No. 634,599. Patented Oct. 10, 1899.

J. WILSON.

HAY LOADER.

(Application filed Apr. 19, 1899.)

(No Model.) 3 Sheets—Sheet 1.

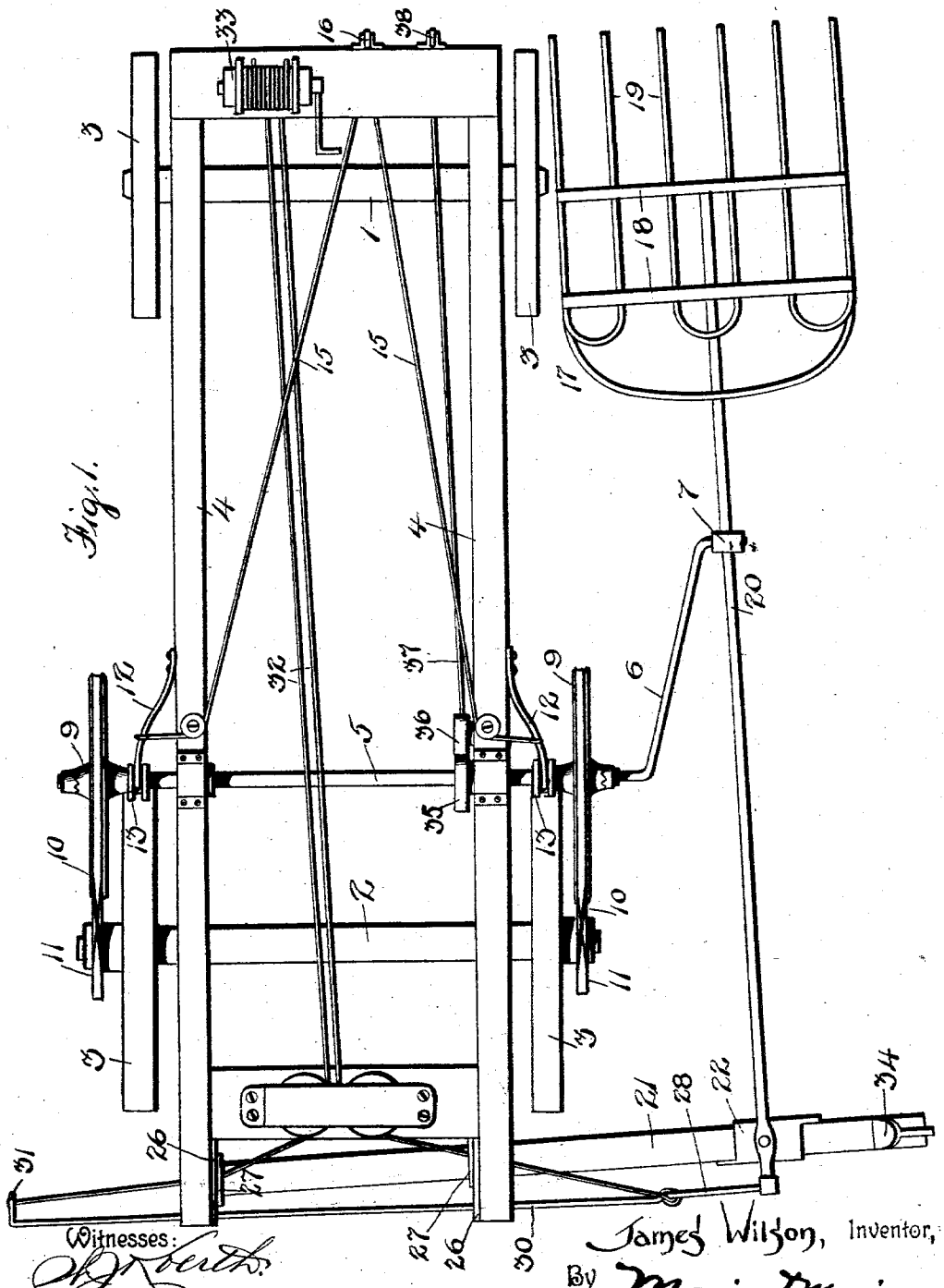


Fig. 1.

Witnesses:
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James Wilson, Inventor,
By Marion & Marion
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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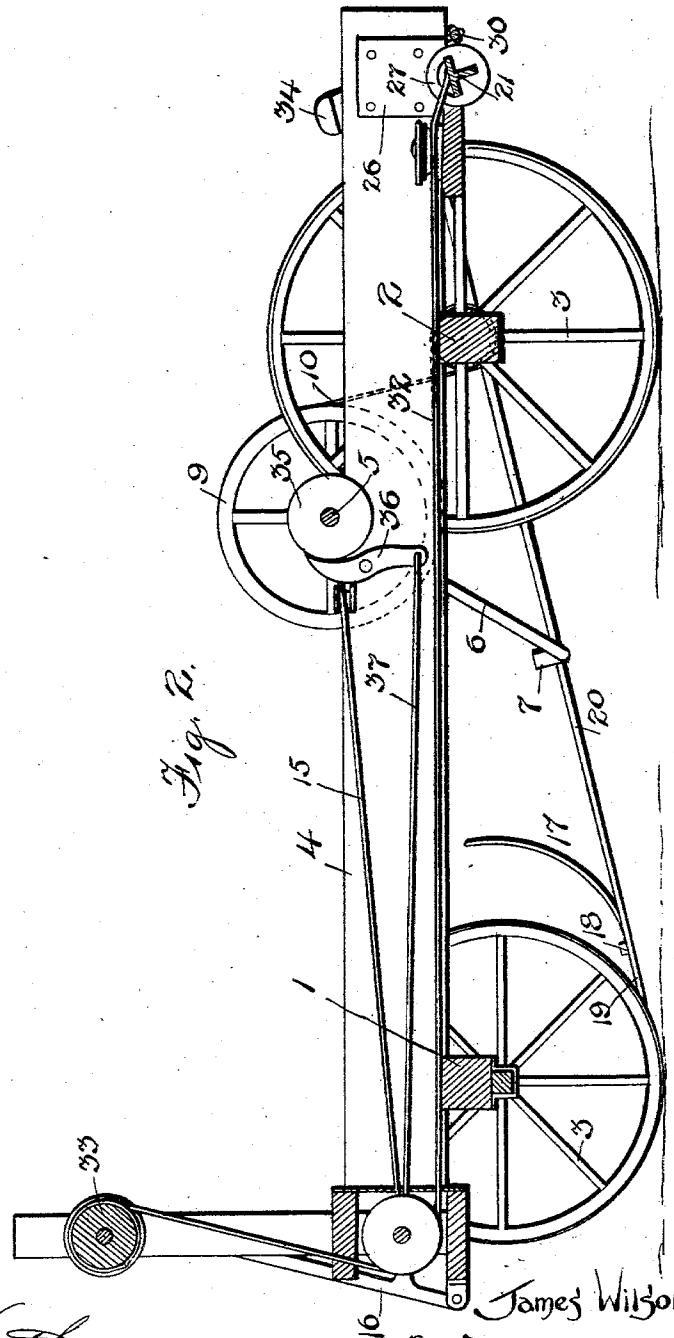


Fig. 2.

Witnesses:

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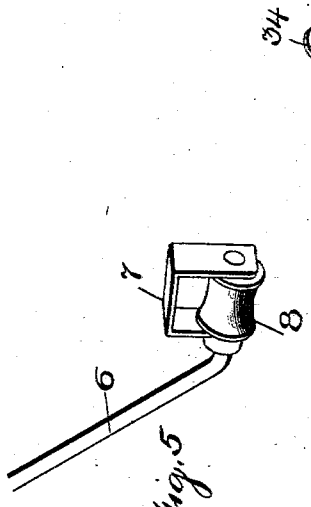


Fig. 5.

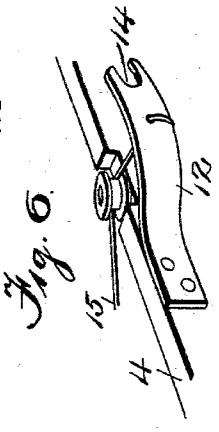


Fig. 6.

Fig. 3.

Fig. 4.

Fig. 7.

Witnesses:

H. J. Knight

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UNITED STATES PATENT OFFICE.

JAMES WILSON, OF GLEN CROSS, CANADA.

HAY-LOADER.

SPECIFICATION forming part of Letters Patent No. 634,599, dated October 10, 1899.

Application filed April 19, 1899. Serial No. 713,680. (No model.)

To all whom it may concern:

Be it known that I, JAMES WILSON, a subject of Her Majesty the Queen of Great Britain, residing at Glen Cross, county of Selkirk, Province of Manitoba, Canada, 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, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in hay-loaders.

The object of my invention is to provide a device of this character by means of which hay, straw, &c., can be readily taken from the ground and deposited on the hay-wagon, the operation being entirely under the control of the driver of the wagon and at the same time allowing the driver to regulate the width of the path over which the loader can pass and also allowing of the regulating of the point where the hay is to be deposited.

A further object is to provide a device which is simple and efficient in operation, durable in construction, which can be readily attached to the ordinary hay-wagon, and which can be made at a moderate cost.

With these and other objects in view, the nature of which will be hereinafter set forth, my invention consists in the improved construction and combination of parts hereinafter fully described, and particularly pointed out within the appended claims.

In the accompanying drawings, forming a part of this specification, and in which similar numerals of reference indicate similar parts in all of the views, Figure 1 is a top plan view of a hay-wagon provided with my improved hay-loading attachment, the racks being removed in order that a clearer showing may be made of the operative construction. Fig. 2 is a central longitudinal sectional view of the same. Fig. 3 is a detail of the track, the carriage regulating the movement laterally of the loader being shown in position thereon. Fig. 4 is a sectional view of the carriage. Fig. 5 is a detail of the arm which serves to impart the vertical movement to the loader. Fig. 6 is a detail of the construction for bringing the apparatus into and out of an operative position. Fig. 7 is a detail of the front of the wagon, showing the levers used to operate the various parts.

In the loading of hay from the ground to the hay-wagon by mechanical means several points are essential in order that the mechanism may have a proper operation. These points are the necessity of the machine being entirely under the control of the operator in order that the machine may be operated satisfactorily whether the hay is mixed or whether it is in isolated heaps. Another feature which is essential is the ability to regulate the width of the path being cleared by the loader and at the same time allow of the regulating of the loader to throw the hay to either side or the middle of the hay-wagon, this being necessary in order that the hay may be loaded in the least possible time and also in order that it may be loaded onto the wagon at a point where it can be easily moved to its proper position on the wagon. A machine of this character constructed to perform these functions will necessarily operate in a manner similar to the loading of hay by hand, and in the construction now to be described this function is clearly apparent by reason of the fact that the loader moves with a movement similar to that of the fork as given by the operator when loading by hand.

The loading mechanism herein described can be readily attached to any suitable hay-wagon, and in the drawings I have shown a wagon in which the racks are removed; but it is to be understood that in practice wagons are intended to be provided with the usual racks and bottom in order that a maximum amount of hay can be readily and securely placed on the hay-wagon.

In the drawings, 1 designates the front axle, and 2 the rear axle, to which are secured in the usual manner the supporting-wheels 3. The wagon-body 4 is secured to the axles in any approved manner, and the racks will be secured to the body, as will be readily understood.

5 designates the shaft, pivotally mounted within the wagon-body at a point in juxtaposition to the rear axle, this shaft having one of its ends 6 bent laterally and having at its end a suitable casing 7, within which is mounted a roller 8, as best shown in Fig. 5. On the shaft 5, at a point without the path of move-

ment of the wheel on the rear axle, are mounted suitable wheels 9, which are operatively connected, by means of a suitable belt 10, with a similar wheel 11, mounted on the hub of the rear wheel 3. The wheels 9 are loosely mounted on the shaft 5, and each of said wheels is operatively connected to the shaft 5 by means of a suitable clutch, such as shown in the drawings, said wheels being held in position in operative contact with the clutch by means of suitable spring-arms 12, having their rear ends mounted in suitable sheaf-pulleys 13, secured to the hubs of the wheels 9, the spring-arms 12 being provided with a suitable bifurcated or forked end 14, which is adapted to be operatively connected to the pulley 13, the arm 12 being constructed substantially as shown in Fig. 6. To withdraw the wheels 9 from operative contact with the clutch located on the shaft 5, I provide a suitable rope 15, preferably formed of wire, having its rear ends connected to the spring-arms 12, the forward end of said rope being connected to a suitable operating-handle 16, mounted at the front of the wagon-body. From this construction it will be readily seen that as the wagon moves forward the wheels 9 will be rotated in a forward direction and that as long as the wheels 9 are in operative connection with the shaft 5, said shaft will receive a corresponding movement, and by reason of the laterally-extending end 6 the casing 7 and roller 8 will have a circular movement on the wagon-body, the plane of such movement being a vertical one. As it is necessary, for reasons hereinafter set forth, that the operative connection with the shaft 5 should be the normal position of the wheels 9, it will be seen that, when it is desired to stop the movement of the arm 6 and shaft 5, by moving the lever 16 forwardly the spring-arms 12 will be moved inwardly toward the wagon-body, thereby withdrawing the wheels 9 from operative connection with the clutch located on the shaft 5, thus destroying the operative connection between the shaft and the wheels 9, yet allowing the wheels 9 to continue their rotary movement on the shaft. Upon release of the lever 16 the spring-arms 12 will immediately force the wheels 9 outwardly and into operative contact with the clutch located on the shaft 5, when the mechanism will again be put into operation.

As hereinbefore stated, the casing 7 and roller 8 are given a circular movement, and this movement is utilized in the loading of the hay, this movement giving a vertical movement to the loader 17. (Best shown in Fig. 1.) As shown in this figure, the loader 17 consists in the framework 18, having a suitable number of forwardly-extending prongs 19, the rear ends of which are bent upwardly, as shown in Fig. 2, in order that a great amount of hay or other material may be held thereon during the operation of the mechanism. The loader 17 is provided with a rearwardly-extending arm 20, which passes within the casing 7 and above the roller 8, the arm 20 normally resting on said roller and being supported thereby. At the rear of the hay-wagon is secured a suitable track 21, preferably T-shaped in cross-section, as shown in Fig. 2, said track being extended laterally outwardly from the hay-wagon a suitable distance and being adapted to receive the carriage 22, said carriage being adapted to support the rear end of the arm 20.

As shown in Figs. 3 and 4, the carriage 22 consists, essentially, of the casing 23, within which is mounted a series of rollers 24, adapted to ride on the upper face of the track 21, and a series of rollers 25, adapted to ride on the under face of said track, thus holding said carriage in proper position at all times on the track.

As the track 21 retains at all times its position within the wagon-body, it will be readily seen that the connections between the rear ends of the arm 20 and the carriage 22 forms the fulcrum for the movement of the loader 17, the roller 8 forming the point of application of the power, and it is by reason of this arrangement that as the arm 6 takes its circular movement the front end of the loader will be raised and lowered in a vertical direction in an obvious manner. As this movement is of considerable length, it will be readily seen that the pivotal connection of the arm 20 with the carriage 22 must be such as will allow of this vertical movement of the front end of the lever 20. This is accomplished by mounting the track in suitable bearings 26, secured to the wagon-body, the mounting being such as will allow said track to have a pivotal movement within the bearings, suitable washers 27, secured on the track 21, serving to hold said track in its proper position to prevent a lateral movement of the track in the wagon-body. As by this contruction the track itself is allowed to turn in its bearings, it will be readily seen that the carriage 22, which is secured to the track and necessarily receives a movement when the track itself is moved on its axis, will allow the forward end of the arm to have its vertical movement, such movement serving to impart the slight pivotal movement to the track 21.

It will be seen that a purely vertical movement of the loader 17 would have no advantage, as it would necessarily have to have this vertical movement at a point outside of the path of movement of the forward wheel 3, and this position being one which is entirely outside of the wagon-body would deter instead of facilitating the loading of the hay.

As heretofore explained, the rotary movement of the arm 6 will cause the loader 17 to be moved vertically, and in order that this movement, which serves to carry the hay above the top plane of the wagon, may become beneficial it is necessary that the loader be caused to move inwardly to a point over

the wagon-body, and after reaching such position to be tilted in order that the hay contained on the loader may be dropped onto the wagon-body. This movement is accomplished by means of the track 21 and the carriage 22.

As will be seen by referring to the drawings, the end of the arm 20 extends rearwardly to a point beyond the pivotal connecting-point of the arm with the carriage 22, and to the rear end of this arm 20 is secured fixedly an arm 28, which extends laterally from the arm 20, the arm 28 terminating in an eye 29, to which is secured one end of a rod 30, which extends through one of the bearings 26 and has its outer end bent at an angle, as shown at 31. The rod 30 is connected at its opposite ends with two ropes 32, which extend forwardly, as shown in Fig. 1, and have their front ends mounted on a suitable windlass 33, located at the front end of the wagon-body. The ropes 32 are arranged in such manner that when the windlass is turned one of said ropes will be wound upon the drum of the windlass, while the opposite rope will be unwound. This causes the ropes 32 to be held taut at all times. The outer end of the track 21 is formed with a curve, as best shown in Fig. 3, said curve extending in an upward direction and having at its end a stop 34, which prevents any movement of the carriage 22 beyond a fixed point. By this construction it will be readily seen that if the handle of the windlass 33 is turned in one direction one of the ropes will be drawn inwardly and will cause the carriage to be drawn inward toward the wagon-body. This inward movement of the carriage 22 serves to throw the forward end of the arm 20 and the loader 17 away from the wagon-body, and in this manner it is possible to increase the space which can be operated upon by the loader when on the ground. With the carriage 22 in its inward position the wheels 9 are allowed to be in operative connection with the shaft 5 until the loader 17 is carried downward onto the ground, whereupon the handle 16 is drawn forwardly, which releases the wheels from contact with the shaft 5 and allows the loader to rest freely on the surface of the ground. As the wagon is drawn forward the hay will be gathered onto the loader until a sufficient amount has been placed thereon. The lever 16 is now released, which serves to throw the wheels 9 into operative connection with the shaft 5, whereupon the arm 6 will continue its upward movement, carrying with it the loader 17, which movement of the loader is continued until it has reached its proper height above the plane of the wagon-body, at which time, if desired, the lever 16 can be again operated, although such operation is not essential. Upon the arrival of the loader at the proper height the handle of the windlass is operated to draw on the end 31 of the rod 30, which causes the carriage to be moved outwardly on the track 21 and carried upwardly around the curved portion of the track. This outward movement of the carriage 22 serves to bring the loader inwardly to a point above the wagon-body, and when the carriage 22 moves to and around the curved portion of the track the loader will be caused to be turned, which turning serves to dump its contents onto the wagon-body. As the arm 6 continues it movement the windlass is again operated to bring the loader outwardly by moving the carriage 22, these movements being continued until the loader has again reached its position on the ground, when the lever 16 is again operated and the former operation is repeated.

In order that the shaft 5 may be held in its position upon release of the wheels 9, I provide a suitable brake mechanism consisting of a wheel 35, located on the axle 5, with which wheel a suitable brake-shoe 36 is adapted to contact, the free end of said shoe being connected by means of a suitable rope 37 with a lever 38, located at the front end of the wagon-body, contiguous to the lever 16.

If desired, the operation heretofore described may be varied, especially where the apparatus is used in connection with the loading of hay which has been placed in heaps or piles. When the hay is found in this condition, the hay is loaded onto the loader, as hereinbefore set forth, and the wagon drawn forward until the loader has reached a proper height. When this point is reached, the lever 16 is drawn forward, and at the same time the lever 38 is also drawn forward, which serves to make a brake connection on the shaft 5 and holds said shaft in its proper position. The windlass 33 is then operated, which causes the loader to be carried inwardly to a point above the wagon-body, where, if desired, the brake-lever 38 may be released, which serves to allow the loader to move downward and deposit the hay onto the wagon-body. When the wagon is again started and the lever 16 released, the loader will be raised and the carriage 22 drawn inwardly, allowing it to move to a proper point without the wagon-bed. The lever 16 is again drawn forwardly, which allows the loader 17 to drop downwardly by its own weight onto the ground in proper position.

It will be readily seen that the loader may be operated in other different ways; but it is not thought necessary to set it forth in detail herein, as it is believed that the operation of the device will be clearly apparent.

The advantages of this construction are many, including the absolute control of the operation, the ability to attach it to the hay-wagon, the ability to adjust the movement of the loader, its durable construction, and the low cost of manufacture.

While I have herein shown a preferred form of carrying my invention into effect, yet I do not desire to limit myself to such preferred details of construction, but claim the right to use any and all modifications thereof which will serve to carry into effect the objects to

be attained by this invention in so far as such modifications and changes may fall within the spirit and scope of my said invention.

I claim—

1. The combination with a hay-wagon; of a hay-loader mounted thereon; means for imparting a vertical movement to said loader; means for adjustably varying the lateral position of said loader; and means for automatically tilting said loader at a predetermined point in its lateral movement.

2. The combination with a hay-wagon; of a hay-loader mounted thereon; means for imparting a vertical movement to said loader; means for varying the lateral position of said loader; and means for automatically tilting said loader at a predetermined point in its lateral movement.

3. The combination with a hay-wagon; of a hay-loader mounted thereon; means for imparting a vertical movement to said hay-loader; means for varying the lateral position of said loader; and means for tilting said loader at a predetermined point in its lateral movement, substantially as described.

4. The combination with a hay-wagon; of a loader connected thereto; means for imparting a vertical movement to said loader; means for varying the lateral position of said loader, said loader being normally held in a horizontal plane; and means, for moving said loader from its horizontal plane at a predetermined period of its lateral movement, substantially as described.

5. The combination with a hay-wagon; of a track secured thereto; a carriage mounted on said track; means for imparting a lateral movement to said carriage; a hay-loader operatively connected to said carriage; and means, operated by the movement of said wagon, for imparting a vertical movement to said loader, substantially as described.

6. The combination with a hay-wagon; of a track pivotally connected thereto; a carriage mounted on said track, said carriage having a lateral movement relative to said wagon-body; means for adjustably varying the position of said carriage on said track; a hay-loader connected to said carriage and extending forwardly therefrom; and a support, operatively connected to the wheels of said wagon, and receiving a circular movement therefrom, said support being adapted to impart a vertical movement to said loader, substantially as described.

7. The combination with a hay-wagon; of a track connected thereto; a carriage movable longitudinally of said track; means for imparting a longitudinal movement to said carriage; a hay-loader connected to said carriage and extending forwardly therefrom; a shaft mounted in said wagon, said shaft having a support for said loader; means operated by the forward movement of the wagon for imparting a rotary movement to said shaft, whereby said loader will be given a vertical movement; and means for controlling the movement of said shaft, substantially as described.

8. The combination with a hay-wagon; of a track secured thereto; said track having a curved portion at one end thereof; a carriage movable longitudinally of said track; means for imparting a regulated longitudinal movement to said carriage; a hay-loader operatively connected to said carriage and extending forwardly therefrom; a shaft mounted within said wagon; a support connected to said shaft, said support serving to regulate the vertical movement of said loader; means, operated by the forward movement of the wagon, for imparting a rotary movement to said shaft, said movement serving to move said loader vertically; and means for controlling the movement of said shaft, substantially as described.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

JAMES WILSON.

Witnesses:

R. W. FORSTER,

ARTHUR C. HOBKIRK.