as new, and desire to secure by Letters Patent, is—

1. The fan-case having a journal-box centrally located at one end to receive the fan-shaft, and an opening at the opposite end sufficient to receive the fan, in combination with a shell, Y, having a plate to fit said opening, and journal-boxes for one end of the gear-shafts, and a plate, Z, fitting the opposite end of the shell, and having journal-boxes for the opposite ends of the gear and fan shaft, substantially as herein set forth.

2. The fan-case X, supplemental shell Y, with its diaphragm *r*, and journal-boxes for gear-shafts, in combination with the exterior closing-plate, Z, formed to fit the edge of the shell, and having a means for adjusting and securing it to the fan-case, substantially as herein described.

3. The fan-case X, supplemental shell Y, with its diaphragm *r*, and gear-wheels journaled within, as shown, in combination with the external closing-plate, Z, and the transverse shelf or diaphragm J, whereby the gears are inclosed, substantially as herein described.

4. The fan-case having air-passages around the central shaft, supplemental shell within which the driving-gears are contained, and the diaphragm and exterior closing-plate, said plate and diaphragm being provided with openings through which air may pass to the fan-case, substantially as herein described.

5. In a blowing apparatus, the fan-case, supplemental shell, and the exterior closing-plate, Z, with journal-boxes for gear and fan-shafts, the said plate being grooved or channeled to fit the edge of the supplemental shell, and having a pin fitting a corresponding socket, whereby the plate is held in one position and the journal-boxes and shaft are always kept in line, substantially as herein described.

In witness whereof I have hereunto set my hand.

GEORGE CUMMING.

Witnesses:

C. D. COLE,

J. H. BLOOD.