

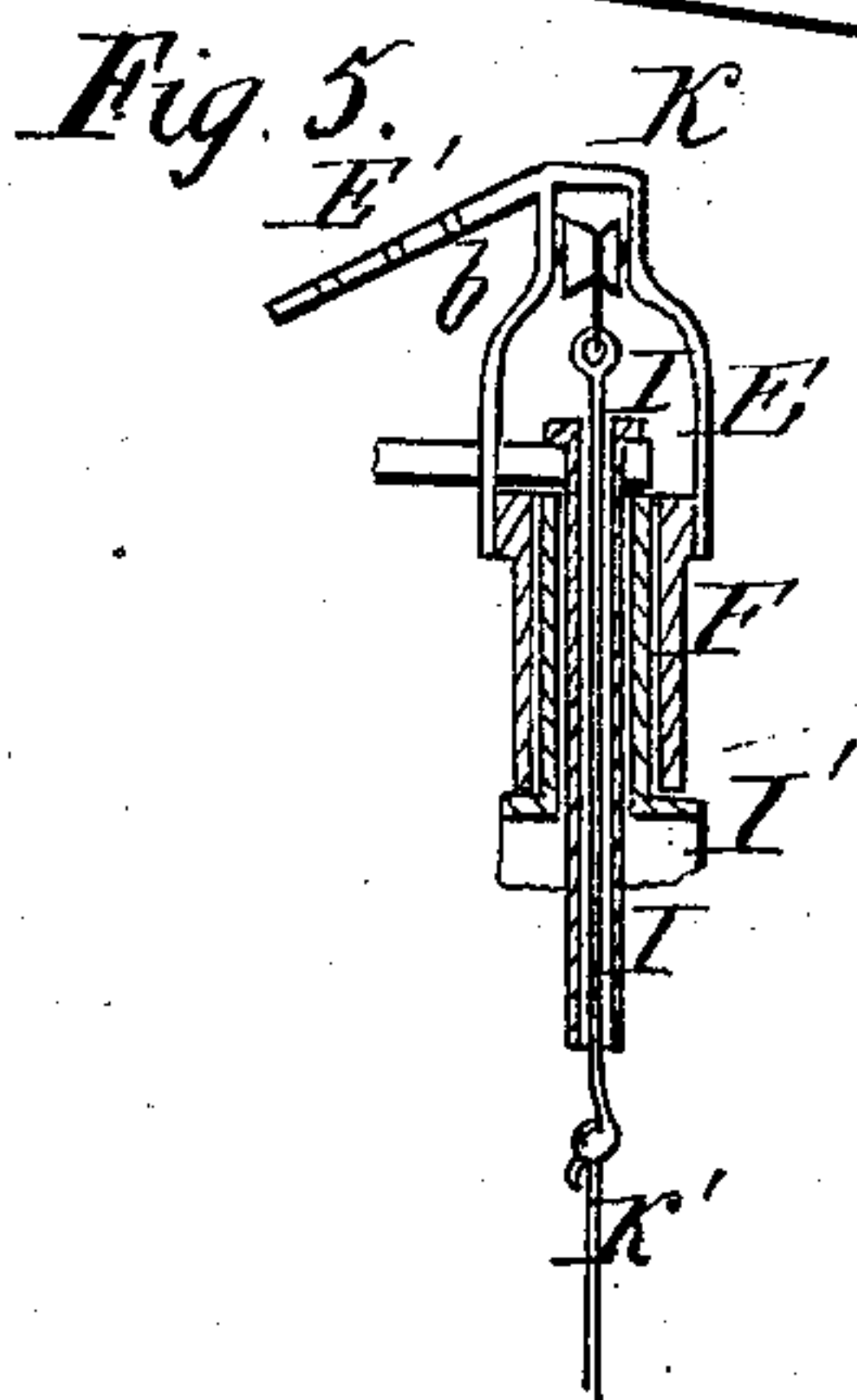
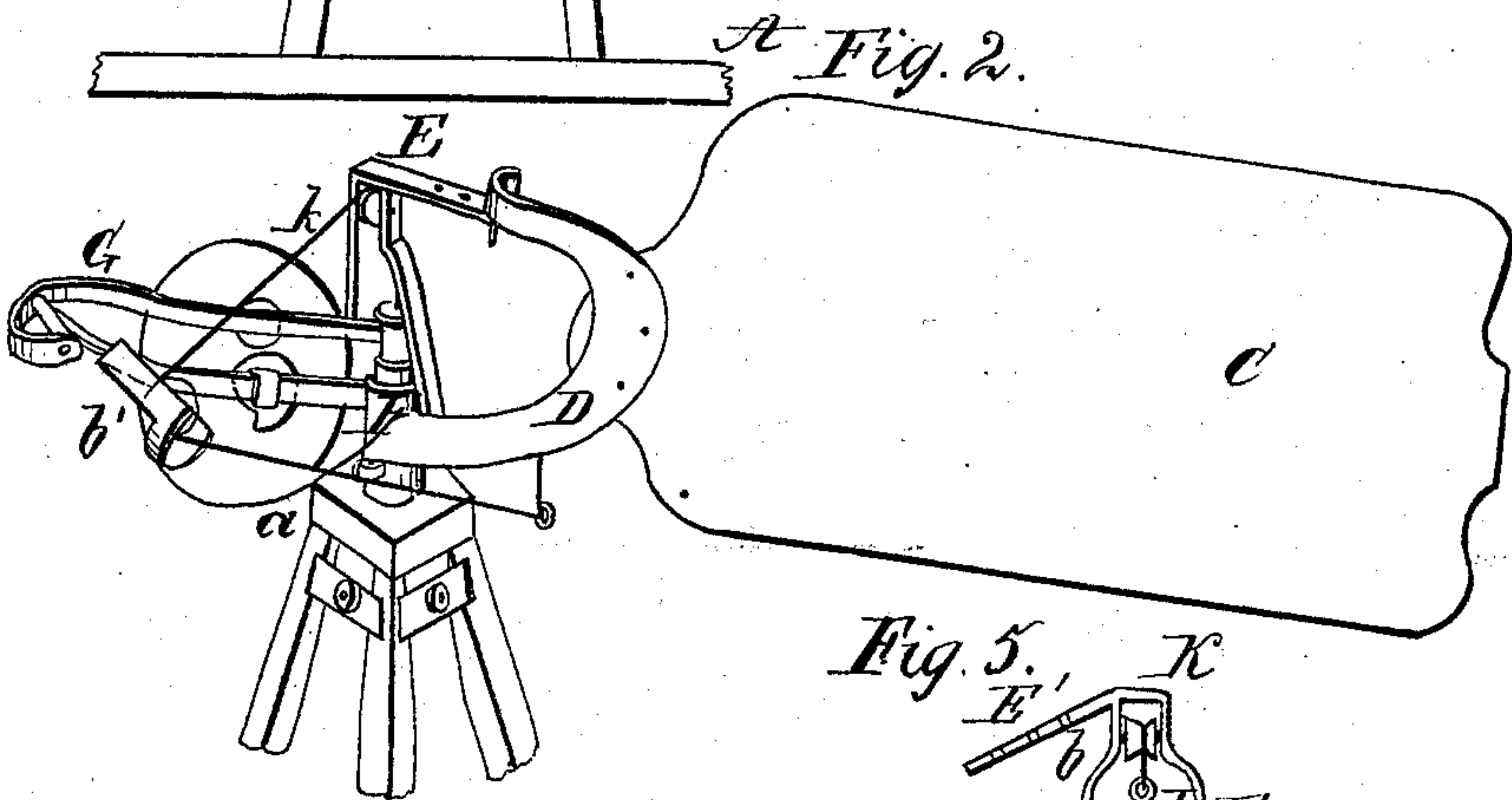
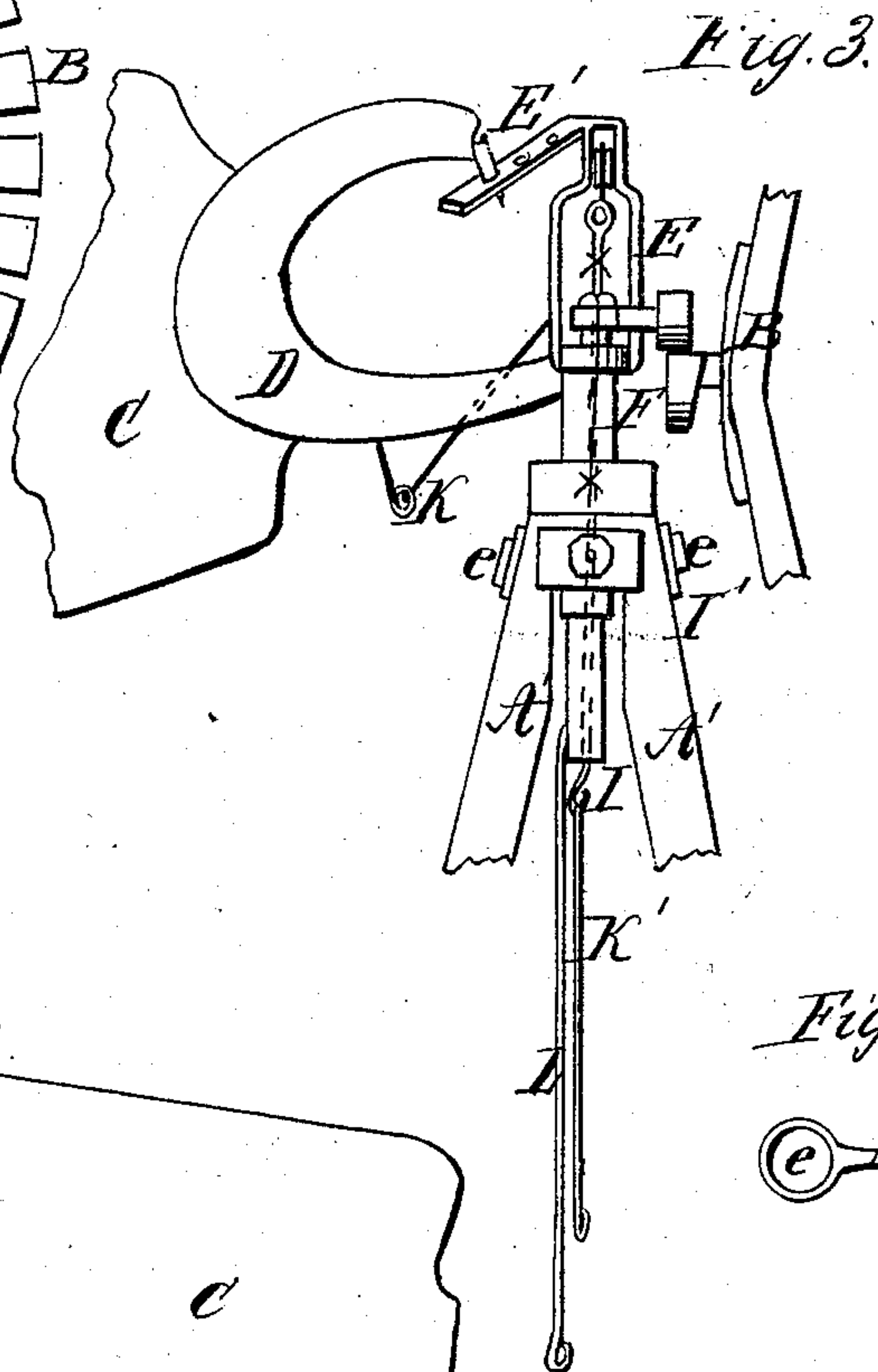
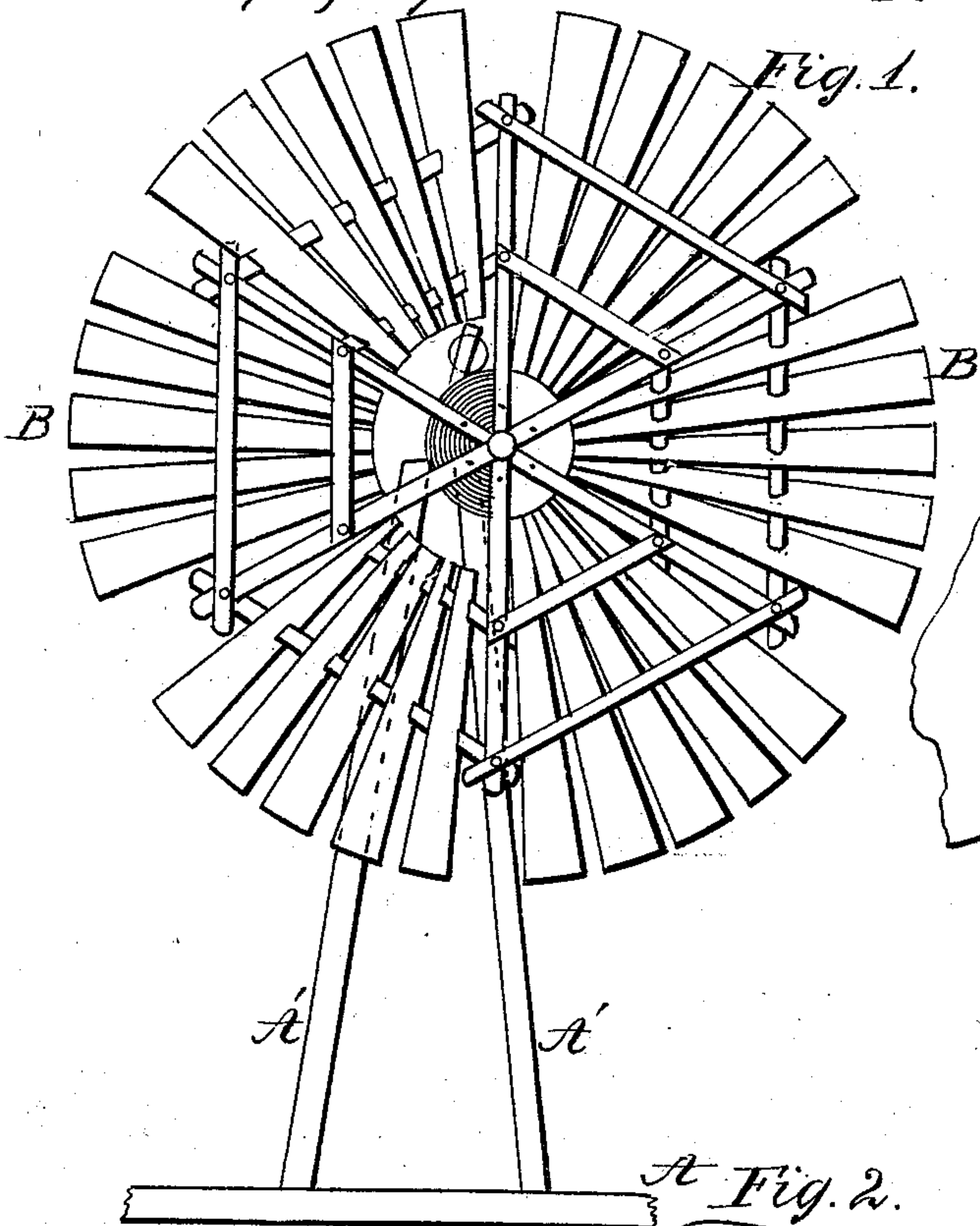
Sheet 1, 2, Sheets.

P. C. Perkins.

Wind Wheel.

N^o 93,472.

Patented Aug. 10, 1869.



Witnesses

A. Ruppert,
C. T. Clausen

Inventor,
P. C. Perkins
D. R. Holloway & Co
Atty.

UNITED STATES PATENT OFFICE

P. C. PERKINS, OF MISHAWAKA, INDIANA.

IMPROVEMENT IN WINDMILLS.

Specification forming part of Letters Patent No. 93,472, dated August 10, 1869.

To all whom it may concern:

Be it known that I, P. C. PERKINS, of Mishawaka, county of St. Joseph, and in the State of Indiana, have invented a new and useful Improvement in Windmills; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 represents a front elevation of my improved mill, showing the construction of the wind-wheel. Fig. 2 is a perspective view of the same, showing the rudder or vane, the frame to which it is attached, the rope or chain for operating said rudder, and various other parts. Fig. 3 is a perspective view of the same, taken from the opposite side of the rudder, showing the tube through which the rods pass for the purpose of operating pumps or other devices. Fig. 4 is a side elevation, showing the cam which operates a pump, and the way in which such pump may be operated. Fig. 5 is a vertical section on line X X of Fig. 3, and Fig. 6 is a plan view of one of the eye-bolts which hold the socket in position in the frame of the machine.

Corresponding letters represent corresponding parts in the several figures.

This invention relates to windmills; and it consists, first, in so constructing such a mill that its propelling-wheel may be so turned upon its vertical axis that its face or faces may be brought nearly or quite in line with the sides of the rudder; and, secondly, the invention consists in the combination and arrangement of various parts of the device, as will be more fully explained hereinafter.

A in the drawing represents the base of the machine, which may consist of a frame made of wood, or it may be of masonry, and have the vertical, or nearly vertical, parts which support the machinery secured therein. A' A' represent the posts, which are secured within the base or foundation, of which there may be one or more, they being of any desired length to give the proper elevation to the wind-wheel, and of such dimensions otherwise as to have the requisite strength to support all the parts of the device. B represents the wind-wheel, which may be constructed as shown in Fig. 1 of the drawing, or in any other suitable manner. To the rear side of

this wheel a flange is to be attached by bolting, or otherwise securing the same to the arms of the wheel. Upon the rear side of this flange a boss is to be cast or otherwise attached, which is to be of suitable length to form a socket or aperture for the reception of the shaft or arbor upon which the wind-wheel turns. This boss has upon its inner end a cam, which may be cast thereon, or be cast separately and screwed or bolted thereto in any suitable manner, so that as the wind-wheel is rotated said cam shall come in contact with the under side of a lever, and raise the same gradually, and yet permit it to fall with a more rapid motion, the side of the cam which is opposite to that which raises the lever being constructed substantially as shown in Fig. 4 of the drawings for that purpose.

In the event of its becoming desirable to work the pump more slowly than would be the case with the above arrangement, it would only be necessary to attach to the hub of the wind-wheel, or to a shaft passing through the same, a pinion, and so arrange it that it should mesh into a large wheel to be placed upon a separate shaft, which shaft would have its bearings in the same frame, or upon the same arm to which the wind-wheel is secured, and place the cam upon the hub of such large wheel, or upon the shaft which it rotates, which arrangement would reduce the number of strokes of the pump to any desired extent, dependent only upon the size of the wheels used.

C represents the rudder or vane, which may be of wood or of sheet metal, and of any required size, its office being to keep the wind-wheel in proper position to receive the wind upon its sails or arms.

D represents one method of securing the rudder to the mill, or to the posts upon which it turns. This metallic connection may, however, be dispensed with, and strips of wood be used, which strips may have upon their inner ends hinges of any suitable kind attached thereto for securing it to the mill; or it may be attached by means of a spring or springs, which will yield or bend to the extent necessary to allow the wheel and rudder to approach each other.

To the outer or curved portion of this frame, when one is used, the rudder is to be secured

by being riveted or bolted thereto, while the lower arm of its inner bifurcated end rests upon a projection, *a*, formed upon the socket *F*, to which it is secured by means of a pin, which passes through its extreme outer end, and through the projection alluded to, so that said frame may turn freely upon such pin and projection. The upper arm of this plate is to have formed in its extreme end a socket for the reception of a pin, which passes down through an arm which extends outward from the yoke or frame *E*. Upon this arm the upper portion of the frame *D* rests and turns, it being bent, as shown in Fig. 2, to enable it to do so.

The object of the above-described arrangement of parts is to enable the rudder and the wind-wheel to be brought around to a position parallel, or nearly so, with each other, when it is not desirable to have the mill operate, and to enable them to recede and return to their original position when the mill is to be put in operation.

E represents a frame or yoke, the lower end of which is to be secured to the upper end of socket *F*. Near its upper end the two sides or parts approach each other until there is only space enough between them to receive a roller, *b*, over which the rope or chain which operates the rudder passes, just outside of which the two parts are joined together. From the extreme end of this frame projects the arm *F'*, which holds the upper portion of frame *D*, which arm may be perforated with a series of holes, so as to give the outer end of the rudder more or less elevation by inserting the pivot in one nearer to or farther from the socket *F*. *F* represents a sleeve or socket, the lower end of which rests upon the upper end of the upright portion of the frame, or upon a plate of metal placed thereon, it being so arranged as to turn freely upon the pipe *I*, which passes down through the center of it. *G* represents a lever, the inner end of which embraces or is attached to the upper end of the pipe *I*, from which it extends outward for any suitable distance, to enable its outer end to be fulcrumed to the arm or frame *H*, so that its inner end may move up and down with the pipe. To this lever, at a point above the cam *C*, upon the hub of the wind-wheel, or upon the shaft of the same, a stud projects, which stud has a roller fitted upon it, so as to revolve freely thereon, so that when said cam comes in contact with the roller the lever shall be raised and kept in its elevated position until the full part, or highest point of the cam, has passed said roller, and then drop down by its own gravity, or by any other force which may be applied to it. *H* represents an arm or frame, which is to be secured to the upper end of socket *F*, from which point it extends outward, so as to form the fulcrum of lever *G*, as above described. To this arm or frame, at a point outside of the center of the socket *F*, the pivot or axle upon which the wind-wheel revolves is to be secured, so that, as more

wind comes in contact with such wheel than is required to furnish the requisite amount of power, it should have the effect to secure the wheel to turn the socket around, and thus bring the force of said wheel nearer and nearer in line with the vane or rudder, and thus reduce the effective force of the wheel for the time being.

It will be seen, by referring to the drawings, that when the parts are in position to receive the greatest effect from the wind, the face of the wind-wheel is set, or nearly set, at a rect-angle to the sides of the rudder or vane, and that as the wheel is turned from such position the effect of the wind upon the wheel is regularly diminished, or, in other words, a less amount of force is exerted upon such wheel; and this ratio of diminution is continued until the face of the wheel and the sides of the vane are brought nearly or quite parallel with each other, at which time the effect of the wind upon the wheel, so far as the production of rotary motion thereof is concerned, will have nearly ceased.

This feature of the invention is regarded as of great importance, as it enables the mill to be to a great extent self-regulating, and thus prevents the possibility of its being injured by the too rapid motion of its parts. It is apparent, however, that the same result may be produced by other and equivalent means—such, for instance, as a vane or rudder attached to the socket upon which the wind-wheel revolves, or to the arm or frame to which such wheel is secured; or it may be the frame made broad enough to serve the same purpose, or, in fact, any wind-receiving surface which is so arranged that the wind will cause the face of the wheel and the side of the vane or rudder to approach each other.

I represents a pipe or tube having a collar upon its upper end, which rests upon the lever *G*, from which point it extends downward through the socket *F* and tubes *I'* for a distance sufficient to permit of fastening thereto the pump-rod *L*. *I'* represents a pipe, which has upon it a collar at such a point as to rest upon the top of the frame, and receive upon its upper surface the lower end of socket *F*, which collar may take the place of the plate above alluded to, if desired. That portion of this pipe which is above said collar extends up a distance about equal to the length of the socket *F*, and forms the axis upon which such socket turns, while that portion of said pipe which is below said collar extends downward for some distance, and receives the eyebolts *e*, which secure it to the frame-work. It will be seen that the socket fits the outer surface of the upper end of this pipe, while the tube *I* fits and moves upon its inner surface. *K* represents a rope or chain, which is to be attached to the vane or rudder, from which point it is to pass around a pulley or roller attached to the arm or frame *H*, and from thence to and over the pulley or roller in the frame *E*, where it is to be united to a rod, *K'*, which passes

down through the tube I, so that it may be operated upon by the devices shown in Fig. 4, or any other suited for the purpose, as a further means of controlling the speed of the wind-wheel, by causing the surfaces of such wheel and the rudder to approach toward and recede from each other. L represents a rod, which is to be secured to the lower end of the tube I, and so arranged that its lower end may be connected to the lever of a pump, as shown in Fig. 4, or to any other devices to which it is desirable to give a reciprocating motion. e represents an eyebolt, of which there may be any required number, the aperture through their centers being of the required diameter to receive the pipe I'.

In placing the parts of the machine in position the pipe is to be passed through these eyebolts, which will leave their threaded portion standing out at right angles to such pipe. On the ends of these bolts any suitable caps or washers may be passed, which shall rest upon the posts or post upon which the mill is supported, and then the nut screwed down upon the same, so that the pipes may be held firmly in their position, and may, by loosening the nuts upon these bolts, be lowered or raised and again secured in their altered position, or may be moved sidewise or brought into a vertical position when it has, from any cause, departed from its position.

I have shown, and thus far described, my improved mill as applicable only to machines or devices requiring a reciprocating motion; but it is equally applicable to those requiring a rotary motion, the only change required in such cases being to insert a hollow shaft in the place now occupied by the tube I, whose outer diameter shall be such as to cause it to turn freely within pipe I'. To the upper end of such shaft a pinion may be attached, which will receive its motion from a gear-wheel placed upon the flange of the wind-wheel, or

upon the axle upon which it is mounted, and be so arranged as to mesh into the pinion upon the hollow shaft, or into an intermediate wheel, which wheel shall mesh into said pinion.

To the lower end of the hollow shaft a gear or band wheel may be secured, which shall give motion to any machine which it may be desirable to attach it to.

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

1. A windmill so constructed and arranged that the wind-wheel may, by turning upon its vertical axis, have its face brought into a parallel, or nearly parallel, line with the sides of the vane or rudder, substantially as and for the purpose set forth.

2. Arranging the wind-wheel or wind-receiving surface upon the arms or frame H, at one side of the center of its vertical axis, substantially as and for the purpose set forth.

3. The arrangement of the rudder with reference to the socket F and frame or support E', substantially as and for the purpose set forth.

4. The combination and arrangement of the socket F, frame or arm H, lever G, and cam c, substantially as and for the purpose specified.

5. The combination and arrangement of the rudder C, rope or chain K, pulleys b and b', and rod K', substantially as and for the purpose specified.

6. The combination of the eyebolts e, pipe I', and the frame A, substantially as and for the purpose specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

P. C. PERKINS.

Witnesses:

B. EDW. J. EILS,
C. F. CLAUSEN.