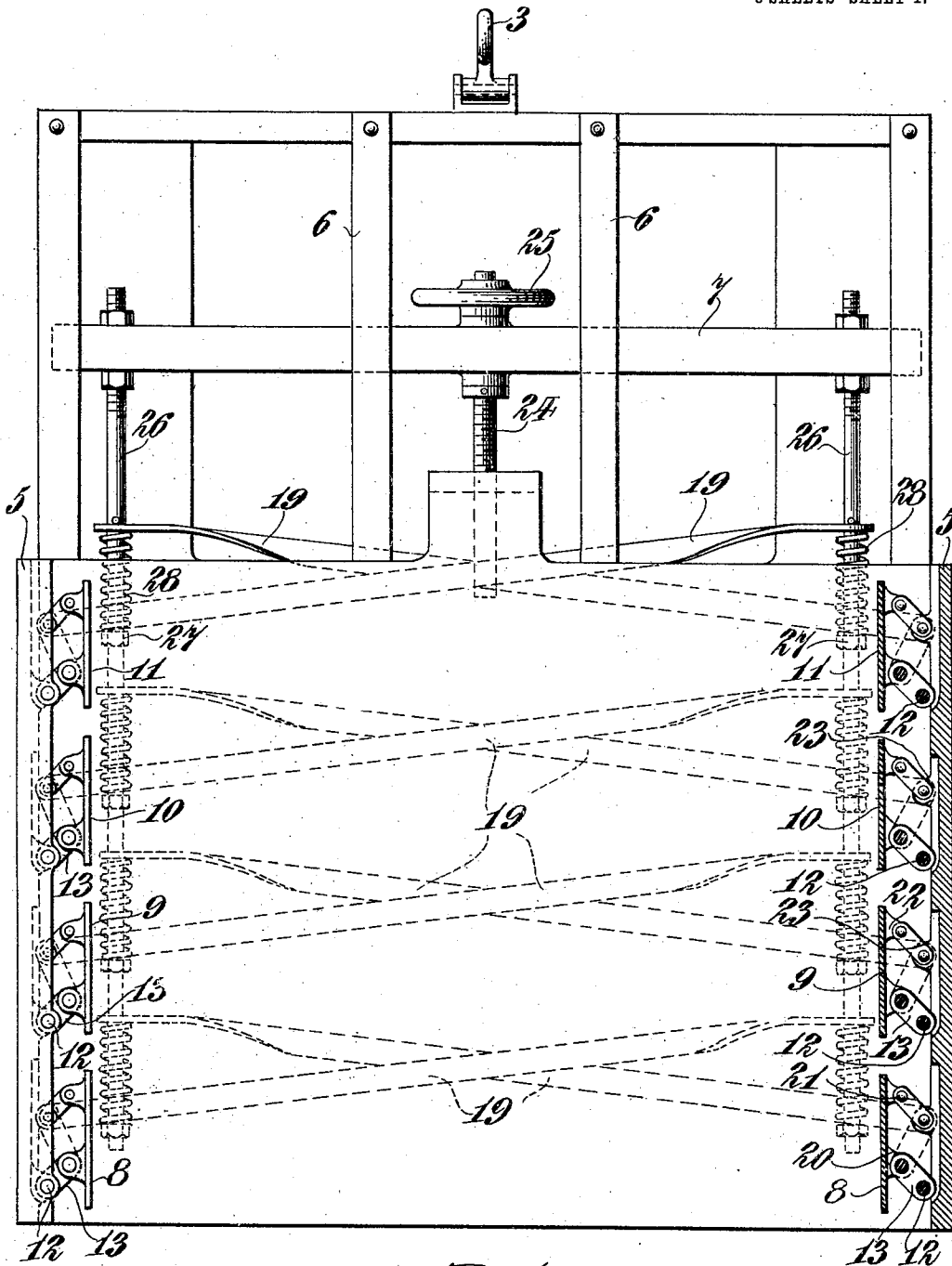


R. C. PENFIELD.  
MACHINE FOR HANDLING BRICKS.  
APPLICATION FILED NOV. 6, 1908.

954,584.

Patented Apr. 12, 1910.

3 SHEETS—SHEET 1.



WITNESSES  
*Julius H. Fritz*  
*L. B. Schneider*

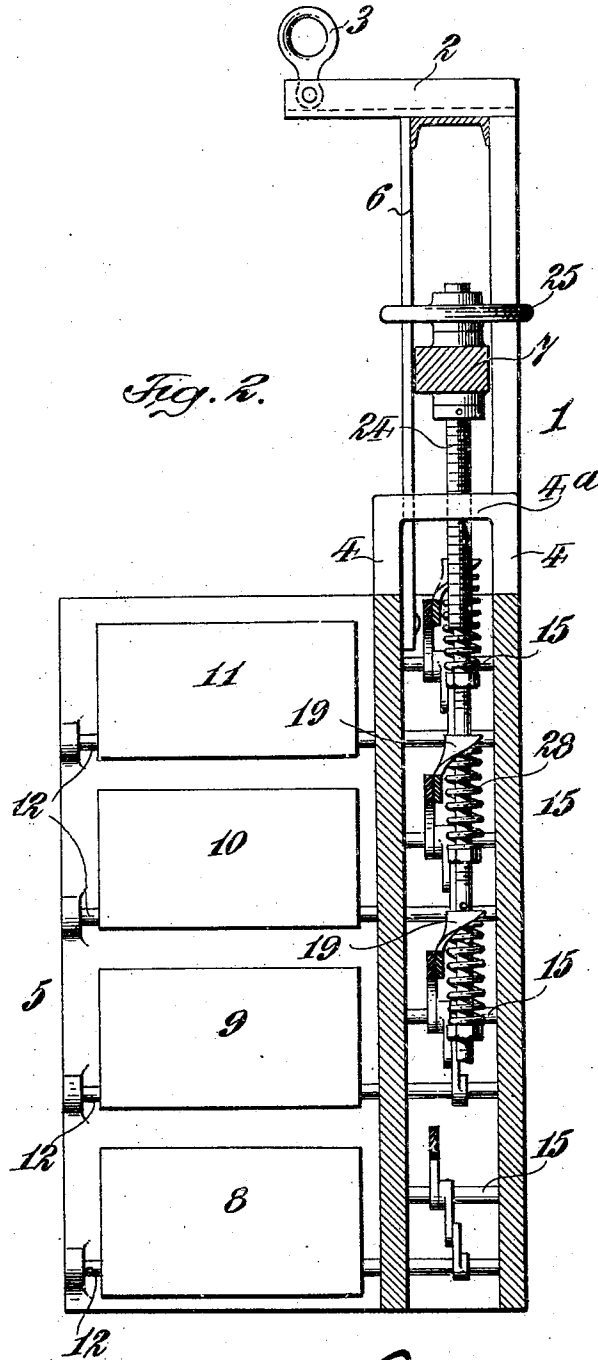
Fig. 1.  
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

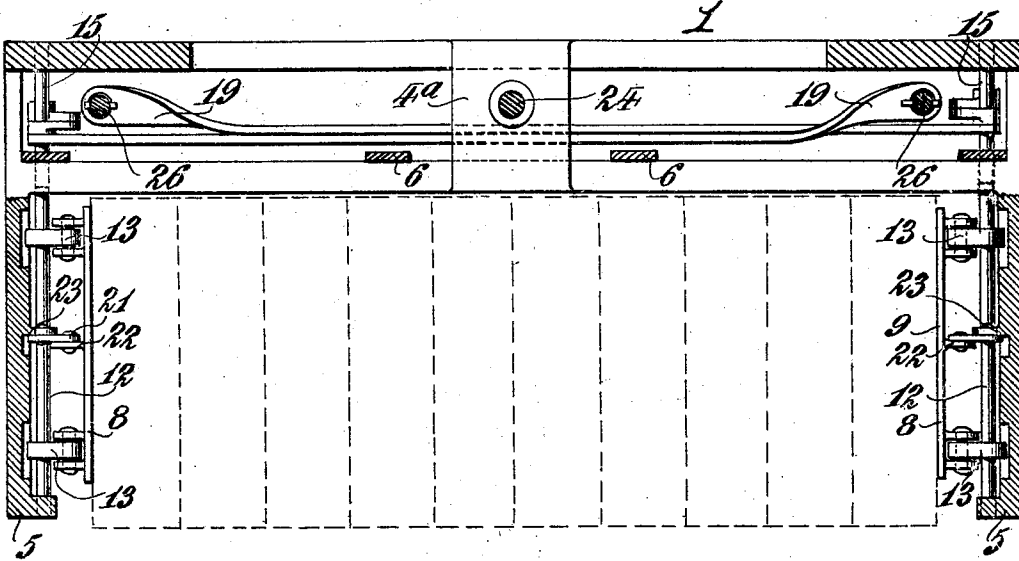


Fig. 3.

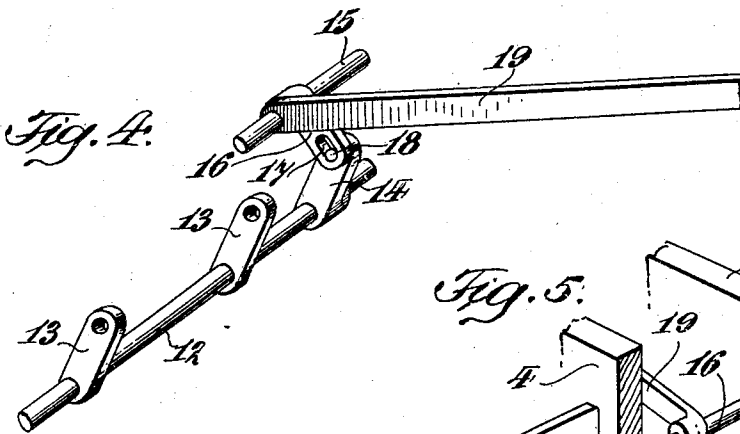


Fig. 4.

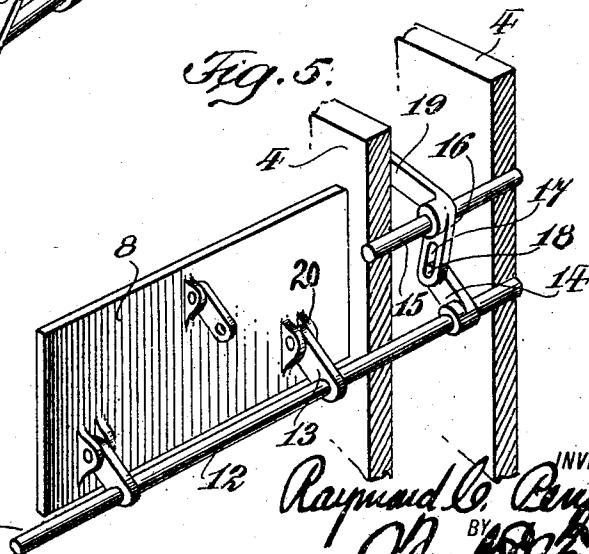


Fig. 5.

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# UNITED STATES PATENT OFFICE.

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

MACHINE FOR HANDLING BRICKS.

954,584.

Specification of Letters Patent.

Patented Apr. 12, 1910.

Application filed November 6, 1908. Serial No. 461,368.

*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 Machines for Handling Bricks, of which the following is a specification, reference being had therein to the accompanying drawing.

The present invention refers to a machine for handling bricks in bulk, the same being of the general class wherein a stack formation of bricks set in a prearranged order is lifted and transported from point to point without disturbing the formation or breaking the bulk. Machines of this class are designed to avoid the repeated handling of bricks, and are thus used in the interest of economy, for they save the expense of labor as well as the damage done to bricks in repeated handlings.

According to the old methods formerly practiced, each individual brick was handled a great many times after it left the brick machine before it reached the place of final storage or use. According to recent improvements, however, exemplified in the Letters Patent of William H. Francis, dated July 9, 1907, No. 859,445, and those dated December 24, 1907, No. 874,582, and the Letters Patent of William H. and C. Francis, dated June 9, 1908, No. 890,586, and the invention shown and described in my co-pending applications for Letters Patent, one of which was filed September 15, 1908, Serial No. 453,178, and another of which was filed October 8, 1908, Serial No. 456,692, a stack formation of bricks set in a regular order and in an accurately rectangular arrangement has its basic layer so built that it is possible to apply thereto a lifting device which shall transport the bricks in stack formation and set the same down and then remove the lifting means without disturbing the stack formation. This basic layer is sometimes spaced apart so that the lifting fingers may be introduced in the spaces, and then again it is made as a solid unit consisting of a multiplicity of bricks set close to each other without any spaces or openings of any kind between them, in which latter case the basic layer is shorter than the superposed mass and is clamped by means of gripping mechanisms at the ends thereof so that the gripping strain on the lower layer

lifts not only the lower layer but the superposed mass as well.

In my co-pending application for Letters Patent, filed October 8, 1908, Serial No. 456,692, I have shown and described a method and apparatus for clamping the lower layer of bricks at the end thereof, and by the single lateral clamping strain thus imparted raising the entire mass of bricks and the machine therewith.

In my present invention, the object is to provide means whereby a plurality of layers shorter than the superincumbent mass, one at the base and others immediately above it, may be gripped tightly between clamps operating at the ends of the layers respectively, and having a certain amount of independent clamping action, so that each row which is involved in the process may be separately clamped, although there would be a joint action throughout the entire machine.

The invention, therefore, consists essentially in means for imparting a clamping action independently to the members of a plurality of parallel layers of bricks which have been previously set in a stack formation, and it comprises also numerous details and peculiarities in the construction, combination and arrangement, substantially as will be hereinafter described and claimed.

In the accompanying drawings illustrating my invention, Figure 1 is a front elevation of my improved brick handling machine. Fig. 2 is a side elevation of the same. Fig. 3 is a sectional plan view. Fig. 4 is an enlarged detail perspective view of a certain portion of the clamp-operating mechanism. Fig. 5 is an enlarged detail perspective view of one of the clamping members and a part of the device for operating it.

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

1 denotes a main vertical frame, the details of which may vary within wide limits, it being only necessary that it should be so built as to accommodate therein and therewith the several mechanical parts which operate together for the purpose of carrying the invention into practical effect. At the top of the frame 1 is a horizontal arm 2 rigidly secured thereto, and to the outer end of said arm is pivoted an eye 3 to which may be connected a crane, hoist, or other suspension means whereby the machine, as well as the

load carried thereby, may be lifted about. The frame 1 includes the parallel upright parts 4, 4, and the right-angled vertical end uprights 5, 5. A couple of braces 6 are preferably fastened to one of the uprights 4 and to the upper horizontal arm 2. A vertically movable bar 7 is placed in a horizontal position between the brace pieces 6 and the outer frame 1, and is so arranged that it can move up and down under the impulse of an operating screw 24, or other device, as I shall presently hereinafter set forth.

The upright frame 1 conjoined to the end upright parts 5, 5 provides a sort of rectangular bow or yoke which might be more or less curved into a U-shape if desired, although sufficient angularity therefor must be maintained to enable the end uprights to carry the clamping devices; but it must be understood that the main frame 1 will stand alongside of the stack formation of bricks while the end uprights 5, 5 are situated at the ends of the stack so that in this way the stack is substantially inclosed on all but one side when the machine is operatively applied thereto. The U-shape or bow-shape is a very convenient design for enabling the machine to be brought close to the stack formation, and, of course, as to the details of actual construction, they may be varied widely in each machine.

There may be any desired number of pairs of clamps. The members of each pair are designed to operate upon a single layer. The pairs of clamps are arranged vertically one above another. In the specimen of the invention illustrated in the drawing, I have shown four pairs of clamps; the members of the lowermost pair are designated 8, 8; those of the next pair above 9, 9; those of the next pair 10, 10, and those of the next pair 11, 11, there being in this example four pairs of clamps designed to operate in conjunction with four separate layers of brick. It is not intended, however, that I should be confined to four layers, for the machine may be built to operate with any number or plurality of layers, and four is merely selected for the sake of illustration. The layers or tiers of brick, as is obvious, on which these four pairs of clamps exert their power, are tiers of burned brick ordinarily, and each tier is set solid with no spaces between the members or units thereof, each layer therefore being in effect a consolidated unit and acting as if it were a single brick. The four rows will all be laid in the same manner, and it is intended that these four rows should all have the same length, which will be shorter than the superposed mass of bricks, for said superposed mass will have its rows built alternately with the brick laid in the opposite directions so that the formation for its several layers interlock

sufficiently to hold the bricks together in a unit bulk.

While it is evident that this machine purposes to function with a multiplicity of layers shorter than the length of the superposed mass, and is in effect the provision of a mechanism for operating with a plurality of layers at the base of the stack formation, instead of with a single short basic layer at the bottom of a stack formation as in my former application hereinabove alluded to, yet it will be understood of course that I am not to be restricted to having the several layers with which the pairs of clamps do their duty shorter than the superposed mass, for the latter may be built up on the lower layers in a manner that will be the same as to length and width. I wish, therefore, to have this distinctly understood so that I will not be confined to any particular stack formation, and so that any formation where the bricks are brought together in a large bulky mass may be gripped near the base by the plural pairs of clamps I am now describing that are situated one above another.

The various clamps 8, 9, 10 and 11 are disposed so that the members of each pair will have vertical faces arranged opposite and parallel to each other, so that they will readily engage the opposite parallel ends of a course of bricks that are evenly set without any spaces between them. In the end upright frames 5, 5, there is journaled a horizontal shaft 12 behind each of the clamping plates, there being thus four shafts 12 arranged in connection with each upright 5 so that one shaft 12 may be behind each of the clamping plates. These shafts are rock shafts and carry a certain number of crank arms 13, say, two of them, which are pivoted to lugs or ears 20 on the rear side of the clamping plates, and also carry a third crank arm 14 with which is connected certain of the mechanical features to be presently described, whereby the rock shafts 12 are oscillated. Thus in the rear of each of the clamping plates 8, 9, 10 and 11 there are two arms 13 which are arranged to act to force the members of each plate toward the other plate of the pair and grip the bricks.

In order to keep the clamping plates parallel during their lateral movement, it is found desirable to employ links 21 which are preferably located midway between the crank arms 13 and are pivoted to ears or lugs 22 on the rear side of the clamping plates, and also to ears or lugs 23 on the end uprights 5.

Vertically above that part of the horizontal rock shaft 12, which is located in the frame 1 between the vertical uprights 4, 4, is arranged an additional horizontal shaft 15 which is shorter than the shaft 12, being supported only in the uprights 4, 4. See Fig. 5. Fixedly secured to these short

shafts 15 are the crank arms 16 which are slotted at 17 and engage pins 18 projecting from the aforesaid crank arms 14 that are rigidly fastened to the rock shafts 12; and  
 5 also rigidly attached to the short shafts 15 alongside of the crank arms 16 are long substantially horizontal levers 19 which extend across to the other side of the machine. The two long levers 19 belonging to the clamping  
 10 plates of each pair of clamping plates are placed crosswise of each other as shown in Fig. 3 and in dotted lines in Fig. 1. By employing these long levers 19 a very strong and powerful leverage on the shafts 15 is  
 15 obtained, and these shafts are oscillated in one direction or the other accordingly as the long levers 19 are moved up or down. The movement of said long levers 19 oscillates the shafts 15 and transmits motion to  
 20 the crank arms 16, and they in turn transmit motion to the crank arms 14 which vibrate the rock shafts 12 and actuate the arms 13, thereby moving the clamping plates 8, 9, 10 and 11 respectively and causing a  
 25 strong and effective pressure to be applied to the ends of the layers of brick.

The upper part of the frame consisting of the vertical uprights 4, 4 is connected together by a strut or cross-head 4<sup>a</sup> through  
 30 which plays a vertical screw 24 having on the upper end a hand wheel 25. This screw passes through the horizontal bar 7 hereinafter alluded to. Bar 7 supports vertical rods 26 which extend downwardly  
 35 therefrom to near the base of the machine, and these rods pass through perforations or suitable openings or slots in the ends of the various long levers 19. Furthermore the rods 26 carry nuts 27 and springs 28, said  
 40 springs surrounding the rods and being tensioned below the ends of the levers 19 and between said ends and the nuts 27. The nuts 27 are adjustable on screw-threaded portions of the rods whenever desired. By  
 45 rotating the hand wheel 25 the screw 24 will travel up and down carrying with it the horizontal bar 7 which will cause the vertical rods 26 to move up and down, and the result of this movement will be to actuate  
 50 the long levers and transmit motion to the rock shafts 12 and the crank arms 13 and apply the clamps 8, 9, 10 and 11 against the ends of the layers of brick contiguous to which they are situated. Thus the movement of the hand wheel in one direction will  
 55 tightly apply the clamps, and its movement in the opposite direction will release the clamps. When the clamps have been tightly and effectively applied to the ends of the various layers and the stack formation of  
 60 bricks thus engaged, it will be possible to transport the same about from point to point after a hoisting mechanism has been caused to lay hold of the upper part of the  
 65 frame of the machine.

It will be obvious that the various springs 28 play an important part in connection with the clamps in causing them to be so applied individually to the various layers that the pairs will yield so as to compensate for any inequalities in the length of the layers, thus insuring a strong and powerful gripping of each layer independently of the others, but at the same time a joint action which will lay hold of all of the  
 75 layers.

Many variations may be made in the precise construction and arrangement of the details of the machine without departing from my invention, and I reserve the liberty of reconstructing and combining the different parts so as to fulfil the original objects of the invention, provided only the scope of the appended claims is not exceeded.  
 85

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

1. A machine for handling brick, comprising a main frame, means for supporting  
 90 the same, a plurality of pairs of clamps arranged one above another and adapted to exert pressure against separate parallel layers of brick set in a prearranged order, and means for actuating the members of each  
 95 pair.

2. A machine for handling brick, comprising a main frame, means for supporting the same, a plurality of pairs of clamps arranged one above another and adapted to  
 100 exert pressure against separate parallel layers of brick set in a prearranged order, and means for actuating the members of each pair, said means including springs so that each pair may have a certain liberty to act  
 105 independently of every other pair.

3. A machine for handling bricks, comprising a main frame having end uprights and a connection between them, a plurality of pairs of clamping members arranged one  
 110 above another and adapted to exert pressure against the opposite ends of several layers of bricks set in a prearranged order, and a leverage mechanism for actuating the members of each pair of clamps, said leverage  
 115 mechanism consisting essentially of long levers arranged crosswise of the machine, and rock shafts actuated by said levers, which rock shafts act against the clamping members.  
 120

4. The combination of a main frame having at its upper end a rigid laterally-extending arm, end sections parallel to each other and connected to the main frame, a plurality of clamps on each end section, rock shafts  
 125 supported behind each clamp and having crank arms pivotally connected to the clamps, and long levers extending crosswise of the machine and actuating said rock shafts.  
 130

5. The combination of a main frame having a rigid upper arm laterally projecting therefrom, suspension means attached to said arm, end uprights parallel to each other and forming a part of the main frame, a series of pivoted clamping members arranged in pairs one above another so that the members of each pair may apply their clamping effect to a single row of bricks set in a prearranged order, a leverage mechanism for actuating said clamps, and springs interposed in the actuating mechanism so that each pair of clamps may act independently of every other pair and act yieldingly.

6. A machine for handling bricks, comprising a main frame, a plurality of pairs of clamping members arranged one above another so as to apply their clamping effect to several parallel layers of brick set in a prearranged order, rock shafts having crank arms pivoted to the clamping members, supplemental shafts having crank arms actuating the rock shafts, long levers extending crosswise of the machine, vertically movable rods connected to the ends of said levers, springs enveloping said rods and assisting in making the yielding connection between them and the levers, and means for moving said rods for the purpose of simultaneously actuating the levers and operating the clamps.

7. The combination of a main frame, a plurality of pairs of clamping members arranged to apply their clamping action to the ends of parallel rows of bricks set in a prearranged order, horizontal rock shafts having cranks pivoted to the clamping mem-

bers, links pivoted to the clamping members and to the main frame for keeping the clamping members parallel, supplemental shafts having crank arms pivotally connected to crank arms on the rock shafts, long levers extending crosswise of the machine and rigidly attached to the supplemental shafts, vertical rods passing through perforations in the ends of said long levers, and means for reciprocating said vertical rods, consisting of a bar to which they are attached and an operating screw therefor.

8. The combination of a main frame, a plurality of pairs of clamping members arranged to apply their clamping action to the ends of parallel rows of bricks set in a prearranged order, horizontal rock shafts having cranks pivoted to the clamping members, links pivoted to the clamping members and to the main frame for keeping the clamping members parallel, supplemental shafts having crank arms pivotally connected to crank arms on the rock shafts, long levers extending crosswise of the machine and rigidly attached to the supplemental shafts, vertical rods passing through perforations in the ends of said long levers, and means for reciprocating said vertical rods, consisting of manually operated mechanism for moving them jointly.

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

RAYMOND C. PENFIELD.

Witnesses:

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C. B. SCHROEDER.