W. VON PHUL, A. L. BLACK & A. M. LOCKETT.

BALE OR PACKAGE REMOVING MECHANISM.

APPLICATION FILED MAR. 13, 1915.

1,149,309.

Patented Aug. 10, 1915.

2 SHEETS—SHEET 1.

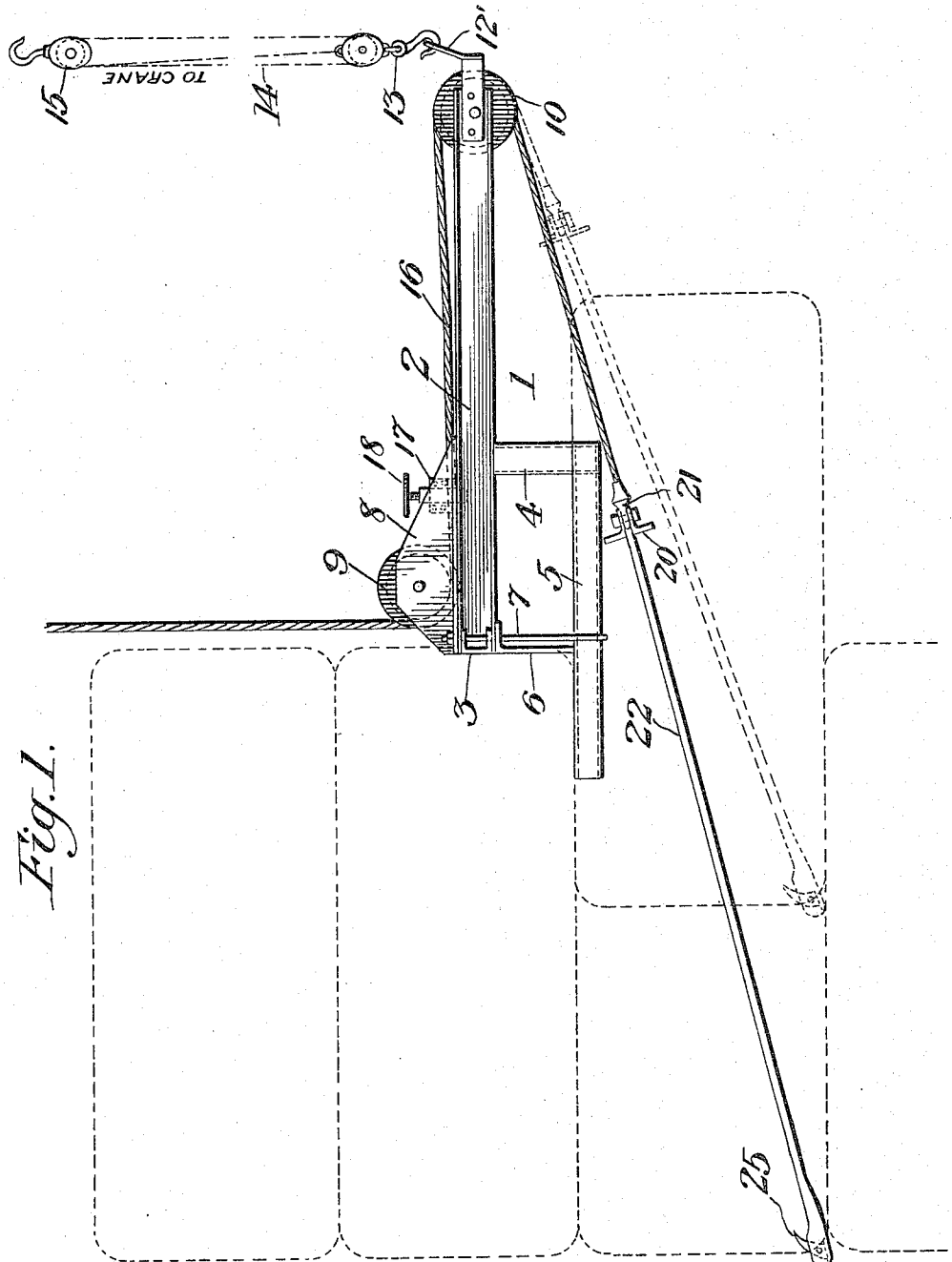


Fig. 1.

Witnesses.
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2 SHEETS—SHEET 2.

Fig. 2.

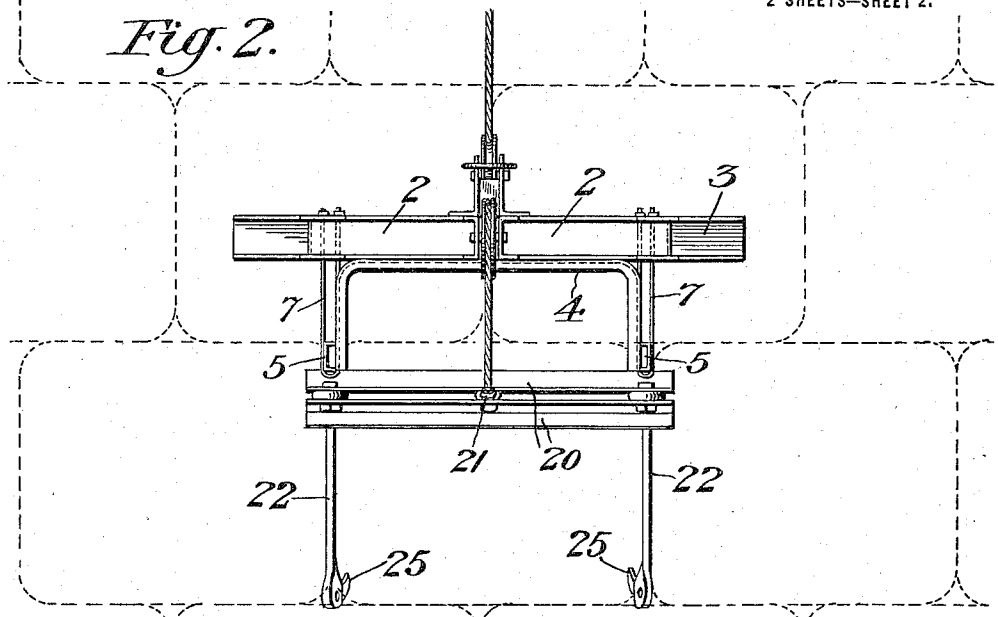


Fig. 3.

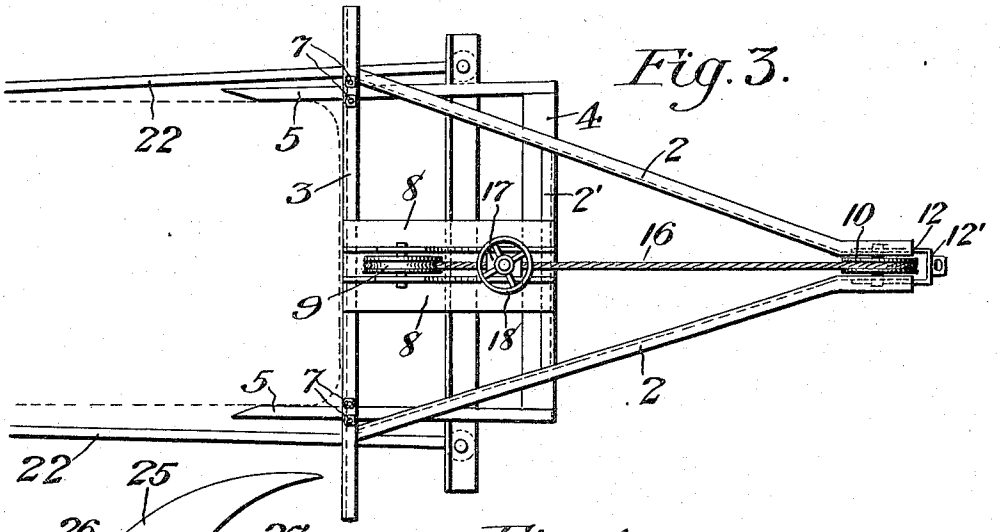
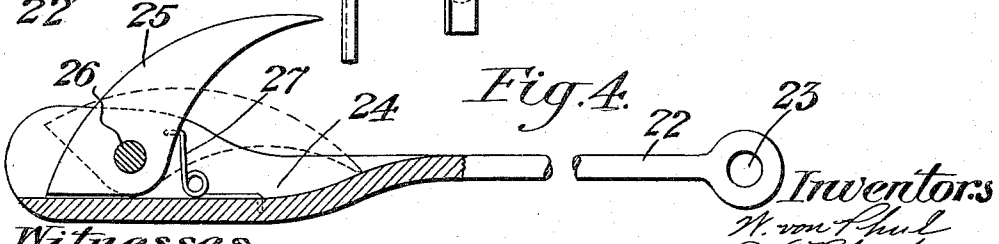


Fig. 4.



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UNITED STATES PATENT OFFICE.

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BALE OR PACKAGE REMOVING MECHANISM.

1,149,309. Specification of Letters Patent. Patented Aug. 10, 1915.

Application filed March 13, 1915. Serial No. 14,187.

To all whom it may concern:

Be it known that we, WILLIAM VON PHUL, ALEXANDER L. BLACK, and ANDREW M. LOCKETT, all citizens of the United States, and residents of New Orleans, parish of Orleans, State of Louisiana, have invented certain new and useful Improvements in Bale or Package Removing Mechanism; and we do hereby declare the following to be 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.

The invention relates to mechanism for extracting, withdrawing or removing individual elements, such as bales, packages, or other containers of goods in bulk, or separate articles, which it is customary to assemble and store in rows and tiers, and has for its object to provide simple and efficient means for relieving the particular package, which is to be removed, from so much of the weight of the superposed elements or packages as will admit of the desired article or package being removed by the proper application of force applied thereto, associated with means for applying the force in a direction to effect such removal.

In the storing of large packages, such as bales, barrels, casks, boxes and the like, as well as large individual elements not in package form, it is quite usual to stack the same in tiers or rows of considerable length and height to economize the storage space as far as possible. In such a storage system, it frequently becomes necessary and desirable to withdraw or remove certain of the individual elements of a stack or pile, and to effect this, it has been the custom heretofore to bodily remove the superposed elements and those immediately adjacent the one desired so that the latter could be lifted out, after which it was necessary to restore the stack or pile by replacing all of the other elements, except the one desired, in proper order. Such an operation is not only wasteful of time and energy, but not infrequently results in damage to the elements of the stack or pile due to frequent removal and replacement.

The present invention is designed to provide means for quickly and efficiently extracting any desired element from a stack or pile without danger of disturbing the relation of the other elements of the stack or pile or of damaging any of the elements, including the one removed.

In the accompanying drawings, Figure 1 is a side elevation of a simple form of apparatus involving the invention as employed in removing bales of cotton from a stacked pile of the same. Fig. 2 is a front elevation of the same. Fig. 3 is a plan view of the apparatus, and Fig. 4 is a side elevation partially in section of a form of grapple or hook employed in connection with the machine.

Although the invention has been illustrated as a device particularly adapted for removing individual bales from a pile of the same, it will be understood that it is not limited to such use, as it may be applied with equal efficacy to effect the removal of other articles or packages which are arranged or stored in substantially regular rows and tiers horizontally and vertically. It is also to be understood that the particular form of the apparatus illustrated is merely exemplary and that the invention is not limited in any sense to such particular form, but, as expressed in the claims appended hereto, is to be regarded as covering any other form of apparatus for effecting the same sequential operations to produce the same desired result.

Referring to the drawings, 1 indicates a portable framework constructed of commercial shapes of iron or steel and adapted to be transported from place to place either by hand or by means of a traveling crane from which it is designed to be normally operated. Said frame 1 comprises converging horizontal members 2 connected at their divergent ends by a cross piece 3 and at their intermediate portions by a cross brace 2′ and rigidly connected to the members 2 is an inverted U-shaped element 4, which like the members 2 and 3 is preferably formed of channel iron, and connected to the pendent arms of the member 4 are two rearwardly projecting horizontally disposed lifting arms 5, which may also be formed of channel iron and have their outer ends chamfered or beveled to admit of said ends being readily passed between adjacent elements of a stack or pile of such elements. Secured to the rearward end of the members 2 is an angle bar 6 which constitutes a

face plate or abutment to afford a firm, broad bearing for the frame against the face of the stack or pile to be operated upon. In order to hold the arms 5 rigidly to the framework, there are provided two U-bolts 7, the upper portions of which pass through the flanges of the members 3 and 6, and the lower loop portions of which engage and pass around the intermediate portions of the arms 5, as illustrated in Figs. 1 and 2.

Connected between the cross members or braces 2′ and 3 are two angle plates 8, the vertical webs of which constitute journal bearings for the sheave or pulley 9. The forward ends of the members 2 are bent into parallelism and secured together by means of a yoke-like member 12 which is provided at its outer end with an eye 12′. Between the parallel outer end of the members 2 is journaled a sheave or pulley 10. The sheaves or pulleys 9 and 10 are adapted to engage and guide an operating cable 16 which passes under pulley 9 and around pulley 10 in the relation shown in Figs. 1 and 3 of the drawings.

Mounted between the angle plates 8 is a rope clamp 17 having an operating handle 18, said clamp comprising two jaws lying on opposite sides of the cables 16 and adapted to securely clamp and lock the same to the frame 1 under certain conditions of operation of the apparatus.

The forward end of the frame 1 is supported by a suitable block and tackle system consisting of a lower block 13, an upper block 15, adapted to be suspended from a traveling crane or the like and a connecting cable or tackle 14, the lower block being connected by a suitable hook to the eye 12′ of the yoke 12 secured to the forward ends of the members 2 of the frame.

The cable 16 is connected at its upper end to a hoisting drum or winch carried by a traveling crane or similar apparatus, not shown, which hoisting drum or winch is adapted to apply the necessary force first to lift the bale or other element of the pile to be removed, second to withdraw the desired bale or other element, and third, in conjunction with the block and tackle mechanism to support and transport the mechanism from place to place. The outer end of the cable 16 is connected to the intermediate portion of a yoke consisting of two spaced angle bars 20, by means of a suitable bolt passing through the horizontal flanges of the yoke members and an eye 21 attached to the end of the cable.

To the outer ends of the yoke 20 are secured two hooks 22, each of which is provided at its forward end with an eye 23 by means of which it is fastened to the yoke between the two angle bars 20 thereof. The forward end of each hook is provided with a pivoted tine 25, journaled on a pin 26, secured to two side flanges 24 of the body of the hook, as illustrated in Fig. 4. The tine 25 is held normally in projecting relation by means of a spring 27, but is adapted to be folded back into the position illustrated in dotted lines in Fig. 4 when lateral pressure is brought to bear upon the tine, as for example, when the hook is shoved in between the bales or elements of a stack or pile. As soon as the lateral pressure is relieved, the spring forces the tine outwardly into its normal position, until the heel of the tine rests upon the bottom of the rearward portion of the hook body, in which position the tine is adapted to be engaged, with the rear portion of the bale or element to be removed when a longitudinal pulling strain is exerted on the hook.

In applying the apparatus to the intended use, the frame 1 is supported from an overhead traveling crane or the like by means of the cable 16, which is locked to the frame by means of the clamp 17, and the block and tackle mechanism connected to the forward end of the frame, the cable being so adjusted as to provide sufficient slack for the operations described below. The crane is then moved to a position in front of the stack or pile of bales or other elements from which it is desired to move a particular bale, and the frame 1 lowered to a position just above the particular bale to be removed. The frame is then moved toward the stack or pile until the horizontal arms 5 are forced in between or under the bales immediately above the one to be removed. The cable 16 is then drawn out and the two hooks 22 are shoved through the pile on both sides of the bale to be removed, until the rear ends of the hooks project beyond the other side of the pile and the tines 25 of the hooks spring outwardly into normal position. Preferably, the hooks are then turned so as to cant the tines at the rear ends thereof to engage the rear lower corners of the bale, as illustrated in Fig. 1. The block and tackle is then adjusted so as to maintain the frame in an approximately horizontal position and the cable 16 is loosened by means of the clamp 17, after which the hoisting winch or drum which controls the cable is operated to exert a lifting strain on the cable which has the effect of lifting the frame 1 to a sufficient extent to cause the arms 5 of the frame to lift the weight of the bales superposed on the bale to be removed and thereby relieve the vertical pressure on the latter to admit of the same being withdrawn. The pull on the cable also forces the frame firmly against the pile or stack of bales, the continued pull resulting in the bodily movement of the cable causes the yoke 20 to move the hooks 22 outwardly from the pile and thereby extract or withdraw the particular bale to which the

hooks are attached. After the bale has been removed, the tension on the cable 16 is relieved and the apparatus permitted to swing free of the pile of bales, so that it may be moved to any position for extracting another bale. Inasmuch as it is customary to stack the bales or other elements of a pile in staggered or bonded relation, the removal of the apparatus will permit the bales to settle down into their normal position, without disturbing the relation of the individual bales of the pile or stack, as will be apparent.

What we claim is:—

1. Mechanism for removing bales and packages from piles of the same, comprising means for relieving the bale desired of the pressure of superposed bales, and cooperating means for forcing said bale out of the pile.

2. Mechanism for removing bales and packages from piles of the same, comprising means for exercising a lifting force on the superposed bales to relieve the desired bale of the weight thereof, and coöperating means for directing a force longitudinally of the bale sufficient to remove said bale.

3. Mechanism for removing bales and packages from piles of the same, comprising means for engaging the bale or bales immediately above that to be removed, means for engaging the bale to be removed, and means for simultaneously applying a lifting force to the first named means and a pulling force to the second named means.

4. Mechanism for removing bales and packages from piles of the same, comprising a frame having arms adapted to engage the superposed bales, hooks adapted to be passed between the piled bales to engage the rear of the desired bale and a cable so connected to the frame and hooks as to impose a lifting force on the frame and a pulling force on the hooks and bale.

5. Mechanism for removing bales and packages from piles of the same, comprising a frame having a rear portion adapted to abut the front of superposed bales and rearwardly projecting arms to pass under said superposed bales, hooks adapted to be passed between the piled bales to engage the rear of the desired bale, cable guides at the front and rear of said frame, and a cable engaging said guides and connected to said hooks, whereby a hauling strain on the cable will lift the frame and superposed bales and withdraw the bale and attached hooks.

6. Mechanism for removing bales and packages from piles of the same, comprising a frame adapted to abut the pile and having rearwardly projecting arms to pass under the superposed bales, means adapted to be passed between the piled bales and to engage the bale to be removed, cable guides at the front and rear of said frame, and a cable engaging said guides and connected to said bale engaging means whereby a hauling strain on the cable will lift the frame and superposed bales and withdraw the bale and attached hooks.

7. Mechanism for removing bales and packages from piles of the same, comprising a frame adapted to abut the pile and having rearwardly projecting arms to pass under the superposed bales, means adapted to be passed between the piled bales and to engage the bale to be removed, cable guides at the front and rear of said frame, a cable engaging said guides and connected to said bale engaging means whereby a hauling strain on the cable will lift the frame and superposed bales and withdraw the bale and attached hooks, and a clamp carried by said frame to lock the cable thereto when necessary.

In testimony whereof we affix our signatures, in presence of two witnesses.

WILLIAM VON PHUL.
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ANDREW M. LOCKETT.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."