W. A. LAIRD.

Three-Horse Draft-Equalizer.

No. 202,555. Patented April 16, 1878.

Fig. 1.

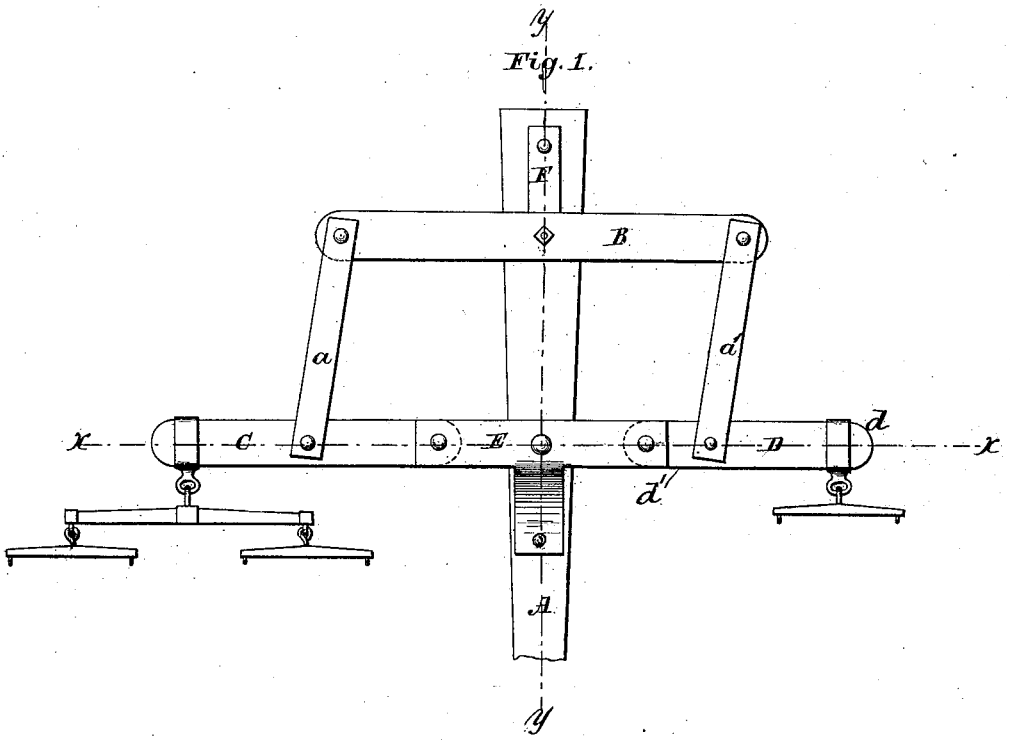


Fig. 2.

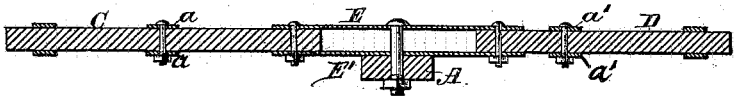
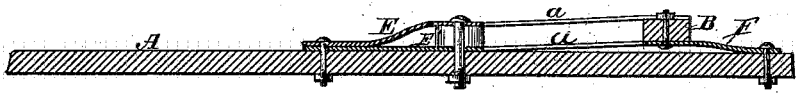


Fig. 3.



Attest.

J. A. Rutherford

James M. Wright Jr.

Inventor.

Wm. A. Laird.

By. James L. Norris.

Atty.

UNITED STATES PATENT OFFICE.

WILLIAM A. LAIRD, OF OSSIAN, IOWA, ASSIGNOR OF ONE-HALF HIS RIGHT TO G. L. FAUST AND W. L. WARREN, OF SAME PLACE.

IMPROVEMENT IN THREE-HORSE DRAFT-EQUALIZERS.

Specification forming part of Letters Patent No. **202,555**, dated April 16, 1878; application filed March 19, 1878.

To all whom it may concern:

Be it known that I, WILLIAM A. LAIRD, of Ossian, in the county of Winneshiek, State of Iowa, have invented an Improved Three-Horse Draft-Equalizer, for all purposes in which it may be necessary to use three horses for draft, of which the following is a specification:

The object of this invention is to provide an improved means of equalizing the draft devices used for vehicles provided with a pole or tongue, when three horses are used, so that one horse can pull against two on the opposite side of the pole or tongue.

In the accompanying drawing, Figure 1 is a plan view of my improved three-horse equalizer. Fig. 2 is a section on line *x x*, and Fig. 3 a section on line *y y*, Fig. 1.

The letter A indicates the tongue of the vehicle. B is a cross-bar, pivoted at its center to the end of a link, F, the opposite end of which projects toward the vehicle, and is pivoted on the center line of the tongue.

E and E′ are T-shaped braces secured to the tongue, one above the other, in front of the cross-bar B, and having their arms projecting on each side of the tongue.

On one side of the tongue is an equal-armed lever, C, having the end of its inner arm pivoted between the ends of the braces E and E′, and its outer end provided with a double-tree and two single-trees, so that two horses may be hitched to draw upon the outer arm of said lever. On the opposite side of the tongue from this lever is arranged a lever, D, having unequal arms, the outer arm *d* being twice the length of the inner arm *d′*, which is pivoted between the ends of the braces E and E′, projecting on the opposite side of the tongue from the equal-armed lever, heretofore referred to. The outer and longer arm of this lever D is provided with a single-tree for the attachment of one horse thereto.

To the opposite ends of the cross-bar B are pivoted links *a* and *a′*, to the upper and lower sides of said bar, and, extending forward, embrace the levers C and D, and are pivoted at points therein at the dividing-line between the opposite arms of said levers respectively.

Now, when two horses are hitched to the outer end of lever C, and one to the outer end of lever D, the central draft on the tongue, through the bar F, will be equally divided between the links *a* and *a′*, for the reason that the single horse, hitched to the outer end of lever D, pulls upon a lever-arm which is equal in length to the arm drawn upon by the two horses on the opposite side of the tongue, and twice the length of the short arm *d′* of the lever upon which he draws, this being in accordance with the well-known law of levers, that the power applied to the long arm of the lever holds the same proportion to the weight lifted or force resulting that the long arm of the lever bears to the short arm.

If the two arms of the lever D were equal, it is plain that the two horses hitched to lever C would exert double the force that the single horse does on the cross-bar B; but, as the long arm of his lever is double that of his short arm, he, of course, applies twice as much power as he would if the arms of his lever were equal, or as much as two horses pulling upon an equal-armed lever.

When the bar F is pivoted on the center line of the tongue, the links *a* and *a′* are necessarily in an oblique position; but, by pivoting the bar F nearer to the side of the tongue toward the link *a*, all the links may be brought to positions parallel with the longitudinal center of the tongue; but I prefer to pivot the inner end of the bar F to the center of the tongue, and, as it swings freely, any side draft on the vehicle is prevented.

Having now fully described my invention, what I claim is—

1. The pivoted levers D and C, one having equal and the other unequal arms, and connected directly to a cross-bar, B, which is attached to the wagon-tongue by the pivoted link F, substantially as described, and for the purpose set forth.

2. In a three-horse equalizer, the combination of the lever D, having unequal arms, the shorter of which is pivoted to a projection from the wagon-tongue, and the outer end of its outer arm provided with a single-tree, the links *a′* connecting said lever with the

cross-bar B, the lever C having equal arms, the inner of which is pivoted to a projection from the wagon-tongue, and the outer provided with a double-tree, the links *a* connecting said lever with the cross-bar B, and the bar F, pivoted to the center of said cross-bar and to the wagon-tongue, substantially as and for the purpose set forth.

Dated this 13th day of February, A. D. 1878.

WM. A. LAIRD.

Witnesses:
A. H. DANIELS,
DANIEL D. WEBSTER.