

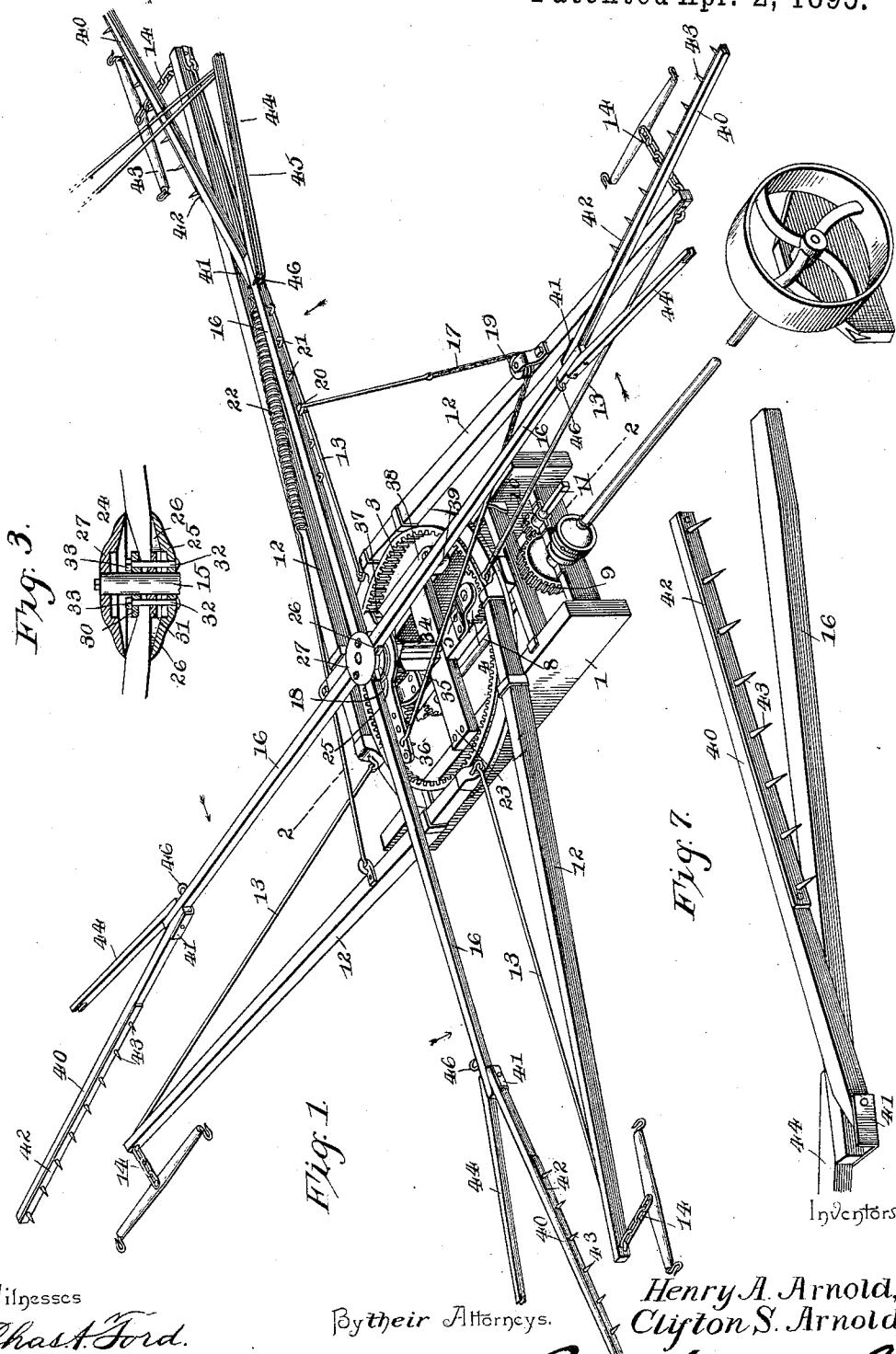
(No Model.)

2 Sheets—Sheet 1.

H. A. & C. S. ARNOLD.
HORSE DRIVER AND GOVERNOR.

No. 536,714.

Patented Apr. 2, 1895.



Witnesses

Chas. A. Ford.

[Signature]

By their Attorneys.

Henry A. Arnold,
Clifton S. Arnold,
CA Snow & Co.

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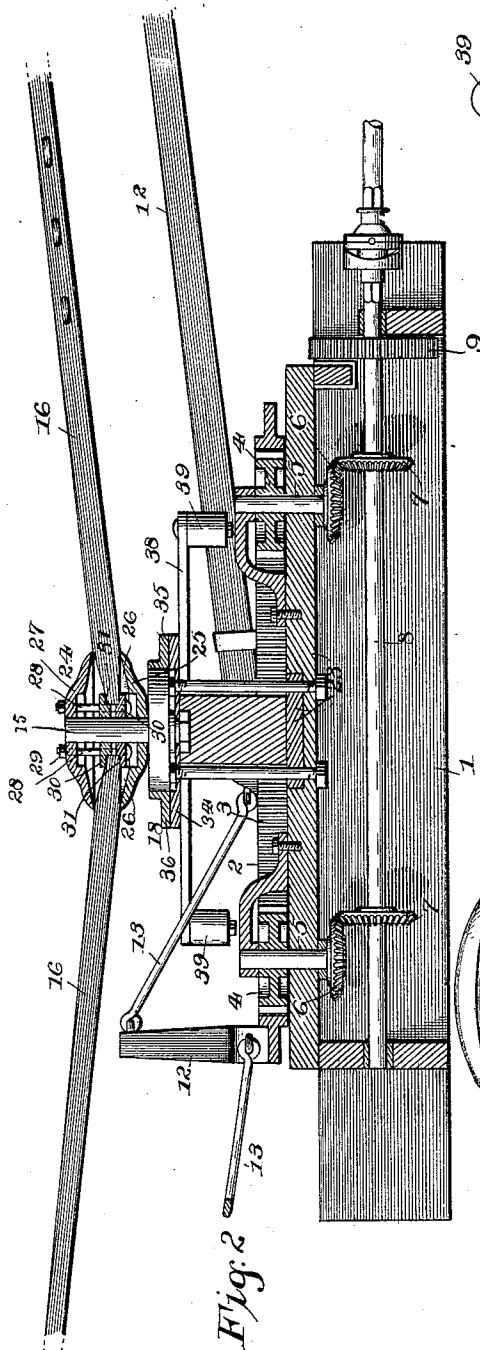


Fig. 2

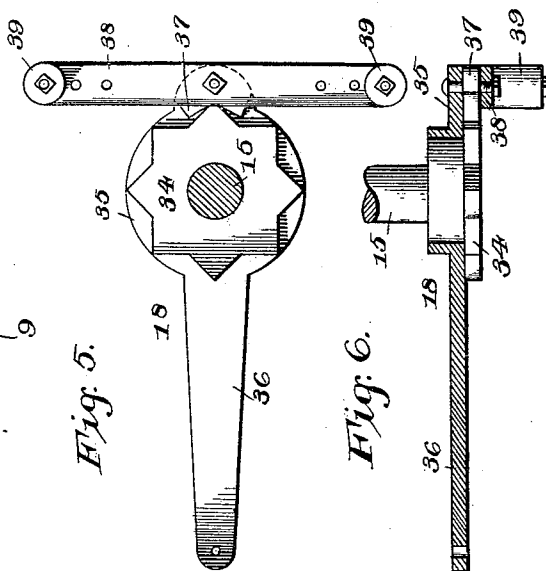


Fig. 5.

Fig. 6.

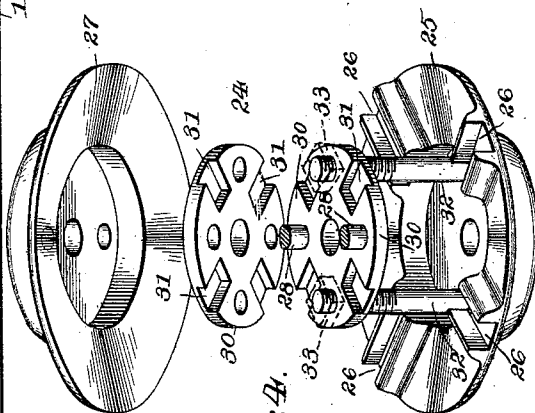


Fig. 4.

Witnesses

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UNITED STATES PATENT OFFICE.

HENRY A. ARNOLD AND CLIFTON S. ARNOLD, OF LAKE GENEVA, WISCONSIN.

HORSE DRIVER AND GOVERNOR.

SPECIFICATION forming part of Letters Patent No. 536,714, dated April 2, 1895.

Application filed August 21, 1894. Serial No. 520,913. (No model.)

To all whom it may concern:

Be it known that we, HENRY A. ARNOLD and CLIFTON S. ARNOLD, citizens of the United States, residing at Lake Geneva, in the county of Walworth and State of Wisconsin, have invented a new and useful Horse Driver and Governor, of which the following is a specification.

Our invention relates to an improvement in a horse driving and governing device for use in connection with horse powers, the objects in view being to provide means for urging forward lagging horses and for restraining a horse that attempts to exceed a certain speed in order to provide for a uniform movement of the mechanism.

Further objects and advantages of the invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings:—Figure 1 is a perspective view of a mechanism embodying our invention. Fig. 2 is a transverse section on the line 2—2 of Fig. 1. Fig. 3 is a detail section of the hub to which are connected the driving arms, said section being taken at right angles to the plane of Fig. 2. Fig. 4 is a detail view in perspective of the same with the parts detached. Fig. 5 is a bottom plan view of the escapement-device. Fig. 6 is a longitudinal section of the same. Fig. 7 is a detail view in perspective of one of the driving arms and attached whip or driving-bar.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

1 designates a base, upon which is mounted the annular master-gear 2, provided with internal teeth 3, which mesh with a pinion 4 carried by a vertical spindle 5. This vertical spindle is geared at its lower end by means of the miter-gears 6 and 7 with a power-shaft 8, and this power-shaft carries a large gear 9 meshing with a similar gear or pinion 10 upon an adjacent parallel power-shaft 11. It will be seen that the power-shaft 11 receives its motion from the shaft 8 and rotates at a higher rate of speed. Attached to the master-gear are the draft-sweeps 12, provided with the brace-rods 13, and carrying the chains 14 for

the attachment of whiffletrees for one or two horses on each sweep.

Rising from the base 1 is a stationary vertical post supporting the escapement wheel 34, the wheel being firmly held in place on the top of the post by means of bolts passing down through a web across the center of the wheel flush with the lower side of said wheel, and outside of said post and on down through the cross-beam 23, the cross frame being bolted to the base 1.

Rising from the center of the escapement-wheel is a stationary vertical arbor 15, upon which are mounted by means of the hub, the radial driving-arms 16, one of which is connected by means of a chain or other flexible device 17 to an escapement device 18, which is similar to that shown and described in our patent issued July 17, 1894, No. 522,956, said chain or flexible connection 17 being passed around a direction pulley 19 carried by the draft-sweep in rear of the driving-arm to which the extremity of said chain is attached. This chain is provided with a terminal hook 20 for engagement with one of a series of eyes or keepers 21 on said driving-arm, for a purpose hereinafter explained, and connecting said driving-arm to the draft-sweep in advance thereof is a tension spring 22, which is adapted to draw said driving-arm forward or in the direction of movement thereof, in order to communicate motion from the draft-sweeps to the driving-arms and hold the restraining chain 17 taut.

The arbor 15 extends up from the center of the escapement-wheel, and the inner ends of the driving-arms are attached to a rotary crown or hub 24, which is mounted for free rotation upon said arbor. This crown or hub consists of a lower cap 25 provided at its periphery and upon its upper side with a series of seats 26 for the reception of said driving-arms and an upper cap 27 which is adapted to fit over the lower cap and bear upon the upper sides of the driving-arms to hold the latter in the seats of the lower cap, said upper cap being adjustable by means of the bolts 28 and engaging nuts 29. These caps, comprising the crown or hub, are hollow or dish-shaped, and in the cavities thereof are arranged adjustable disks 30 provided in

their contiguous or facing sides with registering notches 31 for the reception of the inner extremities of the driving-arms, said disks being adjustable vertically with relation to the caps forming the hub by means of bolts 32 engaged by nuts 33. By the adjustment of these disks the inclination of the driving-arms may be altered as may be desired to suit the height of a mounted or down power and other requirements.

The escapement device above referred to, comprises a fixed or stationary escapement-wheel 34 secured to the top of the supporting post (see Fig. 2), a spider 35 loosely mounted upon the escapement-wheel and having an arm 36, to which is attached one end of the chain or flexible connection 17, and a pivotal detent or escapement 37 carried by said spider in position to engage the teeth of the escapement-wheel, whereby as the spider is rotated upon the escapement-wheel around a collar 30 of said wheel 34 as a center, said detent or escapement vibrates continuously by reason of its engagement with the teeth of the escapement-wheel. In order to provide for a comparatively slow vibration of the detent or escapement, a bar 38 is attached to the detent or escapement and is provided at its extremities with adjustable weights 39. By altering the points of attachment of these weights the resistance offered by the detent or escapement to the forward rotation of the spider may be varied.

Pivotaly connected to the driving-arms are driving-bars or whips 40, which are fitted at their pivoted ends in pockets or brackets 41, whereby when extended said driving-bars or whips are held substantially in alignment with the driving-arms. These driving-bars or whips preferably consist of a light bar of wood, to the front side of which is attached a strip 42 of leather or similar material, bearing a series of points or spurs 43. Attached to the extremities of the driving-arms are rein-holding arms 44 to hold the reins 45 in the proper position over the horses, and adjacent to these rein-holding arms are keepers or hooks 46, with which the reins may be engaged when the proper length of such reins has been attained. When a pin is inserted in the chain 17 directly behind the guide-pulley 19, the driving-arms 16 are firmly held in a retracted position, and the machine is at rest, so that when the horse or horses are attached to the draft-sweep by means of the whiffletrees, and their lines fastened to the rein-holding arms 44 and tied by their lead straps so that they cannot swing out, they are securely held from going.

When the pin is removed from the chain behind the guide-pulley 19, the driving-arms are drawn forward toward the horses by the tension-spring 22. If the latter start immediately the forward motion which is imparted to the sweep and the resistance which is offered to the operating arm 18 by the operation of the escapement device will retard the

motion of the connecting chain 17 and of the driving-arms attached thereto, removing them from contact with the horses. The driving-arms, with their whips 40, are held out of contact with the horses by means of the escapement device when the horses are moving at the desired rate of speed, which is predetermined, and the hook 20 adjusted in the eye for such speed. The driving-arms are held in a retracted position so long as the horses maintain an approximately steady speed; but if their movement is increased the driving lines attached to the rein-holding arm 44 will be retarded owing to the constant resistance of the escapement device, thus partially checking the horses; and if one or more of the horses lag or do not keep up to the speed of the mechanism, the whips will overtake them and urge them to a greater exertion.

If the hook 20 is removed to an eye nearer the inner end of the driving-arm 16, the speed is somewhat increased by the increased leverage that the spring 22 has over the escapement device through the connecting chain; and when the hook is removed to an eye nearer the outer end of said driving-arm, the speed is decreased by the decreased leverage. The speed can further be changed by removing the weights 39 on the escapement lever 38 toward or from the escapement pawl, as described.

It will be understood that when not in use or not required the driving-arms or whips may be turned inward so as to be out of reach of the horses.

It will be understood that in practice various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit of the invention or sacrificing any of the advantages thereof.

Having described our invention, what we claim is—

1. In a device of the class described, the combination with a master-gear and connections, and draft-sweeps attached to the master-gear, of loosely fulcrumed superjacent driving-arms, a tension-spring connecting one of the driving-arms to one of the draft-sweeps, an escapement device having a rotary spider, a fixed escapement-wheel, and a detent or escapement carried by the spider and arranged in operative relation with the escapement-wheel, and a chain or flexible connection attached at one extremity to an arm of said spider, extending around a direction pulley on one of the draft-sweeps, and adjustably attached at the other extremity to a driving-arm, substantially as specified.

2. In a device of the class described, the combination with a master-gear and connections, and draft-sweeps attached to the master-gear, of loosely fulcrumed superjacent driving-arms, a yielding connection between the driving-arms and the draft-sweeps, an escapement device, a flexible connection between the driving-arms and said escapement

device, and driving bars or whips pivotally connected to the outer extremities of the driving-arms, substantially as specified.

3. In a device of the class described, the combination with a master-gear and connections, and draft-sweeps attached to the master-gear, of loosely fulcrumed superjacent driving-arms, a yielding connection between the driving-arms and the draft-sweeps, an escapement-device, and a flexible connection between one of the driving-arms and the escapement device, a pocket or bracket attached to the outer extremity of each of the driving-arms, and a driving-bar or whip pivotally arranged in each of said pockets or brackets and adapted to be folded inward when not in use, said driving-bar or whip being provided with a strap bearing points or spurs, substantially as specified.

4. In a device of the class described, the combination with a master-gear and connections, and draft-sweeps attached to the master-gear, of a vertical stationary arbor, an escapement device, a hub loosely mounted upon the arbor above the plane of said escapement device, driving-arms attached at their inner ends to said hub, a yielding connection between one of the driving arms and one of the draft-sweeps, and a flexible connection between one of the driving-arms and said escapement device, substantially as specified.

5. In a device of the class described, the combination with a master-gear and connections, and draft-sweeps attached to said master-gear, of a vertical arbor, a hub pivotally mounted upon said arbor, driving-arms fitted at their inner ends in said hub and angularly adjustable therein, an escapement device concentric with said arbor, a yielding connection between the draft-sweeps and driving-arms, and a flexible connection between the driving-arms and said escapement-device, substantially as specified.

6. In a device of the class described, the

combination with a master-gear and connections, and draft-sweeps attached to the master-gear, of a vertical arbor, a hub loosely mounted upon said arbor and having upper and lower relatively inverted caps, one of which is provided with a series of radial seats and the other of which is adapted to close the open sides of said seats, means for securing said caps in the desired relative positions, driving-arms fitted at their inner ends in said seats, an escapement device concentric with the arbor, a yielding connection between the draft-sweeps and driving-arms, and a flexible connection between the driving-arms and said escapement device, substantially as specified.

7. In a device of the class described, the combination with a master-gear and connections, and draft-sweeps attached to said master-gear, of an arbor, a hub loosely mounted upon the arbor and having upper and lower relatively adjustable hollow caps, bolts connecting said caps, seats arranged upon one of the caps and adapted to be closed by the other cap, relatively adjustable disks arranged in the cavities of the caps and provided in their contiguous or facing sides with notches, means for adjusting the disks vertically in the cavities of the caps, driving-arms arranged in said seats and fitted at their inner extremities in the notches in the contiguous sides of said disks, a yielding connection between the driving-arms and draft-sweeps, an escapement device concentric with the arbor, and a flexible connection between the driving-arms and the escapement device, substantially as specified.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

HENRY A. ARNOLD.
CLIFTON S. ARNOLD.

Witnesses:

JOHN B. SIMMONS,
R. B. ARNOLD.