No. 642,466. Patented Jan. 30, 1900.

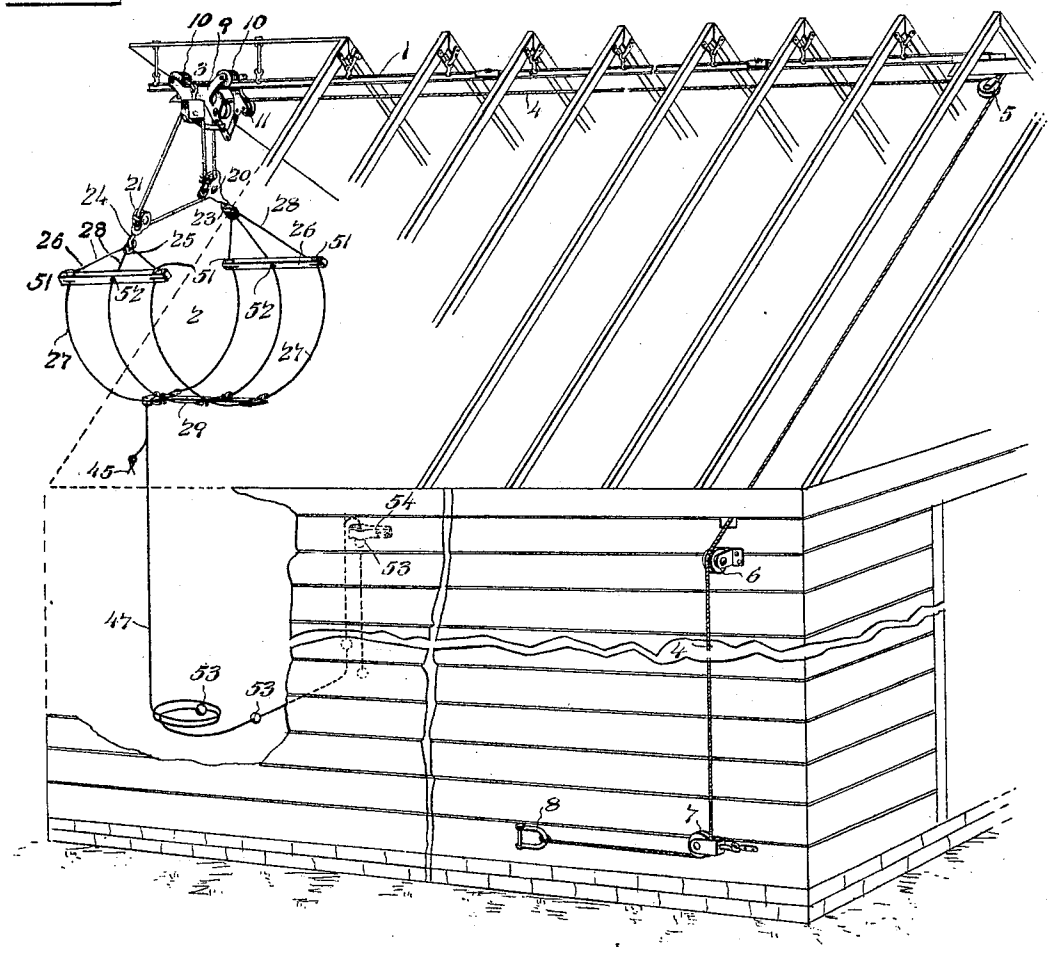
J. LAW.

HAY SLING.

(Application filed Nov. 8, 1898.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.



Witnesses

E. L. Stewart.

O. E. Cook

John Law Inventor

By Wells Allorneys,

C. A. Snow & Co.

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

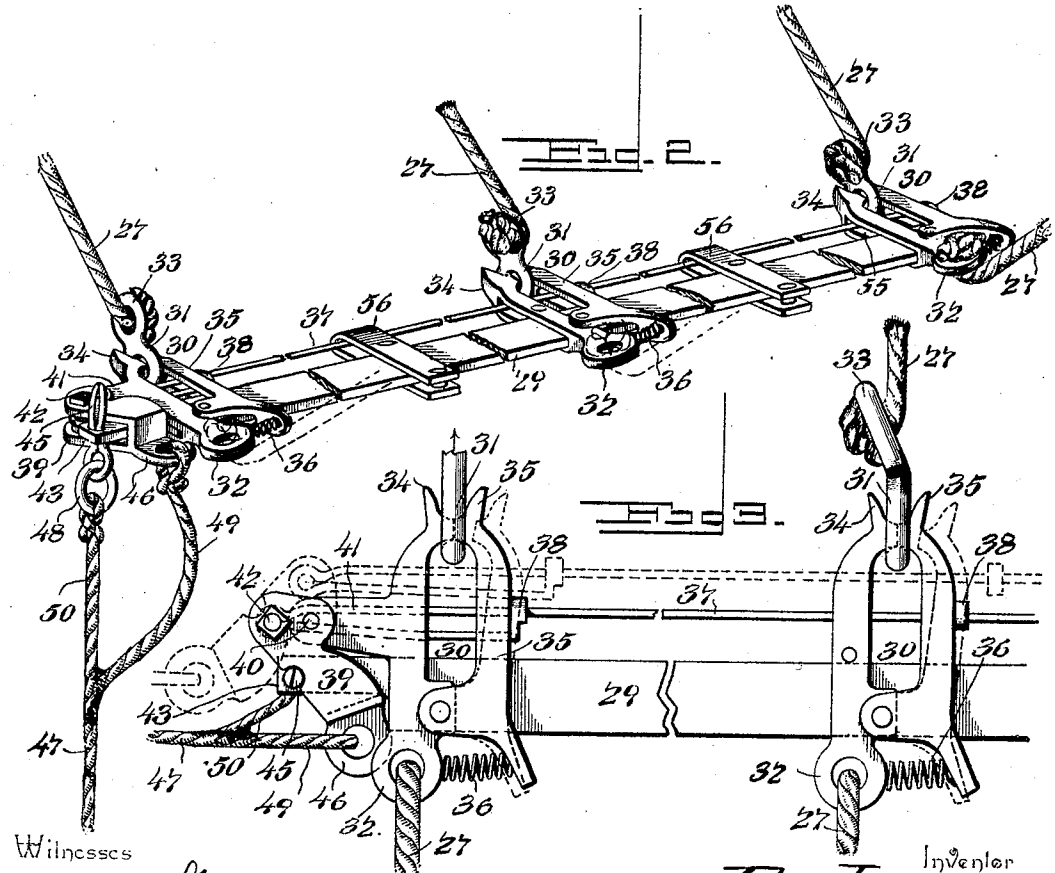
No. 642,466. Patented Jan. 30, 1900.

J. LAW.

HAY SLING.

(No Model.) (Application filed Nov. 8, 1898.)

2 Sheets—Sheet 2.



Witnesses

E. F. Stewart.

C. E. Boyle

Inventor

John Law

By Foss & Attorneys,

Cashow & Co.

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

UNITED STATES PATENT OFFICE.

JOHN LAW, OF MANKATO, MINNESOTA.

HAY-SLING.

SPECIFICATION forming part of Letters Patent No. 642,466, dated January 30, 1900.

Application filed November 8, 1898. Serial No. 695,886. (No model.)

To all whom it may concern:

Be it known that I, JOHN LAW, a citizen of the United States, residing at Mankato, in the county of Blue Earth and State of Minnesota, have invented a new and useful Hay-Sling, of which the following is a specification.

My invention relates to a hay-sling, and has for its object to provide an improved construction and arrangement of parts over those shown and described in my former patents, No. 374,192, granted December 6, 1887, No. 464,975, granted December 15, 1891, and No. 486,164, granted November 15, 1892, the particular objects of the present invention being to improve the construction of the sling whereby the discharge of its load is facilitated and whereby the spreading of the load in the hay-loft may be accomplished without effort upon the part of the operator.

Further objects and advantages of this invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings, Figure 1 is a perspective view of a hay-sling constructed in accordance with my invention, the parts being shown arranged in operative relation with a carrier mounted in a barn. Fig. 2 is a detail view in perspective of the coupling-bar of the sling. Fig. 3 is a plan view of a portion of the coupling-bar.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

In Fig. 1 the sling embodying my invention is shown supported by a carrier mounted in the operative position in the hay-loft of a barn, the essential features of the supporting device being a track 1, arranged longitudinally of the barn-loft and extending through the loft-door to project beyond the end wall of the barn sufficiently to permit a straight vertical lift of the sling 2, and a carrier 3, traversing the track and actuated in its movement toward the rear end of the track by an operating-cable 4, which traverses suitable direction-pulleys 5, 6, and 7 and terminates in a clevis 8 or its equivalent, by means of which a team may be hitched when the operation of the device is accomplished by horse-power.

The carrier 3 and the other elements of the support in the apparatus illustrated in the drawings will form the subject-matter of a future application for patent, and therefore in connection with the disclosure of my invention in so far as it relates to the sling it will be sufficient to state that the carrier consists of a frame 9, having wheels 10 for traversing the track, a rope-clamp 11, and pulleys around which the operating-cable 4 extends. Also in connection with the carrier I employ two separate pulley-blocks 20 and 21, of which the pulleys are traversed successively by the operating-cable after leaving the pulleys on the carrier.

The pulley-blocks 20 and 21 carry sling-supporting hooks 23 and 24, adapted for detachable engagement with terminal rings 25 of the sling 2. In the construction illustrated the sling consists of a plurality of cross-bars 26, connected by flexible longitudinal members, such as ropes 27, extended and converged, as shown at 28, beyond the cross-bars and connected with the above-described rings 25. I preferably, however, employ a sling of sectional construction divided transversely at its center and having a detachable connection between the contiguous ends of the sections, whereby by the disengagement of said contiguous extremities of the sling-sections I am enabled to drop the load vertically and center first instead of sliding or rolling the same out of the sling, as in the ordinary practice, when the sling is released at one end. Therefore the improved sling is provided at its transverse center with a bar 29, preferably of metal, carrying a plurality of clamps 30 for engaging rings or eyes 31, and the rope-sections, which are located upon opposite sides of the said bar, are attached at their contiguous extremities respectively to said bar and the eyes. In the construction illustrated the bar 29 is provided with a number of keepers 32, to which the rope ends are attached, and the clamp-engaged eyes 31 are provided with similar keepers 33, to which the rope ends at the opposite side of the plane of the bar 29 are attached. Also said clamp-engaged eyes are of bowed or bent shape to facilitate their disengagement from the clamps, as will be more fully explained hereinafter.

The clamps by which the eyes are engaged

to secure the sections or members of the sling in operative relation include fixed jaws 34 and movable, preferably pivotal, jaws 35, the latter being yieldingly held in operative relation with the former by means of actuating-springs 36 and the extremities of the jaws being interiorly convexed and terminally flared to facilitate engagement and disengagement of the eyes 31. In connection with the clamps I also employ a common locking-rod 37, having spaced stops, heads, or projections 38, adapted for engagement with the outer sides or backs of the movable clamp-jaws to hold the latter in such positions with relation to the fixed jaws as to prevent the disengagement of the eyes from the clamps. At one end this locking-rod is attached to a dead-center latch 39, fulcrumed, as at 40, upon an extension 41 of the contiguous clamp-jaw and having the looped extremity of said locking-rod connected thereto, as by a transverse bolt 42. This latch is of looped or bifurcated construction to occupy a position with its sides or arms upon opposite sides of a keeper or a tongue 43, provided with a transverse opening or key-seat for the reception of a split key 45, which is arranged in rear or in contact with the back of said latch to lock it against accidental displacement when the locking-rod is secured in its normal position. Also extending terminally from the latch is a ring 46, to which is attached a trip-rope 47. The split key is also provided with a ring 48, with which is engaged another branch of the trip-rope, said trip-rope being bifurcated to form the long and short arms 49 and 50, respectively connected with said latch and key, whereby when a perpendicular strain is applied to the trip-rope the first operation is to displace the key. In other words, the branches of the trip-rope are of different lengths to provide for the successive displacement of the key and operation of the latch, as will be more fully understood from the following description of the operation of the mechanism. The terminal cross-bars 26 of the sling, through which the sections of the ropes 27 extend, are terminally bifurcated or slitted and are cut away in the faces of the slits to form opposing seats for the marginal or side ropes, transverse rivets 51 being employed to secure the walls of the slits in such position as to firmly engage and secure said marginal ropes from displacement in the seats provided therefor. The intermediate rope or ropes of the sling preferably pass loosely through guide-openings 52 in the cross-bars, whereby they are adapted to adjust themselves to the shape of the load supported by the sling.

In operation the sling is arranged longitudinally upon the wagon-bed preparatory to loading the wagon, whereby the load is built thereon; but the length of the sling is sufficient to allow of the projection of its extremities beyond the ends of the load. When the loaded wagon reaches the barn and has been positioned under the carrier, the terminal rings or eyes of the sling are engaged with the hooks 23 and 24 of the movable pulley-blocks 20 and 21, such engagement being accomplished by an operator or operators standing upon the ground and not necessitating the mounting of the load. Having accomplished the connection of the sling with the carrier, the operating-cable should be drawn to elevate the sling, thus drawing the extremities thereof upwardly at the ends of the load, while the portion of the operating-cable which is between the pulley-blocks 20 and 21 presses downwardly upon the load and holds it in place.

From the time of arranging the sling upon the wagon it is well to employ the split key to insure such a position of the dead-center latch as to maintain the clamps in engagement with the rings or, in other words, to prevent the accidental separation of the sections or members of the sling; but after the sling has been elevated from the wagon-bed and is about to enter the barn a downward pull upon the trip-rope will draw the split key from its seat, and thus release the dead-center latch preparatory for throwing the same to disengage the locking-rod from the clamp. A further pull upon the trip-rope necessary to throw the dead-center latch to its inoperative position should not be applied until the sling reaches a position over that point in the loft where the load is to be deposited; but when the sling reaches this position a comparatively slight draft upon the trip-rope will cause the displacement of the latch, the disengagement of the clamps from the eyes, and the vertical dropping of the load in such a position that it will spread uniformly and will practically preserve the shape which it had while on the vehicle. It will be seen that by disposing the track longitudinally of the barn and maintaining the length of the sling in a position transverse to the track I am enabled to arrange the sling-loads in the barn transversely of its length, and thus in practice economize space and materially facilitate the stacking of hay or other material in the loft without necessitating the manual distribution and packing or treading of the same. The parts as described may also be operated to deposit the sling-loads successively at different points in the hay-loft without necessitating the personal presence in the loft of an operator by providing the trip-rope with a plurality of stops or projections 53, spaced apart at intervals suitable for those between loads, as from ten to twelve feet. Then in filling a barn-loft the trip-rope as it has been drawn to unseat the split key should be arranged with its terminal stop or enlargement in a clamp 54 on the wagon or in a fixed position upon the barn or other object. When the sling has proceeded to the end of the barn, the movement of the trip-rope will be checked by the stop and the dead-center latch thrown to disengage the load. When the next load is started up, the second stop or enlargement

of the trip-rope should be engaged with said clamp, whereby when the sling has proceeded along the loft to a position close to that occupied by the first load the checking of the trip-rope will so dispose the parts as to discharge the second load. By continuing this operation a layer of loads may be deposited in the loft successively, and upon this layer a second one may be built in a manner similar to that described. Therefore by means of the apparatus above described I am enabled to properly arrange, distribute, and economically pack in a barn-loft a number of successive loads without requiring the presence in the loft of an operator. The locking-rod, by which the movable jaws of the clamps are held in their engaging positions, extends through guide openings or slots 55 in the fixed jaws of the clamps, and when the intervals between the jaws are of considerable extent intermediate guides 56 may be attached to the intermediate transverse bar of the sling.

It will be understood that in practice various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

Having described my invention, what I claim is—

1. A hay-sling of sectional construction having its members united upon an intermediate transverse line by fastening devices consisting of eyes, and movable-jawed clamps, of which the clamp-jaws are arranged in the planes of movement of the eyes when strained by the weight of the contents of the sling, and means for normally maintaining the clamps closed, in operative engagement with the eyes, substantially as specified.

2. A hay-sling of sectional construction having its members provided at their contiguous ends respectively with clamps and eyes, each clamp being arranged parallel with and in the plane of strain applied to the engaged eye by the weight of the contents of the sling, whereby said clamp may be opened, when released, by said strain, springs for yieldingly maintaining the jaws of the clamp in operative relation when relieved of the strain of the eyes, and locking devices for normally holding the clamps in engagement with the eyes, substantially as specified.

3. A sectional hay-sling having its members provided at their contiguous ends, respectively, with clamps, and eyes engaged by said clamps, the jaws of the clamps having convexed facing surfaces, arranged in the plane of strain of the eyes and one of them being movable and spring-actuated, and means for simultaneously releasing the eyes, substantially as specified.

4. A sectional hay-sling having its members provided at their contiguous ends, respectively, with clamps having movable jaws, and eyes for engagement by the clamps, and adapted to be withdrawn therefrom when the movable jaws of the clamps are released, and a common locking device for the movable jaws of the clamps, whereby they are normally held in engagement with the eyes, substantially as specified.

5. A sectional hay-sling having its members provided at their contiguous ends, respectively, with clamps having movable jaws, and eyes for engagement by the clamps, and adapted to be withdrawn therefrom when the movable jaws of the clamps are released, and a common locking device for the movable jaws of the clamps, the same having a locking-rod provided with stops for normal engagement with the movable jaws of the clamps, and means for securing said rod against longitudinal movement, substantially as specified.

6. A sectional hay-sling having its members provided at their contiguous ends, respectively, with clamps having movable jaws, and eyes for engagement by the clamps, and adapted to be withdrawn therefrom when the movable jaws of the clamps are released, and common locking means for the movable jaws of the clamps, the same having a locking-rod provided with stops for engaging said jaws, and a dead-center latch connected with the locking-rod for securing the latter against longitudinal movement, substantially as specified.

7. A sectional hay-sling having its members provided at their contiguous ends with the interlocking members of fastening devices, a locking-rod controlling said fastening devices and adapted, when released, to allow the disengagement of said interlocking members, a dead-center latch connected with the locking-rod for securing the latter against longitudinal movement, and a trip-rope connected with said latch whereby the latter may be drawn to release the locking-rod, substantially as specified.

8. A sectional hay-sling having its members provided at their contiguous ends with the interlocking members of fastening devices, a locking-rod controlling said fastening devices and adapted, when released, to allow the disengagement of said interlocking members, a dead-center latch connected with the locking-rod for securing the latter against longitudinal movement, and a trip-rope connected with the said latch for moving the latter from its locked position, and provided with a plurality of spaced stops or enlargements, in combination with a fixed clamp for successively engaging said stops or enlargements, substantially as specified.

9. A sectional hay-sling having its members provided at their contiguous ends with the interlocking members of fastening devices, a locking-rod controlling said fastening devices and adapted, when released, to allow the disengagement of said interlocking members, a dead-center latch connected with the locking-rod for securing the latter against longitudinal movement, and a key fitted in a seat in

the path of said latch for securing the latter against accidental displacement, substantially as specified.

10. A sectional hay-sling having its members provided at their contiguous ends with the interlocking members of fastening devices, a locking-rod controlling said fastening devices and adapted, when released, to allow the disengagement of said interlocking members, a dead-center latch connected with the locking-rod for securing the latter against longitudinal movement, a key for securing the latch against accidental displacement, and a branched trip-rope having its members connected respectively with said key and latch, substantially as specified.

11. A sectional hay-sling having its members provided at their contiguous ends with the interlocking members of fastening devices, a locking-rod controlling said fastening devices and adapted, when released, to allow the disengagement of said interlocking members, a dead-center latch connected with the locking-rod for securing the latter against longitudinal movement, a key for securing the latch against accidental displacement, and a branched trip-rope having long and short arms respectively connected with said latch and key, whereby when the trip-rope is strained said key and latch are operated successively, substantially as specified.

12. A hay-sling having terminal and intermediate transverse bars, and longitudinal flexible members or ropes connecting said bars, the portions of said flexible members at one side of the transverse plane of the intermediate cross-bar being detachably connected with said cross-bar, and means for simultaneously releasing said detachably-connected portions of the flexible members, substantially as specified.

13. A hay-sling having terminal and intermediate cross-bars connected by longitudinal flexible members, said terminal cross-bars being provided with split extremities having seats for the reception of the marginal flexible members, and also with intermediate guide-openings for the reception of the intermediate flexible members, rings to which the portions of the flexible members beyond said terminal cross-bars are attached, and means for adjusting the walls of said split terminals of the cross-bars, to clamp the marginal flexible members against movement with relation thereto, substantially as specified.

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

JOHN LAW.

Witnesses:
EVAN HUGHES,
C. W. BACHERT.