C. ROBERTS.

Portable Horse Powers.

No. 166,147. Patented July 27, 1875.

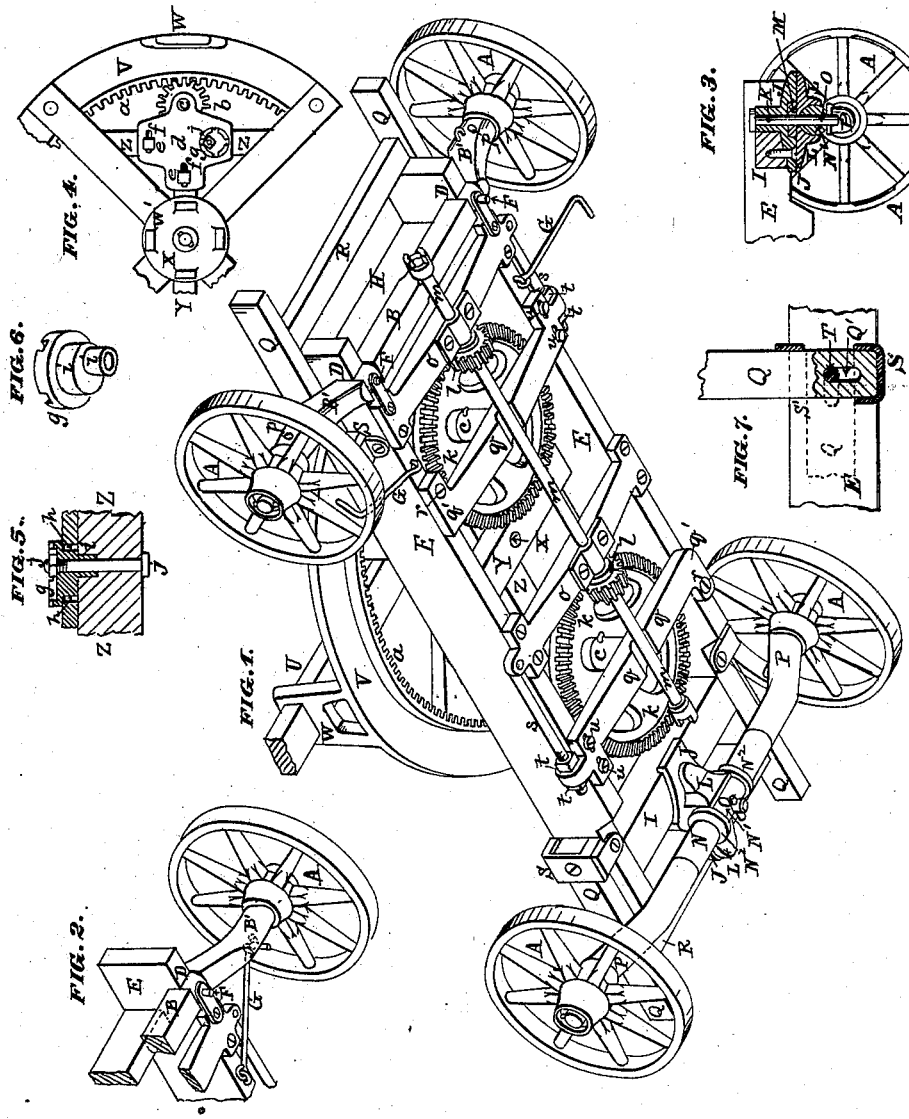

FIG. 1.

FIG. 2.

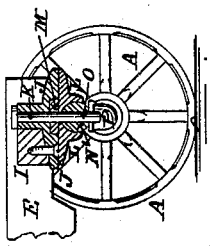

FIG. 3.

FIG. 4.

FIG. 5.

FIG. 6.

FIG. 7.

ATTEST:

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CYRUS ROBERTS, OF THREE RIVERS, MICHIGAN.

IMPROVEMENT IN PORTABLE HORSE-POWERS.

Specification forming part of Letters Patent No. **166,147**, dated July 27, 1875; application filed May 31, 1875.

To all whom it may concern:

Be it known that I, CYRUS ROBERTS, of Three Rivers, St. Joseph county, State of Michigan, have invented certain new and useful Improvements in Portable Horse-Powers, of which the following is a specification:

This invention relates to a horse-power that is supported on its own wheels for transportation from place to place.

The first part of my improvement consists in making the axles in the form of cranks, and supporting them in bearings, so that they may be turned to lower the frame upon the wheels for use as a horse-power, or to raise it upon the wheels for moving from place to place, the wheels supporting the frame in both positions.

The second part of my improvement relates to the universal bearing at the middle of the fore axle. This has a bearing-block fixed to the fore bolster, and recessed on the under side to receive the boss of a box, in which the axle may be turned to raise or lower the frame, as described, when the king-bolt has been drawn out.

The third part of my improvement relates to the construction and attachment of the falling frames at the ends of the bed-frame. These frames are raised and stand vertically to support the sweeps, &c., when the horse-power is moved from place to place, and are lowered to allow the sweeps to turn above them when the horse-power is in use. The lower ends of these frames are supported in staples at the sides of the bed-frame, and are slotted to receive a pin passing through the staple. The construction is such that by lifting the frame slightly in its staples when it is vertical, it may be swung outward on its pivot-pins, and turned down into a horizontal position; and by raising it from the horizontal position into the vertical, and then lowering it slightly in the staples, it is sustained in that position, the lower ends of the uprights being then rigidly held by the lower parts of the staples and the pins.

The fourth part of my improvement relates to the manner of adjusting the gear-pinions to the interior cog-gear of the main driving or sweep wheel. This is done by an eccentric turning in the bracket by which the upper end of the pinion-shaft is supported, and by a bridge-bar at the lower side of the bed-frame, in which bar the lower end of the shaft is stepped. This bridge-bar is connected to one side of the main frame by a pivot passing through a side projection of the bar, as shown, so that as the bar is moved to compensate for wear in the pinion, the shaft will not be moved nearer to the side of the frame, so as to throw shaft out of line with the gearing of the tumbler-shaft. The adjustment is made by means of a screw-rod, one end of which is attached to the main frame, and the other end of which passes through the bridge-bar, and carries two nuts bearing against the sides of the bar, the end being held rigidly in place after adjustment by set-screws passing through slots in the bar.

In the drawings, Figure 1 is an under perspective view of the horse-power as arranged for use. Fig. 2 is a detail under perspective, showing one rear wheel with the axle and falling frame arranged for moving from place to place. Fig. 3 is a section through the bearing of the fore axle. Fig. 4 is a plan of the adjustable bracket of the pinions or second wheels. Fig. 5 is a transverse section through the adjusting-eccentric of the above bracket. Fig. 6 is an under perspective view of the eccentric. Fig. 7 is a section through one of the staples bearing the falling frame.

The supporting-wheels are shown at A. B is the rear axle, made with crank-formed parts B′ B′, and having round portions, turnable in bearings D of the side timbers E of the main frame. F F are pins passing vertically through the bearings and the axle, to prevent the axle turning in the bearings D. These pins admit of being drawn out upwardly, and then the axle can be turned in its bearings D, supposing the hooks G G to be disengaged from the axle, these hooks being attached to the main frame at one end, and the hooked or free end entering an eye in the axle to fulfill a similar office to the pins F. The bed-frame has cross-bars H and I, the latter of which constitutes the bolster of the fore axle. Attached to the middle of this bolster is a bearing-block, J. L is a box similar to a journal-box, and turning in a horizontal plane beneath the block J. This box has upon its upper side a boss, M, con-

centric with the king-bolt K, and turning in a suitable recess in the bottom of the block J.

The fore axle N has a round portion, N^1, at its middle, which has bearing in the box L, and at each side of this round part is a collar, N^2, to prevent the endwise movement of the axle in the box. The bearing part N^1 has a diametric hole, O, in the same plane with the crank-bends P of the axle, and through this hole passes the king-bolt, which thus keeps the axle from turning in the box L, while, at the same time, the axle and box turn together on the king-bolt and block J. Q Q are the side bars, and R the cross-bar, of the falling frame, of which there is one at each end of the main frame. These falling frames form a rack or racks, upon which the sweeps, &c., are laid when moving the machine from place to place. The falling frames are supported by staples S, fixed in the outer sides of the side timbers of the bed-frame. These staples are open at the one side, S′, nearly to the bottom, to allow the frames to be turned down upon their pivot-pins T. Said pin passes through the staple, and through a longitudinal slot, Q′, in the upright or side bar Q of the frame, the slot allowing said bar to be raised when vertical, to free its lower end from the lower part of the staple, to admit of swinging outward and downward on its pivot T so as to be beneath the level of the sweeps U when the horse-power is in use. When the frames Q R are raised they are held up by the combined action of the pin T and the bottom part of the staple S. V is the main wheel, to which the sweeps are attached by brackets W W′. This wheel turns on a vertical arbor, X, supported by a horizontal bar, Y, framed to the cross-bars Z. The sweep-wheel has an interior cog-gear, *a*, engaging with cog-pinions *b* upon the vertical shafts *c*, the upper end of each shaft having journal-bearing in an adjustable bracket, *d*. This bracket is made adjustable (to compensate for wear in the pinion) by the following means: The bracket is held to the bars Y Z by set-screws *e* passing through longitudinal slots *f* in the bracket, and by an eccentric, *g*, turning in an oblong opening, *h*, in the bracket. The eccentric has a tubular boss, *i*, through which passes its pivot-bolt *j*, that extends through the cross-bar Z. The boss *i* turns in a recess in the bar Z. It will be seen that by loosening the set-screws and turning the eccentric a longitudinal movement is given to the bracket. At the lower end of each shaft *c* is a bevel cog-wheel, *k*, engaging with a bevel-pinion, *l*, upon the longitudinal shaft *m*, to which is coupled the tumbling-shaft, extending to the machine to be driven. This shaft *m* has bearings *n* beneath the cross-bars *o* of the bed-frame. Consequently, when the bed-frame is in its lower position, this shaft is but little above the surface of the ground—a very great advantage in practical use, as then the tumbling-shaft forms no impediment, or only a very slight one, to the horses. When the frame is raised on the wheels by turning up the crank-axles, as shown in Fig. 2, the said shaft is raised clear of any impediment, and the horse-power can be driven anywhere without the frame or shaft colliding with obstructions. The axles are rotated in their bearings D D or J, so as to raise or lower the frame, by levers inserted in the holes *p*, or by other means. The lower end of each shaft *c* is stepped in a bridge-bar, *q*, having at one end a side extension, *q′*, through which passes the pivot-pin *r*, on which the bar may be turned to adjust the lower end of the shaft *c* longitudinally. This adjustment is done by a screw-rod, *s*, having one end attached to the cross-bar *o*, and the other passing through the end of the bridge-bar, with temper-nuts *t* bearing against the sides of the bridge-bar. *u u* are set-screws passing through slots in the ends of the bridge-bar, to hold it in place firmly.

I claim as my invention—

1. In combination with a horse-power frame, the bent or crank axles B N, made turnable in their bearings D L, to enable the frame to occupy different vertical positions while supported on the wheels, as and for the purposes set forth.

2. The combination of fore axle N, made with bent portions, and constructed to turn in a vertical plane in bearing L, said bearing turning in a horizontal plane in the fore bolster or cross-bar I, for the purpose set forth.

3. The combination of fore bolster I, bearing-block J, box L, axle N, and king-bolt K, when the king-bolt is made to form a pivot for horizontal rotary motion, and at the same time prevents the axle from turning in its bearings in box L.

4. The combination, with the falling frames Q Q R, of the staple S, open at one side, and the slotted pin-bearing Q′ T, substantially as and for the purpose set forth.

5. The combination of the pinion-shaft *c* and adjustable bracket *d* with the adjusting-eccentric *g*, locking-bolt *j*, and set-screws *e*, substantially as set forth.

6. The bridge-bar *q*, pivoted at *r*, in combination with set-screws *u u* and adjusting-screws *s*, substantially as set forth.

7. The combination of the crank-axle B with the horse-power frame and hooks G, as and for the purpose set forth.

CYRUS ROBERTS.

Witnesses:

WM. E. WHEELER,

ELISHA LOOMIS.