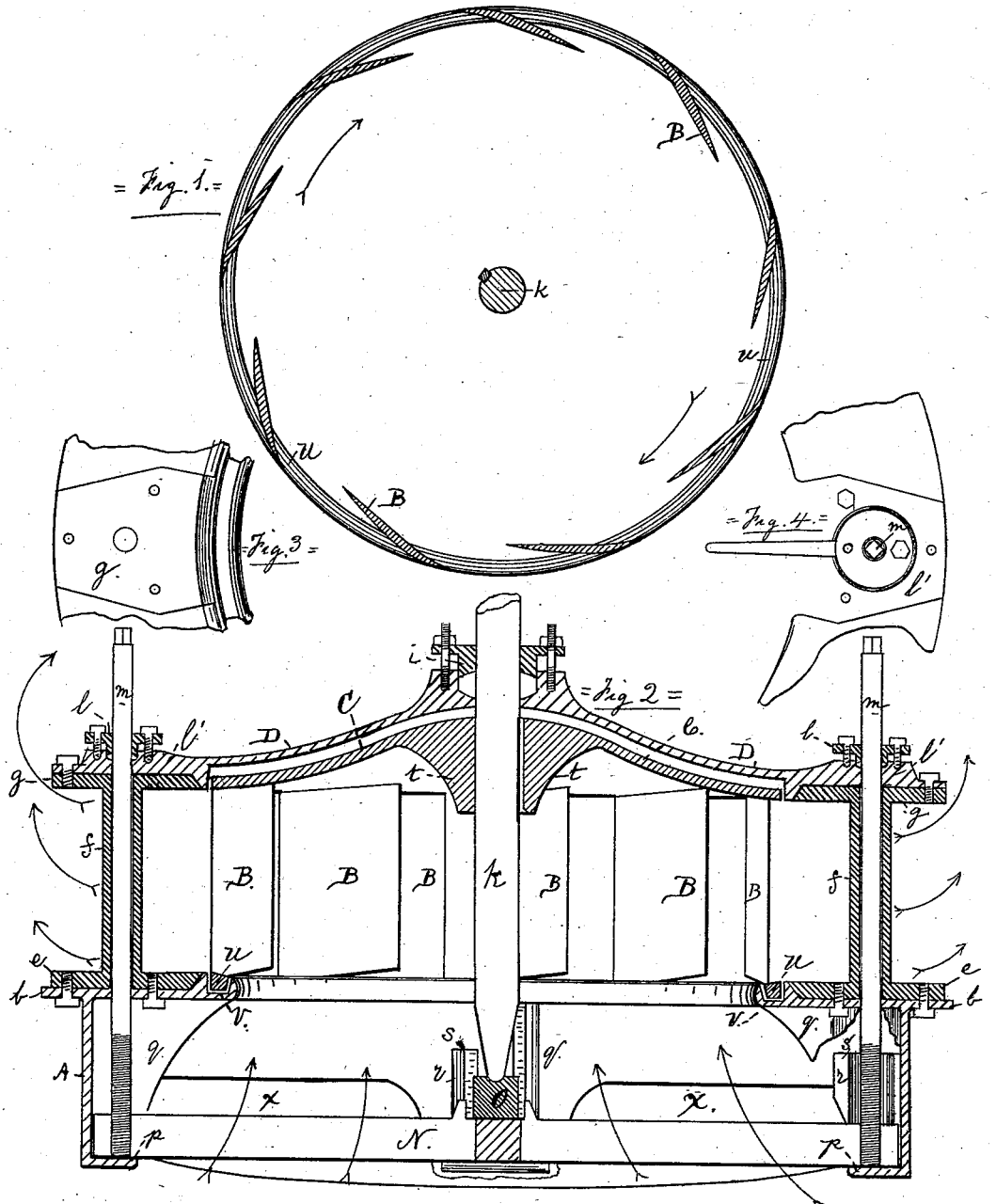
(No Model.) 2 Sheets—Sheet 1.

F. A. GRUNOW.

WATER ELEVATOR.

No. 259,851. Patented June 20, 1882.



Witnesses.
P. J. Finney
J. C. Hubbell

Inventor.
Frank A. Grunow
By H. N. Jenkins
Attorney.

(No Model.) 2 Sheets—Sheet 2.

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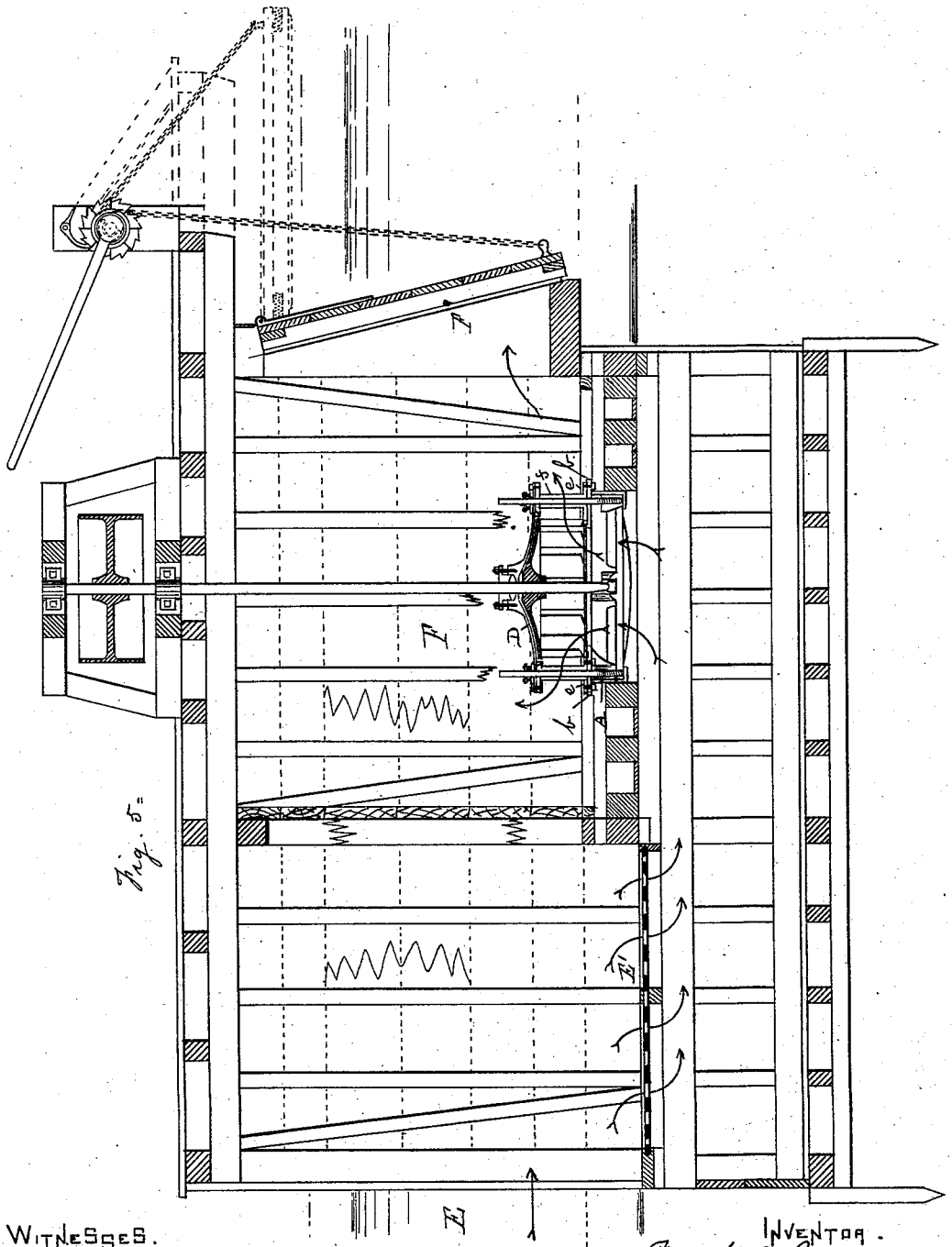

Fig. 5.

WITNESSES.
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UNITED STATES PATENT OFFICE.

FRANK A. GRUNOW, OF NEW ORLEANS, LOUISIANA.

WATER-ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 259,851, dated June 20, 1882.

Application filed January 28, 1882. (No model.)

To all whom it may concern:

Be it known that I, FRANK ALEXANDER GRUNOW, a resident of the city of New Orleans, parish of Orleans, and State of Louisiana, have invented a certain new and useful Improvement in Water-Elevators; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification.

This invention relates to that class of machines which are more particularly intended for purposes of irrigation and drainage; and it consists in a peculiarly-constructed pump or elevator, through the instrumentality of which large quantities of water may be raised within a given time.

In order that the nature of my invention may be fully understood, reference must be had to the accompanying drawings, whereon the same is represented on two sheets.

Figure 1 is a horizontal section of the operating part of the machine; Fig. 2, a vertical cross-section of the whole arrangement, and Figs. 3 and 4 details thereof. Fig. 5 is a longitudinal section through the elevator, and also through the frame in which it is mounted, showing one of the uses to which said elevator may be applied.

The machine is provided with a driving-pulley, and the whole is supported by frame-work, as shown at Fig. 5, Sheet 2.

On the drawings, the letter A represents the lower section of the machine. This part is cylindrical in form, with a supporting-flange, *b*, by which it is secured in position and upon which is bolted the wheel-chamber, the latter consisting of an annular ring, *e*, having four vertical hollow columns, *f*, that serve to support the cover or cap D and the weight of the column of water resting upon the same when the machine is in operation.

The upper ends of the hollow columns are provided with flanges *g*, or, if preferred, with an annular ring corresponding with that at their lower ends. Upon these flanges or ring is bolted a dome-shaped cover, D, having a central vertical hole and stuffing-box, *i*, for the reception of the main shaft *k*, and with similar holes and stuffing-boxes, *l*, in the lugs *l'*, for the passage of the elevating-rods *m*, the lower ends of which are threaded and fitted into the outer ends of a cross-piece, N, the center of which is furnished with a step, *o*, upon which rests the lower end of the main shaft *k*.

For the support of the cross-piece the bottom of the lower section is provided with four inner projections or seats, *p*, which are strengthened on the inner side of the cylinder by ribs *q* and *r*, the upper portions of the latter cut away, as at *s*, to form passages through which the outer ends of the cross-piece may be passed into position. Between the aforesaid seats are open spaces, *x*, for the free admission of water.

Within the wheel-chamber, and keyed or otherwise secured to the main shaft, is a wheel composed of a solid circular plate, C, the upper surface of which is of the same configuration as that of the cover D, while the inner surface follows the line thereof until nearing the center, where it curves downward into a solid boss, as at *t*. From this plate C vertical knives B project downward, and are connected at their lower outer ends by an annular ring, *u*, which travels in a groove, *v*, that is made on the upper surface of the lower section, A. The above knives are set at an angle of about ninety degrees, and rotate in the direction shown by the arrow in Fig. 1.

The apparatus, as above described, is fitted in a circular, square, or other shaped casing, in which the water is raised and projected through a trough or gate.

The action of the pump is as follows: The water enters at the bottom of the casing through suitable grating, (so as to prevent accidents by the suction of floating material,) and is cut or shaved and thrown outward with such force as to cause the same to rise to a sufficient height to be expelled from the casing or to be carried still higher by a second pump placed immediately above the other. The peculiar shape of the top of running-wheel causes the same to be slightly raised as the water is being expelled, and the dome or cover, following the same curves, leaves a vacuum-space between the two, thus reducing the friction-surface to that end of the shaft which rests upon the step O.

The running-wheel is adjusted at its proper height by means of the elevating-screws *m*, the lower ends of which operate against the seats *p*.

In Fig. 5 is represented one plan of utilizing

my elevator. It consists of a frame-work constructed in the pond or place to be drained, the said frame having one of its ends, E, open for the admission of the water, which passes through a grating, E′, through a close compartment, to the under side of the elevator, from whence it is drawn upward by the said elevator into a well, F, and finally discharged therefrom through the gate F′, the object of the grating being to prevent the passage of dirt, trash, &c., to the elevator, and obstructing the same.

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

1. In a water-elevator, a wheel having a solid top, C, and bottom ring, *u*, in combination with the angular knives connected to and supported by said top and ring, substantially as and for the purpose set forth.

2. In a water-elevator, the cylindrical section A, provided with seats *p* and ribs *q r*, to receive the outer ends of the cross-piece N, as described, and for the purpose set forth.

3. In combination with the running-wheel, composed of top C, knives B, and annular ring *u*, the shaft *k*, cover D, lower section, A, elevating-screws *m*, and cross-piece N, all constructed and arranged to operate within a casing, for the purpose described.

In testimony whereof I hereunto sign my name.

FRANK ALEXANDER GRUNOW.

In presence of—
P. J. FINNEY,
J. C. HUBBELL.