Oct. 5, 1937. D. J. STRICKLAND 2,094,762

SKIP FOR HANDLING BRICK STACKS

Filed Nov. 9, 1936 3 Sheets-Sheet 1

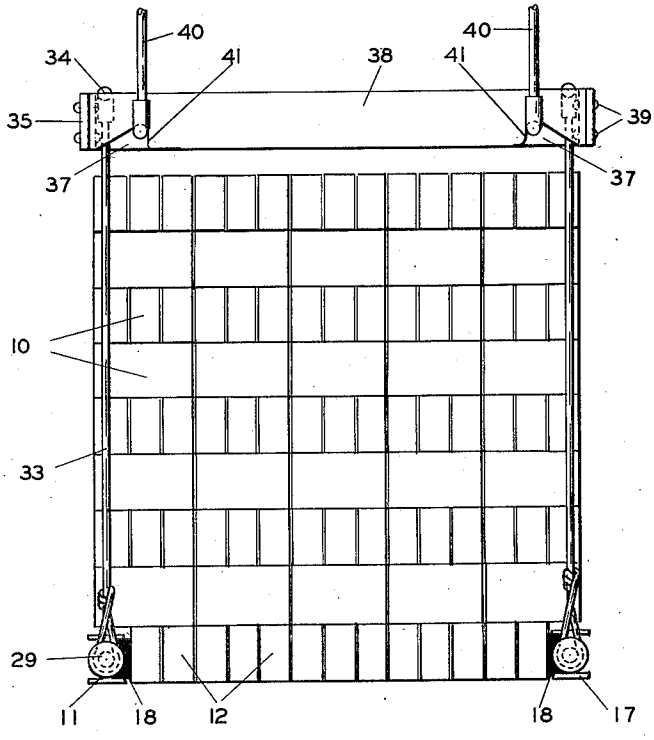


Fig 1

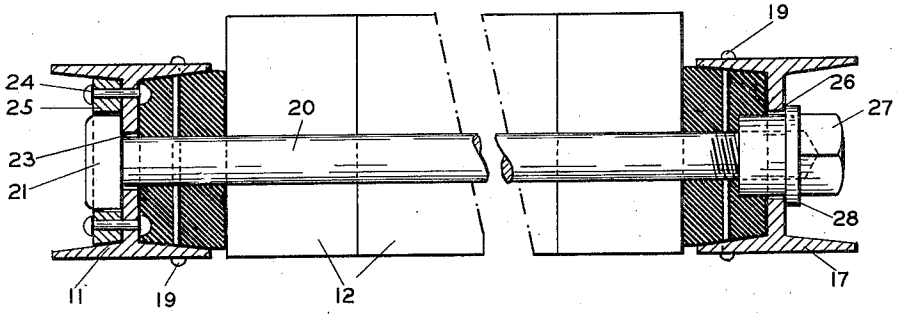


Fig 2

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Filed Nov. 9, 1936 3 Sheets-Sheet 2

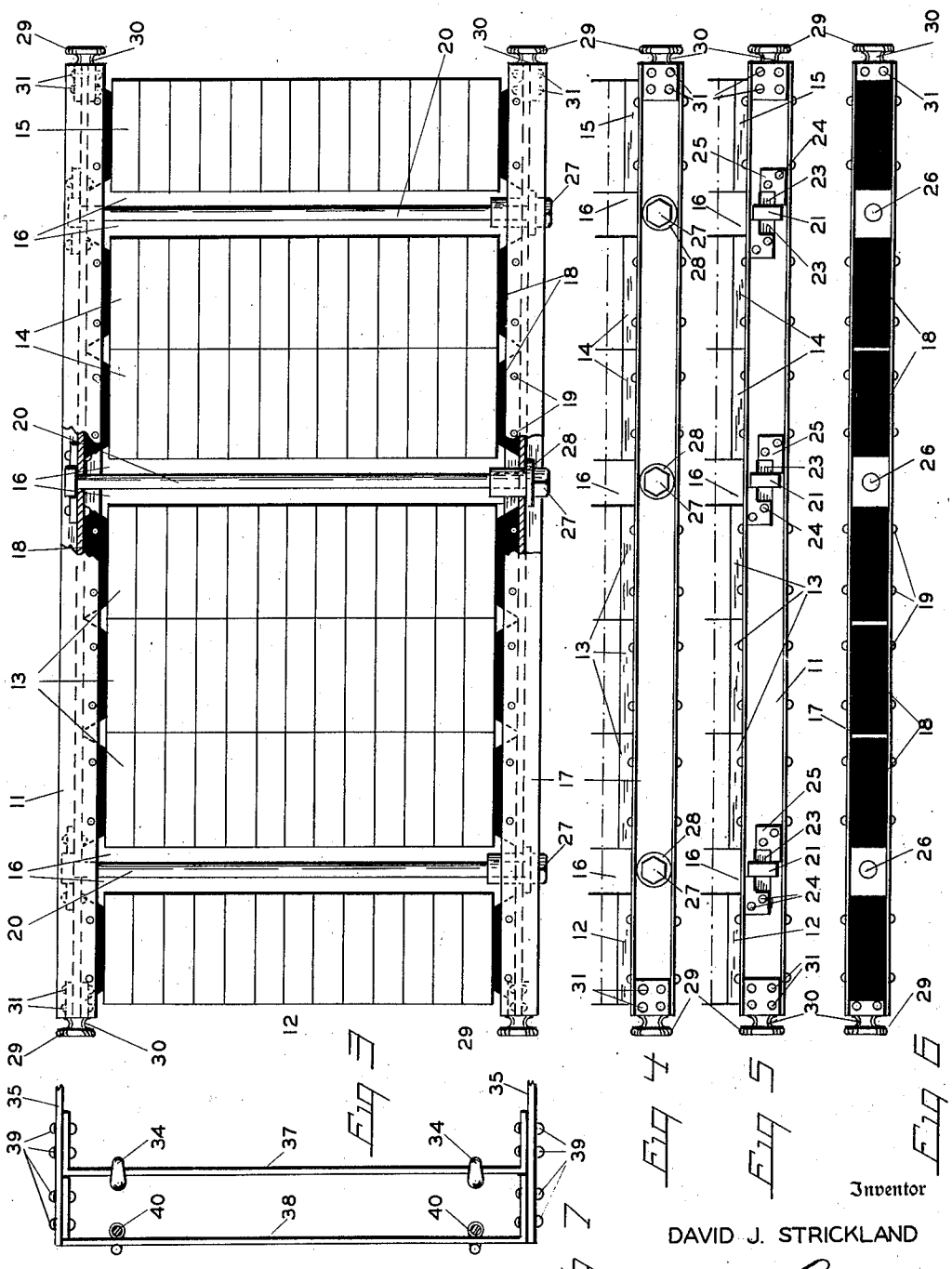


Fig 3 Fig 4 Fig 5 Fig 6

Fig 7

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SKIP FOR HANDLING BRICK STACKS

Filed Nov. 9, 1936 3 Sheets-Sheet 3

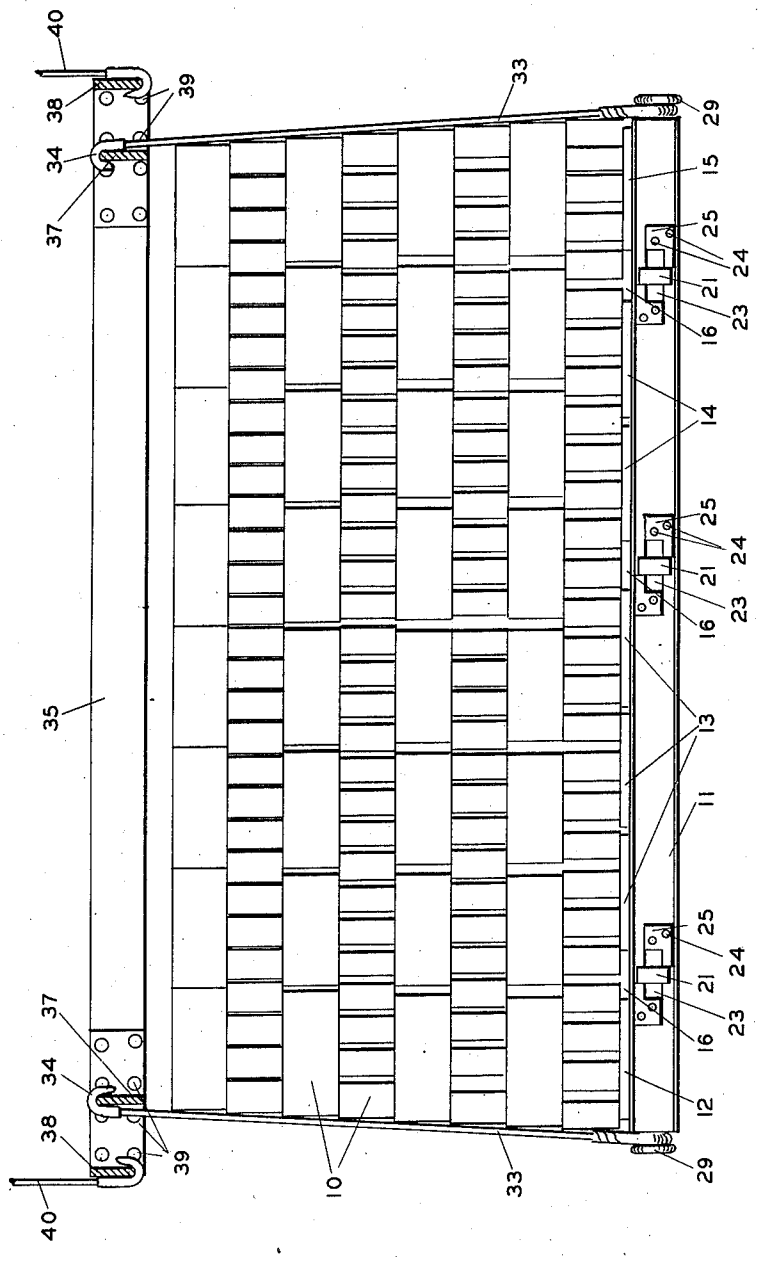


Fig 8

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SKIP FOR HANDLING BRICK STACKS

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9 Claims. (Cl. 294—67)

During the manufacture and transportation of brick, such as are used in building operations, the bricks are usually handled by what is known as the Penfield brick setting machine, or the Neumann grab, and are stacked in units of 1500 bricks, which are known in the trade as "stacks" or "units", and these units have to be moved in the brick plants, loaded for transportation and delivered to the building sites as "units".

In the present method which is in general use, the mud bricks when taken from the mold are conveyed and piled in a certain formation upon a unit car, platform or wooden skip, formed with a series of parallel spaced apart pallets in transverse relation to the rows of bricks; so that after a unit of say, 1500 bricks has been formed, this entire unit may be transported to and from the drying and burning kilns and finally loaded upon barges, railway car containers, or trucks, by the Penfield system which has fingers to support the stacks.

The transporting is now accomplished by these systems or other power operated devices attached to cranes or the like, and these devices are provided with fingers which are inserted between the spaced apart pallets under the units, and thus the unit may be lifted and transported from place to place, but each time that the unit is deposited, be it either in the brick plant, or upon some transporting medium, such as a barge, railway car, or truck, a support similar to the original one has to be provided for the unit to rest upon so that the fingers of the device may be removed from the unit. This necessitates a skip or support for every unit or stack, which are costly and readily lost or destroyed, as a support has to accompany each stack from the time it is made until the bricks are used on the building site.

There is also a great loss of space in storing and transportation by the use of these skips or supports, as the units or stacks have to be spaced apart a sufficient distance to allow the fingers of the lifting device to descend between each unit and enter between the parallel bars of the skip. Thus a space must be left between each unit when placed on a barge or other conveyance, as well as the space which has to be occupied by the support, which is equal to an entire course or layer of brick, and the space between the units placed in vehicles must be temporarily filled with blocking to prevent the units from shifting and closing up the spaces during transportation.

As the approximate weight of one of these stacks or units of 1500 bricks is about three tons, it requires a substantial device to lift and transport them satisfactorily, and thus the fingers of the Penfield device now employed are not satisfactory for this purpose, as the space required is too great an objection to its use and also on account of the use of temporary supports and the waste of storage space.

In the use of the Neumann grab, the lower course of the brick unit is composed of bricks set edgewise in close proximity to each other and the lower edges of the grab are provided with means whereby when the sides of the grab are forced towards each other for raising, compress and grab the lower course of bricks, thus providing a support for the bricks that are stacked thereon, and allowing the unit to be deposited directly on the floor of a brick container or on the deck of a barge. In this case, when the bricks have to be again moved to transport them from the container or barge to a truck, the units cannot be stacked in close proximity to each other, as several inches have to be left between the units so that the sides of the grab may descend between the units to again engage them.

To overcome these and other objections, I have devised a novel skip in the form of a clamp designed to be clamped upon the lower course or layer of brick in the stack or unit so as to convert the lower layer of bricks into a temporary skip or support for the bricks piled upon them to form the stack.

This clamp may be readily and quickly applied to the stack, and by it, the stack may be lifted and transported from the brick yard to the building site where the clamp is readily removed, leaving the unit resting upon the ground and allowing the clamp to be returned to the yard.

By the use of these clamps, not only the requirement for a temporary support for the stack is eliminated, but the overall height of the stack is reduced and no appreciable space is required to be left between the stacks when loading into a conveyance, as no grab or fingers are employed for transporting.

The object of the invention is to provide a device that will temporarily convert the lower layer of a stack of bricks into a platform for supporting the bricks piled thereon.

Another object of the invention is to provide a detachable, adjustable, and interchangeable means whereby a stack of bricks or the like may be lifted and transported without the use of auxiliary supporting devices.

Another object of the invention is to provide a device by which stacked bricks and the like may be raised, lowered, and loaded for transportation without loss of space, and providing compact storage during transportation.

A further object of the invention is to provide a device that shall be simple, durable, efficient, and capable of repeated use.

Another object of the invention is to provide a means for handling loosely stacked bricks which may be readily attached, detached, or remain attached to the stack for a period of time.

With these and other objects in view, my invention consists in certain novel construction and combination of parts as will hereinafter be fully described and claimed and further illustrated in the accompanying drawings which form a part hereof, and in which like figures of reference refer to corresponding parts in all of the views, and it is understood that slight changes may be made without departing from the spirit of the invention.

In the drawings:

Figure 1 is an end elevation of a brick stack or unit showing my handling clamp attached thereto and the hoisting cables in place, but not having been clamped thereon.

Figure 2 is an enlarged partial detail view partly in section of the clamping members and one of the compression rods and friction blocks.

Figure 3 is a top plan view of the bottom course of bricks, showing the arrangement of the same and my handling device secured thereto to form a supporting platform of the bottom course of brick.

Figure 4 is a side elevation of one of the clamping members, showing the nut ends of the clamping rods.

Figure 5 is a similar view of the other clamping member, showing the T-heads of the clamping rods, and the method employed for preventing the clamping rods from turning while being drawn up or released.

Figure 6 is a view of the inner face of one of the clamping members, showing the frictional gripping blocks.

Figure 7 is a partial top plan view of the cable spreader that is employed both for attachment to the clamping member and to the crane cables for lifting the brick unit.

Figure 8 is a side elevation of the brick unit with the clamps, spreader, and cables, and showing how the cables tend to hold the stack together.

Referring to the drawings:

The brick stack or unit is designated by the numeral 10 and the bricks in the bottom course are stacked upon one of their faces with their sides in contact with each other (see Figure 3), and these parallel rows are divided into four groups 12, 13, 14, and 15 which are spaced apart from each other to form the spaces 16 transverse of the stack; the remaining bricks of the stack being piled to bridge over these spaces 16 as shown in Figure 1.

For supporting, handling, and transporting these stacks as units, I have provided a pair of clamping members in the form of the I-beams 11 and 17, and within the inner channels of which are secured a series of frictional brick-engaging or compressional blocks 18 projecting beyond the side of the I-beams 11 and 17, and are renewably secured therein by the bolts 19.

For detachably clamping these members 11 and 17 upon the rows of bricks 12, 13, 14, and 15, comprising the bottom course of the stack, I have provided a series of clamping rods 20, formed at one end with a T-shaped head 21, and threaded on the opposite end 22.

The clamping member 11 is formed with the spaced rectangular openings 23 through which the T-head may pass when inserting or withdrawing the rod 20 from the brick unit and adjacent to these openings 23 are secured by the rivets 24 the stop blocks 25 which prevent the T-head 21 from turning after having been inserted through the opening 23 and given a one-quarter turn.

The other clamping member 17 is formed with a series of clearance holes 26 for the threaded end 22 of the rods 20 and rotatably mounted within these holes 26 are flanged cap-nuts 27 formed with the internal threaded body portion for engagement with the threaded end 22 of the rod 20, and a collar 28 to engage the outer face of the I-beam 17 and also having a flatted head for a wrench. If desired, this clamping member 17 may have in place of the round holes 26 a series of rectangular openings similar to those designated in the member 11 by the numeral 23, so that the rod 20 may be entirely removed from the members 11 and 17 for shipment.

By screwing up on these nuts 27, the clamp rods 20 will force the clamping members 11 and 17 towards each other and by the friction blocks 18 will compress each row of bricks in the bottom course, thus forming a solid support or skip out of the bottom course of bricks, the friction blocks 18 being of resilient nature will compensate for inequalities in the lengths of the rows of bricks in each group 12, 13, 14, and 15, so that the clamps 11 and 17 will securely hold all of the bricks.

For raising the stack 10 by the compressed bottom course and the clamping members 11 and 17; each end of these clamping members 11 and 17 are provided with a stud or knob 29 having a neck 30 and bifurcated body portion secured to the ends of the I-beams by the rivets 31; and to these studs 29 may be hooked one end of the lifting cables 33. The upper hooked ends 34 of these cables 33 are designed to be attached to a cable spreader 35 composed of the sides 35 and ends 37 and 38 secured together by the rivets 39 which are provided with the notches 41 to retain them in place.

In the operation of the device, the bricks are originally stacked with the bottom course arranged in parallel spaced apart groups as shown in Figure 3, this arrangement being easily accomplished by stacking the bricks upon a floor or platform suitably marked out to indicate the rows and spaces.

The clamping members 11 and 17 are now placed one upon each side of the stack on the same plane as the bottom course thereof. The clamping rods 20 are now put in place by inserting the T-heads 21 through the spaces 16 between the groups 12, 13, 14, and 15 of the bricks in the bottom course and also through the rectangular openings 23 in the clamping member 11; the rods 20 then being pushed beyond the stops 25, given a quarter turn and pulled back to engage said stops 25, and bring the T-head 21 at right angles to the opening 23 to retain the rods 20 in place. The nuts 27 are now tightened on the rods 20 forcing the clamping members 11 and 17 towards each other and the frictional compression blocks 18 are thus forced against the ends of each row of bricks 12, 13, 14, and 15, compressing

them against each other and thus forming a solid platform or skip of the bottom course of bricks in the stack to support the others stacked above it.

The stack, as a unit, and as held in the clamping members 11 and 17 may now be raised and transported by the cables 33 attached to the studs 29 and to a cable spreader 35 suspended by the cables 40 from a crane or other lifting device.

The unit may in this manner be deposited in a barge, and after thus being placed, the clamps are removed by loosening the nuts 27 and removing the rods 20 and clamping members 11 and 17 and thus the next unit or stack may be placed in close proximity to the first, etc., thus conserving space and enabling more stacks to be stored in a given place, and the handling means at once removed and returned to the dealer or plant for subsequent re-use. Should the units be transported in a freight car container or by truck, which only holds a few units, then the clamps may be left in place until after the units are deposited upon the ground at the building site and are then removed and returned by the truck or in the container.

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

1. In a device for handling during its transportation from the brick yard to the place of use a brick stack unit composed of layers of loose bricks superimposed upon each other to form a stack, of means comprising a pair of grabbing members and transverse adjustable clamping threaded rods and nuts for clamping together the bricks in the bottom layer to provide a temporary support for the stack and by which the entire stack may be handled as a unit.

2. In a device for handling a brick stack unit during its storage and transportation from the brick yard to the building, the lower layer of which is composed of rows of bricks, of means comprising a pair of clamping members and transverse adjustable compressing threaded rods and nuts for compressing together all of the bricks composing each row to form a support for the bricks stacked thereon, and means carried by said compression means for handling the entire stack as a unit.

3. A device for handling a brick stack unit during its transportation between the brick yard and the building site, the lower layer of which is formed of parallel rows of bricks, of a pair of clamping members disposed in transverse relation to the rows of bricks, means comprising transverse adjustable compressing threaded rods and nuts for clamping said members upon said rows of bricks to press the bricks in each row together to form a support for the body of the stack, and means for handling the entire stack unit by said compressing means.

4. A device for handling a brick stack unit, the lower layer of which is composed of parallel rows of bricks some of which rows are spaced apart from each other, of a pair of clamping members adjacent to the ends of said rows and in transverse relation thereto, resilient gripping members disposed between said clamping members and the ends of the rows of bricks to engage the same, clamping rods extending through the spaces between the rows of bricks, and detachably and adjustably secured to the clamping members.

5. A skip adapted to be detachably secured to a brick stack by which the same may be loaded and transported from the brick yard to the building, comprising a pair of clamping members, a series of compensating frictional grips mounted therein, transverse tie rods detachably and adjustably mounted in said clamping members adapted to compress said clamping members upon the lower layer of bricks in the stack, and means attached to said clamping members by which the brick stack may be raised and lowered.

6. A skip for transporting a brick stack, comprising a pair of parallel clamping members I-shaped in cross-section and provided with transverse holes therein, frictional grips mounted in the opposed sides of said members in contact with the end bricks in the lower rows, clamping rods disposed between said rows of bricks with their ends extending through said holes and nuts threaded upon said rods for urging said members towards each other to clamp and compress the rows of bricks in the lower layer of the stack.

7. A collapsible skip for a brick stack designed to remain thereon during its transportation between the brick yard and the building site adapted to exert pressure on the grab course of bricks to enable the entire stack to be lifted as a unit, comprising two longitudinal members adapted to lie along opposite sides of the grab course, in combination with a plurality of members lying in the grab course, each extending from one longitudinal member to the other, adapted to draw the longitudinal members together to exert the necessary pressure on the bricks.

8. A collapsible skip for a brick stack designed to remain thereon during its transportation between the brick yard and the building site comprising rigid members running longitudinally on opposite sides of the grab brick course of the stack, in combination with equalizing means between the longitudinal members and the bricks, and compression members extending through the grab course of the stack adapted to draw the longitudinal members together and create a unitary foundation out of the grab course.

9. A skip for a brick stack comprising rigid members running longitudinally on opposite sides of the grab course within the lines of the stack created by the upper courses, in combination with a plurality of tie rods extending through the grab course adapted to create a unitary foundation for the entire stack by compressing the longitudinal members against the grab course bricks, each tie rod being adapted to be detached from one of the longitudinal members by turning on its axis.

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