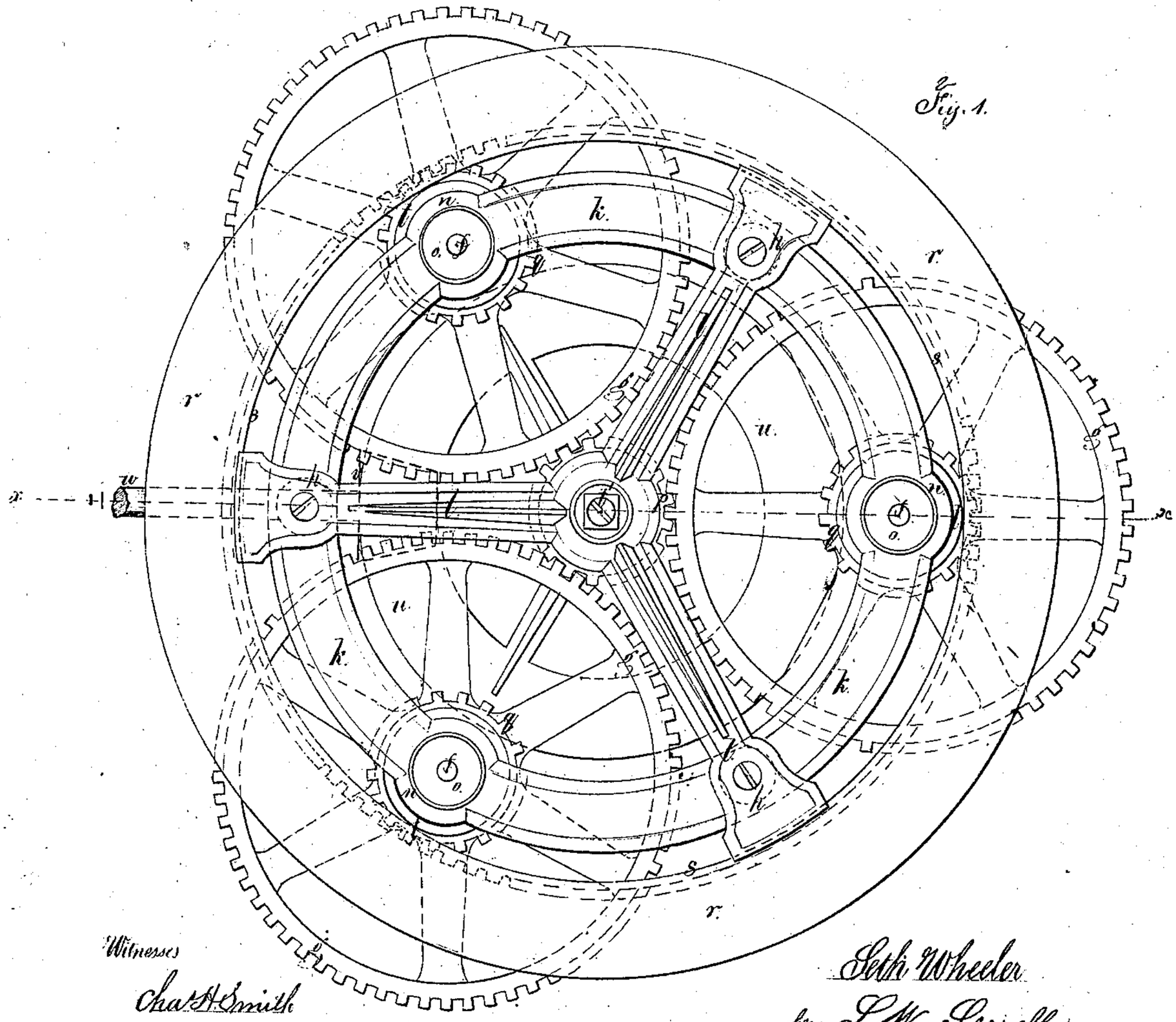
S. Wheeler,

Horse Power.

No 104,240. Patented June 14. 1870.

Fig. 1.



Witnesses

Chas. H. Smith

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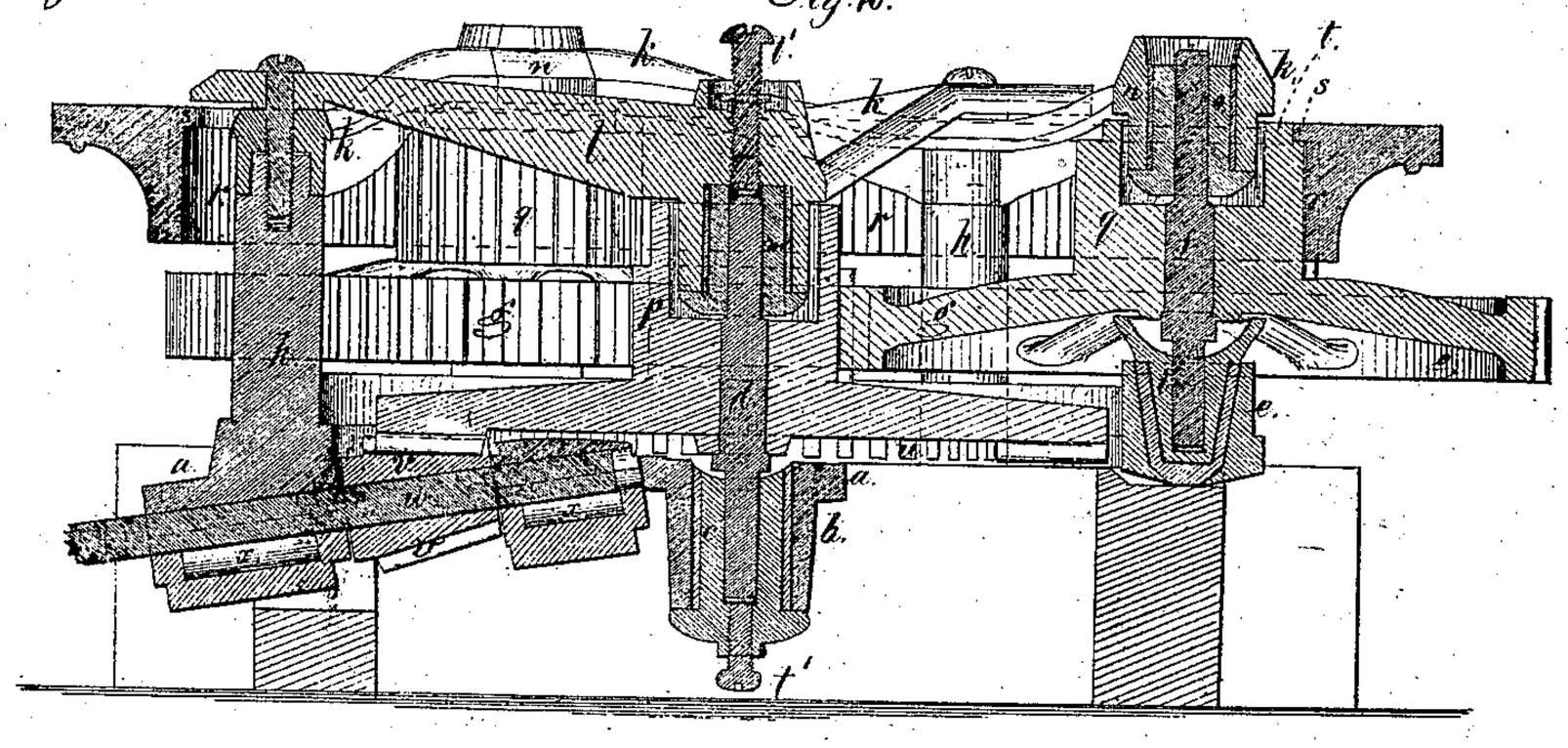
Fig. 2.



United States Patent Office.

SETH WHEELER, OF ALBANY, NEW YORK.

Letters Patent No. 104,240, *dated June* 14, 1870.

IMPROVEMENT IN HORSE-POWERS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, SETH WHEELER, of Albany, in the State of New York, have invented and made an Improvement in Horse-Powers; and the following is hereby declared to be a correct description of the same.

This invention relates to the horse-power known as the "triple-geared power," in which the horse is hitched to a lever, and travels around the power, the lever being connected to a master-wheel or ring that has gear-teeth upon its inner face taking into the pinion of gear-wheels that drive the central pinion and shaft.

In constructing horse-powers of this kind great difficulty is experienced; some of them work admirably, while others are absolutely useless, and both machines may be made from the same patterns. This difficulty arises from inequalities in the contraction of metal in cooling, and from inaccuracies in placing the cores, as it is usual to cast holes in the frames into which the stationary vertical shafts or spindles of the gear-wheels are introduced, and the wheels revolve upon these shafts, the shafts themselves being secured firmly in place. In consequence of this mode of construction, the parts are seldom true, and the gear-wheels often bind, rendering the machine useless. Furthermore, there is great difficulty in maintaining a supply of oil to the bearings, particularly under the high degree of speed to which some portions are subjected.

In my improved horse-power the three wheels and their pinions are secured upon shafts that run at their ends in boxes or bearings at the ends of the shafts, instead of the wheel turning on a stationary shaft, and these bearings are received loosely in sockets cast in the frame. The parts of the machine are set together and properly adjusted, the movement of the bearings in the sockets allowing of this adjustment, and then the spaces between the bearings and their respective sockets are filled with lead or other material, so as to hold the bearings firmly in place.

By this construction the three wheels can be properly positioned relatively to the central pinion, and the three pinions adjusted so as to take properly the teeth of the ring or master-wheel.

I make use of oil-containing pinions, that act to lubricate the upper journals of the shafts, and I provide bearing-surfaces between the master-wheel and the pinions, so that their teeth are not unduly pressed together.

In the drawing—

Figure 1 is a plan of my said horse-power, and

Figure 2 is a vertical section at the line *x x*.

The frame or base *a* is made with a socket, *b*, for the box *c* of the central shaft *d*, and it also has sockets, *e e e*, for the boxes *i i i* of the shafts *f f f*.

Upon the frame *a* are columns, *h*, that sustain the upper ring-frame *k* and triangular frame *l*.

The frame *l* sustains the bearing *m* of the central shaft *d*, and the frame *k* is made with sockets, *n n n*, receiving the boxes *o o o* of the shafts *f*.

The shafts *f* carry wheels *g* that gear into the central pinion *p* on the shaft *d*. They also carry pinions *q*, that are acted upon by the master-wheel or ring *r*.

The master-wheel *r* has an inward circular flange, *s*, that bears against the circular hub-portions *t* of the pinions *q*, so as to prevent the teeth engaging each other too deeply on one side and not sufficiently on the other side, as heretofore usual, thus avoiding unnecessary friction and frequently breakage. To this master-wheel the lever for the horse or horses is attached in any usual manner, and the projecting ends of the frame *l* keep said wheel *r* from rising.

The circular bearing *t* for the master-wheel might be below the pinion or teeth, if desired, and be removable, so as to be changed when worn.

It is now to be understood that the movable boxes in the respective sockets of the frames allow the parts to be adjusted and positioned with accuracy, according to regular measurements or gauges, or after the respective parts are put together, and then the boxes are fixed firmly in their places, by means of melted lead or other metal poured in between the boxes and sockets. By this manner of construction the inequalities in the frame from contraction of the metal are counteracted, and variations in the positions of the vertical shafts prevented.

The cost of this construction is less than in cases where the frames are accurately bored to form bearings for the vertical shafts, and repairs are facilitated.

The shafts in my horse-power, revolving with the wheels, insure greater accuracy and durability than in cases where the shafts are stationary for the wheels to revolve upon, and the wear comes upon the movable boxes and shafts that can easily be replaced.

The vertical shafts *d f f f* are supported upon metal plates or washers (I prefer steel) introduced within the holes of the boxes *c i i i*, so that the vertical position of the respective wheels and shafts can be adjusted, and said plates can be replaced when worn, and friction will be lessened. The boxes *c* and *i* are cup-shaped at their upper ends, to retain the oil.

The shaft *d* is provided with a bevel-wheel, *u*, taking the pinion *v* on the shaft *w*, that is supported in bearings *x*, which are provided with oil-receptacles below the journals, so that the parts may be kept lubricated by the capillary action of cotton waste or wick introduced in said receptacles, and saturated with oil.

The shaft *w* is set at a downward inclination, so as to reach the surface of the ground, and there be connected by a coupling with the horizontal shaft. This renders it unnecessary to have a double inclined platform for the horses to pass over.

The shaft *d* is adjusted vertically by set-screws, *t'*, that act upon steps at the ends of the shaft, so that the teeth of the wheels *u* and *v* may be kept properly in gear. This construction dispenses with the slide or roller heretofore generally employed to keep the wheel *u* from rising, thereby avoiding the wear and friction heretofore usual in this character of horse-power.

The pinions *q* are hollow, or cup-shaped, and the boxes *o o* extend down into these cups. The central pinion *p* has also a cup-shaped extension above it, into which the bearing *m* passes. These cup-shaped receptacles do not come in contact with the bearings, but contain oil, by means of which the journals are lubricated, and, there being no openings to allow the oil to run out of these cups or the cups of the boxes *c* and *i*, the oil will remain until worn out, and hence there is no difficulty in keeping all parts thoroughly lubricated.

The gear-wheels and pinions are shown with teeth, but I do not limit myself in this particular, as frictional surfaces might be substituted for the teeth in some characters of powers.

I claim as my invention—

1. The central shaft *d* and beveled gears *u v*, in combination with the three gears *g* and pinions *q*, and their shafts *f* that revolve in the bearings *i o* of the frame *a l*, substantially as specified.

2. The master-wheel *r*, formed with an inward circular flange, bearing upon and against the circular hubs *t* of the pinions *q*, substantially as and for the purposes specified.

3. A circular bearing around the shafts *f f f*, against which the circular portion of the master-wheel bears, substantially as and for the purposes specified.

4. The lower journal-boxes *i* for the shafts *f*, containing oil-receptacles in their upper surfaces, and movable metallic plates or washers for supporting and adjusting the shafts *f* vertically, as set forth.

5. The journal-boxes for the vertical shafts of the triple-geared horse-power, made separately from the frame and introduced into and combined with sockets formed in the frame, and to which they are secured, substantially as and for the purposes set forth.

6. The screws *t'*, applied to adjust the shaft *d* of the bevel-wheel *u*, in combination with the pinion *v* and triple gears, as and for the purposes specified.

7. The bevel-wheel *u* upon and revolving with the shaft *d*, in combination with the triple-gear power, the pinion *v*, and an adjustment applied endwise of the shaft *d*, as and for the purposes specified.

8. The oil-receptacles encircling the lower portion of the journal-boxes *o o*, and revolving with the shafts, substantially as and for the purposes set forth.

9. The journal-box *x*, with a cavity for absorbent material, in combination with the shaft *w*, gears *u v*, pinions *q*, and gears *g*, as and for the purposes specified.

10. The arrangement of the shaft *w*, gears *u v*, pinions *q*, and gears *g*, with their shafts and supporting-frames, in the manner specified, so that the shaft *w* shall pass away from the machine at an inclination, for the purposes specified.

Signed by me this 21st day of January, 1870.

SETH WHEELER.

Witnesses:

AUGUSTUS H. WALSH,

JOHN WOLFF.