No. 749,907. PATENTED JAN. 19, 1904.

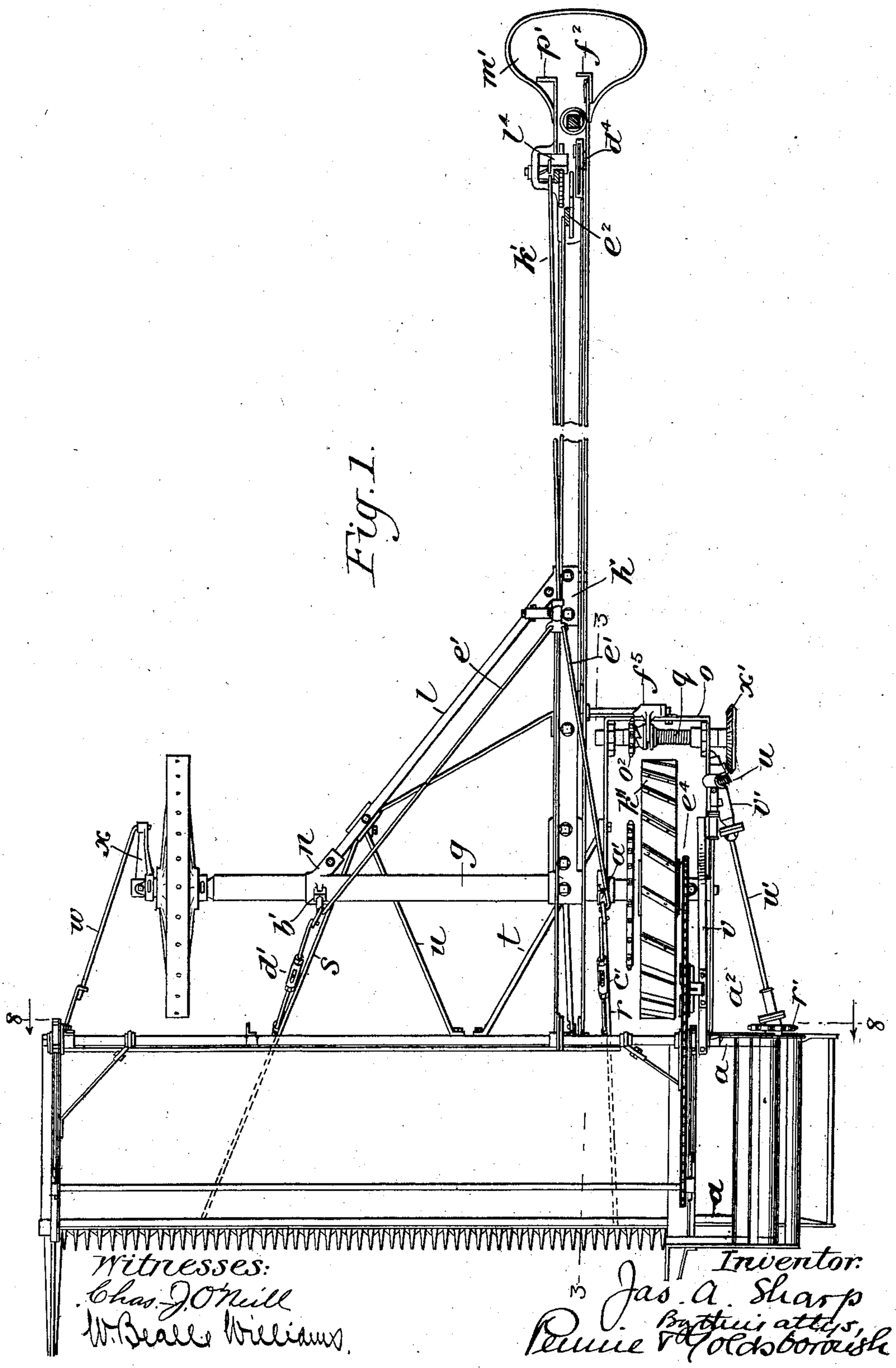
J. A. SHARP.

GRAIN HEADER.

APPLICATION FILED MAR. 2, 1903.

NO MODEL. 7 SHEETS—SHEET 1.

Fig. 1.



Witnesses:
Chas. J. O'Neill
W. Beall Williams.

Inventor:
Jas. A. Sharp
By their attys,
Bennie & Goldsborough

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NO MODEL. 7 SHEETS—SHEET 2.

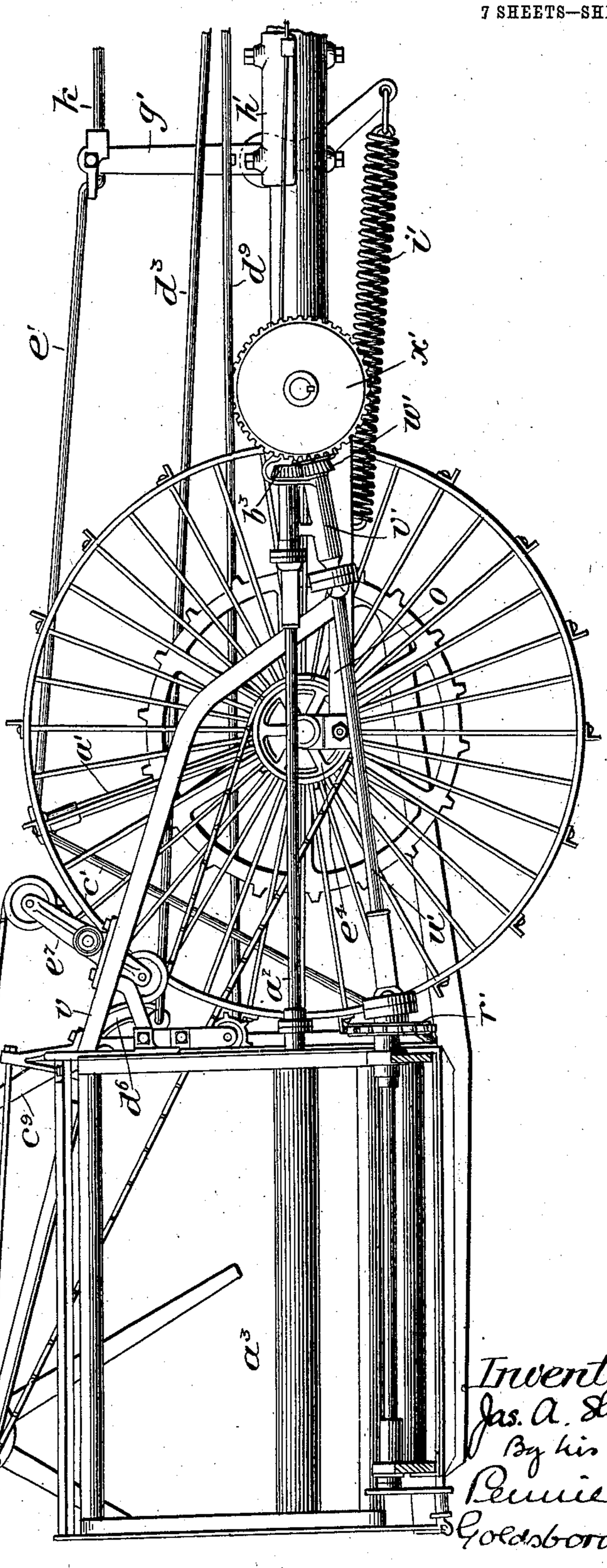

Fig. 2.

Witnesses:
Chas. J. O'Neill
W. Brady Williams

Inventor:
Jas. A. Sharp
By his attys.
Dennis and
Goldsborough

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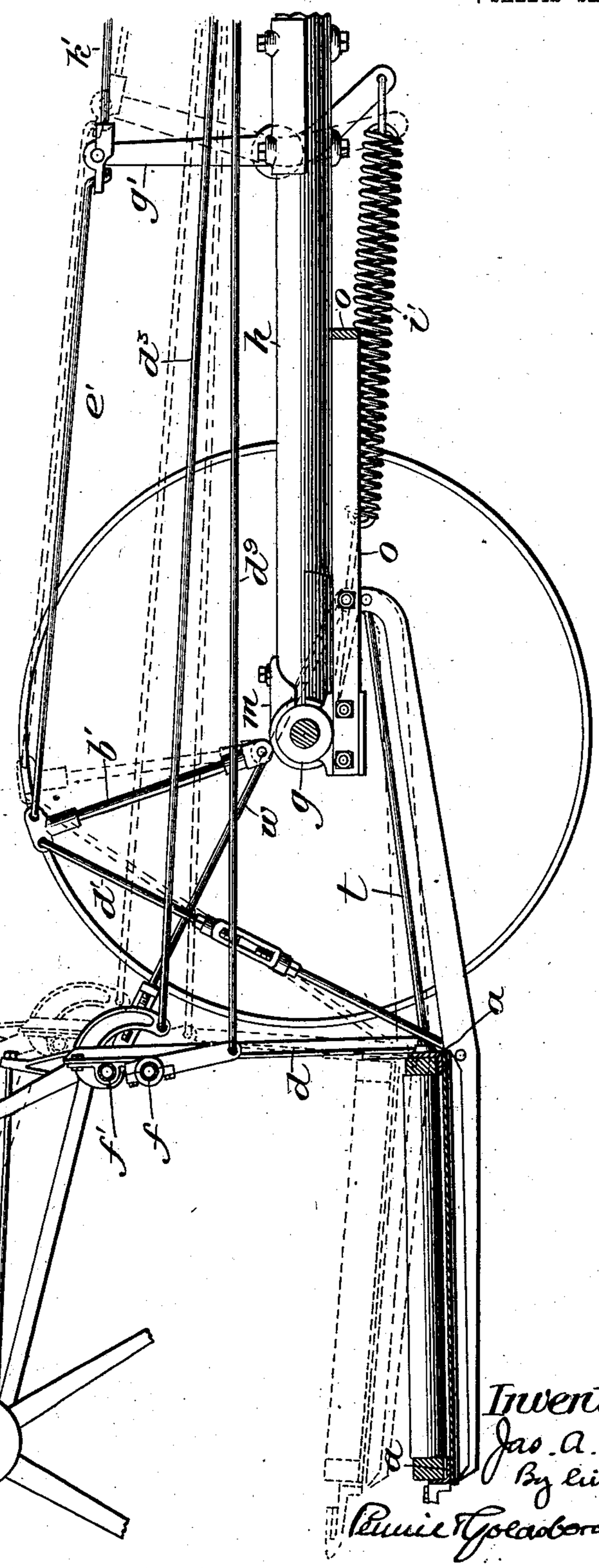
NO MODEL. 7 SHEETS—SHEET 3.

Fig. 3.



Witnesses:
Chas. J. O'Neill
W. Beall Williams

Inventor:
Jas. A. Sharp.
By his attys
Pennie & Goldsborough

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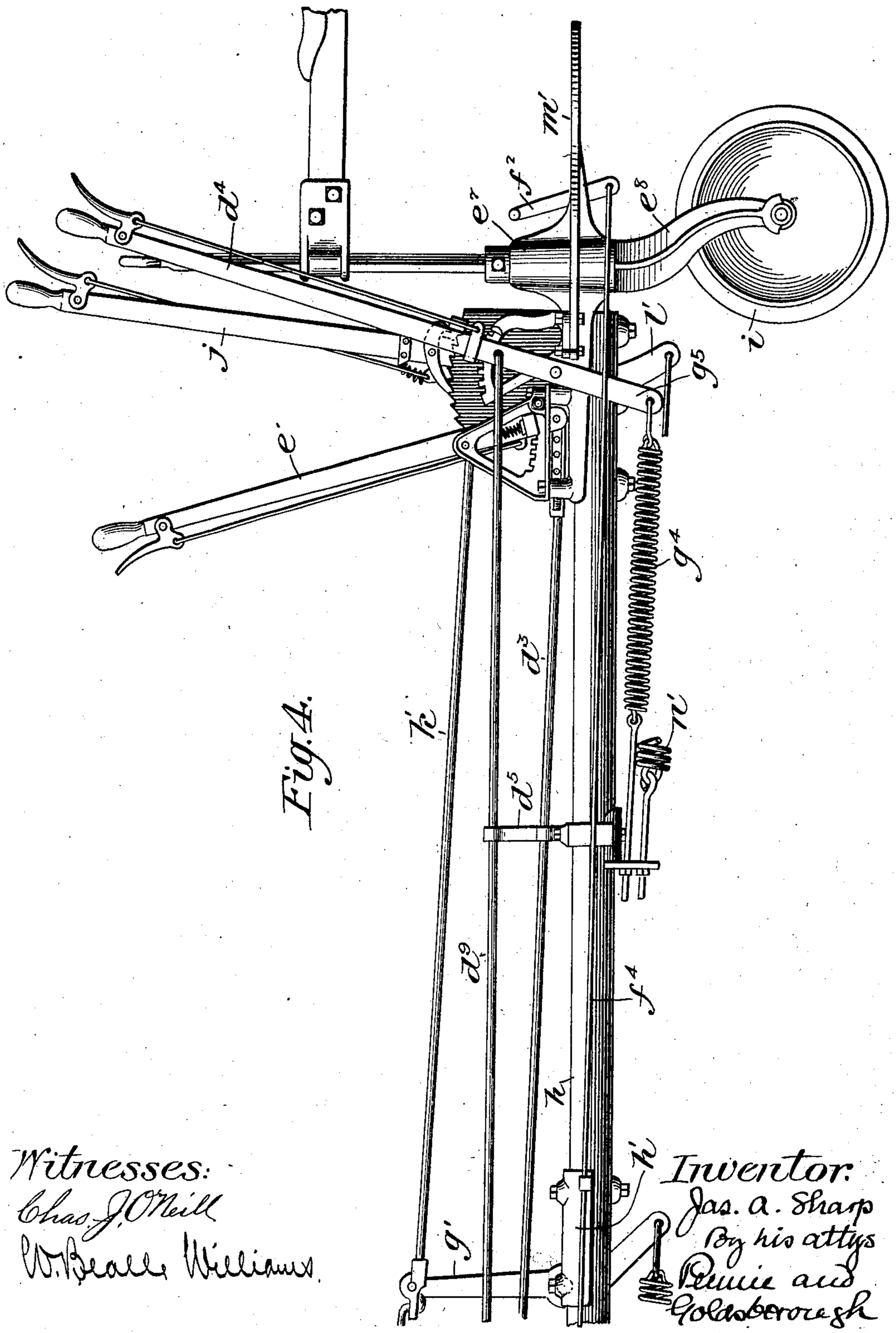
NO MODEL. 7 SHEETS—SHEET 4.

Fig. 4.



Witnesses:
Chas. J. O'Neill
W. Beale Williams.

Inventor:
Jas. A. Sharp
By his attys
Bennie and
Goldsborough

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NO MODEL. 7 SHEETS—SHEET 5.

Fig. 6.

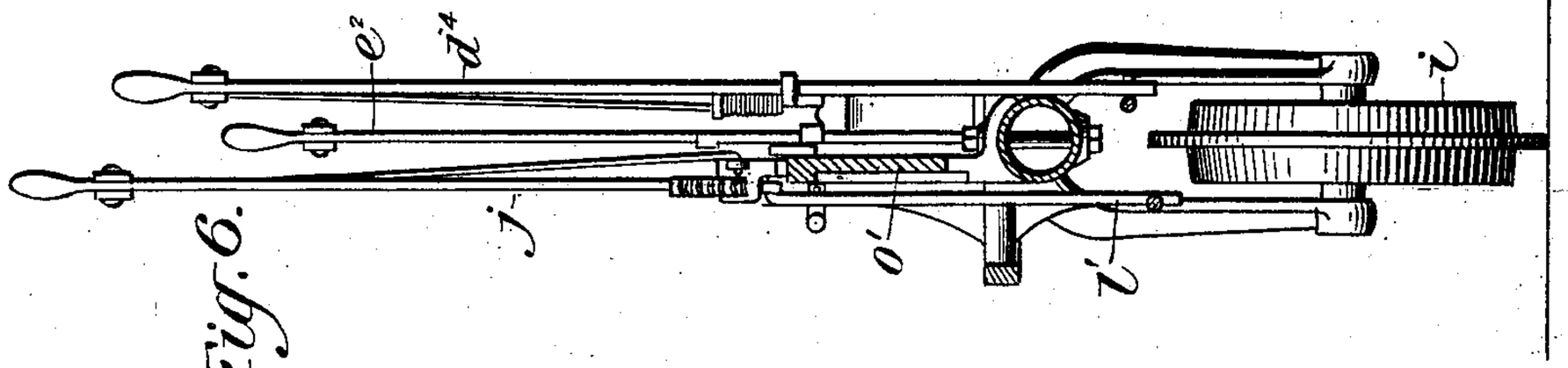
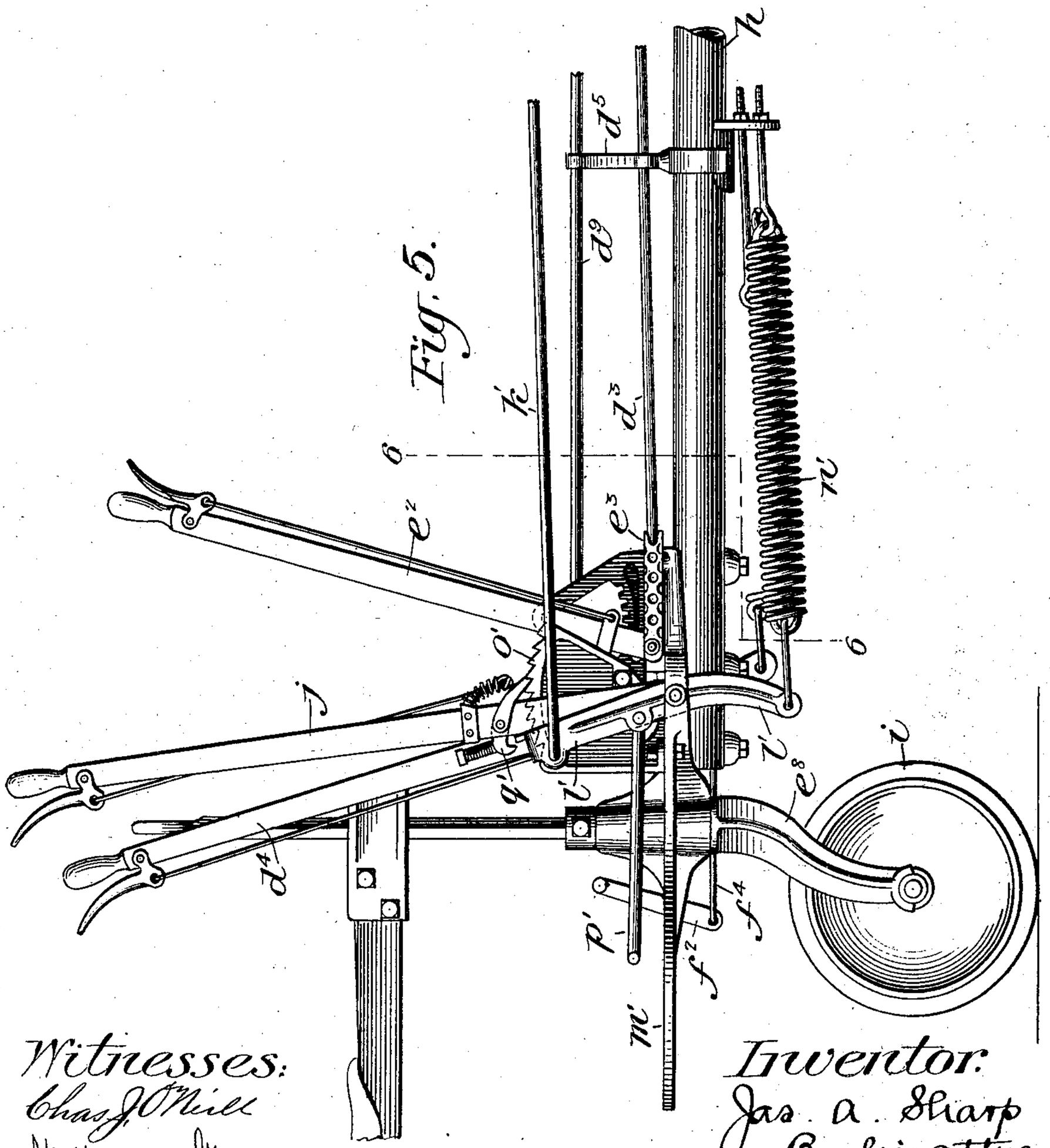


Fig. 5.



Witnesses:
Chas. J. O'Neill
W. Wallace Williams.

Inventor:
Jas. A. Sharp
By his attys,
Dennie & Goldsborough

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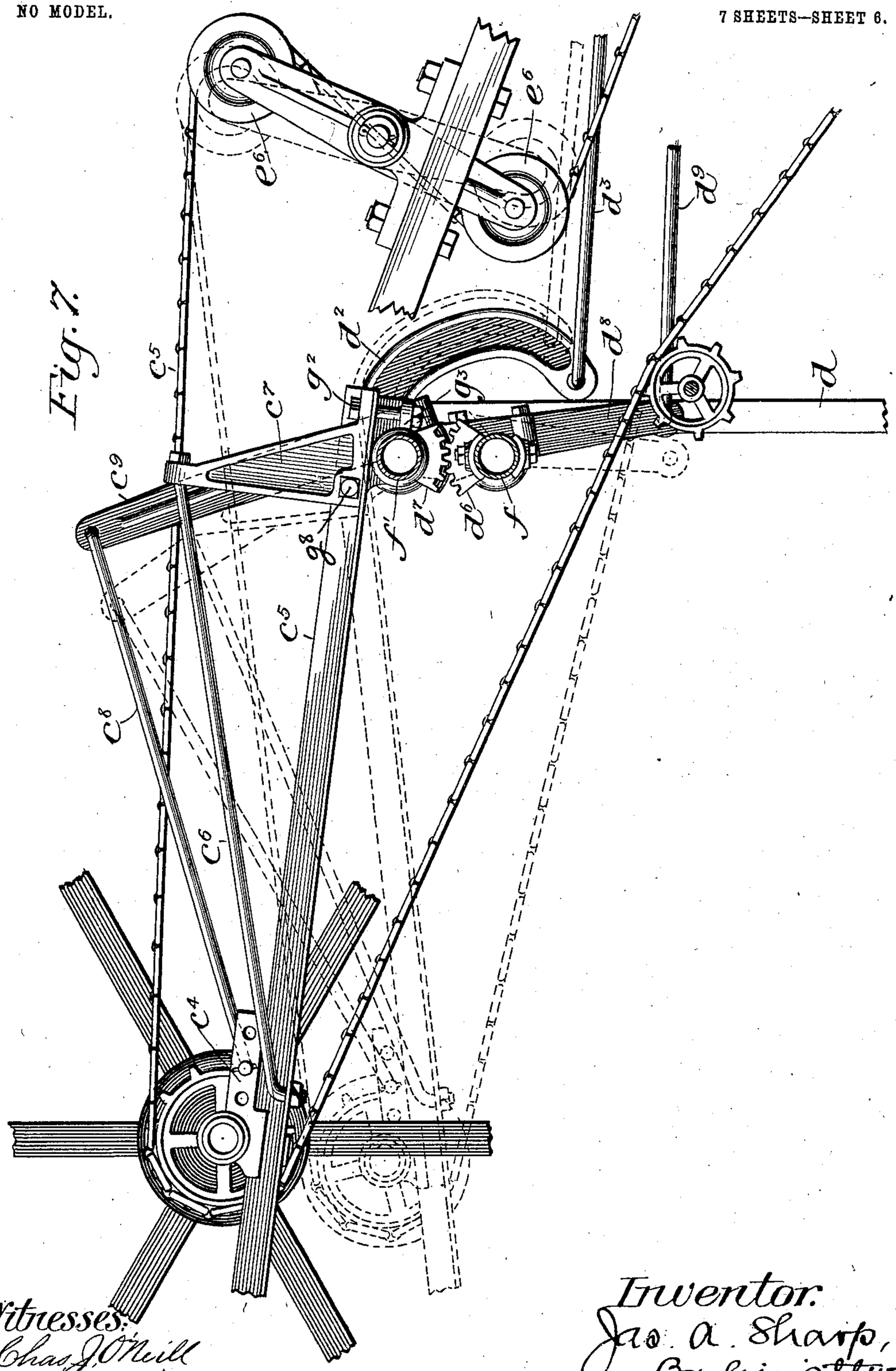
APPLICATION FILED MAR. 2, 1903.

NO MODEL. 7 SHEETS—SHEET 6.

Fig. 7.



Witnesses:
Chas. J. O'Neill
W. Beale Williams.

Inventor:
Jas. A. Sharp,
By his attys.
Prince & Goldsborough

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GRAIN HEADER.

APPLICATION FILED MAR. 2, 1903.

NO MODEL. 7 SHEETS—SHEET 7.

Fig. 8.

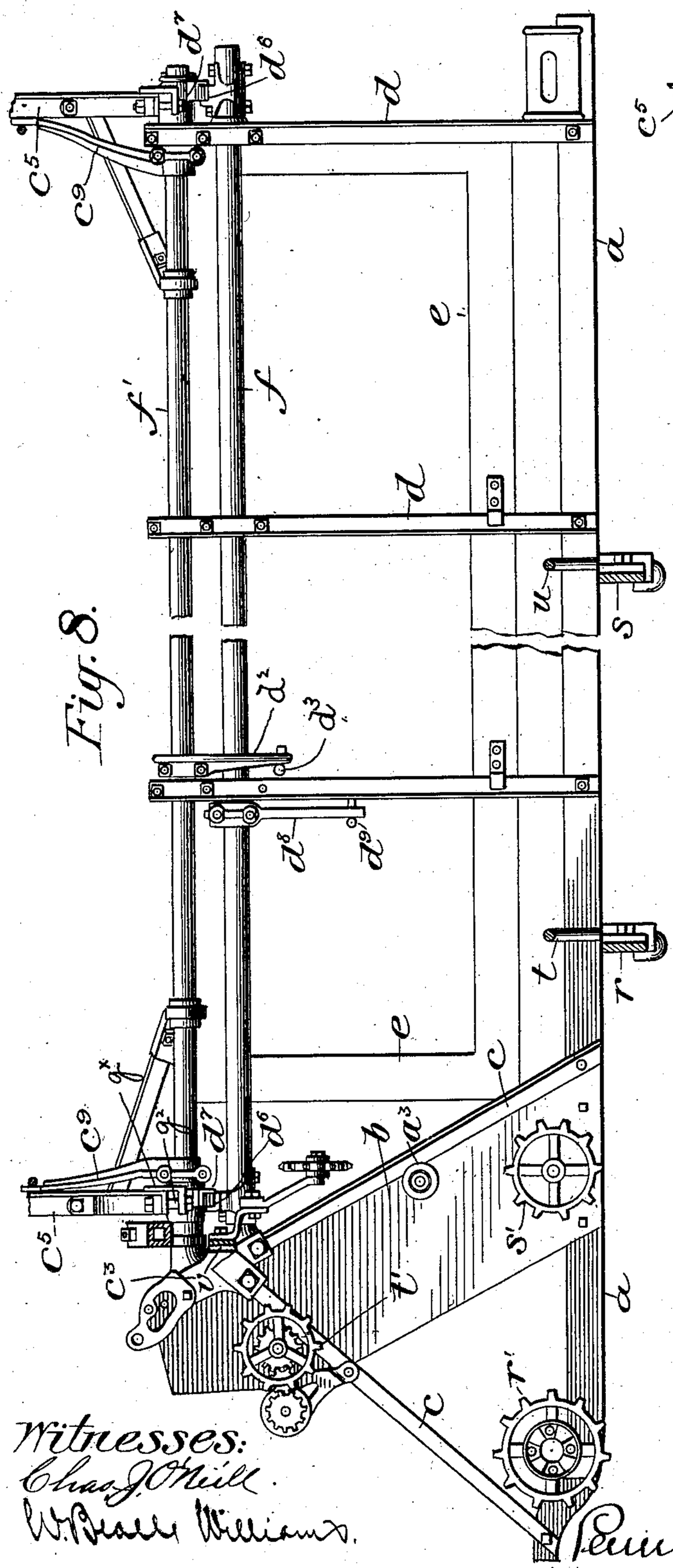
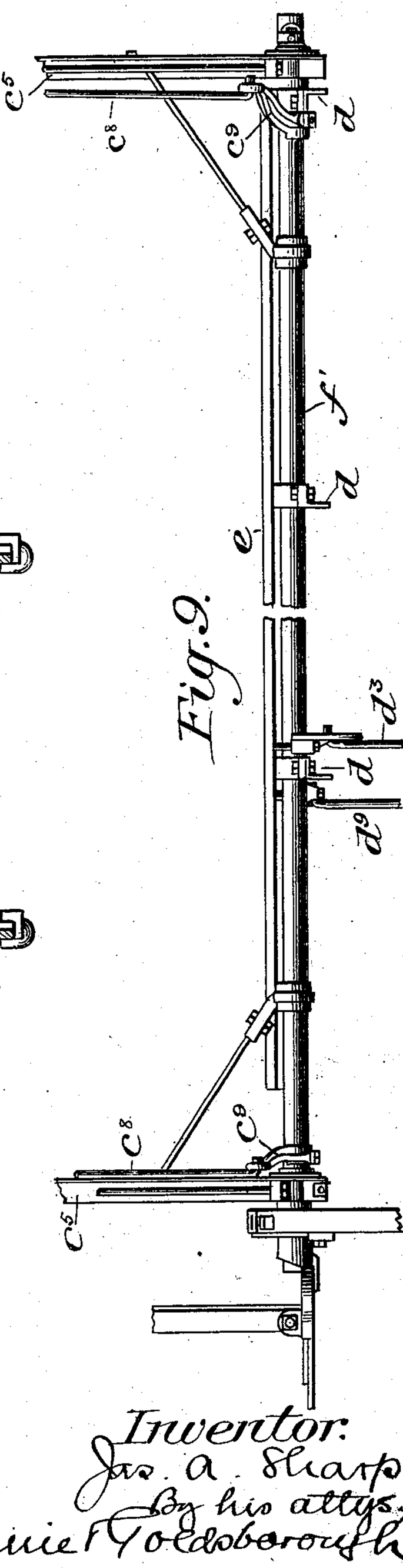


Fig. 9.



Witnesses:
Chas. J. O'Neill.
W. Bailey Williams.

Inventor:
Jas. A. Sharp
By his attys.
Prince & Goldsborough

No. 749,907. Patented January 19, 1904.

UNITED STATES PATENT OFFICE.

JAMES A. SHARP, OF CHICAGO, ILLINOIS, ASSIGNOR TO INTERNATIONAL HARVESTER COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF NEW JERSEY.

GRAIN-HEADER.

SPECIFICATION forming part of Letters Patent No. 749,907, dated January 19, 1904.

Application filed March 2, 1903. Serial No. 145,702. (No model.)

To all whom it may concern:

Be it known that I, JAMES A. SHARP, a citizen of the United States, residing at Chicago, county of Cook, State of Illinois, have invented certain new and useful Improvements in Grain-Headers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to that type of machine which sever the heads of the grain only, leaving the stalks standing, and known as "headers." These machines are carried by a truck comprising supporting-wheels, one of which is a traction-wheel. A long tongue is connected to the truck behind the axle, and the rear end of the tongue is upheld by a steering-wheel, which also supports a stand for the driver. The team is hitched to this tongue in rear of the supporting-wheels, and lever connections extend from the platform, reel, and other parts of the machine to the driver's stand.

The present invention relates to means for supporting and handling the reel in these machines, the difficulty of doing which is often considerable, owing to the length of the reel-shaft, the weight of the reel structure, and the distance of the driver from the reel-supports.

This mechanism was formerly illustrated, described, and claimed in application Serial No. 97,930, filed by me March 12, 1902, and the claims herein are divided out of that application.

The invention is fully illustrated in the accompanying drawings, wherein—

Figure 1 is a plan view of the entire machine. Fig. 2 is a stubble side view of all except the tongue. Fig. 3 is a vertical section on the line 3 3, Fig. 1. Fig. 4 is a stubble side view of the tongue, showing the driver's stand and seat and the operating-levers. Fig. 5 is a grain side view of the same parts. Fig. 6 is a cross-sectional view on the line 6 6, Fig. 5, looking rearward. Fig. 7 is a detail side view of the reel supporting and operating parts. Fig. 8 is a section on the line 8 8, Fig. 1; and Fig. 9 is a detail in plan of the reel-operating parts.

Although the invention now claimed relates only to the reel and its operating and supporting mechanism, the entire machine is illustrated and described herein, so as to render unnecessary any reference to the other application.

The machine-frame, carrying the platform and the elevator, comprises longitudinal angle-iron sills *a*, extending from one end of the machine to the other along the front and rear lower corners. At the stubble end of the machine the elevator *b* and its struts *c* are erected on these sills, and at various points along the length of the rear sill posts *d* are erected, by means of which the wind-board *e* and rock-shafts or rods *f f'*, which carry the reel, are supported.

The truck consists of a tubular sleeve *g*, inclosing a through-axle, which is supported at opposite ends by the usual wheels. A tubular tongue *h* extends rearward and is supported at its rear end by a caster-wheel *i*. The tongue is attached to the axle-sleeve near the drive-wheel *k''* and is connected to it at a point near the grain-wheel by a diagonal brace *l*. The sleeve *g* is connected to the tongue and brace by means of clips *m n*.

At the stubble end of the machine there is a gearing-frame *o*, having one of its arms suspended from the end of the axle outside the main wheel and the other end bolted to the under side of the axle-sleeve on the grain side of the wheel. The frame *o* is rigidly connected at its rear end to the tongue and carries the counter-shaft *q*, which is driven from the main wheel in the usual way.

Pivoted to the inner side bar of the gear-frame in rear of the axle is a forwardly-projecting bar *r*, that extends all the way across the platform of the machine and supports the entire weight of the stubble end of the frame and its superposed parts. The grain end of the frame is supported by a similar bar *s*, that is pivoted to the under side of the diagonal brace *l* in line with the pivot of the bar *r*, so that these two bars form a hinged cradle-like support for the machine-frame, that is

pivoted at a point in rear of the axle instead of being pivoted on the axle, as heretofore. The bars *r s* are rigidly secured to the base-sills *a*, and to firmly brace and unite the machine-frame to these bars *r s* diagonal braces *t u* extend from the sill *a* to the bars *r* and *s*, respectively, near their pivoted connection with the tongue and brace *l*, and the whole structure is further braced by a bar *v*, extending from a point on the outer-side bar of the gearing-frame *o* to the upper end of the elevator-frame, and an adjustable tie-rod *w*, extending from an arm *x* at the outer side of the grain-wheel to the upper end of the outermost post *d*.

The bars *r* and *s* and the entire machine-frame, which is supported thereby, are, as to their elevation from the ground, under the control of the driver through the intermediacy of vertical posts *a' b'*, that are pivoted at their lower ends on the axle-sleeve and are connected to the bars by adjustable pivoted rods *c' d'*. From the upper end of the posts rods *e' e'* extend rearward and connect with the upper end of a lever *g'*, pivoted to a saddle *h'*, bolted to the tongue. The lever *g'* has an arm extending below its pivot, where it is connected to the rear end of a strong coil-spring *i'*, whose front end is connected at any convenient fixed point, so that the tension of the spring will counterbalance the frame and assist the driver in lifting it. Extending rearward from the counterbalance-lever *g'* there is a rod *k'*, which leads to the upper arm of a bell-crank *l'*, that is freely pivoted to the casting which carries the driver's stand *m'*. The lower end of the bell-crank has a coil-spring *h'* connected to it, the other end of the spring being connected to a fixed point on the tongue, so that this spring forms an additional counterbalance for the frame of the machine. The lever *l'* is free to swing forward and backward. It has no direct connection with the notched segment *o'*; but there is pivoted alongside of it and on the same axis a hand-lever *j*, which has the usual latch connection with the segment, and the upper end of the lever *l'* has a lateral projection that overlaps behind the hand-lever. The hand-lever is normally locked to its segment, and therefore forms a stop to limit the forward movement of the upper end of the lever *l'*; but the latter is free to move independently of the hand-lever behind it, and as the weight of the machine is carried by the springs *i'* and *n'* the lever *l'* and the lever *g'* are floating levers in the normal operation of the machine.

The lever *l'* is provided with a rearwardly-extending foot-lever *p'*, by means of which the driver may raise the platform without operating the hand-lever; but whenever it is desired to lower the platform the hand-lever must be unlocked from the segment, and when so released the lever *l'* may be freely operated in either direction by the foot or by means of a spring-catch *q'* on the hand-lever hooking over a projection on the lever *l'*, whereby the two levers are locked together and operate as one.

Referring now to Fig. 8, *r'*, *s'*, and *t'* denote sprocket-wheels around which an endless chain is thrown to drive the platform-carrier, the cutters, the lower elevator-aprons, and the binder when one is employed. Of these sprockets *r'* is the driver, and it is driven by means of a tumbling-shaft *u'*, connected to a short shaft journaled in a boxing *v'*, carried by the gearing-frame. The short shaft has a pinion *w'* on its rear end that is driven by the bevel-gear *x'* on the outer end of the counter-shaft *q*. The upper apron of the elevator is driven by a tumbling-shaft which connects at its front end to the shaft of the roller a^3 and is connected to a short shaft journaled in the same boxing *v'*. This shaft has a pinion b^3, that meshes with the pinion *u* in one part with pinion *w'*, so that the tumbler a^2 is driven by pinion *u*, and both are driven by the gear *x'* on the counter-shaft.

The support and operation of the reel is a difficult matter in this class of machines. In the present invention the vertical posts *d*, that rise from the rear sill *a* of the platform-frame, carry in bearings at their upper ends a pair of parallel tubular rocking shafts, rods, or pipes *f f'*, heretofore referred to, the inner ends of these shafts being supported in suitable bearings in a casting c^3, that is securely fastened to the apex of the elevator-frame and struts *c c*. These rocking shafts form the means for operating the reel, one of them serving to lower and raise it and the other acting to throw it forward or backward without materially changing its elevation. The reel-shaft is supported on boxes c^4, that slide in and out on arms c^5 at each end of the platform, which arms are secured to castings that are sleeved on the rocking shaft *f'*, as more fully described later on, and are braced by tie-rods c^6, that extend from a point near their outer ends to the upper ends of brackets c^7. The sliding boxes c^4 of the reel-shaft are connected by rods c^8 with the upper ends of arms c^9, that are fixed to and project upwardly from the upper rocking shaft *f'* at its opposite ends, and to a downwardly-projecting arm d^2, that is secured to the shaft some distance stubbleward from the inner arm c^9, is connected a rod d^3, running rearwardly to the driver's stand and connected to a hand-lever e^2, the rod on its way passing through a guide d^5, fixed on the tongue to prevent it from sagging and being preferably adjustably connected to the lever e^2 by means of a perforated socket e^3, into any of the holes of which the hooked rear end of the lever may be set. The rocking of the upper shaft-pipe *f'* by these means causes the boxes c^4 to slide in or out on the arms c^5 without altering the elevation of the arms, and the position of the reel is thus adjusted fore

and aft as desired with respect to the line of the cutters. The lower rocking shaft or pipe rod f is also journaled in bearings in the outermost post d and the casting c^3, and at opposite ends it has gear-segments d^6 fixed on it, that intermesh with similar segments d^7, that are loosely journaled on the upper rod f'. The reel-supporting arms c^5, before described, are bolted to the castings on which these loose segments d^7 are formed, so that on rocking the lower rod or shaft f by means of the depending arm d^8, which is fixed thereto, the castings carrying the upper segments d^7 and the reel-supporting arms c^5 will be rotated around the rod f' and the vertical height of the reel will be altered. A rod d^9 leads from the lever d^8 backward to a hand-lever d^4 on the driver's stand, by means of which the height of the reel is controlled, this rod also passing through the guide d^5 on its way. The weight of the reel is counterbalanced by means of a coil-spring g^4, that is connected at its front end to a fixed point under the tongue and has its rear end connected to a depending extension g^5 of the lever d^4, that raises and lowers the reel and puts the whole reel structure under the quick and easy control of the driver. The reel is driven from a sprocket-wheel e^4 on the axle outside the main wheel, an endless chain e^5 on this sprocket passing around a similar wheel on the end of the reel-shaft and passing on its way over and around the sheaves e^6 of a spring-held compensating tightener e^7.

The driver's stand m' is formed on a casting that is bolted to the rear end of the tongue, and in a bearing e^7 in this casting the vertical stem of the yoke e^8, which carries the caster-wheel, is journaled. The ratchet-segments for the several levers already described are fixed on the stand-casting, and the levers themselves are also pivoted thereon. A foot-lever f^2 is also pivoted on the stand, and a rod f^4 runs from said lever to a clutch f^5 on the gearing-frame o. By this means the counter-shaft may be unclutched from the pinion o^2 and the movement of all the operative parts may be instantly stopped.

The constructions being as thus described it is to be noted that the arrangement for supporting and adjusting the reel provides for a very close adjustment, and the manner of mounting and operating the rocking shafts or rods obviates the distorting effect of the weight of the reel when thrown forward or back. It may be further noted that the castings on which the gear-segments d^7 are formed have the reel-carrying arms secured to them by means of bolts g^2 and g^8, the latter securing the arms pivotally to the flange $g^\times$ of the segments and the former passing through the rear ends of the arms and through lugs g^3, that project from the rear sides of the castings, thereby providing for an adjustment around the pivot g^8 in the range of up-and-down movement of the reel in addition to that obtained by the hand-operating lever.

Having thus described my invention, what I claim is—

1. In a header, the combination of posts rising from the rear part of the platform, a shaft or rod carried by the posts, reel-supporting arms sleeved on opposite ends of said shaft, a rock shaft or rod carried by the posts, gears at opposite ends of said rock-shaft and meshing with gears rigid with the reel-supporting arms, a lever within the driver's reach, and a connection from the lever to the rock-shaft.

2. In a header, the combination of posts rising from the rear of the platform, a rock shaft or rod carried by the posts, reel-supporting arms sleeved on opposite ends of the rock-shaft, a second rock shaft or rod carried by the posts, a connection between the reel and the first rock-shaft, a connection between the reel-supporting arms and the second rock-shaft, a reel mounted to slide on the supporting-arms, means for rocking the first-mentioned shaft to slide the reel in and out on the supporting-arms, and means for rocking the second shaft to raise and lower the reel-supporting arms.

3. In a header, the combination of posts rising from the rear of the platform, a rock shaft or rod carried by the posts, reel-supporting arms sleeved on opposite ends of the rock-shaft, a connection between the reel and the rock-shaft, a second rock shaft or rod carried by the posts, gears fixed at opposite ends of said second rock-shaft, gears sleeved on the first-mentioned rock-shaft and rigid with the reel-supporting arms and meshing with the gears on the second rock-shaft, a reel mounted to slide on the supporting-arms, a lever within the driver's reach, a connection from said lever to the first-mentioned rock-shaft to slide the reel in and out on the supporting-arms, a second lever within the driver's reach, and a connection from said second lever to the second rock-shaft for rocking the same to raise and lower the reel-supporting arms.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES A. SHARP.

Witnesses:

FRANK S. CRAVER,

ALEX A. DENNISON.