A. HINES.

DRAFT EQUALIZING DEVICE.

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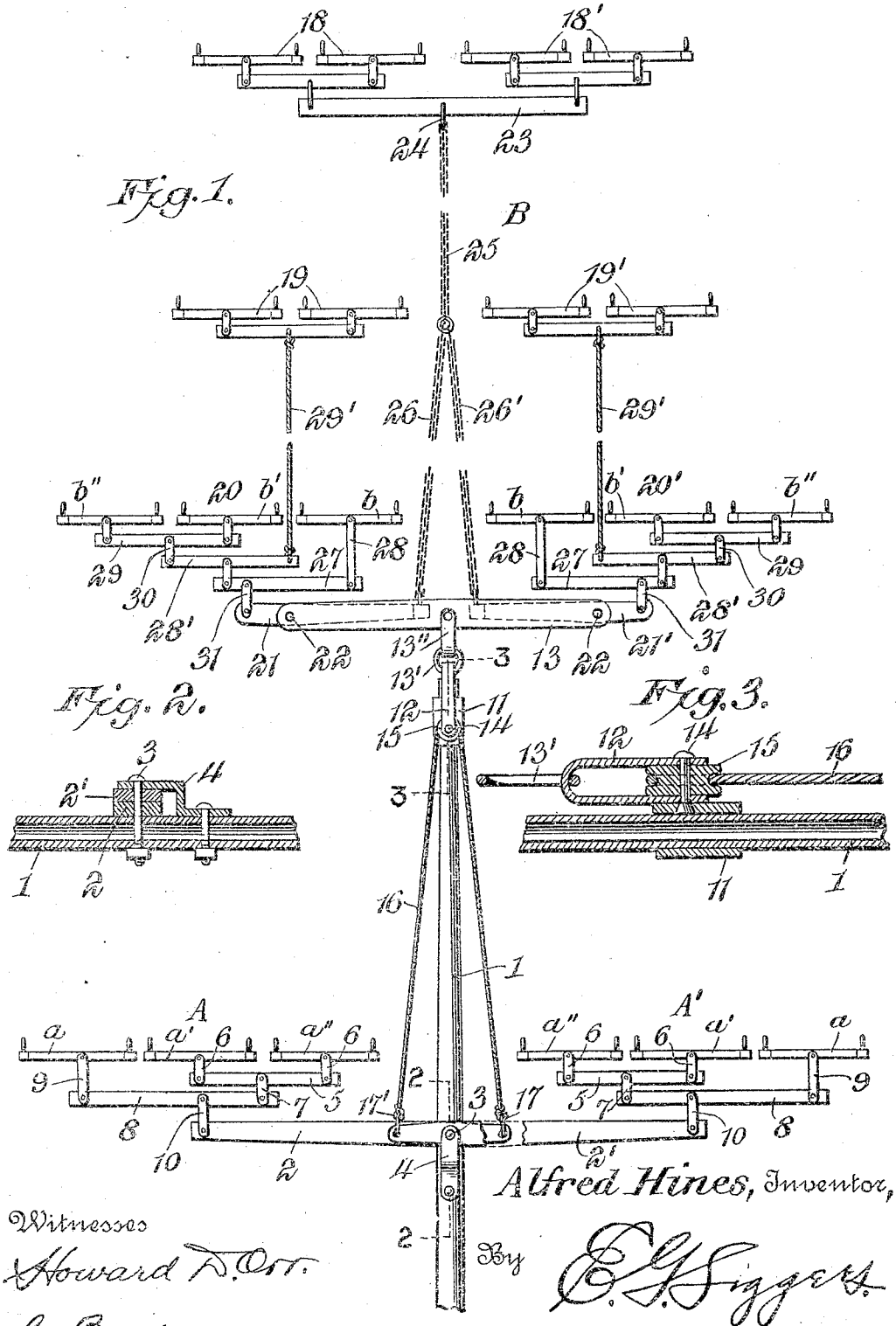
958,811. Patented May 24, 1910.



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DRAFT-EQUALIZING DEVICE.

958,811. Specification of Letters Patent. Patented May 24, 1910.

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To all whom it may concern:

Be it known that I, ALFRED HINES, a citizen of the United States, residing at Wasco, in the county of Sherman and State of Oregon, have invented a new and useful Draft-Equalizing Device, of which the following is a specification.

This invention relates to draft devices of the equalizer type designed more especially for use in connection with large agricultural and farming apparatus such as traveling reapers and threshers, and the objects of the invention are to provide a draft equalizer of durable and substantial construction, one which is composed of comparatively few parts which are so arranged as to place the horses in the best possible position, and at the same time arrange the various groups of horses so that each group will effectively take up its appropriate share of the work.

With these objects in view and others, as will appear as the description proceeds, the invention comprises the various novel features of construction and arrangement of parts which will be more fully described hereinafter and set forth with particularity in the claims appended hereto.

In the accompanying drawing, which illustrates one embodiment of the invention, Figure 1 is a plan view of the draft device. Fig. 2 is a detail sectional view on line 2—2, Fig. 1. Fig. 3 is a detail sectional view on line 3—3, Fig. 1.

Similar reference characters are employed to designate corresponding parts throughout the views.

The draft device shown in the present instance is designed for use more especially in connection with farming machines of that type provided with tongues for steering the machines in travel, and referring to the drawing, 1 designates a tongue of any approved construction, which is attached to the fore-carriage of the machine to be drawn, and at opposite sides of the tongue are groups of swingletrees A and A′ for the rear draft horses, while in front of the tongue is a draft device of any approved construction and designated generally by B, which accommodates a number of horses operating in conjunction with the rear horses to pull the machine. The various groups of horses are so arranged that the draft is thoroughly equalized between them so that the maximum traction effect can be obtained. The rear draft devices A and A′ are connected, respectively, with equalizer levers 2 and 2′ which are arranged with their inner ends overlapping and pivotally connected by a bolt or pin 3. In the present instance, the equalizers 2 are connected with the tongue 1, but it is to be understood that they can be attached to the front part of the machine of which the tongue is a part.

The upper end of the pin is held in place by a brace 4 which is itself rigidly secured to the tongue at a point behind the equalizing levers. The inner or short arms of the levers 2 and 2′ are adapted to be connected with the front draft rigging B, and the number of horses adapted to be attached to the groups of whiffletrees A and A′ will depend upon the number of horses attached to the front draft rigging B. In the present instance, each group comprises three whiffletrees *a*, *a′*, *a″*, the two latter of which are connected with an equalizer bar or tertiary lever 5 by clevises 6, and the center of such lever is connected by a clevis 7 with a secondary lever or equalizer 8. The whiffletree *a* is connected by a clevis 9 with the long arm of the secondary equalizer 8, so that the horse attached to such whiffletree will equalize the two horses attached to the whiffletrees *a′* and *a″*, the secondary lever 8 being, in turn, connected with the long arm of the adjacent main lever A by a clevis 10.

The means for connecting the main equalizers or levers of the rear draft rigging with the front draft rigging is so designed as to flexibly support the rear part of the last-mentioned rigging on the front end of the tongue whereby the latter can be guided by the horses hitched to the front rigging for satisfactorily steering the machine, and at the same time the said connecting means will permit the combined draft effect of the front horses to be equalized with respect to the combined draft effect of the rear horses, so that perfect equalization will result. The connecting means between the front and rear draft riggings comprises a slidable member such as a sleeve 11 supported on the front extremity of the tongue 1 and movable freely back and forth thereon. Secured to the sleeve is a forwardly-extending clevis 12 which is adapted to be flexibly connected with the draft beam 13 of the front rigging, as for instance by the ring 13′ and clevis 13″. The clevis 12 is connected

with the sleeve by a vertical rivet or fastening 14 that constitutes an axle for a grooved pulley 15 confined between the top and bottom members of the clevis. Passing around this pulley is a flexible element such as a chain or cable 16 which extends rearwardly along opposite sides of the tongue 1 and has its rear extremities connected at 17 and 17′ with the shorter arms of the main equalizing levers 2 and 2′. By this arrangement, the two groups of rear horses can readily equalize the draft with respect to each other, and at the same time the rear horses will be balanced against the front horses.

The front draft rigging is shown in the present instance to accommodate fourteen horses, and it comprises two pairs of front whiffletrees 18 and 18′, two pairs of intermediate whiffletrees 19 and 19′, and two rear groups of three whiffletrees 20 and 20′, all of which groups are connected indirectly with the equalizing beam 13. On the extremities of the equalizing beam 13 are main equalizing levers 21 and 21′ that are connected to the beam by pivots 22, the pivots being located nearer the outer ends of the main levers, since the four horses attached to the front group of whiffletrees are intended to balance the intermediate and rear groups of horses, which latter are connected with the shorter arms of the equalizing levers 21 and 21′. The two pairs of front whiffletrees are connected with the extremities of a front beam 23 which has its center connected by a clevis 24 with a chain or other flexible element 25 that extends rearwardly in line with the tongue 1 and has its rear portion divided into branches 26 and 26′ connected with the long arms of the levers 21 and 21′. Attached to the shorter arm of each main equalizing lever on the beam 13 is a secondary equalizer 27 which has an inwardly-extending long arm that is connected by a clevis or equivalent means 28 with the inner whiffletree b, and the long arm is so proportioned that the horses attached to such whiffletree will balance the combined draft of the horses attached to the whiffletrees b' and b'', and also the horses attached to the intermediate doubletree in advance thereof, the whiffletrees b and b' being connected with a quaternary lever 29 connected by a clevis 30 with the tertiary lever. The short arm of the secondary lever 27 is connected with the tertiary lever 28′ which has its inner end connected by a rod, chain or the like 29′, with the intermediate group of whiffletrees, while the outer arm of the tertiary lever is connected with the whiffletrees b' and b'', so that the two intermediate horses will balance the two outer horses of the rear group.

By the arrangement set forth, it will be seen that the corresponding horses of the various groups will travel directly in line and the groups on opposite sides of the center line of draft will be evenly balanced, while the front group of horses of the front rigging will balance the intermediate and rear groups of horses of the front rigging; and furthermore, the horses of the front and rear riggings will be effectively balanced. If, for any reason, it should be desired to employ a draft rigging for five horses, the clevis 31 of the secondary lever can be detached from the main lever 21 so that the intermediate whiffletrees 19 and rear whiffletrees 20 of the front rigging can be detached from the latter and applied to the machine or vehicle to be drawn. It will thus be understood that certain parts of the entire draft device can be used separately, as occasion requires. By employing a sleeve as a carrier for the pulley and clevis, these parts, together with the flexible element 16, constitute an attachment which can be readily applied to any ordinary tongue by merely slipping the sleeve over the free extremity of the latter and attaching the flexible element to the rear draft device. Furthermore, if it is desired to use the tongue with any other draft-rigging or appliance in which the flexible element 16 is not required, the sleeve, together with such element, can be readily taken off the tongue to meet the new requirements.

From the foregoing description, taken in connection with the accompanying drawing, the advantages of the construction and of the method of operation will be readily apparent to those skilled in the art to which the invention appertains, and while I have described the principle of operation of the invention, together with the apparatus which I now consider to be the best embodiment thereof, I desire to have it understood that the apparatus shown is merely illustrative, and that such changes may be made when desired as are within the scope of the claims appended thereto.

Having thus described the invention, what I claim is:—

1. An attachment for draft devices comprising a support adapted to be slidably mounted on the front end of a tongue, a pulley mounted on the support, a flexible element passing around the pulley and extending rearwardly along opposite sides of and free from the tongue to be attached at its extremities to rear draft devices, the length of the element between either end and point of engagement with the pulley being such that the element prevents the support from passing off the end of the tongue, and a device on the support for connecting the same with a front draft device, said support forming the sole means of connecting the pulley and device with and supporting them on the tongue.

2. In a draft equalizing device, the combi-

nation of a tongue, a sleeve slidably mounted on the front end thereof, a front draft rigging flexibly connected with the sleeve, a rear draft rigging composed of pivotally connected equalizing levers, means for supporting the levers in fixed relation to the tongue, a flexible element connected with the corresponding arms of the levers, and a guide on and carried wholly by the sleeve across the front of which the element moves for equalizing the draft on the levers.

3. In combination with the draft beam, main equalizing levers pivotally mounted at the ends thereof, the pivots of said levers being located near the outer ends thereof so that the short arms extend from the beam, a front beam with draft appliances, a flexible element extending rearwardly from the front beam and having its rear portion divided into two branches which are connected respectively to the long arms of the main equalizing levers, and duplicate draft mechanisms arranged on opposite sides of the flexible element in rear of the front beam, said duplicate draft mechanisms each comprising a secondary equalizer having its long arm on the inside adjacent the flexible element and provided with a swingletree, and pivotally connected near its outer end to the short arm of the main equalizing lever, a tertiary lever pivotally connected to the short arm of the secondary equalizer, a quaternary lever pivoted to the outer end of the tertiary lever and carrying two swingletrees which are arranged in line with the swingletree on the long arm of the secondary equalizer, a flexible element connected to the inner end of the tertiary lever and extending forwardly beyond the said swingletrees, and whiffletrees connected to the front end of the last-mentioned flexible element.

4. In a draft equalizer, the combination of a tongue, a sleeve slidably mounted on the front extremity thereof, a clevis, a fastener for securing the clevis to the sleeve and forming an axle, a pulley mounted on the said axle, a pair of equalizing levers arranged at the rear end of the tongue, a flexible element connected with the corresponding arms of the levers and extending forwardly therefrom and guided by the pulley, draft means connected with the levers, and additional draft means connected with the clevis and attached thereby with the tongue for guiding the latter to steer the vehicle to which the tongue is attached.

5. In a draft device, the combination of a tongue, a rear draft rigging comprising equalizing levers arranged with their inner ends overlapping and extending across the tongue, a pivot mounted on the tongue and connecting the overlapping ends of the levers together, the pivot being located nearer the inner ends of the levers than the outer ends thereof, draft means located at opposite sides of the tongue and connected with the outer extremities of the levers, a pulley removably mounted on the front end of the tongue and movable back and forth thereon, a flexible element having its middle portion passing over the front of the pulley and its extremities disposed at opposite sides of the tongue and between the latter and said draft means, said element forming an equalizing connection between the levers, and means for connecting the extremities of the said element with the inner arms of the levers respectively, with a front draft rigging operatively connected with the rear draft rigging whereby the one equalizes the other.

6. In a draft equalizing device, the combination of a tongue, a rear draft rigging operatively connected therewith, a sleeve slidably and removably mounted on the tongue, a flexible connection between the sleeve and rear draft rigging, a vertically-disposed pivot on the sleeve, a clevis connected with the pivot, and a front draft rigging connected with the said clevis.

7. The combination of a tongue, right and left rear draft devices including equalizing levers extending across the tongue with their inner short ends terminating at opposite sides of the latter, a member freely movable back and forth at the front end of the tongue, and a single flexible element doubled centrally on itself with its middle portion slidable longitudinally over the said member, said element extending rearwardly therefrom along opposite sides of the tongue, the right and left rear extremities of the element being connected respectively to the inner ends of the equalizing levers of the left and right draft devices, with a front draft device connected with the said member to equalize the draft of both rear devices.

8. An attachment for draft devices comprising a tongue-engaging sleeve, a pulley mounted on the sleeve, a single flexible element passing around the pulley and adapted to be attached to rear draft devices, and attaching means on the sleeve for connection with front draft devices.

9. An attachment for draft devices comprising a tongue-engaging sleeve, a pulley, a clevis, a single fastening constituting a pivot for the pulley and clevis and securing them to the sleeve, a flexible element passing around the pulley and adapted to be connected with a rear draft device, and means for connecting the clevis with a front draft device.

10. In a draft device, the combination of a tongue, a pair of equalizing levers disposed at opposite sides of the tongue with arms of unequal length, the shorter arms of the levers overlapping each other and extending across the tongue, a pivot connecting the levers together with the tongue, a movable support on the front end of the

tongue, a pulley mounted on and carried by the support, and a flexible element passing around and movable over the pulley and having two portions extending respectively along opposite sides of the tongue, the rear extremity of each portion at one side of the tongue being connected with the shorter arm of the lever disposed at the opposite side of the tongue, rear draft appliances connected with the levers, and front draft appliances connected with the said movable support.

In testimony, that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

ALFRED HINES.

Witnesses:
JOHN H. SIGGERS,
DAVID R. WAGNER.