

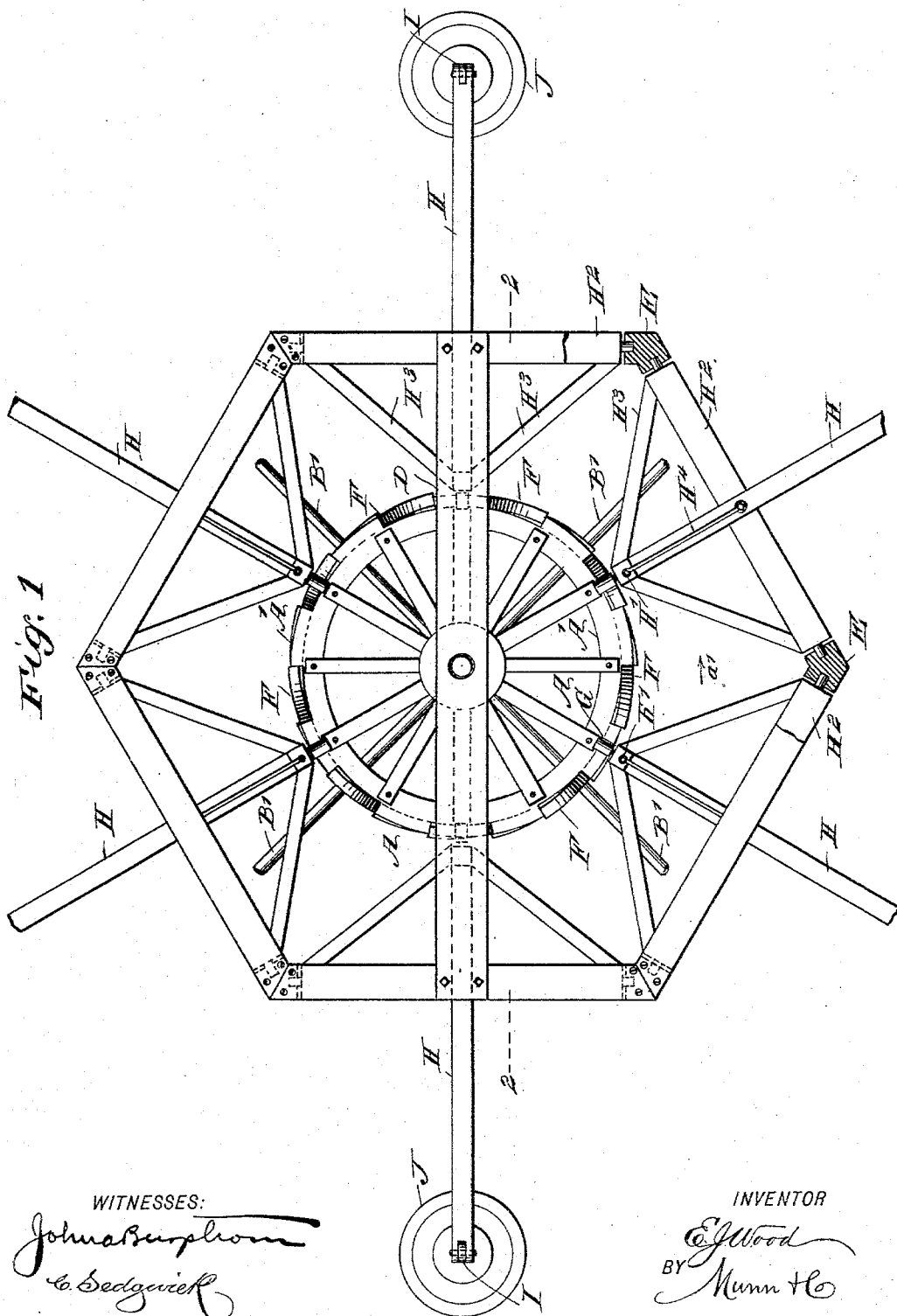
(No Model.)

2 Sheets—Sheet 1.

E. J. WOOD.
HORSE POWER.

No. 533,768.

Patented Feb. 5, 1895.



WITNESSES:

John A. Burphom
C. Sedgwick

INVENTOR

E. J. Wood
BY *Munn & Co*

ATTORNEYS.

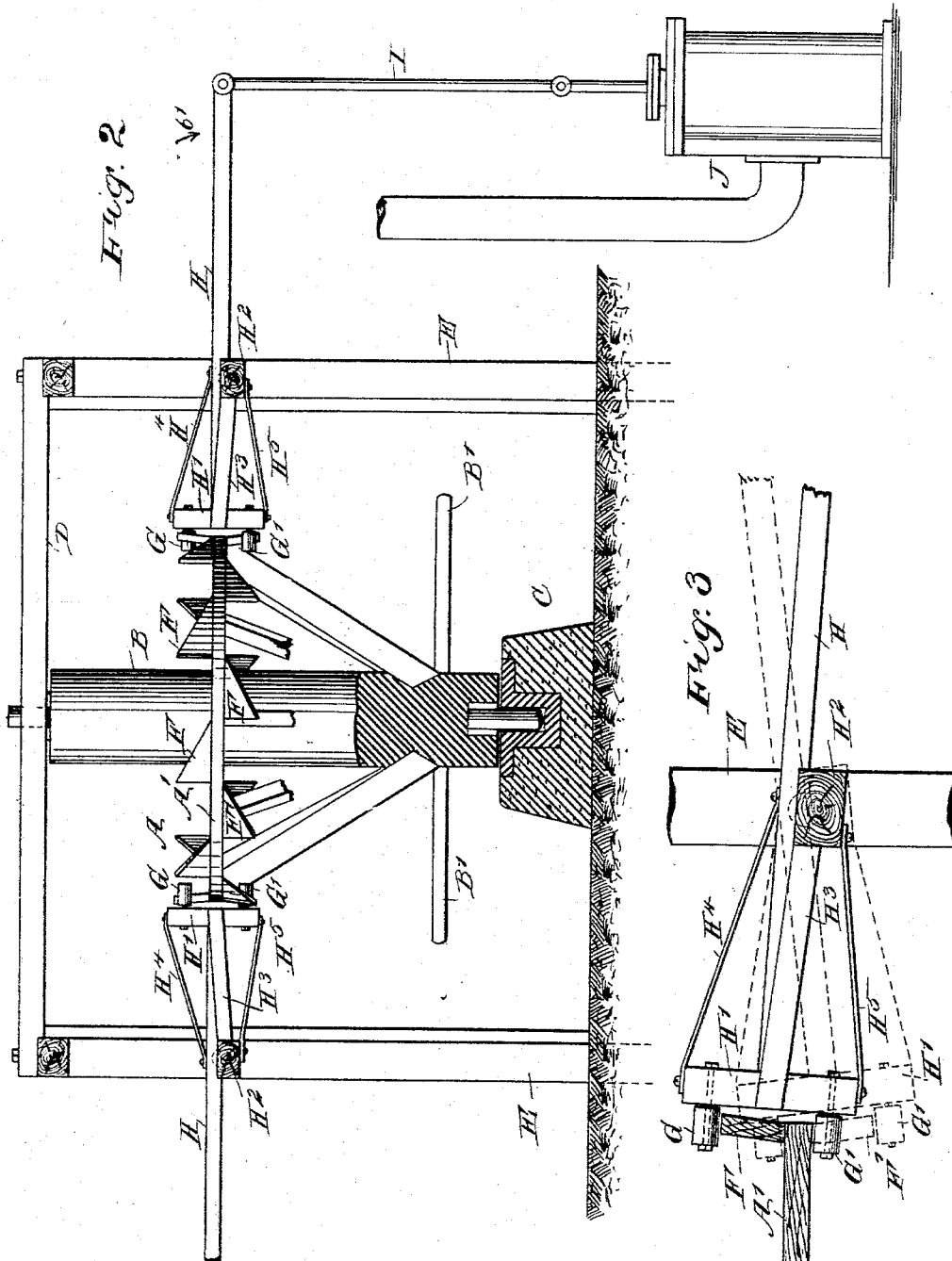
(No Model.)

2 Sheets—Sheet 2.

E. J. WOOD.
HORSE POWER.

No. 533,768.

Patented Feb. 5, 1895.



WITNESSES:

John A. Bergstrom
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INVENTOR

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UNITED STATES PATENT OFFICE.

EDWARD J. WOOD, OF BECKWITH, CALIFORNIA.

HORSE-POWER.

SPECIFICATION forming part of Letters Patent No. 533,768, dated February 5, 1895.

Application filed February 16, 1894. Serial No. 500,354. (No model.)

To all whom it may concern:

Be it known that I, EDWARD J. WOOD, of Beckwith, in the county of Plumas and State of California, have invented a new and Improved Horse-Power, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved horse power or motor, which is simple and durable in construction and more especially designed for conveniently driving a series of pumps and other small machinery.

The invention consists of certain parts and details, and combinations of the same, as will be hereinafter described and then pointed out in the claim.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of the improvement with parts in section. Fig. 2 is a sectional side elevation of the same on the line 2—2 of Fig. 1; and Fig. 3 is an enlarged sectional side elevation of the working lever and part of the cam wheel.

The improved horse power is provided with a cam wheel A, disposed horizontally and having its vertical shaft B, set at its lower end in a suitable step C, and its upper end is journaled in a beam D, supported on a suitable framework having posts E, set in the ground, as plainly shown in the drawings.

Near the lower end of the shaft B are secured the usual draft arms B', to which the animals for turning the wheel A are hitched. On the upper and lower faces of the rim A' of the wheel A are secured cams F and F', arranged alternately as plainly illustrated in Fig. 2, and preferably of a wedge shape so that the apex of a cam on the upper face of the rim A' is in vertical alignment with the vertical back of the next following cam F' on the lower face of the said rim. The cams F and F' are adapted to engage alternately friction rollers G and G', journaled on a vertical arm H' attached to the inner end of a lever H, fulcrumed between two adjacent posts E of the main frame.

The outer end of each lever H is pivotally connected with the pump rod I of the pump J, or with other parts of a machine to be

driven. Each lever H has a transverse beam H², formed with trunnions at its ends journaled in suitable bearings in two adjacent posts E, so as to form a solid pivot or fulcrum for the respective lever. It is to be noticed that these pivot beams or shafts H² are arranged between each two adjacent posts so that the several beams or shafts H² constitute a bracing circle extending with their supporting posts or uprights entirely around the frame and serving to equalize and distribute the strains thus increasing the strength and rigidity of the structure. The vertical arm H' is braced from the cross beam H² by suitable braces H³, and the upper and lower ends of the said arm H' are likewise connected by braces H⁴ and H⁵ with the lever H and the beam H², as will be readily understood by reference to Figs. 2 and 3. Now, it will be seen that when the wheel A is rotated in the direction of the arrow a', Fig. 1, then an uppermost cam F will first come in contact at its apex point with the upper friction roller G of a lever H, so that the cam F causes the friction roller to travel up its inclined face, thereby imparting a swinging motion of the lever H in the direction of the arrow b'. At the time the friction roller G leaves the highest point of the cam F the other friction roller G' commences to travel up the apex end of the next following cam F' on the under face of the rim A'. On the further rotating of the wheel A this friction roller G' will travel up the inclined face of the cam F', so that a swinging motion in the inverse direction of the arrow b' is given to the lever H. Thus, it will be seen that two succeeding cams F and F' impart a downward and upward swinging motion to the lever H, and as the said cams are alternately arranged throughout the entire rim A' of the wheel, a continuous up and down swinging motion is given to each lever, as long as the wheel A is revolved. The series of levers are so arranged relatively to the series of upper and lower cams that the alternate levers are being pressed in reverse directions, that is to say each lever is being pressed up while the levers intermediately adjacent thereto are being pressed down, and, as the levers constitute a series extending entirely around the cam wheel, it follows

that by this relation of cams and levers the strain upon the cam wheel is distributed around the wheel and its shaft and bearings are relieved of such strain as would result from any unequalized upward or downward pressure upon any portion of the rim of the wheel.

By reference to Fig. 1, it will be seen that six levers H are actuated simultaneously from one wheel A, but this number may be increased or diminished, as desired, the main frame being built correspondingly, that is, of a different polygonal cross section.

The cams F and F' are set at angles to the faces of the rim A of the wheel A, and the cams are inclined outwardly so as to approximately correspond with the arc in which the friction rollers G G' move up and down; the said arc having its center in the fulcrum of the respective lever H. By this arrangement all side draft on the levers H is prevented. The inner end of each lever H is sufficiently heavy to counterbalance nearly one half the weight of the water in the pump, so as to equalize the motion and at the same time relieve the device of one half the force necessary to lift the plunger and the entire weight of the water on the upstroke.

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

The improved horse power herein described consisting of the operating wheel having upon its opposite sides a series of inclined tooth like cams, the cams on one side alternating with and inclined oppositely to those on the other side, the frame having a series of posts or uprights surrounding said wheel, the levers provided with the pivot beams or shafts arranged one between each two adjacent frame posts and constituting therewith a continuous brace extending entirely around the operating wheel, the said levers being engaged at their inner ends by the cams of the operating wheel and arranged relatively thereto substantially as described whereby when a cam of the upper series is acting upon one lever, cams of the lower series will be acting upon the levers next to said first lever, all substantially as described and for the purposes set forth.

EDWARD J. WOOD.

Witnesses:

W. E. McNEIL,
J. M. PARISH.