R. B. COBB.

APPARATUS FOR HANDLING BRICK.

APPLICATION FILED JUNE 10, 1920.

1,380,776.

Patented June 7, 1921.

2 SHEETS—SHEET 1.

Fig. 1.

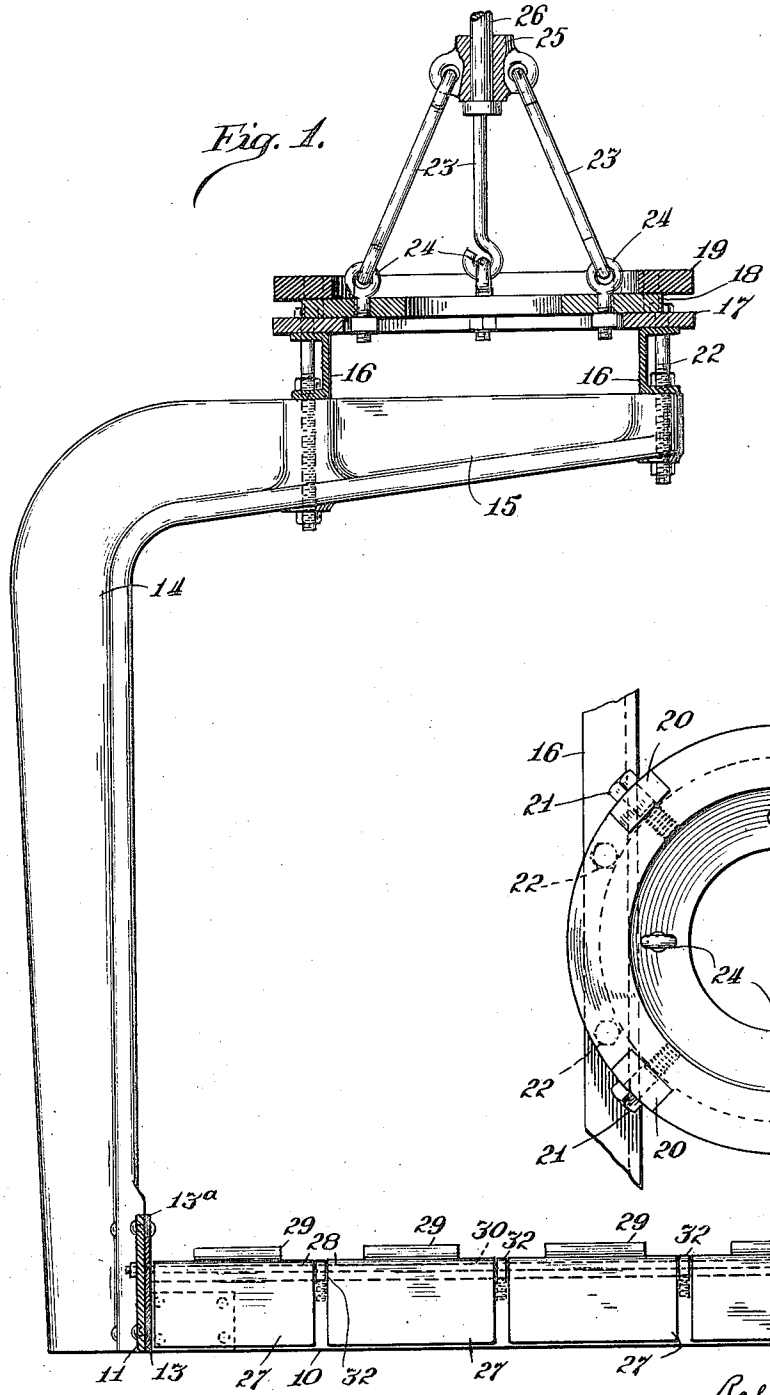


Fig. 2.

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2 SHEETS—SHEET 2.

Fig. 4.

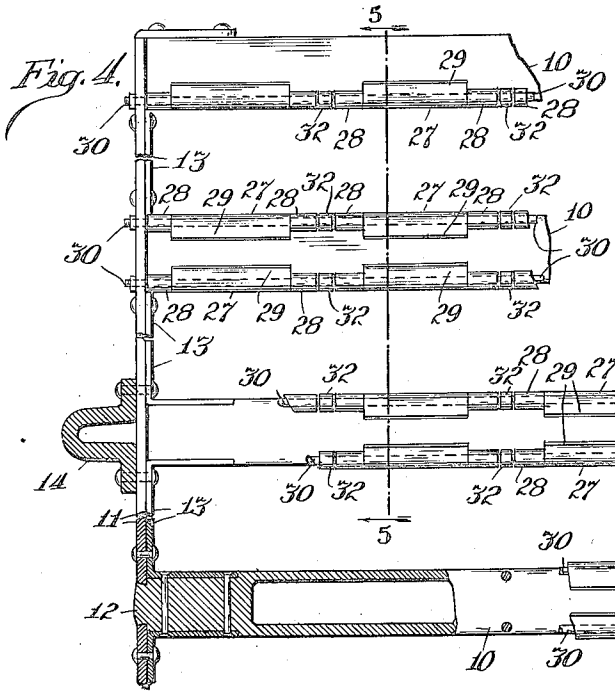


Fig. 3.

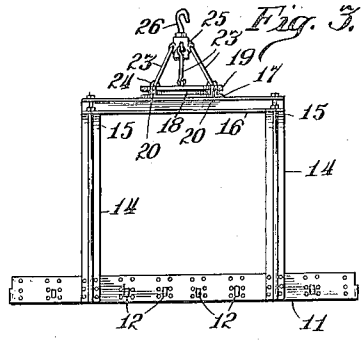


Fig. 5.

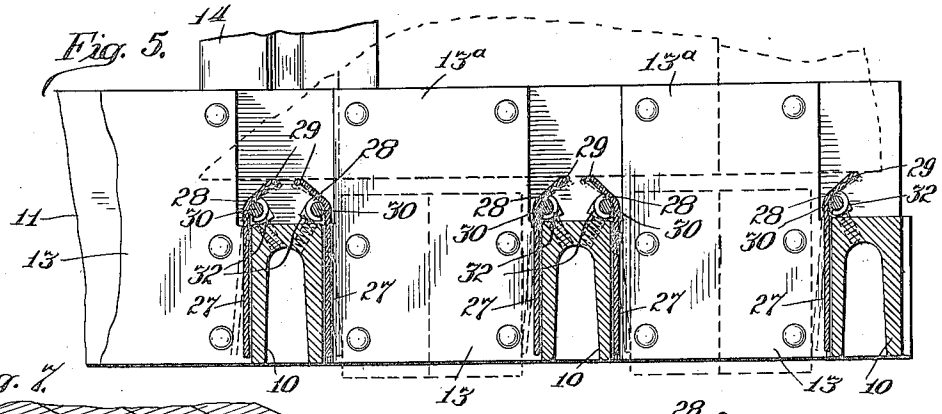


Fig. 7.

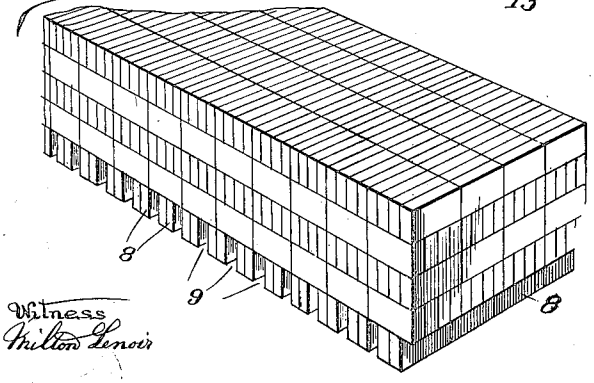
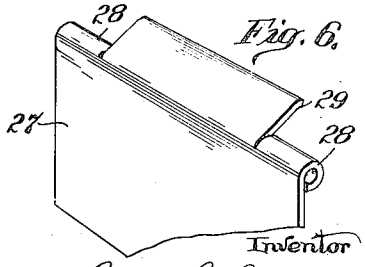


Fig. 6.



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UNITED STATES PATENT OFFICE.

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APPARATUS FOR HANDLING BRICK.

1,380,776. Specification of Letters Patent. Patented June 7, 1921.

Application filed June 10, 1920. Serial No. 387,863.

To all whom it may concern:

Be it known that I, RALPH B. COBB, a citizen of the United States, and a resident of River Forest, in the county of Cook, and State of Illinois, have invented certain new and useful Improvements in Apparatus for Handling Brick, of which the following is a specification, reference being had to the accompanying drawings.

My invention relates to apparatus for moving or transporting brick in mass, as from drying cars to the kiln, or to a warehouse, &c. In brick yards, the brick, either finished or unfinished, are usually arranged in piles, the bricks of the bottom course being arranged in a series of spaced parallel rows, each row being composed of pairs of bricks set close together, the rows being usually four bricks in length. The width of the spaces between the several rows is usually equal to the thickness of a single brick. Above the bottom course the bricks are piled close together in crisscross rows to a height of about four feet. These figures are given merely for illustration, as so far as my invention is concerned it is essential only that the bricks be piled so that there is a bottom course composed of separated parallel rows, with one or more courses above the lowermost course. The length of the several rows may vary as conditions require or make desirable. In piling bricks in this way it frequently occurs that the bricks of each of the lowermost rows are not exactly alined with each other, and also that the rows are not uniformly made up of pairs of bricks, so that the rows will in practice be somewhat irregular, although they approximate parallel straight lines.

Various attempts have heretofore been made to provide an apparatus which would successfully handle bricks piled as above described, but for various reasons they have not proven successful, and so far as I am aware no one has heretofore provided an apparatus which meets the exacting requirements of the situation. To provide an apparatus which will operate successfully for this purpose is the object of my invention, which object I accomplish as illustrated in the drawings and hereinafter described. What I regard as new is set forth in the claims.

In the accompanying drawings,—

Figure 1 is a central vertical sectional view of my improved apparatus;

Fig. 2 is a plan view of the suspending devices, showing the turntable partly in section;

Fig. 3 is a rear elevation of the apparatus on a reduced scale;

Fig. 4 is a partial plan view of the lower portion of the apparatus, some parts being in section;

Fig. 5 is a partial vertical section on line 5—5 of Fig. 4;

Fig. 6 is a perspective view of one of the clamping plates, partly broken away; and

Fig. 7 is a perspective view of a typical pile of bricks, also partly broken away.

Referring to the drawings,—8 indicates the lowermost course of bricks which, as shown in Fig. 7, comprises a number of parallel rows of bricks having spaces 9 between them forming parallel tunnels which extend under the upper courses, and my improved apparatus is designed to lift such a pile of brick as a unit without disarranging them or damaging the bricks, which may be more or less soft depending upon their condition at the time they are being handled. To this end my apparatus comprises a series of parallel arms 10 of such shape and dimensions that they are adapted to be introduced into the tunnels or spaces 9 and to extend throughout the length of said tunnels. These arms are securely connected together in any suitable manner so as to form a rigid frame, but for this purpose I prefer to secure them at one end to a crossbar or plate 11. This is best accomplished by providing the bar 11 with holes adapted to receive tenons 12 at the inner ends of the bars 10, which tenons may be upset or riveted so as to form a secure connection. Also U-shaped braces 13 are secured to the bar 11 and to adjoining arms 10, the end portions of said braces being inset so as to be flush with the arms 10, as shown in Fig. 4. The intermediate portions of the braces 13 are extended upwardly, as shown at 13^a in Fig. 5, so as to secure greater strength and rigidity.

The cross-bar 11 is provided with means for suspending it from a crane and for permitting of the angular adjustment of the arms 10, this being best accomplished by providing said bar with two uprights 14 having their upper portions extended over the arms 10 at a sufficient height so as to permit the pile of bricks to lie between them. These horizontally-extending portions of

the uprights 14 are indicated by 15 in Fig. 1. The members 15 are cross connected, preferably by channel beams 16, as shown in Figs. 1 and 3, and to these channel bars is secured an annular plate 17 which forms one member of a turntable or rotary support through which the apparatus may be connected to a crane or equivalent device. Rotatably mounted upon the plate 17 is an annular plate 18 which is held in proper operative relation to the plate 17 by an overlying plate 19 connected to the plate 17. The plates 17 and 19 are preferably connected together by lugs 20 which rise at suitable intervals from the plate 17 and fit in notches in the marginal portion of the plate 19, screws 21 which extend through the lugs 20 into the plate 19 serving to connect said parts firmly together. This construction permits the plates 17 and 19 to be separated readily when desired. 22 indicates bolts which connect the plate 17 with the channel beams 16 and also with the members 15. 23 indicates a series of links, preferably four in number, which are connected at their lower ends to eye-bolts 24, mounted in the rotary plate 18. the upper ends of said links being connected to a collar or sleeve 25 carrying a swiveled hook 26, shown in Figs. 1 and 3, by which the apparatus may be connected to the crane. By this construction the point of support of the apparatus is brought substantially over the load carried by the arms 10 so that the load when lifted maintains a substantially horizontal position, and it will be apparent that by supporting the arms 10 in the manner described they may be swung around at any desired angle to facilitate the introduction of the arms 10 into the tunnels 9.

In order to adapt the apparatus to take up a pile of bricks each of the intermediate arms 10 is provided with a series of clamps arranged in two rows at opposite sides of the arm, one of such clamps being provided for each brick of the row. As such rows are ordinarily four bricks in length, as above stated, the apparatus is preferably provided with four clamps along each side of each of the intermediate arms 10. The outside arms 10 are, however, provided with clamps at their inner sides only, as shown at the top in Fig. 4, as these outside arms do not enter the tunnels 9, but lie parallel with the outermost rows of bricks in the bottom course. The construction of these clamps is best shown in Figs. 5 and 6, from which it will be seen that each clamp comprises a plate 27 having hinge portions 28 near its upper margin, between which hinge portions is a wing or arm 29 which extends upwardly at an angle to the main portion of the plate. Preferably the hinge portions 28 and wing 29 are formed by slitting the upper margin of the clamp and rolling the end portions to form sleeves adapted to receive a pintle, as illustrated in Fig. 6. This leaves the intermediate portion or wing 29 somewhat shorter in length than the main portion of the clamp, which is desirable in order that adjoining clamps may not interfere with each other. These clamps are mounted upon elongated pintles or rods 30 carried at the upper margins of the arms 10, as shown in Figs. 4 and 5. These rods extend from end to end of the arms 10, their inner end portions being secured to the bar 11, as shown in Fig. 4, while their opposite ends are secured to plates 31 provided at the outer ends of the arms 10. The rods 30 are intermediately supported by a series of eye-bolts 32 secured to the arms 10, as shown in Figs. 4 and 5, one of these eye-bolts being placed between each consecutive pair of clamping plates. The clamping plates are mounted so that they normally lie parallel with the side faces of the arms 10, with the wings 29 extending over the upper surfaces of said arm and at an angle thereto, as shown in Fig. 5. The arrangement is such that when the arms 10 are inserted in the tunnels 9 the wings 29 are in juxtaposition to the lower surfaces of the bricks in the second course, and consequently if the arms 10 be then lifted the weight of the superimposed bricks will bear down on the wings 29 rocking the clamping plates so as to swing them outward, or away from the arm 10 upon which they are mounted, thus causing them to bear firmly against the exposed faces of the bricks in the first course. As the opposed clamping plates of two adjacent arms act oppositely to each other it will be apparent that the two bricks lying between them will be tightly clamped and that this clamping will be effected not by the lower margins of the clamping plates but by the greater part of the outer surfaces thereof. To better adapt the clamping plates to operate in this manner they are made slightly flexible or elastic to enable them to lie closely against and present an extended bearing surface to the bricks, but, of course, they must not be made so flexible as to impair their efficiency as clamps. As each co-acting pair of clamps, *i. e.*, the opposed clamps of two adjoining arms 10, act on a single brick or pair of bricks it will be evident that even if such bricks are not exactly in line with the adjoining ones no harm will result, and if the bricks should be piled so that the lower course instead of having double rows of bricks has one or more rows made up in whole or in part of single bricks the clamps will nevertheless operate properly, as the clamping plates are made wide enough so as to be capable of gripping single bricks as well as double bricks, and their flexibility enables them to adapt themselves to the clamping of a single brick.

In the apparatus described the clamps are moved into operative position by a very slight upward movement of the arms 10, and consequently even though only one or two courses are piled on top of the lowermost course the apparatus will operate to lift the pile, but the greater the mass of superimposed bricks the more forcibly the clamping plates will grip the bricks of the lowermost course.

An important advantage of my improved apparatus is that I provide a very simple construction which has no springs, gears, levers or other parts which are apt to get out of order. If a clamping plate should be broken or for any reason become inoperative it can readily be replaced by removing the rod on which it is mounted. The apparatus can, therefore, be economically manufactured and used.

What I claim as my invention and desire to secure by Letters Patent, is—

1. A brick handling apparatus comprising a frame having a plurality of parallel arms projecting therefrom and adapted to be introduced into the spaces between parallel rows of bricks, and clamping devices carried by said arms and arranged to be directly actuated to operatively engage the bricks of such rows by the weight of bricks superimposed thereon.

2. A brick handling apparatus comprising a frame having a plurality of parallel arms projecting therefrom and adapted to be introduced into the spaces between parallel rows of bricks, and clamping devices hinged upon said arms and normally projecting above the upper surfaces thereof, whereby they are adapted to be engaged by the superimposed bricks when the apparatus is lifted.

3. A brick handling apparatus comprising a frame having a plurality of parallel arms projecting therefrom and adapted to be introduced into the spaces between parallel rows of bricks, and clamping devices hinged upon said arms, said clamping devices having angularly arranged wings extending over the upper portions of said arms and adapted to be engaged by the superimposed bricks when the apparatus is lifted.

4. A brick handling apparatus comprising a frame having a plurality of parallel arms projecting therefrom and adapted to be introduced into the spaces between parallel rows of bricks, clamping plates pivotally connected with said arms near the upper margins thereof, said plates being normally disposed parallel with the side faces of said arms, and upwardly projecting means connected with said plates and adapted to engage the superimposed bricks for actuating said plates.

5. A brick handling apparatus comprising a frame having a plurality of parallel arms projecting therefrom and adapted to be introduced into the spaces between parallel rows of bricks, flexible clamping plates pivotally connected with said arms near the upper margins thereof, said plates being normally disposed parallel with the side faces of said arms, and upwardly projecting means connected with said plates and adapted to engage the superimposed bricks for actuating said plates.

6. A brick handling apparatus comprising a frame having a plurality of parallel arms projecting therefrom and adapted to be introduced into the spaces between parallel rows of bricks, rods mounted upon said arms adjacent to the upper margins thereof, clamping plates pivoted upon said rods and adapted to swing outwardly from said arms, and means actuated by the weight of the superimposed bricks when said frame is lifted for moving said clamping plates outwardly.

7. A brick handling apparatus comprising a frame having a plurality of parallel arms projecting therefrom and adapted to be introduced into the spaces between parallel rows of bricks, a plurality of clamping devices disposed longitudinally of said arms at opposite sides thereof, and means for actuating said clamping devices by the weight of the superimposed bricks when said frame is lifted.

8. A brick handling apparatus comprising a frame having a plurality of parallel arms projecting therefrom and adapted to be introduced into the spaces between parallel rows of bricks, and a plurality of clamping plates disposed longitudinally of said arms at opposite sides thereof and pivotally connected therewith, said clamping plates having upwardly projecting members adapted to engage the superimposed bricks when said frame is lifted, to actuate said clamping plates.

9. A brick handling apparatus comprising a frame having a plurality of parallel arms projecting therefrom and adapted to be introduced into the spaces between parallel rows of bricks, a plurality of clamping devices disposed longitudinally of said arms at opposite sides thereof, means for actuating said clamping devices by the weight of the superimposed bricks when said frame is lifted, and means connected with said frame and disposed over said arms for suspending the load.

10. A clamping device for brick handling apparatus comprising a suitable support, a plate hinged thereto to swirg laterally, and means connected with said plate and adapted to be actuated by superposed bricks to move said plate into operative position when the clamping device is lifted.

11. A clamping device for brick handling apparatus comprising a suitable support, a

flexible plate hinged thereto to swing laterally, and means connected with said plate and adapted to be actuated by superposed bricks to move said plate into operative position when the clamping device is lifted.

12. A clamping device for brick handling apparatus comprising a suitable support, and a plate hinged thereto to swing laterally and having an upwardly projecting angularly disposed arm connected therewith, said arm being adapted to be actuated by superposed bricks to move said plate into operative position when the clamping device is lifted.

RALPH B. COBB.