A. J. LARSON.

LOADING DEVICE.

APPLICATION FILED MAR. 1, 1918.

1,327,436.

Patented Jan. 6, 1920.

3 SHEETS—SHEET 1.

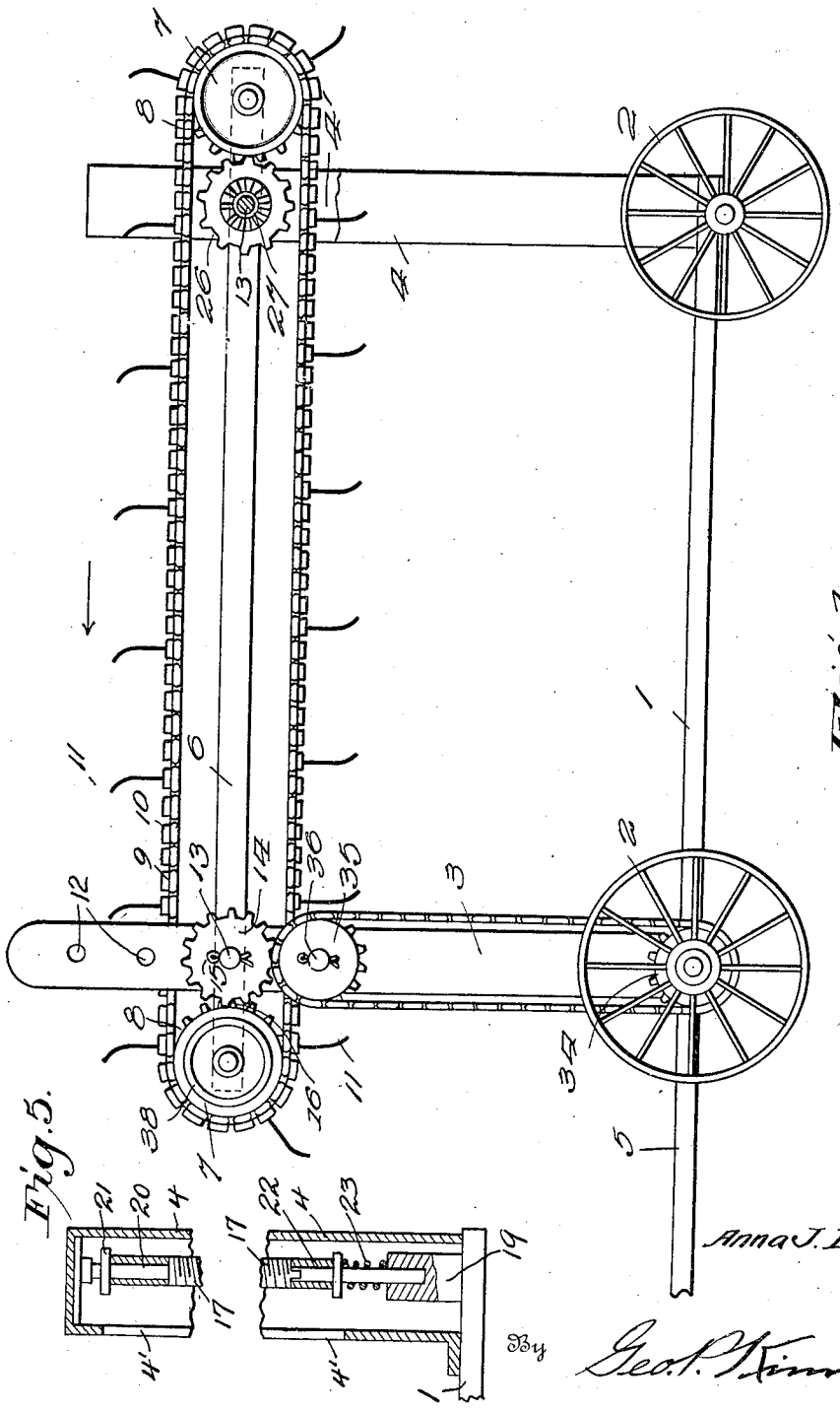


Fig. 1.

Fig. 5.

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3 SHEETS—SHEET 2.

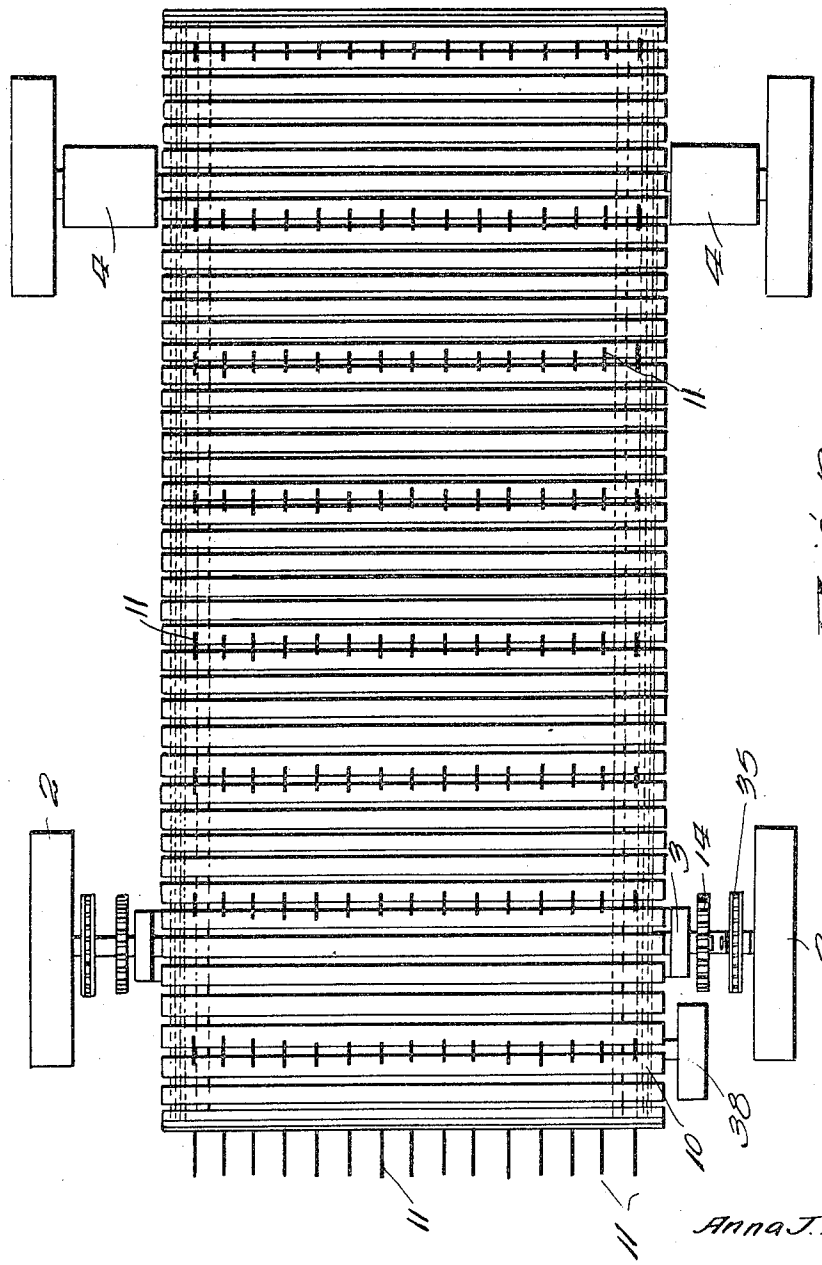


Fig. 2.

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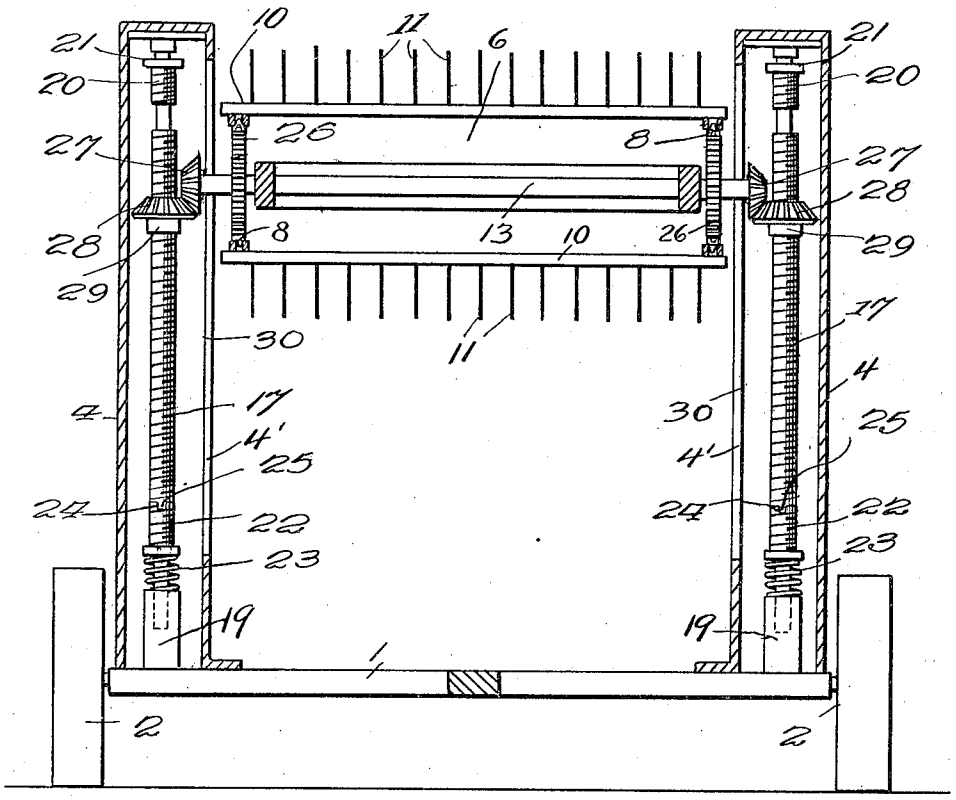
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3 SHEETS—SHEET 3.

Fig. 3



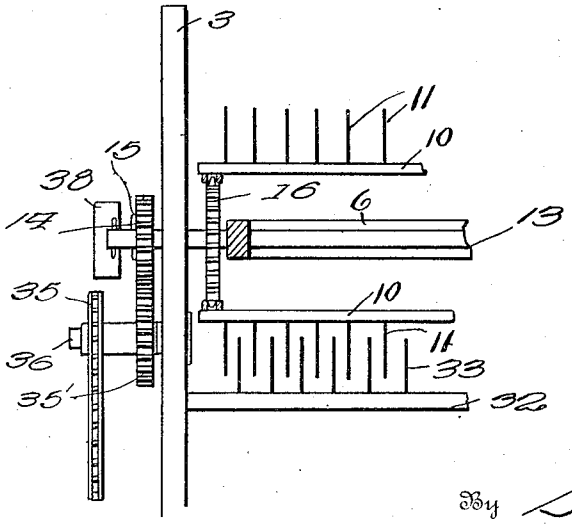


Fig. 4

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UNITED STATES PATENT OFFICE.

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LOADING DEVICE.

1,327,436. Specification of Letters Patent. Patented Jan. 6, 1920.

Application filed March 1, 1918. Serial No. 219,824.

To all whom it may concern:

Be it known that I, ANNA J. LARSON, a citizen of the United States, residing at Sherburn, in the county of Martin and State of Minnesota, have invented certain new and useful Improvements in Loading Devices, of which the following is a specification.

This invention relates to loading devices and it is the dominant object of the invention to provide an improved loader especially designed for removing matter from a pile or stack and conveying the same into the body of a vehicle or other conveyance for removal.

It is also an object of the invention to provide the device with novel loading means capable of moving over the pile or stack of matter and evenly removing a portion of the same for loading the vehicle without disturbing the pile or causing the collapsing or scattering of the same.

The invention also aims to provide the loading of the device with means for automatically raising and lowering the same with relation to the pile or stack of matter and to limit the upward and downward movement of said loading means.

Yet another object of the invention is to provide means for moving the device after a portion of the matter of the pile has been removed, in order that the loading means can be again engaged therewith for further loading operations.

Other objects will be in part obvious and in part pointed out hereinafter.

In order that the invention and the manner of its application may be readily understood by those skilled in the art, I have in the accompanying illustrative drawings, and in the detailed following description based thereon, set forth a preferred embodiment of the invention.

In these drawings:

Figure 1 is a side elevation of the improved loader having parts broken away and shown in section,

Fig. 2 is a top plan thereof,

Fig. 3 is a vertical transverse section therethrough, and

Fig. 4 is a fragmentary transverse section.

Fig. 5 represents sectional details of the upper and lower portions of one of the threaded adjusting shafts illustrating the construction.

Having more particular reference to the drawings, in connection with which like reference characters will designate corresponding parts throughout the several views, 1 represents the frame of the device, the same being provided with wheels 2, which as will be noted, are mounted upon the extremities of axles supported on the transverse pieces of the frame 1. Uprights 3 and 4 are arranged adjacent the opposite ends of the several transverse pieces of the frame 1: the uprights 3 being pivotally mounted on the front axle and the uprights 4 having vertically disposed ways or slots 4′ formed therein for a purpose which will be hereinafter described.

Suitable draft connections 5 are arranged upon the forward transverse piece of the frame and as will be noted, serve as means for facilitating connection of suitable draft means to the frame of the device.

Supported upon the upper portions of the forward upright 3 is a conveyer supporting bed 6 having rollers 7 rotatably supported between the opposite extremities of the same, which rollers have sprocket wheels 8 secured to the opposite end of the same and engaged with the links of sprocket chains 9 passing thereover and carrying an endless apron or conveyer 10. The apron, as will be noted, is provided with transversely disposed rows of curved fingers 11, which fingers serve as means for engaging and removing portions of matter from a pile or stack and carrying the same forwardly into engagement with the body of a vehicle or other suitable receptacle into which said matter is discharged or dumped. To permit the raising or lowering of the forward end of the bed 6 with relation to the uprights 3, a plurality of openings 12 are formed therein in spaced relation and as will be noted, receive the shaft 13 therethrough, which shaft is mounted in suitable bearings on said bed and has gear wheels 14 movably mounted thereon. To permit lateral movement of the sprocket wheels 14 on the shafts 13, for a purpose hereinafter set forth, a pair of openings are formed in each of said shafts and receive cotter pins or like devices 15 therethrough. Thus, when it is desired to retain the gear wheel 14 in its innermost position the inner pin 15 is arranged to engage with the outer face of the same. However, should it be desired to arrange and maintain the gear wheel 14 in its outermost position the inner pin 15 is removed and the gear wheel 14 is then moved until the outer face of the same en-

gages the outer pin 15 whereupon the inner pin is reinserted in the openings formed in each of said shafts. Other gear wheels 16 are mounted upon the inner portions of the shaft 13 adjacent the inner faces of the uprights 3 and are in mesh with the wheels 8.

Rotatably mounted in the uprights 4 which as will be understood, are hollow and as a consequence form casings, are screw threaded shafts 17, the lower ends of said shafts being formed smooth as at 18 and mounted in bearings 19 secured to the opposite ends of the rear cross piece of the frame 1, while the upper ends of said shafts are also formed smooth and have short screw threaded sleeves 20 rotatably mounted thereon, which sleeves as will be noted, have flanges 21 formed adjacent the upper ends of the same. In this connection, it is to be noted that the lower ends of the sleeves 20 are arranged in spaced relation to the threads formed on the shafts 17. Sleeves 22, similar to the sleeves 20, are rotatably and slidably arranged on the lower portion 18 of said shafts, and have their lower ends engaged with the upper convolutions of expansible coil springs 23, these springs as will be noted, having bearings on the adjacent ends of the sleeves 22. When expanded, the springs 23 will serve as means for forcing the screw threaded sleeves upwardly until recessed edges 24 of the same engage with lugs 25 on the lower ends of the screw threaded portions of said shafts 17. It is to be also understood, that the upper ends of the shafts 17 will be engaged in suitable bearings arranged in the tops of the hollow casings 4, thereby preventing undue lateral movement of the same. Gear wheels 26 are mounted upon a suitable shaft 13 journaled in bearings in proximity to the rear end of the bed 6, and mesh with adjacent gear wheels 8, thereby permitting the transmission of rotary motion to the same. Mounted on the shaft 13 are beveled gears 27, which gears are arranged to mesh with other beveled gears 28 carried upon the upper ends of rotatable and internally screw threaded sleeve-like boxings 29.

The housings or casings 4 are provided with slots 4′ to slidably receive the shaft 13.

Adjustably secured between the forward uprights 3 is a transversely disposed bar 32 having a series of spaced vertically disposed fingers 33 arranged thereon, which fingers as will be noted, are adapted to pass between the curved fingers 11 carried on the apron or conveyer 10, thereby serving as means for thoroughly removing all matter from the endless conveyer before the same is reëngaged with the pile or stack of matter.

A sprocket wheel 34 is mounted upon one end of the forward axle of the frame and is adapted to be connected with a similar wheel 35 carrying a gear 35′ movably mounted on a stub axle 36 supported in suitable bearings arranged in the adjacent uprights 3 and meshing with the adjacent gear wheel 14.

To permit the transmission of power to the endless apron 10, the shaft carrying the pulley 7 is extended and carries a pulley 38, about which a belt or other suitable form of gearing is arranged, this belt, of course, being extended into engagement with the driving means or source of power.

The operation of the device may be reviewed as follows:

The rear end of the apron 10 is in its uppermost position with respect to the rear uprights 4 whereupon motion is transmitted thereto through the medium of the pulley 38 and pulleys 7 and sprocket wheels 8. As the apron 10 is caused to move about the bed 6 in the direction shown by the arrow, it of course will be understood that the rows of curved fingers 11 at the rear end of the apron will first engage the adjacent top portion of the pile or stack in sequential order and will remove portions of the same and carry it forwardly to the front standards 3 at the front end of the device, from where it will be discharged into a receptacle or body of a vehicle adapted to be positioned over the tongue 5 and beneath the forward projecting portion of the apron. During movement of the apron 10, rotary motion will be imparted from the gear wheels 8 to the gear wheel 26 and from there rotary motion will be imparted to the screw threaded boxings 29 which boxings, due to the weight of the material will leave the upper rotatable sleeves 20 and engage with the screw threaded shafts 17 and as a consequence, move downwardly causing the rear end of the apron to be gradually lowered with respect to the pile or stack of matter being loaded or handled thereby and against the side of which the supporting frame 1 is backed. When the rear end of the apron is in its lowermost position, the boxings 29 will have engaged with the short screw threaded sleeves 22 and the weight of the apron will be such as to cause the movement of said sleeves to their lowermost positions against the resistance of the springs 23, thereby placing the expansible coil springs 23 under tension and disengaging the recesses 24 and spurs 25. Thus, the continued rotation of the boxings will not affect the apron, since, as before stated, the sleeves 22 are loosely mounted on the smooth lower portions 18 of said shafts and rotated around the shafts. When all matter has been removed from the apron, the weight of the same is of course lessened and the expansible coil spring 23 then expands and causes the recesses 24 and 25 to be reëngaged. The drive through the pulleys 38 is

then reversed and as a consequence, the boxings 28 will be caused to ascend the screw threaded portions of the shafts 17 until the same move into engagement with the upper short sleeves 20. Since these upper short sleeves 20 are also loosely mounted on the upper ends of the shafts 17, continued rotary movement of the boxings will not affect the positioning of the apron 10 after the same has been moved to its uppermost position with respect to the uprights 4. At this time, it becomes necessary to move the device backwardly so that the apron 10 may be again engaged with the side of the pile or stack of matter. To accomplish this, the sprocket wheels 35 are moved into engagement with the wheels 14 and due to the reversed drive of the apron, the device will of course be moved backwardly to the desired position with relation to the pile or stack of matter, whereupon the wheels 14 and 35 may be disengaged to prevent the transmission of motion to the wheels 2. Furthermore, the sprocket wheels 14 may be moved to their outermost positions upon their respective shafts 13 and maintained in such positions by position of the pin 15. Thus, upon operating the apron 10, the transmission of rotary motion to the wheels 14 and hence to the wheels 35 will be prevented. When the rear end of the apron 10 has been raised and properly positioned with respect to the stack, the drive may be then stopped and changed to "forward." Thus, when again started the apron 10 will move in the direction indicated by the arrow and will again remove a portion of the stack or pile of matter and effectually load the same into the body of a waiting vehicle. All matter will be thoroughly dislodged from the curved fingers 11 by provision of the cleaner element comprising the bar 32 and spaced pins 33, which pins as will be understood, engage between the curved fingers 11.

While I have illustrated and described, with a considerable degree of particularity, constructional details of the device embodying my invention, it is to be understood that the invention is not limited to the particular form and arrangement of the several parts which may be modified within a wide range without departing from the essence of the invention, the construction shown and the description based thereon being intended to be taken in an illustrative rather than a limiting sense.

I claim:

1. In a loading device, a frame, spaced uprights arranged on the forward portion of the frame, conveying means pivotally supported at one end between said uprights, spaced vertically disposed screw threaded shafts arranged upon the remaining end of the frame, the upper and lower extremities of said shafts being formed smooth, screw threaded sleeves rotatable on the smooth extremities of said shafts, rotatable screw threaded boxings secured to the conveying means adjacent the remaining end thereof and receivable over said screw threaded shafts and engageable, at times, with said screw threaded sleeves, means for imparting rotary motion to the conveying means, and other means connected to said motion imparting means and said screw threaded boxings for rotating the same.

2. In a loading device, a frame, spaced uprights secured to the forward portion of the frame, conveying means pivotally supported at one end between the uprights, vertically disposed spaced screw threaded shafts mounted upon the remaining end of said frame, screw threaded boxings secured to the conveying means adjacent the remaining end of same and engaged with said screw threaded shafts, screw threaded means rotatably mounted on the upper and lower portions of the shafts and engageable at times by the boxings for limiting the upward and downward movement of the rear portion of the conveying means, means for imparting rotary motion to the conveying means, and other means connected to said motion imparting means and said screw threaded boxings for rotating the same.

3. In a loading device, a frame, spaced uprights arranged upon the forward end of said frame, conveying means pivotally secured at one end between said uprights, vertically disposed spaced screw threaded shafts secured to the remaining end of the frame, the opposite extremities of said shafts being formed smooth, screw threaded sleeves rotatably mounted on the smooth extremities of the shafts, means for normally forcing certain of said sleeves into engagement with the shafts, screw threaded boxings rotatably mounted on the conveying means adjacent the remaining end thereof engaged over said shafts and adapted to be received on said sleeves, at times, means for imparting rotary motion to the conveying means, and other means connected to said motion imparting means and said screw threaded boxings for rotating the same.

In testimony whereof, I affix my signature hereto.

ANNA J. LARSON.