(No Model.) 2 Sheets—Sheet 1.

J. S. DAVIS.

HARVESTER TONGUE.

No. 457,185. Patented Aug. 4, 1891.

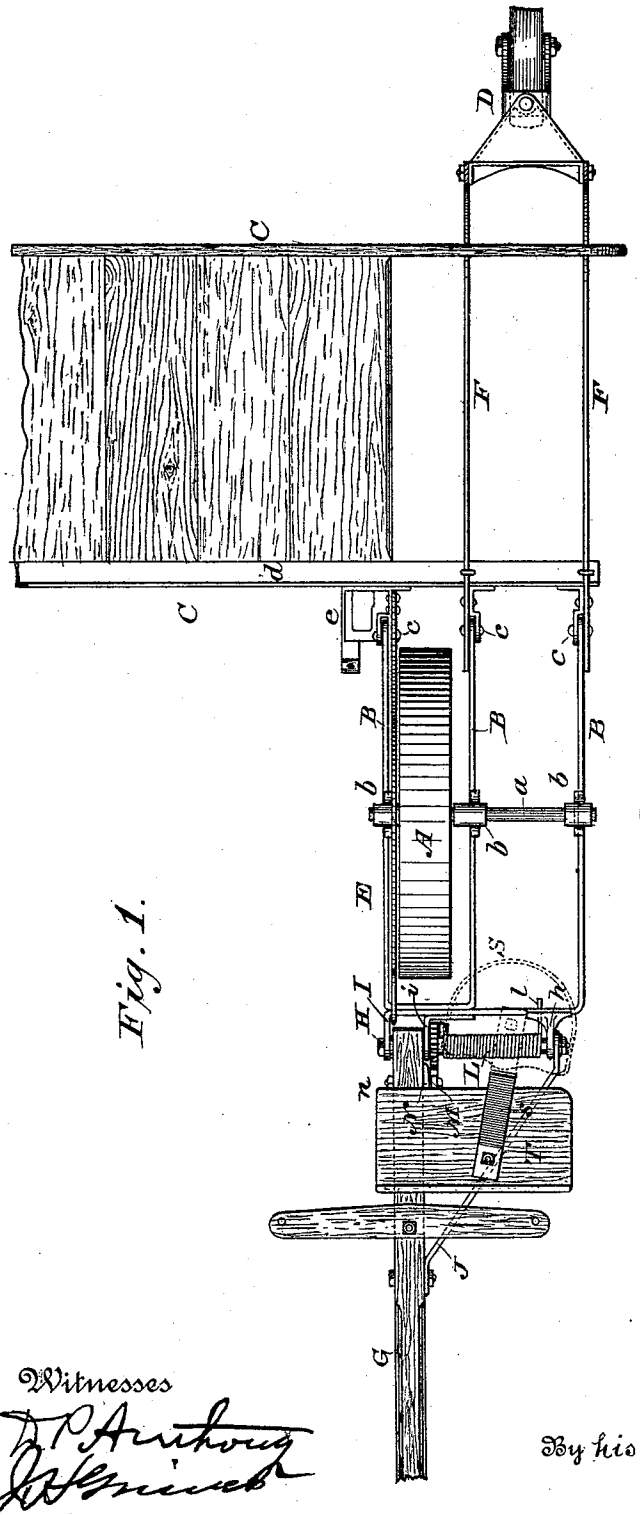


Fig. 1.

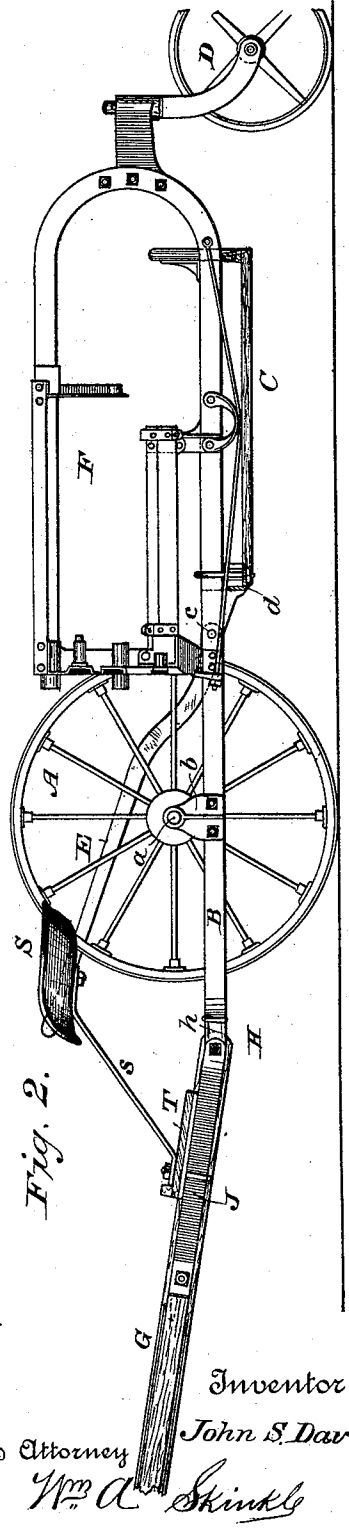


Fig. 2.

Witnesses

D. P. Anthony

J. L. Snider

Inventor

John S. Davis

By his Attorney

Wm. A. Skinkle

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

J. S. DAVIS.

HARVESTER TONGUE.

No. 457,185. Patented Aug. 4, 1891.

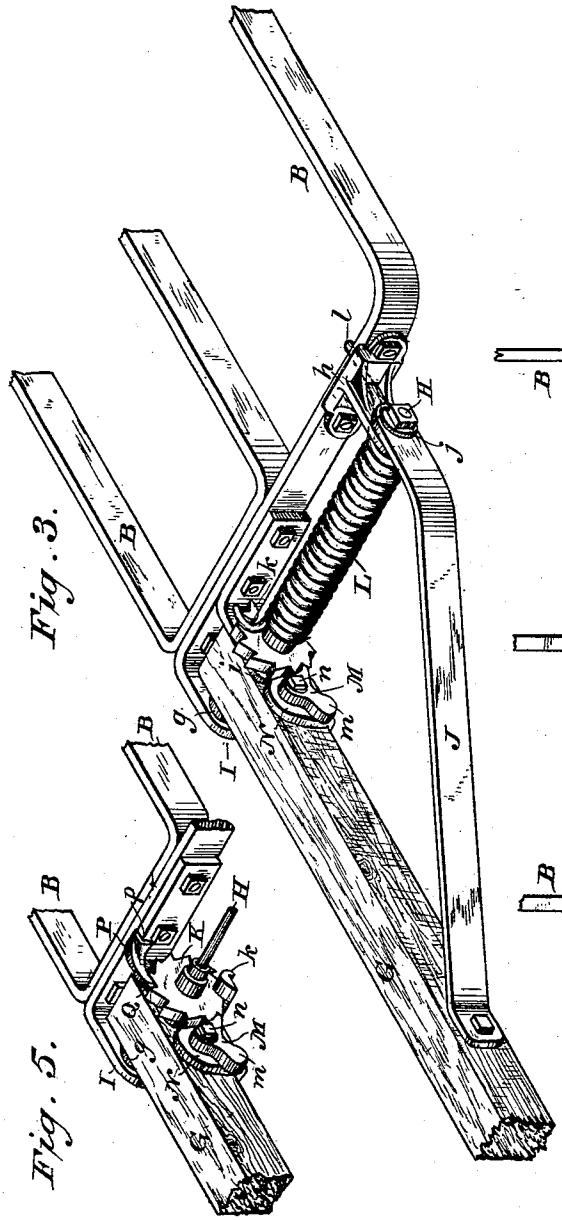


Fig. 3.

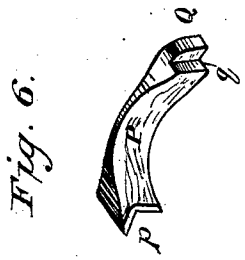


Fig. 6.

Fig. 5.

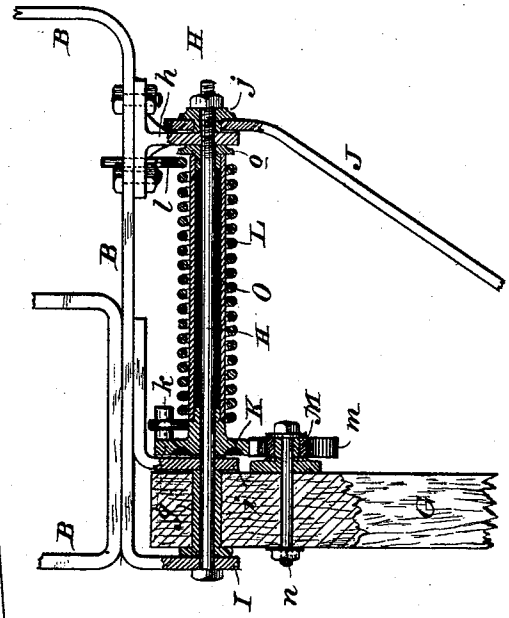


Fig. 4.

Witnesses

F. P. Armstrong

J. H. Graves

Inventor

John S. Davis

By his Attorney

Wm. A. Skinkle

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOHN S. DAVIS, OF CLEVELAND, OHIO.

HARVESTER-TONGUE.

SPECIFICATION forming part of Letters Patent No. 457,185, dated August 4, 1891.

Application filed June 9, 1890. Serial No. 354,745. (No model.)

To all whom it may concern:

Be it known that I, JOHN S. DAVIS, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga, State of Ohio, have invented certain new and useful Improvements in Harvester-Tongues; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it pertains to make and use the same.

It relates to the manner of pivoting the tongue and supporting or balancing its free end by means of a spring; and its objects are to relieve the horses' necks from the weight of a pivoted or free tongue, and also to utilize the weight and leverage of the tongue when applied at the front end of a harvester wheel-frame to aid in counterbalancing the weight of a platform pivotally connected to the rear end of the wheel-frame.

In the accompanying drawings I have shown my invention as applied to a harvester similar in its general features to the machines shown in many of my previously-granted patents, but more particularly in Patent No. 368,280, dated August 16, 1887, or No. 392,721, dated November 13, 1888. The details are designed to meet the particular requirement of this form of harvester; but, obviously, some of them might be used without the others, and many changes within the skill of a good mechanic might be made to adapt the invention to other forms of harvesters or vehicles employing loosely-pivoted tongues, without departing from the spirit of my invention, as hereinafter set forth in the claims.

Figure 1 is a general plan view of the harvester to illustrate the application of my invention in its preferred form. Fig. 2 is an outside elevation of the same, as seen from the stubble side of the machine. Fig. 3 is a perspective view, on an enlarged scale, of the front end of the harvester wheel-frame and the tongue hinged thereto and the balancing-spring applied at the heel end of the tongue. Fig. 4 is a detailed view, in horizontal section, through the center of the tongue-pivot. Fig. 5 is a view of a portion of the mechanism similar to Fig. 3 and showing the application of the holding-dog for winding up the spring.

The driving-wheel A is surrounded by the wheel-frame B, its axle *a* being mounted in bearing-hangers *b* on the frame. At its rear end the wheel-frame is pivotally connected to the front outer corner of the platform C by the pivot-pin *c*, and the rear side of the platform is supported by a caster-wheel D. A tilting-lever E is rigidly attached to the shoe *e* on the platform or to any other convenient place on the platform or binder-frame F and extends up to a position where it will stand within easy reach of the driver when in his seat. This lever may be provided with any suitable detent bolt and rack to hold it in the desired position to which it may be moved in raising or tilting the cutter-bar *d* on the platform.

The tongue G is pivoted on the bolt H between the lugs I *i* on the front of the wheel-frame, a sleeve or thimble *g*, fitted into the tongue, taking the wear of the bolt. The tongue-brace J, consisting, preferably, of a flat bar of iron, is pivoted on the bolt H, which is screwed through the threaded hole in the bracket or lug *h*, and passes through a small sleeve or thimble *j* in the brace. A ratchet-wheel K is mounted on the bolt just beside the lug *i*, and has a projection *k*, over which is hooked one end of a spiral spring L, wound around the pivot-bolt, its other end *l* extending under the frame-bar or any other suitable stop. A dog or pawl M is pivoted on a bracket N, securely fastened to the tongue by a bolt *n*, and engages the teeth of the ratchet-wheel, as clearly shown in Figs. 3 and 5, its heavily-weighted tail *m* serving to hold it into engagement without the use of a spring. In order to prevent the spring from bearing too hard upon and cutting into the pivot-bolt, I interpose between them a sleeve or thimble O, which consists of a plain piece of iron pipe, fitted at one end upon a reduced portion of the ratchet-wheel hub and at the other upon a thimble *o*, which is mounted on the bolt. The spring may be wound up in many ways; but I prefer to do so by means of a small loose dog P. (Shown in Figs. 5 and 6 of the drawings.) It is shaped with a square notch *p* at one end, which fits over the corner of the front frame-bar, and is adapted at the other to engage the teeth of the ratchet-wheel by either one of its two points Q or *q*. When the spring is to be wound up, the dog is placed in the position shown in Fig. 5, so that it will

hold the wheel K against backward rotation. The free end of the tongue is then raised, the pawl M slipping over the ratchet-teeth as the tongue goes up, but engaging one of them as the tongue comes down, turns the wheel, and tightens the spring. This operation must be repeated until the desired tension is put upon the spring, while the spring may be unwound by the reversal of the operation. I prefer to put the spring under enough strain to enable it to nearly balance the free end of the tongue. By this means I not only take most of the weight off the horses' necks, but I produce a very desirable result in balancing the machine on the axle of the main wheel, and thereby greatly relieve the strain or load on the tilt-lever.

Where the tongue is simply pivoted to the front of the main frame a portion only of its weight, together with that of the driver whose seat S is mounted by a spring-standard *s* on the foot-board T, being in front of the main axle, tends to counterbalance the weight of the platform, &c., behind it; but if the tongue were rigidly connected to the frame its entire weight, and in addition thereto the tremendous increase in effect due to the length or leverage of the tongue, would add largely to its effective balancing-power without adding to the actual weight of the harvester as a whole. Now, in view of the fact that the wheel-frame rocks and changes its angle relatively to the tongue when the front edge of the platform is raised and lowered, it is impossible to have a rigidly-connected tongue; but I secure substantially the same result by employing a long powerful spring at a tension that will just about balance the tongue, and yet of such a length that the change of angle between the tongue and frame will not add materially to its force or tension and overbalance the tongue when the angle is most acute.

Other forms of springs might be employed and the means of attaching and adjusting them varied through a wide range, and quite a number of such changes have been considered by me; but for present purposes I prefer the arrangement shown, as it is the neatest, most compact, and most readily applied to my present machine of any that I have had under consideration.

In the arrangement of parts shown in the drawings the seat is so located that the driver's weight falls principally behind the axis of the tongue-pivot, and therefore tends to counterbalance the tongue. Now a very light man in the seat might not have much effect in balancing the tongue, and the spring-tension may be increased to compensate for lack of weight of the driver until the desired effect is secured, or if a very heavy man were to drive the tension should be diminished to correspond with his weight.

What I claim as new and useful, and desire to secure by Letters Patent, is—

1. The combination of the wheel-frame, the tongue hinged thereto, the pivot-bolt, and the ratchet-wheel and coil-spring mounted on the pivot-bolt, one end of the spring being connected to the ratchet-wheel and the other end to the wheel-frame, with a pawl pivoted on the tongue and taking into the ratchet-wheel, substantially as hereinbefore set forth.

2. The combination of the wheel-frame, the tongue hinged thereto, the spring and the ratchet-wheel, the pawl pivoted on the tongue and engaging the ratchet, and the loose dog arranged to fit against the frame and into the teeth of the ratchet, substantially as and for the purpose set forth.

In testimony whereof I hereunto set my hand this 7th day of June, 1890, at Cleveland, Ohio.

JOHN S. DAVIS.

In presence of—
L. A. STRATTON,
H. J. RUSS.