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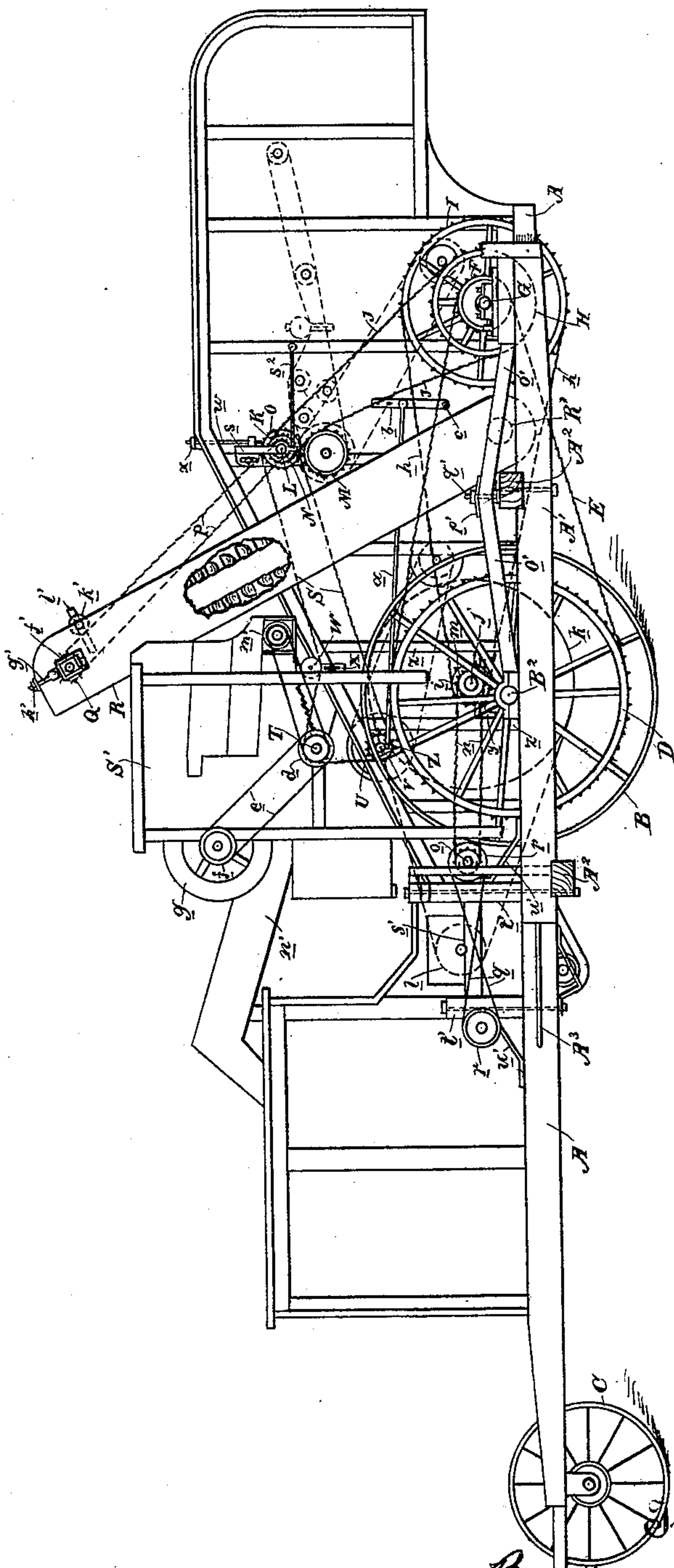
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B. HOLT & J. DRAPER.  
TRAVELING THRASHER.

No. 408,413.

Patented Aug. 6, 1889.

Fig. 1.



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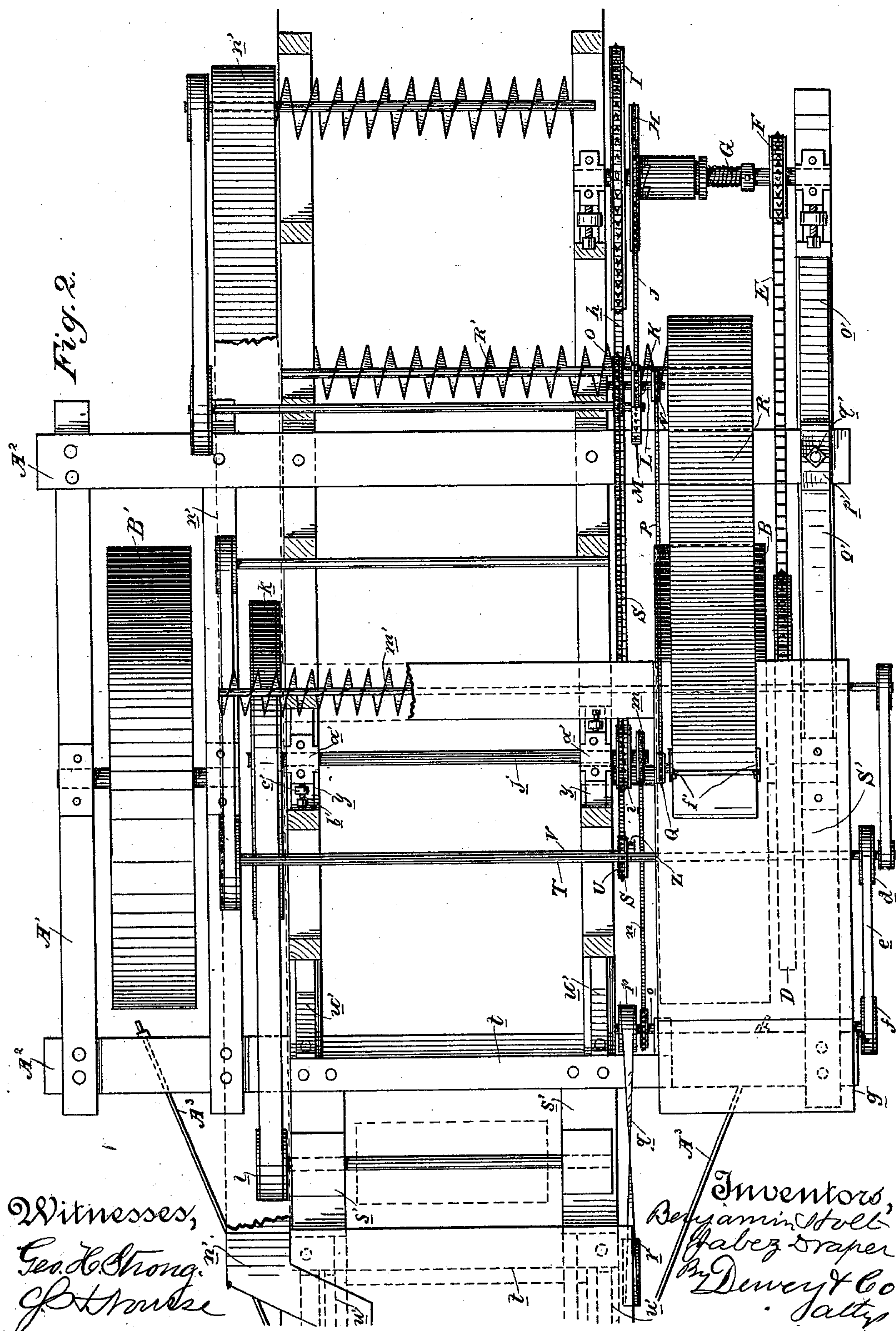
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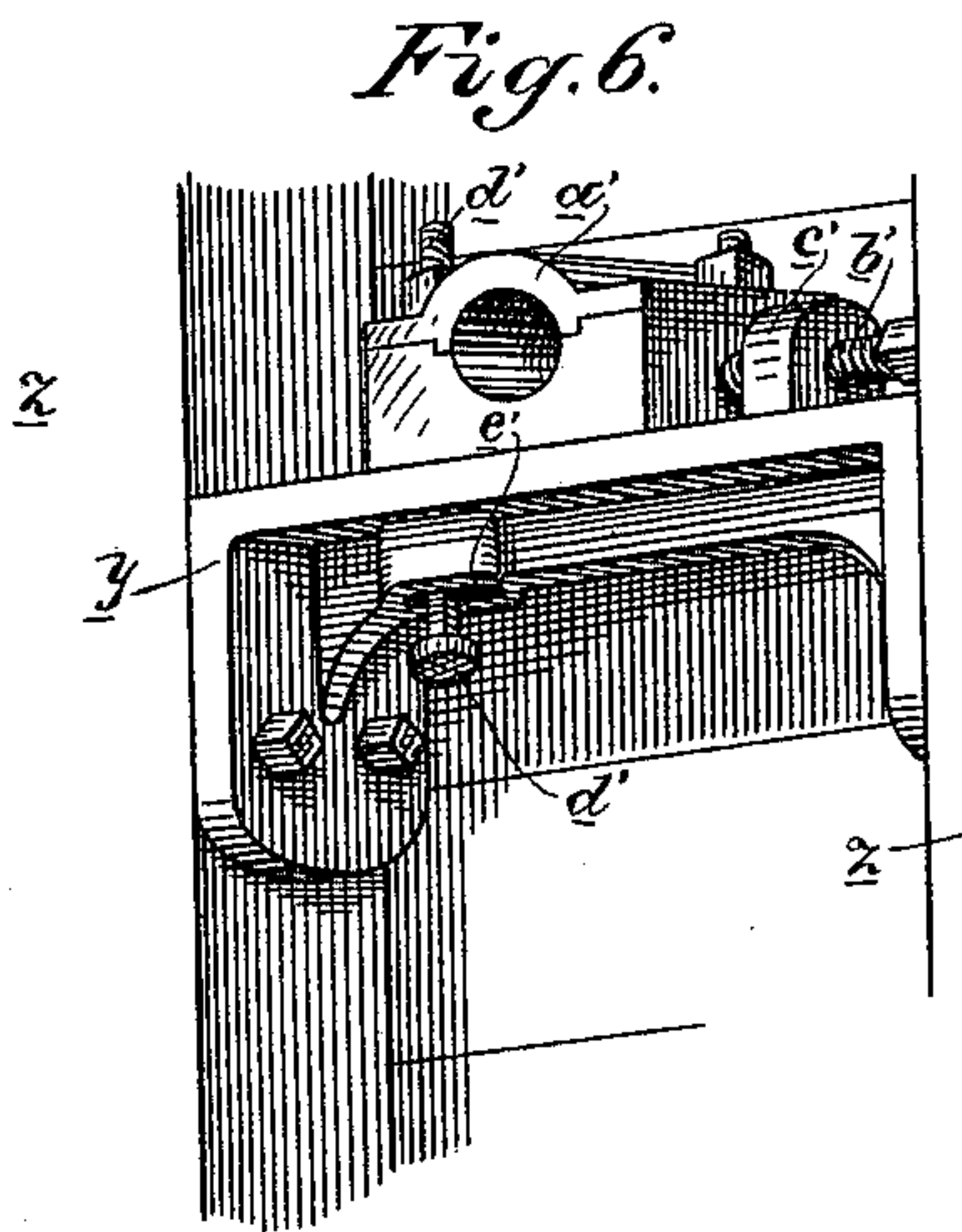
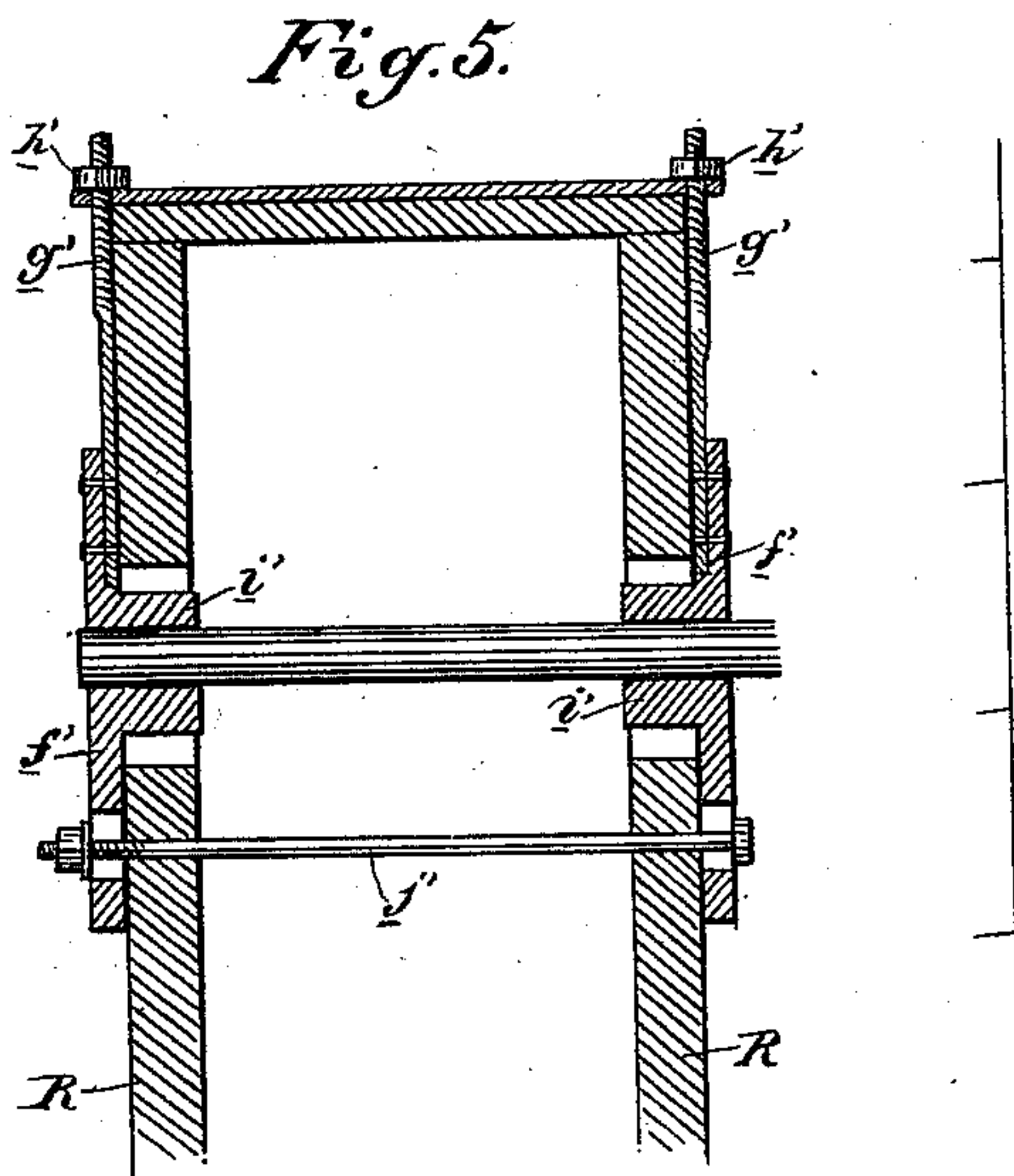
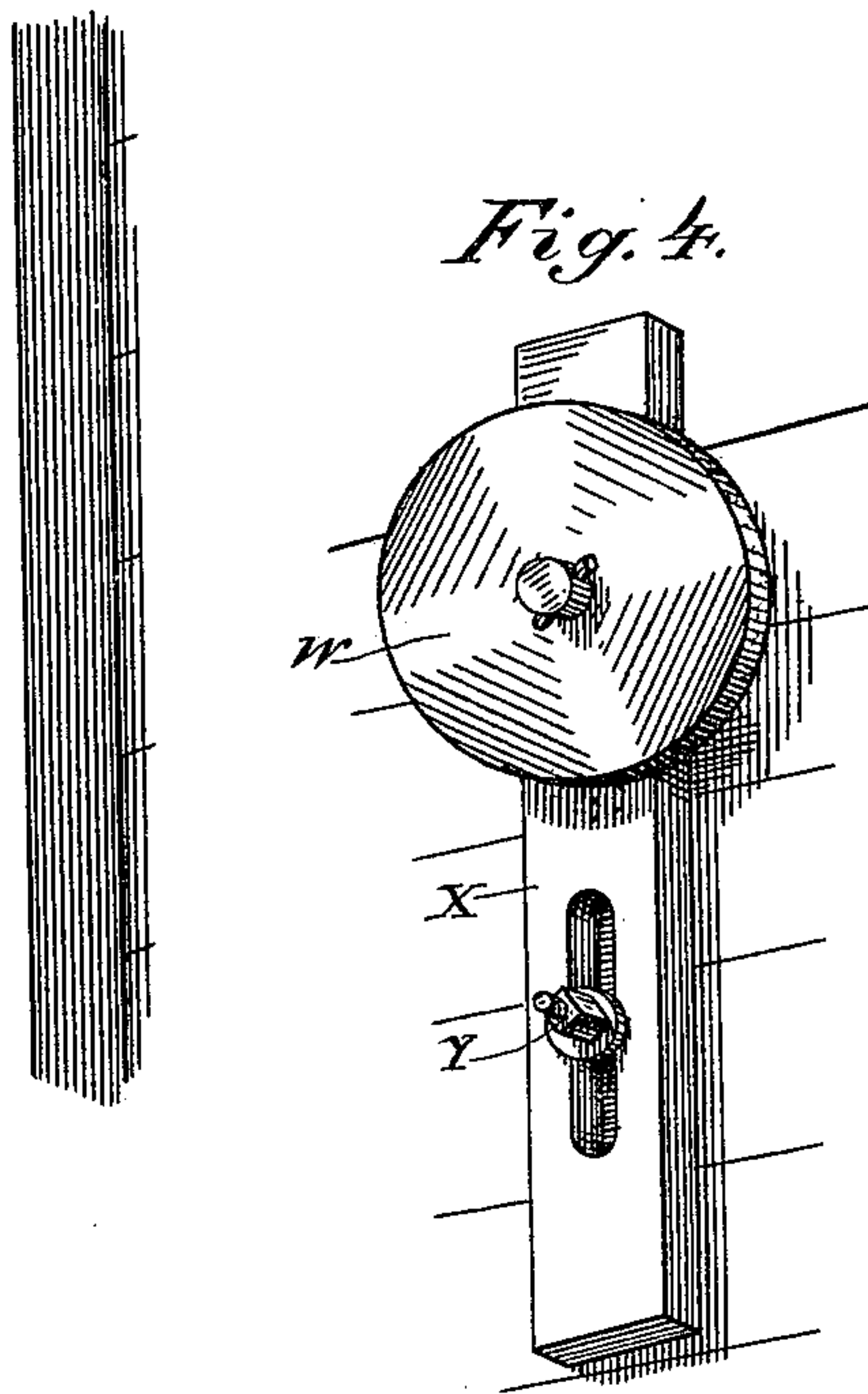
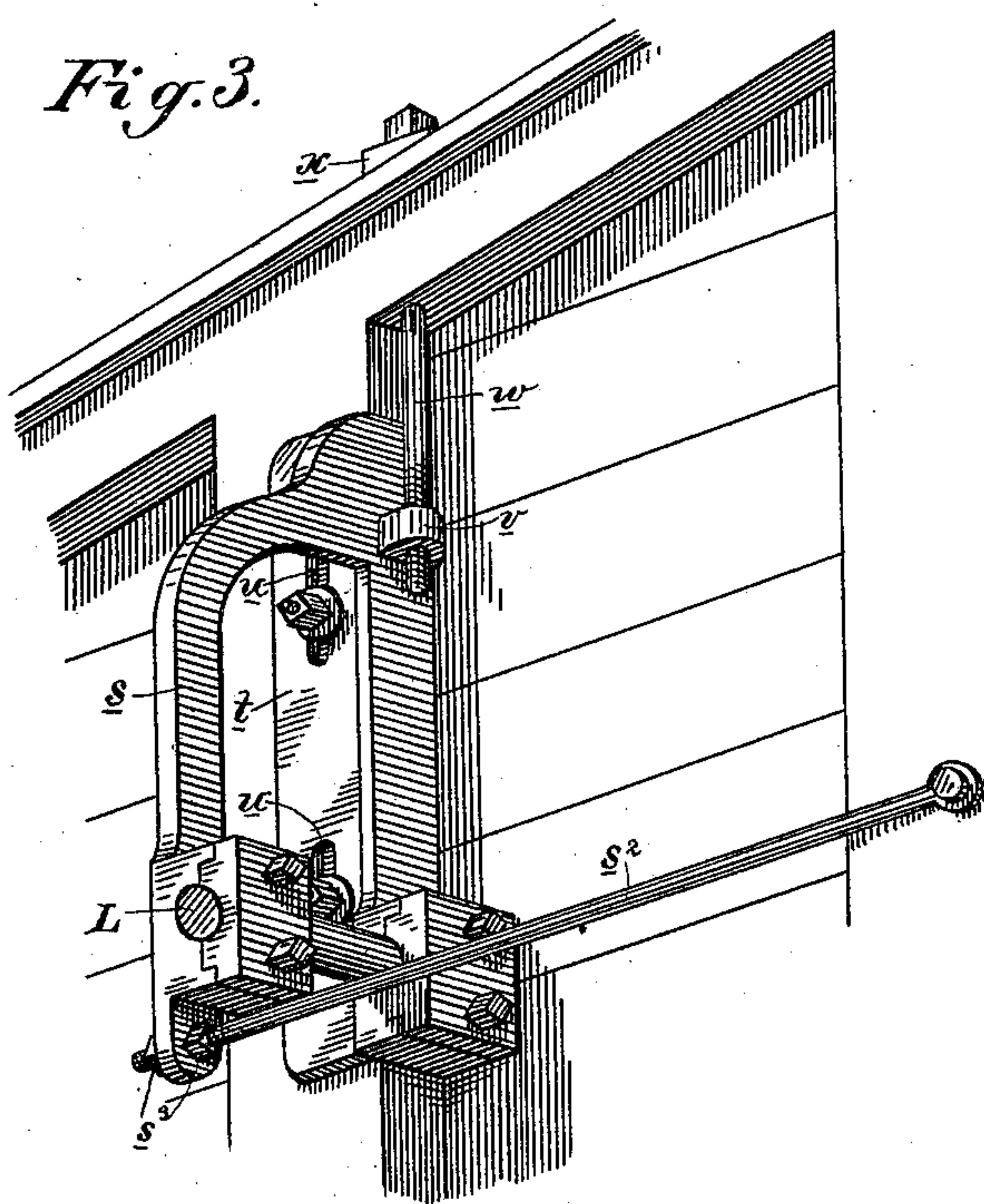
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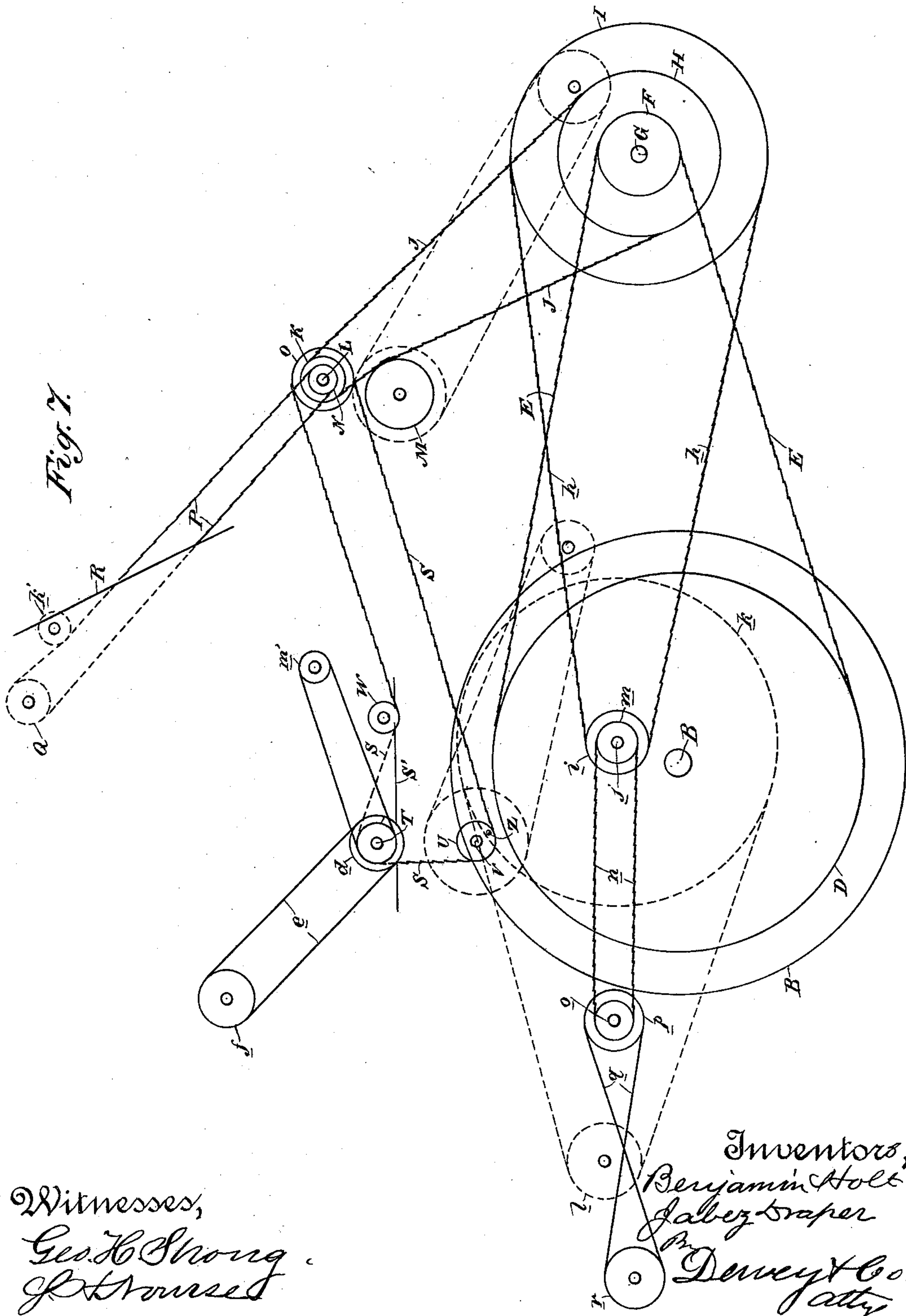
(No Model.)

4 Sheets—Sheet 4.

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TRAVELING THRASHER.

No. 408,413.

Patented Aug. 6, 1889.





# UNITED STATES PATENT OFFICE.

BENJAMIN HOLT AND JABEZ DRAPER, OF STOCKTON, CALIFORNIA.

## TRAVELING THRASHER.

SPECIFICATION forming part of Letters Patent No. 408,413, dated August 6, 1889.

Application filed April 3, 1889. Serial No. 305,886. (No model.)

*To all whom it may concern:*

Be it known that we, BENJAMIN HOLT and JABEZ DRAPER, of the city of Stockton, county of San Joaquin, State of California, have invented an Improvement in Traveling Thrashers; and we hereby declare the following to be a full, clear, and exact description of the same.

Our invention relates to certain improvements in thrashing-machines; and it consists in the constructions and combinations of devices which we shall hereinafter fully describe and claim.

Figure 1 is a left-side elevation of our machine. Fig. 2 is a plan with the upper portion of the separator and cleaner removed. Fig. 3 is an enlarged view of the adjusting-brackets. Fig. 4 is an enlarged view of the tightener W. Fig. 5 is an enlarged section through the upper end of the elevator-case R, showing adjustment of driving-shaft. Fig. 6 is an enlarged view of adjustable box *a'*. Fig. 7 is an enlarged skeleton arrangement of the wheels, pulleys, and belts.

A are the main longitudinal beams or sills upon which the thrasher and operating devices are supported.

B B' are the main bearing and driving wheels, each having its own independent short shaft, which does not extend across the central portion of the frame, and C is the front steering-wheel.

A' are timbers outside of and parallel with the sills A, and they are bolted to transverse beams A<sup>2</sup>, which cross the sills at right angles. The short independent shafts B<sup>2</sup> of the wheels B B' are journaled upon the timbers A' and the sills A, and the main counter-shaft G is also journaled upon these timbers at the left of the machine. Diagonal tension-rods A<sup>3</sup> pass through the ends of the front timbers A<sup>2</sup> and cross so as to be secured to the timber A upon the opposite side and near the front.

The mechanism of the header (which is not shown in the present case) is driven by the right-hand wheel B' of the machine, and the mechanism of the thrasher and cleaner is driven by the left-hand wheel B, and it is this mechanism which is especially the subject of the present invention.

The thrashing-cylinder, grain-carrying belt,

straw-carrier, cleaning-shoe within the machine, and the elevators are not dissimilar in any important points to those which are in common use, and their positions are only indicated from the exterior of the machine in order to explain their relations to the driving mechanisms. In order to drive these various parts with proper speed and direction with relation to each other, we employ a system of chain belts and sprocket-wheels, which prevents any slipping or marked change in the length and tension of the belts, such as usually occurs when the ordinary smooth flexible belts are employed.

D is the driving sprocket-wheel, which is fixed upon the outside of the main bearing-wheel B, and E is the chain passing around this wheel, and thence around the small sprocket-wheel F, which is fixed upon the counter-shaft G, journaled in boxes upon the frame-timbers A A' toward the rear of the machine. Upon this shaft are fixed two other sprocket-wheels H and I. A chain belt J from the first of these wheels H passes around a sprocket-wheel K upon the counter-shaft L, and the lower part of this chain in its return or downward movement passes over the teeth of the sprocket-wheel M, which is fixed upon the outer end of the grain-carrier shaft, so that it drives the grain-carrier as well as the counter-shaft L.

Upon the counter-shaft L are fixed two other sprocket-wheels N and O. From the first and smaller of these wheels an independent chain belt P extends up to the pulley Q, which is fixed to the upper shaft of the elevator, which travels within the elevator-case R, and raises the grain which is delivered to its lower end by the grain-auger receiving the grain from the shoe. This elevator delivers the grain into the supplemental cleaner S', situated upon the top of the machine, as shown.

From the larger pulley O upon the shaft L a chain S passes around a pulley upon a counter-shaft T, thence around a pulley U upon a beater-shaft V, and thence back to the pulley O.

W is an adjustable tightening-pulley, the shaft of which is journaled upon a slotted bar X, which is movable, so as to regulate the tension of the belt S, and is held at any desired point by a set-screw Y passing through



the slot and screwing into the frame-timbers of the machine.

Upon the side of the wheel U, which is fixed to the beater-shaft, is a crank-pin Z, from which a pitman *a* extends alongside of the machine and connects with the rocker-arm *b*. This rocker-arm is fixed to the shaft *c*, which extends across the interior of the machine, and has arms (not here shown) which connect with the shoe in the usual manner, and through the oscillations of the rocker-arm *b* the shoe is caused to oscillate.

A pulley *d* is fixed upon the counter-shaft T, and from this a belt *e* passes around the pulley *f*, which is fixed upon the end of the shaft of the fan, supplying air to the supplemental cleaner S', which fan rotates within the case *g*.

Returning again to the pulleys upon the first counter-shaft G, a belt *h* passes around the larger pulley I, and thence around a pulley *i* upon the counter-shaft *j*. This counter-shaft *j* extends across the thrashing-machine, and carries upon its opposite end a pulley *k*, from which a belt passes around a pulley *l*, which is fixed upon the end of the thrashing-cylinder shaft. The power to drive the cylinder is derived through this source.

Returning to the left side of the machine, the counter-shaft *j* has fixed upon it another pulley *m*, from which a belt *n* passes around a pulley upon the counter-shaft *o*, and this shaft has a pulley *p* fixed to it, from which a belt *q* passes to the pulley *r* upon the shaft of the feeder, which delivers the unthrashed straw to the thrashing-cylinder. From this it will be seen that the power which is first transmitted altogether to the counter-shaft G is subdivided at this point, and the mechanism of the thrasher and feeder are driven from one pulley, while the carriers, cleaning mechanism, and fans are driven from another pulley.

In order to regulate the tension of the driving-belt J, the shaft L is journaled in boxes which are fixed upon a bracket *s*. This bracket has a plate *t*, which rests against the side of the thrashing-machine, and has slots *u* made in it for the reciprocation of bolts by which it is secured to the side of the machine.

V is a lug upon one side of the bracket, through which a screw *w* passes. The shank of this screw passes up through the top of the frame of the machine, and has a head resting upon a washer or support X, so that by turning the screw around, the bracket is either raised or depressed, so as to correspondingly raise or depress the counter-shaft L, and with it its sprocket-wheels, and thus tighten or slacken the chain J, and also partially the chain S, which extends at an inclination downward from its driving-wheel O. When the proper adjustment has been attained, the bolts passing through the slots *u* may be tightened and the bracket firmly fixed in place.

*s*<sup>2</sup> is a brace-rod extending from the bracket *s* to the side of the machine, with adjusting and holding nuts *s*<sup>3</sup>.

*y y* are brackets fixed between the two upright timbers *z* upon each side of the machine, each having upon its horizontal top a box *a'*. This box carries the counter-shaft *j* and is adjusted upon the top of the bracket *y* by means of the screw *b'*, which passes through the lug *c'*, and has a head by which it may be turned, so as to move the box *a'* in either direction upon the top of the bracket.

One of the bolts *d'*, by which the cap of the journal box *a'* is held in place, passes entirely through the journal-box, and also through the bracket, passing through a slot *e'*, as shown in Fig. 6. The lower end of the shank of the bolt *d'* is flattened where it passes through the slot *e'*, so that it will not turn when the nut is screwed upon the upper end of the bolt to secure the cap of the journal-box; but when the nut is loosened and the screw *b'* is turned it will be manifest that by reason of the slot *e'* this bolt will be allowed to move back and forward with the journal-box, and it thus acts as a guide for the box, while at the same time the bolts *b'* and *d'* have a sufficiently loose connection with the box *a'* to allow it to turn slightly and accommodate itself to any irregularity in the position or adjustment of the shaft *j* which may occur, because its ends are moved in opposite directions to regulate the tension of belts leading to opposite sides of the shaft. One of these adjustments is fixed on each side of the machine, and through them the driving-chain *h*, which furnishes power to drive the cylinder, as before described, is properly adjusted, and also the chain between the pulleys *k* and *l* upon the opposite sides of the machine.

The elevator-buckets traveling in the grain-elevator case R are fixed upon a chain belt, the upper and lower ends of which pass over suitable sprocket-wheels at these points, and the tension of this belt is maintained by means of adjusting-slides *f'*, having screws *g'*, extending upwardly from their upper end, and nuts *h'*, which turn against a washer or plate extending across the upper end of the elevator-case.

*i' i'* are the boxes in which the upper chain elevator-shaft is journaled, and they project from the slide *f'* and extend into a slot in the side of the elevator-case, so as to serve as guides. The slides *f'* extend a short distance below the ends of the slots, and their lower ends are slotted to receive a rod *j'*, which extends across through the elevator-case from one side to the other. There are two of these adjustments, one upon each side of the case. This bolt serves to hold both of them in place after the adjustments have been made by means of the screws *g'* and the nuts *h'*, before alluded to.

It will be manifest that the chain P must be adjusted to correspond with the adjust-



ment of the elevator-belt, and as its adjustment may not always be exactly the same as that of the elevator-belt this adjustment is provided for by the employment of a tightening-pulley *k'*, which is journaled upon a slot-  
 5 ted bar *l'*, this bar being adapted to slide transversely upon the elevator-case R and being secured at any point of adjustment by means of a bolt passing through the slot in  
 10 the bar and locking it wherever desired.

The elevator chain belt is utilized to drive the grain-auger at R' by extending the shaft of that auger through the lower end of the elevator-case and fixing the lower sprocket-  
 15 wheel of the chain elevator-belt upon the grain-auger shaft, thus dispensing with an independent belt to drive this grain-auger, which carries the grain from the cleaning-shoe within the thrashing-machine to the elevator of the  
 20 supplemental cleaner S'.

Although the cleaning-shoe within the thrashing-machine separates a large portion of the chaff and heads at this point, still there is a great deal of grain to which the husks  
 25 still cling which passes through the screens and is carried up by the elevator into the supplemental cleaner S.

In driving all this machinery from the main wheel D the strain upon the belt E is  
 30 very great and has a tendency to draw the main driving-shaft and the first counter-shaft G toward each other and to spring the frame. In order to resist this tendency we fix bracing-beams *o'* so that their outer ends abut  
 35 against the journal-boxes of these wheel-shafts or their supports, while their meeting ends are at an obtuse angle, as shown in Fig.

1. Upon the top of this angle is a plate *p'*, through which passes a bolt *q'*, the lower end  
 40 passing through a heavy plate upon the top of the transverse beam A<sup>2</sup>, which extends across the main sills A and is strongly bolted thereto. By means of the nut upon the upper end of the bolt holding the bracing-timbers *o'*  
 45 these timbers may be adjusted at will.

The distance between the main bearing-wheel shafts and the front steering-wheel is considerable, and the tendency of these main longitudinal timbers or sills is to spring, and  
 50 this is increased by the rapid movement and strain of the heavy cylinder.

The cylinder-shaft is journaled upon the top of the horizontal timber *s'*, the ends of which are supported in the vertical timbers  
 55 *t'*. These vertical timbers are secured to the sills by bolts extending down through the caps and having nuts at the lower end by which they are kept as tight as may be necessary.

*u'* are angular braces strongly bolted to the sills A and having their inner ends bolted to the vertical timbers *t'*. These braces and the vertical timbers *t'* and the horizontal timber  
 65 *s'* act as a truss to strengthen and steady this portion of the frame and prevent the sagging or loosening of the parts.

Having thus described our invention, what

we claim as new, and desire to secure by Letters Patent, is—

1. In a traveling thrasher, the main bearing  
 70 and driving wheel, the counter-shaft with a sprocket-wheel to which power is transmitted from the driving-wheel by a driving-chain, a second sprocket-wheel fixed to said shaft, and  
 75 a chain J passing around said wheel and around the sprocket-wheel K upon the counter-shaft L and returning in contact with the sprocket-wheel M upon the grain-carrier  
 80 shaft, in combination with the vertical movable bracket *s*, in which the counter-shaft L is journaled, whereby the tension of said belt may be regulated, substantially as herein described.

2. The counter-shaft L, journaled in the bracket *s*, and having the sprocket-wheel K,  
 85 through which power is transmitted to it from the primary counter-shaft G, and the sprocket-wheel O, through which power is transmitted from it through the belt S to the beater-shaft, pulley U, and the cleaner-fan,  
 90 in combination with the guide and holding-bolts of the bracket *s*, the adjusting-screw X, and the locking-bolt Y, substantially as herein described.

3. The grain-elevator case R, having its  
 95 sides slotted at the upper end, the journal-boxes *i'*, fitting in said slots, and the sliding plates *f'*, to which said boxes are secured, said slides fitting and covering the slots in the case R, in combination with the adjust-  
 100 ing screws and nuts attached to the slides, and the bolt *j'*, passing through the elevator-case and through slots in the lower ends of the slides, substantially as herein described.

4. The main driving-wheel D, the sprocket-  
 105 wheel F, fixed upon the counter-shaft G and receiving power through a chain from the main driving-wheel, the sprocket-wheel I, fixed to the counter-shaft G, the counter-  
 110 shaft *j*, having the sprocket-wheel *i'*, and the belt *h*, by which power is transmitted from the wheel I to the wheel *i*, in combination with the bracket *y* and the journal-boxes *a'*, in which the shaft *j* turns, said boxes being ad-  
 115 justable upon said bracket, substantially as herein described.

5. The main bearing and driving wheels supported upon a single journal-shaft and the counter-shaft G, carrying the sprocket-wheels  
 120 F, H, and I and journaled upon the rear portion of the thrashing-machine frame, in combination with the timbers *o'*, abutting against each other at an angle and against the journal-boxes of the shafts, and the adjusting-screw bolt *q'*, passing through the  
 125 meeting angle of the brace-timbers and having a nut fitted upon its upper end, substantially as herein described.

6. In a traveling thrasher, the main bearing-wheels and the main driving sprocket-  
 130 wheel D, the counter-shaft G, journaled in boxes upon the rear of the frame and having the sprocket-wheels F, H, and I, the supplemental chains J and *h*, driving, respectively,



the counter-shafts L and j, and the supplemental wheels and chains whereby the power is distributed from one of these counter-shafts to the grain-elevator, the beater-shaft  
5 and cleaning mechanism, and from the other to the thrashing and feeding mechanism, substantially as herein described.

7. The counter-shaft j, having a sprocket and pulley upon its opposite ends, one of  
10 which receives power from the main counter-shaft G from one side of the shaft, while the other transmits power to the cylinder at the opposite side of the shaft, in combination with the horizontally-adjustable journal-  
15 boxes, whereby the ends of the shaft may be moved in opposite directions, substantially as herein described.

8. The main bearing-wheel and sprocket driving-wheel D, the counter-shaft G, receiving power therefrom, a second counter-shaft

L, to which power is transmitted from the shaft G, as described, the chain elevator-belt and buckets, an adjustable shaft and pulley driving said elevator, and an independent adjustable chain transmitting power to drive  
25 the elevator from the counter-shaft L, in combination with the auger R', delivering grain into the bottom of the elevator-case, and a sprocket-wheel fixed to the end of the auger-shaft within the elevator-case and  
30 around which the elevator-belt passes, substantially as and for the purpose described.

In witness whereof we have hereunto set our hands.

BENJAMIN HOLT.  
JABEZ DRAPER.

Witnesses:

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H. T. PREBLE.