

No. 860,403.

PATENTED JULY 16, 1907.

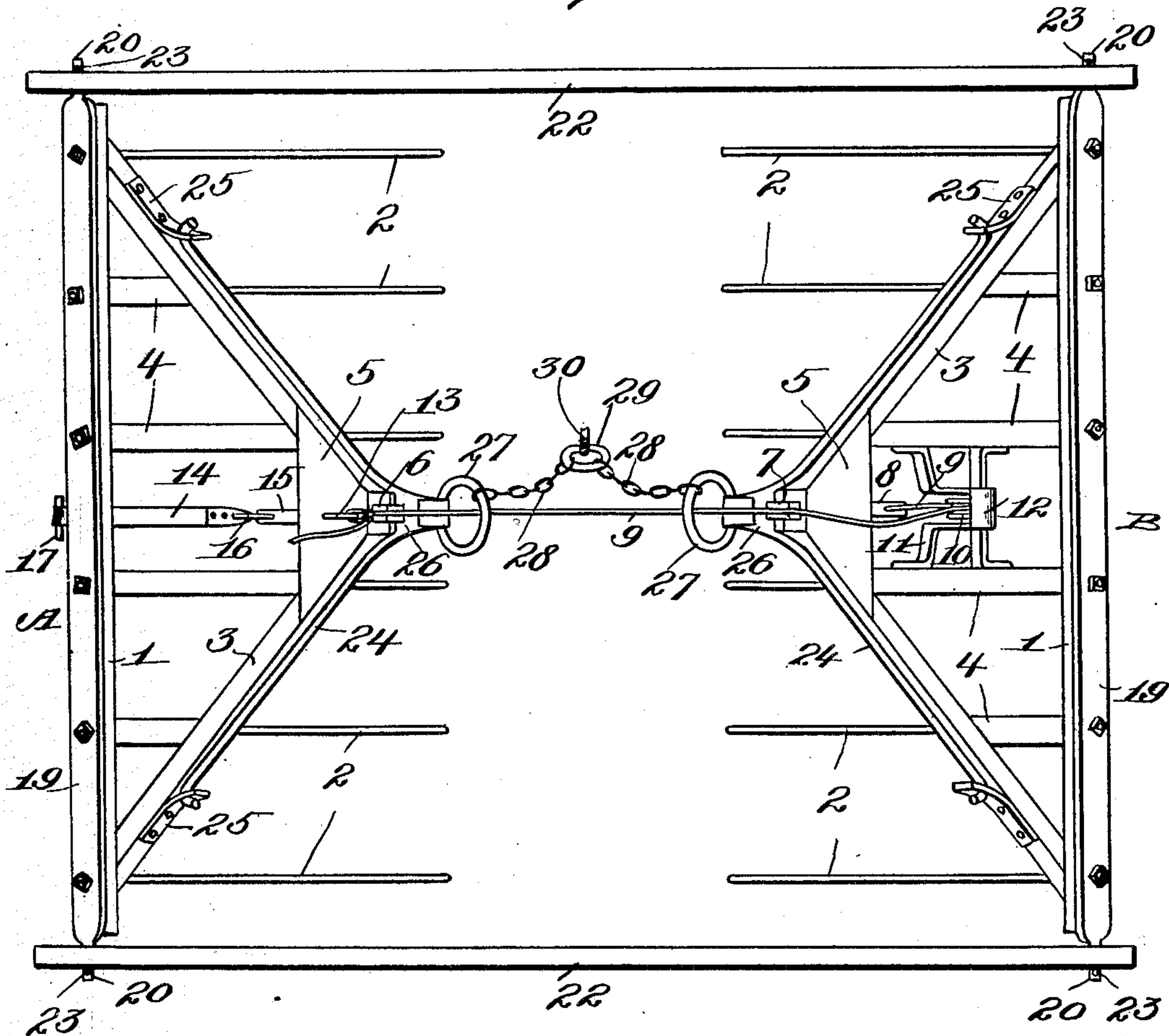
H. H. MILLS & S. WADE.

FORK OR GRAPPLE.

APPLICATION FILED MAR. 21, 1907.

2 SHEETS—SHEET 1.

Fig. 1.



Witnesses:

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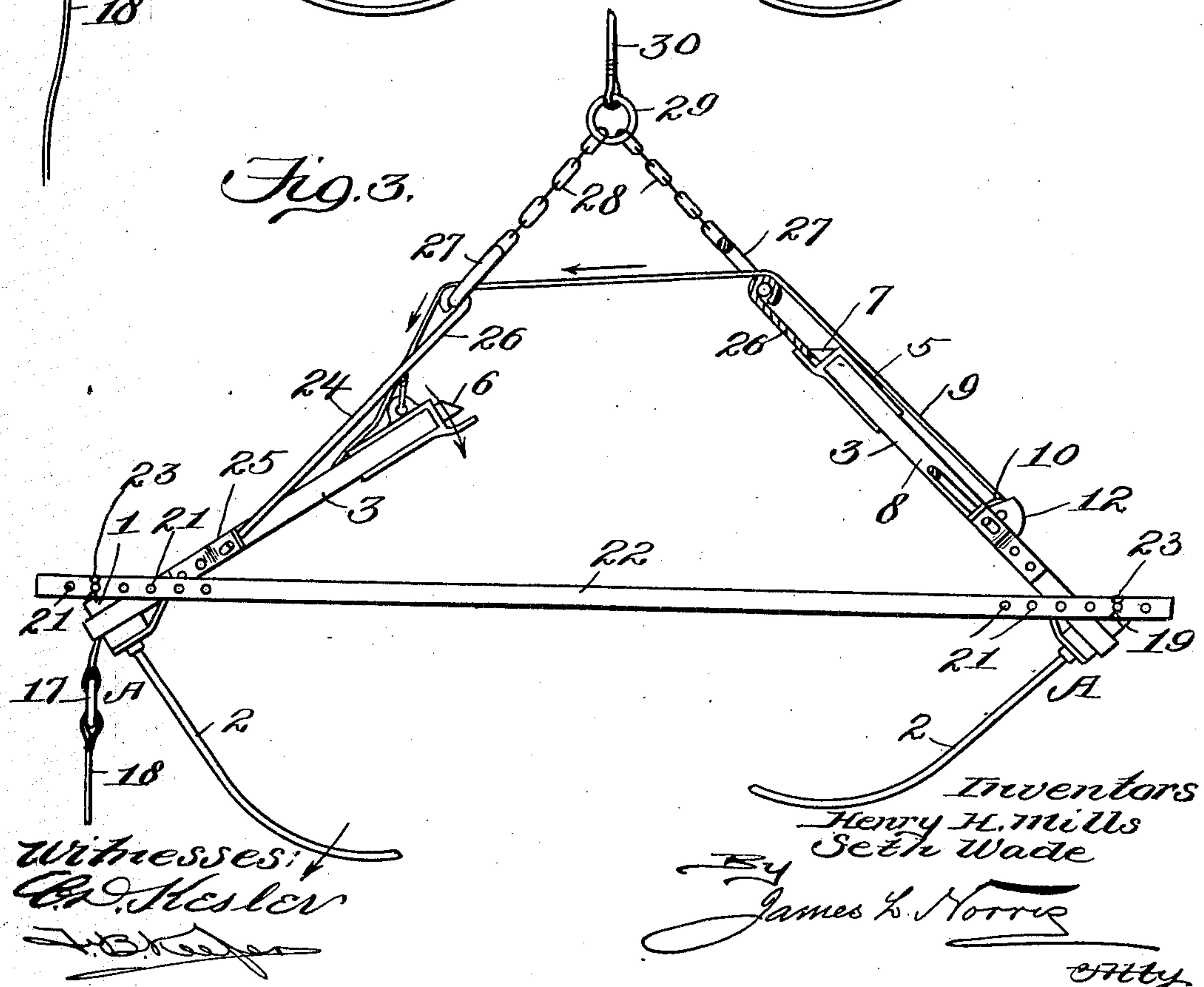
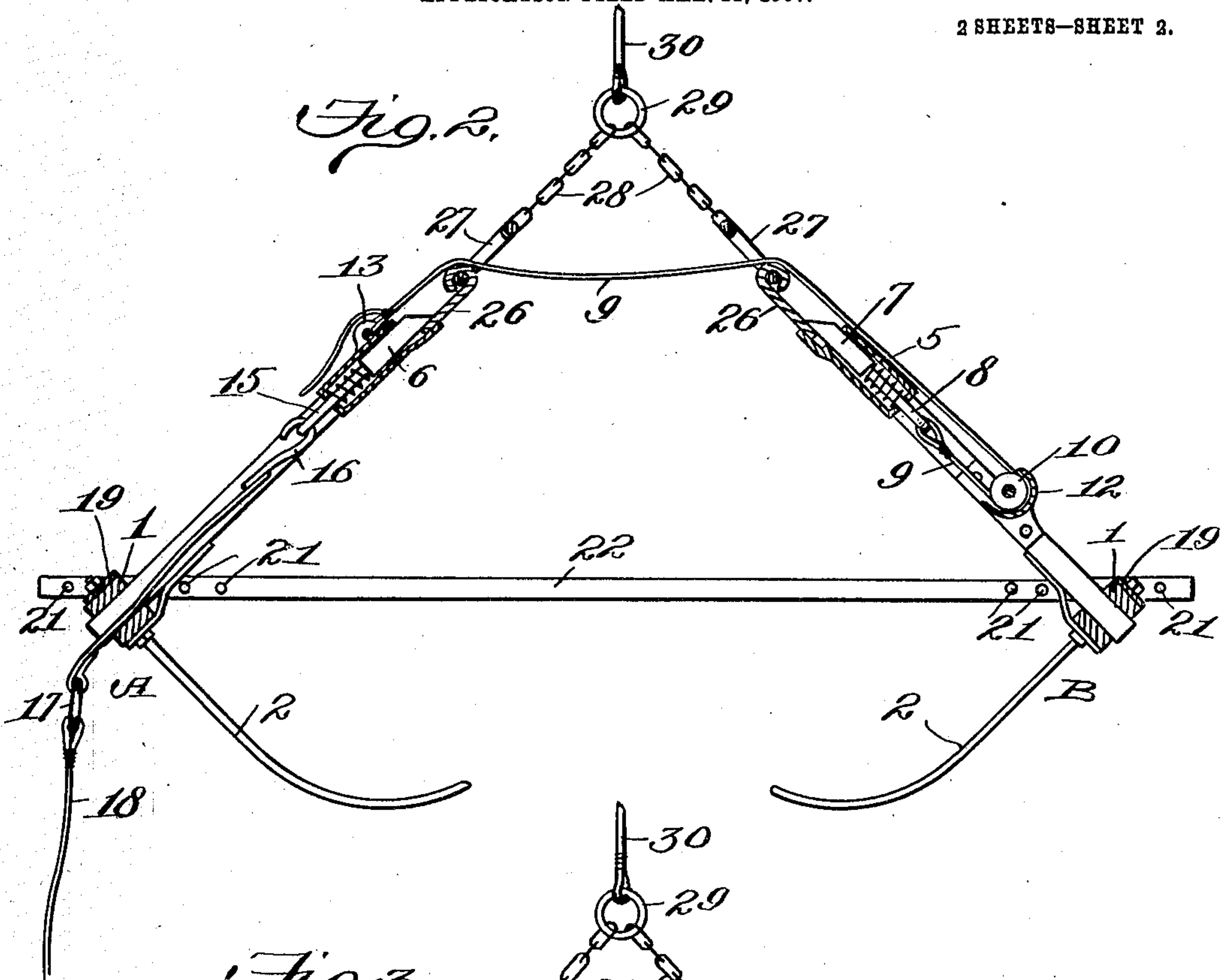
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

HENRY H. MILLS AND SETH WADE, OF NEWMAN, CALIFORNIA.

FORK OR GRAPPLE.

No. 860,403.

Specification of Letters Patent.

Patented July 16, 1907.

Application filed March 21, 1907. Serial No. 363,738.

To all whom it may concern:

Be it known that we, HENRY H. MILLS and SETH WADE, citizens of the United States, residing at Newman, in the county of Stanislaus and State of California, have invented new and useful Improvements in Forks or Grapples, of which the following is a specification.

This invention relates to forks or grapples of that class comprising two coöperating fork members arranged for use with a hoisting derrick or other means to elevate hay, straw, grain and other material.

The fork members in the present organization are movably and adjustably held by two rigid frame bars or supports which maintain said members at a uniform distance apart, the frames of the said members being provided with elevating yokes movably attached thereto and also with catch devices or locks normally engaging said yokes and released by relative pull devices initially under manual control. When the one yoke member is released and depresses under the load weight therein, the other fork member is similarly released automatically by the downward movement of the first fork member, and the material carried by the two fork members is practically simultaneously liberated.

The primary object of the invention is to provide a fork or grapple of comparatively simple construction having a positive operation in elevating hay, straw or other material in larger quantities than is possible with the ordinary form of fork or grapple, and wherein the several parts are readily controllable as to release and liberation of the load.

In the drawing, Figure 1 is a top plan view of a fork or grapple embodying the features of the invention. Fig. 2 is a longitudinal vertical section of the same showing the parts in the position they maintain during engagement with and elevation of a load. Fig. 3 is a sectional end elevation showing one of the fork members released and in a position to release the remaining fork member.

Similar characters of reference are employed to indicate corresponding parts in the views.

A and B designate fork members, each comprising head bars 1, from which a plurality of tines 2 project downwardly and inwardly in curved planes. Extending from the head bars 1 are triangular frames 3, having a plurality of longitudinal connecting bars 4 between the same and the said head bars, the triangular frames 3 at their apices being provided with head blocks or solid triangular members 5 composed of metal, and in which sliding bolts 6 and 7 are centrally mounted. To the outer extremity of the shank 8 of the bolt 7 a pull-cord 9 is secured and passes over a pulley 10 held by bearing devices 11 centrally between two of the longitudinal bars 4 adjacent to the said bolt 7, the pulley 10 being partially covered with a sheathing 12 to insure engagement of the cord 9 therewith. From the pulley 10 the cord 9 passes over to the opposite frame 3 and is secured to an eye or analogous

device 13 on the block 5 of the said latter frame. The bolt or catch 6 has a pulling strap 14 connected to the shank 15 thereof by a hook 16, the said strap being freely movable between the adjacent head bars 1, and having a terminal ring 17 in which the upper end of a pull cord 18 is attached and extends downwardly within reaching distance of an operator.

Each frame 3 has a metallic fulcrum bar 19 securely fastened on the upper surface of the upper head bar 1 and the ends projected beyond the ends of the said head bar and reduced, as at 20, to adjustably engage a plurality of openings 21 in a pair of rigid frame bars 22, the reduced ends 20 of the fulcrum bars of both fork members being removable from the frame bar and held in connection with the latter by suitable cotter pins or analogous devices inserted therethrough adjacent to the outer edges of the frame bars, as at 23. The fork members are free to move in the arcs of circles between the frame bars 22, and both fork members are connected to means conjointly operating for elevating purposes. This means consists of a triangular yoke 24 having the terminals of the legs deflected and movably mounted in clips 25 secured on the triangular frame 3 of each fork member, the fork member being movable upwardly into and downwardly from its yoke. At the apex of each yoke a bearing surface 26 is provided with which the bolt or catch contacts to hold the fork member to the yoke and cause said member to retain a positive position during elevation of the entire grapple and prior to the release of the fork members. The apex of each yoke also has a ring 27 attached thereto and extending from the two rings of both yokes chains or analogous flexible connecting devices 28 project inwardly and are attached to an intermediate ring 29 to which the elevating rope, cable or other device 30 is secured. The rope, cable or other device 30 will preferably engage suitable movable elements, such as sheaves of a derrick, though it is not essential that this particular application of the grapple be adopted, as it may be disposed to operate within a barn structure or other inclosure either by means of a fixed sheath or coöperate with a traveling carriage having a sheath, all of which are well known structures in the art to which this invention pertains.

In engaging or elevating a load of hay, straw, or other material the grapple is lowered and the fork members are released and permitted to swing outwardly, and are then drawn inwardly and located adjacent to the yokes 24 by means of the bolts or catches 6 and 7. The load of material confined between the fork members is then elevated through the medium of the hoisting rope or cable 30 by suitable power, and when the grapple reaches the desired height or position for depositing its load, the operator pulls downwardly on the cord 18 and first releases the bolt 6 and the adjacent fork member. The weight of the load on the fork member tends to force

the latter downwardly in the direction of the arrows shown by Fig. 3, and this movement of the fork member at the left, for instance, sets up a tension on the cord 9, which releases or pulls on the bolt or latch 7, and the fork member at the right then likewise depresses and the load is liberated from the fork member. The cord 9 has sufficient slack to render the operation just explained practicable, and when the bolt 6 is released the fork member affected thereby first descends or depresses slightly before the release of the bolt 7 takes place. The purpose of this particular operation is to insure a positive releasing operation of the bolt or catch 7 by the load weight on the fork or member carrying the bolt or catch 6, and though there is a slight interval of time between the manual release of the bolt or catch 6 and the automatic release of the bolt or catch 7, the liberation of the load from the two fork members is practically simultaneous.

To vary the capacity of the grapple the fork members may be shifted inwardly and outwardly on the frame bars 22. These frame bars add materially to the strength and durability of the grapple, as well as a convenient means for movably supporting the fork members, and, furthermore, said frame bars insure accurate operation of the fork members in receiving and liberating the load.

Changes in the proportions, dimensions and minor details may be resorted to without departing from the spirit of the invention.

Having thus described the invention, what is claimed, is:

1. In a grapple of the class specified, the combination of rigid frame bars disposed in parallel relation at opposite ends of the grapple, fork members provided with fulcrums adjustable between the said frame bars, elevating devices movably engaging the fork members, and locking means carried by the fork members to engage the elevating devices.

2. In a grapple of the class specified, the combination of rigid end frame bars, fork members provided with fulcrums

adjustable between the said frame bars, and elevating devices from which the fork members may be released and permitted to be depressed between the frame bars.

3. In a grapple of the class specified, opposed fork members having inwardly projecting tines held positively spaced from each other, elevating yokes pivotally connected to the members, elevating devices connected to the yokes, and locking means carried by the fork members to engage the yokes.

4. In a grapple of the class specified, opposed fork members having inwardly projecting tines held positively spaced from each other, elevating yokes pivotally connected to the members, elevating devices connected to the yokes, and locking means carried by the fork members to engage the yokes, one of the locking means being automatically released by the depression of the fork member carrying the remaining locking means.

5. In a grapple of the class specified, the combination of opposed fork members movably held in spaced relation and each carrying locking means at its inner portion, elevating yokes movably attached to the fork members and adapted to be engaged by the locking means of the latter, manual operative means for releasing the locking means of one fork member, and a pulley connection between the fork member having the manually operative locking means and the locking means of the remaining fork member.

6. In a grapple of the class specified, the combination of fork members movably held in opposed spaced relation, elevating means movably attached to the fork members, and locking devices carried by the fork members and adapted to engage the elevating means.

7. In a grapple of the class specified, the combination of opposed fork members held in positive spaced relation and movable in the arcs of circles, elevating means movably connected to the fork members, locking devices carried by the fork members to engage the elevating means, and a pulling connection between the locking device of one fork member and the remaining fork member, the locking device of the said remaining fork member being manually operative.

In testimony whereof we have hereunto set our hands in presence of two subscribing witnesses.

HENRY H. MILLS.
SETH WADE.

Witnesses:

G. A. WHITBY,
W. D. MOOREHEAD.