No. 687,163.

Patented Nov. 19, 1901.

D. MAXWELL.

TEDDER.

(Application filed Mar. 16, 1900.)

(No Model.)

3 Sheets—Sheet 1.

Fig. 1.

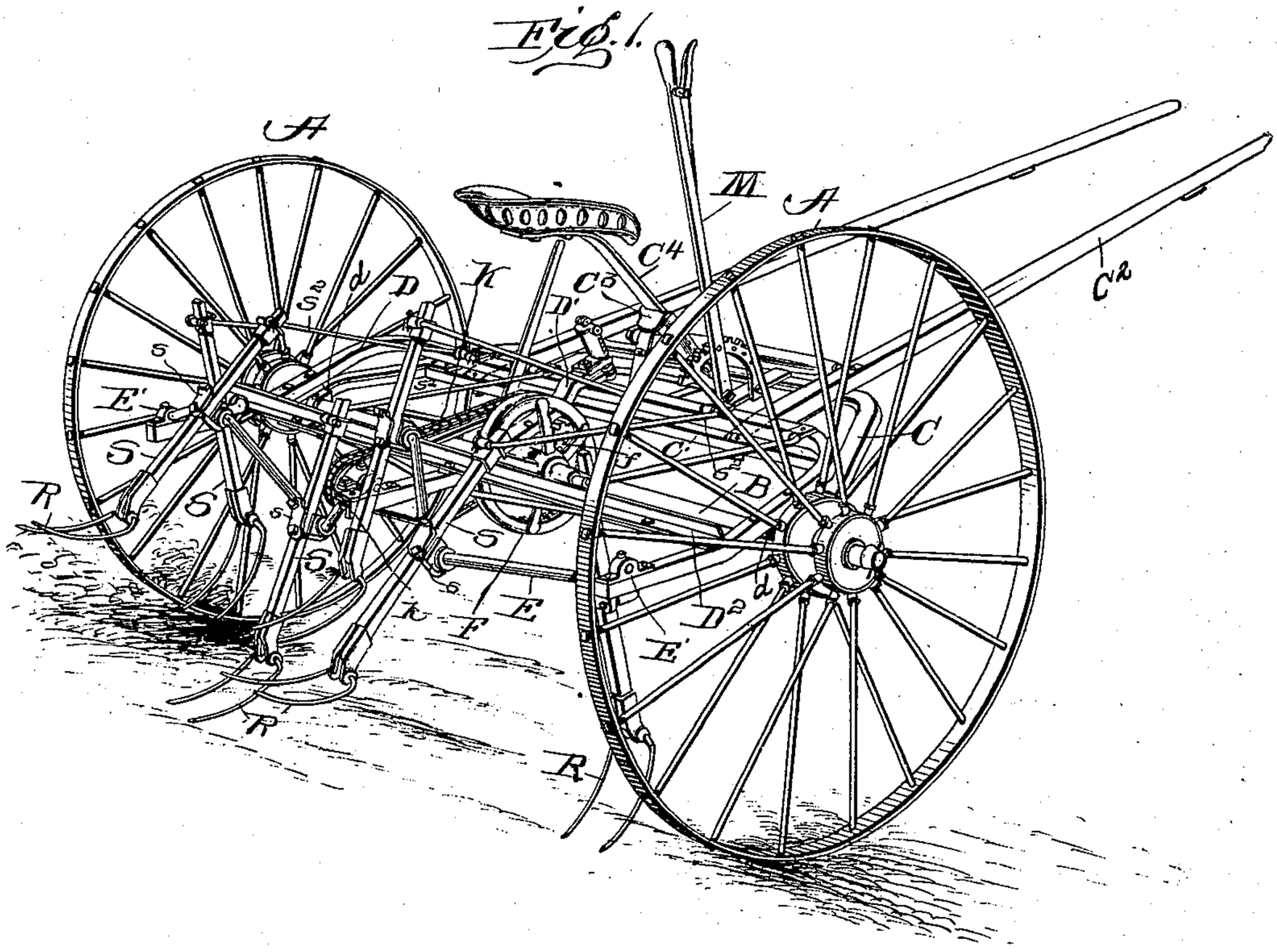


Fig. 4.

Witnesses
J. McFowler Jr.
Alexander J. Steuart.

Inventor
David Maxwell
by Church & Church
his Attorneys

No. 687,163. Patented Nov. 19, 1901.

D. MAXWELL.

TEDDER.

(Application filed Mar. 16, 1900.)

(No Model.) 3 Sheets—Sheet 2.

Fig. 2.

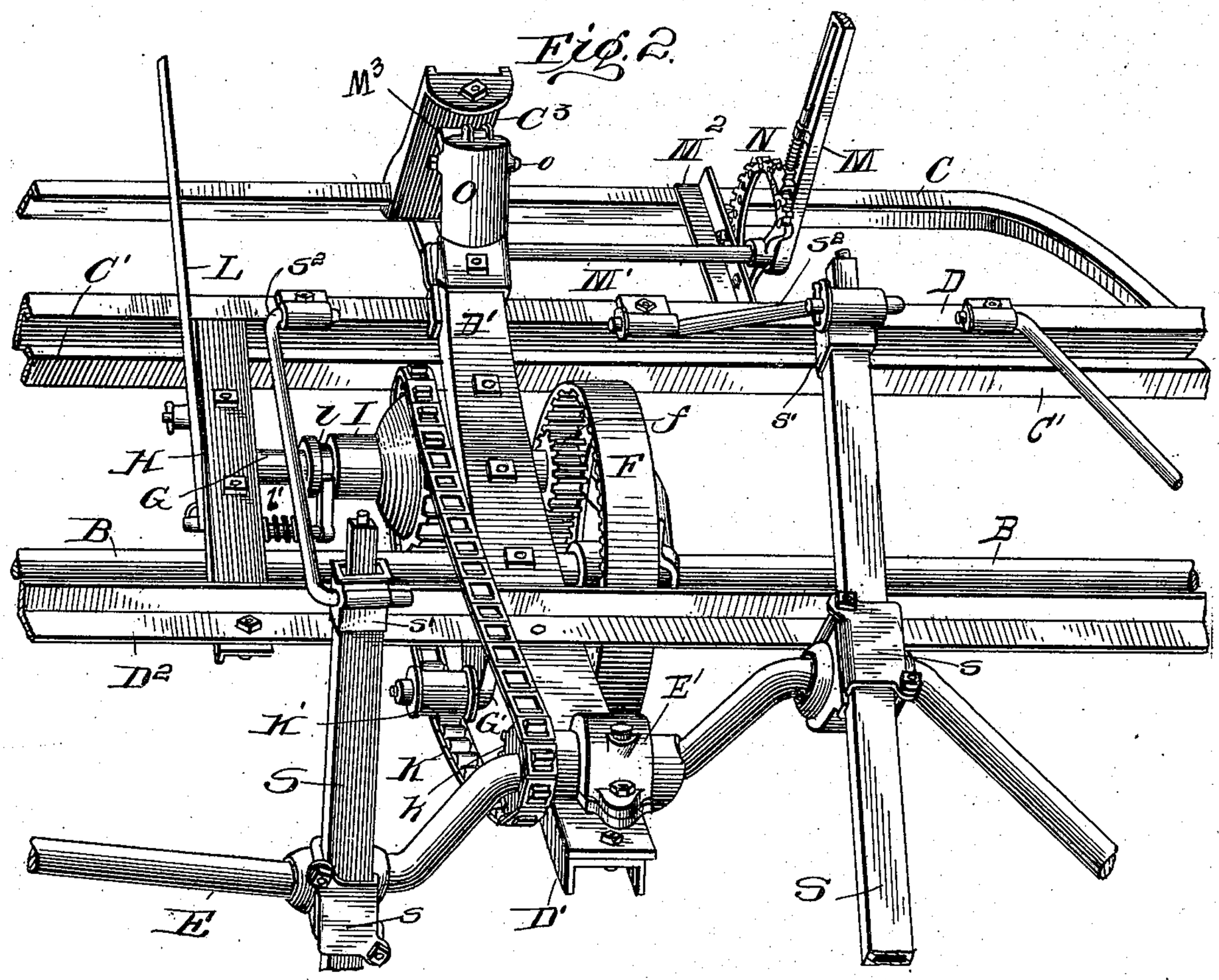
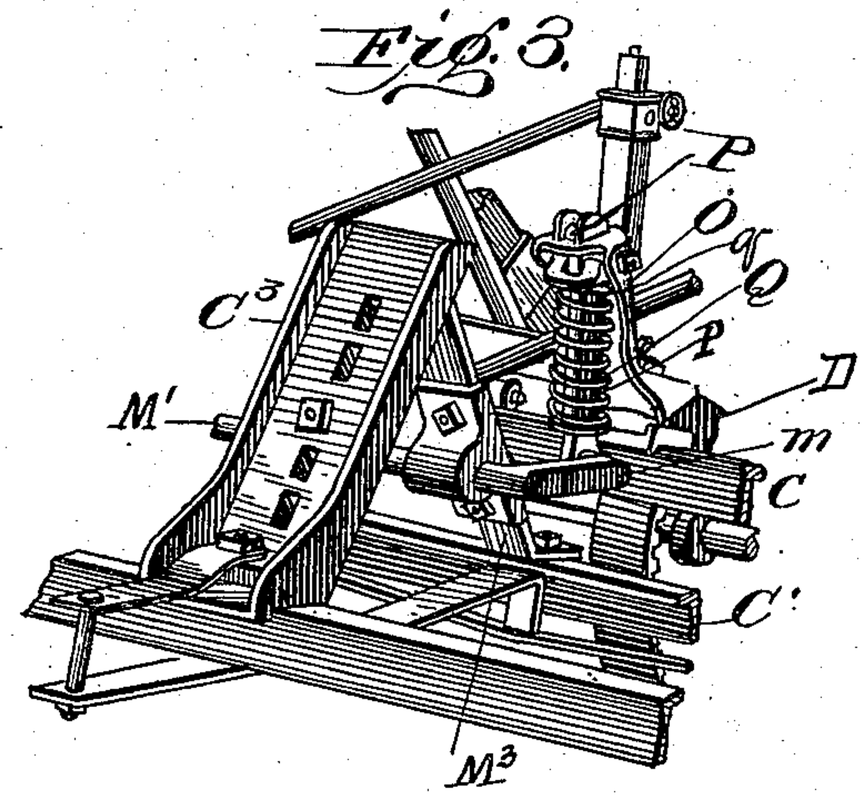


Fig. 3.



Witnesses
J. M. Fowler Jr.
Alexander Gilmore.

Inventor
David Maxwell
by Church & Church
his Attorneys

No. 687,163. Patented Nov. 19, 1901.

D. MAXWELL.

TEDDER.

(Application filed Mar. 16, 1900.)

(No Model.) 3 Sheets—Sheet 3.

Fig. 5.

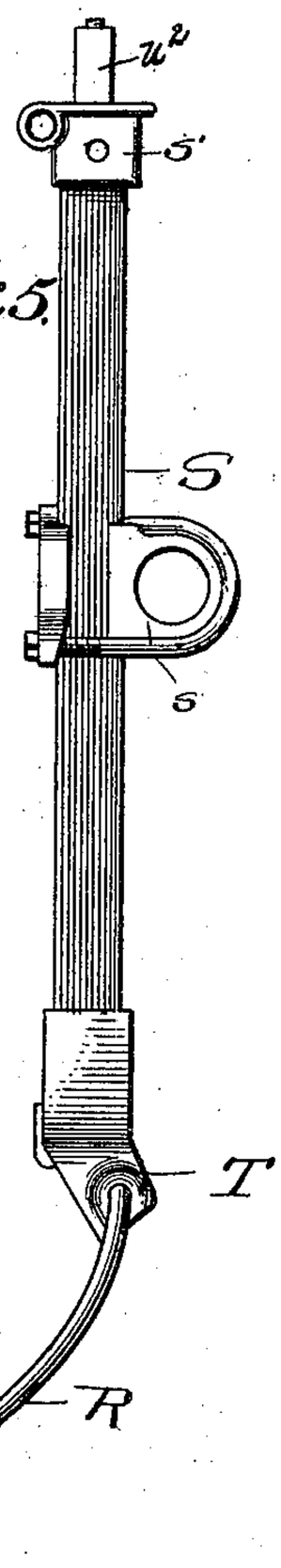


Fig. 6.

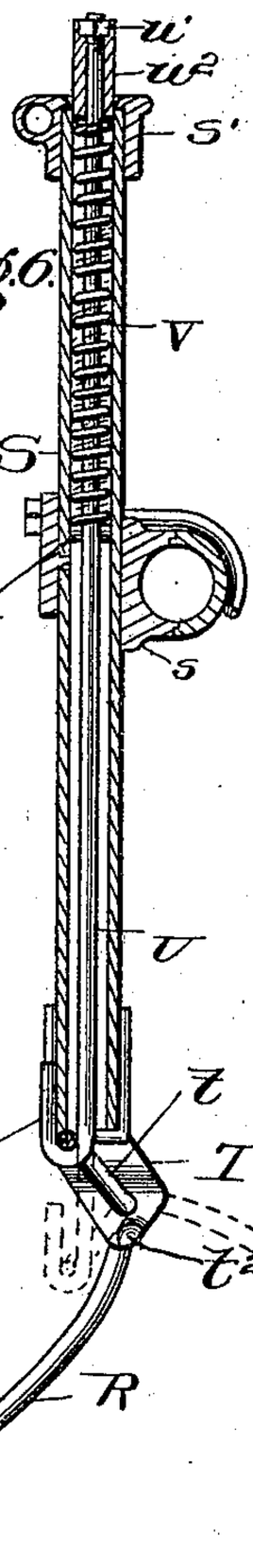
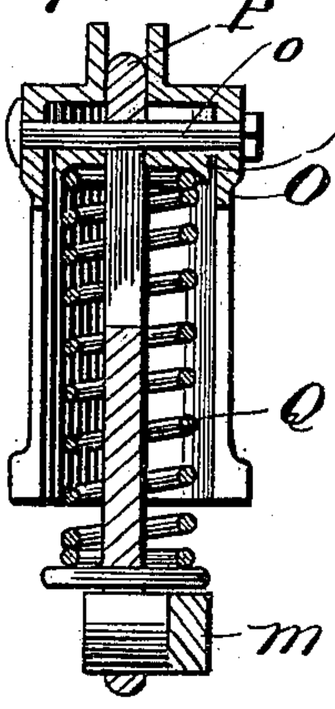


Fig. 7.



Witnesses
J. M. Fowler Jr.
Alexander Stewart.

Inventor
David Maxwell
by Church & Church.
his Attorneys

UNITED STATES PATENT OFFICE.

DAVID MAXWELL, OF ST. MARYS, CANADA, ASSIGNOR TO THE FIRM OF DAVID MAXWELL & SONS, OF ST. MARYS, PROVINCE OF ONTARIO, CANADA.

TEDDER.

SPECIFICATION forming part of Letters Patent No. 687,163, dated November 19, 1901.

Application filed March 16, 1900. Serial No. 8,941. (No model.)

To all whom it may concern:

Be it known that I, DAVID MAXWELL, of St. Marys, Province of Ontario, Canada, have invented certain new and useful Improvements in Tedders; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the letters of reference marked thereon.

This invention relates to improvements in tedders, and has for its object to provide a simple, strong, and effective machine which will have great capacity for adjustment and at the same time not be liable to become broken or the parts bent out of alinement.

The invention consists in certain novel details of construction and combinations and arrangements of parts, all as will be now described, and pointed out particularly in the appended claims.

Referring to the accompanying drawings, Figure 1 is a perspective view of a tedder embodying my present improvements. Fig. 2 is a detail perspective view looking at the driving mechanism from the rear. Fig. 3 is a similar view of the relieving-spring and its controlling-crank. Fig. 4 is a detail of the clutch in the driving-gear. Fig. 5 is a side elevation of one of the forks. Fig. 6 is a vertical section through the same with the fork thrown back and the spring under compression in dotted lines. Fig. 7 is a detail sectional view through the relieving-spring with its link.

Like letters of reference in the several figures indicate the same parts.

The tedder is, as usual, carried by ground-wheels A, in the present instance connected by a straight axle B, which rotates therewith, although any of the usual or preferred backing-ratchets may be interposed. Extending forwardly from the axle and journaled thereon in suitable bearings is a U-shaped frame C, having a cross-bar C′ connecting its two arms at a point about midway between its front bar and the axle, this U-shaped frame and cross-bar C′ constituting the main frame of the machine, to which the shafts C^2 are connected and which also supports the socket C^3 for the standard and seat C^4. A secondary and substantially U-shaped frame D is also journaled on the axle, preferably in bearings *d*, depending from the under side of its arms at about midway of their length, and this frame is adapted to support the working mechanism of the tedder, including the crank-shaft for the forks and the major portion of the driving mechanism therefor. In the preferred construction this secondary U-shaped frame has an intermediate arm or member D′, and the three arms are connected together in rear of the axle by a cross-piece D^2. The crank-shaft E for the tedder-forks, to be presently described, is journaled in bearings E′ on the rear ends of the arms of the frame D, and said arms, it will be seen, particularly in Figs. 1 and 2, are curved so as to raise the front and rear ends of the secondary frame, this curvature being made greater or less in the manufacture of the tedder, so as to permit of the use of longer or shorter forks or of larger or smaller ground-wheels without necessitating the changing of the other portion of the mechanism in any respect.

At an intermediate point on the axle there is mounted a relatively large internally-toothed gear F, adapted to mesh with a pinion *f*, mounted rigidly on the end of a secondary shaft G, journaled at one end in bearings supported beneath the central arm D′ of the secondary frame and at the other end in a bearing beneath a support H, extending from the front of the secondary frame to the cross-piece D^2 at a point slightly to one side of the intermediate arm D′. The secondary shaft G is located in front of the axle and beneath the secondary frame, this arrangement being made practicable by bending the arms of the secondary frame, as before explained, and forms a structure wherein the line of draft is located most favorably to prevent distorting the frame should unusual resistance to the driving mechanism occur. Between the arm D′ and the support H the secondary shaft G carries a sprocket-wheel and sleeve I, adapted to be connected with the shaft by a clutch connection, as illustrated in Fig. 4. The clutch consists, essentially, of a pin *i* on the shaft, with a recess or socket in the

sprocket-wheel, with which the pin engages when the sprocket-wheel is moved in one direction, but which permits the shaft to rotate independently of the sprocket-wheels when disengaged. The connection between the sprocket-wheel I and the fork crank-shaft is made by a sprocket-chain K, passing around said wheel and around a corresponding but preferably smaller sprocket-wheel *k* on the crank-shaft. The sprocket-wheel I is moved longitudinally of its shaft, so as to engage or disengage the clutch, and thereby rotate or permit the crank-shaft to remain stationary by means of a hand-lever L, journaled on the support H and having one of its ends bent to engage a groove *l* in the hub of the sprocket-wheel. The sprocket-wheel may be held in engagement by the spring *l'* or by any other usual or preferred means. The chain K passes around the axle and is held out of contact therewith by an intermediate guide-pulley or idler K', preferably adjustably mounted on the intermediate arm G'. Thus the secondary frame, together with the secondary shaft, the crank-shaft, and connected parts, may be turned about the axle to any inclination without any of the parts contacting with the axle or the main frame, and consequently the forks may be raised or lowered to any desired extent.

The mechanism for tilting the secondary frame and raising and lowering the forks preferably consists of a hand-lever M, pivoted on the main frame and connected with a crank-shaft M', the crank end *m* of which is connected with the secondary frame through an intermediate relieving-spring. (Best shown in Figs. 3 and 7.) The crank-shaft and hand-lever M, together with the secondary frame, are held in their position of adjustment by a segmental rack N and a pawl on the hand-lever of usual construction.

The relieving-spring is located centrally of the whole machine and preferably on the forward end of the intermediate arm D' of the secondary frame, for which purpose a spring-housing O is bolted to the end of said arm and provided at its upper end with a transverse bolt *o*, around which a link P, pivotally connected with the crank *m*, is adapted to play, while the relieving-spring itself (lettered Q) surrounds this link and is interposed between the lower end of the link and a washer *q*, which bears upon the transverse bolt *o*. The spring Q is a compression-spring, and thus, assuming that the secondary frame has been tilted, should any of the forks encounter a resistance tending to turn the frame back into a more or less horizontal position the spring would yield and prevent any breakage or distortion. The central location of the relieving-spring balances up the resistance and greatly simplifies the structure by dispensing with the necessity of long connections between opposite ends of the frame, such as has usually been employed in prior structures.

The shaft M' is preferably journaled in bearings supported one by a brace M^2, extending between the front of the frame C and the cross-piece C', and the other by a diagonal brace M^3, extending from the cross-piece C' to the seat-socket C^3, as shown clearly in Fig. 3 of the drawings.

The carriers or direct supports for the tedder-forks R are in the form of tubular casings S, preferably, though not necessarily, square and having bearings *s*, attached thereto near the center, which receive the cranked portions of the tedder crank-shaft E. The upper ends of the casings are provided with other bearings *s'*, connected by links s^2 with the front bar of the supplemental frame. The tubular casings S at their lower ends are provided with bearings T, in which the forks R are journaled, such forks themselves being preferably, though not necessarily, formed of a single length of rod having a cranked portion *t* located intermediate the bearings T and adapted when the fork is turned back to the position indicated in dotted lines in Fig. 6 to contact with stops t^2 and arrest the further rotation of the fork in the bearing.

Extending longitudinally through the casing S is a rod U, having its lower end provided with a hook *u*, which engages the cranked portion of the forks, while its upper end is provided with a nut *u'*, adapted to rest in a socket in the upper end of a sleeve u^2, movable longitudinally within the casing and adapted to bear against a compression-spring V, located between the inner end of said sleeve or socket and suitable stops or pins W, passed transversely through the casing on each side of the rod. The effect of this arrangement is to hold the forks normally in their operative position; but should they encounter resistance by sticking into the earth or by striking an obstruction they will be allowed to yield backwardly until the obstruction is passed. The nut *u'* is adjustable on the end of the rod, but is held against accidental release or movement by the socket u^2, and the latter is preferably held against rotation by fitting within the square casing S. It will be particularly noted that the spring is entirely inclosed by the casing, and hence there is no danger of dirt or hay working into it and preventing its effective action, and at the same time the adjusting means for such spring is readily accessible at all times. A nut and threaded rod are much to be preferred as the adjusting means, but it is obvious that other well-known forms of adjustable stops for the upper end of the spring may be employed without departing from the spirit of my invention.

The entire frame of the machine is preferably formed of angle or channel irons, which may be of relatively light caliber, and by reason of the formation of the frames of U shape and the location of the driving and controlling mechanisms centrally there is little or no liability of the frame being distorted and

thrown permanently out of operative alinement by unusual usage or rough handling.

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

1. In a tedder the combination with the axle, ground-wheels, U-shaped main frame journaled on said axle, intermediate cross-piece connecting the arms of said frame, and shafts connected with said cross-piece and front bar of the frame respectively, of a secondary U-shaped frame located above the main frame having rearwardly-extending arms curved upwardly intermediate their ends and journaled on the axle, the crank-shaft journaled on the rearwardly-extending ends of the arms, tedder-forks journaled on said crank-shaft, and a driving-gear embodying a gear-wheel on the axle, a secondary drive-shaft journaled on the under side of the secondary frame in front of the axle and having a pinion meshing with said gear, sprocket-wheels on said secondary shaft and crank-shaft respectively, a sprocket-chain connecting said sprocket-wheels and a tilting mechanism for the secondary frame; substantially as described.

2. In a tedder the combination with the axle, ground-wheels, forwardly-extending U-shaped main frame journaled on the axle, shafts and seat and tilting mechanism mounted on said forwardly-extending U-shaped frame, of a secondary U-shaped frame located above the main frame also journaled on the axle, and having end and intermediate rearwardly-extending arms curved upwardly as described, the crank-shaft journaled on the ends of said arms, tedder-forks carried by said crank-shaft and a driving-gear for said crank-shaft embodying an internally-toothed gear-wheel on the axle, a secondary shaft journaled beneath the secondary frame, forward of the axle, a pinion on said secondary shaft meshing with the internally-toothed gear, sprocket-wheels on said secondary shaft and crank-shaft respectively, and a sprocket-chain passing around the axle and connecting said sprocket-wheels; substantially as described.

3. In a tedder the combination with the main and secondary frames and the axle on which said frames are journaled, of the teddering mechanism on the secondary frame and a tilting mechanism for said secondary frame embodying a tilting lever and a single relieving-spring interposed centrally of the machine between the said lever and the secondary frame; substantially as described.

4. In a hay-tedder the combination with the main frame, axle on which it is journaled and secondary frame journaled on said axle and having an intermediate arm extending rearwardly at a central point, of a relieving-spring casing carried by the front end of said intermediate arm, a controlling-handle and crank-shaft journaled on the main frame, and a link-and-spring connection interposed between the crank of said shaft and the controlling-spring casing of the secondary frame; substantially as described.

5. In a tedder the combination with the axle, ground-wheels, U-shaped main frame journaled on said axle, a U-shaped secondary frame overlying the main frame and also journaled on said axle having rearwardly-extending arms, the intermediate arm on said secondary frame, the crank-shaft carrying the tedder-forks journaled on the rearwardly-extending ends of said arms, the tilting crank-shaft journaled on the main frame, a controlling-handle for said tilting crank-shaft, a link connecting the crank of said shaft and the central arm of the secondary frame and a spring interposed between the end of said crank and said arm whereby the secondary frame may yield without moving the crank-shaft of the tilting mechanism; substantially as described.

6. In a hay-tedder, the combination with a tubular casing, bearings mounted on its lower end, a tedder-fork journaled in said bearings and having a cranked portion intermediate said bearings, a rod connected with said cranked portion and extending through the casing, an adjustable stop on its upper end and a spring located entirely within the casing and surrounding the rod for holding the fork in normal position; substantially as described.

7. In a tedder the combination with a tubular casing having bearings at each end and at an intermediate point, a tedder-fork journaled in the bearings at one end of the casing and having an intermediate cranked portion, stops with which said cranked portion is adapted to contact when the fork is bent backwardly, a rod connected with said cranked portion and extending through the casing, a tubular sleeve surrounding the upper end of the rod and having a socket therein, a nut on the rod adapted to fit in said socket, a coil-spring located entirely within the casing and beneath the lower end of the socket and a projection for supporting the lower end of said spring; substantially as described.

8. In a tedder the combination with a square tubular casing having end and intermediate bearings, a tedder-fork journaled in the bearings at one end of the casing and having an intermediate cranked portion, stops with which said cranked portion is adapted to contact when the fork is bent backwardly, a rod connected with said cranked portion and extending through the casing, a squared tubular sleeve surrounding the upper end of the rod and having a socket therein, a nut on the rod adapted to fit in said socket, a spring located beneath the lower end of the socket within the casing and a projection for supporting the lower end of said spring; substantially as described.

DAVID MAXWELL.

Witnesses:
LEONARD HARSTONE,
WM. CARR.