

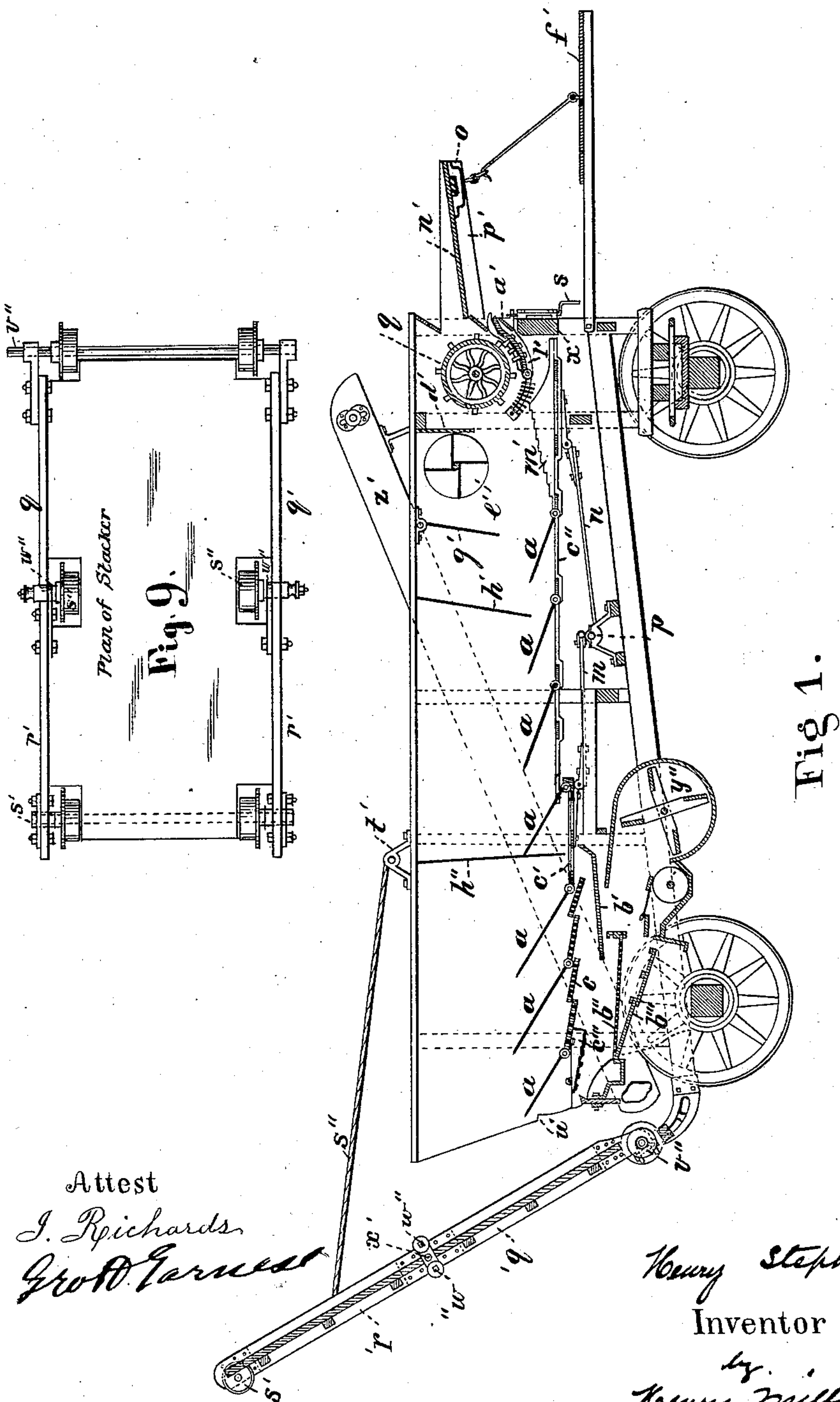
(No Model.)

3 Sheets—Sheet 1.

H. STEPHAN.  
THRASHING MACHINE.

No. 280,258.

Patented June 26, 1883.



Attest  
J. Richards  
Grover Tarnes

Henry Stephan  
Inventor  
by  
Henry Millward  
his Attorney

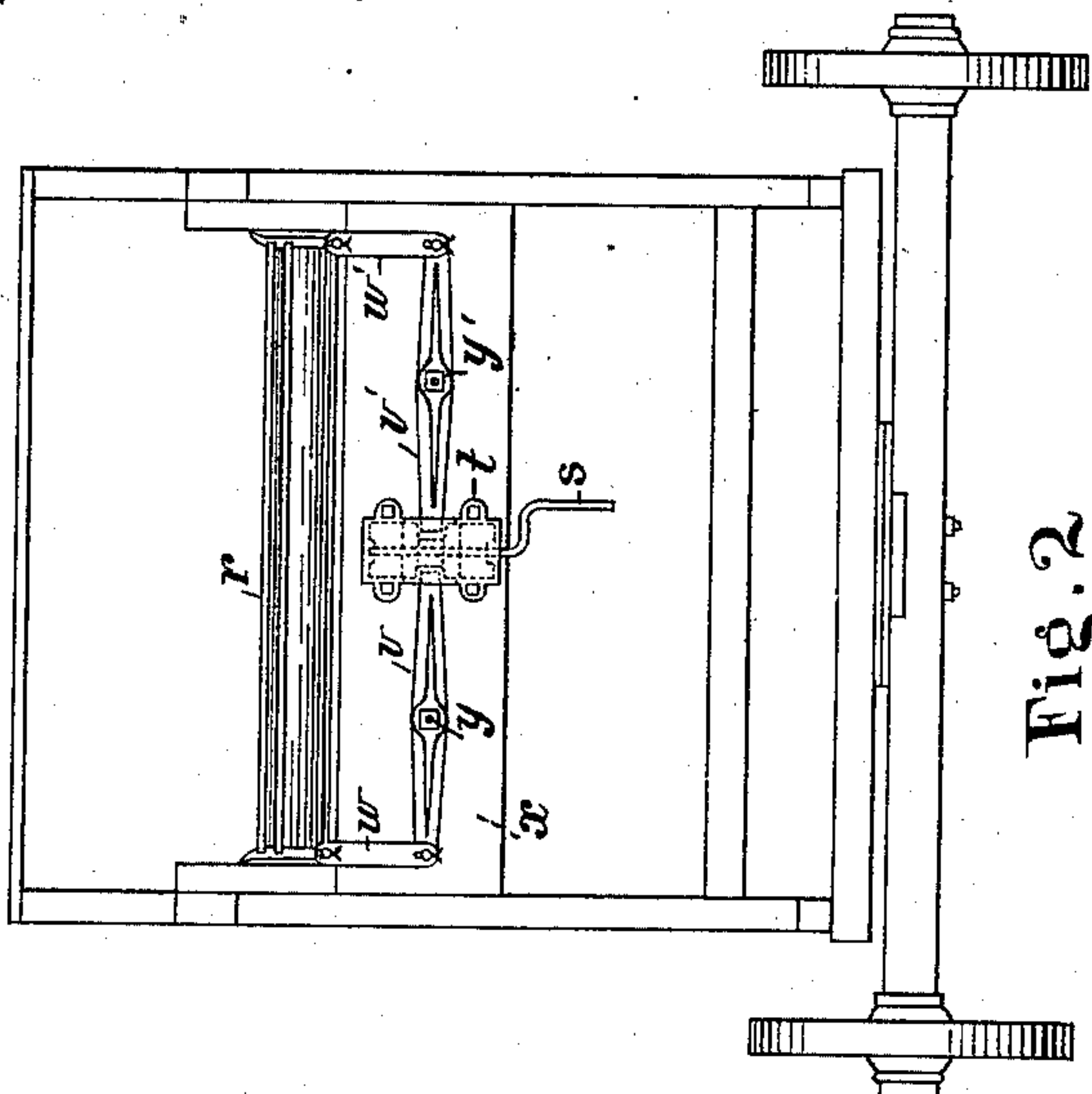
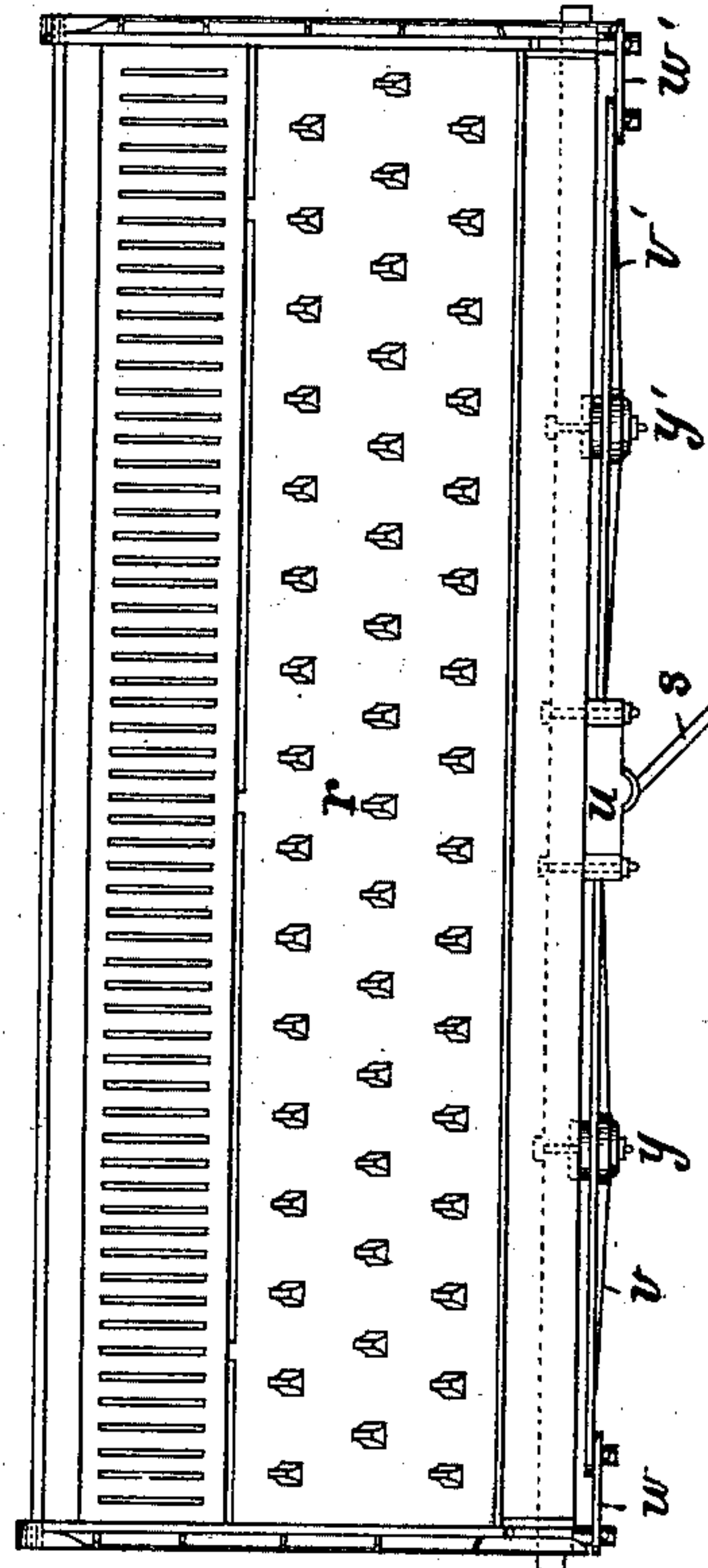
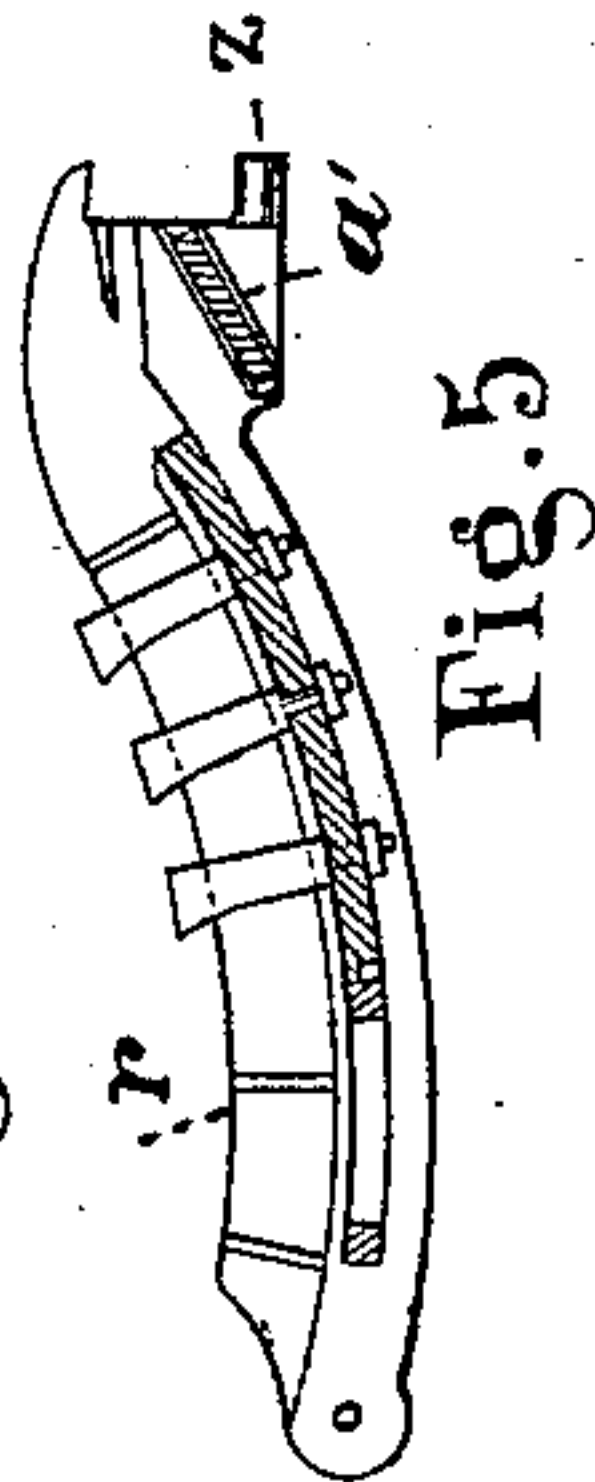
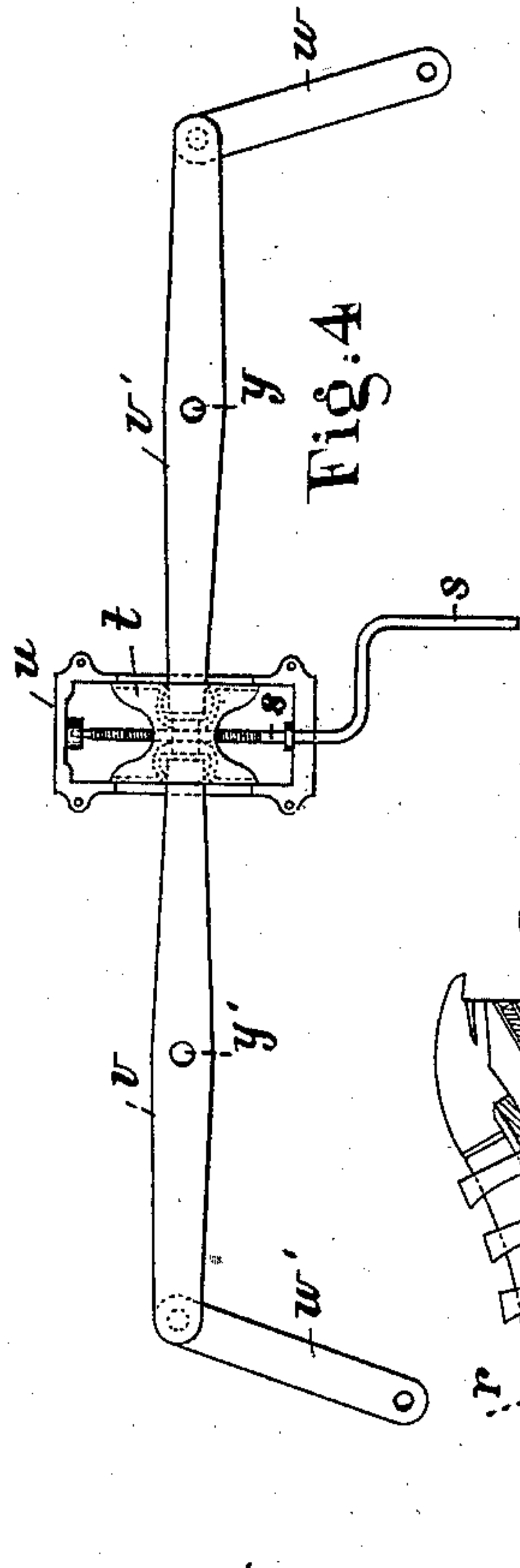
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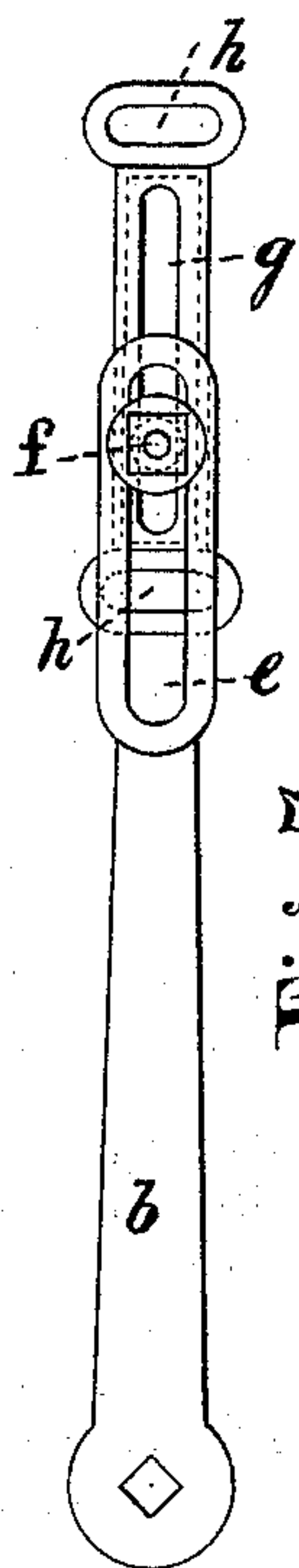


Fig 7

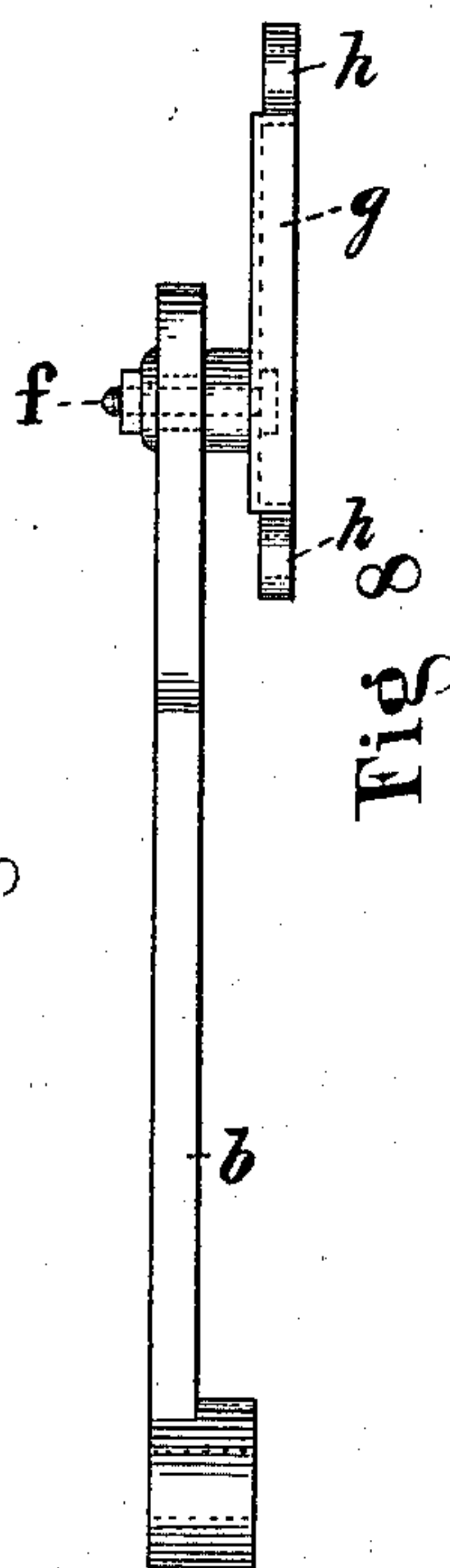


Fig 8

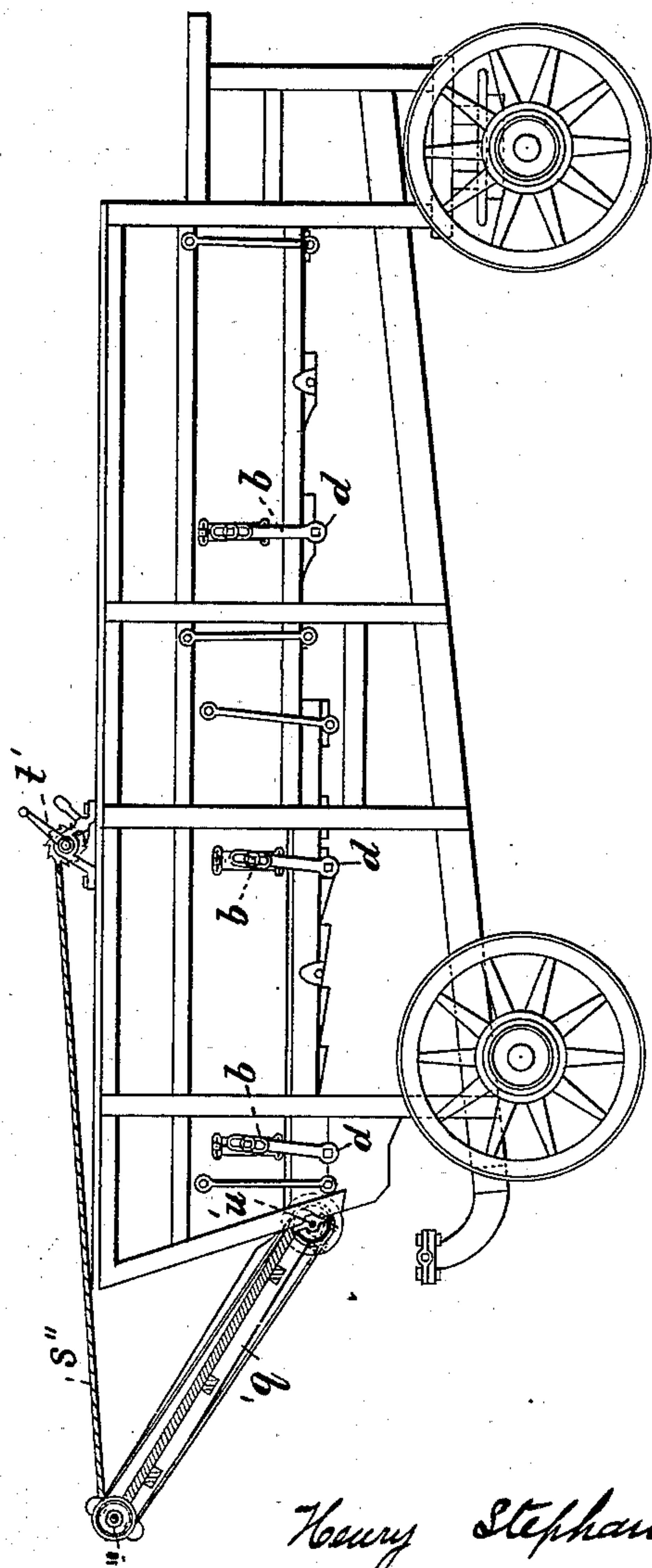


Fig 6

Attest  
J. Richards  
Notary Public

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his attorney



# UNITED STATES PATENT OFFICE.

HENRY STEPHAN, OF SPRINGFIELD, OHIO, ASSIGNOR TO THE SPRINGFIELD  
ENGINE AND THRESHER COMPANY, OF SAME PLACE.

## THRASHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 280,258, dated June 26, 1883.

Application filed March 5, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY STEPHAN, of Springfield, county of Clarke, State of Ohio, have invented a new and useful Improvement in Thrashing-Machines, of which the following is a specification.

My invention relates to thrashing-machines of the class known as "vibrators;" and it consists in the construction and arrangement of parts whereby a more perfect separation of grain from straw will result; also, less liability to the entanglement of the straw with the revolving cylinder; also, a more perfect separation of chaff and straw; and by my construction a more perfect adjustment may be effected of the parts to suit varying conditions of the grain, as will hereinafter be more fully specified.

In the accompanying drawings, Figure 1 is a longitudinal vertical section of a thrashing-machine with my improvements attached thereto. Fig. 2 is an elevation of the front end of the machine. Fig. 3 is an enlarged plan view of the concave and the mechanism used to adjust it. Fig. 4 is an inverted elevation of the mechanism used to adjust the concave. Fig. 5 is a transverse sectional elevation of the concave and its attachments. Fig. 6 is a longitudinal elevation of a machine illustrating the stacking-elevator in section, and shortened to suit a limited space in the barn or other receptacle. This figure also illustrates the stacking-elevator raised above the floor of the machine in order that the chaff may be separated from the straw. Figs. 7 and 8 are views of the vibrating levers that control the vibrating rakes, and are made adjustable. Fig. 9 is a plan view of the stacker.

The same letters of reference indicate the same or corresponding parts in all the figures.

The vibrating rakes *a* are controlled by means of slotted and adjustable vibrating lever-arms *b*. These lever-arms are constructed to be adjustable as to length of stroke and angle of oscillation in the following manner: The rakes *a* are loosely pivoted to the series of vibrating pans *c c' c''*, from which they derive their motion. The lever-arms *b*, by which the motion of the rakes is directed and limited, are pivoted to each of the aforesaid pans at *d*,

and extend in an upward direction, in the manner shown in Fig. 6, their upper ends being formed with elongated apertures *e*. Bolts *f* pass through said apertures, that have their heads constructed to slide in ways *g*, secured to the framing of the machine through the agency of bolts passing through the slots *h*. It will be observed that with this construction the bolts *f* may be adjusted in the aperture *e* to change the oscillation of the arms *b*, thus making them vibrate more or less, as desired, and the slides *g*, by means of the slots *h*, may be placed at any angle to change the angle of oscillation of the lever-arms *b* and the rakes which they control. The pans *c* are perforated in the customary manner and receive a transverse vibrating motion. The pans *c'* and *c''* are not perforated, and receive a vibrating motion from the pitmen *m n*, which, in their turn, derive motion from the crank-shaft *p*, that is actuated in the customary manner. The toothed cylinder *q* is rotated by means of pulleys and belts, and the concave *r*, that is located immediately below it, is adjustable in an upward direction, so as to be brought nearer to or farther from the cylinder *q*. I obtain this adjustment of the concave by means of a screw, *s*, a threaded slide, *t*, a box, *u*, levers *v v'*, and links *w w'*. The levers *v v'* are pivoted to the board *x* at *y y'*, and the links *w w'* are pivoted to the levers *v v'* at one end and to the concave *r* at the other end by means of pin-

It will be observed that one end of each of the levers *v v'* is inserted into the screw-box *t*, so that by turning the screw *s* in either direction the box *t* will be moved up or down, thereby causing the levers *v v'* to oscillate upon the pivots *y y'* and the links *w w'* to move the concave *r* into any desired vertical adjustment relatively to the cylinder *q*. The concave *r* is provided with a diagonal chute-board, *a'*, which confines the scattering grain to the action of the machine. If any loose or scattering grain should pass the concave, the board *a'* will arrest it and return it to the pans *c''*, *c'*, and *c*, and it will thereby be carried back to the proper avenue of escape through the agency of the chute-board *b'* and perforated screens *b'' b'''*. The pan *c'''* is perforated in the usual manner,



and is inserted between the vibrating pans *c* and the perforated pan *b''*. I use this pan to arrest any grain that might otherwise pass away with the straw; also to assist in the separation of chaff from grain and straw, thereby assisting the riddle of perforated pan *b''* in its work of separation.

Back of the cylinder *q*, I locate a stationary board, *d'*, to act as a shield between said cylinder and the rotary beater *e'*. I use this shield to prevent the beater *e'* from throwing the dust and other light matter into the face of the operator, who would be standing on the table *f'*. The beater *e'* rotates at a rapid rate, and is used for the purpose of taking the straw from the cylinder *q* as fast as it passes through or under the same, thus obviating the wrapping of straw around said cylinder and checking the flying grain thrown from the cylinder, forcing it down on the separating-pans, where it will be carried back to the fan and shoe.

As an additional security against flying grain, I use a gravitating shield, *g'*, and stationary shields *h'* *h''*, which also assist in directing the grain to the separating-pans.

Under the beater *e'* there is a grate, *m'*, which forms an avenue of escape for a large portion of the thrashed grain, which, by passing through it, falls into the separating-pans, where it is entirely under and separate from the straw, whereby the separating capacity of the machine is greatly augmented by having such a separation take place immediately at the cylinder, instead of leaving the whole work of separation for the rakes to perform. The feed-board *n'* is attached at one end to the concave *r*, and at the other end fits loosely into metallic shoes *o*, attached to each side of the framing *p*, by which arrangement it is caused to move with said concave, and thereby their relative positions are preserved.

The stacking device, which I use at the exit end of the machine for the purpose of elevating the straw as it is delivered from the vibratory rakes *a* to any suitable receptacle or place of deposit, is made adjustable in length by means of the two parts *q'* *r'*. When it becomes desirable to elevate but a short distance from the limited space at disposal, or from other causes, the part *r'* is detached from the part *q'*, and the upper end of the part *q'* is provided with stationary auxiliary pulley *s''*, for the reception of the conveyer-belts, and by the application of short conveyer-belts the stacker will be ready for use, in the manner illustrated by Fig. 6. When both sections are used, the stacker will appear as shown in Fig. 1.

To hold the stacker in place the customary guy-ropes, *s''*, and windlass *t'* are used. It is often found in practice that more chaff mixes with the straw than is desirable. To obviate

this difficulty I provide recesses or receptacles *u'* in the end framing of the machine, said receptacles being so located as to elevate the near conveyer-shaft *v''* above the bottom of the machine, and thereby leave a vent between the bottom of the machine and the bottom of the conveyer for the escape of the chaff. For an illustration, see Figs. 1 and 6. The two sections of the stacking-elevator, when both are in use, are joined together by means of corresponding perforations, *w''*, formed in each of the sections, through which screw-bolts pass. These perforations are formed in metallic pieces rigidly secured to the framing of the stacking-elevator; and in each of the metallic pieces that are joined to the parts *q'* a perforation, *x'*, is left for the reception of the studs upon which the auxiliary pulleys revolve. It will be understood that *y''* is the customary fan and *z'* the elevator. It will be also understood that the perforated pans *c'''* extend all across the full width of the machine.

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

1. The combination of the cylinder, the beater *q*, the separating-pans, the gravitating shield *g'*, and stationary shield *h'*, for directing the grain to the separating-pans, and the grate *m'*, located near the cylinder, between the pans and beater, to receive the grain directed by the shields and pass it to the pans separated from the straw, substantially as and for the purpose set forth.

2. The concave *r*, provided with diagonal board *a'* and pintles *z*, in combination with the links *w w'*, swung on the pintles of the concave, the slide *t*, the pivoted levers *v v'*, hinged at one end to the links *w w'*, and at the other end resting in the slide *t*, a box, *u*, for the slide to move in, and a screw, *s*, for operating the slide, substantially as and for the purpose set forth.

3. The combination of the vibrating rakes *a*, levers *b*, secured thereto at one end, and having apertures *e* at the other end, the slides *g*, having apertures *g'*, and transverse slots *h*, and connecting-bolt *f*, substantially as and for the purpose set forth.

4. The combination of sections *q'* *r'*, the stacker, a connecting-plate provided with perforations *x'*, the auxiliary pulleys *s''*, and bearing-studs therefor, fitting into perforations *x'*, substantially as and for the purpose set forth.

In testimony whereof I have hereunto set my hand this 27th day of February, 1883.

HENRY STEPHAN.

Witnesses:

HENRY MILLWARD,  
I. RICHARDS.