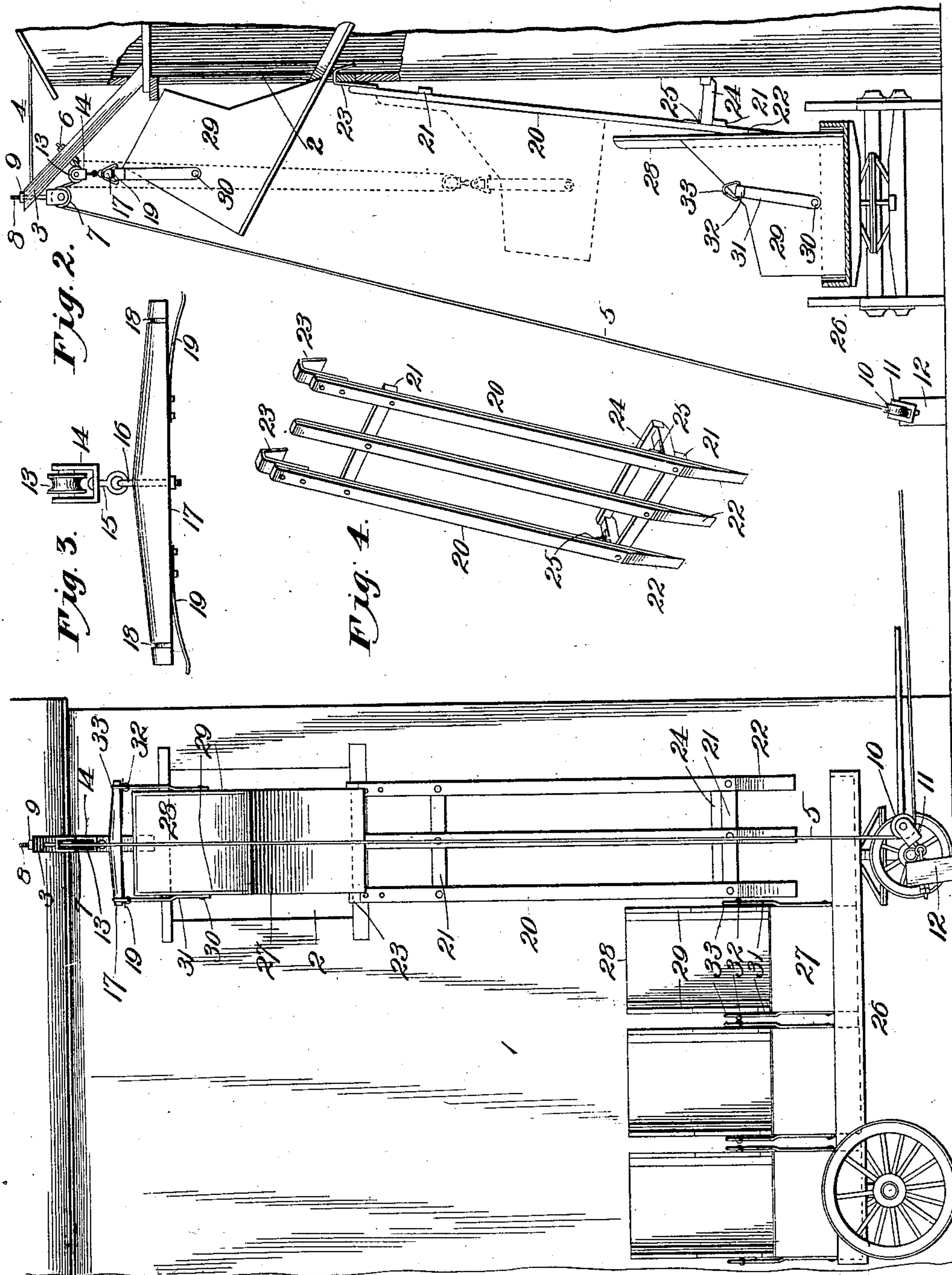


No. 863,075.

PATENTED AUG. 13, 1907.

C. A. LONG.  
LOADING AND UNLOADING APPARATUS.

APPLICATION FILED OCT. 21, 1905.



Witnesses:  
K. M. Inboden  
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Fig. 1.

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By George J. Thorpe atty.



# UNITED STATES PATENT OFFICE.

CALVIN A. LONG, OF SOLDIER, KANSAS

## LOADING AND UNLOADING APPARATUS.

No. 863,075.

Specification of Letters Patent.

Patented Aug. 13, 1907.

Application filed October 21, 1905. Serial No. 283,835.

*To all whom it may concern:*

Be it known that I, CALVIN A. LONG, a citizen of the United States, residing at Soldier, in the county of Jackson and State of Kansas, have invented certain new and useful Improvements in Loading and Unloading Apparatus, of which the following is a specification.

This invention relates to loading and unloading apparatus and has for its object to produce apparatus of this character adapted for transferring corn, wheat, and other farm products from the field to a storage structure, and my object is to produce apparatus of this character which can be operated efficiently, reliably and expeditiously.

A further object is to produce apparatus of this character of simple, strong, durable and comparatively inexpensive construction.

To these ends the invention consists in certain novel and peculiar features of construction and organization as hereinafter described and claimed; and in order that it may be fully understood reference is to be had to the accompanying drawing, in which—

Figure 1, is a side elevation of the complete apparatus. Fig. 2, is an end view of the same with the storage structure broken away and the vehicle in which the boxes are conveyed, in vertical section. Fig. 3, is a detail elevation of the hoisting bar on a larger scale than shown in Figs. 1 and 2. Fig. 4, is a detail perspective view of the guide for the boxes while being elevated from the vehicle to the point of discharge.

In the said drawing where like reference numerals indicate corresponding parts in the several views, 1 indicates a storage structure of the type shown or of any other suitable or preferred type, and 2 an opening therein through which the structure is charged.

For the purpose of hoisting the boxes hereinafter described, a hoisting mechanism is provided, the same being constructed as follows:—3 indicates an arm projecting outwardly from the storage structure centrally above the opening 2 thereof and preferably pitched upwardly at an angle as shown clearly in Fig. 2, and braced as at 4 or otherwise from the structure.

5 indicates a cable secured at its upper end to an eye bolt 6 or its equivalent carried by arm 3.

7 is a sheave secured to the lower end of a bolt 8 depending from arm 3 outward and preferably above the upper end of the cable, said sheave being secured at the desired elevation by the nut 9 engaging the upper end of the bolt and arm 3.

At a point approximately two feet from the ground and outward from the storage structure a distance somewhat exceeding the width of a wagon, is a sheave 10 engaged by said cable 5, said sheave being mounted in a bracket 11, attached to an anchor such as a post 12, driven into the ground, the lower end of the cable

being adapted to be equipped with means such as a swingle or doubletree, not shown, to which the draft animal or animals are adapted to be hitched.

13 indicates a sheave engaging the cable between its point of attachment with arm 3 and sheave 7, and mounted in a bracket 14 swiveled on a bolt 15 pivoted to eye bolt 16 carried by and projecting upwardly from a hoisting bar 17, said bar being provided near its outer ends with grooves 18 in its upper and side surfaces.

19 indicates flat springs secured at their inner ends to the under side of the hoisting bar and having their outer ends diverging from said bar.

A guide of any suitable character but preferably of skeleton form for convenience in handling, consists of a series of parallel bars 20, connected together by cross bars 21. The lower ends of bars 20 are preferably beveled downwardly as at 22, so that said beveled surfaces shall stand approximately vertical in operative position, and at their upper ends the outermost ones are provided with downwardly disposed hooks 23, said hooks being arranged at the opposite sides of the bars from the beveled surfaces 22.

A brace 24, preferably of skeleton form as shown, is provided to hold the guide when suspended from the lower sill of opening 2 by means of the hooks as shown in Fig. 2, at such an angle to the storage structure that the surfaces 22 shall be vertical as explained, and said brace for convenience in handling is hinged as at 25, to bars 20, above the lower cross bar 21, the latter thus serving to prevent the brace swinging downward below the plane shown in Fig. 2.

26 indicates a wagon of any suitable type adapted to receive one or more boxes into which the grain is loaded in the field or at any other point. Each of said boxes comprise a comparatively low front wall 27 and high back wall 28 connected by side walls 29 which increase in height by preference from said front to said back wall. A box of this character can obviously be loaded more rapidly because the person engaged in loading the same can pitch the grain over the front wall without danger of it also passing over the rear wall.

Pivoted externally on the side walls of each box about centrally between the front and back walls and nearer the bottom than the top of said walls as at 30, are swing arms 31 terminating in eyes 32 in which are pivotally secured loops 33. When the boxes are charged the wagon is hauled between the storage structure and the post 12 with the rear sides of the boxes as close to the guide as possible, the wagon being arrested with one of the boxes opposite said guide. The person in control then grasps the hoisting bar, which at this time is lowered, and presses springs 19 up against the same so as to slip the ends of the bar and said springs through loops 33 until the latter engage the grooves 18 of the bar. A



draft animal or team hitched to the cable is then driven forward so as to operate the hoisting mechanism and raise the box to which the cross bar is attached. As this operation takes place the heavier or rear side of the box causes it to tilt rearwardly until it lies flatly against the inclined guide and in such position it remains until the upper end of its rear wall projects slightly above the lower sill of the opening 2, at which time it will be noticed the center of gravity is rearward of pivotal point 30, because the box in its ascent moved gradually toward the storage structure whereas its pivotal point 30 remained approximately in the vertical plane of the sheave 13. As a result of this shifting of the center of gravity, the rear wall of the box when it attains the position above referred to, will fulcrum on the lower sill of opening 2 until it is raised almost to the position shown in full lines at the top of Fig. 2. During such pivotal movement of the box on the sill of opening 2 its contents are being discharged into the storage structure. Just before the pivotal movement of the box is completed and its contents are completely discharged the continued upward movement of the sheave draws the box upward and outward so that it has a slight withdrawal movement in said opening, which withdrawal movement of the box insures a complete discharge of its contents. The draft animal is then backed and the box first slides downward and inward of the storage structure and then reverses the pivotal movement above described and moves downward until its rear wall again rests against the guide as shown by dotted lines Fig. 2, and is guided downward by the same until it enters the wagon. The operator then detaches the hoisting bar from the empty box and the wagon is moved forward until the next box is op-

posite the guideway, when the operations above described are repeated.

From the above description it will be apparent that I have produced a loading and unloading apparatus embodying the features of advantage enumerated as desirable.

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

1. In an apparatus of the character described, the combination of a storage structure having an opening, an inclined guide having an uninterrupted outer surface terminating at and extending downward and outward from the opening in the storage structure, a box resting upon the outer surface of said inclined guide and having its inner side adjacent thereto longer and heavier than its outer side, arms pivoted at their lower ends to the opposite sides of the box near the bottom of the same, and a hoisting mechanism detachably connected to the upper ends of said arms.

2. In an apparatus of the character described, the combination of a storage structure having an opening, a guide secured to said structure and extending downward and outward from the lower margin of the opening of the structure, a box at the outer side and lower end of the guide and having its wall contiguous to the guide of greater height than its opposite wall, arms pivoted to the box below its center, and a hoisting mechanism attached to said arms and adapted to raise said box and slide it upward on the guide until its higher wall projects into the opening of the structure above the guide and turns pivotally on the sill of the opening until its normal lower end occupies a higher plane than its normal upper end.

In testimony whereof I affix my signature, in the presence of two witnesses.

CALVIN A. LONG.

Witnesses:

C. E. McKIBBIN,  
S. P. POLSON.