

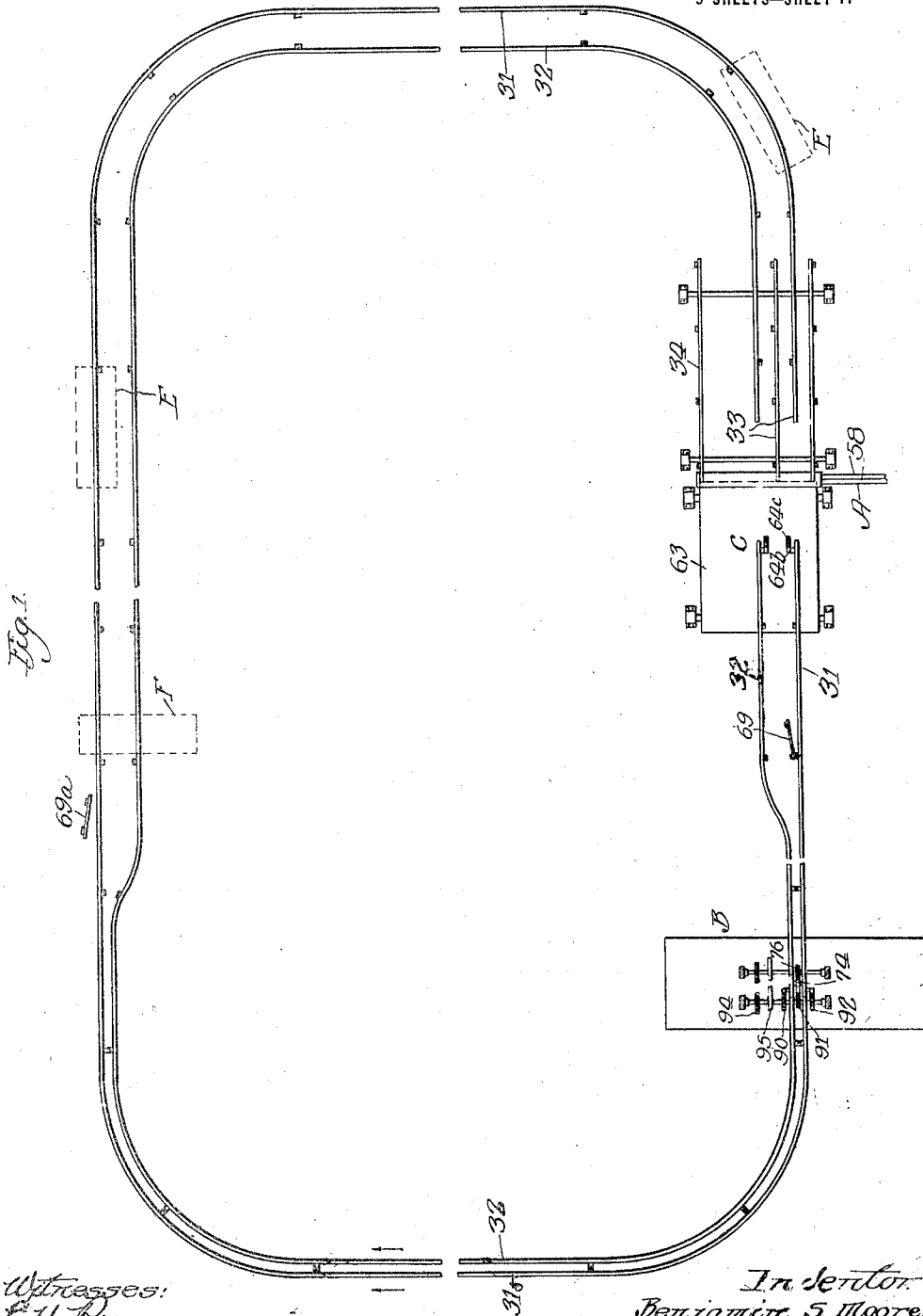
B. S. MOORE.
BRICK CONVEYER.

APPLICATION FILED MAY 6, 1916. RENEWED NOV. 29, 1918.

1,303,359.

Patented May 13, 1919.

9 SHEETS—SHEET 1.



Witnesses:
E. H. Rosson.
Lewis J. Frost

Inventor.
Benjamin S. Moore.
By *W. H. Johnson*
Atty

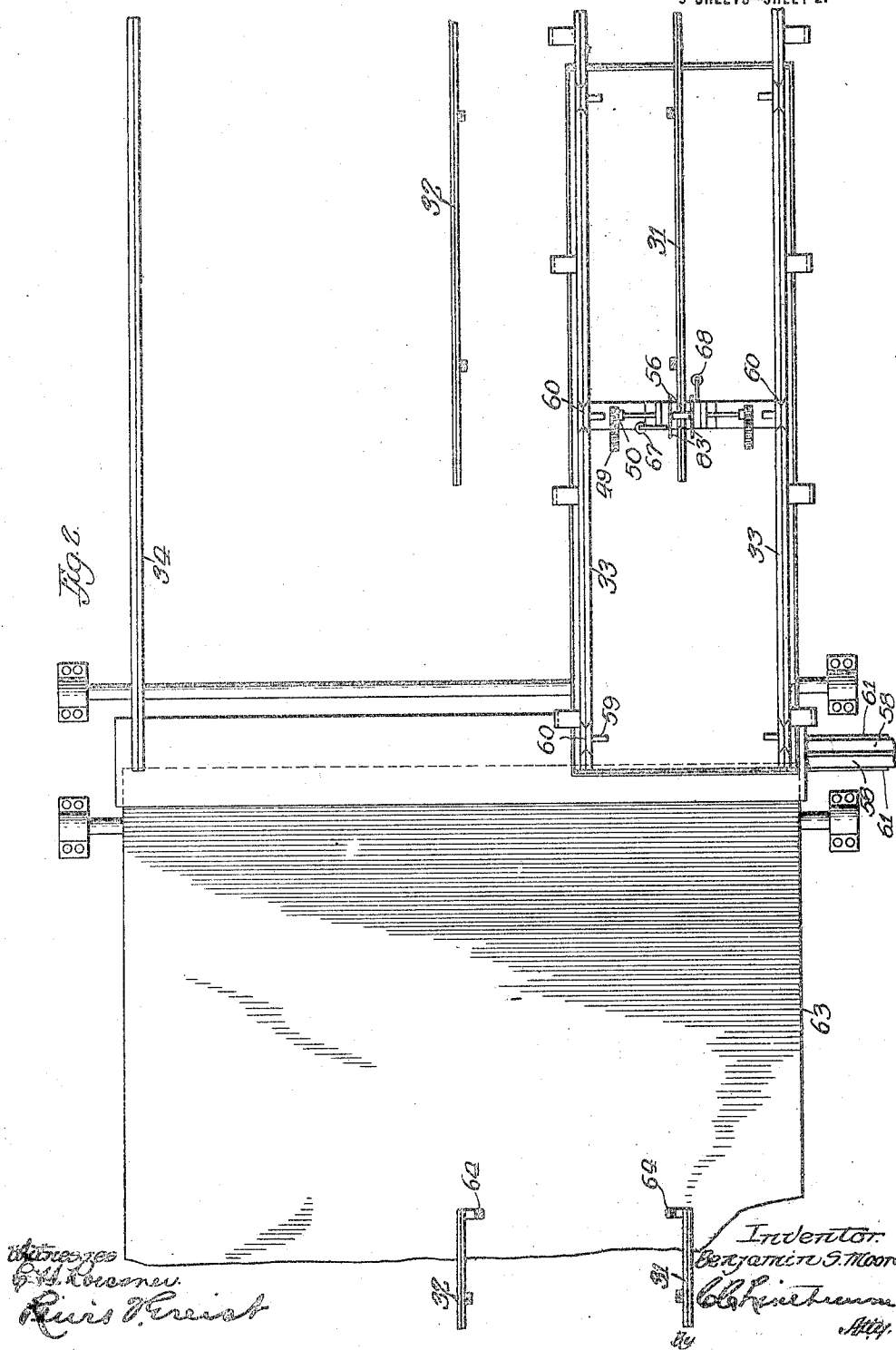
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9 SHEETS—SHEET 3.

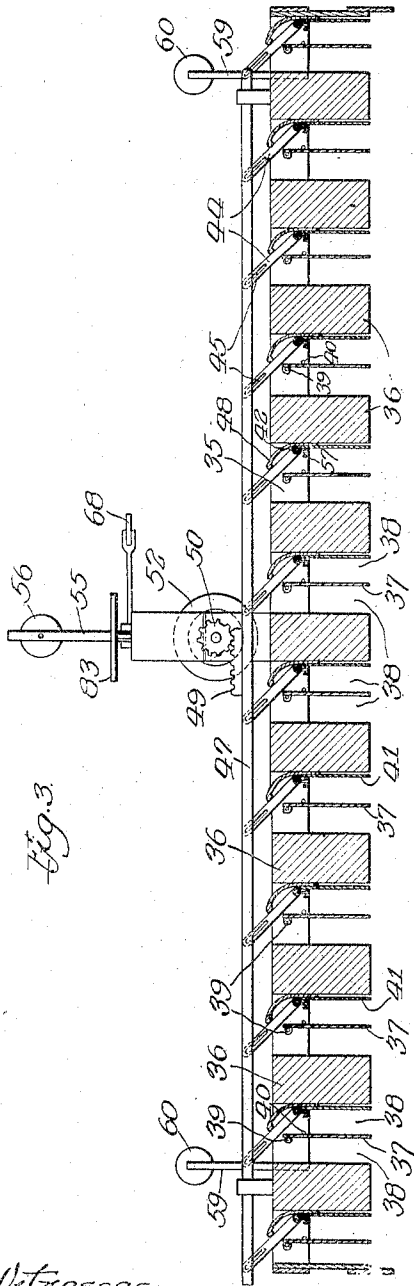


Fig. 3

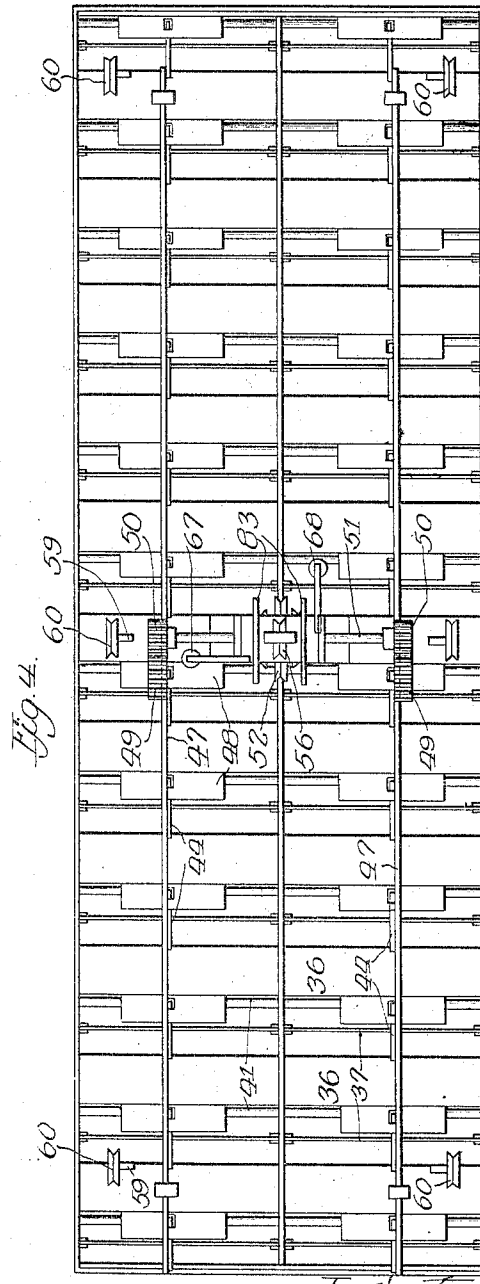


Fig. 4.

Witnesses:

C. H. Rossoner.

Russ J. Geist

Inventor
Benjamin S. Moore.

By *B. C. Kitchin*
Atty.

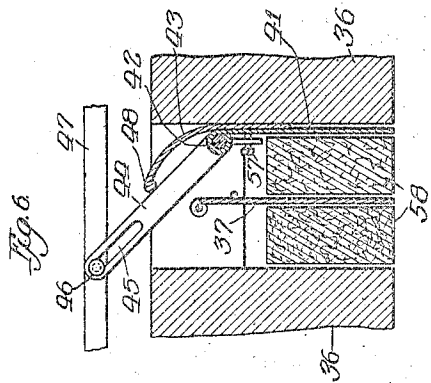
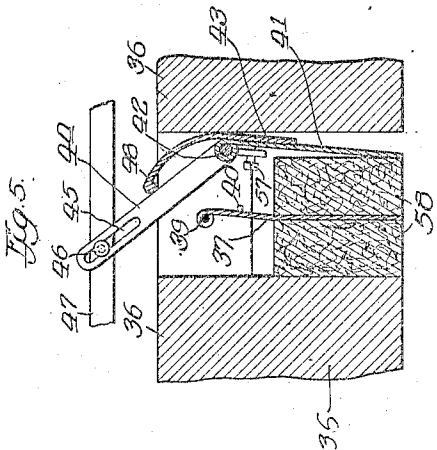
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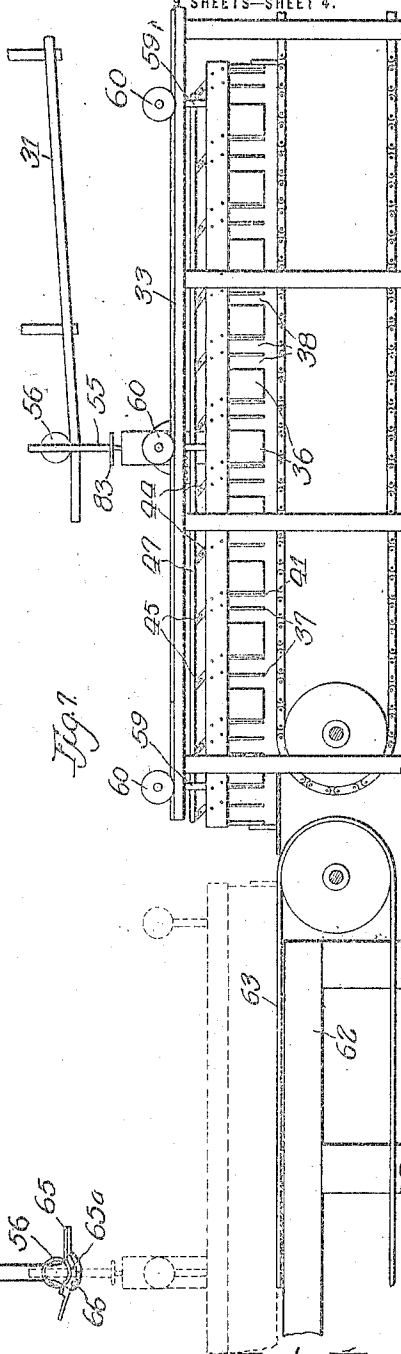
1,303,359.

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9 SHEETS—SHEET 4.



Witnesses:
C. H. Reesner.
Lewis Priest



Inventor:
Benjamin S. Moore
By C. C. Kitchin
Atty.

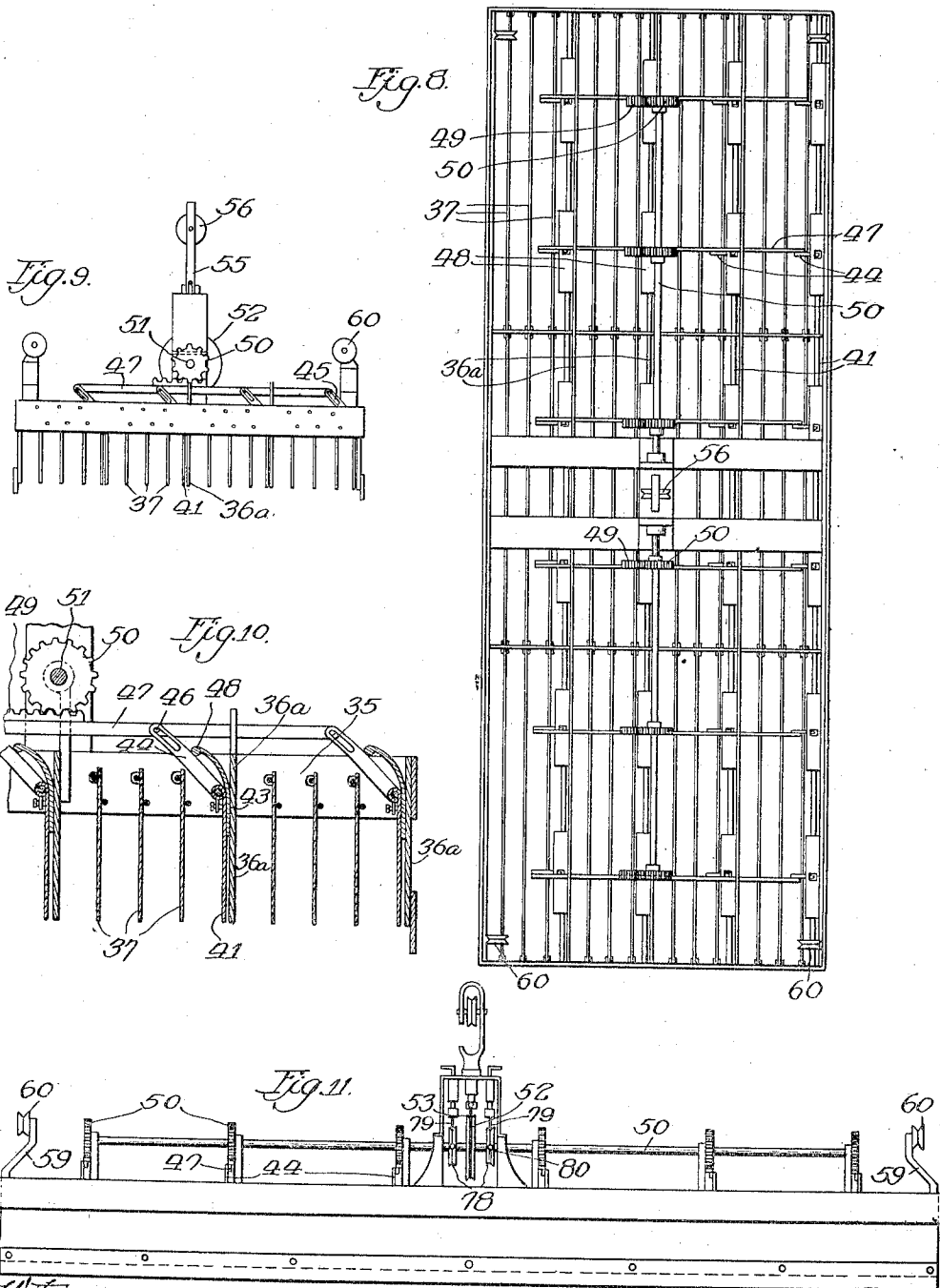
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9 SHEETS—SHEET 5.



Witnesses:
B. H. Rosener.
Lewis Kreist

Inventor:
Benjamin S. Moore.
By *Chas. H. H. H. H.*
Atty.

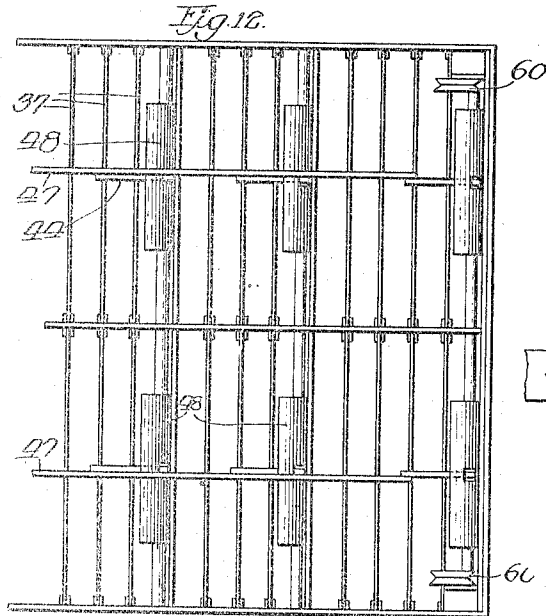
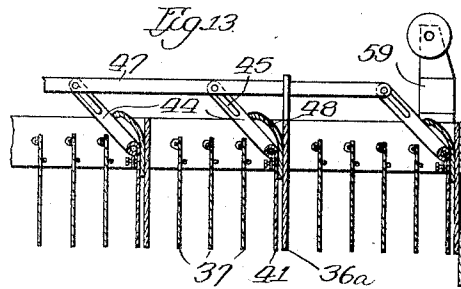
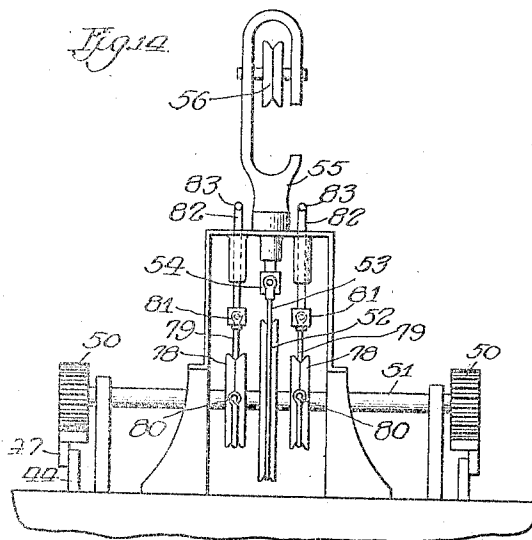
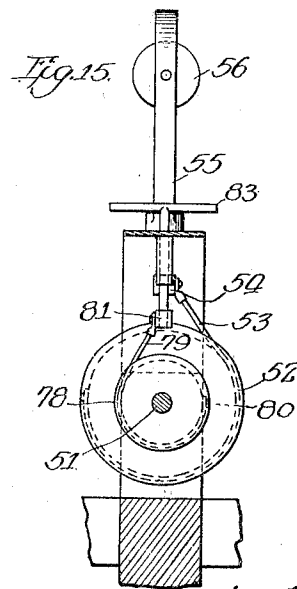
B. S. MOORE.
BRICK CONVEYER.

APPLICATION FILED MAY 6, 1916. RENEWED NOV. 29, 1918.

1,303,259.

Patented May 13, 1919.

9 SHEETS—SHEET 6.



Witnesses:
C. H. Roemer
Lewis Kriest

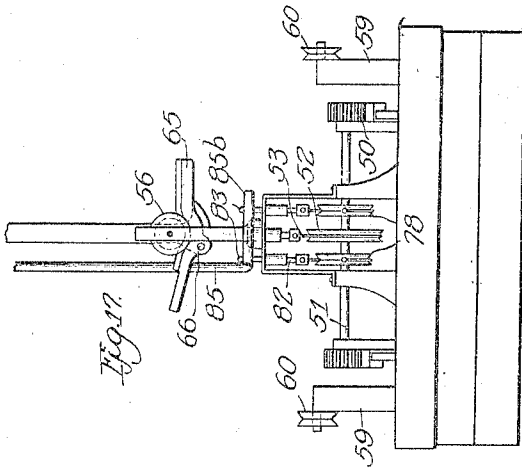
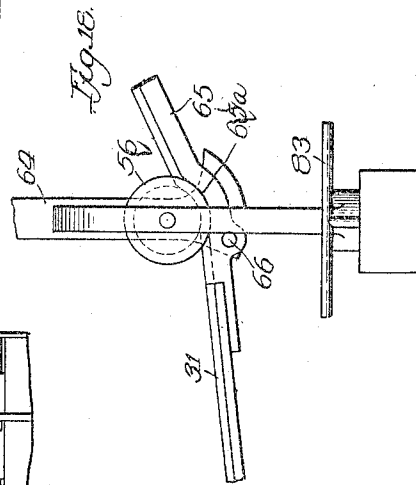
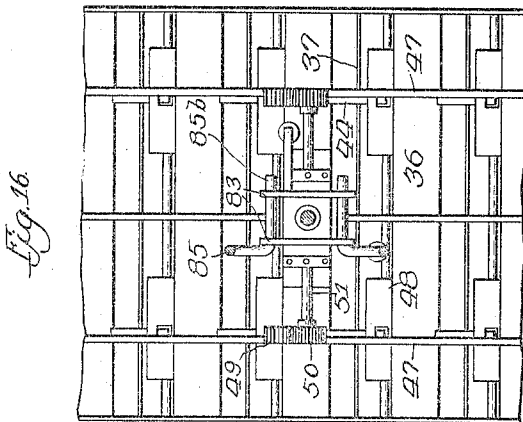
Inventor
Benjamin S. Moore.
By R. C. Knechtum
Atty.

B. S. MOORE.
BRICK CONVEYER.

APPLICATION FILED MAY 6, 1916. RENEWED NOV. 29, 1918.

1,303,359.

Patented May 13, 1919.
9 SHEETS—SHEET 7.



Witnesses:
C. H. Rosener.
Lewis Priest

Inventor:
Benjamin S. Moore.
By C. H. Rosener
Atty.

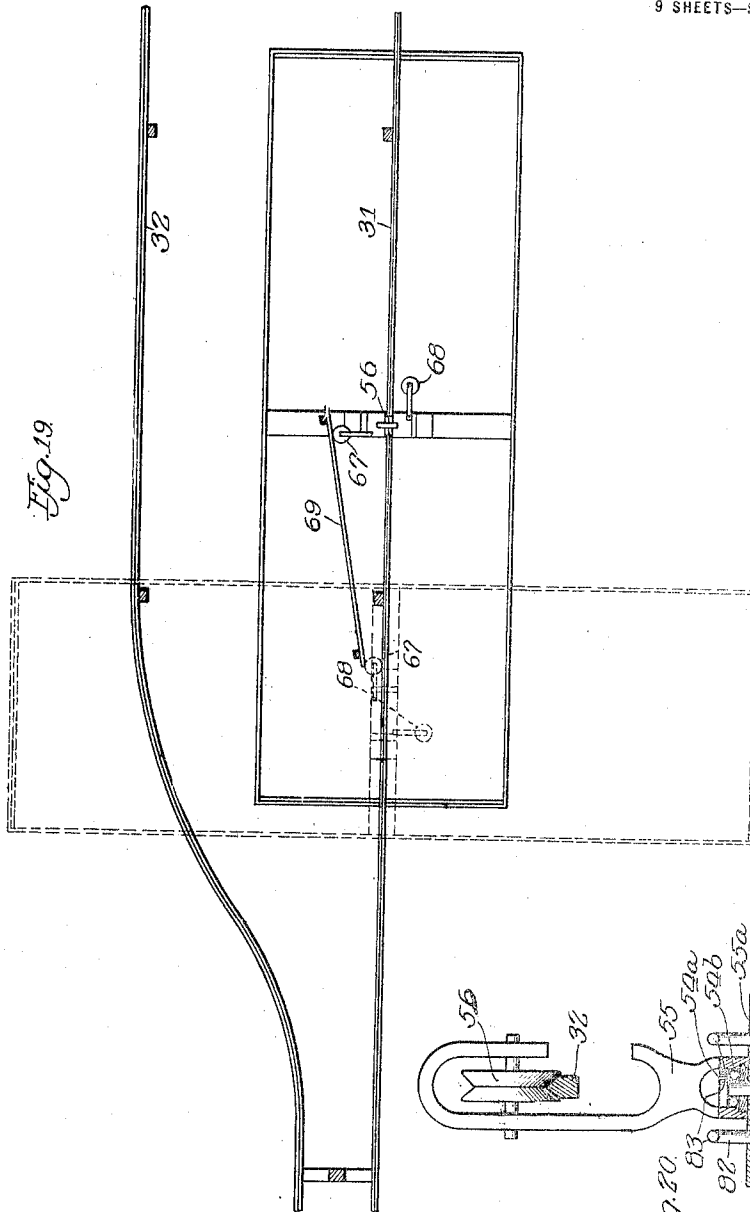
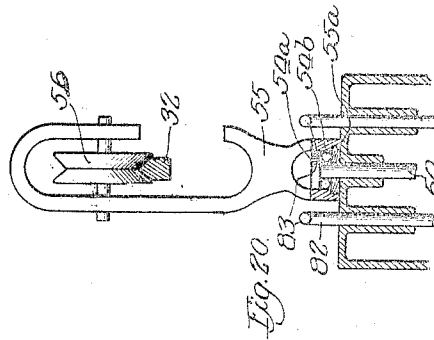
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Patented May 13, 1919.

9 SHEETS—SHEET 8.



Witnesses:
C. H. Reasoner.
Lewis J. Kreist

Inventor
Benjamin S. Moore
By *W. C. Kintner*
Atty.

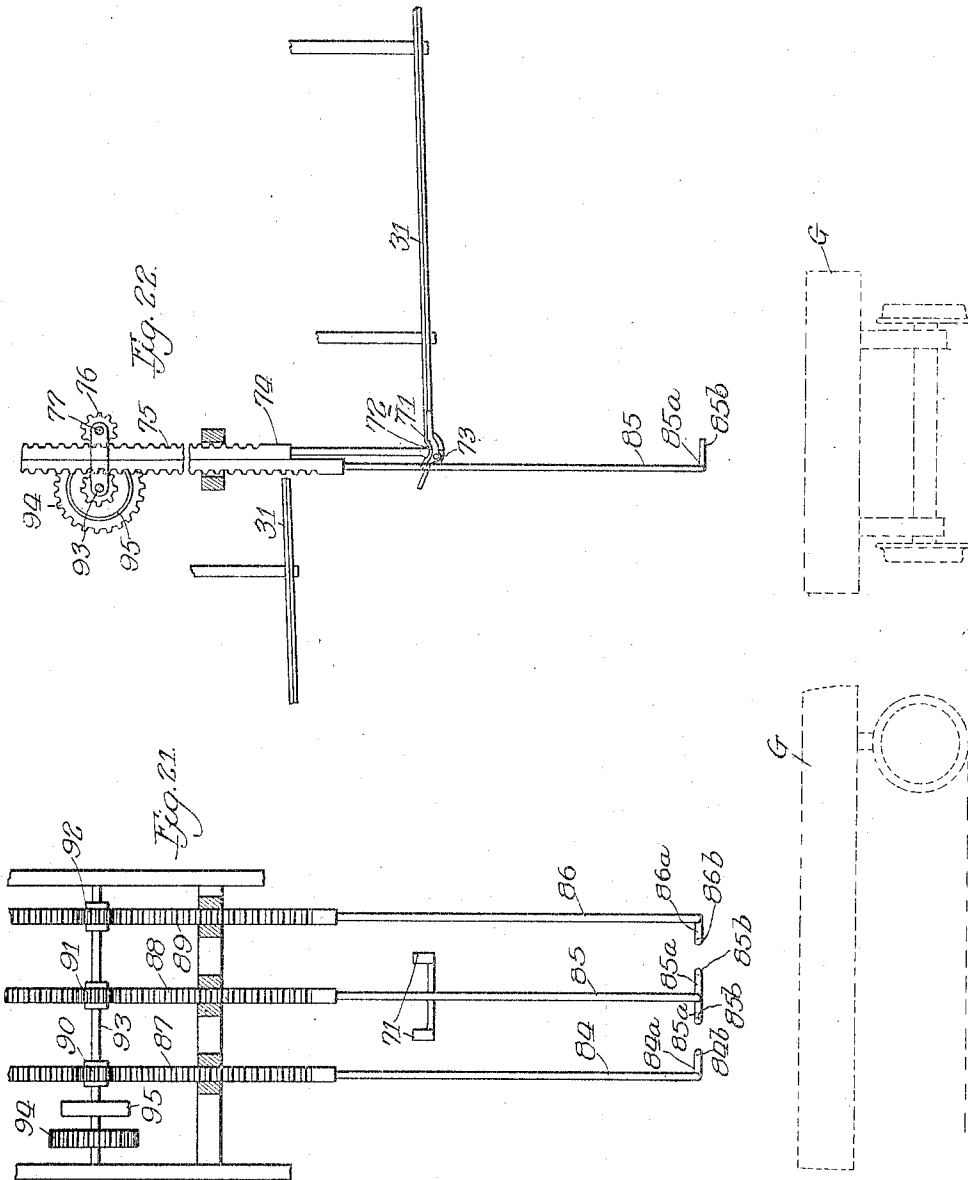
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BRICK CONVEYER.

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1,303,359.

Patented May 13, 1919.

9 SHEETS—SHEET 9.



Witnesses:
C. H. Keesner.
Lewis Kreist

Inventor.
Benjamin S. Moore
By *B. S. Moore* Atty.

UNITED STATES PATENT OFFICE.

BENJAMIN S. MOORE, OF JOLIET, ILLINOIS, ASSIGNOR TO RAYMOND C. PENFIELD, OF NEW YORK, N. Y.

BRICK-CONVEYER.

1,303,359.

Specification of Letters Patent.

Patented May 13, 1919.

Application filed May 6, 1916, Serial No. 95,829. Renewed November 29, 1918. Serial No. 264,720.

To all whom it may concern:

Be it known that I, BENJAMIN S. MOORE, a citizen of the United States, residing at Joliet, in the county of Will and State of Illinois, have invented certain new and useful Improvements in Brick-Conveyers, of which the following is a specification.

The invention has for its object certain improvements, as will hereinafter appear, in mechanism for conveying and handling brick, and especially adapted for the receiving of the bricks as they are delivered from the molding machine, carrying the same in bulk to another point, and depositing them on cars in suitably arranged layers for future handling.

The invention comprises, among other novel constructional features, peculiarly efficient means for grasping the bricks individually, carrying the same, and depositing them, without injury to the soft bricks, the operation being mechanical and largely automatic, whereby are attained results wholly free from uncertainty, inaccuracy and non-uniformity in handling which would follow from lack of manual skill, miscalculation or mistake on the part of laborers in charge of such work.

In order that the invention may be readily understood a preferred embodiment of the same is set forth in the accompanying drawings and in the following detailed description based thereon. Obviously, however, the invention is susceptible of embodiment in other and varied constructional forms, wherefore the drawings and description are to be taken in an illustrative and not in an unnecessarily limiting sense. In the drawings—

Figure 1 is a plan showing diagrammatically the arrangement or layout;

Fig. 2 is an enlarged view of the lower medial portion of Fig. 1;

Fig. 3 is a longitudinal section through one of the carriers;

Fig. 4 is a plan view of the same carrier;

Fig. 5 is an enlarged detail of the brick grasping mechanism in lifting position;

Fig. 6 is a similar view in releasing position;

Fig. 7 is a side elevation of the carrier in position to begin loading;

Fig. 8 is a plan view of a second carrier arranged to cooperate with the first;

Figs. 9 and 10 are respectively an end elevation and a transverse section through Fig. 8;

Fig. 11 is a side elevation of the carrier shown in Fig. 8;

Fig. 12 is a fragmentary top plan of the carrier shown in Fig. 8;

Fig. 13 is a fragmentary longitudinal section through Fig. 12;

Fig. 14 illustrates the detached mechanism for suspending the carrier;

Fig. 15 is a view taken at right angles to Fig. 14;

Fig. 16 is a central top plan fragmentary view of a carrier showing in sectional plan the lowering mechanism;

Fig. 17 is a side elevation of the lowering mechanism;

Fig. 18 is an enlarged detail of the lifting and transferring mechanism;

Fig. 19 is a diagrammatic view illustrating the mechanism for turning the carrier;

Fig. 20 is a detail sectional view showing the swivel mounting of the carrier hanger;

Fig. 21 is a side elevation of the releasing mechanism; and

Fig. 22 is an edge elevation of the same.

Diagrammatically viewed (Fig. 1) the invention, in the embodiment here shown as an illustration, contemplates a continuous route from the point of loading the carriers from the mold at A, past the point of unloading the same on to the cars at B, and thence around again to the point of loading.

In practice the bricks are received from the mold delivery at A in tandem uniformly positioned, *e. g.* end first, on edge. When placed on the cars at B, successive layers after the first two are advantageously arranged at right angle to the preceding layer to facilitate firing and unloading. To accomplish the proper disposition of the bricks on the cars, it is therefore preferable to turn certain of the carriers through 90 degrees after loading and prior to unloading, and in order that they may occupy symmetrical

positions relative to the mold delivery and to the cars, two tracks are provided, one for the carrier that is loaded from the side, and the other for the one which is loaded from the end.

Each carrier, as will be hereinafter more fully described, is suspended from a centrally disposed swiveled pulley which travels on an aerial mono-rail, the side-loaded carriers on the mono-rail 31 and the end-loaded carriers on the other mono-rail 32, the two mono-rails being substantially parallel. In order that sufficient stability may be secured while being loaded, the side-loaded carriers are temporarily transferred from the one point suspension on the mono-rail 31 to a four point suspension on the duo-rails 33—33, while the end-loaded carriers are similarly shifted for the time being to the duo-rails 33—34. The mono-rails are inclined so that the carriers travel by gravity from the unloading point to the loading point. After loading at the low point A the carrier is elevated by mechanical means to the high point at C, runs by gravity to the point B, is lowered mechanically and after discharging its load is again elevated to the aerial and returns by gravity to the loading point.

Referring, for a clearer understanding of the construction, arrangement and operation of the side-loaded carrier, to Figs. 3 to 7 inclusive, it will be observed that it consists of a frame 35 carrying at intervals spacing blocks 36, providing therebetween transversely extending spaces divided by means of the gripping sheets 37 into brick-receiving spaces 38. The metallic sheets 37 are pivotally suspended at 39 and pins 40 provide abutment for the rear of the sheet. Other brick gripping sheets 41 are suspended at 42 adjacent the spacing block 36 and bear to the rear against the lower ends of leaf springs 43. Links 44 slotted at 45 are pivoted at 42 and pinned at 46 to the operating rods 47, the upper ends of the leaf springs 43 being bent over at 48 and bearing against the links 44. The operating rods 47 each carries a rack 49 in mesh with a pinion 50 mounted on each end of the shaft 51 upon which is fixed a sheave 52 traversed by a cord or band 53 having one end fixed to the sheave and the other extending therefrom to a point of engagement at 54 with the stem of a hanger 55 which, as more clearly shown in Fig. 14, carries a grooved pulley 56 for traveling on the aerial mono-rail 31.

It will be readily understood that, the weight of the carrier being supported from the mono-rail 31 by means of the sheave 56, the strain upon the cord 53 will tend to rotate the sheave 52 and the pinion 50, carrying the operating rod 47 to the right (Fig. 3), thus pressing upon the bent over portion 48 of the leaf spring 43 and causing

the lower portion of said leaf spring to press against the gripping sheet 41. If the carrier is empty, as is the case when it approaches the loading point, the inward movement of the gripping sheet 41 is limited by means of the stop 57 which is readily adjustable. If, however, the spaces 38 between the gripping sheets 37 and 41 are occupied by bricks 58 (Fig. 5) the gripping sheet 37 will be moved slightly to the left and the sheet 41 will press against the bricks thus clamping the bricks between the two gripping sheets.

The end-loaded carriers correspond as to all the essentials of construction above described with those which are side-loaded except that the spacing blocks 36 are omitted and substituted by a less number of spacing plates 36^a rigidly mounted on the frame 35. In this construction there are illustrated three of the suspended gripping sheets 37 instead of one as in the former illustration, there being as in the former case, one of the gripping sheets 41 pivoted and lying adjacent the spacing plate 36^a. The leaf springs 43 are likewise here employed bearing with their upper ends at 48 upon the links 44 having a pin and slot connection at 46 with the operating rods 47 provided with the racks 49 meshing with the pinion 50 on the shaft 51 of the sheave 52 connected by the cord 53 to the hanger 55 provided with the carrying pulley 56.

As more clearly shown in Fig. 20, the hanger 55 has a swivel connection with its shank 54, the latter being provided with a head 54^a which bears upon anti-friction balls 54^b confined within the hanger 55 by means of the bearing plate 55^a. This swivel connection is preferably employed in connection with both carriers although its special function is in connection with side-loaded carriers which must be turned through an angle of 90 degrees before being unloaded.

Each of the side-loaded carriers is provided near its four corners and also preferably in its medial portion with standards 59, carrying pulleys 60 adapted to engage the duo-rails 33—34, or 33—33 as the case may be, thus shifting the load from the mono-rails and the hanger 55 and links 44 directly to the carrier frame 35, and relieving the gripping sheets 37 and 41 of any pressure.

For convenience of reference in the further description of construction and operation side-loaded carriers will be designated by the letter E and the end-loaded carriers by the letter F. Assuming that an empty car is located at the point B and that it is desired to load the same with successive layers of bricks, a carrier E as designated in dotted lines at the lower right hand portion of Fig. 1, travels down the inclined aerial 31 suspended by its pulley 56 and as it reaches

the right hand end of the duo-rails 33—33 said rails are engaged by the pulleys 60—60 whereby the thus suspended carrier is supported against oscillation. The carrier is brought to rest at its forward end adjacent and with its first pair of brick-receiving spaces 38 in transverse alinement with the double conveyer belt 61 which conveys the bricks 58 from the molding machine. The bricks are carried through the spaces 38 until the foremost bricks reach the opposite side of the carrier, whereupon the carrier E is advanced to bring the next pair of spaces 38, 38 in line with the conveyer belt, and causes the brick receiving spaces to be filled with brick as in the first instance. This step by step advance of the carrier continues until each of the spaces 38, 38 are filled. During this step by step advance of the carrier the forward portion of the same passes over the table 62, the bricks 58 within the brick receiving spaces of the carrier resting upon a movable metallic belt 63 which overlies and is supported by said table. After having all the brick-receiving spaces filled the carrier comes to rest with its hanger 55 immediately beneath the elevator 64, its pulley 56 being engaged by the pivoted arm 65 attached at the pivotal point 66 to said elevator and provided with the recessed portion 65^a within which the pulley 56 is received. The power shaft 64^a is now actuated by any suitable means, and, by means of the rack 64^b and the pinion 64^c, the elevator 64 is moved upwardly. In so doing, as previously described, strain is put upon the band 53 thus rotating the sheave 52 and causing the pinion 50, acting through the rack 49 to move the operating bar 47 to the right, clamping each pair of bricks between the fixed spacing block or abutment 36 of the gripping sheets 37, 41, whereby the bricks are suspended within the carrier by friction alone in such manner as not to mar their soft surfaces. The pivoted arm 65 of the elevator having reached the height of the aerial mono-rail 31 (Figs. 7 and 18) the left hand end of the tilting arm is moved downwardly by engagement with the end of the mono-rail 31 and the pulley 56 runs by gravity from the tilting arm on to the mono-rail.

The carrier now moves by gravity toward the unloading point while its position at the loading table is taken by the next succeeding carrier which is also of the type E, the operation of the loading of the latter being that just described.

As previously stated, it is necessary that all of the carriers E, loaded from the side, must be turned through an angle of 90 degrees in order to properly deposit their load upon the car at the point B. To effect this turning, and the subsequent restoration of the carrier to its initial position after un-

loading, each of the carriers E is provided with rollers mounted to turn upon vertical axes as clearly shown in Fig. 19. These turning rollers 67, 68 are arranged at a position relative to the center line of the carrier and the carrier axis, which is the hanger 55, and at such a height above the carrier that the roller 67 will engage the turning switch 69 and, as the carrier advances, will cause the turning of the carrier through 90 degrees as will be clearly understood by an examination of Fig. 19, the swivel mounting of the hanger permitting of this turning of the carrier.

The carrier having been turned by the means just described from the position shown in full lines in Fig. 19 to that shown in dotted lines in said figure, it proceeds by gravity to the position indicated in Fig. 1 above the car G (Fig. 22) upon which its load is to be deposited. Here its supporting pulley 56 runs from the aerial 31 on to the transfer arm 71 having the recessed portion 72 and pivoted at 73, off center, to the lowering device 74 which is provided with a rack 75 meshing with the pinion 76 suitably driven from the power axle 77. By this lowering device the carrier E is lowered until it reaches a position with the lower surface of its load of bricks resting upon the car whereupon the gripping pressure upon the bricks by means of the gripping sheets 37, 41 is relieved and the bricks deposited in the manner which will now be described.

Having reference particularly to Figs. 14 and 17, it will be seen that the shaft 51 of the pinions 50 is, in addition to the sheave 52, provided with a pair of sheaves 78 disposed one on each side of the sheave 52. These sheaves are provided with bands or ropes 79 each secured at 80 to its sheave 78 and extending therefrom partially around said sheave to a connection at 81 with a releasing rod 82 having a T-head 83. Arranged alongside the lowering device 74 are three releasing elements 84, 85 and 86 (Figs. 21, 22). These releasing elements are respectively provided at 87, 88 and 89 with racks engaging severally with pinions 90, 91 and 92 upon the common power shaft 93 suitably driven as through the intermediary of a gear 94, a brake or other restraining device being indicated at 95. The lower end of each releasing device is horizontally bent at 84^a, 85^a and 86^a respectively and then offset in a horizontal extension 84^b, 85^b and 86^b, the releasing device 85 being provided with duplicate portions 85^a and 85^b.

The carrier E is lowered by means of the device 74, its load being carried by its pulley 56, until the T-heads 83 of the releasing mechanism of the carrier engage over the portions 85^b, 86^b, the lower faces of the bricks carried by the carrier being at this

time in contact with the floor of the car. The releasing devices 84, 85 and 86 thereupon move upwardly and by means of the bands or cords 79, acting through the sheave 78, the shaft 51 and the pinion 50, the operating rod 47 is moved to the left, the pressure being taken off of the portions 48 of the leaf springs 43, relieving the gripping sheets 37 and 41 and freeing the bricks 58 from their friction grip. The carrier is then lifted by means of the devices 86 until the lower ends of the spacing blocks 36 and the gripping sheets 37, 41 are clear of the bricks which rest upon the car, whereupon the devices 84, 85, 86, cease their upward movement and the carrier is then lifted to the elevated portion 31 of the aerial to which it is transferred in the same manner as described at the point C after loading, and runs by gravity on the aerial 31 until it reaches the turning switch 69^a (upper portion of Fig. 1) where it is again turned through an angle of 90 degrees and proceeds on its way by gravity to receive a fresh load at the point A.

The next carrier, which is also of the E type, is loaded and transferred and unloaded in the same manner, wherefore it follows that the two lower layers of bricks upon the car G are similarly positioned with spaces therebetween corresponding to the spacing blocks 36 of the carrier. After the first two layers, the next carrier is of the F type loaded from the end, and successive carriers alternate so that the subsequent layers of bricks on the carrier after the first two are arranged in criss-cross relation, and alternately with spaces corresponding to those in the first two layers.

The carriers F travel upon the aerial 32 and after being transferred therefrom to the duo-tracks 33, 34 at the loading point, are loaded in precisely the same manner as the carrier E. They are then lifted in the same manner to the aerial 32 at the point C and run by gravity to the unloading point. As these carriers already occupy a position longitudinally of the track they are not turned through an angle of 90 degrees and consequently there is no provision made in this carrier of turning pulleys such as 67 and 68 of the type E carriers, and neither is there provided a turning switch corresponding to 69. The carriers F are lowered, the bricks released, and the carriers again elevated and transferred to the aerial 32 after unloading in precisely the same manner as that described with reference to the carriers E, except that they are engaged between the members 84^b, 85^b instead of between the members 85^b, 86^b, the center lines of each pair corresponding to the aerials 32 and 31 respectively.

I claim:

1. In conveyers for bricks and the like, the combination with conveying tracks, of carriers, traveling thereon between loading and unloading points, said carriers consisting in different types, one type having means to receive its load transversely and the other type having means to receive its load longitudinally.

2. In conveyers for bricks and the like, the combination with a pair of tracks leading past loading and unloading points, of a type of conveyer having means to receive its load transversely and another type of conveyer having means to receive its load longitudinally, each type of carrier arranged to travel on its own track, and means to turn one type of carrier through a right angle intermediate the loading and unloading point to correspondingly vary the lay of successive courses when unloaded.

3. In conveyers for bricks and the like, the combination with a pair of aerial mono-rails forming tracks leading past loading and unloading points, one type of carrier having means to receive its load transversely, and another type having means to receive its load longitudinally, one type of carrier provided with swivel mounted suspending means traveling on the track, and means to turn said carrier on its suspending device through a right angle intermediate the loading and unloading points to correspondingly vary the lay of successive courses when unloaded.

4. In conveyers for bricks and the like, the combination with parallel tracks of different types of carriers traveling on each track, one type of carrier having means to engage and lift a plurality of bricks longitudinally and the other type of carriers having means to engage and lift a plurality of bricks transversely, and mechanism permitting the unloading of said two types of carriers with their respective load of bricks stacked at right angles to each other.

5. In conveyers for bricks and the like, the combination with conveying tracks, of carriers, traveling thereon between loading and unloading points, said carriers consisting in different types, one type having means to receive its load transversely and the other type having means to receive its load longitudinally, in combination with means automatically actuated by the initial lifting of the carrier at the loading point to frictionally grip a plurality of bricks, and means automatically actuated by the initial lifting of the carrier at the unloading point, to release said plurality of bricks.

6. In conveyers for bricks and the like, the combination of an inclined track in two sections, one leading from an unloading

point to a loading point and the other from the loading point to the unloading point, a carrier adapted to travel by gravity on said track, means providing for the loading of the carrier at the low end of the first track section, means to elevate the loading carrier to the high end of the second track section, means providing for the unloading of the carrier at the low end of the second track section, and means to elevate the unloaded carrier to the high end of the first track section, means automatically actuated by the initial lifting of the carrier at the loading point to frictionally grip the bricks, and means automatically actuated by the initial lifting of the carrier at the unloading point to release the grip on the bricks.

7. In conveyers for bricks, and the like, the combination with parallel tracks of different types of carriers traveling on each track, one type of carrier having means to engage and lift a plurality of bricks longitudinally and the other type of carriers having means to engage and lift a plurality of bricks transversely, and mechanism permitting the unloading of said two types of carriers with their respective load of bricks stacked at right angles to each other, in combination with means actuated automatically by the initial lifting of the carrier at the loading point to grip a plurality of brick and means automatically actuated at the unloading point to release the load of brick.

8. In conveyers for bricks and the like, the combination of an aerial mono-rail forming an inclined track in two sections, one leading from an unloading point to a loading point, a carrier suspended on said mono-rail and adapted to travel by gravity on said track, means providing for the loading of the carrier at the low end of the first track section, means to elevate the loaded carrier to the high end of the second track section, means providing for the unloading of the carrier at the low end of the second track section, and means to elevate the unloaded carrier to the high end of the first track section, means automatically actuated by the initial lifting of the carrier to the mono-rail at the loading point to frictionally grip the bricks, and means automatically actuated by initial lifting of the carrier at the unloading point to release the grip on the bricks.

9. In conveyers for bricks and the like, the combination of a pair of aerial mono-rails forming each an inclined track in two sections, one leading from an unloading point to a loading point, and the other from the loading point to the unloading point, carriers adapted to be suspended from said mono-rails and travel by gravity thereon, one of said conveyers being of a type having

means to receive its load transversely, and another of a type having means to receive its load longitudinally, means to turn one type of carrier through a right angle intermediate the loading and unloading points to correspondingly vary the lay of successive courses when unloaded, means providing for the loading of the carriers at the low end of the first track section, means to elevate the loaded carriers to the high end of the second track section, means providing for the unloading of the carriers at the low end of the second track section, and means to elevate the loaded carrier to the high end of the first track section, said unloading means being automatically actuated by the initial elevation of the carriers from the low end of said second track section.

10. In conveyers for bricks and the like, the combination of a pair of aerial mono-rails forming each an inclined track in two sections, one leading from an unloading point to a loading point, and the other from the loading point to the unloading point, carriers adapted to be suspended from said mono-rails and travel by gravity thereon, one of said conveyers being of a type having means to receive its load transversely, and another of a type having means to receive its load longitudinally, means to turn one type of carrier through a right angle intermediate the loading and unloading points to correspondingly vary the lay of successive courses when unloaded, means providing for the loading of the carriers at the low end of the first track section, means to elevate the loaded carriers to the high end of the second track section, means providing for the unloading of the carriers at the low end of the second track section, and means to elevate the loaded carrier to the high end of the first track section, the elevating means comprising a device arranged to receive the wheels of the carrier from the track and provided with a rack, a driven pinion meshing with the rack, said elevating device vertically movable between the low and high ends of the track section, the elevating means at the loading station automatically gripping a plurality of brick and the elevating means at the unloading station automatically releasing the gripping engagement on the plurality of brick.

11. In conveyers for bricks and the like, the combination with conveying tracks, of carriers, traveling thereon between loading and unloading points, said carriers consisting in different types, one type having means to receive its load transversely and the other type having means to receive its load longitudinally, mechanism intermediate the loading and unloading points to vary the position of one type of carrier relatively to

the other type, whereby rows of brick unloaded by the carriers of different types will be substantially at right angles to each other.

12. In conveyers for bricks and the like,
5 the combination with conveying tracks, of carriers, traveling thereon between loading and unloading points, said carriers consisting in different types, one type having means to receive its load transversely and the other
10 type having means to receive its load longitudinally, mechanism intermediate the loading and unloading points to rotate one of

said types of carriers through an angle of substantially ninety degrees, whereby rows of bricks unloaded by the carriers of different types will be substantially at right angles to each other. 15

In testimony whereof I have hereunto signed my name in the presence of two subscribing witnesses.

BENJAMIN S. MOORE.

Witnesses:

LEWIS T. GREIST,
MARY C. BROWER.