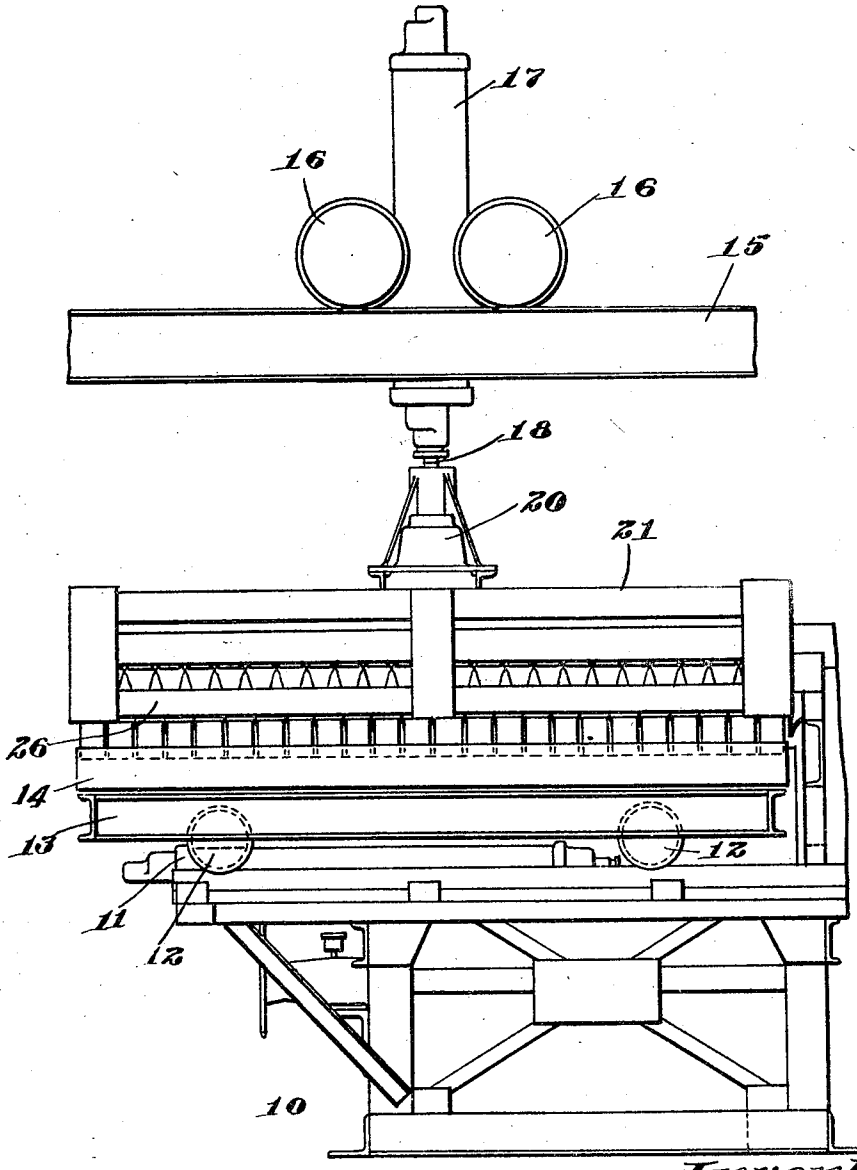
Oct. 7, 1924. 1,510,886

C. E. FULLER

HACKING MACHINE

Filed May 19, 1922 5 Sheets-Sheet 1

Fig. 1.



Inventor
Claud E. Fuller
by James R. Hodde
Attorney

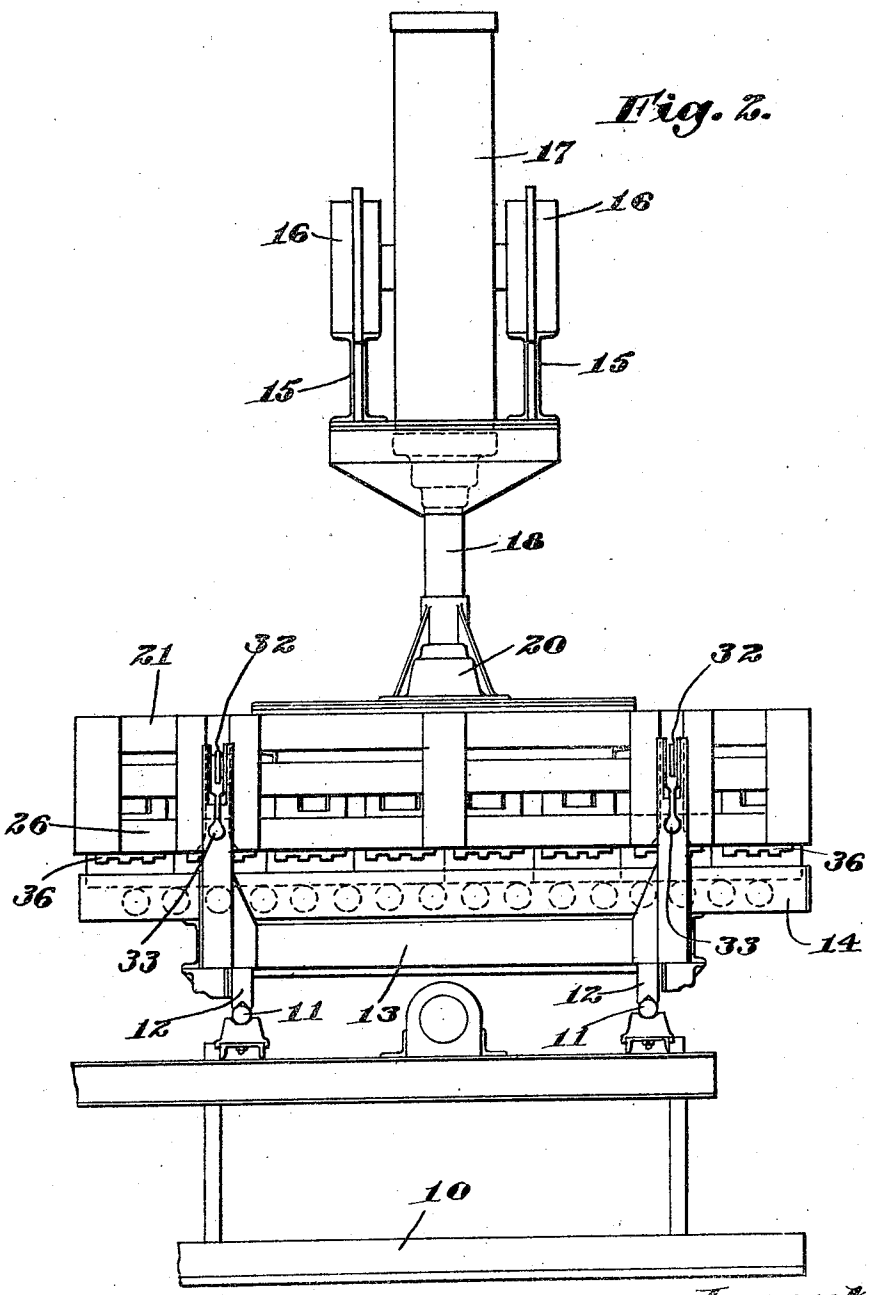
Oct. 7, 1924. 1,510,886

C. E. FULLER

HACKING MACHINE

Filed May 19, 1922 5 Sheets-Sheet 2

Fig. 2.



Inventor
Claud E. Fuller
by James R. Hodder
Attorney

Oct. 7, 1924. 1,510,886

C. E. FULLER

HACKING MACHINE

Filed May 19, 1922 5 Sheets-Sheet 3

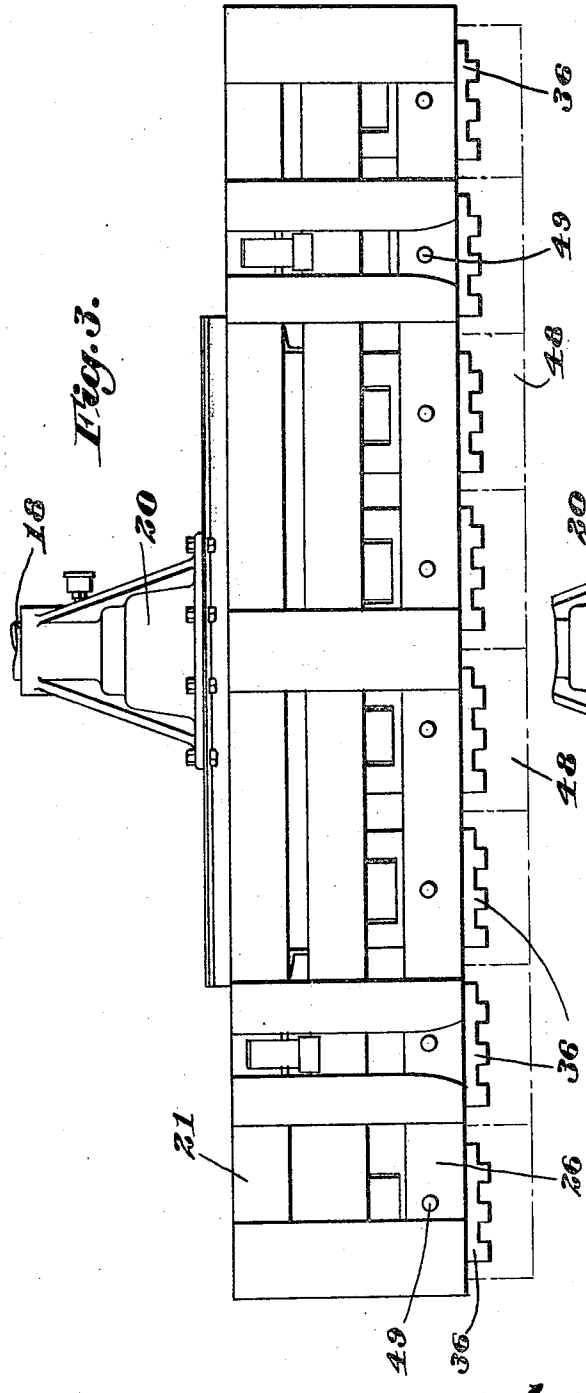


Fig. 3.

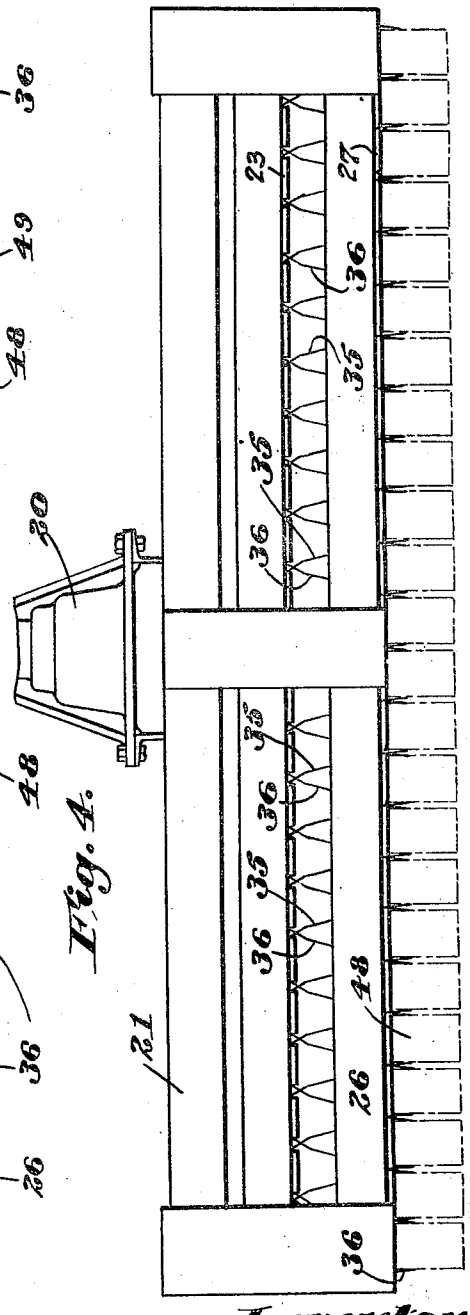


Fig. 4.

Inventor
Claud E. Fuller
by James R. Hodder
Attorney

Oct. 7, 1924. 1,510,886

C. E. FULLER

HACKING MACHINE

Filed May 19, 1922 5 Sheets-Sheet 4

Fig. 7.

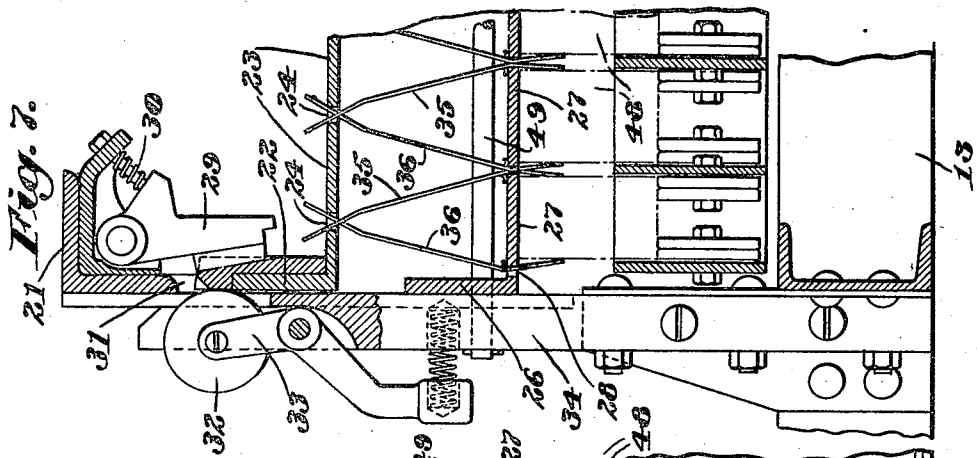


Fig. 6.

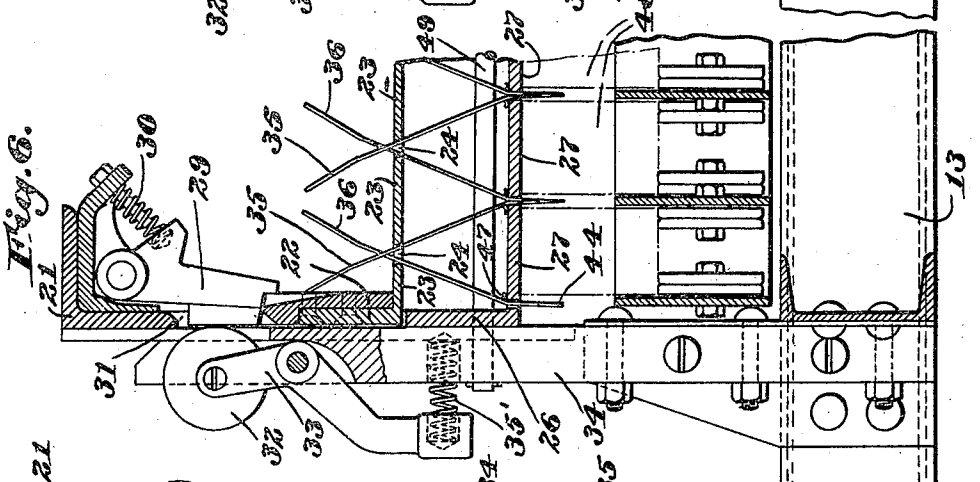
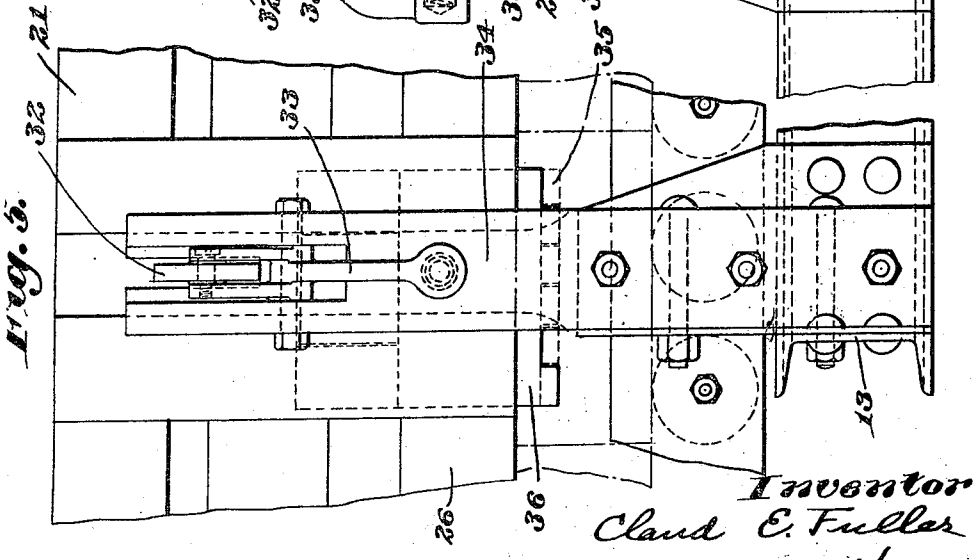


Fig. 5.



Inventor
Claud E. Fuller
by James K. Hodder
Attorney

Oct. 7, 1924. 1,510,886

C. E. FULLER

HACKING MACHINE

Filed May 19, 1922 5 Sheets-Sheet 5

Fig. 9.

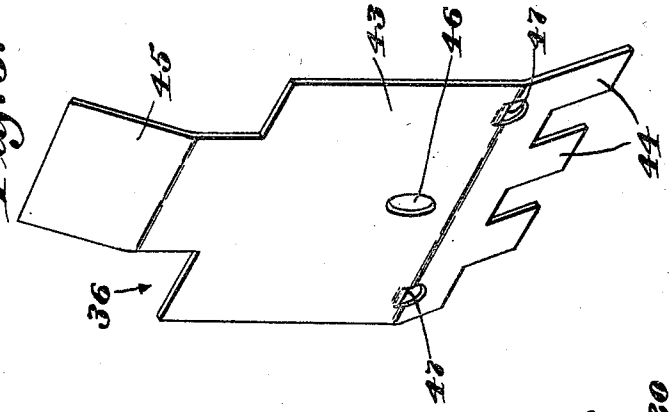


Fig. 10.

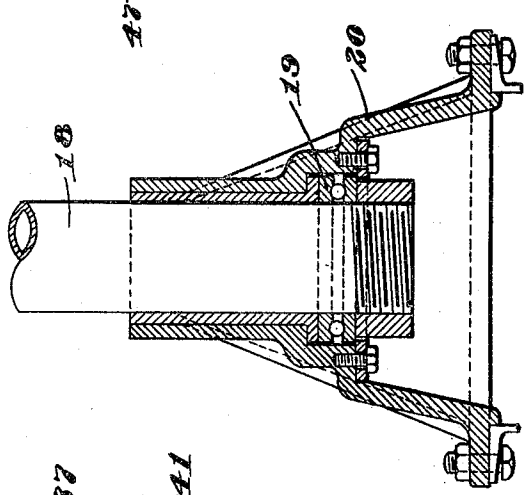
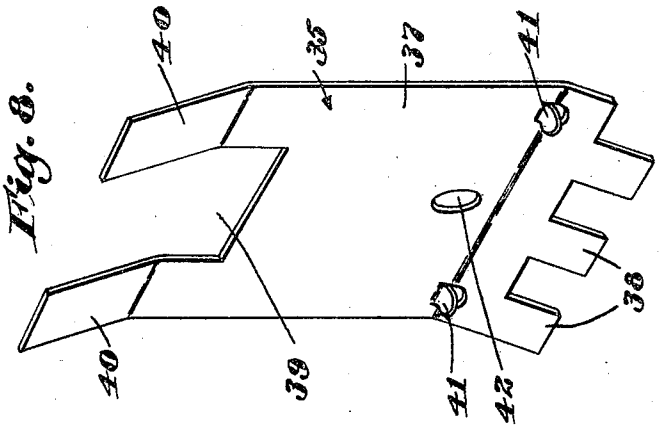


Fig. 8.



Inventor
Claud E. Fuller
by James R. Hodder
Attorneys

Patented Oct. 7, 1924. 1,510,886

UNITED STATES PATENT OFFICE.

CLAUD E. FULLER, OF NEW YORK, N. Y.

HACKING MACHINE.

Application filed May 19, 1922. Serial No. 562,250.

To all whom it may concern:

Be it known that I, CLAUD E. FULLER, a citizen of the United States, and a resident of New York, N. Y., have invented an Improved Hacking Machine, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

My present invention relates to brick making machines, and more particularly to an improved hacking machine for hacking brick, as they come from a drier, into units suitable for handling by mechanical kiln building or loading apparatus.

In my copending application Serial No. 537,631 filed Feb. 8, 1922, I have described and claimed the novel features of an apparatus for taking green bricks as they are fed to an off bearing belt from a brick making machine and loading and unloading such bricks into and out of a drying apparatus, preferably a pipe rack drier, and in my copending application Serial No. 608,057 filed Dec. 19, 1922, I have described and claimed the novel features of an apparatus for taking the bricks as they come from the drying apparatus and placing them in position for hacking. My present apparatus cooperates with the improved apparatus above referred to, to economically manufacture brick by eliminating manual labor to as great an extent as possible.

In carrying out my present invention I provide a vertically movable carrier provided with a plurality of rows of automatically operable brick gripping devices, such carrier being rotatable on its mounting to place the bricks gripped thereby into any position within the range of the apparatus. The number of gripping devices may be varied as desired, the number employed depending on the size of the unit stack of brick it is desired to build.

As the weight of a load of bricks is considerable, I have paid particular attention, in my present invention, to the form and manner of operation of the gripping devices, it being essential that such devices be strong, yet light, easily assembled and disassembled, and capable of positive operation with slight effort.

The principal object of my invention therefore, is an improved hacking machine for bricks or other clay products.

Another object is an improved loading element or device for simultaneously gripping a plurality of bricks and then transporting them to a hacking stand.

Still another object is an improved form of gripping device for gripping a brick or other clay article on two sides.

Other objects and novel features of the construction and arrangement of parts of my improved apparatus will appear as the description of the invention progresses.

In the accompanying drawings illustrating the preferred embodiment of my invention,

Fig. 1 is a side elevation;

Fig. 2 is an end elevation;

Fig. 3 is a side elevation, on an enlarged scale, of a portion of the device, showing the gripping devices in operative position;

Fig. 4 is an end elevation of the device shown in Fig. 3;

Fig. 5 is an end elevation of the operating means for the gripping devices;

Fig. 6 is a side elevation, partly in section, of the mechanism illustrated in Fig. 5, showing one position of the operating means for the gripping devices;

Fig. 7 is a side elevation, similar to Fig. 6, with the operating means in another position;

Fig. 8 is a perspective view of one finger of one of the gripping devices;

Fig. 9 is a perspective view of the other finger of one of the gripping devices, and

Fig. 10 is a sectional detail of the anti-friction pivoting devices for the gripping devices.

Referring to the drawings 10 designates a base provided on its top with rails 11 on which track wheels 12 that are rotatably mounted on and support a frame 13, a table 14 being attached to the top of such frame 13 in any suitable manner. The rails 11 extend far enough to the right, as viewed in Fig. 1, to allow the frame 13 to be moved to a loading point, means being provided for mechanically performing this operation.

Cooperating with the frame 13 is an overhead crane structure designed for the purpose of enabling articles on the table 14 to

be deposited at any point within the range of movement of such crane, and of this crane I have illustrated the cross beams 15, on which are mounted a plurality of wheels or rollers 16 that support and carry an air hoist cylinder 17, the depending plunger or piston 18 of which has mounted at its lower end a thrust bearing 19. On this thrust bearing 19 is rotatably mounted a frame 20, to the lower end of which is secured a frame 21. This frame 21 is substantially rectangular in shape and comprises members 22 having secured thereto a plurality of flat plates or bars 23 spaced apart from each other to define slots 24, as may be clearly seen in Figs. 6 and 7. Associated with the frame 21 and movable relative to such frame is another frame comprising members 26 having secured thereto a plurality of flat plates or bars 27 spaced apart from each other to define slots 28 equal in size and in vertical alinement with the slots 24 in the frame 21. At each of a plurality of points on each side of the frame 21 is pivotally mounted a latch 29, a spring 30 tending to hold said latch in its outward position, as shown in Figs. 6 and 7. These latches 29, in their extreme outward position, pass through slots 31 in the members 22 and are each adapted to be engaged by a roller 32 rotatably mounted at one end of a lever 33 that is pivotally mounted, intermediate its ends, on uprights 34 secured to the frame 13. An expansion spring 35' engaging the free end of the lever 33 forces the roller 32 into engagement with the latch 29.

Finger plates 35 and 36, illustrated in Figs. 8 and 9 respectively, constitute a pair of gripping devices. The finger plate 35 comprises a body portion 37, at the lower edge of which is formed a plurality of teeth 38 that extend at an angle to the body portion, while the top end of the body portion is cut away at 39 and has formed thereon a pair of upwardly extending projections or teeth 40. The elements described are formed of a single sheet of metal, and at the intersection of the body portion 37 and the portion containing the teeth 38 is struck up a plurality of ears 41. In the body portion is a hole 42. The finger plates 36 comprise a body portion 43 having formed integral therewith and at its lower end a member containing a plurality of teeth 44 that extend at an angle with said body portion, while the top of the body portion is cut away at either side to define a projection 45 slightly less in width than the width of the space between the projections or teeth 40 on the fingers 35, the outer end of this projection 45 being bent at an angle to the body portion 43. A hole 46 is formed in the body portion 43 in such a position as to be in alinement with the hole 42 in the finger plate 35, while ears 47 are struck up from the body portion at the line of connection of such body portion with the portion containing the teeth 44.

As clearly shown in Figs. 6 and 7 these finger plates 35 and 36 are arranged in position, one of each type constituting a pair, and the ends 40 and 45 of each pair are pushed upwardly through the same slot 24 formed by adjacent plates or bars 23. Referring particularly to Fig. 6, it will be noted that the first, or left hand, pair of finger plates has the teeth 44 of the finger plate 36 pushed downwardly through the slot 28 formed by the plate or bar 27 and the frame member 26, the extent of movement being limited by the ears 47 engaging with the upper face of the bar 27. The other finger plate of the pair, that is, the finger plate 35, passes through the next slot 28 to the right, its downward movement being limited by the ears 41 engaging the upper face of the bar 27. Also, it will be noted that the slots 24, formed by the bars 23, are substantially midway between the slots 28 formed by the bars 27. The finger plates 35 and 36 are so formed that when the frame 22 is in its lowermost position, with respect to the frame 26, which position is determined by the frame 22 engaging the top of the frame 26 and which can only occur when the bars 27 are resting on the top surface of a plurality of bricks, indicated at 48 in dotted lines in Figs. 6 and 7, that the teeth 38 and 44 of the finger plates intermesh and lie in substantially a single vertical plane and out of engagement with the bricks. These pairs of finger plates 35, 36 are arranged in a plurality of parallel rows, the number of rows and the number of pairs in each row being determined by the length and breadth of the frames 22 and 26, one pair of finger plates being provided for each brick to be lifted. Extending through the frame members 26 and from one side to the other of the frame formed thereby are rods or bars 49, these bars passing through the holes 42 and 46 of the finger plates 35, 36 of each transverse row of finger plates and serve to lock such pairs of finger plates 35, 36 in operative position with respect to the bars 27. Such rods 49 form a convenient and efficient means for rapidly assembling and disassembling the finger plates 35 and 36.

The operation of my improved apparatus is as follows, it being assumed that it is desired to pick up and transport to a hacking device a plurality of parallel rows of bricks 48 such as shown on the table 14.

The overhead crane members 15 are moved to a position over the table 14, and the pneumatic lift mechanism operated in such a

way as to lower the members 20 and 21 and all parts attached to and mounted thereon. In the normal position of the apparatus, the frame members 22 and 26 are in the position relative to each other shown in Fig. 6, with the catches 29 engaging the top of the frame member 26 to hold the bars 23 out of engagement with the upper ends of the finger plates 35, 36. The frame members 22 and 26 are lowered onto the table 14 with the catches 29 in alinement with the release wheels 32 on the members 34 attached to the frame 13, and in this position the lower ends of the finger plates 35, 36 move between the rows of bricks 48, as clearly shown in Fig. 6. As the frame members 22 and 26 reach their lowermost position; that is, with the bars 27 resting on the top of the bricks 48, the wheels 32 engage the latches 29 and force the same from the position shown in Fig. 6 to that shown in Fig. 7, The pneumatic lift mechanism is now operated to raise the member 22 and all parts connected thereto, whereupon the frame members 22 and bars 23 move relatively to the members 26 and bars 27, as shown in Fig. 7, the upper ends of the bars 23 in this movement engaging the upper ends of the finger plates 35, 36 and causing the lower ends to firmly grip the bricks 48. This relative position of the members 22 and 26 will be maintained as the apparatus is moved to the desired hacking point, and the weight of the bricks 48 only serves to cause the finger plates 35, 36 to more firmly grip the bricks. During this transporting movement the latches 29 and the members 22 occupy the position relative to each other shown in Fig. 7 and, when the load of bricks 48 is brought to the hacking point, the pneumatic lift apparatus is operated to lower the members 22 and 26, whereupon the bricks 48, coming to rest in appropriate position, take the load off the bars 27 and members 26. On continued downward movement of the members 22, further movement of the members 26 being prevented by the now positioned bricks 48, the members 22 and bars 23 move relative to the members 26 and bars 27, or from the position shown in Fig. 7 to that shown in Fig. 6, whereupon the latches 29 engage the members 22 to hold the members 22 and 26 in the position shown in Fig. 6.

While I have necessarily shown and described the preferred embodiment of my invention somewhat in detail, it is to be understood that I may vary the size, shape and arrangement of parts constituting my improved apparatus within wide limits without departing from the spirit of the invention.

My invention is further described and defined in the form of claims as follows:

1. An improved hacking device, comprising a frame, a plurality of parallely arranged bars therein defining a pair of slots spaced apart from each other, a pair of substantially vertically arranged finger plates having their lower ends extending through said slots, a second frame movable with respect to said first frame, and means associated with said second frame for moving the lower ends of said finger plates toward each other to grip a brick between.

2. An improved hacking device, comprising a frame, a plurality of parallely arranged bars therein defining a pair of slots spaced apart from each other, a pair of finger plates, a perforation in each of said finger plates in alinement with each other, a locking bar extending from one side to the other of said frame through said perforations in the finger plates for holding the said finger plates securely in position, and means on the finger plates for limiting the movement thereof with respect to said bars.

3. An improved hacking device, comprising a plurality of gripping devices arranged in pairs, a pair of frames lying parallel to, but spaced apart from, each other and in which said gripping devices are mounted, said frames being movable relatively toward and from each other to operate the gripping devices.

4. An improved hacking device, comprising a frame, plurality of parallely arranged bars therein defining a pair of slots spaced apart from each other, a pair of substantially vertically arranged finger plates having their lower ends extending through said slots, a second frame lying parallel to, and movable toward and from said first frame, means for moving said frames toward and from each other, and means associated with the second frame for maintaining the finger plates in non-gripping position.

5. In a hacking device, the combination with a brick receiving table, of uprights attached to said table and provided with latch operating means, a brick carrying frame co-operating with said table, a plurality of pairs of brick engaging fingers mounted on said frame, means for retaining the fingers in non-gripping position, said retaining means engaging the latch operating means to permit the fingers to move into gripping position.

6. An improved gripping device for brick handling machines comprising a plurality of finger plates, spaced apart from each other, and arranged in pairs, means for mounting said finger plates on a line extending transversely thereof, a plurality of teeth formed in said finger plates in the portion below said pivotal mounting, said finger plates being adapted to intermesh in the non-gripping position thereof, whereby but a single thickness of material is presented.

7. An improved gripping device for

brick handling machines comprising a pair of finger plates, spaced apart from each other and arranged in pairs, means for mounting said plates on a line extending transversely thereof, a plurality of teeth formed in said plates in the portion below said pivotal mounting, said teeth being adapted to intermesh in the non-gripping position of the plates, whereby but a single thickness of material is presented.

In testimony whereof I have signed my name to this specification.

CLAUD E. FULLER