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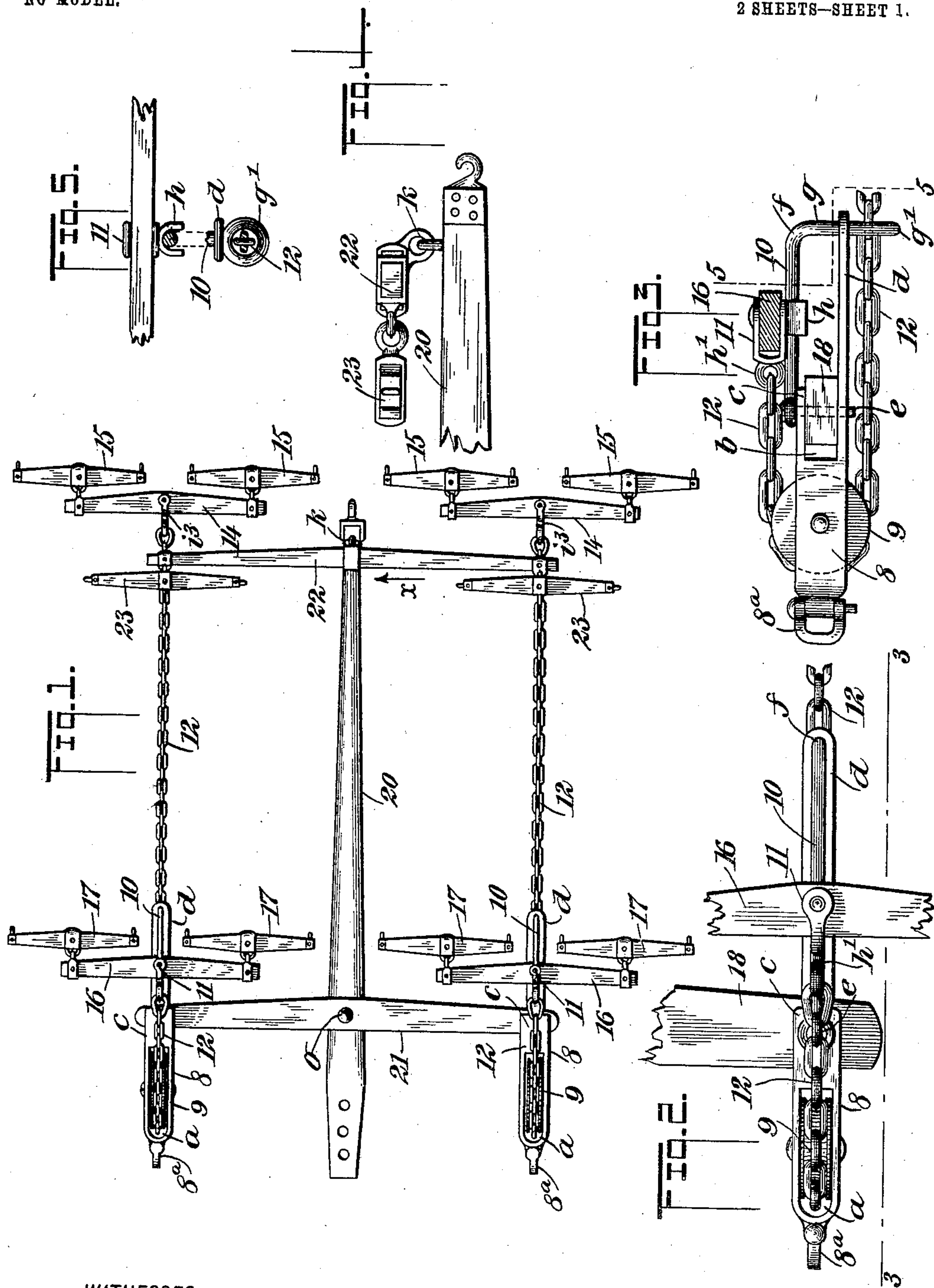
PATENTED JULY 26, 1904.

E. J. D. MILLER.
DRAFT EQUALIZER.

APPLICATION FILED DEC. 26, 1903.

NO MODEL.

2 SHEETS—SHEET 1.



WITNESSES:

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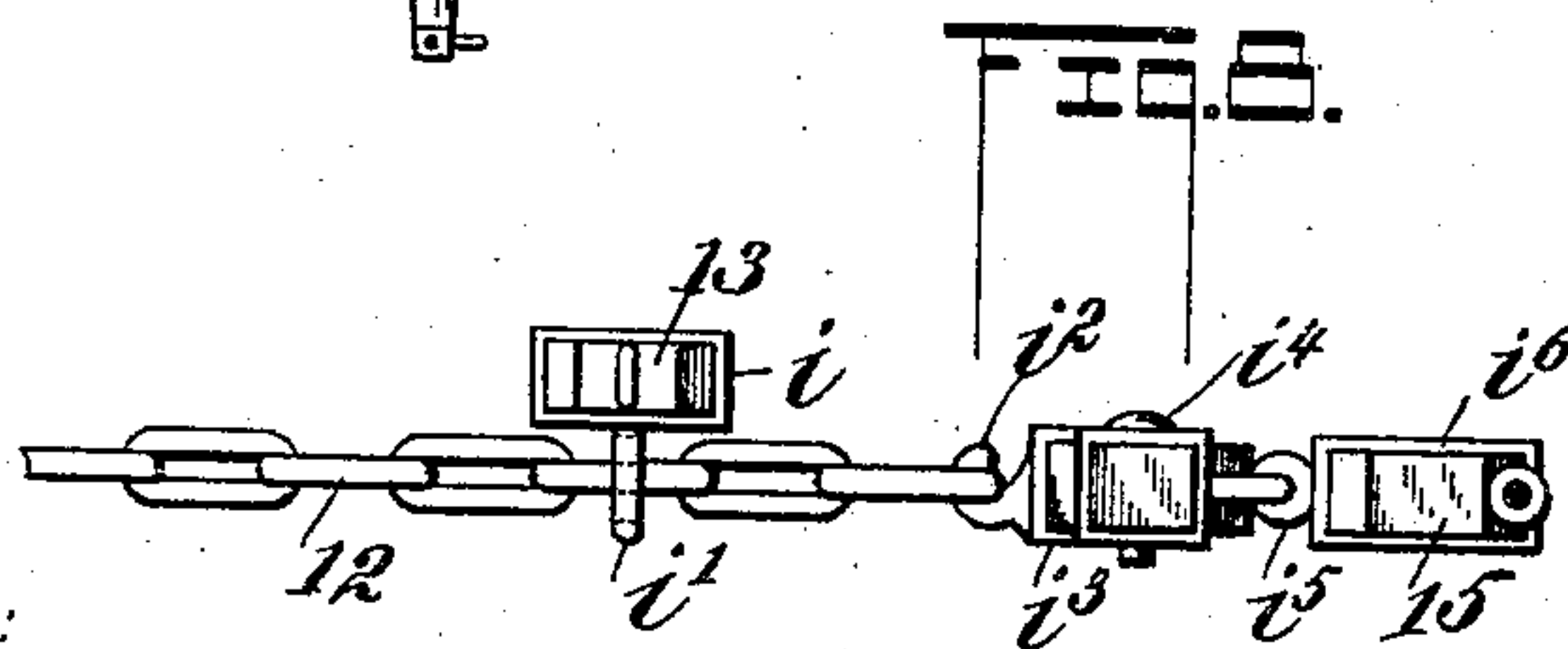
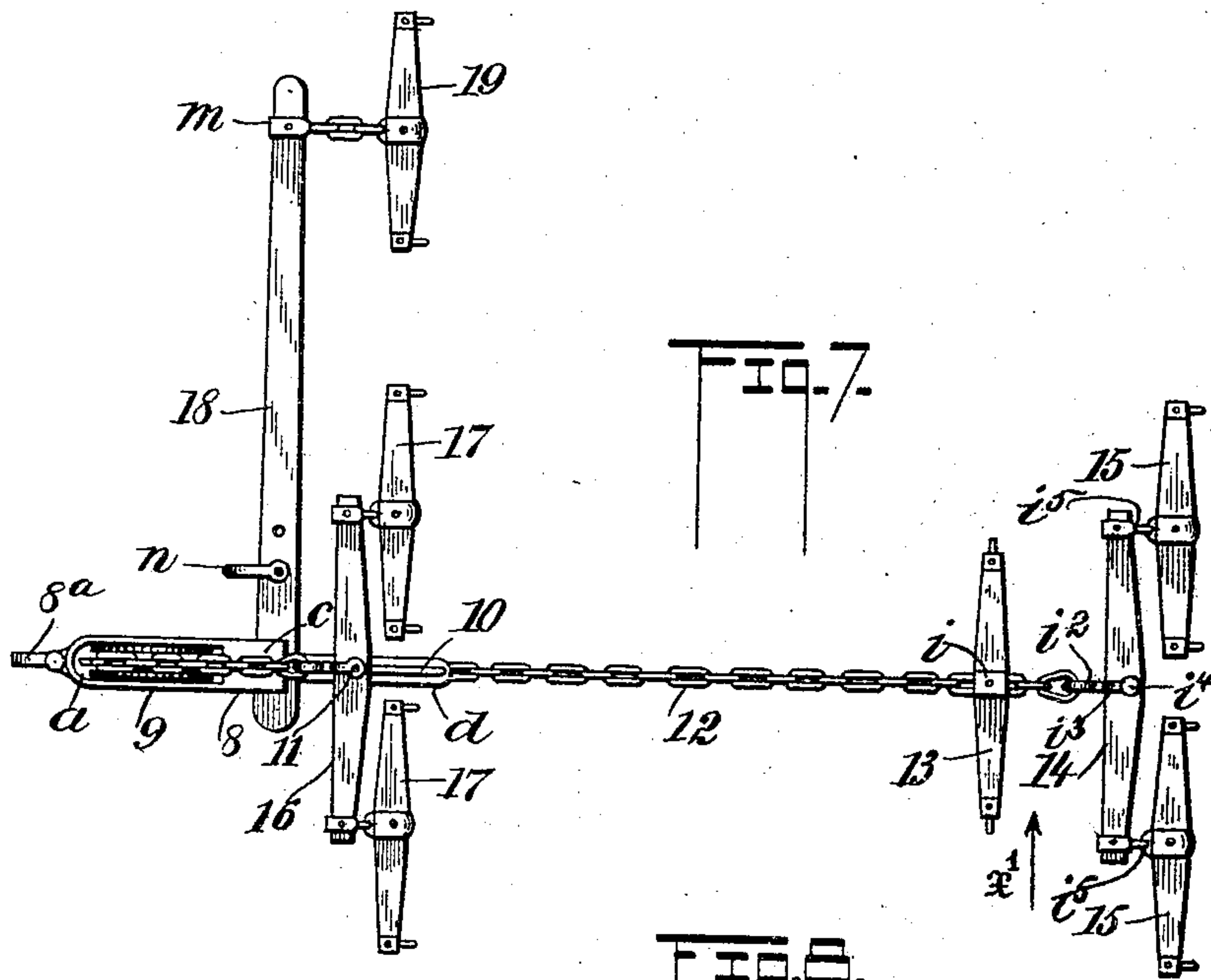
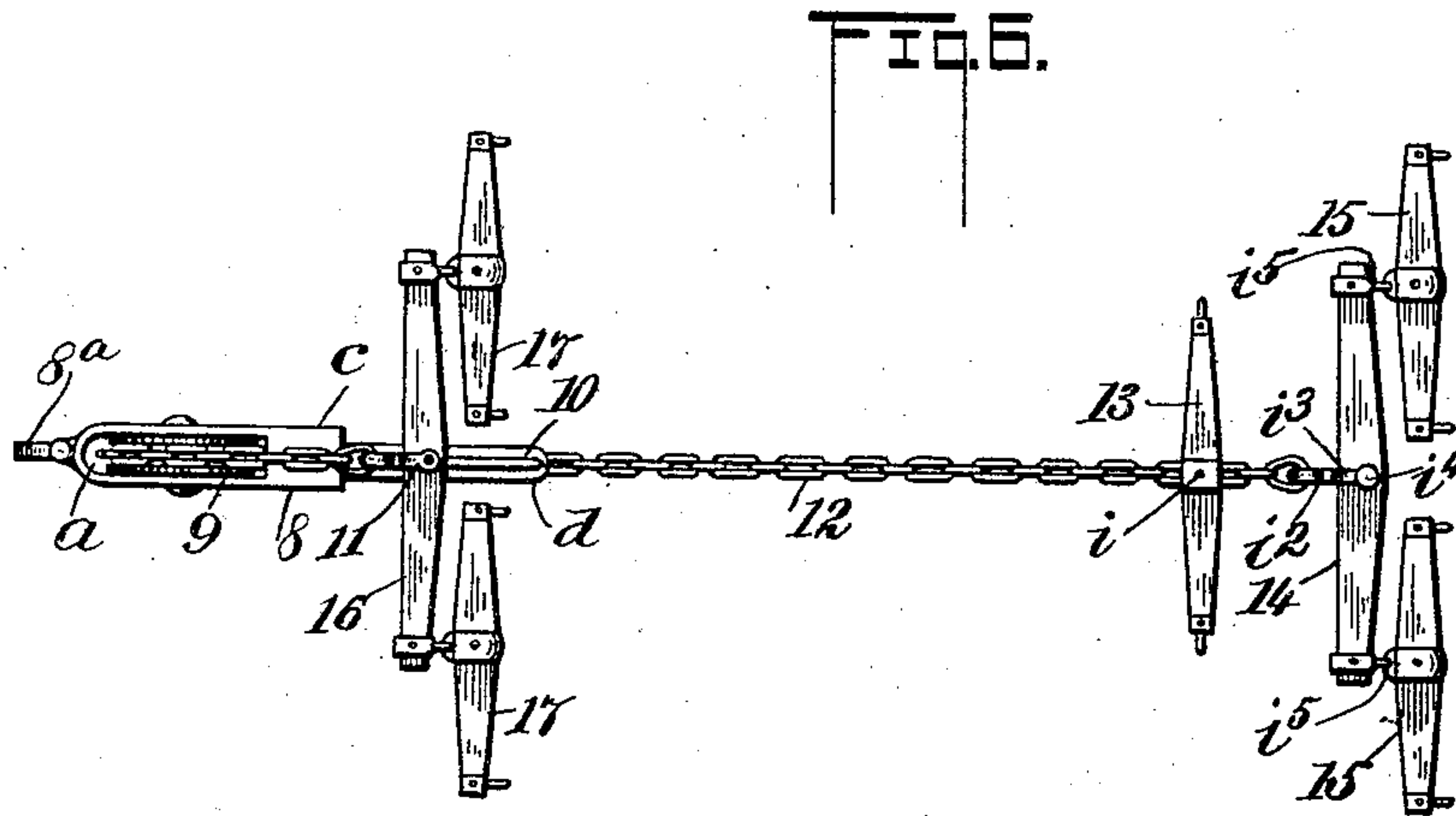
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UNITED STATES PATENT OFFICE.

EZRA J. D. MILLER, OF NEW ROCKFORD, NORTH DAKOTA.

DRAFT-EQUALIZER.

SPECIFICATION forming part of Letters Patent No. 766,054, dated July 26, 1904.

Application filed December 26, 1903. Serial No. 186,567. (No model.)

To all whom it may concern:

Be it known that I, EZRA J. D. MILLER, a citizen of the United States, and a resident of New Rockford, in the county of Eddy and State of North Dakota, have invented a new and Improved Draft-Equalizer, of which the following is a full, clear, and exact description.

This invention relates to means for equalizing the pulling strain on two or more pairs of draft-animals, and has for its object to provide novel details of construction for a draft-equalizer which are simple, practical, and inexpensive, the improvement being equally well adapted for use as a four-horse, five-horse, six-horse, or eight-horse draft-equalizer and in either application of the improvement effectively distributing the draft strain upon all the animals employed to pull a load.

The invention consists in the novel construction and combination of parts, as is hereinafter described, and defined in the appended claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of the improvement applied to equalize draft strain on eight animals. Fig. 2 is an enlarged fragmentary plan view of the details of the invention. Fig. 3 is a partly-sectional side view substantially on the line 3 3 in Fig. 2. Fig. 4 is an enlarged side view of details seen in the direction of the arrow α in Fig. 1. Fig. 5 is a transverse partly-sectional view substantially on the line 5 5 in Fig. 3. Fig. 6 is a plan view of the draft-equalizer adapted for use as a four-horse evener. Fig. 7 is a plan view of the improvements arranged to equalize the draft of five or six horses, and Fig. 8 is an enlarged side view of novel details seen in the direction of the arrow α' in Fig. 7.

In applying the invention to equalize draft strain on four horses, and that is also available for service when an increased number of draft-animals are employed, the primary features, that are clearly represented in Figs. 2, 3, and 5 of the drawings, comprise the following details:

A frame 8 is provided to support working parts in proper relative positions and consists of a metal structure elongated sufficiently for the reception of said parts and essentially rectangular in the body.

Through the block forming the body of the frame 8 a vertical slot a is formed that extends from a point near the forward end of the block rearward, said slot receiving the grooved sheave-wheel 9, pivoted in the block. Near the forward end of the vertical slot a a transverse slot b is formed in the material of the frame 8, providing two horizontal flanges c and d , that extend from the upper and lower sides of the vertically-slotted portion, and it will be seen that the lower flange d is considerably longer than the flange c . Upon the upper surface of the flange c a guide-bar 10 is secured by one end, preferably by means of a pin e , that projects down through aligned perforations in the guide-bar and the flanges c and d . The guide-bar is bent at a right angle at f , so as to produce a depending member g thereon, which extends down through a hole in the forward end portion of the flange d , and upon the end of said guide-bar below said flange a transverse ring-eye g' is formed.

A clevis 11, having an open box h on its lower side, at its forward end is mounted to slide on the horizontal portion of the guide-bar 10 by the loose engagement of the box h therewith. Upon the closed rear end of the clevis 11 a ring-eye h' is formed, and to this ring-eye one end of a draft connection 12 is secured, that is shown in the form of a chain; but a wire rope or other flexible connection may be employed. The flexible connection 12 is extended from the clevis 11 and passes down over the sheave 9 at the rear portion of its periphery and thence trends forward below the frame 8, passing loosely through the ring-eye g' .

As shown clearly in Figs. 7 and 8, the front end of the draft connection 12 is attached by a hook i^2 or equivalent means to the clevis i^3 , pivoted by the bolt i^4 upon the doubletree 14 at its center, said doubletree having at its ends similar loose connections i^5 with the swingletrees 15. Upon the draft connection

12 near the doubletree 14 the neck-yoke or spreader-bar 13 is loosely mounted by means of a clip-band *i*, that embraces the neck-yoke or spreader-bar at its center and carries a depending ring-eye *i'*, through which the draft connection 12 is loosely passed before its end is connected to the clevis *i''*.

In the clevis 11 a doubletree 16 is pivoted, and upon the ends of the doubletree a pair of swingletrees 17 are loosely secured. Upon the rear end of the frame 8 a clevis 8^a is loosely secured, which may be connected with the object to be drawn, which may be a gang-plow, harrow, harvester, or the like.

When the device is employed for the use of four horses, two of the draft-animals are hitched to the swingletrees 17 and are connected by breast-straps with the spreader-bar or neck-yoke 13, as usual, and the other pair of the draft-animals is secured to the forward swingletrees 15.

It will be seen that the manner of connecting the forward pair of draft-animals to one end of the chain 12 and the other pair to the rear end of the same requires the two pair of animals to pull alike. It is found that the driver can control the rear horses readily so that they will pull their share of the load, and in case the front pair shirk duty this will permit the draft-chain 12 to slacken. The slackness will be taken up by the rear horses, and they will crowd upon the front ones and cause them to pull equally with the rear horses or plainly show their delinquency, so that the driver will notice it and force them to perform equal duty.

It is sometimes found advantageous to employ a five or six horse team to draw a gang-plow or a large harrow. To utilize the improvement in such a case, as is shown in Figs. 2, 3, and 7, one end portion of an elongated equalizing-bar 18 is inserted between the flanges *c* and *d* and secured therein by the headed pin *e*, which is also utilized to connect the guide-bar 10 with the frame 8, as before explained. The equalizing-bar 18 at its opposite end is engaged by a clip-band *m* or the like, that is adapted for connection with a similar band on a swingletree 19, if five horses are to be employed. The equalizer-bar 18 is provided with a clevis *n*, that is clipped thereon near the frame 8, and the clevis is designed to afford means for loosely connecting the bar 18 with an object to be drawn by the five animals. It will be seen that there is such leverage afforded by connecting the bar 18 near the frame 8 that the pull of a single animal hitched to the swingletree 19 will counteract the pull of four draft-animals connected with the swingletrees 15 and 17, and if the five animals are employed for pulling a gang-plow the single horse will travel on the unplowed ground, and thus will

be enabled to pull with less fatigue than the others.

If it is desired to employ six draft-animals for plowing heavy soil or like work, the same arrangement is used as is represented in Fig. 7; but instead of connecting a swingletree to the end of the equalizing-bar that is farthest from the connection with the load a doubletree of ordinary construction is substituted therefor, and a pair of swingletrees that are connected with the ends of the doubletree will enable the attachment of a pair of horses to the outer end of the equalizing-bar for service in place of a single one. It is also feasible to hitch two draft-animals to one swingletree 19 by connecting them tandem to one pair of traces that at their rear ends are connected to the swingletree.

In Fig. 1 is shown the application of the improved equalizer device for the employment of eight draft-animals. In this arrangement a short tongue 20 is provided, that in use extends from a vehicle of any kind that is to be drawn, and on the tongue near its rear end a draft-bar 21 is pivotally secured transversely, so as to extend equally at each side of the tongue, as shown at *o*. Upon the ends of the draft-bar 21 two frames 8 are respectively mounted and secured by sliding the ends of the bar between the flanges *c* *d* of the frames and bolting them thereto. The frames are each furnished with a sheave-wheel 9, and, as before described, a draft-chain 12 is provided for the connection of a clevis 11 with a doubletree 16, provided with two swingletrees 17. The duplicate flexible connections or draft-chains 12 extend over and beneath the sheaves 9 and thence forwardly through the ring-eyes *g'* and have clevis connections *i''* at their forward ends with the doubletrees 14, each provided with a pair of swingletrees 15, as indicated in Figs. 1 and 4. Upon the forward end of the tongue 20 a spreader-bar 22 is mounted and loosely secured at its longitudinal center, as indicated at *k* in Fig. 4, and upon each end of the spreader-bar 22 a neck-yoke bar 23 is shackled, as appears in Figs. 1 and 4, and, as before explained with regard to the neck-yokes 13, the draft connections 12 pass loosely through ring-eyes that depend from the neck-yokes at their centers.

In service four horses are hitched to the four swingletrees 15 17 at each side of the tongue 20, and the four rear horses are respectively connected by breast-straps to the ends of the neck-yokes 23. Four horses are also hitched to the four swingletrees 15 as leaders. It will be seen that by the described construction and arrangement of details for connecting eight horses with a wagon or the like the operation will be similar to that previously described for the four-horse equalizer device, and any slackness in the draft-chains 12 will be taken up by

the rear horses, so that the front ones will be pulled against the spreader-bar 22, and this will show that they are not drawing their share of the load.

5 If preferred, the clevises 8^a may be coupled directly upon a vehicle and the pole and cross-bar thereon be dispensed with.

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

10 1. A draft-equalizer comprising a vertically and longitudinally slotted frame, a sheave-wheel pivoted in the slot, a clevis on the rear end of the frame, two spaced horizontal flanges on the forward portion of the frame, 15 a bent guide-bar extended forwardly from the upper flange and then down, passing through the front portion of the lower flange and having a ring on its lower end, a clevis held to slide on the horizontal portion of the guide-bar, a doubletree pivoted in said clevis, a 20 swingletree on each end of the doubletree, a flexible connection secured to the clevis that carries the doubletree, said flexible connection passing rearward and downward over the 25 sheave-wheel, through the slot in the frame, and thence forward through the ring on the lower end of the guide-bar, a doubletree

shackled upon the forward end of the flexible connection, and a swingletree loosely secured on each end of said doubletree. 30

2. A draft-equalizer for five horses, comprising a frame, a sheave-wheel held to rotate near the rear end of the frame, an equalizer-bar held by one end on the frame and projecting laterally therefrom, means for con- 35 necting said equalizer with a load to be drawn, at a point near the frame, a swingletree or the like held on the extended end of the equalizer-bar, a guide-bar mounted on the frame forward of the sheave-wheel, a doubletree 40 held to slide on the guide-bar, two swingletrees thereon, a flexible connection extended from said doubletree rearward and downward over the sheave-wheel and thence forward below the frame, a doubletree shackled upon the for- 45 ward end of the flexible connection, and two swingletrees on the ends of said doubletree.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EZRA J. D. MILLER.

Witnesses:

JAMES E. HYDE,
D. L. HYDE.