

No. 765,194.

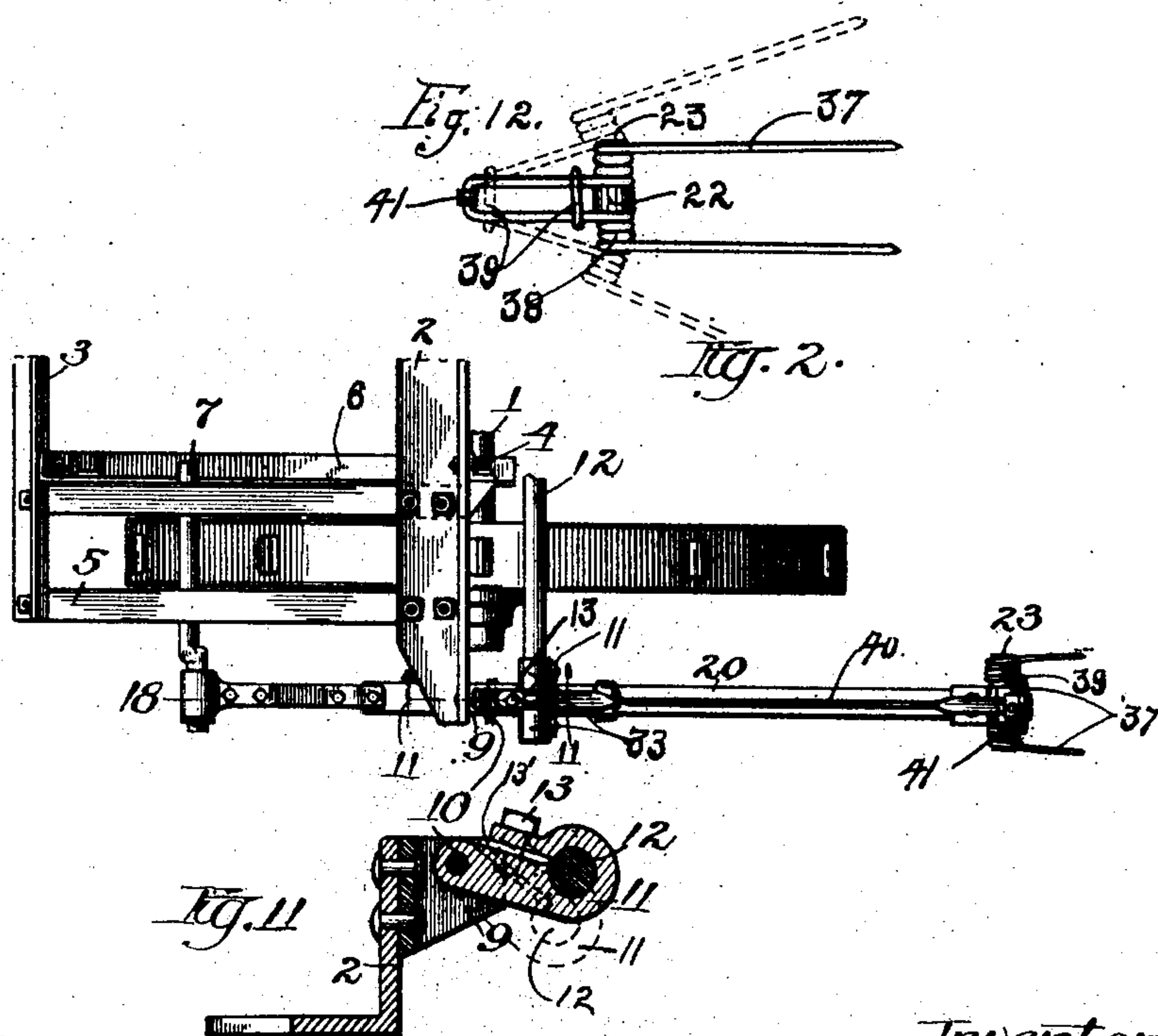
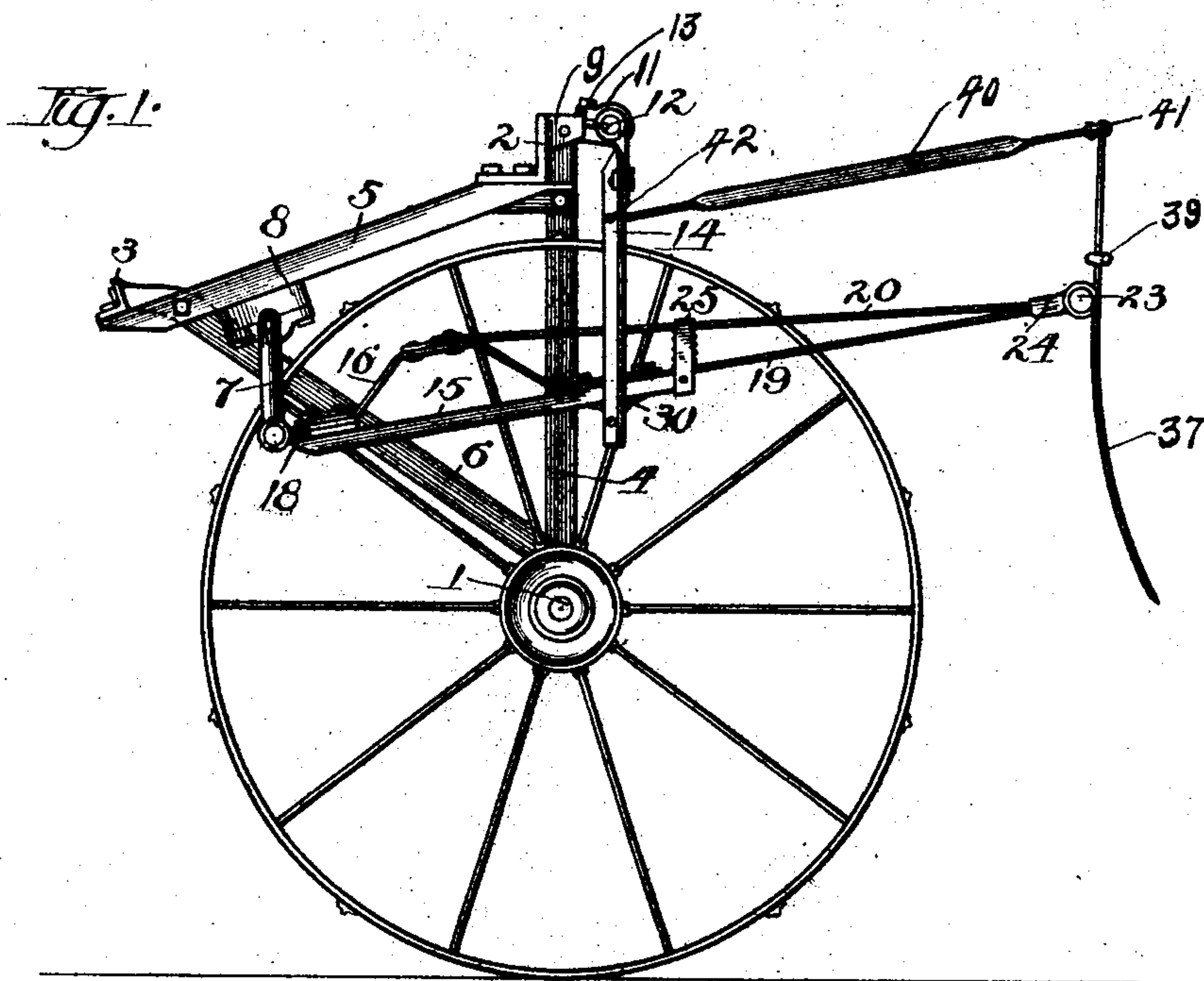
PATENTED JULY 19, 1904.

O. B. REYNOLDS.  
HAY TEDDER.

APPLICATION FILED APR. 4, 1904.

NO MODEL.

2 SHEETS—SHEET 1.



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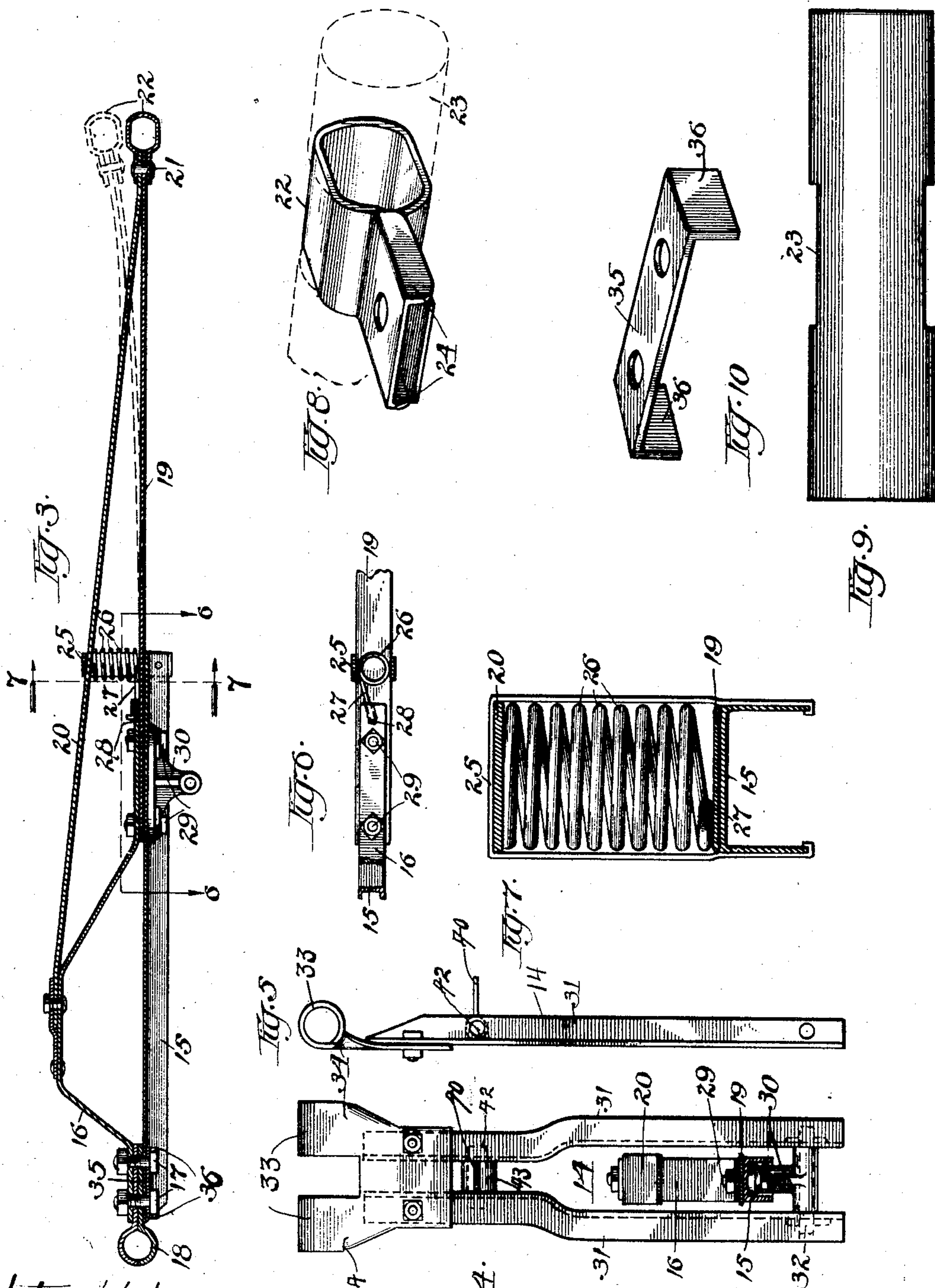
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# UNITED STATES PATENT OFFICE.

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## HAY-TEDDER.

SPECIFICATION forming part of Letters Patent No. 765,194, dated July 19, 1904.

Application filed April 4, 1904. Serial No. 201,386. (No model.)

*To all whom it may concern:*

Be it known that I, OLIVER B. REYNOLDS, a citizen of the United States, residing at Brockton, in the county of Plymouth and State of Massachusetts, have invented a new and useful Improvement in Hay-Tedders, of which the following is a complete specification.

This invention relates to hay-tedder machines of that type shown in a former patent granted to me October 14, 1902, No. 711,226, and may be regarded as an improvement on the machine disclosed therein.

The primary object of this invention is to secure a better and cheaper construction of the various parts of the machine and a construction which will result in a more perfect action of the forks on the tedder-arms. Heretofore in this type of machines a crank-shaft having a comparatively short throw has been used in which the required movement of the fork was obtained by effecting a rotary movement of same on its supporting-spool. This was accomplished by imparting the required movement to the upper end of the fork by securing the controlling or fork rod to the upwardly-projecting end of the vibrating link on which the fork-arm proper was suspended. Such a construction would necessarily result in a motion of the fork-rod reverse to that of the fork-arm, thus producing considerable rotative movement of the said fork on its spool.

In one of my former patents—viz., No. 449,948, dated April 7, 1891—the upper pivotal connections of the fork-rod and link were made substantially coincident, which construction also resulted in a considerable rotative movement of the fork on its spool, and in either construction a shock resulted due to the rapidly and oppositely moving members, which shock greatly reduced the life of the machine and impaired its smooth and easy operation. The above-mentioned evil effect is avoided in this invention by giving a greater crank movement to the fork-arm and less rotative movement of the fork on its spool by connecting the fork-rod to the swinging link intermediate of the pivotal support of the said link and its connection with the fork-arm.

Further objects of the invention will appear

in the improved construction of the various details as set forth in the annexed drawings, in which—

Figure 1 represents a side elevation of the frame of the tedder, one of the supporting-wheels, one of the tedder-arms, and coöperative elements in connection therewith. Fig. 2 is a plan view of the parts shown in Fig. 1, being a representation of the left-hand side of the tedder. Fig. 3 is a sectional view of one of the tedder-arms. Fig. 4 represents a rear elevation of the swinging link for supporting and controlling the movement of the tedder-arm. Fig. 5 is a side view of the swinging link shown in Fig. 4. Fig. 6 is a fragmentary view as indicated by the line 6 6 in Fig. 3. Fig. 7 is a sectional view as indicated by the line 7 7 in Fig. 3, showing the yoke and coil-spring interposed between the upper and lower members of the fork-arm. Fig. 8 is a detail perspective of the spool-engaging clip on the rear end of the fork-arm by means of which the fork is secured to the fork-arm. Fig. 9 is a side elevation showing the construction of the spool on which the fork is mounted. Fig. 10 is a detail perspective of the reinforcing and locking plate lying beneath and within the forward end of the channel-bar of the fork-arm. Fig. 11 is a section through the upper angle-bar of the frame of the machine as indicated by the line 11 11 in Fig. 2; and Fig. 12 is a rear elevation of the tedder-fork mounted on its supporting-spool and designed to show the yoke or clamp which prevents lateral movement of the fork-tines, the dotted lines indicating the position of the parts when the said yoke or clamp is raised to permit the fork-tines to be sprung laterally and withdrawn from the supporting-spool.

The frame of the machine is essentially triangular, the shaft or main axle 1 being located at the lower apex thereof, the transversely-extending angle-bar 2 forming the main upper member and lying substantially above the axle 1, while the angle-bar 3 forms the front member of said frame. These three parts or members are connected by means of the vertically-disposed angle-bars 4, the upper angle-bars 5, and the obliquely-ex-



tending angle-bars 6. These connecting-bars 4 5 6 are secured to each other, as well as to the transversely-extending angle-bars 2 and 3, as clearly shown in Figs. 1 and 2.

5 Near the forward apex of the triangular frame is located the crank-shaft 7, journaling in the split boxes 8, the cranks of this shaft being disposed at various angles to give the proper tossing effect to the forks in a man-  
10 ner well understood in these machines.

Secured to the transversely-extending angle-bar 2 are the angle-plates 9, provided with apertures in which journal the pins 10, which form a pivotal bearing for the supporting-  
15 arms 11 of the adjustment-shaft 12. These supporting-arms 11, only one of which is shown, (see Figs. 1, 2, and 11,) have formed in their outer ends split boxes, which are made of a single piece held rigidly to the shaft 12  
20 by means of the key 13' and screw 13. This adjustment-shaft 12 forms a vertically-adjustable pivotal bearing for the swinging links 14, which support the fork-arms. The adjustment-shaft 12 is held relatively fixed in  
25 the arms 11 by means of the set-screws 13 and the keys 13', the keys being secured in place by the said set-screws. The shaft 12 is thus made to move about the pivotal centers formed by the pins 10 and is controlled in po-  
30 sition by any suitable means—such, for instance, as shown in the patent of reference, and which may be consulted for further details not material to this invention.

Proceeding to the description of the fork-  
35 arms, reference is made to Fig. 3, in which is shown a fork-arm essentially the same in its operation as the fork-arm disclosed in the patent above mentioned, but of a somewhat modified and improved construction. 15 design-  
40 nates a channel-bar forming the principal member of the rigid portions of the said fork-arm. Connected to this is the superposed truss-bar 16, having the highest portion of its length lying parallel with the said channel-  
45 bar 15. The forward end of the said truss-bar is connected to the forward end of the channel-bar by means of the bolts 17. Secured also to the forward end of the channel-  
50 bar 15 and intermediate of its end and the end of the truss-bar 16 is the crank-box bearing 18, constructed as shown in Fig. 3, the said bearing engaging the wrists of the crank-shaft 7. This crank-box bearing, it will be  
55 seen, consists simply of two straps having their forward ends bent to form opposing halves of the eye which engages the wrist of the crank-shaft, while the two ends afford means for securing it to the fork-arm, thus making a very cheap and effective bearing and  
60 one which can be removed with little trouble.

To the rear end of the channel-bar 15 is secured the rearwardly-extending flexible bar or flat spring 19, and to the upper and horizontally-extending portion of the truss-bar 16  
65 is secured the forward end of the flat spring

20, which extends rearwardly and is convergent with respect to the channel-bar 15 and spring 19, to the latter of which it is rigidly secured by means of a bolt or rivet 21. This bolt or rivet also secures to the rearward  
70 ends of the flat springs 19 and 20 the clip 22, which engages the fork-bearing spool 23, the said spool being provided with two oppositely-disposed flattened portions with which said clip is adapted to engage, and thus pre-  
75 vent it from turning. To prevent lateral displacement of the clip, it is provided with the laterally - arranged downwardly - projecting flanges or lips 24, which embrace the ends of the springs 19 and 20.

To the rear end of the channel-bar 15 is secured or clamped the yoke 25, which engages both the said springs, as shown in Fig. 3, and forms a fulcrum for the upper spring 20 when  
80 upward stress is applied to the rear end of the fork-arm. A coil-spring 26 is placed within the yoke in a position to bear against the said spring 20 and keep it from excessive buckling when stress is applied thereto. The peculiar  
85 action of these springs will not be dwelt upon here, since they constitute no part of this invention; but the patent of reference may be consulted for a description of their special characteristics. The free end 27 of the coil-  
90 spring 26 is securely held by clamping it beneath the rearward end of the truss-bar 16, which is provided with an aperture 28, adapted to engage the upturned portion of the projecting end 27 of said coil, as clearly shown  
95 in Figs. 3 and 6. The bolts 29 secure together not only the rear ends of the truss-bar 16 and channel-bar 15 and the forward end of the spring 19, but also support a casting 30, which forms a hanger by means of which connection is effected between the lower end of the  
100 swinging link 14 and the fork-arm, as shown in Figs. 1 and 3. This link 14 consists of the two laterally-disposed angle-bars 31, which connect at their lower ends with a pin 32 to the casting 30, as shown in Figs. 3 and 4. The  
105 upper ends of these angle-bars 31 are secured to a plate, said plate terminating above in an eye 33, which engages the adjustment-shaft 12, as before stated. This eye-forming plate is constructed, preferably, of a single piece, as  
110 shown in Figs. 4 and 5, the eye-forming part being turned up into a notch 34 in the shank portion of the plate and in this manner reinforced and securely locked in proper position. The plate forming the eye 33 is notched cen-  
115 trally, thus making a two-part eye or a bifurcated termination of the upper end of the swinging link 14. This two-part eye or bifurcated end of said swinging link embraces the end of the supporting-arm 11 of the adjust-  
120 ment-shaft 12, the said link being thus prevented from longitudinal movement on the adjustment-shaft by the said arm. By having the links 14 engage the adjustment-shaft at positions substantially coincident with the  
125 130



engagement of the supporting-arms 11 therewith instead of at positions intermediate thereof, as heretofore constructed, the support is made more firm, the tendency to vibrate lessened, and the efficiency of operation increased.

Beneath the forward end of the channel-bar 15 and secured by the bolts 17 thereto is the reinforcing-plate 35, (shown in Fig. 10,) with the downturned ends 36, which serve as locks to prevent turning of the said bolt 17, as clearly indicated in Fig. 3.

The fork 37 consists simply of a spring-rod bent to form two parallel arms extending at their lower ends slightly rearward, with coil-springs 38 to engage the spool 23. In order to permit the fork-tines to be readily withdrawn from the spools, the spools are made to come practically flush with the outer normal position of the coil-springs, and to prevent them from becoming inadvertently disengaged from the supporting-spool a yoke or clamp 39, formed with bent eyes or loops, is made to engage the arms of the fork immediately above the spool and prevent lateral movement thereof. When it is desired to remove the tines from the spool, the yoke or clamp 39 is slipped upwardly to the position shown in dotted lines in Fig. 12, after which the tines may be sprung out over the ends of the spool. By means of this clamp the length of the spool is thus enabled to be made considerably shorter, the tines thus more easily removed when desired, and their displacement when in operation rendered impossible. To the upper end of the fork 37 is pivotally connected the fork-controlling rod 40 by means of the clip 41, said fork-controlling rod 40 connecting at its forward end with the swinging link 14 at a point intermediate of the length of the latter. The connection between the fork-controlling rod and swinging link is effected by means of the pin 42, which passes through an eye 43 on the forward end of the controlling-rod 40, said eye being located between the angle-bars forming the swinging link.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a hay-tedder, in combination, a fork-arm, a fork pivotally mounted on the rear end thereof, said fork having an upwardly-extending arm, a swinging link pivotally supported at its upper end and connected at its lower end to the said fork-arm intermediate of the length thereof and a fork-controlling rod connecting the upper end of said upwardly-extending arm of said fork to the said swinging link intermediate of the upper and lower pivotal connections of same, substantially as described.

2. In a hay-tedder, a tedder-arm comprising a fork-arm, a fork pivotally mounted on the rear end thereof, said fork having an upwardly-extending arm in connection therewith, a swinging link vibratably mounted upon an adjustable support at its upper end and pivotally connected to the fork-arm at its

lower end intermediate of the length of the said fork-arm, the said swinging link being arranged substantially parallel with the said upwardly-extending arm of said fork, and a fork-controlling rod connecting the upwardly-extending arm of the fork with the said swinging link at a point below the upper pivotal support thereof, said fork-controlling rod being disposed substantially parallel with the fork-arm, thus forming in connection with the said upwardly-extending arm of the fork and the swinging link a parallelogram, substantially as described.

3. In a fork-arm for hay-tedders a forward and rigid portion consisting of a channel-bar and a superposed truss-bar substantially of even length therewith, a rearward flexible portion consisting of superposed flexible bars extending from said forward portion rearwardly, a fork pivotally mounted on the rear end thereof, a fork-controlling rod, and a pivotally-mounted link for supporting said fork-arm, said link consisting of two parallel bars united at their upper ends by means of a plate, the upper end of which terminates in an eye, and the lateral margin of said plate beyond the eye-forming portion thereof being bent or depressed to form a lock or reinforcing-stop for the eye portion of said plate, substantially as described.

4. In a hay-tedder, a fork-arm having the rigid portion thereof consisting of a channel-bar and a superposed truss-bar substantially of even length therewith, a rearward flexible portion consisting of superposed flexible bars extending from the said rigid portion rearwardly, a fork pivotally mounted on the rear end thereof, a fork-controlling rod, a yoke secured to the rear end of the said channel-bar, said yoke extending upwardly and embracing the flexible bars, a spring within the yoke adapted to bear against the upper flexible bar, and a pivotally-mounted vibratile link for supporting said fork-arm, substantially as described.

5. In a hay-tedder, a fork-arm having the rigid portion thereof consisting of a channel-bar and a superposed truss-bar substantially of even length therewith, a rearward flexible portion consisting of superposed flexible bars extending from the said rigid portion rearwardly, a fork pivotally mounted on the rear end thereof, a fork-controlling rod, a yoke secured to the rear end of the said channel-bar, said yoke extending upwardly and embracing the flexible bars, a spring within the yoke adapted to bear against the upper flexible bar, a hanger secured to said channel-bar independent of the yoke connection therewith, and a pivotally-mounted vibratile link engaging said hanger for supporting the said fork-arm, substantially as described.

6. In a fork-arm for hay-tedders, a forward rigid portion consisting of a rigid channel-bar and a superposed truss-bar substantially of



even length therewith, a two-part crank-box comprised of two straps having their forward ends bent to form the opposing halves of said box, while the rearwardly-projecting ends of  
 5 said halves constitute fastening means for same, the said rearwardly-projecting ends being between the forward ends of the said channel and truss bars, and a rearward flexible portion consisting of superposed flexible bars  
 10 extending from the said rigid portion rearwardly, a fork pivotally mounted on the rear end thereof, a fork-controlling rod, and a pivotally-mounted vibratile link for supporting said fork-arm, substantially as described.

15 7. In a hay-tedder, in combination, a fork-arm, a fork pivotally mounted in the rear end thereof, said fork having upwardly-extending arms, adjustment-shaft-supporting arms, an adjustment-shaft rigidly secured to said arms,  
 20 a swinging link pivotally supported at its upper end on the said adjustment-shaft and connected at its lower end to said fork-arm intermediate of the length thereof, the said swinging link being supported upon said adjustment-shaft at a position immediately adjacent  
 25 to the connection of the adjustment-shaft-supporting arms therewith, and a fork-controlling rod connecting the end of the upwardly-extending arm of the said fork to the said swinging  
 30 link, substantially as described.

8. In a hay-tedder, in combination, a fork-arm, a fork pivotally mounted on the rear end thereof, said fork having an upwardly-extending arm, adjustment-shaft-supporting arms, an adjustment-shaft rigidly secured in said  
 35 arms, a swinging link provided with a bifurcated upper end said bifurcation embracing the adjustment-shaft-supporting arms the said link being connected at its lower end to the  
 40 fork-arms intermediate of their length, and a fork-controlling rod connecting the end of said upwardly-extending arm of said fork to the said swinging link, substantially as described.

9. In a hay-tedder, in combination, a fork-arm, a spool secured to the rear end thereof,  
 45 a fork-controlling rod, a fork consisting of two parallel arms forming an upwardly-extending loop which engages said fork-controlling rod, each of said arms being provided with a coil  
 50 which engages the said spool, and a yoke or clamp adapted to engage the arms of said fork above the coils thereof and prevent lateral movement of same, the said yoke or clamp being adjustably secured to said arms, substantially as described.

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