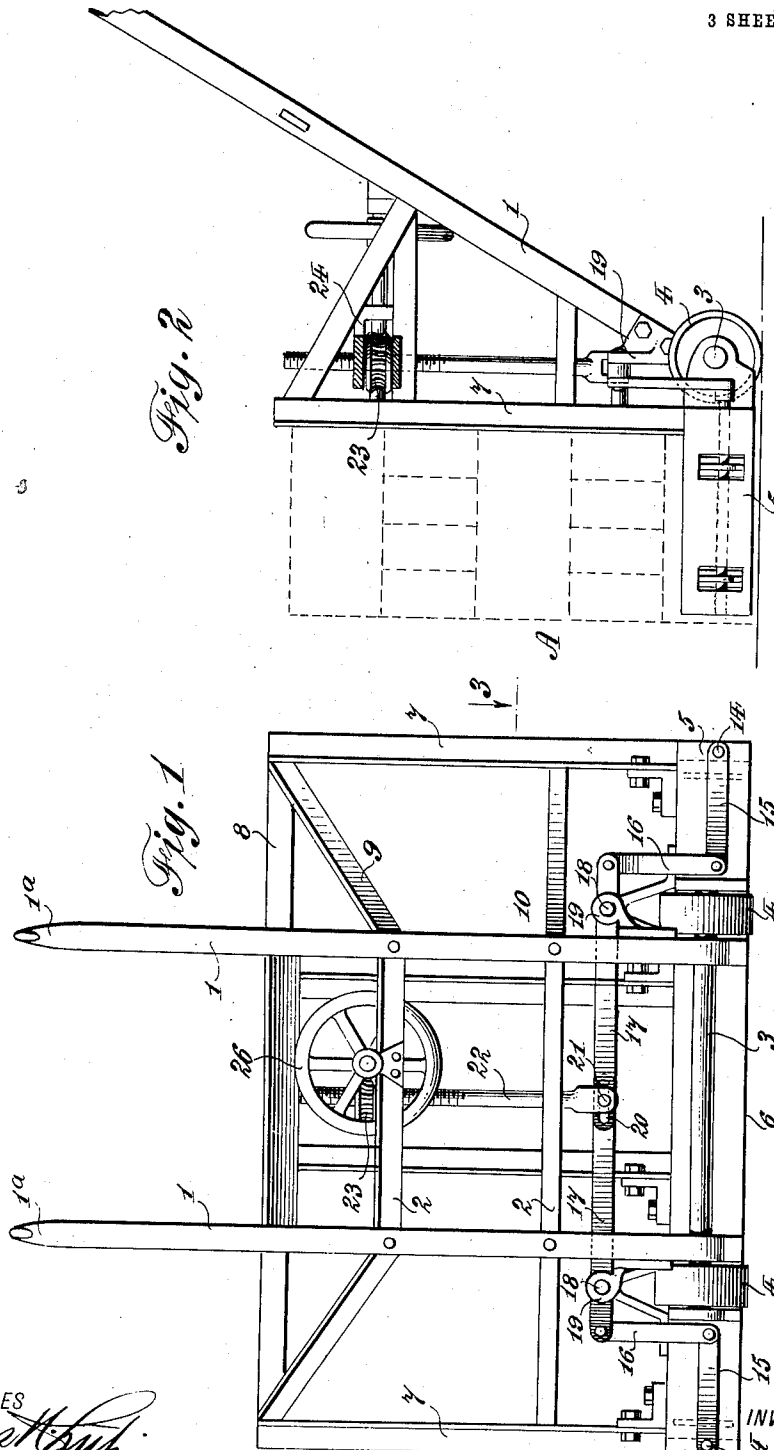


R. C. PENFIELD.
 PORTABLE BRICK HANDLING DEVICE.
 APPLICATION FILED OCT. 24, 1908.

976,393.

Patented Nov. 22, 1910.

3 SHEETS—SHEET 1.



WITNESSES
Julius H. H. H.
 C. B. Schneider.

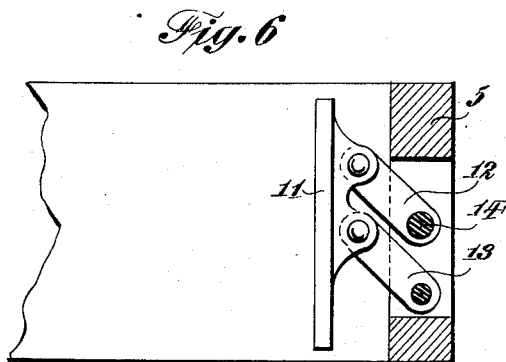
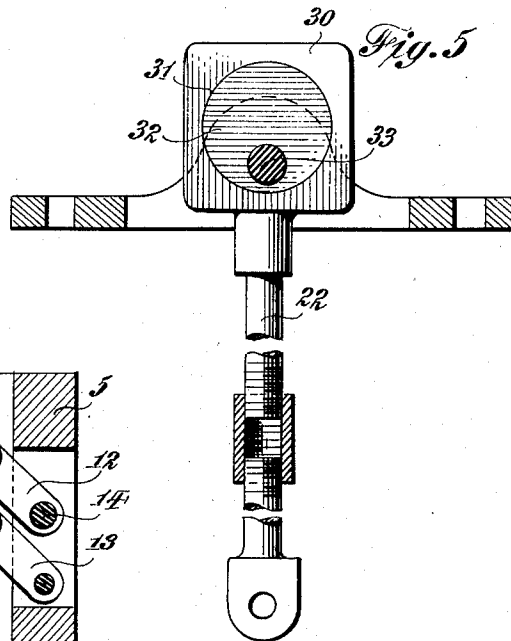
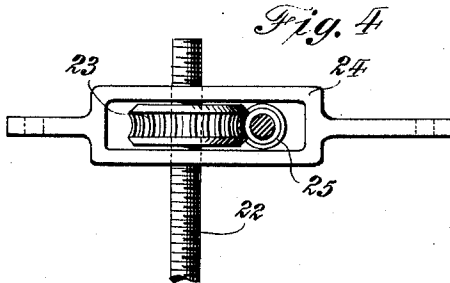
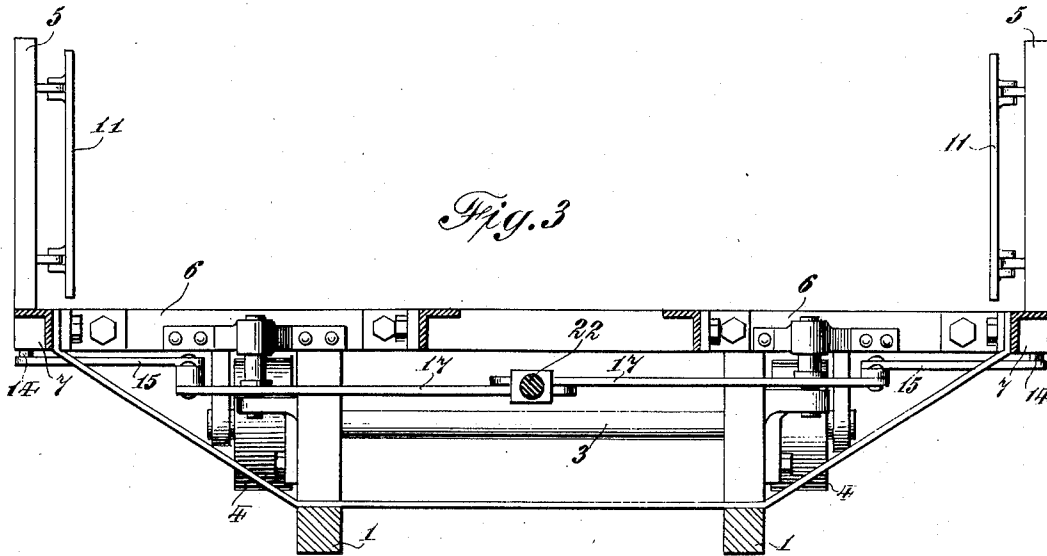
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

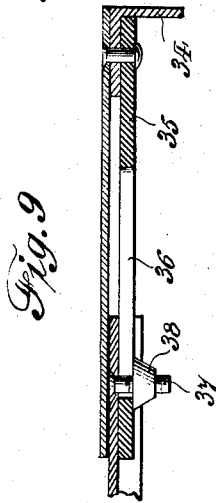


Fig. 8.

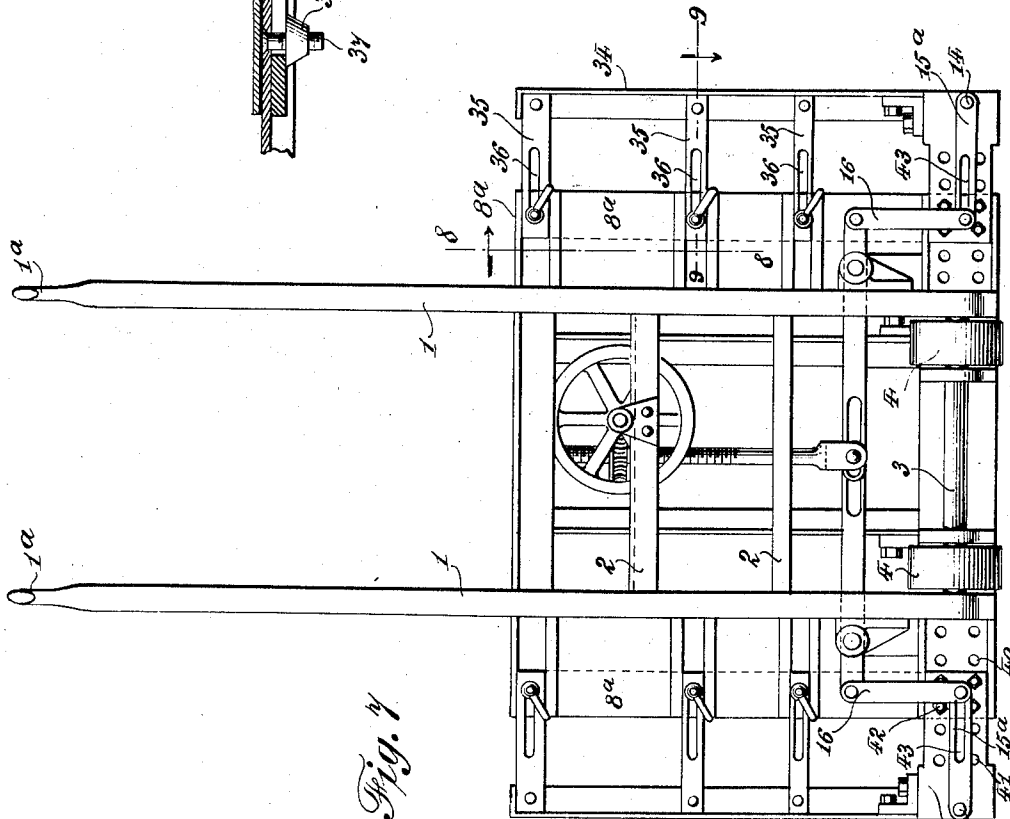


Fig. 4.

WITNESSES
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UNITED STATES PATENT OFFICE.

RAYMOND C. PENFIELD, OF NEW YORK, N. Y.

PORTABLE BRICK-HANDLING DEVICE.

976,393.

Specification of Letters Patent.

Patented Nov. 22, 1910.

Application filed October 24, 1908. Serial No. 459,347.

To all whom it may concern:

Be it known that I, RAYMOND C. PENFIELD, a citizen of the United States of America, residing at New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Portable Brick-Handling Devices, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to a portable apparatus for transporting brick in bulk from one place to another, the object being to provide a simple and efficient vehicular device which will be provided with means for laying hold of a mass of brick which has been set with its individual members in a pre-arranged order and will carry the same into the kiln or to a place of storage or elsewhere as may be desired.

The invention consists essentially in a portable device provided with clamping means for engaging and lifting a pile of brick, and in various details and peculiarities in the construction and combination, substantially as will be hereinafter described and claimed.

In the accompanying drawings illustrating my invention, Figure 1 is a rear elevation of my improved portable device for carrying bricks. Fig. 2 is a side elevation of the same. Fig. 3 is a sectional plan view on the line 3, 3 of Fig. 1. Fig. 4 is an enlarged detail view of the worm wheel and vertical screw which form a part of the mechanism for operating the clamping devices. Fig. 5 is an enlarged sectional detail of a modified means for actuating the clamping devices, said modified means including a cam or eccentric device. Fig. 6 is an enlarged detail view showing the parallel links for actuating one of the clamping plates. Fig. 7 is an elevational view of a form of the invention having adjustable mechanism to suit the device to stacks of different sizes. Fig. 8 is a cross section on the line 8, 8 of Fig. 7, and on an enlarged scale. Fig. 9 is a section on the line 9, 9 of Fig. 7.

Similar characters of reference designate corresponding parts throughout the different figures of the drawings.

The truck or portable device, of which this invention consists, is designed to be used with a stack formation of bricks built with the lower layer or tier shorter than the

superposed mass, so that said layer can be effectively clamped and raised by the truck and then transported thereby. In Fig. 2 I have shown in dotted lines, at A, a stack of bricks hacked up in the manner suggested. Usually the bottom layer will be shorter than the upper mass, but I am not restricted to using the truck with bricks so stacked. Obviously the layer or layers that are gripped must be set closely. The truck or portable device is preferably of the hand variety, and the general framework thereof is of the kind commonly employed in handling goods of various kinds in warehouses and places of shipment. Said frame consists of the side bars 1, 1 having the handles 1^a. These side bars 1, 1 are connected by transverse pieces 2, 2. At one end of this frame is supported an axle or shaft 3, which carries the wheels 4 at points outside of the main frame, as indicated in Figs. 1 and 2.

The lower end of the main frame, adjacent to the wheels 4, is provided with a horizontal bar 6, at the ends of which are right-angled plates 5 that are adapted to occupy a horizontal position, as shown in Fig. 2, when the truck is moved up against a stack of bricks for the purpose of engaging and removing the same, said plates 5 being parallel and on opposite sides of the stack of bricks. The plates 5, 5, as stated, are connected together by a horizontal bar 6, which is much longer than the axle 3 and which projects out at both sides of the truck in a broad and extended fashion as shown in Fig. 1, so as to enable the truck to operate with a mass of bricks having a considerable number in the basic layer. At right angles to the lower plates 5 is a frame which occupies a vertical position when the plates 5 are in the horizontal position shown in Fig. 2, and said frame consists of the outer upright bars 7 bolted at their lower ends to the base bar 6 and connected by a top cross bar 8 and braced by means of inclined pieces 9, which latter are secured to the truck-frame bars 1. Additional cross pieces 10 are likewise secured to the truck-frame bars 1 and the upright bars 7. So it is seen that in this way the whole framework, consisting of the handle bars 1 and the various other parts specified, is securely fastened together in a unitary structure which can be propelled about on the truck wheels and can carry with it a mass of bricks of considerable magnitude when the same has been

properly engaged and clamped firmly to said frame.

The means for clamping and holding the stack of bricks A, and enabling the same to be engaged with sufficient power to allow the truck when moved about to carry with it the mass of bricks, consists essentially of a pair of clamping plates 11, one of which is arranged on the inside of each of the stationary side plates 5, and both disposed edgewise in a vertical position so as to present vertical flat faces against the bricks. A pair of links 12 and 13 are pivoted to the rear side of each of the clamping plates 11 and these links are pivotally supported in the side plates 5. The link 12 is a crank arm which is rigidly secured to a horizontal shaft 14 that is supported in the side plate 5 in such a manner as to be revoluble therein, and the main application of power to the clamping plate 11 is accomplished by means of the arm 12 and shaft 14; since the parallel link 13 is principally for the purpose of enabling the clamping face of the plate 11 to be kept in a vertical position at all times so that it will properly apply its gripping power to the adjacent bricks. Outside the plates 5 at one end thereof, and also outside the base bar 6, the projecting end of each shaft 14 is rigidly secured to a horizontal arm 15, the opposite end of which is pivoted to a vertical link 16, and these links 16 are in turn pivoted to the short ends of horizontal levers 17. These levers 17 are fulcrumed at 18 on certain stationary brackets 19 that are firmly bolted to the main frame of the truck. The inner ends of the levers 17 overlap each other, as indicated in Fig. 3, and they are provided with slots 20. A bolt 21 passes through the slotted ends of the levers 20, and is carried by the lower end of a vertical screw 22 on which is a worm wheel 23, which is located in a horizontal position near the upper part of the frame 1, being carried in a stationary bracket 24. The worm wheel 23 meshes with a worm 25, on which is a hand wheel 26. By turning the hand wheel 26 and revolving the worm 25, the worm wheel 23 is rotated and the screw-threaded rod 22 raised or depressed in consequence, and the power transmitted by rod 22 through levers 17, links 16, crank arms 15, shafts 14 and cranks 12 to clamping plates 11, enables the clamping plates 11 to be applied with great power and effectiveness to the bricks of the basic layer or layers.

Another means for raising and lowering the vertical actuating rod 22 is shown in Fig. 5 as substitutable for the worm gear mechanism already described. This mechanism in Fig. 5 consists of a block 30 carried by the upper end of the shaft 22, said block 30 having a circular opening 31 therein, which receives an eccentric 32 fast on a horizontal

shaft 33 which is located in the same position as the worm shaft 23, said shaft 23 carrying the hand wheel 26. By rotating the hand wheel, the shaft 33 will be revolved and the eccentric 32 which is carried thereby will likewise be revolved within the block 30 and the shaft 22 raised and lowered correspondingly, thereby actuating the train of levers at the base of the machine for the purpose of moving the clamps 11 in and out.

A modified form of the whole invention is illustrated in Figs. 7, 8 and 9, the same consisting of means for enabling the truck to be used with unit stacks of greater or less size. A unit stack may have in its lower layer of bricks any suitable number, as, for instance, from ten to twenty, the number depending upon the weight and size of the entire unit, but of course the capability of a man to handle the same upon a truck must be taken into consideration. It is obvious that the number of bricks in the lower row will vary under different circumstances, and hence it is manifestly needful that the clamping mechanism should be capable of adjustment in conjunction with an adjustable frame, so that the device may be made suitable to operate with this variable number of bricks in the basic row. Consequently, in the present modification of the invention, I have so constructed the members of the framework and the operative mechanical elements that the whole machine may be used with different sized unit stacks having different numbers of bricks in the basic row. In this construction the framework of the truck, which comprises the handle bars 1, 1 carrying the handles 1^a and connected by the cross pieces 2, will remain the same; wheels 4 are the same as in Fig. 1, except that they are shown outside of instead of inside of the bars 1, but the side bars 7 will be changed into the form shown in Fig. 7 where it will be seen that frames 8^a are provided with laterally-movable extensible frames 34 which are adapted at times to occupy the vertical position which the side bars 7 occupy in Fig. 2, and then to be brought into an inclined position when the truck is being moved about. These laterally-movable side frames 34 are provided with horizontal bars 35 slotted at 36. The slots are engaged by horizontal bolts 37 which are fixed rigidly in the frames 8^a. On these bolts 37 are clamping nuts 38 provided with handles 39. By means of these handles the clamping nuts can be loosened whenever desired to permit the frames 34 to be extended, or to be brought closer together, and when they are adjusted at the proper point they can be securely held at that point by manipulating the handles 39 for the purpose of screwing the nuts 38 closely against the bars 35 and securely binding the parts together into an immovable framework. The clamp-

ing plates 11, which engage the ends of the basic layer, are supported and actuated in like manner as they are in the construction represented in Fig. 3 of the drawing, being carried in this instance, however, by the extensible laterally-movable frames 34 at the base thereof. In order that the great strain which is brought upon the frame in clamping may be withstood, the lower bar 6 is provided with a plurality of openings or perforations 40 which are adapted to register with perforations 41 in the lower plates 6^a carried on the lower ends of the side frames 34. Bolts 42 having suitable nuts, etc., pass through the openings 40 and 41, being removable whenever desired. They have the purpose of enabling the parts of the frame to be adjustable in extending and contracting the size of the latter. Thus when the frame is in the position shown in Fig. 7, it will be evident that the bolts 42 by passing through the base bar 6 and the lower plates 6^a of the side frames, will thoroughly hold in a firm and rigid position the parts at the base of the frame, so that the effect thereon of the movement of the clamping devices will not be such as to damage or unduly strain the machine, and a tight clamping of the basic layer of bricks will be permitted as the result of the movement of the parts within the strong framework.

When the parts are extensible for different sizes of unit stacks, as I have explained, it will of course be necessary that the actuating leverage for the clamping plates 11 should likewise be extensible so that it will perform its duty equally well whether the unit stack be smaller or larger, and hence the horizontal levers 15 which are attached rigidly to the rock shafts 14 will be replaced by levers 15^a, having therein elongated slots 43, so that the pivotal points connecting the lower ends of the links 16 and the ends of the slotted levers 15^a will be adjustable to a greater or less extent in correspondence with the adjustment of the parts of the frame. Thus when the laterally-movable frames 34 are moved in and out by reason of the slots 36 in the parts 35, permitting the bolts 37 to take different positions therein, the slots 43 in the levers 15^a will permit the vertical links 16 to have their lower pivotal points correspondingly adjusted to different points in the lengths of said slots 43, and as a result, whatever be the position of the frames 34, the effect in clamping will be equally good.

In the operation of my improved portable brick handling device, it will be evident that after a stack of bricks has been set in unit formation with the lower layer composed of a series of closely set bricks without any openings or spaces between them, the device will be brought up into position alongside of the unit in the manner shown in Fig. 2,

where the clamps 11, 11 will be at the opposite ends of the basic layer. In most cases, it will be found more appropriate to set the basic layer so that it will be shorter than the superposed mass, although my invention will operate equally well with units set with the basic layer flush with the sides of the upper part of the unit. However, when the unit is to be transported and set down alongside of other units in a close situation, it will be necessary to employ the short basic row which will allow the clamps 11 to be set inside of the outer line of the unit, so that when the unit is transported and set down the clamps will not be imprisoned against adjacent units, but can be easily withdrawn. After the truck has been brought up alongside of the unit stack and the clamping plates located in position for action, the workman can by giving the handwheel 26 a few turns operate the clamping mechanism, and cause the machine to tightly lay hold of the unit stack at the base thereof. Then by deflecting the handles of the truck into proper position for manipulating and pushing the latter, the stack of bricks will be lifted from the floor by the leverage exerted thereon by depressing the handles of the truck frame, and the stack will lie over in an inclined position as far as may be necessary to enable it to preserve its place on the truck without falling therefrom, and thus the whole combination will be moved about to such distant point as may be desired on the wheels 4, 4. It will be perceived that the result of the clamping action is to cause the unit stack to be so grasped and held by the clamping mechanism as to become in effect a part thereof. Or, in other words, the operation of the machine consists in placing wheels or rollers under a unit stack of bricks and simultaneously providing the necessary framework and handles which will allow a man to push the stack along the floor or ground to any point where it is to be operated upon in any way or stored for future use.

Many variations in the precise construction, combination and arrangement of parts may be made without exceeding the scope of the invention, and I reserve the liberty of re-arranging and modifying the same in so far as experience may show to be necessary.

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

1. A portable device for carrying bricks comprising a movable frame, wheels therefor, means for manipulating the frame, a pair of clamps adapted to grip between them a pile of bricks set in a pre-arranged order, means for actuating said clamps, and extension frames on the movable frame, which extension frames carry the clamps.

2. A portable device for transporting bricks, comprising a movable frame, wheels therefor, handles for manipulating the frame, extension frames on the sides of the movable frame, clamps carried at the base of the extension frames, and a leverage mechanism for actuating said clamps for the purpose of enabling them to tightly grip a mass of material between them.
- 10 3. A portable device for carrying bricks, comprising a movable frame, locomotive means arranged in connection therewith, laterally extensible frames on the movable frame, a pair of clamps carried by the extensible frames, a leverage mechanism for actuating said clamps including means whereby said mechanism is capable of extension and contraction in correspondence with the movement of the extensible frames, and
- 15 means including a hand wheel for actuating said leverage for the purpose of applying the clamps.
- 20 4. A portable device for carrying bricks and other articles, comprising a movable frame, wheels therefor, clamps at the base
- 25

thereof, actuating rock shafts having crank arms pivoted to said clamps, crank levers secured to the rock shafts, links pivoted to said levers, horizontal levers pivoted to said links, a vertical rod pivoted to the ends of said levers, and means for actuating said rod in applying the clamps.

5. A portable machine for lifting and carrying bricks, comprising a movable frame having wheels, a pair of clamps for gripping a mass of brick, rock shafts having crank arms pivoted to the clamps, levers rigidly affixed to said rock shafts, links pivoted to said levers, horizontal levers pivoted to said links, a hand-wheel supported in the movable frame, and intermediate means between the hand-wheel and the aforesaid levers whereby the levers may be operated for the purpose of applying the clamps.

In testimony whereof I affix my signature in presence of two witnesses.

RAYMOND C. PENFIELD.

Witnesses:

FRANK PAUL,
C. B. SCHROEDER.