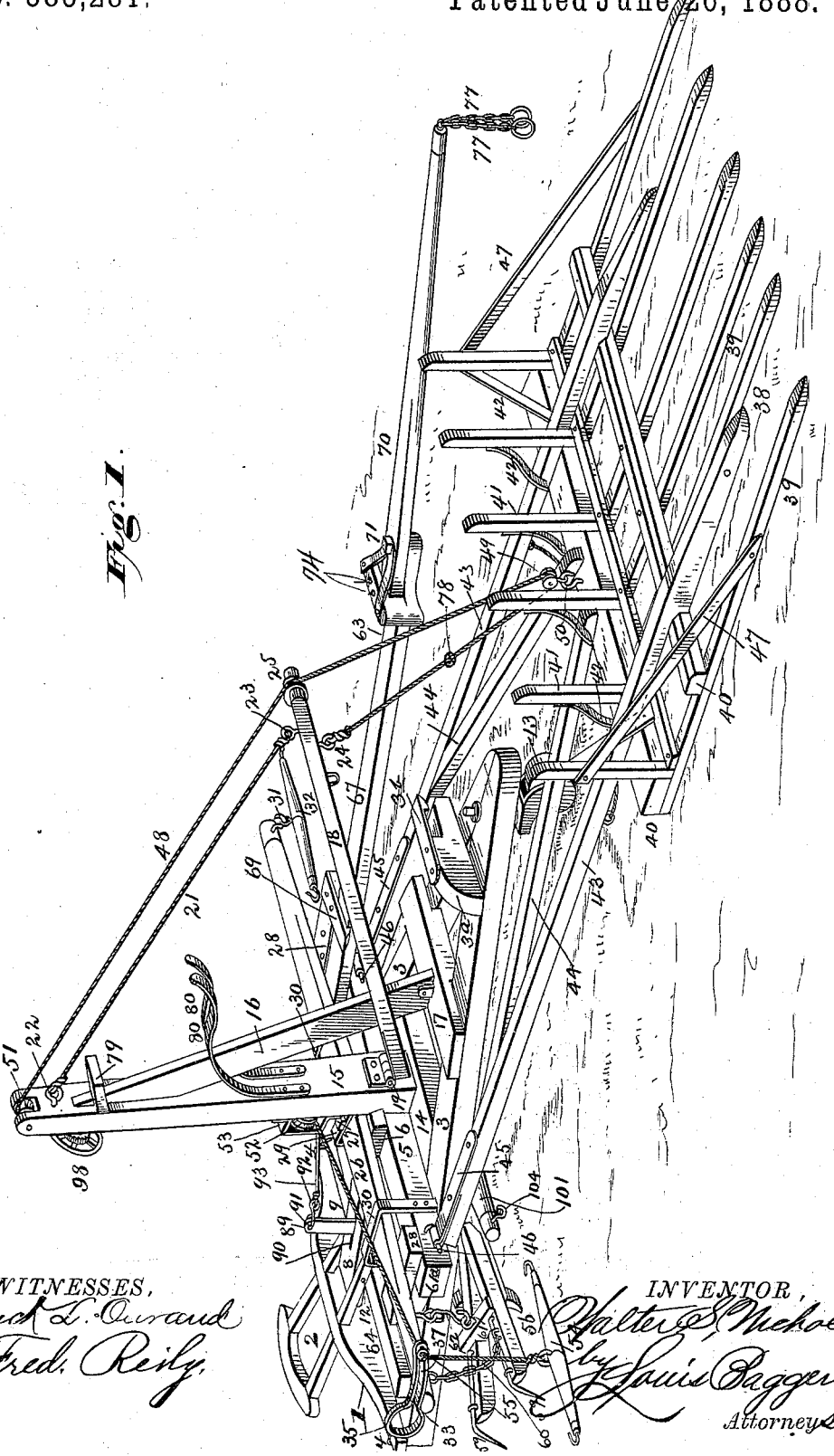
(No Model.) 4 Sheets—Sheet 1.

W. S. NICHOLS.

HAY LOADER.

No. 385,281. Patented June 26, 1888.

Fig. 1.



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(No Model.) 4 Sheets—Sheet 2.

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Fig. 2.

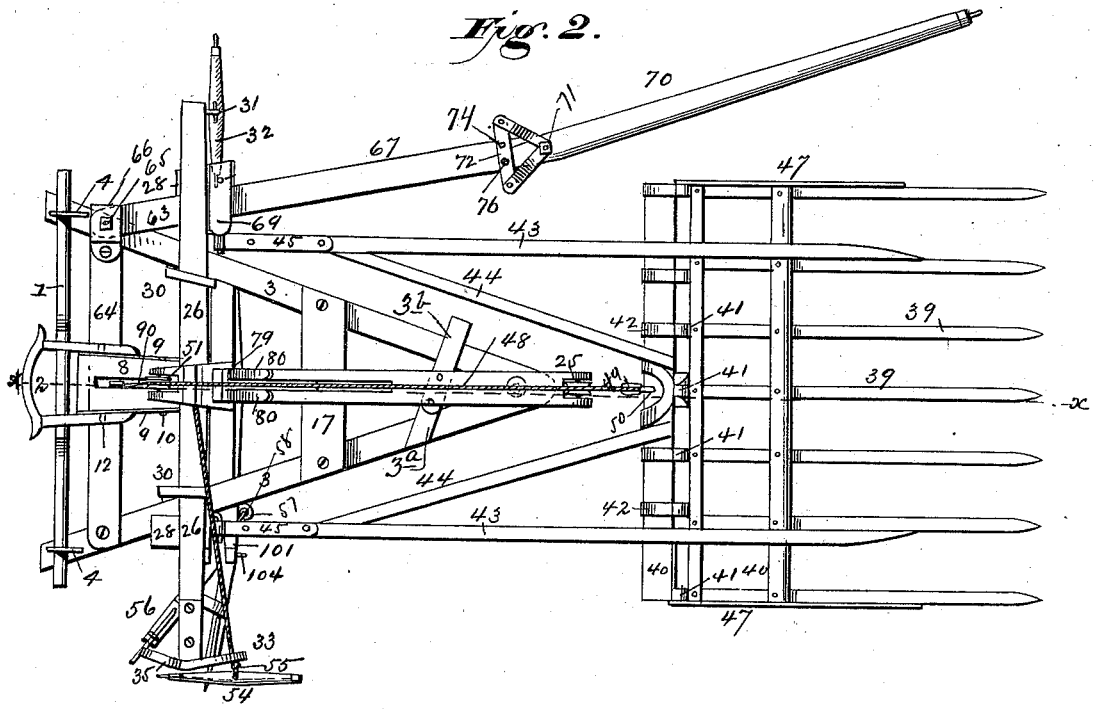
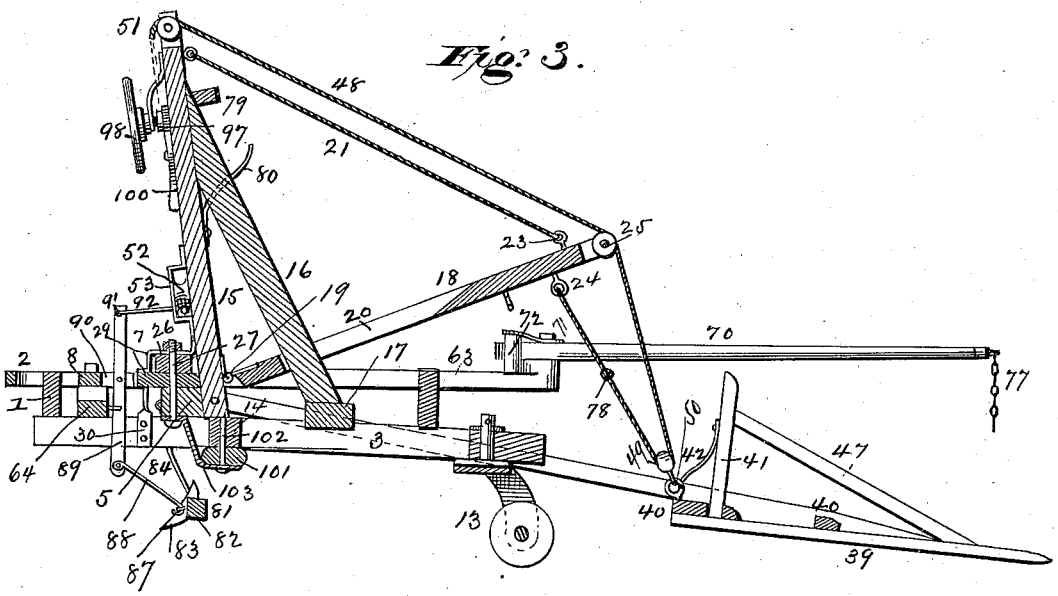


Fig. 3.



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4 Sheets—Sheet 3.

W. S. NICHOLS.

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Fig. 9.

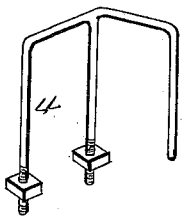
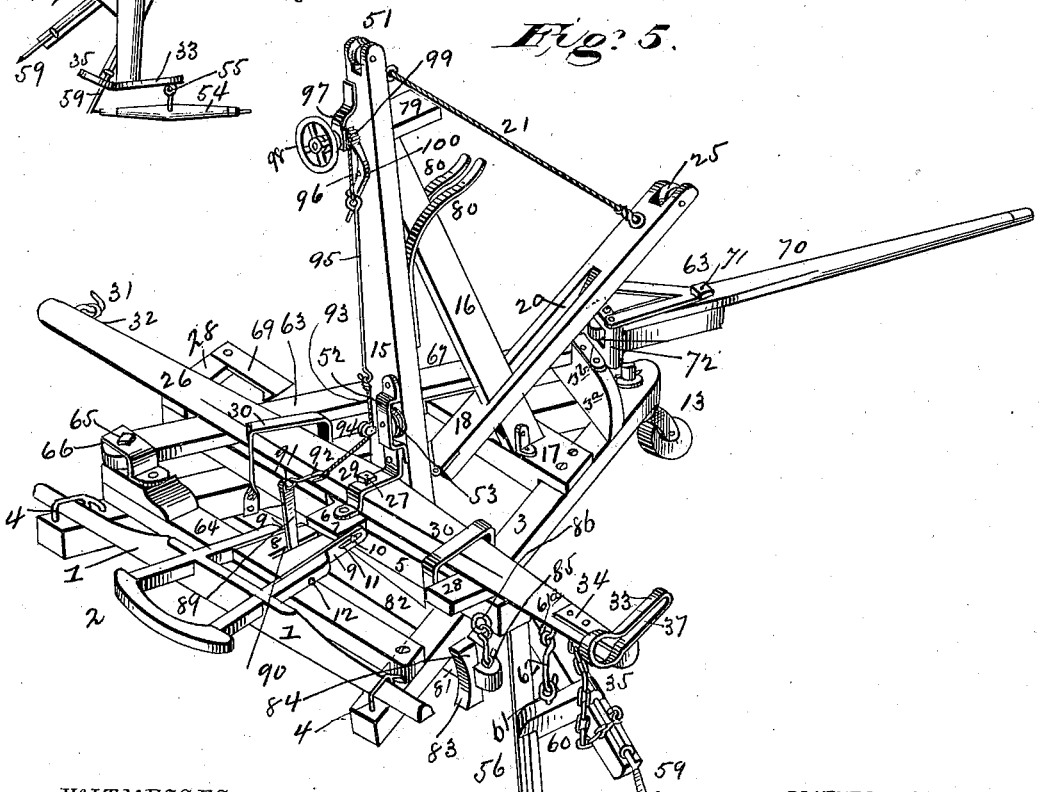


Fig. 4.

Fig. 5.



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(No Model.) 4 Sheets—Sheet 4.

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HAY LOADER.

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Fig. 6.

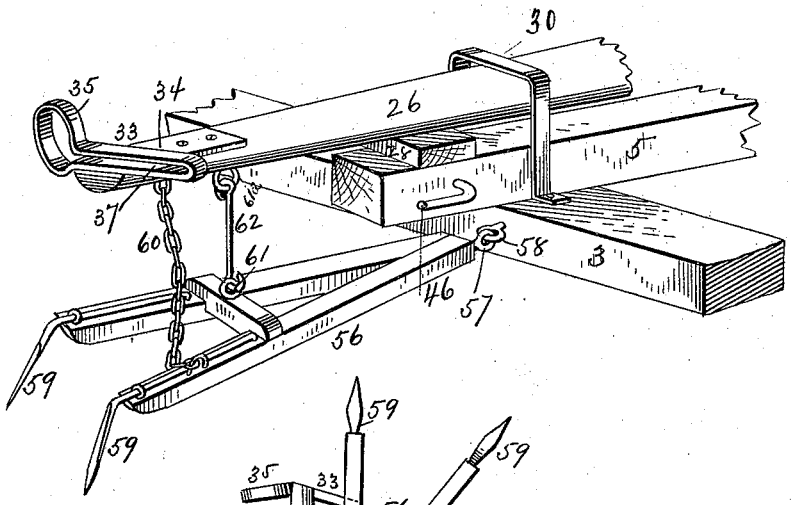


Fig. 7.

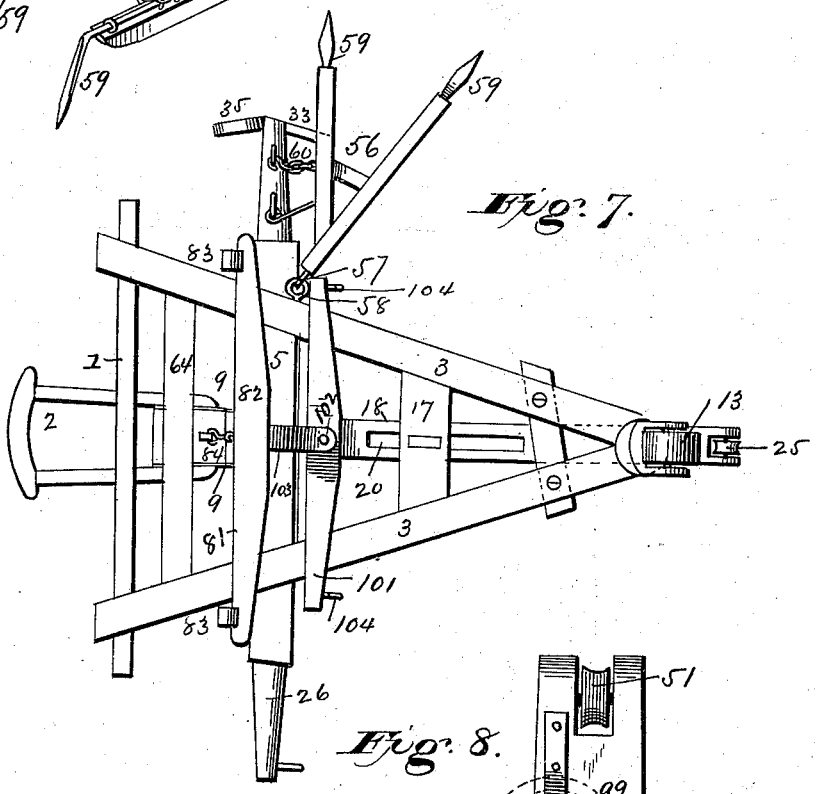
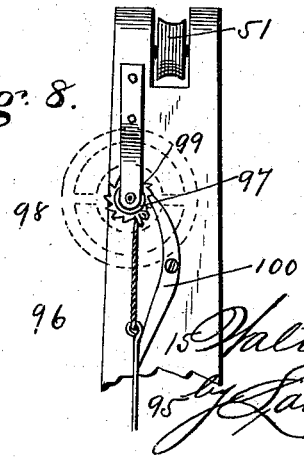


Fig. 8.



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UNITED STATES PATENT OFFICE.

WALTER S. NICHOLS, OF HEBRON, INDIANA.

HAY-LOADER.

SPECIFICATION forming part of Letters Patent No. 385,281, dated June 26, 1888.

Application filed November 4, 1887. Serial No. 254,279. (No model.)

To all whom it may concern:

Be it known that I, WALTER S. NICHOLS, a citizen of the United States, and a resident of Hebron, in the county of Porter and State of Indiana, have invented certain new and useful Improvements in Hay-Loaders; 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 appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a perspective view of my new and improved hay-loader. Fig. 2 is a top plan view of the same. Fig. 3 is a central vertical sectional view of the same, taken on line *x x* of Fig. 2. Fig. 4 is a top plan view showing the fork removed or detached and the large adjustable tongue adjusted to the center of the loader. Fig. 5 is a perspective rear view. Fig. 6 is a detail view of the drag-bar and its adjacent parts, including that end of the evener; and Fig. 7 is a bottom plan view of the A-frame and the parts secured thereto. Fig. 8 is a detail view, on an enlarged scale, of the upper end of the standard, taken from the rear side thereof; and Fig. 9 is a detail view, on an enlarged scale, of one of the clips.

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

My invention has relation to hay-loaders, and especially to that class of hay-loaders in which the loading mechanism precedes the wagon, being attached to the forward axle of the same; and my invention consists in certain new and useful improvements of the invention for which Letters Patent of the United States No. 365,194 were granted to me, bearing date of June 21, 1887, and my invention will be hereinafter fully described and claimed.

Referring to the several parts by their designating-numerals, 1 indicates the front axle, and 2 indicates the hounds, of a wagon of ordinary construction to which my new and improved hay-loader is shown attached in operative position.

3 indicates an A-frame, which is attached to the front axle of any suitable wagon by means of the removable bails 4 4, which pass over the ends of the said axle and have burrs on their lower threaded ends to hold them in place, the said bails passing through vertical apertures in the rear ends of the A-frame, thus supporting the ends of the A-frame from the axle. The said bails or clasps 4 4 extend parallel with the sides of the A-frame, and are long enough to let the axle have a slight movement backward and forward.

Upon the A-frame is firmly bolted the main cross-beam 5, upon which the evener and against which the standard or post are secured; and upon the center of this main cross-beam is bolted the forward end of the hinged tongue 6, which consists of the stationary forward section 7, which is bolted upon the said cross-beam, and the movable rear section 8, which is pivotally secured between the forward ends of the hounds 2 of the axle. This rear section 8 of the tongue has its sides made slanting to adapt it to fit between the ends of the hounds 2, and upon these sides are secured the metal plates or strips 9 9, the forward ends of which project on each side of the rear end of the front section 7 of the tongue, where they are movably secured by the pivot-bolt 10, which extends transversely through the rear end of the front section and through the longitudinal slots 11 11, which are formed in the projecting front ends of the plates 9 9, while the rear section 8 is pivotally secured between the hounds 2 by the transverse pivot-bolt 12; and it will be seen that by this arrangement the loader, while securely held to the front axle of the wagon, will have free motion or play while crossing over rough and uneven ground.

The front end or apex of the A-frame is supported by the swiveled wheel 13, the cylindrical shank of which is swiveled in the forward end of the frame, this wheel being of such size and the bracket in which it is secured of such height that the front end of the A-frame in a working machine is raised about four inches higher than its rear end. Upon the forward end of this A-frame is secured a recessed block, 3^a, provided with a spring-catch, 3^b, which, after the rake has been detached, engages and holds in place the rear section 67 of the large adjustable tongue 63, as shown more clearly in Figs. 4 and 5 of the drawings.

To the central front part of the main cross-beam 5, and upon a cross-piece, 14, of the A-

frame is firmly bolted or otherwise secured a standard or post, 15. This post is strengthened and braced by the inclined stationary brace 16, which is secured at its upper end to the upper part of this post to the forward side of the same, and which is secured at its lower end upon a forward cross-piece, 17, of the A-frame, as shown.

18 indicates the swinging brace, which is hinged at its lower end by the hinge 19 to the lower part of the post 15, and which is formed with the longitudinal central slot, 20, through which the stationary inclined brace 16 passes, this slot permitting the swinging brace to swing without interfering with or being obstructed by the fixed brace 16. This swinging brace is prevented from falling down too far by the stay-rope 21, which is secured at one end to an eyebolt, 22, in the post 15, near the upper end thereof, and is fastened at its other end to a similar eyebolt, 23, in the outer end of the swinging brace. In the under side of the outer end of the swinging brace is secured an eyebolt, 24, while in the slotted outer end of the said brace is journaled a grooved roller, 25, hereinafter referred to.

Upon the forward stationary end of the tongue 6 is pivotally secured the large evener 26, which is secured upon the said tongue by the pivot-bolt 27, which passes through the center of the evener, through the said tongue, and down through the main cross-beam 5, as shown in the sectional view, Fig. 3, of the drawings. This evener extends transversely across the top of the machine, as shown, resting upon the tongue 6, and also upon blocks 28 28, which are secured at each end of the main cross-beam 5, the said end blocks being of the same thickness as the tongue 6 and serving to keep the ends of the evener from dropping down. A bail, 29, is secured over the central part of the evener, being secured at one end to the tongue 6 and at the other end to the post 15, the upper end of the bolt 27 passing through the said bail, and on each side of this central bail bails 30 30 are placed, being secured at one of their ends to the sides of the A-frame, passing over the evener at each side of its central bail, and secured at their other ends to the main cross-beam 5, as shown in the drawings, these bails, while guiding the evener, permitting it to have a free movement backward and forward as it turns on its central pivot-bolt. Upon one end of the long evener—in the drawings the left-hand thereof—is secured a large hook, 31, to which is hooked the singletree 32, while upon the other end of the evener is secured the rope-clutch 33. This rope-clutch is preferably cast with the plate 34, by means of which it is secured by screws upon the end of the evener, and the clutch itself consists of a frame having the nearly-circular rear portion, 35, and the contracted narrow forward portion, 37, as shown.

The fork 38 is composed of the series of forwardly-projecting teeth 39, which are connected by the cross-pieces 40, from the rear one of which the upwardly-projecting teeth 41 project, the said rear upwardly-projecting teeth being further strengthened by the metal strips or braces 42, as shown. The shank of the fork is formed of the two bars 43 43, which are secured at their forward end portions to the body of the fork, as shown, and are strengthened by the inclined brace-bars 44 44, and upon the rear ends of these shank-bars are secured the eye-plates 45 45, which engage and hinge upon hooks 46 46, which are secured in the forward side of the main cross-beam 5 of the A-frame. The fork is formed at its sides with the inclined brace and guide bars 47 47, extending from the upper ends of the outer teeth 41 to the outer portion of the outer teeth 39.

The hoisting-rope 48 is secured at one end to the eyebolt 24 on the lower side of the outer end of the swinging brace 18, and then passes through a pulley-block, 49, secured to an eyebolt, 50, which is secured centrally in the rear cross-beam of the fork, as shown, so that the rope can be disengaged from the fork at any time when the fork is to be detached. The hoisting-rope then passes up and over the grooved roller 25 in the slotted outer end of the swinging brace 18, then over a grooved roller, 51, which is journaled in the slotted upper end of the post 15, then down under a grooved roller, 52, which is journaled in a bracket, 53, on the rear side of the lower part or end of the post 15, and the hoisting-rope then passes out and through the rope-clutch 33, which is secured, as described, upon one end of the evener, and which may be secured upon either end of the evener, and upon either the upper or lower side thereof. Upon the outer end of the hoisting-rope is secured a singletree, 54, while at a short distance from the said singletree the rope is formed with a knot or stop, 55, the function of which will be hereinafter described.

56 indicates the V-shaped drag-bar, the single inner end of which is hinged by an eyebolt, 57, engaging with a similar eyebolt, 58, on the side of the A-frame at a point just in front of the evener, as shown, while to the outer ends of the drag-frame are secured the points 59 59, which are bent downward as well outward, so their pointed ends will engage with the ground when the drag-frame is lowered into its operative position, and thus hold and brace up that side of the loader when a forkful of hay is being raised. The drag-frame is connected to that end of the evener by the chain 60, and also has an eyebolt, 61, secured in it near its outer end, and when elevated a hook, 62, is hooked at its upper end to an eyebolt, 61^a, on the lower side of that end of the evener, and it will be seen that in operation the chain will always hold the drag-frame in its operative position as the loader is being drawn forward, while when it is desired to fasten the drag-frame up out of contact with the ground, as shown in Figs. 1, 5, and 6 of the drawings, this can be readily

done by raising it and hooking the hook 62 into the ring or eyebolt 61.

63 indicates the large adjustable tongue. This tongue is pivotally secured at its rear end upon the left-hand end of a rear cross-beam, 64, of the A-frame, being pivoted by its pivot-bolt 65 in a bracket, 66. This main section 67 of the tongue rests upon the main cross-beam 5 of the A-frame beneath that end of the evener, and when moved or swung out into its outer position bears with its outer side against an inclined block, 28, which is secured upon that end of the beam 5, where it is held in that position by the spring-catch 69. Upon the forward end of the main section 67 of the tongue is pivoted the rear end of the front section 70 of the tongue, the rear end of this front section extending back of its pivotal point 71 through a bracket, 72, which is bolted upon the front end of the rear section, as shown, and the rear extremity of this front tongue-section is formed with a vertical aperture which can be brought to register with either of two upper and lower openings, 74, in the upper and lower parts of the bracket 72, when the tongue can be secured in its adjusted position by a key or pin, 76, passed down through either the openings 74 and through the perforation in the rear end of the front tongue-section. When the fork is in operation, the rear section 67 of the tongue is swung out, as shown in Figs. 1 and 2 of the drawings, where it is held by the spring-catch 69, and as the forward end of the main tongue section is thus inclined outward the front tongue-section 70 is swung inward toward the middle of the loader at its forward free end, so that the perforation in the rear end of this front section will register with the outer perforations, 74, of the bracket 72, when the front section is secured in this adjusted position by passing the pin or key 76 down through the registering apertures of the bracket and tongue end. When the front section is thus secured in its adjusted position, it will extend parallel with the sides of the fork, so that when a horse has been attached to its forward end, using the chains 77 77, the draft will be in a line forward with the machine.

In operation, the tongue 63 being thus adjusted, a horse is attached to the front end of the tongue 63, one to the singletree 32, and another to the singletree which is secured to the outer end of the hoisting-rope. The hoisting-rope is formed, as before stated, with a knot or stop, 55, at a short distance from the singletree 54, this stop being of such size that while it will run freely through the enlarged rear portion, 35, it cannot pass through the long contracted forward part, 37, of the rope-clutch. Now, when the machine is being drawn along with the wagon astride a windrow or a bunch or a cock of hay until the fork is loaded, the fork sliding on the ground, this stop on the outer end of the hoisting-rope is slipped inside on the inner side of the contracted front portion of the rope-clutch, and it will then hold the hoisting-rope so that the horse which is attached to the singletree on the end of the said rope can assist in drawing the wagon and loader forward, as will be readily understood by reference to Fig. 1 of the drawings. When the fork is loaded, the wagon is stopped, which is done instantly by the brake, which will be hereinafter described, and the hand tending the loader draws the outer end of the hoisting-rope back until the stop 55 clears the contracted front portion of the rope-clutch and comes to the circular rear portion of the same. When the drag-frame is in operative position, the horse attached to the end of the hoisting-rope is driven straight out from that side of the loader, drawing the hoisting-rope freely out. As the hoisting-rope is thus drawn out, it will swing up the fork. A stop, 78, on the other end portion of the rope, a suitable distance from the eyebolt on the under side of the swinging brace 18, to which the other end of the rope is secured, comes in contact with the snap-hook 49 when the rope starts to run through the eyebolt on the upper end of the said hook, the stop being too large to pass through the said eyebolt. This stop causes the rope to operate better at that point than if the stop were not employed, by causing the rope to "lift" directly from the rear bar of the fork instead of pulling on the rope from the eyebolt 24 of the swinging brace 18. The fork is thus swung up and rearwardly until it comes in contact with the outer end of the swinging brace, when it forces the said hinged brace 18 back until the upper end of this brace comes in contact with a block, 79, which is secured upon the forward side of the upper part of the post 15 and stationary brace 16, and which prevents the said swinging brace and also the fork from swinging too far backward. Upon the forward side of the post 15 are also secured spring-arms 80 80, or a single spring can be employed, if desired, instead of the two, and as the swinging brace swings up and backward it comes in contact with the free upper ends of the said spring-arms and forces them back until it comes in contact with the stop-block 79, above referred to. As soon as the fork is clear of the hay thus elevated, the horse at the outer end of the hoisting-rope is backed, so as to let the rope run back as the fork descends, and as soon as the rope is thus slacked the pressure of the upper ends of the spring-arms 80 80 will start the fork down by swinging out and down the upper end of the swinging brace 18, which in turn swings out the fork, and when the fork is thus started its weight will lower it down into its former position, ready to again collect a load of hay, and when the hoisting-rope is thus run back the horse is moved so that the rope will run through the enlarged rear part of the rope-clutch, at least the outer part of it, and as soon as the knot or stop 55 has passed back through the large part of the clutch it is moved forward, so as to engage against the inner side of the contracted front

portion of the clutch, when the rope will be held, as before described, to enable the rope-horse to assist in drawing the wagon and loader forward without pulling out the hoisting-rope. The operation is continued in this manner until the work is finished, the loader operating rapidly, easily, and efficiently.

In order to readily stop the wagon when the fork is full, I employ the brake 81. This brake consists of the brake-bar 82, which extends transversely across beneath the A-frame, and which has at its ends the curved brake-shoes 83 83, of any suitable construction. This brake-bar is movably supported at its ends from the ends of the main cross-beam 5 of the A-frame by the links 84 84, the eyed ends of which are hooked in eyebolts 85 86 on the ends of the brake-bar and the ends of the main cross-beam 5, while in its rear edge or side is secured centrally an eyebolt, 87, which is pivotally connected by a link, 88, with the lower end of a centrally-pivoted lever, 89, which is centrally pivoted on the forward side of the rear cross-piece of the A-frame, as shown clearly in Fig. 3 of the drawings, the upper part of this lever extending up and working through a slot, 90, in the rear section 8 of the tongue 6. The upper end of this centrally-pivoted lever is formed with a perforation, 91, in which is hooked a hook, 92, which is secured to the lower end of the brake-rope 93, or a chain may be employed in place of this rope. This brake-rope then passes under a grooved pulley, 94, on the rear side of the post 15, at the lower end of the same, and up, and is secured at its upper end to the lower end of the small rod 95, which is in turn secured at its upper end to the lower end of a rope, 96, which is secured at its upper end to and winds around a small drum or barrel, 97, which is mounted on the rear side of the upper end of the post 15 and has a hand-wheel, 98, at its outer rear end for convenience in manipulating the brake. It will be seen that when it is desired to stop the wagon when the fork is full of hay all that is necessary is to turn the hand-wheel 98, thus winding the hoisting-rope around the drum 97, which, as will be readily seen, will draw the upper end of the centrally-pivoted lever 89 forward, thus swinging the lower end of this lever back and upward, so as to draw the brake-bar up and press the brake-shoes firmly against the wheels, by which arrangement the wagon can be quickly and easily stopped in a moment. The drum is provided at one end with a ratchet-wheel, 99, or with a pinion having such teeth, and as the hand-wheel is turned to wind the rope up on the drum a pawl, 100, pivoted on the rear side of the upper end of the post 15 beneath the drum, will engage with its upper reduced end with the said ratchet-wheel and will hold the drum at the point to which it has been turned, thus automatically holding the brakes on, while when the brakes are to be taken off the wheels to permit the wagon to be drawn forward this is done in a moment by pushing to one side the long weighted lower end of the centrally-pivoted pawl 100 to free its upper end from the ratchet-wheel, when the weight of the brake-bar will draw down on the brake-rope and unwind it from the drum.

To the under side of the cross-piece 14 of the A-frame is centrally secured a doubletree, 101, by means of its central pivot-bolt, 102, and the ends of this doubletree, which is steadied by the bracket or brace 103 from the lower end of the pivot-bolt of the large evener, are provided with the spring or snap hooks 104 104 for the ready attachment of the two singletrees when the machine is to be transported from place to place. The loader is attached to the front axle of the wagon after detaching the tongue of the wagon, and when the wagon and loader are to be drawn to the field the fork is detached and stowed on the wagon-body and the horses, which were attached at the ends of the evener—the one to the singletree at the evener end and the other to the end of the hoisting-rope—are detached and attached to the ends of the doubletree 101, the tongue 63 having been previously freed from the spring-catch 69, which holds the rear tongue section out to the side, as it is adjusted when the fork is in position, and swung in until the said rear section 67 extends parallel with and directly over that side of the A-frame, when the forward part of this rear section 67 rests upon the recessed block 3^a, which is secured upon the forward end of the A-frame, and where it is held by the spring-catch 3^b, as shown. The pin 76 is then withdrawn and the outer end (the forward end of the forward section, 70) of the tongue pushed to the left, so as to bring the aperture in the rear end of this front section to register with the right-hand apertures of the bracket 72, when the pin is inserted through the registering apertures of the bracket and tongue end, when the front tongue-section 70 will extend straight forward in line with the center of the A-frame, as shown in Fig. 4 of the drawings, the horse being attached to the front end of the tongue, when the wagon and loader can be drawn readily forward.

From the foregoing description, taken in connection with the accompanying drawings, the construction, operation, and advantages of my invention will be readily understood. It will be seen that my new and improved hay-loader is simple and strong, and very durable in its construction, and exceedingly efficient in its operation. The rope-clutch, which materially assists the rapidity and effectiveness of the loader, is an important feature of my invention, as its use prevents the loss of time and labor which were formerly required in unhitching one of the horses from the thills of the wagon or loader and hitching it to the hoisting-rope whenever a forkful of hay was to be raised, and then unhitching the horse from the rope and attaching it in its previous position. This clutch can be secured on any side of the evener end, on the top or bottom, or on either side of the same, as will be readily

understood. The other features of my invention also possess the advantages previously set forth in the specification.

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

1. The combination, with the A-frame 3, of the tongue 6, consisting of the stationary front section, 7, and the movable rear section, 8, having the slanting sides, and the plates 9, secured thereto and having the slotted projecting forward ends, 11, and a pivot-bolt, 10, the said stationary section of the tongue being secured to the A-frame.

2. The combination, with the A-frame 3, supported at its forward end by the swiveled wheel 13 and adapted to be movably secured at its rear end to the axle of the wagon, of the main cross-beam 5, having the hooks 46 on its forward side, the fork hinged on the said hooks, the large centrally-pivoted evener 26, having at one end a singletree, 32, and having secured to its other end the rope-clutch 33, formed with the enlarged portion 35 and the contracted portion 37, the post 15, the movable brace 18, and the hoisting-rope 48, having the singletree 54 secured to its outer end and formed with a stop, 55, near the said end.

3. The combination, with the A-frame 3, supported at its front end by the swivel-wheel 13, and the main cross-beam 5, having the end blocks, 28, of the tongue 6, consisting of the stationary front section, 7, and the movable rear section, 8, having the slanting sides, and the plates 9, secured thereto and having the slotted projecting forward ends, 11, and the pivot-bolt 10, the centrally-pivoted evener 26, and the bails 30, extending over the same.

4. The combination, with the A-frame 3, having the main cross-beam 5, hooks 46, secured in said cross-beam, and the fork 39, having the eye-plates 45 upon the rear ends of its shank-bars 43, and having the central eyebolt, 50, upon its rear cross-bar, 40, of the post 15, having the roller 51 journaled in its upper end, and the eyebolt 22 upon the forward side of said end, the stop-block 79, and the spring-arms 80, the stationary brace 16, the hinged swinging brace 18, formed with the longitudinal slot 20, and having the roller 25 journaled in its outer end, and the eyebolts upon the upper and lower sides of the said end, the stay-rope 21, and the hoisting-rope 48, formed with a stop, 78, and provided with a pulley-block, 49.

5. In a hay-loader, the combination, with the A-frame, of the rear cross-beam having the bracket secured upon one of its ends, the main cross-beam having the inclined end block provided with a spring-catch, and the front recessed block having a spring-catch, and the adjustable tongue consisting of the rear section having the bracket formed with perforations upon its forward end and the pivoted front section having the perforation in its rear end, and the pin or key, substantially as set forth.

6. In a hay-loader, the combination, with the A-frame having the main cross-beam and the long evener, of the V-shaped drag-frame hinged to the side of the A-frame at its inner end, having the points at its outer ends and the eye upon its center, the connecting-chain, and the hook depending from the evener, substantially as set forth.

7. The combination of the A-frame supported at its front end by the swivel-wheel, having the doubletree pivotally secured beneath it, and having the bails upon its rear ends, the rear cross-beam having the bracket upon its end, the main cross-beam having the front hooks, the straight block upon one end, and the slanting block provided with the spring-catch upon its other end, the tongue consisting of the stationary front section and the movable rear section, the centrally-pivoted evener having the singletree at one end and having secured upon its other end the rope-clutch formed with the enlarged and the contracted portions, the bails extending over the said evener, the removable fork, the post having the roller in its upper end and the front eyebolt, the stop-block, and the spring-arms, the stationary brace, the hinged swinging brace formed with the longitudinal slot and having the roller journaled in its outer end and the upper and lower eyebolts, the stay-rope, the hoisting-rope having the pulley-block 49, and formed with a stop near its inner end, and having another stop formed in it near its outer end, and the singletree secured to the said outer end, the front recessed block having a spring-catch, and the adjustable tongue consisting of the rear section pivoted at its rear end and having the perforated bracket upon its forward end and the pivoted front section having the perforation in its rear end, and the key or pin, all substantially as set forth.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

WALTER S. NICHOLS.

Witnesses:
BENJ. F. NICHOLS,
E. M. NICHOLS.