

June 16, 1925.

C. E. FULLER

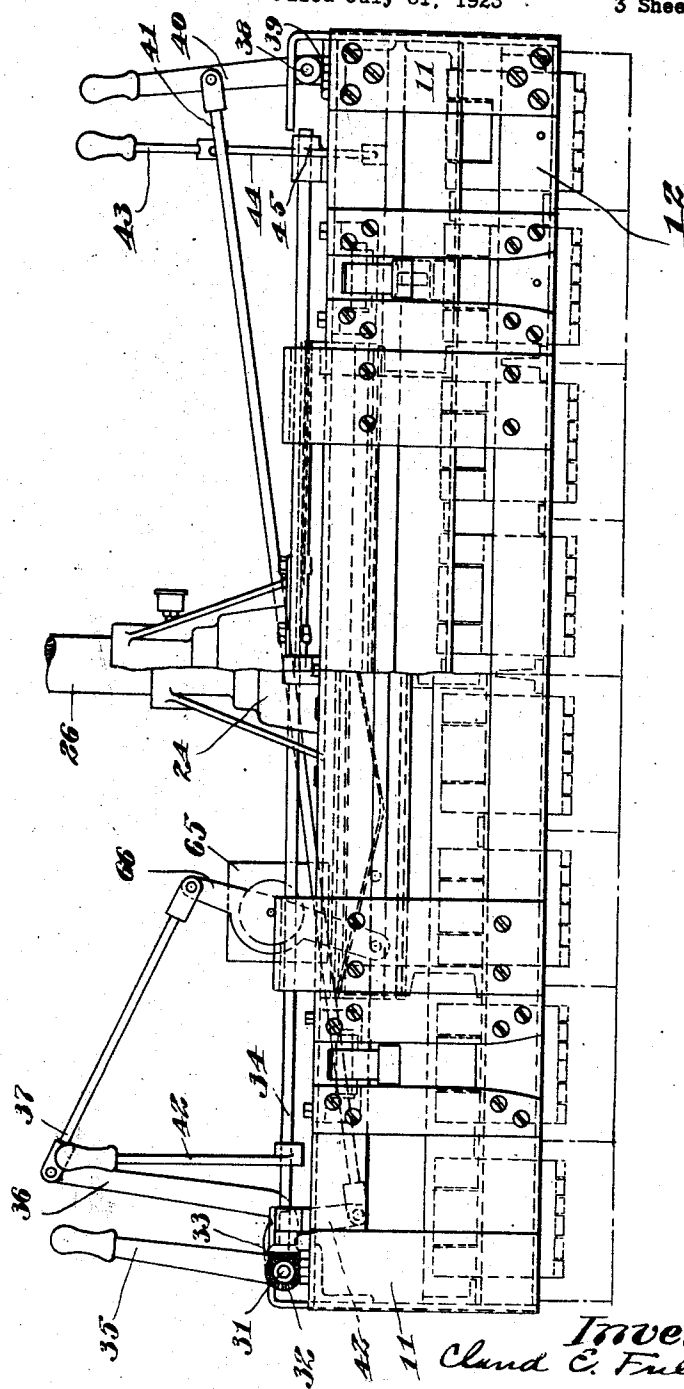
1,542,787

VALVE OPERATING MECHANISM

Filed July 31, 1923

3 Sheets-Sheet 1

Fig. 1.



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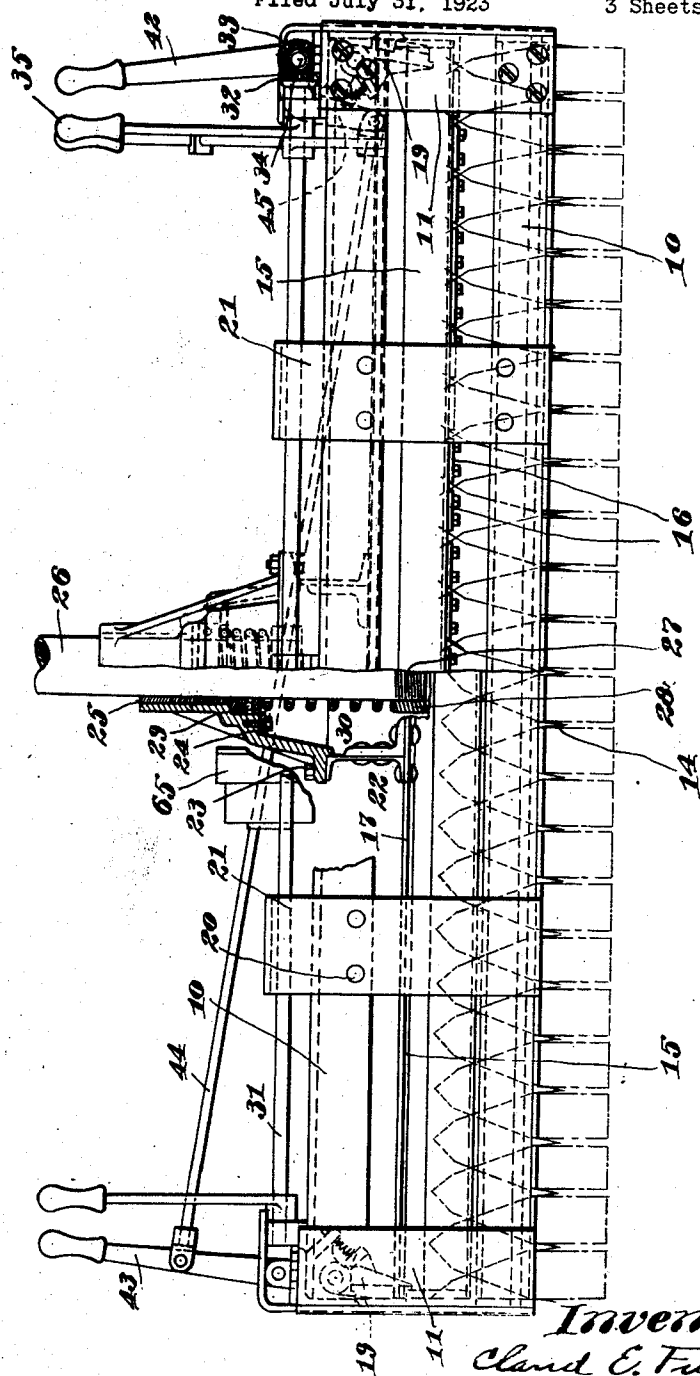
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Fig. 2.



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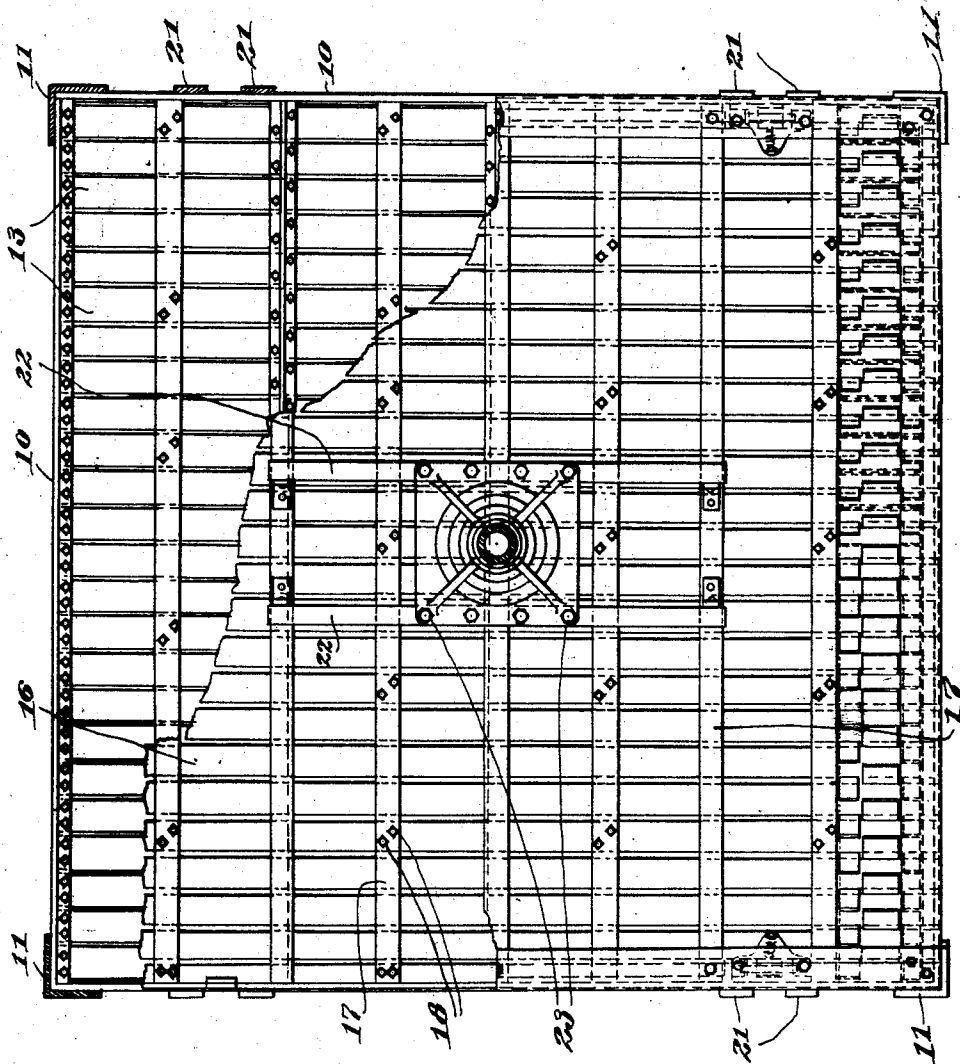


Fig. 3.

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Patented June 16, 1925.

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UNITED STATES PATENT OFFICE.

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

VALVE-OPERATING MECHANISM.

Application filed July 31, 1923. Serial No. 654,898.

To all whom it may concern:

Be it known that I, CLAUD E. FULLER, a citizen of the United States, and a resident of the city, county, and State of New York, have invented an Improvement in Valve-Operating Mechanisms, 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 the drier into units suitable for handling by mechanical kiln building or loading apparatus.

In my Patent No. 1,491,771, dated April 22, 1924, I have described and claimed the novel features of an apparatus for taking brick as they issue from a drying apparatus, preferably a pipe rack drier, and in my co-pending applications, Serial No. 608,057, filed Dec. 20, 1922, Patent No. 1,487,326, dated March 18, 1924, and Patent No. 1,510,866, dated Oct. 7, 1924, I have described and claimed apparatus associated with the first mentioned application, all the various pieces of apparatus being capable of conjoint action to convey the bricks as they issue from the drying apparatus preparatory to subsequent handling by an apparatus that transports them to a transfer car on which they are moved to a position in a kiln for the final setting.

In my present invention I have designed an apparatus for lifting and transporting parallelly arranged rows of bricks on a tiltable table and from thence to a transfer car, such apparatus having associated therewith as essential elements the plurality of rows of automatically operable brick gripping devices described and claimed in my Patent No. 1,510,886. In transporting the group of rows of bricks from the tiltable table to the transfer car I have, as described in my Patent No. 1,510,886, above referred to, provided an air cylinder for raising and lowering the lifting apparatus, but have not shown means associated with such air cylinder for operating the same either manually or automatically. In building the rows of bricks in position on the transfer car into a unit stack, it is necessary to lay, for example, one course of brick comprised of a plurality of parallelly arranged rows of brick and the next layer of brick to rest

on the first layer of brick with the bricks thereon extending at right angles thereto, this arrangement being alternated for the height of the unit stack in order to make such unit stack a self supporting unit, one not liable to derangement. It is, therefore, necessary that the lifting apparatus be capable of rotation through an angle of 360° and it is also essential that means be provided thereon for controlling the air supply to the air cylinder to lower or lift the lifting apparatus, as the case may be, regardless of the position of the lifting apparatus to the rows of bricks on the tiltable table. It is also necessary to provide means for easing the shock to the apparatus when the lifting apparatus is lowered with any degree of speed into engagement with a plurality of rows of bricks on the tiltable table and to reverse the direction of flow of air in the air cylinder to insure a rapid return of the lifting apparatus together with its load of bricks to the uppermost limit of its travel.

I have, in my present invention, devised a lifting apparatus in which the apparatus is designed to be raised and lowered by air admitted to either end of an air cylinder at will and have, as one of the principal objects of my invention, provided a system of levers whereby the air supply to the air cylinder may be controlled from either side or corner of the apparatus as the same is rotated and have, as one of the principal objects of my invention, associated with the plunger of the air cylinder a means cooperating with the air valve and with the lifting apparatus itself whereby the direction of movement of the apparatus is automatically reversed when the lifting devices on the lifting apparatus have been brought into position relative to the bricks of a plurality of parallelly arranged rows of bricks on the tiltable table.

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

In the accompanying drawings illustrating a preferred embodiment of my invention

Fig. 1 is a side elevation;

Fig. 2 is an end elevation looking to the right from Fig. 1, this view being shown partly in section to illustrate the manner of

reversing the direction of flow of air in the air cylinder, and

Fig. 3 is a plan view.

Referring to the drawings, 10 designates
 5 plates or strips of metal, such as iron or steel, secured together at their ends by angle
 irons 11 to form a rectangular frame. The
 angle members 11 extend downwardly from
 the strips 10 and at their lower ends have
 10 secured strips 12 which likewise form a rectangular frame similar in size to the rectangular frame formed by the members 10, the angle irons 11 acting as means for
 spacing the frameworks apart from each
 15 other. To the framework comprised of the members 12 is secured a plurality of parallelly arranged strips or plates 13, the space between each adjacent strip or plate 13 being
 sufficient to allow the lower end of brick
 20 gripping members 14 to protrude and extend a distance below the lower portion of the framework 11 that is determined by the length of the members 14 below their pivotal point. Mounted within the angle irons 11
 25 and between the lower end of the upper strips 10 and the lower strips 12 is a rectangular framework comprised of strips 15 of a size sufficient to form a good, but sliding, fit within the corner angle iron 11 as bearings
 30 and between a pair of oppositely arranged plates or strips 15 extends a plurality of parallelly arranged plates or strips 16 secured to cross members 17 by bolts 18, the strips 16 being of a width slightly less than the width
 35 of the strips 13 and so arranged as to bring the slot defined by adjacent strips substantially vertically over the middle portion of the strips 13, as clearly shown in Fig. 3. The upper ends of the gripping plates 14
 40 extend through the slots formed by the strips 16 and the reciprocating movement of the frame formed by the members 15, 16, and 17 serves to bring the lower ends of the gripping members 14 into the gripping
 45 position or the releasing position, as the case may be, the reciprocating frame formed by the members 15, 16, and 17 being locked against rotative movement with respect to the members 10 and 12 by the mechanism
 50 shown in dotted lines in Fig. 2 at 19 and as clearly described and claimed in my co-pending application, Serial No. 562,250, and above referred to. On each side of the apparatus and secured to the plates 10 and 12
 55 by rivets 20 are plates or strips 21 whose function is to prevent the movement or bulging outward of the rectangular frames forming the apparatus. Secured to the plates or strips 17 and extending transversely across, and attached to, several of the same in any desired manner are members
 60 22 which are secured by bolts or rivets 23 a base plate 24.

The base plate 24 is provided with a vertically arranged hole in which is fitted a

bearing 25 through which bearing is slidably mounted the vertically arranged shaft 26 and by means of which the entire apparatus may be lifted. The lower end of the shaft 26 is threaded at 27 to receive a collar
 70 28. Arranged within the base plate 24 and beneath the bearing sleeve 25 is a roller thrust bearing 29, and between the thrust bearing 29 and the upper face of the collar 28 is a coil spring 30 which tends to move
 75 the shaft 26 downwardly through bearing sleeve 25 while the thrust bearing 29 allows the base plate 24 and all parts carried thereby to be rotated in a horizontal plane on the shaft 26. The upper end of the shaft 26 acts as a plunger in an air cylinder
 80 (not shown), the usual arrangements for applying air to either end of the cylinder to cause a movement in either direction of the shaft 26 being employed though, as the air cylinder itself and the valve arrangement therefor do not concern the present invention, they have not been shown and will not
 85 be further described. It is, however, essential that the admission of air to the air cylinder be controlled by an operator who handles the lifting apparatus, and it is necessary that such control be exercised by the operator regardless of the position of the lifting apparatus on the shaft 26; that is, in
 90 loading a transfer car with a plurality of brick, it is necessary, in order to obtain a self supporting unit pile, that the layers of brick on such car be laid at right angles to each other and for this reason the lifting
 95 apparatus has been so constructed as to be rotatable on the shaft 26. The valve mechanism for controlling the admission of air to either end of the air cylinder (not shown) is secured to the plates 17 and such valve mechanism is indicated by the reference numeral 65, such mechanism 65 including a
 100 pivoted lever 66 and by means of which the air may be directed to either the top or lower end of the air cylinder (not shown). Located at one end of the lifting apparatus, in suitable bearings, is a shaft 31 provided at one end with a bevel pinion 32 which
 105 meshes with a bevel pinion 33 secured to one end of a shaft 34 that is rotatably mounted in suitable bearings on the adjacent side of the lifting apparatus and at right angles to the shaft 31. Secured to the shaft 31 at
 110 suitable intervals along its length and extending upwardly therefrom are operating handles 35 and by means of which the shaft 31 may be rotated through an angle sufficiently large to accomplish the purpose for which it was designed, this rotary movement of the shaft 31 causing, through the
 115 bevel pinions 32 and 33, a corresponding angular movement of the shaft 34. Secured to the shaft 31, and extending upwardly therefrom, is a lever 36 to the upper end of which is pivotally mounted one end of a link
 120
 125
 130

37, the other end of this link 37 being pivotally attached to the upper end of the control lever 66 on the air valve mechanism 65. By utilizing either of the handles 35, the lever 66 may be operated through the medium of the shaft 31, lever 36, and link 37 to control the valve mechanism 65 and thereby control the admission of air to the air cylinder (not shown). The above construction, as so far described, will make it possible to control the valve mechanism 65 from one side or end of the lifting device. To control such mechanism from the opposite side or end of the lifting device, there is provided a shaft 38 rotatably mounted in suitable bearings 39, and secured to said shaft and extending upwardly therefrom is an operating handle 40 to which is pivotally mounted one end of a link 41, the other end of this link being pivotally attached to the lower end of a downwardly extending arm 42 attached to the shaft 31 so that movement of the handle 40 will cause, through the link 41, a corresponding movement of the shaft 31 and, therefore, a movement of the lever 66 of the valve mechanism 65. Secured to the shaft 34 at any desired point or points is a handle 42 and by means of which the shaft 34 may be rotated, which rotation through the bevel gears 33, 32, transmitting like rotary motion to the shaft 31, and therefore operating in the manner above described, lever 66 of the valve mechanism 65. On the opposite side or end of the lifting device from the side on which is located the shaft 34 is pivotally mounted an operating handle 43 to which is pivotally attached one end of a connecting rod 44, the other end of this connecting rod being pivotally attached to the lower end of a crank 45 that is secured to the shaft 34, and it is obvious that movement of the upper end of the operating handle 43 will cause a rotary movement through a predetermined angle of the shaft 34 which, in the manner above described, will cause a movement of the lever 66 of the valve mechanism 65. Further, it will be obvious that, regardless of the relative angular position of the lifting device in a horizontal plane with respect to the shaft 26, the operator may, without altering his position, rotate, manually, the lifting device on the shaft 26 and may control the valve mechanism 65 by means of any of the numerous operating handles disposed about the periphery of the lifting device.

Assuming that the lifting device is to be utilized as described and claimed in the co-pending application, Serial No. 737,750, filed September 15, 1924, in the name of Raymond C. Penfield and Claud E. Fuller, and that it is desired to transfer a layer or course of brick from the collecting table to

the transfer car, the operator will bring the lifting device into position over the collecting table, as described in said application, will cause the lifting device to be moved vertically and then in a horizontal plane over the transfer car and will then so operate the mechanism as to lower the car into unloading position. During this downward movement of the lifting device to unloading position, the operator rotates the lifting device on the shaft 26 to properly position the layer or course of brick on the transfer car, and when the lifting device is vertically over the transfer car, the one or the other of the operating handles is moved to control the valve mechanism in such a manner as to allow air to pass to the proper end of the air cylinder referred to to lower the lifting device onto the transfer car. When the car has reached its lowermost position, and the release mechanism for the lifting device has been operated, the operator, by properly manipulating one or the other of the various operating handles, causes admission of air to the proper end of the air cylinder to cause a lifting upward of the lifting device and this circle of operations is continued indefinitely.

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 within wide limits without departing from the spirit of the invention.

Having thus described my invention, what I claim as new is:

1. An improved valve controlling mechanism comprising a valve, a control lever pivotally mounted thereon, a plurality of shafts arranged in the form of a parallelogram, and means interlinking the said shafts whereby the valve mechanism is controlled from either side of the parallelogram.

2. An improved valve controlling mechanism for brick lifting devices and the like comprising a shaft, means for rotating the same through a predetermined angle, an arm secured to said shaft, a valve including a pivotally mounted lever, a connecting rod extending between the pivotally mounted lever and the arm, a shaft mounted parallel to the first shaft, an operating handle secured to said second shaft, and operative connections extending between said operating handle and the first shaft whereby angular movement of the operating handle causes a corresponding angular movement of the first said shaft.

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

CLAUD E. FULLER.