No. 737,788. PATENTED SEPT. 1, 1903.

H. B. SMITH.

WINDMILL.

APPLICATION FILED JAN. 19, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

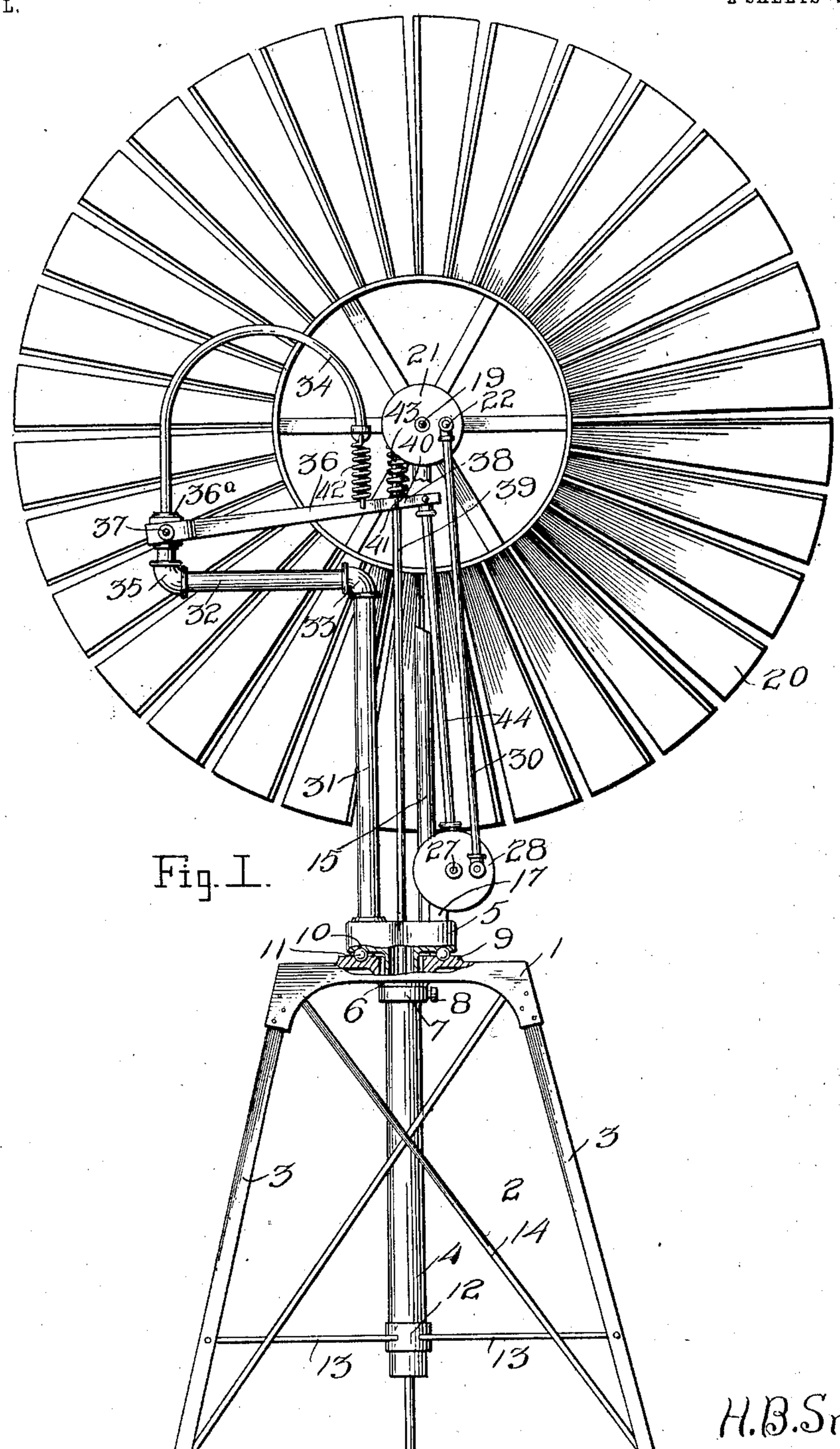

Fig. I.

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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 2.

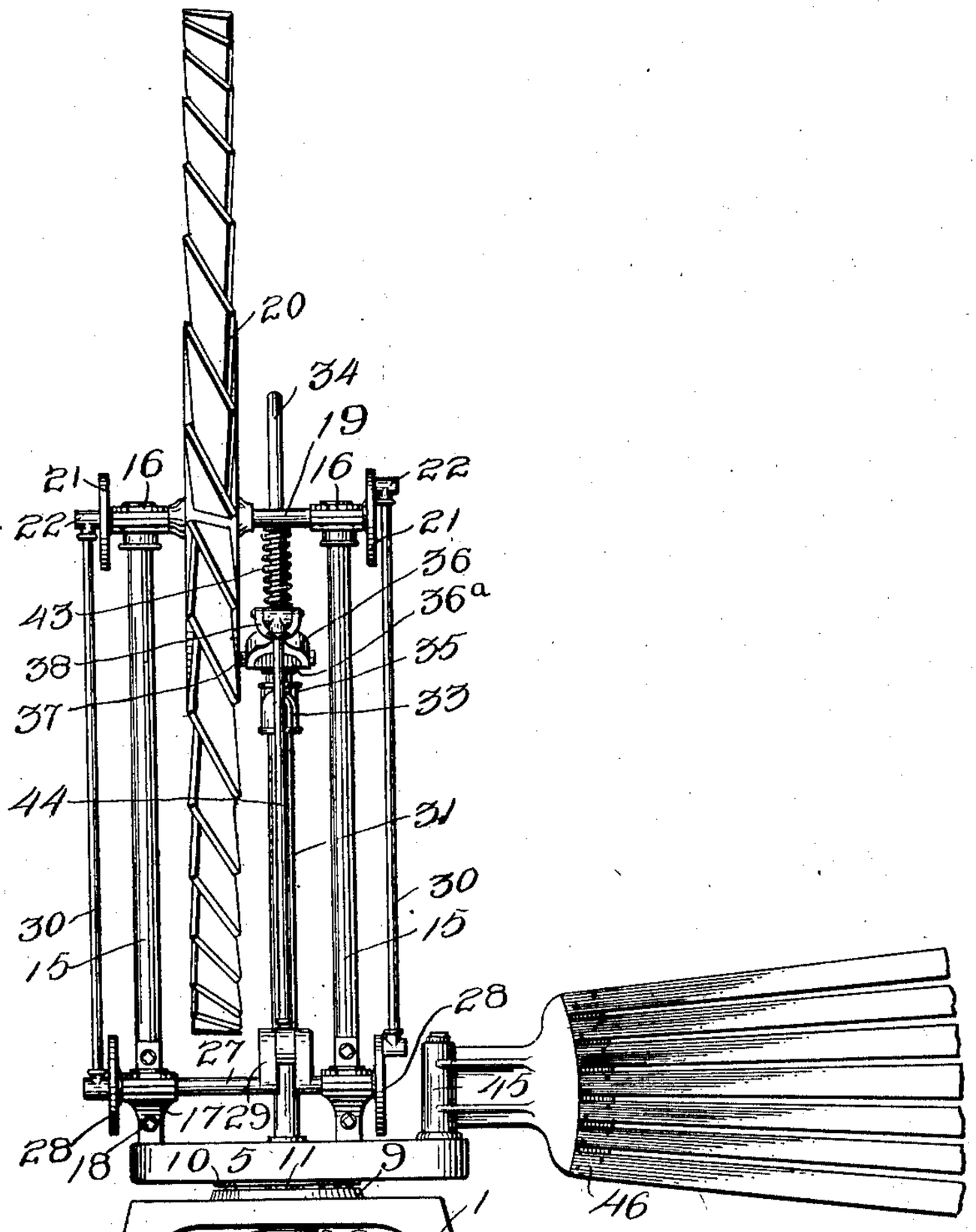

Fig. 3.

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 737,788. Patented September 1, 1903.

UNITED STATES PATENT OFFICE.

HARBERT B. SMITH, OF LANGLEY, KANSAS.

WINDMILL.

SPECIFICATION forming part of Letters Patent No. 737,788, dated September 1, 1903.

Application filed January 19, 1903. Serial No. 139,677. (No model.)

To all whom it may concern:

Be it known that I, HARBERT B. SMITH, a citizen of the United States, residing at Langley, in the county of Ellsworth and State of Kansas, have invented certain new and useful Improvements in Windmills; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention is an improved windmill; and it consists in the peculiar construction and combination of devices hereinafter fully described and claimed.

The object of my invention is to effect improvements in the construction of a windmill whereby the pump-rod is prevented from stopping on a dead-center, whereby the pump-rod is cushioned to prevent the stocks thereof from jerking and jarring the pump when the pump-valve primes or catches, and to effect improvements in the construction of the frame which carries the wind-wheel.

In the accompanying drawings, Figure 1 is a side elevation of a windmill embodying my improvements, partly in section. Fig. 2 is a similar view at right angles to Fig. 1, and Fig. 3 is a top plan view of the same.

The cap-plate 1, which forms the upper side of the tower 2 and to the corners of which the upper ends of the corner-studs 3 are bolted, is provided at its center with an opening through which extends a depending brace-tube 4, the upper end of which is connected by a screw-coupling 5 and extends through said turn-table. On the under side of the cap-plate 1 is an annular boss 6, which surrounds the base-tube 4, and on the latter is clamped a collar 7 by means of a set-screw 8, said collar bearing against the under side of the boss. On the upper side of the cap-plate 1 and disposed concentrically with reference to the brace-tube 4 is a ball-race 9. The turn-table 5 has a corresponding ball-race 10 on its under side, and bearing-balls 11 operate in the said ball-races. By this construction and combination of devices friction between the turn-table and the cap-plate is minimized, as will be understood.

The lower end of the brace-tube 4 is braced by means of a collar 12, which is engaged therewith, and stay-rods 13, which extend radially from the collar to the corner-studs 3 of the tower. Stay-rods 14 are here shown, which connect said corner-studs to the corner portions of the cap-plate.

A pair of standards 15, which are in practice gas or water pipes of suitable length and diameter, have their lower ends screw-threaded and engage with screw-threaded openings in the turn-table. To the upper ends of the said standards are connected bearings 16 by means of similar screw-couplings, and to the said standards near their lower ends are secured bearings 17 by means of bolts 18.

The shaft 19 of the wind-wheel 20 is journaled in the bearings 16 and is provided at its ends with crank-disks 21, the wrists 22 of which are disposed in planes ninety degrees from each other. A counter-shaft 23 is journaled in the bearings 17, is provided with similar crank-disks 28 at its ends, and at a point intermediate its ends is provided with a crank 29. Pitmen 30 connect the wrists of the crank-wheels 21 28, and it will be understood that when the wind-wheel is revolved rotary motion is communicated to the counter-shaft 27.

A standard 31, which is in practice a pipe of suitable length and diameter, has its lower end screwed in an opening in one side of the turn-table, and to the upper end of the said standard is connected an outwardly-extending horizontal arm 32, which is also a similar pipe, by an elbow 33. An upwardly and inwardly extending substantially inverted U-shaped arm 34, which is also preferably a pipe, has its lower outer portion connected to the outer end of the arm 32 by an elbow 35, and the vertical outer portion of the said arm 34 is provided with a diametrically enlarged sleeve 36^a, fixed thereto, and to which the forked or bifurcated outer end of the walking-beam 36 is pivotally connected, as by a bolt 37, the said bolt serving also to connect said sleeve to the said arm 34. The said walking-beam is provided near its free end, which is disposed directly above the center of the turn-table and cap-plate, with an annular enlargement 38, through the bore of which extends the upper end of the pump-rod 39. In the sides of said annular enlargement and transversely disposed with reference to the said walking-beam are slots 40,

which are engaged by a pin 41, that extends through and projects from opposite sides of the pump-rod. Hence the latter is pivotally connected to the walking-beam and is adapted to move independently thereof to an extent equal to the length of the slots 40 minus the thickness of the pin 41. A coiled retractile spring 42 connects the inner end of the arm 34 to the walking-beam at a suitable distance from the free end of the latter and draws upwardly on the walking-beam. On the upper portion of the pump-rod above the walking-beam and bearing thereon is a coiled extensile spring 43, the upper end of which is connected to the pump-rod by any suitable means—as by a nut or pin, and the function of the said spring 43 is to normally elevate the pump-rod with reference to the walking-beam to dispose the pin 41 normally in the lower ends of the slots 40. A pitman 44 connects the free end of the walking-beam 36 to the crank 29 of the counter-shaft 27.

From the foregoing it will be understood that when the wind-wheel is in operation reciprocating motion will be communicated to the pump-rod and that by means of the walking-beam and the springs 42 43 the pump-rod is cushioned, so that the stocks thereof are prevented from jarring and rocking the pump when the valve primes or catches.

The turn-table is provided with an upstanding pivot 45 for the inner end of the vane 46, which may be either of the construction here shown or of any other suitable construction, and is in practice provided with means for turning it on its pivot to throw the wind-wheel into or out of operation. The means for operating the vane constitute no part of my present improvements, and hence are not shown and described herein, as they are well known to those skilled in the art to which my invention relates.

From the foregoing description, taken in connection with the accompanying drawings, the construction, operation, and advantages of my invention will be readily apparent, it is thought, without requiring a more extended explanation.

Various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of the invention.

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

1. In a windmill, the combination of a wind-wheel having a shaft provided with cranks, the wrists of which are out of line with each other, a counter-shaft having similar cranks and provided also with a crank 29, pitmen connecting the wrists of the cranks of the wind-wheel and counter-shaft, a walking-beam, a pitman connecting the latter to the crank 29, and a reciprocating rod connected to the walking-beam, substantially as described.

2. In combination with a walking-beam, a wind-wheel and connections between the wind-wheel and walking-beam to operate the latter, a spring bearing upwardly on the walking-beam, a reciprocating rod having pivotal and slidable connection with the walking-beam, and a spring coacting with said walking-beam and rod to normally depress the latter with reference to the walking-beam, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

HARBERT B. SMITH.

Witnesses:
M. E. CHILTON,
THOS. H. DAVIS.