No. 871,840. PATENTED NOV. 26, 1907.

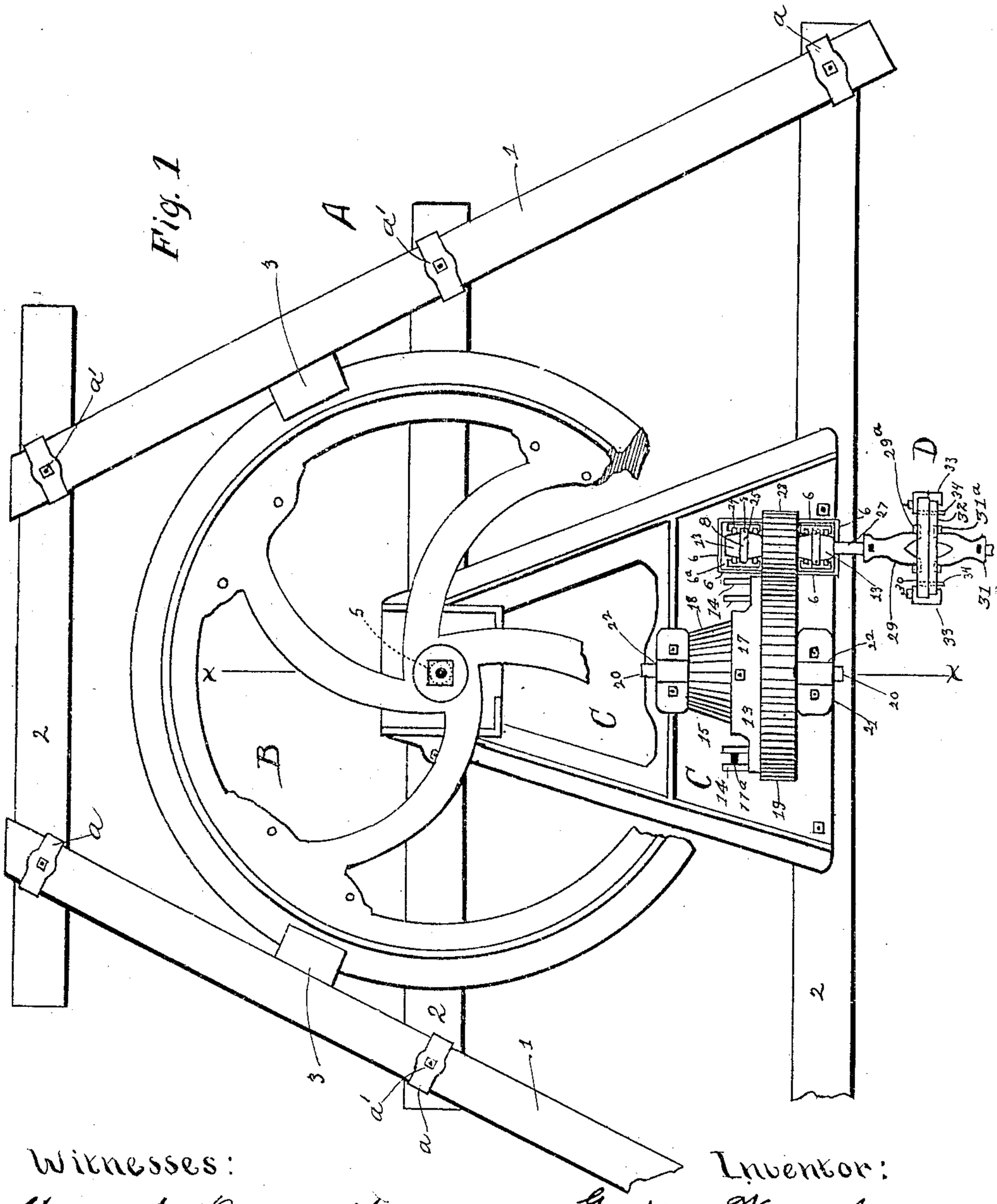
G. WENZELMANN.

HORSE POWER.

APPLICATION FILED SEPT. 12, 1905.

2 SHEETS—SHEET 1.

Fig. 1



Witnesses:
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H. J. Montgomery

Inventor:
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By H. M. Richards,
his atty.

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2 SHEETS—SHEET 2.

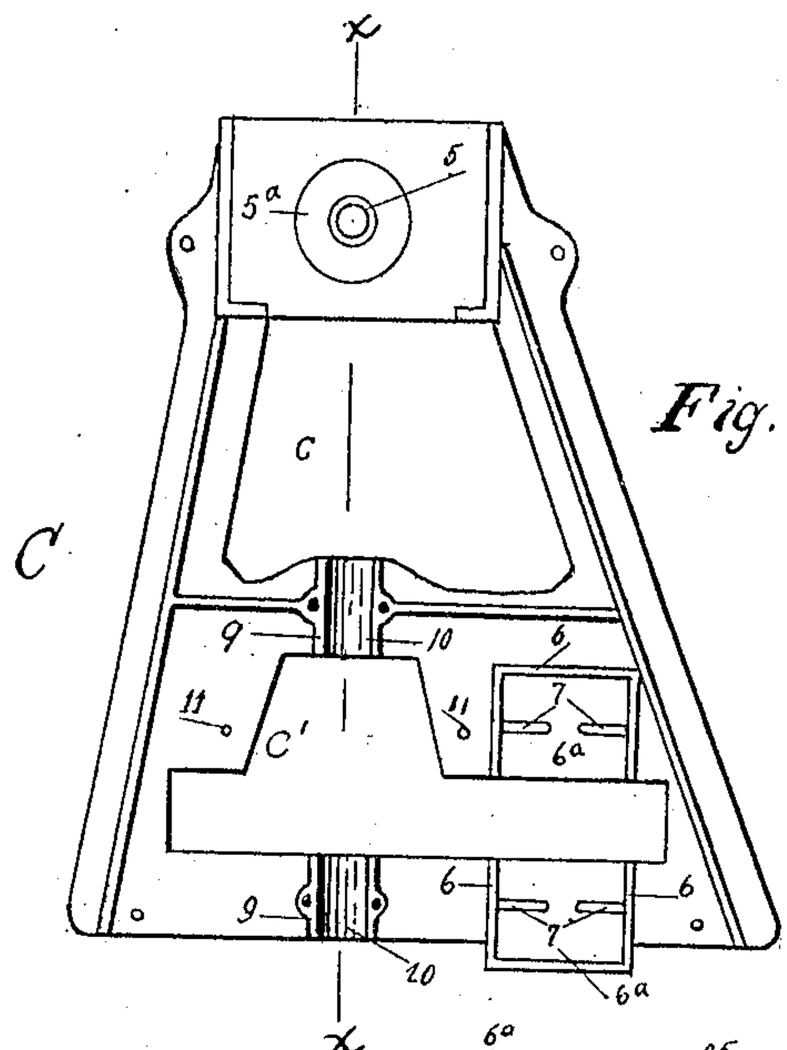


Fig. 2.

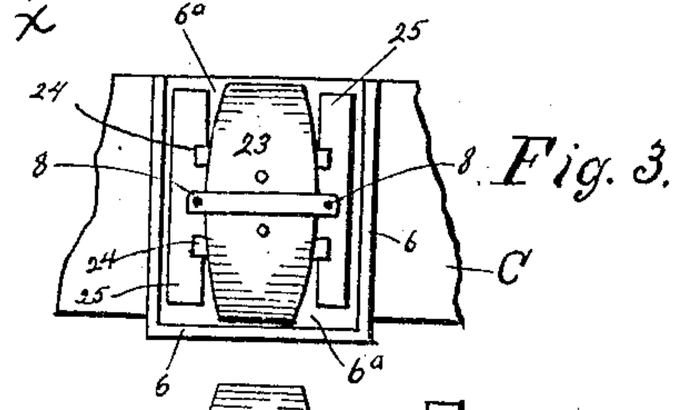


Fig. 3.

Fig. 7.

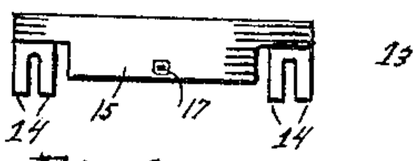


Fig. 8.

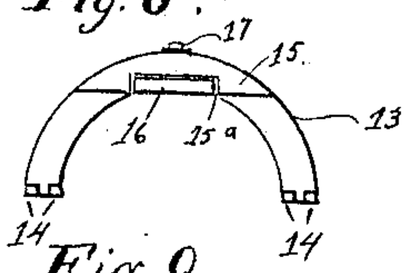


Fig. 9.

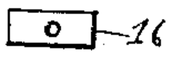


Fig. 4

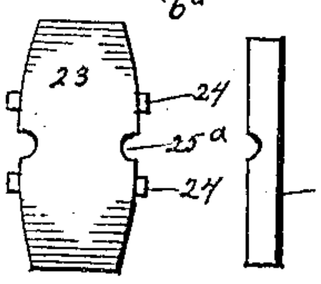


Fig. 6.

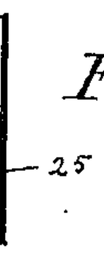
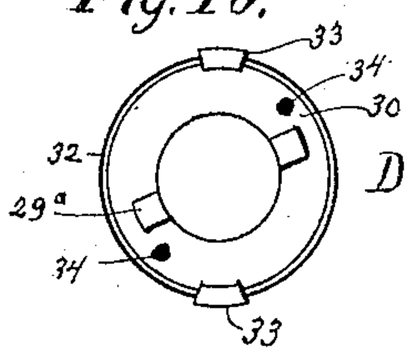


Fig. 10.



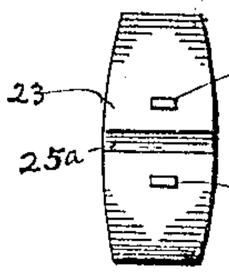


Fig. 5.

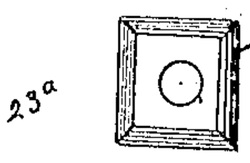


Fig. 11.

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UNITED STATES PATENT OFFICE.

GUSTAVE WENZELMANN, OF GALESBURG, ILLINOIS.

HORSE-POWER.

No. 871,840. Specification of Letters Patent. Patented Nov. 26, 1907.

Application filed September 12, 1905. Serial No. 278,090.

To all whom it may concern:

Be it known that I, GUSTAVE WENZELMANN, of Galesburg, in the county of Knox and State of Illinois, a citizen of the United States, have invented a new and useful Horse-Power, of which the following is a specification.

My present invention relates to motors of that class which are propelled by draft animals and known as horse powers.

Heretofore no device nor assemblage of devices has been provided whereby the line or horizontal shafting could at all times and in every kind of operation be held automatically true with the vertical shafting, the result being that when unusual strain or resistance was offered by the device being driven by the power, the cogs of the master-pinion would be stripped or mutilated to such degree that precision was impossible and the power rendered practically useless; and the chief ends and objects of my invention are to overcome these difficulties; to increase the usefulness of the power and prolong its life, and to provide for changing the speed.

Other objects of the invention consist in novel structural features and combinations of devices, the operation of which devices separately and in combination will be found hereinafter fully described and made the subject matter of claims hereto appended.

Mechanism showing such structural features, and the arrangement, order and mutual relationship of the several parts of my improvements, is illustrated in the accompanying drawings, in which similar letters and numerals of reference are employed to indicate corresponding parts in the different views and in which:—

Figure 1 is a top plan of an approved construction of horse-power embodying my improvements, a portion of the master-wheel being broken away to show parts beneath; Fig. 2, a top plan of the base or supporting plate; Fig. 3, a top plan of one of the boxes in position on a fragment of the base; Fig. 4, a similar view of the box alone; Fig. 5, a side elevation thereof; Fig. 6, a top plan of one of the adjusting plates; Fig. 7, a top plan of the yoke; Fig. 8, a side elevation thereof; Fig. 9, a plan of the yoke-adjusting plates; Fig. 10, a plan of the knuckle plates, and Fig. 11, an end elevation of one of the boxes.

Referring to the drawing, A represents a frame upon which the base which carries the working parts of the power is mounted. While it may be of any desired or preferred form and construction I have shown it composed of converging side bars 1 united to a plurality of parallel transverse bars 2 by bolts a' and clamps a which, together with the base constitute a strong, rigid construction free from liability of twisting or unsteadiness. Secured to each bar 1 is an ordinary U-shaped guide or keeper 3 for a purpose hereinafter described.

To those two of the parallel bars which are at the points of greatest divergence of the side bars is rigidly fixed by bolts or otherwise my improved base or supporting plate C, upon which all the moving parts of the power are mounted and by which the vertical axle and the line of horizontal shafting are held at all times and under all circumstances in alinement. It is preferably frusto-triangular in outline, has openings c, c', and near its narrower end carries a vertical, hollow stub-axle 5 preferably integral with its base and at a right angle thereto, and about the axle is a hub support 5^a for the master wheel.

6, 6 are rectangular projections, the surface presented by that part 6^a of the frame bounded by them being plane, and 7, 7 are transverse slots for the reception of the ends of yokes 8, 8 for a purpose hereinafter described. The projections 6, 6 are spaced a distance apart to permit placement of a spur-pinion, also hereinafter described.

9, 9 are journal-box pillows or shaft bearings cast with rectangular relation to the vertical axle and in line therewith and with each other as shown by the line x—x, Figs. 1 and 2, and each is provided with a bushing 10.

11, 11 are openings through which are threaded bolts for securement and adjustment of the yoke 13.

B is an ordinary contrate-bevel-gear master wheel pivoted on the vertical axle and directed and held from vibration partly by guides 3 fixed to the frame bars and partly by an adjustable yoke 13 having slotted parallel feet 14, a convex projection 15 and a recess 15^a for the reception of an adjusting block 16 which is held in place by a set screw 17 or in any other ordinary manner, and which block is interchangeable to provide for wear etc. The yoke is adjustable toward or from the master wheel by adjustments of the slotted feet 14 relatively to the bolts 11^a. The usual levers or sweeps (not shown) to which the draft animals are to be hitched may be attached to the master

wheel in any desired manner, and it may be here stated that the construction of the apparatus is such that power may be applied to operate it either forwardly or backwardly. For the purpose of securing rigidity and balance the axle 5 is located centrally of the frame A.

The beveled master-pinion 18 and spur-wheel 19 are preferably cast integrally on the shaft 20, and the latter, which I may term the main or central shaft, is seated in bearings in the journal boxes 21, (comprising the pillows 9 and caps 22 with the usual bushing,) while the lower portions of the pinion and spur project downwardly through the opening c' in the base. It will be manifest that when so constructed and assembled the main shaft will, no matter how great the strain or stress, be held in actual and positive true relation to the vertical axle; or, in other words, the cogs on the master pinion cannot become untrue with those of the master wheel with which they are meshed, to cause mutilation or stripping of either.

The pinion boxes 23 are seated on the flat or plane surfaces 6^a and held within the projections 6. They are preferably formed as shown at Figs. 3, 4, 5 and 11, integrally, and the longitudinal opening 23^a of each is bushed. One and preferably both sides of each is provided with retaining-projections for an adjusting-plate 25 whereby they may be adjusted toward or from the spur wheel, and each side is grooved for the reception of a leg of a yoke or clamp 8 which projects through the transverse slots 7 for a purpose hereinafter described. That face of each journal box which contacts the plane surface 6^a is ovaled or tapered from about its midlength toward its end in such manner that when the boxes and the line shaft 27 are in place each box may incline to automatically adjust itself to assume a right-line position with relation to the other to cause the cogs of the pinion 28, which is fixed to said shaft intermediate said boxes, to mesh in alinement with those of the spur wheel.

Should it become desirable to insert a larger or a smaller pinion to change the speed of the machine, or should it become necessary to bring the spur and the worn pinion into closer relation, a plate 25 may be removed and another of greater or lesser cross sectional diameter may be inserted at one or both sides of a box 23 and the latter adjusted by movement of the legs of the yoke in the slots 7. Ordinary caps serve to confine the shaft 20 in place in the bearings or boxes.

To guard against accidental breakage of any part of the power or the machinery which it is driving, by reason of said machinery becoming caught or clogged, I have provided a break-pin knuckle or gimbal joint D, which may be located at any desired or preferred position on the line-shafting. The one shown consists of a leg 29 articulated in eyes 29^a of a male plate 30 and a similar leg 31 articulated in eyes 31^a in a female plate 32. The plates are held from separation by clamps 33 which seat in annular recesses in the plate 32 and from revolution with relation to each other by wooden break-pins 34 fixed in eyes in each plate and projecting through both. It will be evident that should the strain become such that the machine would, in the event of no provision therefor being made, break, these pins would give way and permit revolution of one of the plates while the other parts of the device, including the shaft 27, would remain at rest. It will be apparent that a flange may project from the pinion 28, and form one member of a break-pin gimbal or joint, and that a plate keyed to the line shaft may form the other, and that such device is substantially that described.

When the master-wheel is set in motion by the movement of the draft animals attached to the sweep the cogs thereof meshing with the bevel pinion will cause the spur wheel to transmit motion to the pinion and thence to the line of shafting. It will be evident from an inspection of the drawings that the tumbling-rod is to be attached to a leg of the break-pin-joint in the ordinary manner of such devices.

The main features of my invention rest in the flat base-plate comprising an integral vertical axle or pivot for the master wheel, and means integral therewith whereby the horizontal shafting is at all times and under all circumstances held in alinement or positive working relation therewith; and in the adjustable and removable or interchangeable journal boxes, whereby when the cogs of the pinion become worn, as inevitably occurs, or when it is incumbent that the speed of the machine be changed or differentiated, said pinion may be adjusted with reference to the spur wheel to again bring them into effective working positions, or said pinion may be changed for a larger or smaller one for changing the speed. By constructing the base-plate, the axle, the journal-pillows and the supports for the pinion boxes integrally, absolute rigidity is attained,—a result not heretofore had.

Not only does the base or main casting hold every moving part of the power in positive and perfect alinement, but its construction is such that with the other features of the improvement every possible contingency of adjustment is provided for; and the line-shaft is by reason of the beveled or tapered construction of the boxes in which it is seated, automatically held from twisting and causing the pinion to angularly mesh with the spur wheel.

The advantages of the invention will be apparent and the operation understood from

the foregoing description when taken in connection with the drawings, it being particularly understood that various changes may be made in the details of construction and the order, disposition and assemblage of the parts which fairly fall within the realm of my invention without departing materially from the general idea involved.

Having thus described the nature and objects of my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In a horse-power, a base including a vertical axle, a master-wheel fulcrumed thereon, a main shaft seated in journal-box pillows integral with said base, and line shafting journaled in boxes adjustably secured to the base.

2. In a horse-power, a master-wheel supporting base, a vertical axle integral therewith, a master-wheel mounted thereon, an integral journal box pillow, a second pillow intermediate said pillow and axle, line shaft boxes, means integral with the base for supporting them, means for adjusting and securing them thereto, a main shaft, a master-pinion thereon in gear with the master-wheel, and means for adjusting it relatively thereto.

3. In a horse-power, and in combination, a base provided with a vertical axle, a master-wheel, adjustable means carried by the base for guiding said wheel, and means carried by said adjustable means for limiting the vertical movements of the wheel.

4. In a horse-power, a master-wheel supporting base, a vertical axle integral therewith, an integral journal-box pillow at one side of the base, a second pillow intermediate said pillow and axle, line-shaft boxes, means integral with the base for supporting them, and means for adjusting them and securing them thereto.

5. In a horse-power, a base provided with a vertical axle, integral horizontal shaft-bearings, and horizontal supports having plane surfaces, and ovaled-face journal boxes mounted on said supports, adapted to rock thereon.

6. A master-wheel adjusting-yoke comprising a convex portion having a recess, a removable plate adapted to be seated therein, means for holding and adjusting it, and parallel feet provided with slots.

7. The combination with a frame and a base-plate fixed thereto including a vertical axle and horizontal shaft bearing pillows, and provided also with horizontal box-supports, a master-wheel pivoted on said axle, a master pinion and a spur-wheel fixed to a shaft in said pillows, journal boxes adjustably mounted on said supports, a spur-pinion carried by a shaft seated in said boxes, and means for adjusting said boxes and thereby said shaft relatively to the spur-wheel.

8. In a horse-power, a base including a vertical axle, a master-wheel thereon, integral horizontal journal-box-bearings, ovaled face journal-boxes adapted to rock thereon, main shaft journal-box pillows integral with the base, a shaft seated therein, a beveled master-pinion fixed thereon to mesh with the cogs of the master-wheel, and means for adjusting it relatively thereto.

In witness whereof I hereunto subscribe my name.

GUSTAVE WENZELMANN.

Witnesses:

ALVAH S. GREEN,

IRA RYNER.