

J. W. KELSEY.
Wind-Engine.

No. 215,753.

Patented May 27, 1879.

Fig. 1

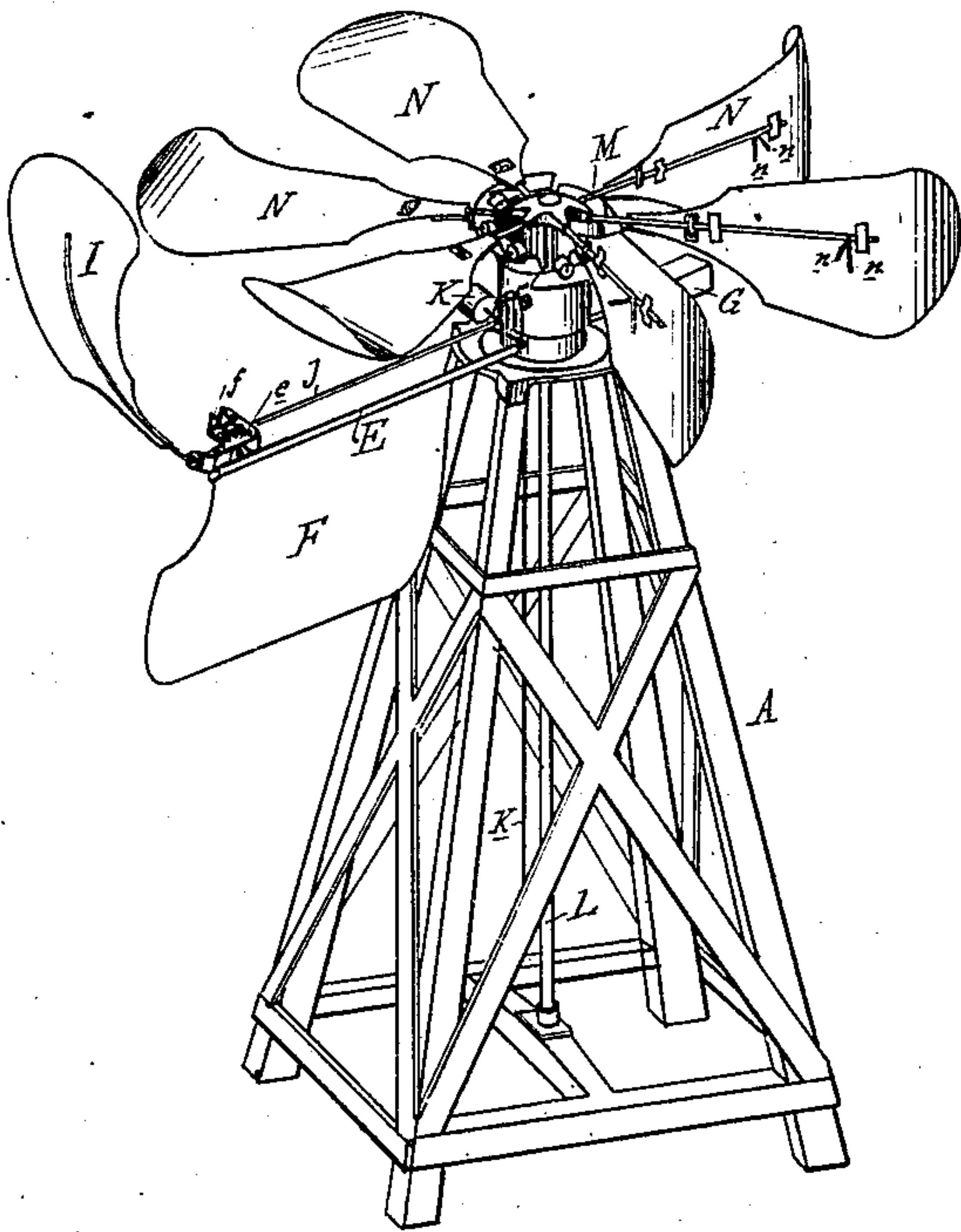


Fig. 2

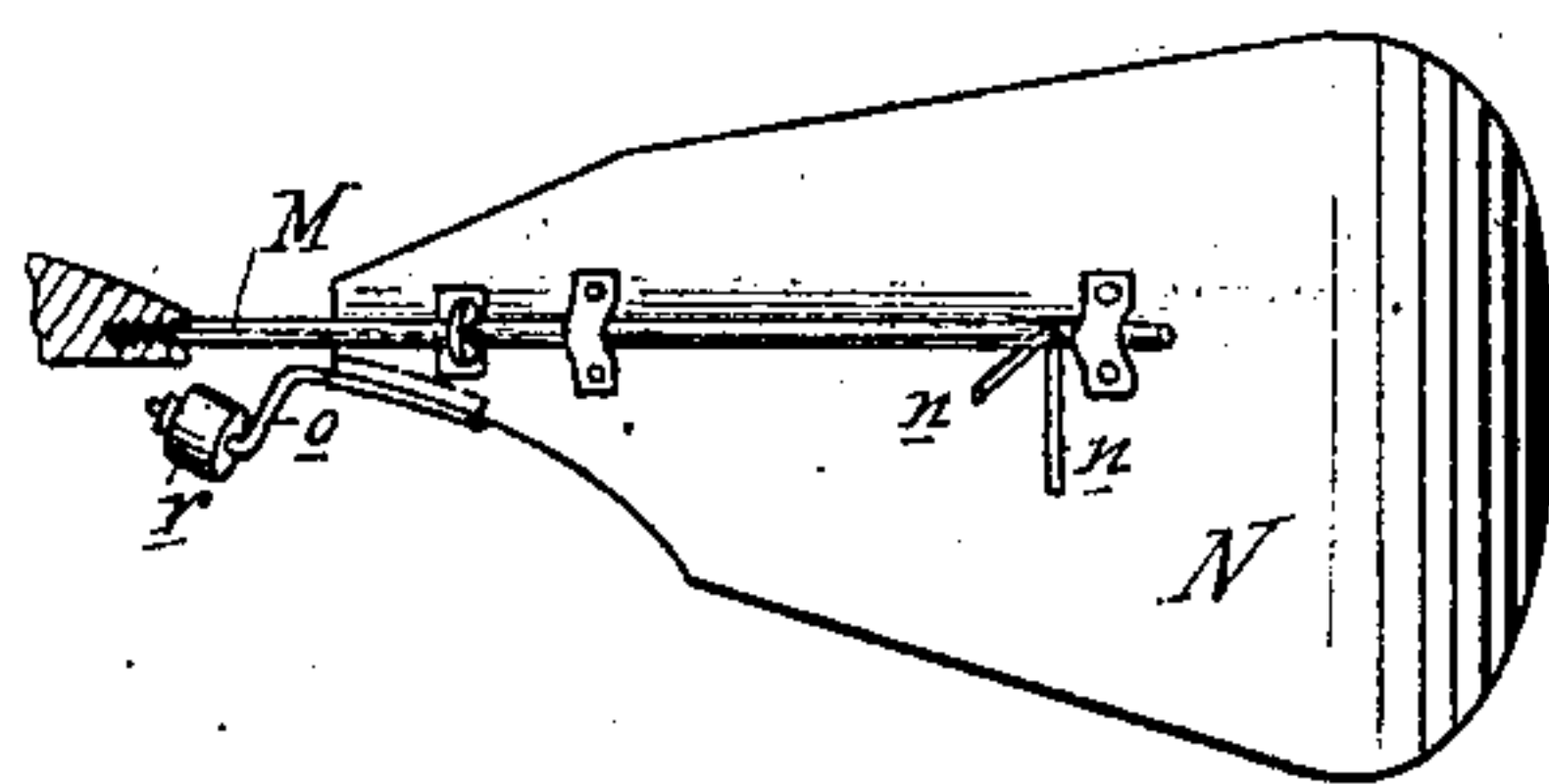


Fig. 3

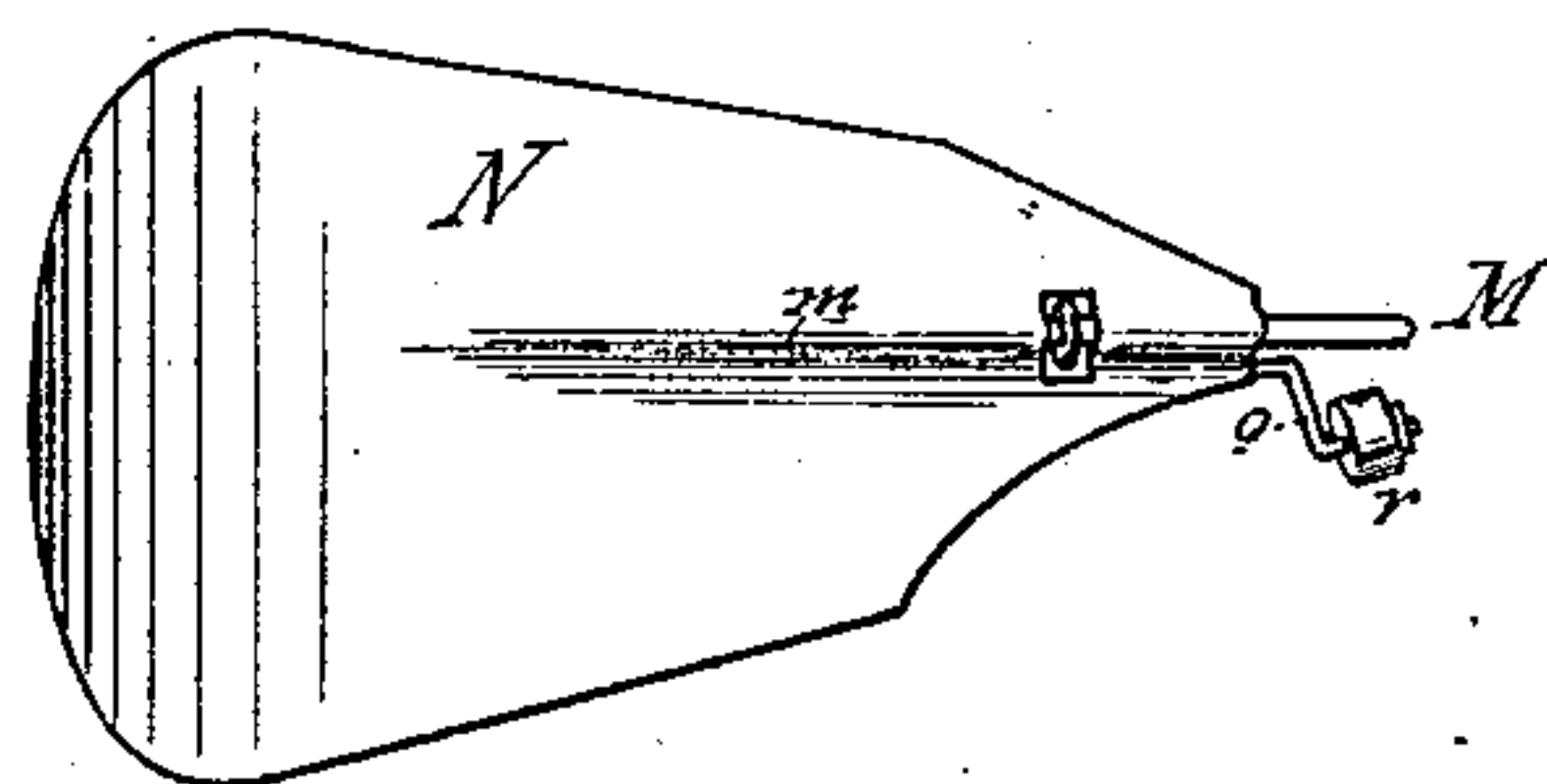


Fig. 4

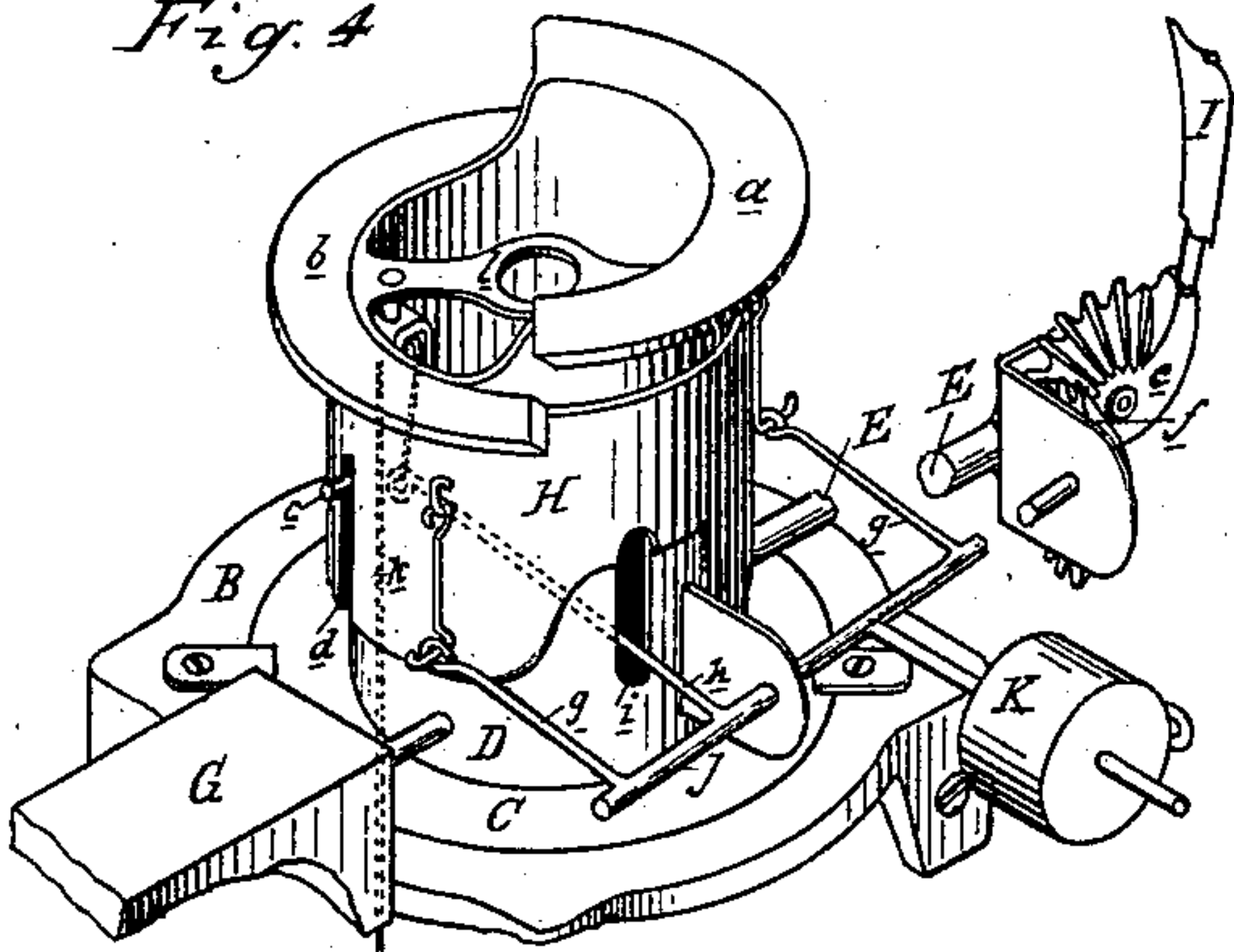
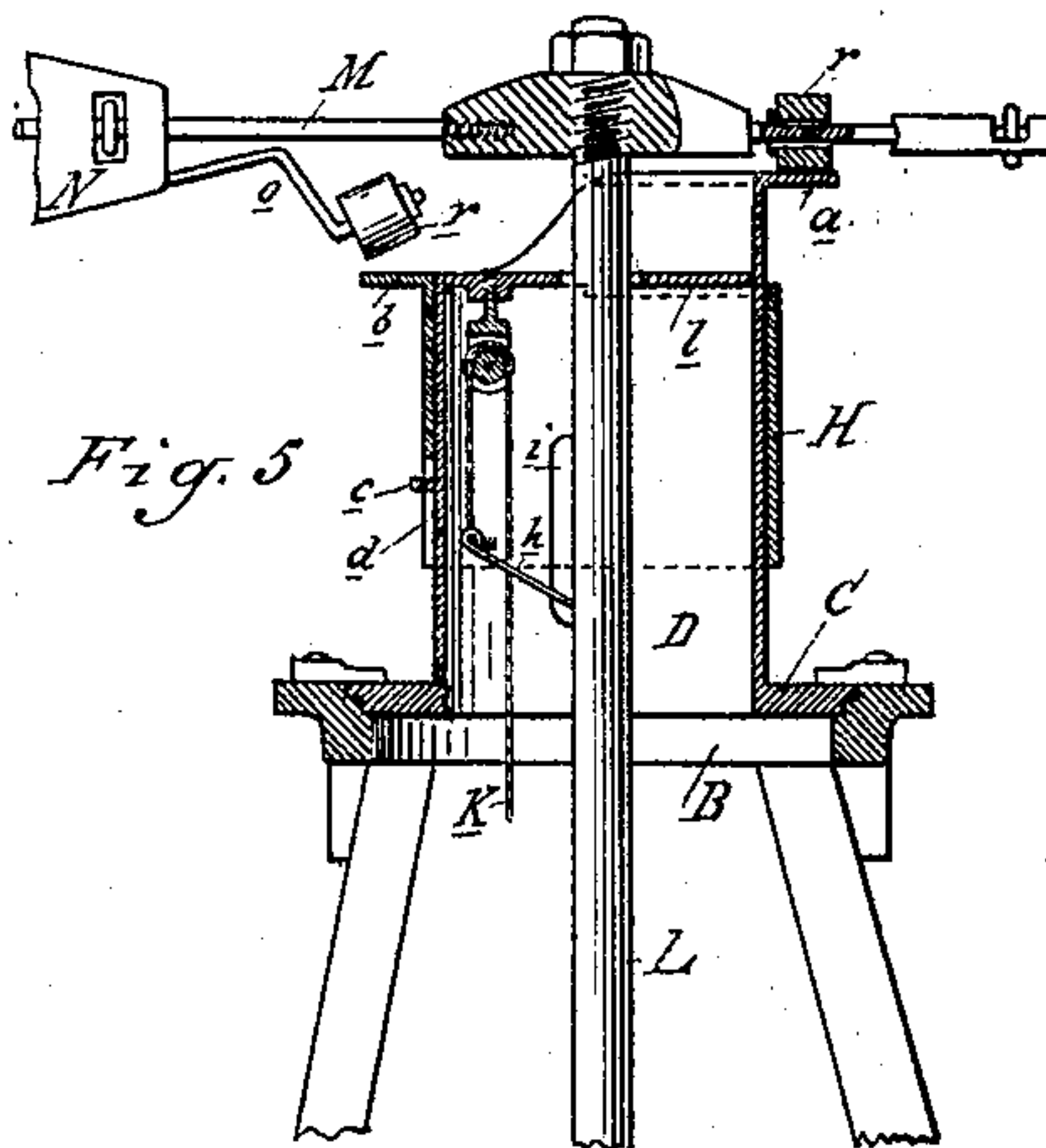


Fig. 5



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UNITED STATES PATENT OFFICE.

JOHN W. KELSEY, OF CARO, MICHIGAN.

IMPROVEMENT IN WIND-ENGINES.

Specification forming part of Letters Patent No. **215,753**, dated May 27, 1879; application filed October 7, 1878.

To all whom it may concern:

Be it known that I, JOHN W. KELSEY, of Caro, in the county of Tuscola and State of Michigan, have invented an Improvement in Windmills, of which the following is a specification.

The nature of my invention relates to certain new and useful improvements in that class of machines known as "wind-engines;" and the invention consists in the peculiar construction and arrangement of devices by means of which the action of the sails is automatically governed by the varying velocity of the wind, and in the construction and arrangement of the parts of the machine, as more fully hereinafter described.

Figure 1 is a perspective view. Fig. 2 is a perspective view from the rear of one of the wind-sails detached. Fig. 3 is a like view from the front. Fig. 4 is a perspective of the turn-table and its attachments. Fig. 5 is a vertical section through the head and turn-table.

In the accompanying drawings, which form a part of this specification, A represents a derrick, of the usual construction, upon the top of which is placed the cap B, upon and within which, and upon suitable friction rollers or balls, the turn-table C has a rotary motion. Secured to this turn-table is the tube D, terminating in one half of its upper end in a circumferential flange, *a*, the other half of the upper end being cut away, as shown in Fig. 4. To this tube is rigidly secured the arm E, which supports the tail-vane F, and the counter-balance G.

The tube H, with one-half of its upper end provided with the circumferential flange *b*, is sleeved upon the tube D in such manner that under certain conditions, hereinafter named, the tube H can be elevated so that the two half circumferential flanges will be upon the same plane. The tube H is so secured to the tube D, by means of the pins *c* and slot *d*, that it will rotate with the latter-named tube.

At the outer end of the arm which carries the tail-vane there is pivoted a governor-vane, I, provided with a bevel-pinion, *e*, which engages with a pinion, *f*, and communicates motion to the rock-shaft J, which is connected with the tube H by means of crank-arms *g*, arranged in such a manner that the depression

of the governor-vane will force the outer tube upward until the half circumferential flange on its top is coincident and upon the same plane with the half circumferential flange on the top of the tube D.

To the rock-shaft J is secured an arm and counter-balance K, which may be adjusted to the weight of the tube H. There is also secured to the rock-shaft an arm, *h*, which is projected through the slot *i* in the tube D, and a cord, *k*, secured to the free end of this arm, passes over a small pulley secured within the tube, and falls down within reach of the operator on the ground, and by this means, when when desired, the tube H may be elevated to the position already described.

The shaft L is held in vertical position within the tube by passing through a spider, *l*, therein, and the lower end of this shaft is stepped into a suitable bearing at the bottom. To the top of this shaft there is secured, in any desirable manner, the arms M, to which the wind-sails N are pivoted. These sails are preferably cut and curved in the form shown from sheet metal, and ribbed upon their front sides, as shown at *m*, and the arm to which they are pivoted rests within the recess on the rear side of the sail formed by such rib, which is above the axial center of the sails, so that their normal condition would be to hang upon said arms vertically.

Rigid rods or stays *n* are secured to the arms in rear of each sail, and at right angles to each other, to form bearings to hold the sail either in a vertical or horizontal position.

To the inner and lower edges of the sails are secured the shafts *o*, having journaled upon their ends the bearing and friction rollers *r*. These shafts are in the form of cranks, which office they perform in addition to that of bearing the friction-rollers.

In practice, and when in operation, the upper faces of the two half circumferential flanges are upon different planes, the flange *a* upon the tube D being elevated above the other, thereby forming, in conjunction with it, a cam when in this position, and the bearing and friction rollers upon the crank-arms of the wind-sails travel upon the top of these flanges, those resting upon the upper or higher flange turning the sails to which they are attached out of

the wind, while those resting upon the depressed flange *b* allow the sails to drop from a horizontal to a vertical position, thereby presenting their faces to the wind.

Should the velocity of the wind increase beyond the desired point, it depresses the governor-vane, and, by means of its connections, raises the sleeved tube until its flange is gradually brought up to the same plane of the flange *a* on the tube *D*, and thereby throws all the sails into a horizontal position and out of the wind. A decrease of this velocity allows the governor-vane to be brought back to its original position by the gravity of the sleeved tube and the counterbalance-weight upon the rock-shaft.

The sails may also be thrown out of the wind and secured in that position, when desired, by means of the cord hereinbefore described and its connections.

What I claim as my invention is—

1. In a wind-engine, the tube *D* and its cir-

cumferential flange *a*, in combination with the tube *H*, with its flange *b*, the said tube *H* rotating with the tube *D*, and having a vertical motion thereon, substantially as and for the purposes set forth.

2. In combination with said tubes *D* *H*, a governor-vane, *I*, and the connecting devices, substantially as herein described, by means of which a vertical motion is given to the tube *H*, for the purposes set forth.

3. In a wind-engine, the wind-sails *N*, eccentrically pivoted to the arms *M*, said arms resting within the ribs *m*, and being provided with stays *n*, substantially as set forth.

4. The wind-sails *N*, eccentrically pivoted to arms *M*, and provided with crank-shafts *o* and friction-rollers *r*, substantially as and for the purposes described.

JOHN W. KELSEY.

Witnesses:

H. S. SPRAGUE,
A. BARTHEL.