2 Sheets—Sheet 1.

W. McE. DYE.

HORSE POWER MECHANISM.

No. 244,799. Patented July 26, 1881.

Fig. 2.

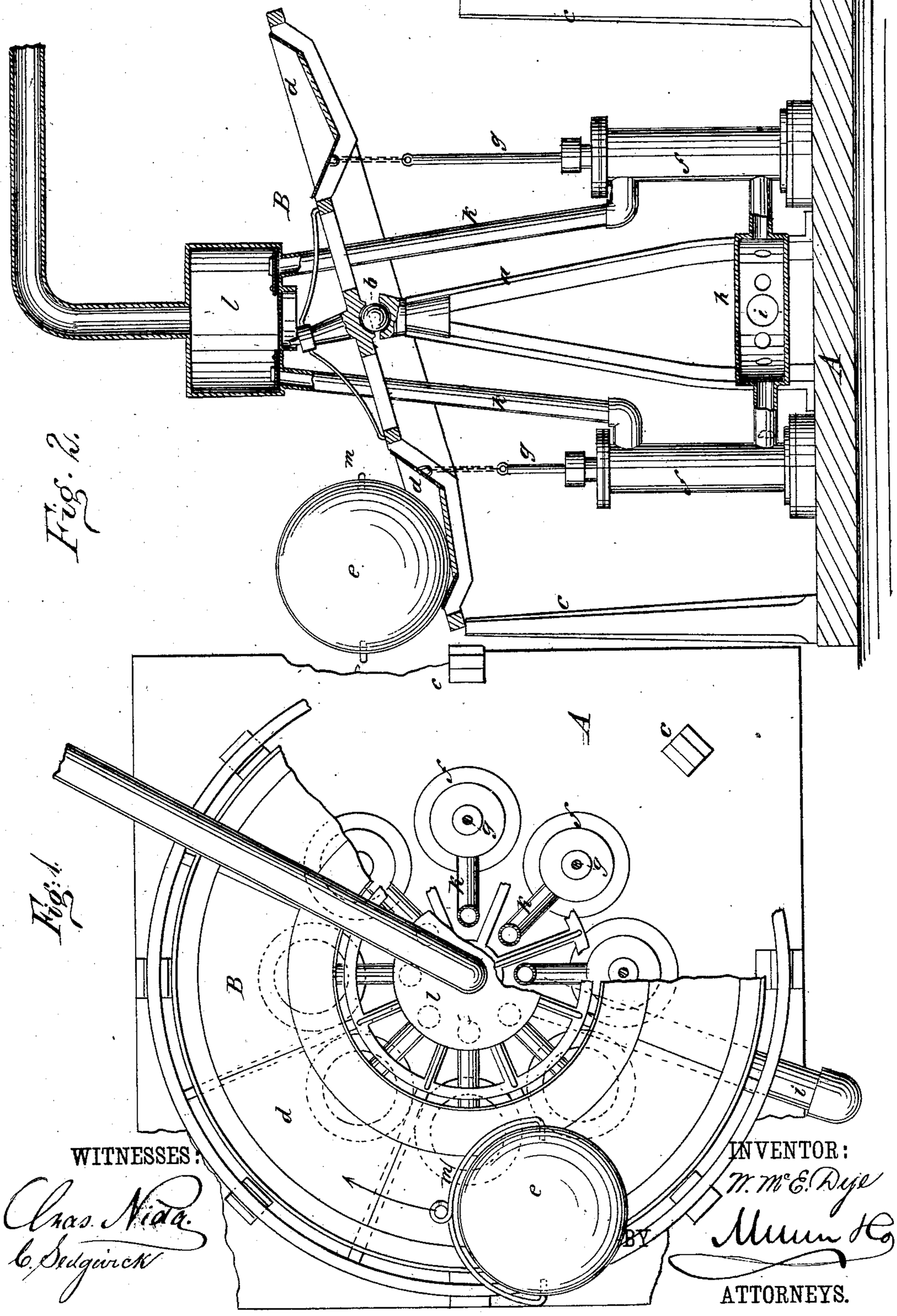

Fig. 1.

WITNESSES:

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2 Sheets—Sheet 2.

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Fig. 4.

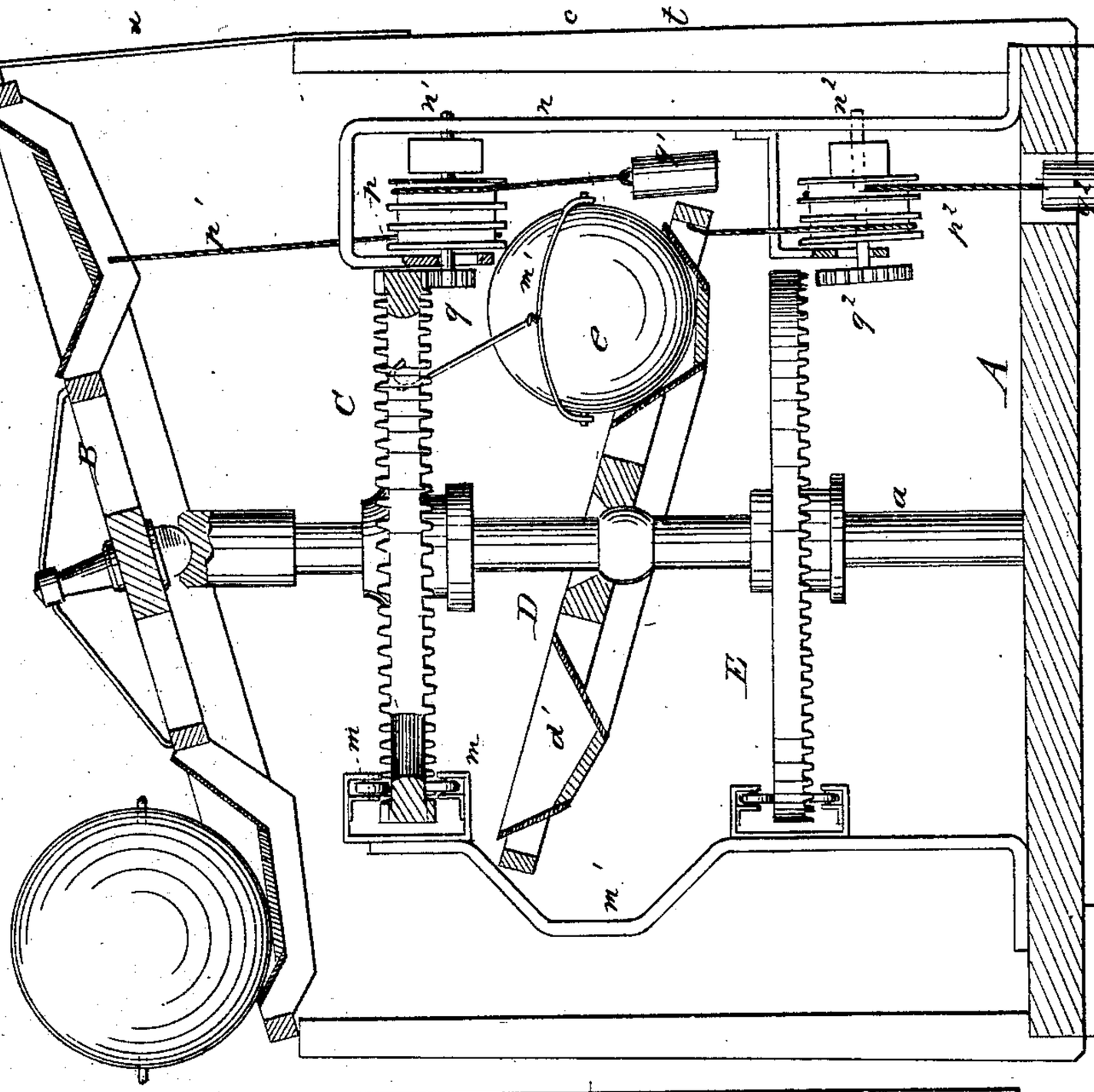


Fig. 3.

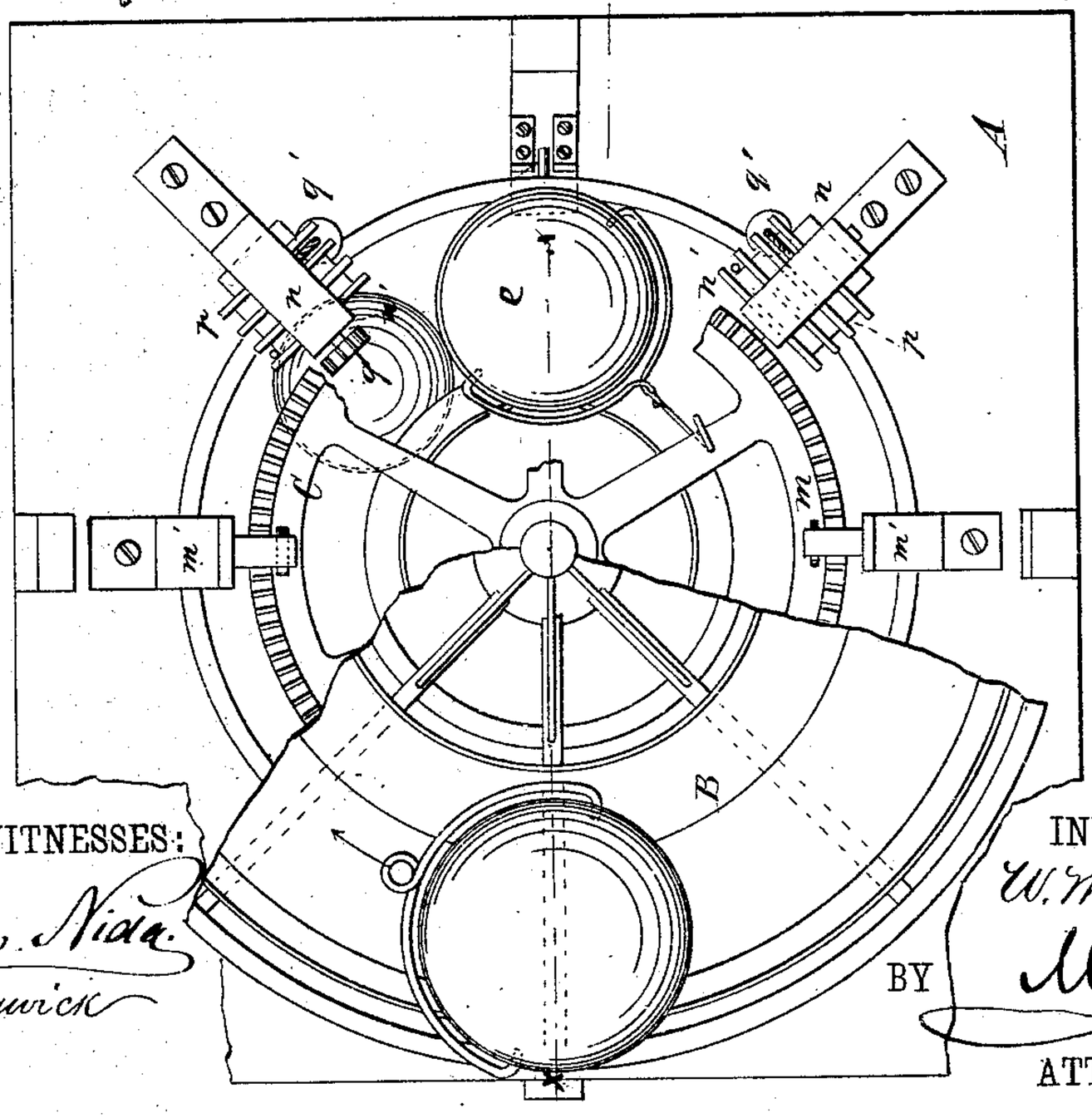
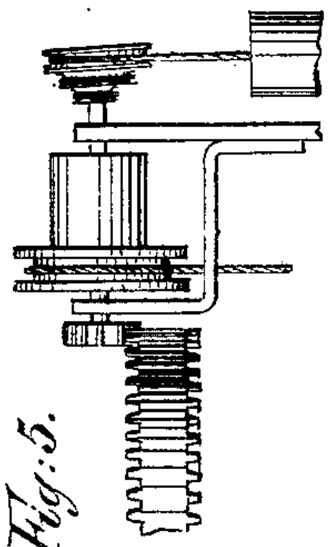


Fig. 5.



WITNESSES:

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INVENTOR:

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UNITED STATES PATENT OFFICE.

WILLIAM McE. DYE, OF NEW YORK, N. Y.

HORSE-POWER MECHANISM.

SPECIFICATION forming part of Letters Patent No. 244,799, dated July 26, 1881.

Application filed February 11, 1880.

To all whom it may concern:

Be it known that I, WILLIAM McE. DYE, of the city, county, and State of New York, have invented a new and useful Improvement in Horse-Power Machines, of which the following is a specification.

The object of my invention is to furnish an improved horse-power mechanism for various industrial operations usually performed by steam, water, or wind power.

My invention is an improvement in that class of power mechanism which combines a continuously-acting lever and an endless inclined plane, formed practically of a circular disk pivoted at its center on a ball-and-socket or other universal joint, upon which joint the disk is made to oscillate by the weight of a draft-animal moving in a regular manner around its perimeter and up the inclined plane.

The construction and operation will be more particularly described hereinafter, with reference to the accompanying drawings, forming part of this specification.

In the drawings, Figure 1 is a sectional plan view of my improved mechanism in its most simple form, and as applied for pumping water. Fig. 2 is a central vertical section of the same. Fig. 3 is a sectional plan view, showing the mechanism compounded for obtaining greater power. Fig. 4 is a vertical section on line *x x* of Fig. 3.

Similar letters of reference indicate corresponding parts.

A is a bed-plate of suitable size, from the center of which rises a standard, *a*, that is formed with a socket at its upper end to receive a ball, *b*, on which the disk B rests, so that the disk may oscillate freely above and below the horizontal plane, the motion being limited by the posts *c*, that rise from the base A in position for arresting the downward movement of the disk.

The disk B is made of wood or metal, or those materials combined, in strong and substantial form. It preferably consists of an outer ring united to radial arms that project from a central hub, with braces extending from a central post and connected to the radial arms.

At the inside of the outer edge of the disk B an annular treadway, *d*, is formed, which is of a shape for receiving and retaining a weight, *e*, that may be of spherical or conoidal form, and the tread is also adapted for the animal that operates the mechanism.

Upon the base A, beneath the disk B, are fitted pump-barrels *f*, in a circular range, and as close together as may be. The pistons *g* of the pump-barrels are connected by chains or other flexible connections directly to the under side of the disk B. The suction-pipes are all connected to a central reservoir, *h*, from which a common suction-pipe, *i*, extends, and the outlet-pipe *k* of the pumps extends to an elevated reservoir and air-chamber, *l*, from which the water is to be taken in any desired manner for the purposes required.

The inlet and outlet pipes are fitted with suitable valves, and I prefer that the pistons *b* should be sufficiently heavy to fall as fast as they are relieved of the lifting-power.

The weight *e* is provided with a shackle, *m*, on which it may revolve freely, and which also serves as means for attaching the draft-animal. The weight *e* should be fully as heavy as the animal is capable of drawing; and it will be understood that the power obtained results from the combined weight of the animal and the weight *e* acting to oscillate the disk B. By these means both the weight and strength of the animal are utilized, and a continuous lever action obtained to operate the pumps. This form of apparatus is adapted for raising water for irrigating, for pumping out mines, for fire-engines, and similar purposes.

The pumps may be simple lift-pumps or made as force-pumps, and the water may flow from the reservoir *l;* or the reservoir may be made as an air-chamber to insure a constant discharge of water from the same.

In cases where it is not necessary to raise the water above the level of the pumps, the outlet-pipes will simply discharge into a reservoir upon that level.

The apparatus shown in Figs. 3 and 4 is made in compound form for the purpose of increasing the power.

B is the oscillating disk and tread, similar in construction to that before described. Upon the standard *a*, beneath the wheel B, is a loose

gear-wheel, C, the rim of which is supported between friction-rollers m', that are carried by the standard m^2.

Upon the base A there are standards n, which are fitted with horizontal shafts n', radial to the standard a. Upon each shaft n' is fixed a grooved drum, p, and a pinion, q, for engagement with the gear-wheel C. The shafts n' are fitted to swing up and down in their bearings, so that when raised the pinion q will mesh with wheel C, and will be free therefrom when the shaft drops.

From the oscillating disk B a rope, p', extends to and is attached upon the drum p, so that the disk B, as it rises, acts to raise the shaft n' and revolve the same. There is also attached to drum p a rope carrying a weight, q', which tends to revolve the shaft n' and wind the rope p' as it is slackened by the descent of the disk. The weight q' may be sufficiently heavy to prevent rotation of the shaft n' until it is raised in contact with the wheel C; but I prefer to make use of a pin fixed in position for engaging the teeth of pinion q when released from wheel C, to prevent its rotation except by the weight q'.

There are to be the required number of standards with the gearing described to give a continuous rotation to the wheel C by the successive action of the pinions q as the disk is oscillated.

Upon the standard a, beneath the wheel C, is fitted an oscillating disk, D, similar in construction to the disk B. In the annular grooveway d' of disk D is a ball, e, provided with a shackle, m, that is connected to the gear-wheel C, so that by the rotation of the wheel C the ball e is rolled upon the disk D and the latter oscillated in the same manner as disk B. Beneath the disk D on standard a is fitted a gear-wheel, E, which is similar to the wheel C, and is rotated by the oscillations of disk acting through the drums p^2 and pinions q^2, in the manner described in connection with wheel C. Thus the oscillations of disk B are transmitted to the wheel E, which will revolve at a fast or slow speed, according to the proportions of the gearing.

When the gear-wheel C is fitted above the disk B the mechanism for revolving the wheel C will be arranged as shown in Fig. 5. In this case the grooved drum p and pinion q are raised by the weight q' at the outer end of shaft n' and drawn down to throw the pinion in gear by the oscillations of the disk. The rope of the weight q' winds on a volute spiral, so that the rope, when wound, is farthest from the fulcrum of shaft n' and upon the larger portion of the cone, whereby it has its greatest power for turning and raising the shaft n' when most needed.

There are two weights on the second oscillating disk, D, one smaller than the other, the smaller weight representing the tractile power which is supplied by the wheel C.

To overcome the tendency of the animal's movement to turn the oscillating disk, I provide a standard, t, carrying a slotted piece, u, that engages with a pin on the oscillating disk. This permits the oscillation and prevents turning.

In the machine shown in Figs. 3 and 4 the power from the disk B is used to shift the second weight on the second oscillating disk, and this second weight will be much heavier than the first weight—say five or six times as heavy, according to the inclination of the plane.

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

1. In horse-power mechanism, the combination, with the disk B, fitted for oscillation by a weight provided with a shackle and to be moved thereon by animal-power, of the gear-wheel C, arbors n, pinions q, drums p, cord and weights q', and connections p' to the disk B, constructed for operation substantially as shown and described, whereby a continuous rotary motion is given to wheel C by the oscillation of the disk.

2. In power mechanism, the disk B, fitted for oscillation on a central support by means of a moving weight and connected directly by ropes or chains with the pistons of a circular range of pumps, substantially as described and shown.

3. In power mechanism, the combination, with the oscillating disk B, of the pumps f, pipes k, and elevated reservoir or air-chamber l, substantially as described and shown.

4. In power mechanism, the combination, with disk B, fitted for oscillation on a central support and provided with means for utilizing its oscillations, of the weight e, provided with a shackle, m, for being moved around the disk by animal-power, substantially as described.

5. In power mechanism, the disk D, fitted for oscillation on standard a, the gear-wheel E, arbors n^2, pinions q^2, drums p^2, weights q', and ball-weight e, combined together and with the revolving gear C and oscillating disk B substantially as and for the purposes set forth.

WM. McE. DYE.

Witnesses:
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C. SEDGWICK.