

Sept. 25, 1934.

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1,974,892

BRICK LIFTER

Filed Nov. 30, 1932

2 Sheets-Sheet 1

Fig. 1.

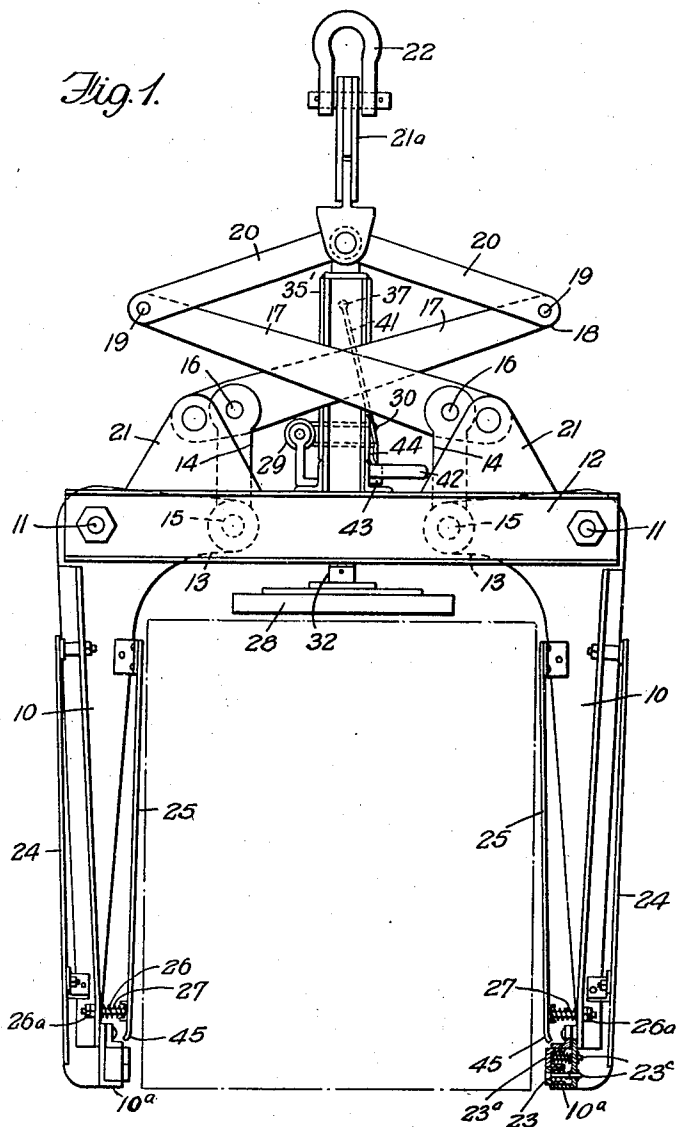
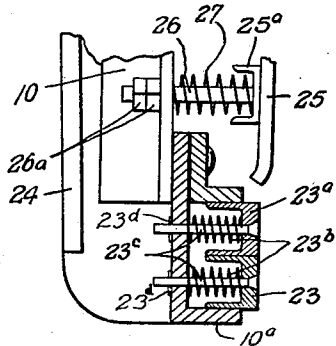


Fig. 4.

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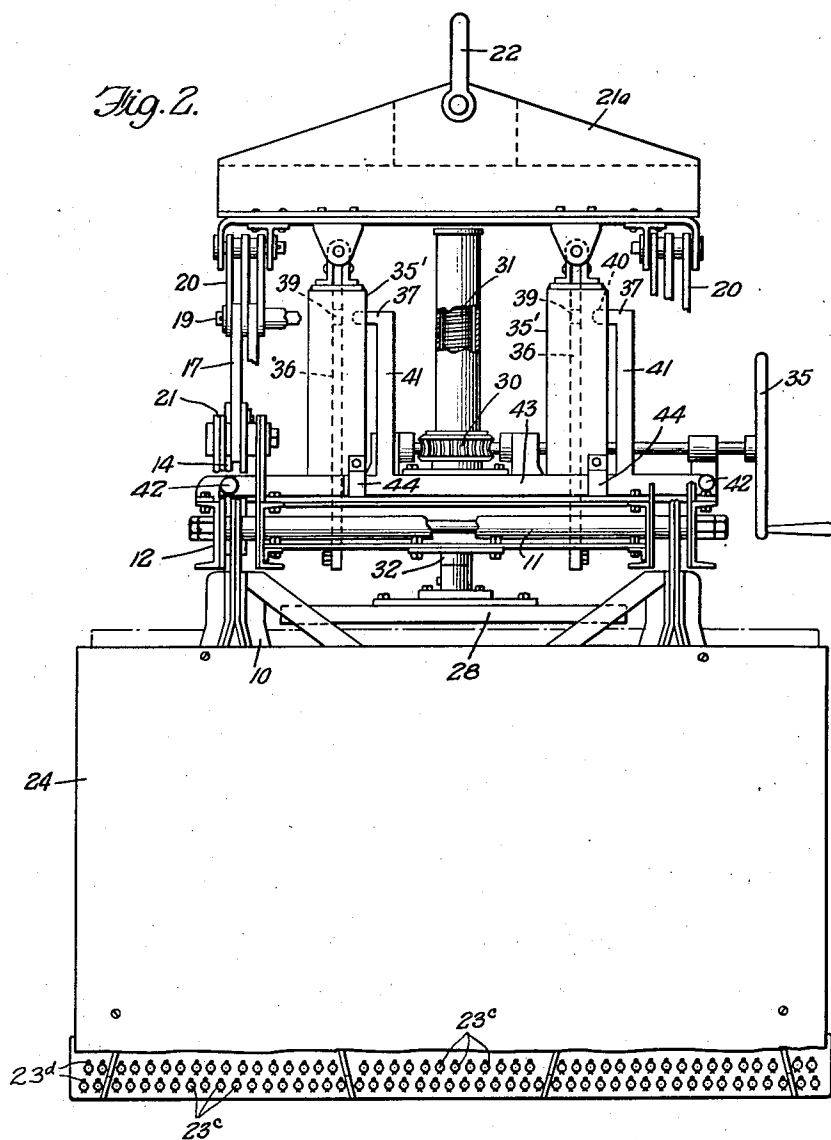
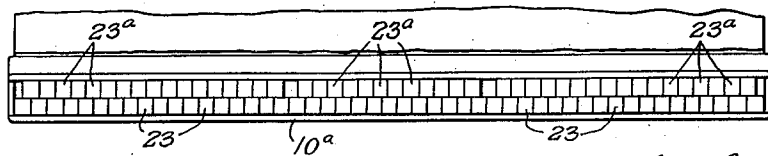
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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BRICK LIFTER

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Application November 30, 1932, Serial No. 645,049

3 Claims. (Cl. 294—63)

This invention relates to a brick-lifting machine for loading and unloading bricks, and more particularly to a brick-lifting machine embodying improvements on the invention disclosed in my application for patent Serial No. 514,248 filed February 7, 1931.

One object of this invention is to provide a brick-lifter designed to lift a pile containing a very large number of bricks without subjecting the bricks in the bottom layer to too great unit pressure.

Another object of this invention is to provide a brick lifter with locking mechanism for locking the gripping arms in open or non-gripping position and having means extending to both ends of the frame of the device so that the locking mechanism may be operated from either end of the machine.

The above and other objects will appear from the following description, appended claims and accompanying drawings forming a part of this disclosure.

In the accompanying drawings:

Fig. 1 is an end elevation of the improved device with the gripping arms in open or non-gripping position;

Fig. 2 is a side elevation of the device shown in Fig. 1 with the lower portion of the outer plate cut away;

Fig. 3 is an inside elevation of the lower portion of one of the gripping arms with the lower portion of the inside plate omitted and showing the gripping buttons; and

Fig. 4 is an enlarged view of the lower portion of one of the gripping arms of Fig. 1 with the gripping buttons shown in section.

The brick lifter comprises gripping arms 10 pivoted at their upper ends 11 to the framework 12. The gripping arms 10 have extensions 13 providing a bell crank lever effect. To each of the ends of the extensions 13, a link 14 is pivotally connected at one end 15, and the other end is pivotally connected at 16 to one lever 17 of a lazy tongs 18. The lever 17 is pivotally connected at one end 19 to another link 20 of the lazy tongs, and at the other end to a bracket 21 rigidly mounted on the framework 12. The upper end of the link 20 is pivotally connected to the lifting yoke 21a which carries the bail 22 for connection with a hoisting mechanism. From the above construction, it will be clear that as the lazy tongs is pulled out or extended by lifting the bail 22 upwards, the frame 12 remaining stationary, that the gripping arms will swing to-

ward each other at their lower ends as they pivot about the pivots 11.

The lower end of each of the gripping arms 10 is provided with a channel construction 10a in which are slidably mounted a lower row 23 and a superposed upper row 23a, of spring-pressed gripping buttons or pins normally forced outward by springs 23b, each of which is normally under an initial compression of about 130 pounds. In order to hold the buttons 23, 23a in place and with the springs 23b under initial compression, each button is provided with a rod 23c extending through the rear wall of the channel 10a and held by a suitable locking or limiting device such as a cotter pin 23d. The gripping faces of the buttons 23, 23a preferably extend outward the same distance so as to grip the bricks at the same time and with substantially equal force. The two rows of buttons are of such size as to all grip the lowermost layer of bricks. By providing two rows of independently spring-pressed buttons, a device is provided which grips the lowermost layer of bricks with sufficient force to lift a pile from 1300 to 1500 bricks or more and yet keep the unit pressure of the buttons on the bricks, notwithstanding irregularities of the surface of the bricks being gripped, sufficiently low to avoid breaking any substantial number of bricks.

The gripping arms are usually made of an open frame work of structural shapes, but this has its disadvantages due to the fact that as the device is lowered into position to grip a pile of bricks, some of the bricks in adjoining piles will be knocked off due the projections of the structural shapes. Similarly the bricks in the pile about to be lifted might become disarranged and would hit the projecting parts of the gripping arms, thus disarranging the whole pile. In order to overcome these defects, I have applied to the outside, plates 24 which entirely enclose the outer side of the frame work of the gripping arms.

Inner plates 25 are riveted at their upper ends to the gripping arms 10, and attached to their lower ends are preferably four or more bolts 26 which extend through the arms 10 and carry adjusting and lock nuts 26a. Mounted on the bolts 26 are springs 27 which normally hold the plates pressed outward toward the pile of bricks. The channel 25a is secured to and extends the length of the plates 25 to strengthen the latter. The lower ends of the plates 25 are preferably curved inward as shown at 45.

As the device is lowered to gripping position over a pile of bricks, the plates 25, which prefer-

ably are slightly closer to the brick pile than the buttons 23, 23a, tend to push in projecting bricks and slightly straighten the brick pile. When the arms 10 are then operated to cause the buttons 23, 23a to grip the lowermost layer of bricks, the plates 25 push projecting bricks still further in so as to align the bricks into a neat, straight-sided pile. The springs 27, however, permit the plates 25 to yield without seriously bending or damaging the plates in such instances as the plates encounter bricks which strongly resist being forced inward. Thus it will be seen that the plates 25 serve to align the bricks into neat piles so that they can be readily gripped by the lifting device whenever it is desired to again move the pile of bricks.

In order to prevent the bricks from buckling upwards as they are being lifted, a top clamp 28 is provided, which can be vertically adjusted through the medium of a worm 29 and a worm wheel 30 which latter engages the threaded portion 31 of the rod 32, that is connected to the clamp 28, so that rotation of the hand wheel 35, vertically adjusts the top clamp 28. When about to lift a pile of bricks the top clamp is set down hard against the top of the pile of bricks.

It becomes desirable at times to lock the lazy tongs and the gripping arms in the position where the bricks have just been discharged and when about to be lowered over another pile of bricks. For this purpose guides 35' are secured to the main framework 12 and guide rods 36 reciprocated in the guides. When the lazy tongs are in the contracted position shown in Fig. 1, a locking pin 37 is slid through an aperture in each guide 35' and an aligning aperture 39 in each guide bar 36, to lock the two together. The pins are suitably rounded at their ends 40 to permit easy entrance into the said apertures. The pins 37 form a part of the rods 41 which are connected to or formed on the bar 43 which slides in guides 44 and extends to the opposite ends of the device and is provided with handles 42 so that the locking mechanism can be operated from either end of the machine.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics of the invention, and the present embodiment is therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein.

I claim:

1. A brick grab including a frame, jaws pivoted to the frame, levers operating the jaws and pivoted to the frame, tubular guides on the frame, a lifting head, rods on the head movable in said guides, flexible devices connecting the head and said levers, said guides and rods having openings adapted to register when the head is in its lowered position, and locking mechanism including pins movable into said registering openings to secure the head in its lowered position, said locking mechanism also including means extending to both ends of the frame whereby the locking device may be operated from either end of the apparatus.

2. A brick grab including a frame, jaws pivoted to the frame, levers operating the jaws and pivoted to the frame, tubular guides on the frame, a lifting head, rods on the head movable in said guides, means connecting the head and said levers, said guides and rods having openings adapted to register when the head is in its lowered position, and locking mechanism including pins movable into said registering openings to secure the head in its lowered position, said locking mechanism also including means extending to both ends of the frame whereby the locking device may be operated from either end of the apparatus.

3. A brick grab including a frame, jaws pivotally connected to the frame, two superposed rows of independently spring-pressed buttons carried by each jaw, and means for causing said jaws to move toward and away from each other.

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