A. GAAR.

HORSE POWER APPARATUS.

No. 106,979. Patented Aug. 30, 1870.

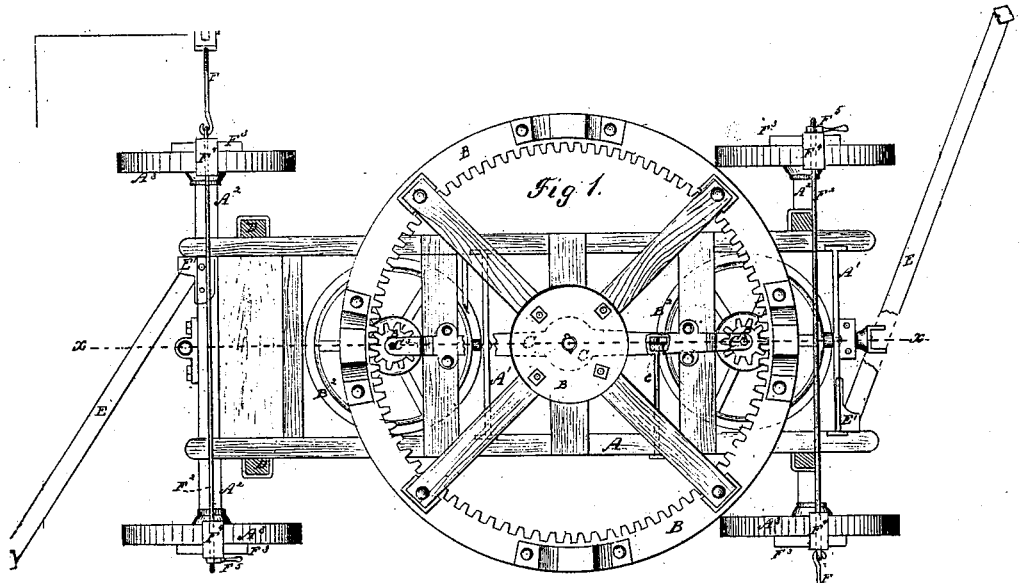

Fig. 1.

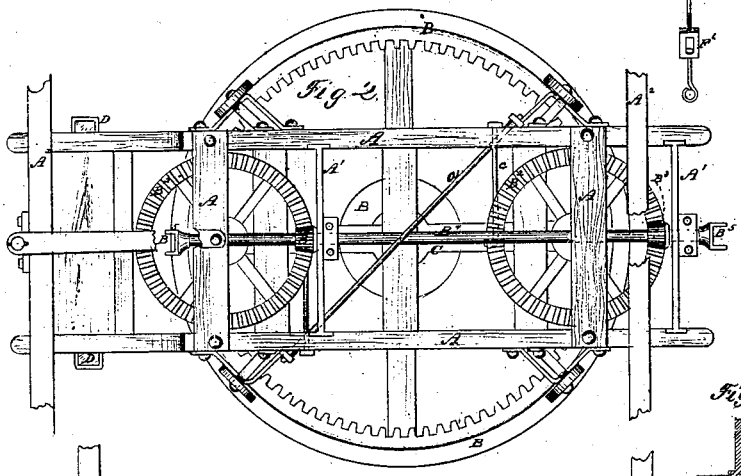

Fig. 2.

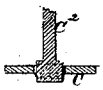

Fig. 4.

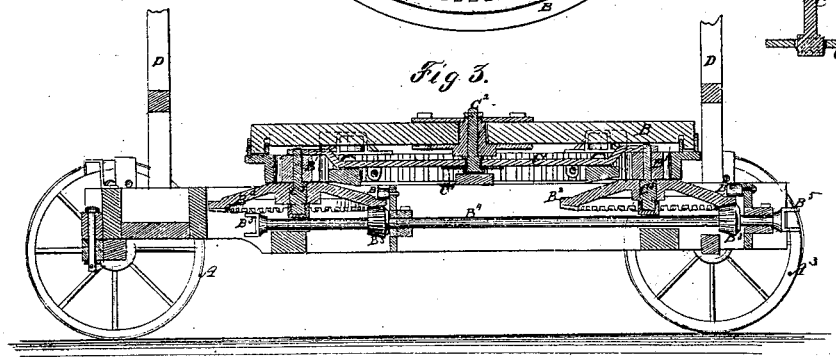

Fig. 3.

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ABRAHAM GAAR, OF RICHMOND, INDIANA.

Letters Patent No. 106,979, *dated August* 30, 1870.

IMPROVEMENT IN HORSE-POWER APPARATUS.

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, ABRAHAM GAAR, of Richmond, in the county of Wayne and State of Indiana, have invented certain Improvements in Mounted Horse-Powers; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the annexed drawing making part of this specification, in which—

Figure 1 is a plan or top view of this horse-power as it appears when mounted upon wheels, and staked or fastened in position for use, the arrangement of gearing being also shown.

Figure 2 is a bottom view of the same, with the wheels and fastening devices removed.

Figure 3 is a longitudinal vertical section on line *x x*, of fig. 1.

Figure 4 is a cross-section of the bridge-piece, showing the slot in which the pin which holds the master-wheel works.

Corresponding letters refer to corresponding parts in the several figures.

This invention relates to that class of horse-powers which is mounted upon wheels, for convenience in transportation, and it consists in the construction, combination, and arrangement of certain parts thereof, as will be more fully explained hereinafter.

A in the drawing refers to the main frame of the machine, which may be constructed in any well known form, so as to consist of two pieces of timber arranged parallel to each other, but at proper distances apart, to receive and support the gearing of the machine.

A^1 A^1 refer to metal cross-beams, the ends of which are provided with flanges by which to attach them to the side rails of the frame.

These beams are furnished with apertures, to which the boxes which support the shaft which transfers the motion to the machine to be driven are attached, they being found to be of great advantage, in that they keep the shaft always in line, the boxes not being liable to become loosened, as is the case when they are fastened to wooden beams. The rear one of these cross-beams is provided with a socket upon its upper edge and at one of its ends, to receive the end of a brace, which is used to hold the machine in position when in use, a similar socket being bolted to the frame-work at the front end, for the same purpose. The apertures in the forward metal cross-beams are so arranged as to permit the diagonal brace, *a*, which is used to hold the frame together, to pass through them. Other cross-beams of wood are provided, one at the forward end of the frame, and others at such points as they are needed to support the various parts of the machine.

A^2 refers to the axles; and

A^3, to the wheels.

B refers to what is usually termed the master-wheel of the machine, it having, at its center, a metal hub, which is provided with pockets for the arms, which connect it with the rim of said wheel, and also for the reception of the arms or sweeps to which the horses are attached. The rim of this wheel is of metal, and has, upon its inner periphery, cogs, in the usual manner, so that, as it is put in motion, such motion is communicated to the pinions B^1 B^1, and bevel-wheels B^2 B^2; the latter mesh into and turn the pinions B^3 B^3 upon the shaft B^4, which, by means of couplings upon its ends, communicates motion to any machine to which it is connected.

C refers to a bar of metal, termed the bridge-piece, it being so constructed as to receive, in openings formed in its outer end, the pins or spindles upon which the gear-wheels B^1 and B^2 revolve, it being secured to the cross-bars or beams of frame A just inside of such points, and also at its center, where it receives and holds the pin or spindle upon which the master-wheel turns, its under surface being provided with projections, to receive and hold the inner end of tenons, as shown in fig. 1.

The peculiarity of the construction of this bridge consists in the fact that it has formed, in its center, an aperture of sufficient size to admit into it a peculiarly formed head or box, which is upon the bolt or spindle C^2, soon to be described.

To the under side of this bridge-piece there are bolted two jaws, C^1 C^1, the inner ends of which are turned upward at or nearly at right angles to their lower surfaces, so that they may enter the aperture in the bridge-piece, and partially close up the same, as shown in fig. 2 of the drawing.

The bridge-piece is further secured by metallic braces, *c c*, attached to ears on the same, near each end, and thence passing in opposite direction to the side beams of the frame, through which they extend sufficiently far to receive tightening-nuts.

C^2 refers to the pin or spindle upon which the master-wheel B revolves, its upper portion being turned to fit a hole bored in the hub of such wheel, while its lower end is provided with a box or projection, into two sides of which recesses are formed for the reception of the ends of the jaws C^1 C^1, as above stated.

This box or head of the pin, and the jaws C^1 C^1 nearly fill the aperture in the bridge-piece longitudinally, thus holding said pin or spindle in its place, while transversely its head, or the box attached thereto, has sufficient room to move for a considerable distance, the object being to form, at this point, an adjustable bearing for the master-wheel, in order that, in the event of any small obstructions being in the teeth of the master-wheel or pinions which it drives, it may move slightly in any direction, and thus, by adjusting itself, prevent the breaking of the gearing.

C^3 C^3 refer to the pins or spindles upon which the pinions B^1, and bevel-wheels B^2 revolve, they being of the form shown in fig. 3, where it will be seen that their lower ends rest in sockets formed in pedestals secured to the cross-beams of frame A, their lower ends being reduced in diameter for that purpose.

That portion of this pin or spindles which passes through the bevel-wheel B^2 is of greater diameter than any other portion of it, while that part which passes through the pinion B^1 is of less. The arrangement of this pin or spindle with reference to the wheels through which it passes, and the parts which support its ends, is such that it can turn freely within such supports, while the wheels can freely turn upon such pin or spindle, the object being to prevent said pin or spindle from wearing flat upon any portion of its surface, as is done when it is held fast in one position, and also to facilitate the repairing of the machine at that point when it becomes necessary.

D D refer to stakes or frames, which are attached to the frame of the machine by means of stake-irons, so that, when it becomes desirable to remove the machine, the sweeps or arms and the coupling-shaft may be placed thereon, and be carried with the other parts.

The above-described parts, with the exception of the metal bars or beams A^1, the adjustable pin or spindle C^2, and the loose pins or spindles C^3, when separately considered, form no part of my present invention, and consequently need not be more particularly described here, while those hereinafter described separately, and as combined and arranged, form parts of my invention.

E E refer to braces, the outer ends of which rest against stakes driven into the earth, the inner ends resting in the sockets E^1 E^1, at the ends of the frame, as shown in fig. 1. The office of these braces is to aid in holding the power firmly in position, they receiving a portion of the side strain or thrust, consequent upon the movements of the horses around the machine.

F F refer to rods or bars of iron, which have a loop or ring formed in their outer ends for the reception of stakes, which are driven through them into the ground. About midway of their length these rods are provided with a swivel-nut, F^1, so arranged that, by turning the same, the length of the rods may be lengthened or shortened at pleasure, which arrangement, together with the manner of connecting said rods to the shoe or clamp, which is placed upon the wheel, is clearly shown in fig. 1 of the drawing.

F^2 F^2 refer to rods, which extend across the machine, and from the point where they connect with the rods F F through the wheels, and to a suitable distance outside the opposite wheel, to receive a brake-block or shoe, and a nut, F^5, for holding and tightening the parts.

F^3 F^3 refer to blocks of wood, which are placed upon the outside of the wheels, the rods F^2 passing through them, in order that, as the nuts upon the ends of said rods are screwed up, the shoes may be made to press upon the outer sides of the wheels, and thus hold them firmly in position, and prevent them from turning to any extent upon the axles, and, at the same time, prevent the clamps F^4 from moving upon said wheels, as they would do were it not for the wooden shoe.

It will be observed that the points at which the rods or braces F F are staked to the ground, are upon opposite sides of the machine to those where the braces E E are staked, the object being to provide two points of resistance to the side strain upon the machine, caused by the pull of the horses when passing the ends of the machine.

As an additional security against the side movement of the machine, pieces of planks, of any suitable length, width, and thickness, are placed against the wheels which are nearest the braces F F, and a stake is driven into the earth outside of said plank, so that, as the nuts in said rods are tightened up, the machine will not be moved in that direction.

The advantage derived from attaching the holding braces to the wheels over those attached to the frame of the machine, is that a much larger leverage is obtained, and, consequently, that the machine is held more firmly in its position.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The metal cross-beams A^1 in a horse-power, when mounted and operated as set forth.

2. The diagonal iron brace-rod *a*, in a horse-power frame, when mounted and operated on four wheels, as set forth.

3. The clamp, shoe, and rod, for clamping and holding the wheels of a mounted power when in operation, as described.

4. The combination and arrangement of the rods F and F^2, the shoes F^3, clamps F^4, and nuts F^5, or their equivalents, when used in connection with the mounted horse-power, substantially as and for the purpose set forth.

5. The diagonal iron brace-rod *a*, when used in combination with the two rods *c c*, attached to each end of the bridge-piece, and passing through each side of the frame, when mounted and operated as herein specified.

6. The master-pinions and bevel-wheels, in combination with the loose stud-pins, when mounted and operated as herein set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ABRAHAM GAAR.

Witnesses:
M. E. McMEANS,
E. H. DENNIS.