No. 797,101. PATENTED AUG. 15, 1905.

W. W. DINGEE.

PORTABLE HORSE POWER.

APPLICATION FILED FEB. 26, 1903.

4 SHEETS—SHEET 1.

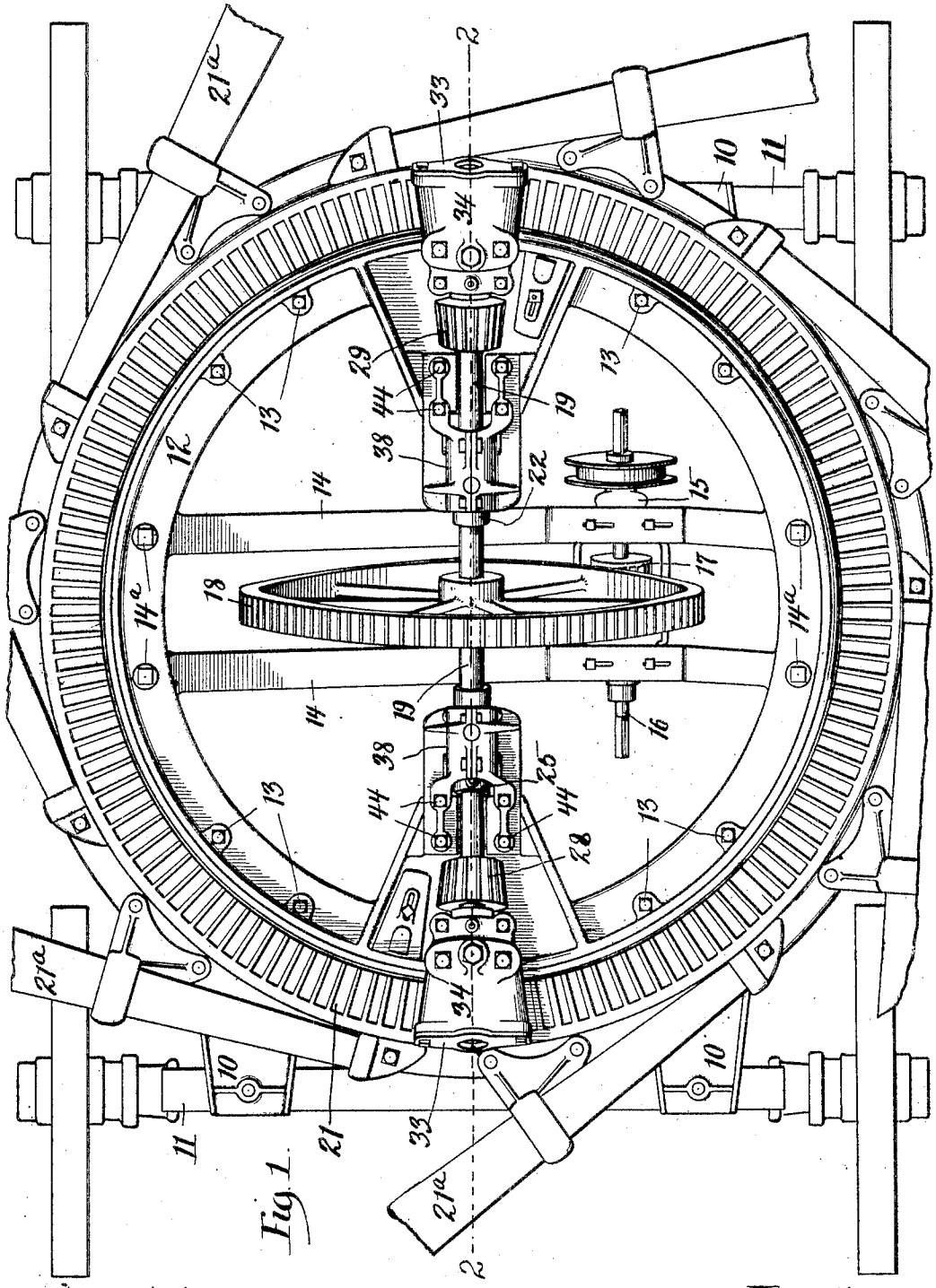


Fig. 1.

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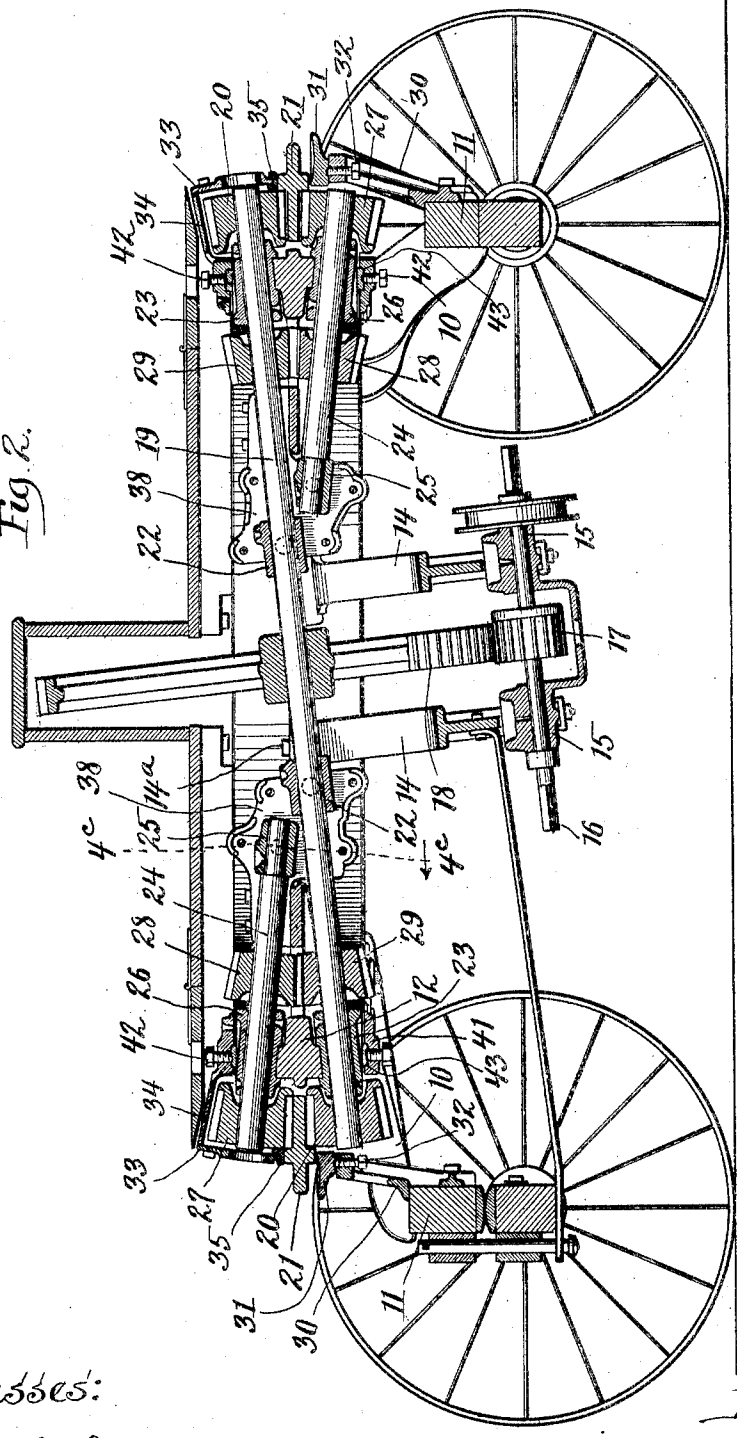
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4 SHEETS—SHEET 2.

Fig. 2.



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4 SHEETS—SHEET 3.

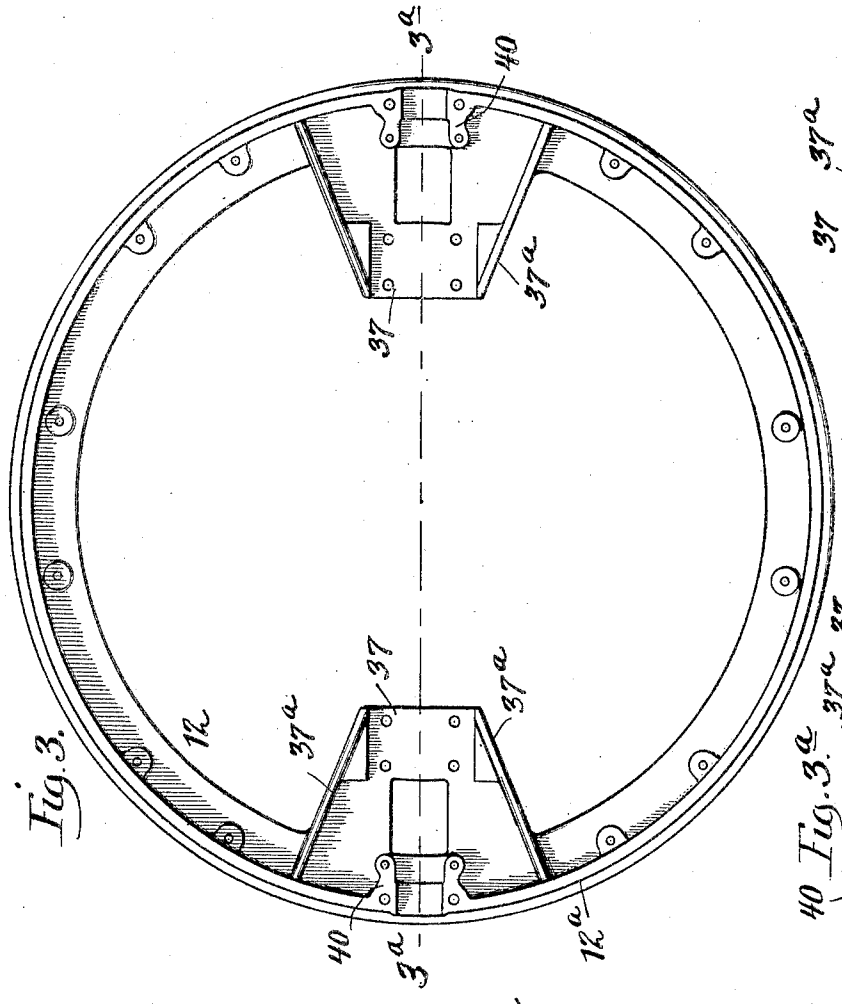


Fig. 3.

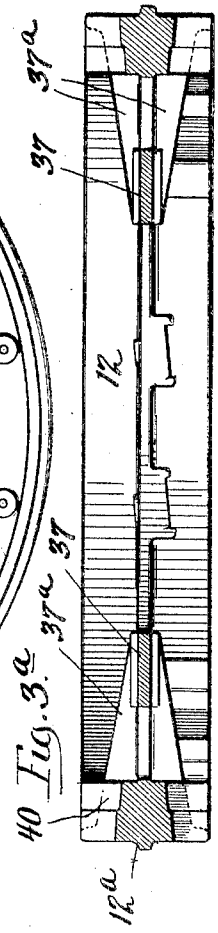


Fig. 3a.

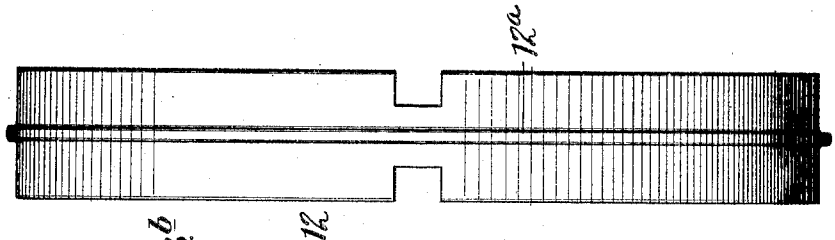


Fig. 3b.

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4 SHEETS—SHEET 4.

Fig. 4b

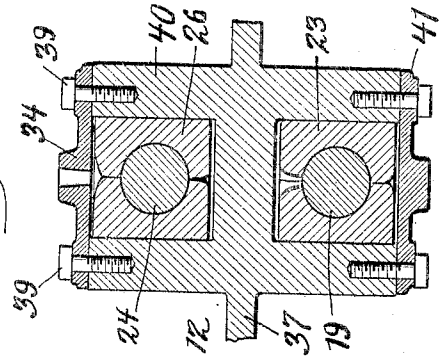


Fig. 4d

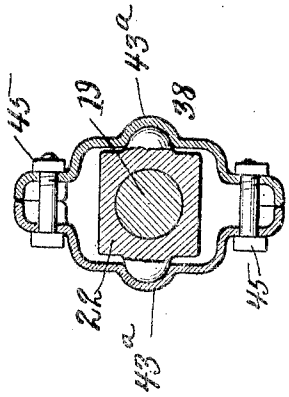


Fig. 4a

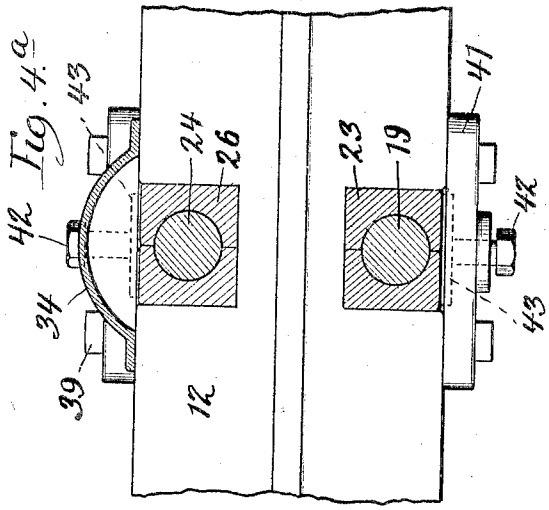


Fig. 4c

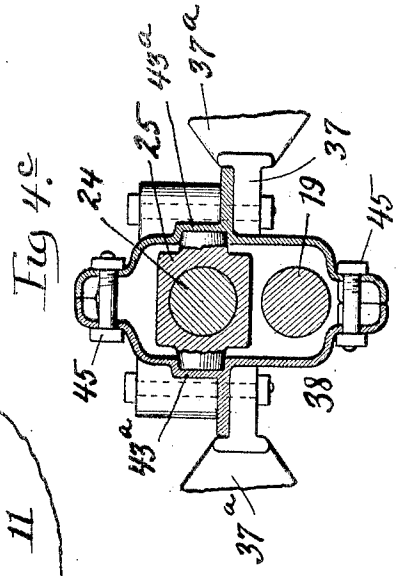
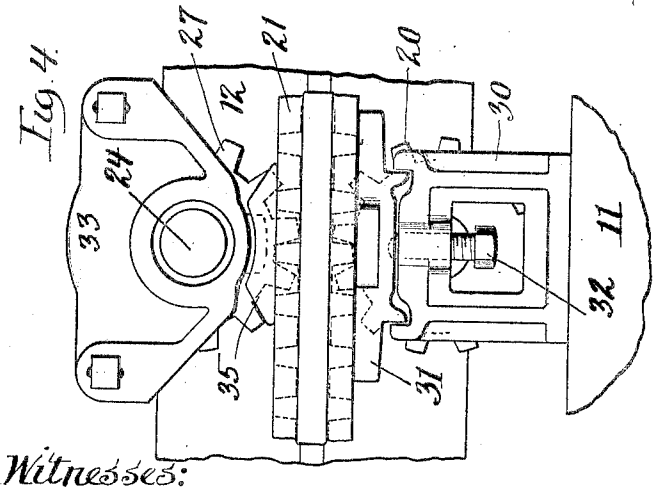


Fig. 4



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UNITED STATES PATENT OFFICE.

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PORTABLE HORSE-POWER.

No. 797,101. Specification of Letters Patent. Patented Aug. 15, 1905.

Application filed February 26, 1903. Serial No. 145,141.

To all whom it may concern:

Be it known that I, WILLIAM W. DINGEE, a citizen of the United States, and a resident of Racine, in the county of Racine, State of Wisconsin, have invented certain new and useful Improvements in Portable Horse-Powers, of which the following is a full, clear, and exact description.

The invention relates to portable horse-powers having a master or bull wheel to which the horizontal sweeps attach. In devices of this sort it is familiar practice to incline the main shaft for proper mesh of its pinions at diametric points with the upper and lower racks of the master-wheel, there being twin supplemental shafts also provided to oppositely engage the inclined shaft and the companion racks of the master-wheel, respectively.

The present invention designs to improve the structure of the main frame employed to sustain both the bull-wheel and the main and supplemental shafts, just referred to, as well. The frame is a massive ring of metal, insuring requisite strength and rigidity, and is suitably mounted on its truck-bolsters, so that the bull-wheel travels at about its median plane, whereby the strains become equalized and evenly distributed. Upper guide slides or keepers carried by the ring frame at the bull-pinions coöperate with the customary lower slides to retain the master-wheel against extreme sway. The outer boxes for the shafts are adjustably mounted on the main frame to take up for wear between the bull-wheel and its pinions, while the inner boxes are pivotally carried by the frame to allow for such adjustment and as well to readily ease the shafts against any severe thrust which might tend to shove them apart, and thus force their pinions out of true mesh.

The exact nature of the invention will appear in detail from the description following and be pointed out by claims at the conclusion thereof.

On the drawings like parts bear like designation throughout.

Figure 1 is a plan view of the improved machine with driver's deck or platform removed. Fig. 2 is a longitudinal section at line 2 2 of Fig. 1 with the driver's platform shown in place. Fig. 3 is a plan of the ring frame detached; Fig. 3^a, a view in longitudinal section at line 3^a 3^a of Fig. 3; Fig. 3^b, a view of the ring frame in side elevation; Fig. 4, a detail elevation view at the outer side of the master-wheel, showing the upper and lower guides therefor; Fig. 4^a, a cross-section at front of the outer boxes for the main and supplemental shafts with the ring frame shown in elevation; Fig. 4^b, a similar cross-section somewhat nearer the center through the rear of said boxes; Fig. 4^c, a cross-section at line 4^c 4^c, Fig. 2; Fig. 4^d, a cross-section at the inner box for the main shaft.

At front and rear the massive side brackets 10 extend in pairs upward from bolsters 11 of the wheel-axles and at top stoutly sustain the broad ring frame 12, resting thereon and to which the brackets are fastened by long through-bolts, as at 13. (See Fig. 1.) Parallel cross-girths 14, secured beneath by bolts 14^a at opposite points to ring frame 12, afford adjustable seats for the journal-boxes 15 of a line-shaft 16, having spur-pinion 17 thereon, which latter meshes into spur-wheel 18, carried above it on main shaft 19. The shaft 19 is mounted diametrically across the machine at proper inclined position, so as to bring its outer or terminal pinions 20 into gear, one with the upper and the other, at opposite end of the shaft, with the lower face of circular rack on master-wheel 21, as well understood. To maintain said pinions 20 in mesh with the master-wheel, it is seen that main shaft 19 is held at desired incline through the medium of its inner and outer journal-boxes 22 23, both of which find support at ring frame 12, as will presently appear.

Above and below, near opposite ends of main shaft 19, range the supplemental shafts 24, having inner and outer journal-boxes 25 26, which, like the corresponding boxes on main shaft 19, find support at ring frame 12 in position to bring the terminal pinions 27 of said supplemental shafts, respectively, into mesh with the upper or lower arc rack of master-wheel 21, while the inner or transfer pinions 28 of such supplemental shafts engage like pinions 29 at main shaft 19.

Master-wheel 21 encircles the mid-rib 12^a of ring frame 12 and is equipped with the familiar sweeps 21^a, to which the horses hitch as usual. The circular form of the rigid metal frame and the location of the master-wheel at about its median plane both unite to enable the frame at all points to stoutly receive the thrust and to evenly distribute the

strains without severe wrench upon the bolster-standards or upon the gearing with which the frame is associated. It will be observed that the central mid-rib of the ring frame has a central projecting portion upon the outer face of the frame, which extends closely adjacent and in line with the central web of the master-wheel. By this arrangement the lateral shift of the master-wheel out of proper mesh with the pinions is prevented. Instead of riding on terminal pinions 20 27, with which it is in mesh, said master-wheel is independently sustained between upper and lower guides brought to bear at diametric points against adjacent faces of the wheel. Each lower guide or carrier consists of a bracket 30, projected above from the mid-portion of the axle-bolster and furnished at top, Fig. 4, with an extended shoe 31 set loosely in grooved ways of the bracket, so as to rest on adjusting-screw 32. The master-wheel rides over the shoe, which latter affords support and yet eases slightly in its seat to better adapt itself to the minor sway of the wheel. Each upper guide or keeper confronts the companion carrier 30 31 and consists of a dependent bracket 33, united by slot-and-bolt joint, Figs. 1, 4, with the end of the protective cover 34, the lower face of the bracket terminating in a stud seated loosely within the socket of an extended shoe 35, which latter bears against the upper face of master-wheel 21. The adjustment of both keeper and carrier guides is easily effected, as appears, to relieve the terminal pinions from the burden of the master-wheel and as well to afford stops against any excessive up or down play of the wheel, due to horse motion or other cause.

Ring frame 12 consists of a broad circular cast-metal band, Figs. 3, 3^b, having an enlarged mid-rib 12^a. At opposite points the frame is equipped with companion bearers 37, each consisting of a stout horizontal plate projected radially inward from the band and suitably stiffened by marginal taper wings 37^a. The confronting inner ends of the horizontal bearers sustain cages 38, Figs. 1, 4^c, having proper trunnion-seats for the inner journal-boxes 22 25 of the main and supplemental shafts 19 24, respectively, while the outer journal-boxes 23 26 pertaining to said shafts are set above and below at diametric points within notches of the rim of ring frame 12, so as to seat against its mid-rib 12^a, Figs. 1, 4^a.

At diametric points companion sets of parallel lugs 40, cast in piece with bearers 37, Figs. 3, 4^b, extend inward for a short distance from ring frame 12 above and below each bearer-plate 37 and serve to position the outer journal-boxes just mentioned. Protective covers 34 41, Figs. 4^a, 4^b, inclose said boxes in their seats, the upper covers 34 being arched over to clear the terminal pinions 20 27 and to furnish at front suitable support for bracket-keepers 33.

Screw-bolts 42, Figs. 1, 2, 4^a, threaded through bosses on covers 34 41, encounter internal cross-plates 43, seated within the covers, these plates resting against the split journal-boxes 23 26. By adjustment of said bolts 42 the boxes are forced against mid-rib 12^a, or rather against leather pads (not shown) interposed between the mid-rib and the adjacent face of each journal-box seated thereon. The screw-bolts 42 bring the terminal pinions into true mesh with master-wheel 21. After wear leather pads of lesser thickness are interposed and bolts 42 readjusted to restore the proper mesh of said pinions with the master-wheel.

As already stated, the free ends of horizontal bearers 37 support the split cages 38, Figs. 1, 2, 4^c, 4^d, which respectively carry the inner journal-boxes 22 for shaft 19 and as well the separate journal-boxes at inner ends of supplemental shafts 24. Each cage 38 affords opposite seats for trunnions 43^a, projected at the sides of said journal-boxes 22 25, respectively, and is fastened to its bearer by means of through-bolts 44. Cross-bolts 45 unite the halves of the split cage together. Being held in the same cage, it is seen that the journal-boxes appropriate to the main and supplemental shafts 19 24 cannot spread apart while, because of the trunnion-mount, the boxes accommodate themselves to any irregular play experienced by the shafts. In brief, each shaft constantly lines itself, so that the engaging pinions always remain in true mesh. On removal of the lids or covers 34 41 at their outer journal-boxes the supplemental shafts can be turned about trunnion-mounts 43 far enough to enable said shafts to be drawn lengthwise out of the machine.

The structure hereinbefore set forth, although entirely practical in its make-up, can obviously be varied in its details by the mechanic's skill without departure from the essentials of the improvement.

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

1. In horse-powers, the combination with the supporting-frame, the encircling master-wheel having upper and lower racks, the main and supplemental drive-shafts, diametrically sustained at counter incline from said frame and having intermeshing inner pinions and outer terminal pinions to engage the master-wheel between them, of the upper and lower guides contacting with the master-wheel at the terminal pinions, substantially as described.

2. In horse-powers, the combination with the supporting-frame, the encircling master-wheel having upper and lower racks, the main and supplemental drive-shafts, diametrically sustained at counter incline from said frame

and having intermeshing inner pinions and outer terminal pinions to engage the master-wheel between them, of the lower carrier-guides to sustain the wheel in near relation to such pinions and the upper keeper-guides confronting said carrier-guides and furnished with loose shoes to bear upon the wheel, substantially as described.

3. In horse-powers, the combination with the supporting-frame, the encircling master-wheel having upper and lower racks, the main and supplemental drive-shafts, diametrically sustained at counter incline from said frame and having intermeshing inner pinions and outer terminal pinions to engage the master-wheel between them, of the upper keeper-guides, sustained in place from the upper journal-boxes of the outer, terminal pinions, substantially as described.

4. In horse-po vers, the combination with the main frame and with the encircling master-wheel, of the inclined drive-shaft having terminal pinions to engage said wheel, inner journal-boxes for the shaft carried pivotally and outer journal-boxes therefor carried adjustably by said frame, substantially as described.

5. In horse-powers, the combination with the main frame having opposite bearers projected inwardly therefrom and with the encircling master-wheel, of the inclined main and supplemental shafts, outer journal-boxes for said shafts sustained at the frame-rim and their inner journal-boxes therefor sustained pivotally at the inner projecting bearers of said frame, respectively, substantially as described.

6. In horse-powers, the combination with the main frame, the encircling master-wheel, said frame having opposite inwardly-projecting bearers and divided cages sustained thereby, of the inclined main and supplemental shafts intermeshing together and with said master-wheel and journal-boxes therefor pivotally mounted in said cages, respectively, substantially as described.

7. In horse-powers, the combination with the circular main frame, of a main drive-shaft mounted at an incline thereon, a master-wheel encircling said main frame and located at about the median plane of said frame, said master-wheel having upper and lower racks, pinions on said shaft engaging said racks and a projecting rib on the outer face of said circular main frame extending adjacent and in line with the central web of said master-wheel.

8. In horse-powers, the combination with a circular main frame and with a master-wheel encircling said frame and located about the median plane thereof, of the main and supplemental drive-shafts carried at an incline to said frame, said shafts being geared together and to said master-wheel, said main frame having inwardly-projecting bearers at diametrically opposite points and journal-boxes for said shafts sustained on said bearers.

9. In horse-powers, the combination with the open main frame comprising an endless band having opposite, inwardly-projecting bearers, of the encircling master-wheel, the inclined main and supplemental shafts geared together and to said master-wheel, outer journal-boxes for said shafts sustained on the frame-rim and inner journal-boxes therefor sustained on said bearers.

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