Sept. 6, 1966 H. LINGL 3,270,897

APPARATUS FOR STACKING BRICKS

Filed April 26, 1962 4 Sheets-Sheet 1

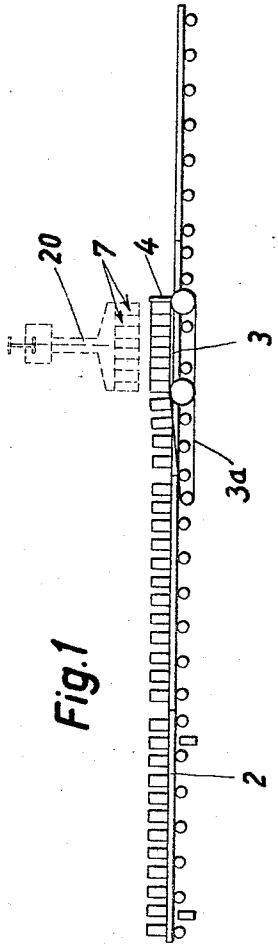

Fig. 1

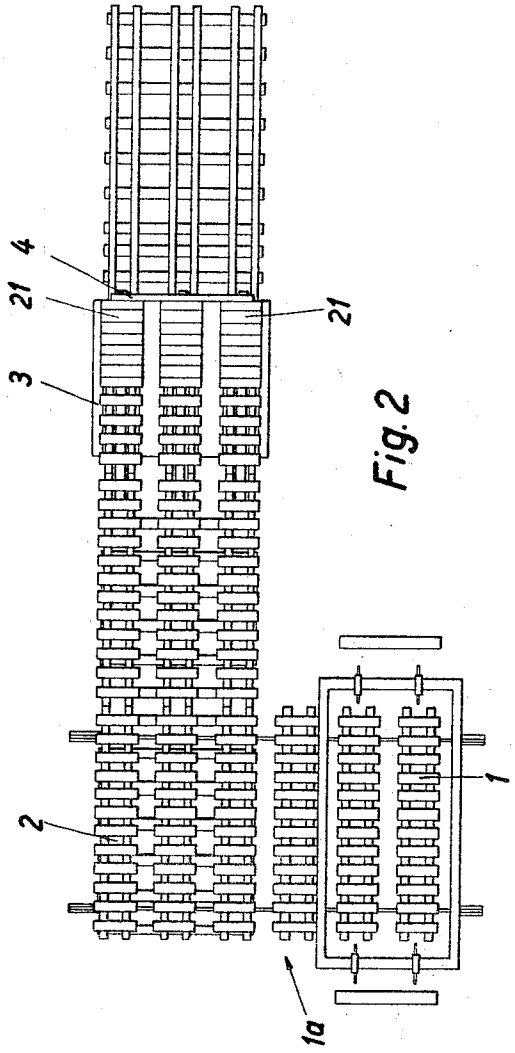

Fig. 2

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APPARATUS FOR STACKING BRICKS

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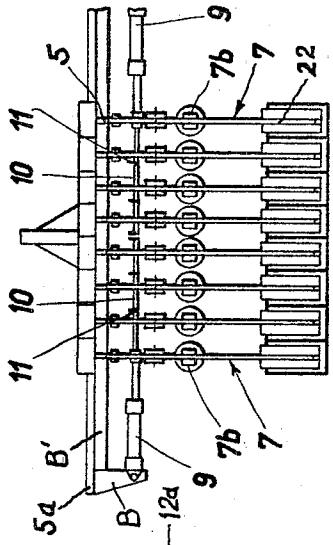

Fig.4

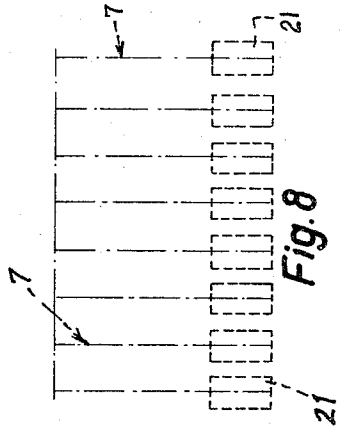

Fig.8

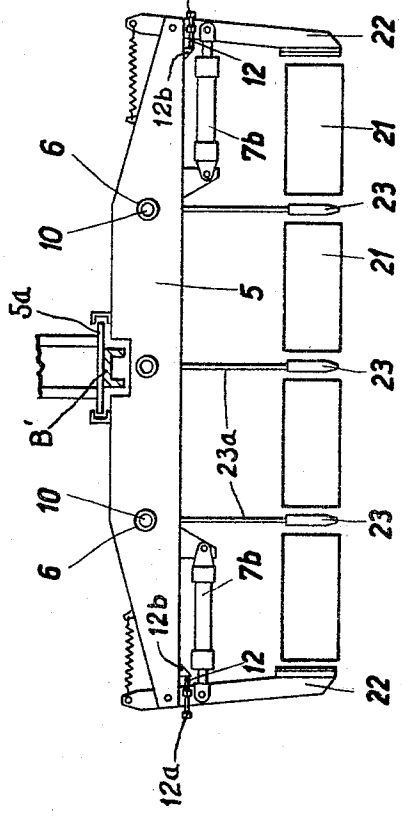

Fig.3

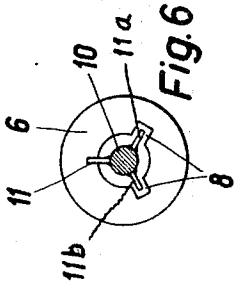

Fig.6

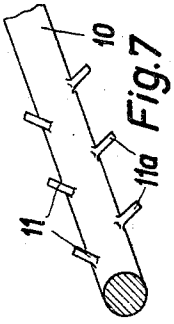

Fig.7

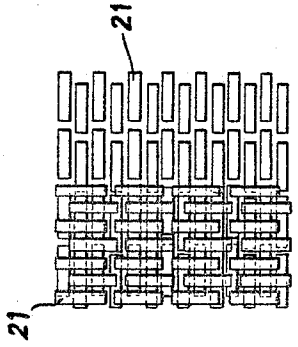

Fig.5

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APPARATUS FOR STACKING BRICKS

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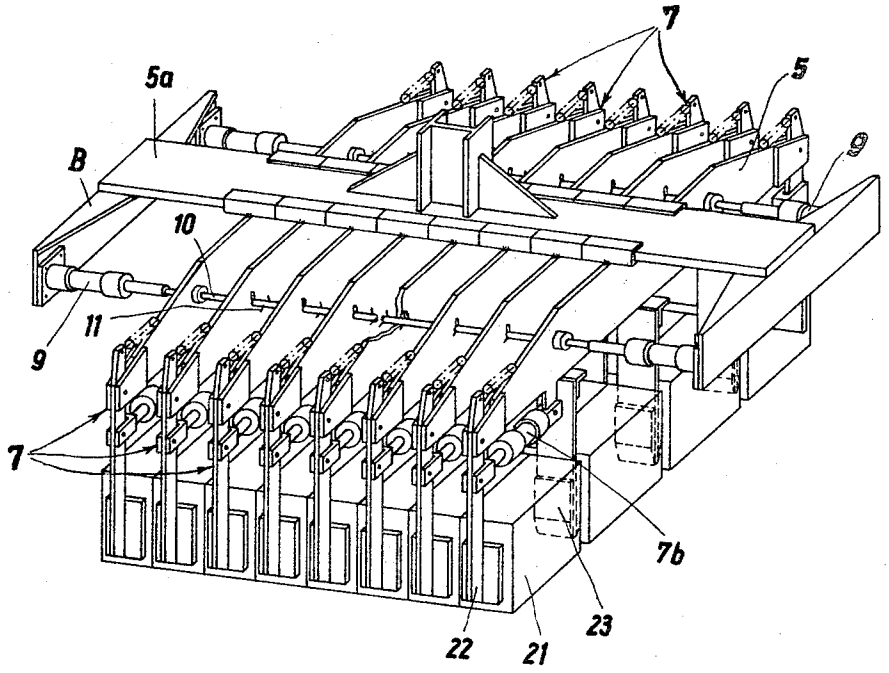

Fig. 4A

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APPARATUS FOR STACKING BRICKS

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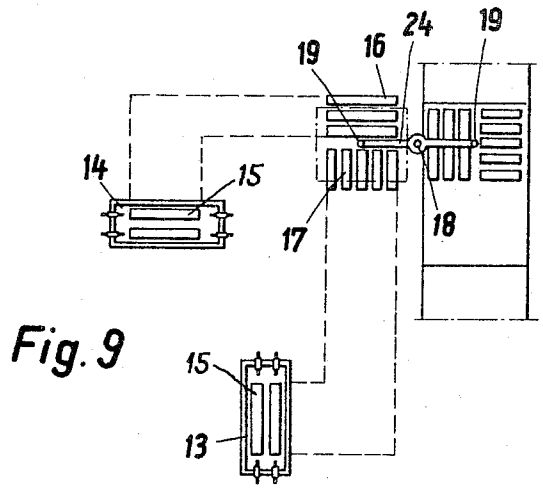

Fig. 9

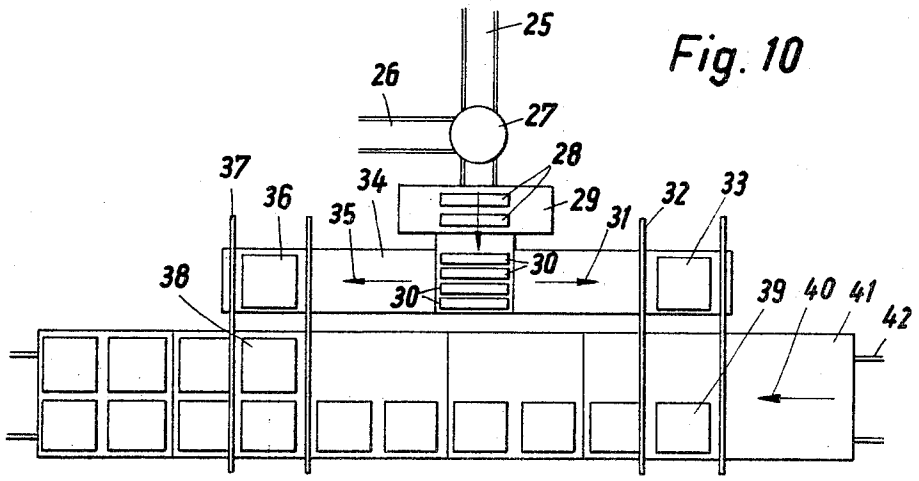

Fig. 10

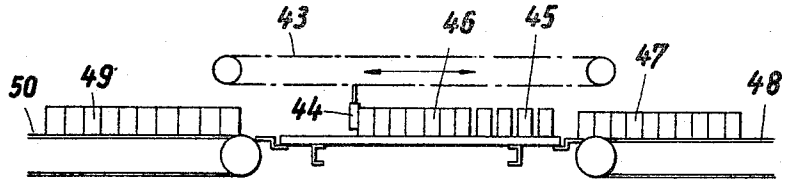

Fig. 11

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United States Patent Office

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Patented Sept. 6, 1966

3,270,897

APPARATUS FOR STACKING BRICKS

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Filed Apr. 26, 1962, Ser. No. 190,307
Claims priority, application Germany, Aug. 5, 1961, L 39,719
13 Claims. (Cl. 214—6)

The present invention relates to methods and apparatus for stacking raw bricks on a conveyor, for instance on tunnel-kiln cars. An object of the invention is to accelerate the automatic stacking of raw bricks and at the same time to carry out this operation in such a manner that the raw bricks are stacked cleanly on the conveyor or tunnel-kiln car.

In accordance with the invention, apparatus for stacking the raw bricks includes a group of individual gripper members arranged alongside of each other in what is referred to hereinafter as a gripper assembly for lifting the bricks which are disposed in rows in intimate engagement with each other laterally. Each individual gripper member is designed to grasp a row of raw bricks at its ends, the bricks preferably being arranged end to end within each row. The gripper assembly is therefore capable of lifting several rows of bricks at one time, and while thus suspending the bricks, the individual grippers are moved apart a desired distance, so that when the bricks are deposited on the conveyor, they are spaced properly for drying purposes. It will thus be noted that when the individual gripper members grasp the rows of bricks at their ends, the bricks in each row are prevented from buckling laterally by engagement with adjacent rows which provide mutual support for each other. Once grasped, however, the rows are relatively stable due to the pressure exerted on them by the grippers, so that they can be separated laterally for proper stacking.

Such an arrangement makes it possible to deposit the raw bricks at different distances apart and furthermore, as will be more apparent hereinafter, to form the deposited layers of courses of rows of bricks which are staggered so that the stack has substantially better stability on the conveyor. By means of the arrangement in accordance with the invention it is also possible to grasp the raw bricks in precise position and after being thus grasped, to impart to them any desired spacing from one row of bricks to the next. As will be apparent hereinafter, the spacing may also be varied within each row.

One suitable embodiment of the invention is characterized by the fact that a plurality of individual grippers are supported on a gripper-mounting frame having a track along which they can move in order to spread the rows of bricks apart. Power means, such as fluid cylinders, are provided in order to move the individual grippers the desired distance apart. The individual grippers may be arranged side by side with elongated members or rods disposed transversely of them, said rods having correspondingly arranged driving means interconnecting the rods and individual grippers, so that when the rods are displaced axially by the fluid cylinders, the individual grippers are moved apart and the desired spacing between the bricks is established. This arrangement is referred to hereinafter as spreader means.

More specifically, the driving means interconnecting the rods and individual grippers consists of several—for instance three—rows of projections extending radially outwardly from the periphery of the rod. In addition, driving plates are provided on each individual gripper, through which the rods extend, each driving plate having

recesses corresponding to all but one of the rows of projections on said rods. The rods themselves are rotatably mounted in such a manner that in any predetermined angular position, longitudinal displacement of the rods will cause only one row of projections to strike against the corresponding driving plates and thus displace the individual grippers transversely to their prescribed positions.

Each individual gripper is also provided with adjustable stops which limit the clamping movement of the clamping jaws or gripper arms and make it possible to stagger the raw bricks in one row with the bricks in adjacent rows. The purpose of staggering the rows in this manner is to stack the layers of bricks so that the bricks will be staggered with respect to each other from one layer to another in order to improve drying, as well as to make the pile of bricks more stable.

It is also possible to disconnect individual grippers in order to immobilize them so that in any particular instance the desired number of raw bricks can be grasped at one time. It is thus possible to form a pile containing a different number of raw bricks in its individual layers. Furthermore, the bricks can be deposited with any desired spacing.

By employing apparatus in accordance with the present invention, a sequence of operations for stacking raw bricks may be used, whereby several groups or rows of bricks are first supplied from a brick elevator by lifters, whereupon they are pushed onto a conveyor which shoves the rows firmly together in a lateral direction against a stop on a platform, where an automatic gripper assembly picks them up, actuation of the gripper assembly being initiated by said stop. The stop can consist, for instance, of an electric contact which closes a circuit to the control system for the gripper assembly.

In another system for stacking raw bricks in accordance with the present invention, raw bricks at one location, as for example on brick carriers, are fed several abreast to a shove-off platform, from which the raw bricks are alternately ejected in rows, first to one side and then the other, onto oppositely moving conveyors comprising a so-called shove-off path. At the same time, the rows of bricks are pushed into intimate engagement with each other laterally by means of the shove-off mechanism. Thereupon the raw bricks are picked up at each end of the shove-off path by gripper assemblies in such a manner that the individual grippers grasp the rows of bricks along their longitudinal axes, while they are pushed together side by side. After a layer of bricks thus arranged in rows have been picked up by the gripper assemblies, the individual grippers are moved the desired distance apart within each gripper assembly, and finally the two gripper assemblies are moved on overhead tracks extending transversely of, and more particularly at right angles to, the shove-off path so that the two gripper assemblies form two stacks side by side on a single conveyor extending parallel to the shove-off path.

This system includes a shove-off chain which has a pusher that travels back and forth with the chain for the alternate ejection of the raw bricks from the shove-off platform.

The principle of the invention, one embodiment of the gripper assembly and a few systems or installations of equipment for stacking brick by means of the gripper assembly are shown by way of example and more or less schematically or diagrammatically in the accompanying drawings, in which

FIGS. 1 and 2 are side elevation and top plan views, respectively, of a brick stacking or piling installation embodying certain features of the invention;

FIG. 3 is a front elevation of the gripper assembly shown in broken lines in FIG. 1 and looking in the direction of the conveyor, the construction of an individual gripper member of said gripper assembly being clearly shown;

FIG. 4 is a side elevation of the gripper assembly shown in FIG. 3;

FIG. 4A is a perspective view of the gripper assembly shown in FIGS. 3 and 4;

FIG. 5 is a top plan view of a stack or pile of bricks illustrating how the bricks may be staggered from row to row and from layer to layer;

FIG. 6 is an enlarged detail view of the driving means for separating the individual grippers shown in FIGS. 3 and 4;

FIG. 7 is an enlarged detail view in perspective of a part of the driving means;

FIG. 8 is a diagram illustrating the spacing of the individual grippers and rows of bricks held thereby after the individual grippers have been separated from the position shown in FIG. 4;

FIG. 9 is a top plan view of a modified brick stacking installation;

FIG. 10 is a view similar to FIG. 9 of another modification; and

FIG. 11 is an elevational view on an enlarged scale of the brick shove-off mechanism employed in the modification of FIG. 10.

Referring now more particularly to FIGS. 1 and 2, a number of rows of bricks, depending on the width of the stack to be made, is supplied from a conventional brick elevator **1** by a lifter **1***a*, both shown purely schematically in the drawings. As here illustrated the bricks have been arranged end to end in rows of three and spaced from each other endwise as well as between rows. Using conventional brick-conveying means, the bricks are transferred to a conveyor **2** so that the rows are disposed transversely thereof. Conveyor **2** then carries them to a compacting device where they are shoved tightly together on a platform **3** against a stop **4** for their removal by automatic grippers to be described in detail hereinafter. Suitable means for shoving the bricks together on platform **3** include power-driven endless belts **3***a* which lift the bricks slightly off the conveyor **2** and carry them against stop **4**, which consists of a fixed member extending across the full width of conveyor **2**. Stop **4** actuates a gripper assembly designated **20** in FIG. 1 by means of an electric contact which directly or indirectly starts the gripper drive (not shown) in order to lower the gripper assembly **20** into position so that its individual gripper members **7** can grasp the outer ends of each row of bricks on platform **3**, in the manner shown in FIG. 3.

The individual bricks **21** are most desirably arranged end to end within each row and are lifted off in this position by the individual grippers **7** which correspond in number and spacing with the rows of brick on platform **3**. Due to the fact that the individual bricks within each row are tightly pressed together endwise by the individual grippers which are arranged directly alongside each other while they are being lifted, the layer of bricks thus gripped has excellent stability during its transfer. Moreover, at the time each of the grippers **7** grasp the bricks, the rows mutually support each other laterally in order to prevent the bricks from twisting out of alignment or buckling in the middle during the critical initial contact of the grippers therewith, as they are shifted lengthwise into tight end to end engagement.

A gripper arrangement, such as used for stacking brick in accordance with the present invention, will now be explained with reference to FIGS. 3–8.

The gripper assembly shown in FIGS. 3, 4 and 4A consists of a series of individual grippers **7** arranged side by side, each gripper **7** extending in the same direction as the rows of bricks **21** (i.e. transversely of conveyor **2**).

In this case four bricks are shown in each row instead of three as shown in FIG. 2. Each individual gripper **7** is suspended for lateral displacement by means of a transversely extending supporting beam **5** which is slideably supported on a horizontal track **5***a* disposed longitudinally of conveyor **2** when the bricks **21** are being removed from platform **3**. Track **5***a* in turn is mounted on a suitable hoist (not shown). Spreader means are provided for separating the individual grippers **7** on their track **5***a*. Such means includes a set of elongated members or rods **10** which extend through openings provided in each of the beams **5** of the intermediate grippers **7** for limited longitudinal movement with respect thereto. One each rod **10** are provided longitudinally spaced radial projections **11**, **11***a* and **11***b* (FIGS. 6 and 7), which engage driving plates **6** on the intermediate grippers **7**.

As may be seen in FIGS. 3, and 4*a* rods **10** are located on opposite sides and about equidistant from the center line of the gripper assembly. Two such rods are used on each side, each being fixed at its outer end to the outermost gripper **7**. The rods in the pair of rods **10** on each side of the gripper assembly extend inwardly toward each other through one-half of the individual grippers **7** with the innermost projections **11** on each rod disposed inwardly of the two central grippers **7**. The free ends of rods **10** are located adjacent to but not in contact with each other at the center of the assembly. By drawing the outermost grippers **7** outwardly from the position shown in FIG. 4, the rods **10** are moved so that their projections **11** engage each of the intermediate grippers **7** consecutively from the outermost toward the center, moving them outwardly in order to space the rows of bricks **21**, one from the other. The spreader means above referred to further includes a pair of power cylinders **9** at each end of track **5***a*, each cylinder being mounted at its outer end to a bracket B depending downwardly from a horizontal beam B' rigidly secured to the underside of track **5***a* for the individual grippers **7**. The piston rods of power cylinders **9** are connected to the supporting beams **5** of the outermost grippers **7** in order to accomplish the above-described spreading action of the individual grippers and thereby establish their spacing.

As shown in FIG. 7, the driving elements on rods **10** consist of several, for instance three, longitudinally extending rows of projections **11**, **11***a* and **11***b* equally spaced circumferentially about the periphery of each rod (the row of projections **11***b* is not visible in FIG. 7). The beforementioned driving plates **6**, which in this particular case are mounted on each of the intermediate grippers **7**, have a large central aperture through which rods **10** extend as shown in FIG. 6. Driving plates **6** are provided with two internal recesses **8** which correspond in their circumferential spacing to all but one of the rows of projections **11**, **11***a* and **11***b* on rods **10**. The rods **10** are so constructed that they can be turned about their longitudinal axes, so that at a predetermined angular position of rods **10** only the projections **11**, for example, of one row of projections will not register with one of the recesses **8** and will therefor strike against the corresponding driving plates **6** and thus move the individual grippers **7** into the desired position. The individual rows of raw bricks are thus pulled apart to any desired spacing depending on the longitudinal spacing of the projections **11** on rod **10**. Such spacing may be uniform or varied as desired.

Each individual gripper **7** is provided with a pair of gripping arms **22** pivoted to the outer ends of its supporting beam **5** in the manner best shown in FIG. 3. A pair of power cylinders **7***b*, each fastened at one end to beam **5** and with its piston rod pivoted to one of the gripping arms **22**, are arranged so as to draw the lower ends of gripping arms **22** into gripping engagement with the opposite ends of one row of bricks to be stacked. The rows of bricks may be staggered lengthwise by limit-

ing the pivotal movement of certain of the gripping arms so that as the gripping arms grasp the bricks one of the arms is permitted to pivot inwardly farther than the other, thereby shifting the bricks in that row to one side. Adjacent grippers **7** may be adjusted so that the bricks in those rows remain centered or may be moved to the opposite side as they are being grasped by the grippers **7**.

In order to accomplish this lengthwise staggering of the rows, each individual gripper **7** is provided with adjustable stops **12** adjacent the pivot point of each of its gripping arms **22**. Any suitable type of stop for limiting the pivotal movement of arms **22** may be employed. For example, a bolt **12***a* may be threaded through a lug on each arm **22** so that its inner end is disposed for abutment with a stop lug **12***b* on the underside of supporting beam **5**. By turning bolts **12***a* in or out to limit the movement of arms **22**, various positions of the rows of bricks in a lengthwise direction can be obtained. The individual rows of raw bricks are thus displaced longitudinally with respect to each other so as to obtain a staggered pile construction such as that shown in FIG. 5.

It is also desirable to control the power cylinders **7***b* in such a manner that they can be operated individually so that one or more rows of bricks in each layer of a pile can be omitted. This provides the stacking apparatus of the present invention with still greater versatility and flexibility in spacing and arranging the bricks while they are rapidly stacked layer by layer at the stacking station.

In the arrangement shown in FIG. 3, intermediate tongues **23** extend on resilient rods **23***a* downwardly from the supporting beams **5** and are disposed between the ends of each of the bricks **21**, in order to space the bricks from each other within each row when they are pushed together during the lifting operation. Rods **23***a* may pivot or bend slightly to one side in order to permit the rows of brick to be shifted lengthwise.

The apparatus in accordance with the invention operates in such manner that the raw bricks are picked up by the gripper jaws while the individual grippers are initially disposed closely adjacent each other so that they will register with the rows of bricks which have been shoved into engagement with each other as shown in FIG. 4. During the transfer, the individual grippers are pulled apart into the desired position by rods **10**, for instance in the manner indicated schematically in FIG. 8; whereupon the raw bricks are set down on a stack being built on a conveyor car, for example.

Different stacking systems of this type are shown in FIGS. 9, 10 and 11. In this system shown in FIG. 9, gripper assemblies (not shown), such as those illustrated in FIGS. 3 and 4, are rotatably supported on the ends of a rotary crane **24**, the axis of rotation of which is located at **18**. The gripper assemblies at **19** pick up different layers **16** and **17** from the elevators **13** and **14** where they have been arranged on raw-brick carriers **15**, and turn them through an angle of 90° as they are being transferred to the conveyor where they are to be deposited. In this way the two layers are arranged one on top of the other with the rows of bricks in alternate layers disposed at right angles to each other.

Another piling system which employs a gripper arrangement such as that shown in FIGS. 3 and 4 is illustrated in FIGS. 10 and 11. FIG. 10 shows two feed tracks **25** and **26**, over which the raw bricks are fed on raw-brick carriers **28**. A turntable **27** is provided for turning the brick carriers 90° from the track **26**. From these feed tracks, the raw bricks on the brick carriers pass into the brick elevator **29**.

It is now necessary to stack the raw bricks, which are in the elevator **29**, in piles on tunnel-kiln cars, so that the raw bricks can be fed to the firing process. For this purpose, the raw-brick carriers loaded with bricks are placed in groups on a shove-off platform from which they are ejected onto conveyors **34**. In the example shown, the groups consists, in each case of four brick-carriers **30**. These groups of raw-brick carriers and raw bricks are ejected by a shove-off chain **43** (FIG. 11) alternately in opposite directions as indicated by the arrows **31** and **35**. The shove-off platform and conveyors **34** together comprise what is referred to as a shove-off path for the brick. Shove-off chain **43** is provided with a pusher **44** and moves alternately in one direction and then the other. It will also be noted from FIG. 11 that the raw bricks fed on the brick carriers are shoved together by pusher **44** at the same time that they are ejected from the shove-off platform. Thus, it may be seen in FIG. 11 that some of the bricks **46** on each brick-carrier **30** have already been pushed together under the action of the pusher **44**, while the rest of the bricks **45** are still apart. After they have been shoved-off in the directions indicated by the arrows **31** and **35**, the groups of bricks occupying the position indicated by reference numerals **47**, **49**, respectively, continue to move in opposite directions on conveyors **34**. At the ends of conveyors **34** are arranged gripper assemblies **33** and **36** like those shown in FIGS. 3 and 4. Their purpose is to lift the raw bricks which have been pushed together, spaced them and then deposit them in suitable piles on kiln-cars.

As in the system shown in FIG. 9, the gripper assemblies are desirably arranged in the system illustrated in FIG. 10 so that they can be turned through an angle of 90° in order to make a staggered piling possible. After the rows of bricks have been grasped by the gripper assemblies, lifted and then spaced apart in the manner described hereinbefore, the gripper assemblies are moved on overhead tracks **32** and **37**, respectively, over a conveyor, consisting in this instance of tunnel-kiln cars **41**, which move on tracks **42** in the direction indicated by the arrow **40**. Kiln-cars **41** preferably move in a step-wise manner so that several layers of bricks can be deposited in each stack one on top of the other and preferably with the rows of bricks disposed with their longitudinal axes at right angles to each other in alternate layers.

The double ejection in the directions indicated by the arrows **31** and **35** makes it possible to stack two rows of piles at one time on the tunnel-kiln cars. For this purpose, the gripper assembly **33** is moved on its track **32** to the far side of the kiln-cars **41** to form the rear row **39** of brick piles. The gripper assembly **36** is moved on its track **37** to the near side of the cars forming the front row **38** of brick piles. The cars **41** remain in rest position until a pile has been completely deposited. Such a pile can consist, for instance, of about 12 to 15 layers of raw bricks, staggered 90° apart. This staggering of the individual layers is effected by turning the gripper assemblies **33** and **36** each time through an angle of 90°.

The system shown in FIGS. 10 and 11 provides an excellent, automatic way of loading tunnel-kiln cars with raw bricks so that the raw bricks are deposited in uniform piles on the tunnel-kiln cars. In the embodiment described, four of such piles each having 12 to 15 layers are deposited on each car. However, more than four such piles can, of course, be placed on a car, for instance, by providing more than two rows alongside of each other or more than two piles longitudinally of the car.

The gripper assembly of the present invention makes it possible to stack elongated, as well as square, piles. Moreover, the distance between rows of bricks pile alongside of each other can be varied and adapted to the prevailing conditions.

When stacking individual raw bricks in piles it is advisable in each instance to deposit two bricks in the pile in such a manner that the "face" sides of the bricks cover each other. By "face" side is meant the longitudinal side of the brick which does not serve as a bearing surface when it is used. In the case of the embodiment shown in FIGS. 1 and 2 it would be necessary for this purpose to provide, in addition to the conveyor **2** shown therein for advancing bricks, a second conveyor of this type, and

preferably to arrange it parallel to the conveyor **2**. Then alternately, one layer of bricks may be taken by means of the gripper assembly **20** from the first conveyor and one layer of bricks from the second conveyor and stacked one above the other. However, a turning device must be provided in the second conveyor to turn the bricks upside down before they are picked up by the gripper assembly **20**. After the transfer of two of such layers of bricks to the pile, the "face" sides of the bricks then contact each other.

Where the pile shown in FIG. 5 is to be stacked in the foregoing manner, two layers of bricks would be laid one on top of the other in coincidence with each other. Then the next two layers of bricks would be placed on top of the first two but at an angle of 90° with respect thereto. This procedure is carried on until the pile is complete. Interlacing such as shown in FIG. 5, would then take place after every second layer. The method which has just been described has the advantage that the "face" slides of the raws bricks are not exposed during the firing to the discoloring action of the oven gases.

What is claimed is:

1. Apparatus for stacking brick comprising a group of individual gripper members suspended side-by-side for lifting a plurality of bricks which are supported in rows with adjacent rows in engagement with each other laterally, each of said gripper members including means for grasping a row of bricks by applying pressure to its outer ends to thereby press inwardly longitudinally thereof while said row is supported initially in a lateral direction by engagement with an adjacent row of bricks in order to prevent lateral buckling of said rows, and spreader means for moving said individual gripper members apart in said lateral direction after said bricks have been lifted from their support, thereby moving the individual rows of bricks apart while suspended.

2. Apparatus according to claim **1**, which further includes a gripper-mounting frame for displaceably supporting said individual gripper members for movement relative to each other in said lateral direction, and in which said spreader means includes power means for moving said individual gripper members a desired distance apart.

3. Apparatus according to claim **2**, wherein said spreader means also includes an elongated member supported for axial movement by said power means transversely of said individual gripper members, and driving means interconnecting said elongated member and gripper members such that said gripper members are driven and spaced apart by axial movement of said elongated member.

4. Apparatus according to claim **3**, wherein said driving means comprises a plurality of rows of projections on said elongated member, said projections in each row being spaced axially of said elongated member with said rows disposed circumferentially around said elongated member, said driving means further comprising driving plates mounted on said individual gripper members with said elongated member passing through said driving plates, each of said driving plates having recesses corresponding to said rows of projections on said elongated member for engagement of said driving plates by selected rows of said projections, said elongated member being rotatably supported about its longitudinal axis on said gripper-mounting frame such that in a predetermined angular position of said elongated member only the projections of one row of projections engage the corresponding driving plates and thus displace the individual gripper members in accordance with the spacing of the projections of the selected row of projections.

5. Apparatus according to claim **1**, wherein each individual gripper member is provided with a pair of arms movable toward each other for gripping said bricks, and adjustable stops associated with each of said arms for limiting the inward movement of said arms such that the row of bricks held by each of said individual gripper members may be staggered lengthwise with respect to the others.

6. Apparatus according to claim **5**, wherein said gripper arms are provided with brick-gripping power means for moving said arms into gripping engagement with said bricks.

7. Apparatus according to claim **6**, wherein each individual gripper member is provided with intermediate tongues for disposition between the ends of the bricks within each row, said tongues serving as stops for the bricks so as to space said bricks from each other within each row.

8. Apparatus for automatically stacking bricks comprising in combination a support on which a plurality of bricks are arranged in rows with adjacent rows in engagement with each other laterally, a gripper assembly for lifting the rows of bricks in unison and for depositing them at a stacking station, said gripper assembly comprising a plurality of individual gripper members each including means for grasping a row of bricks by applying pressure to its outer ends to thereby press inwardly longitudinally thereof while being supported in a lateral direction by an adjacent row of bricks in order to prevent lateral buckling of said rows, and spreader means for separating said individual gripper members in said lateral direction after said rows have been lifted from said support, thereby moving the individual rows of bricks apart while suspended and before they are deposited at said stacking station.

9. Apparatus according to claim **8**, which further includes a conveyor for carrying bricks two or more abreast, said support for said bricks including stop means disposed in the path of said conveyor against which said bricks are pushed tightly together in said rows which extend transversely of said conveyor, and actuating means interconnecting said stop means and gripper assembly for actuating said gripper assembly when the rows of bricks are tightly pushed together against said stop means.

10. Apparatus according to claim **9**, which includes a second conveyor from which a plurality of rows of bricks may be lifted in unison, and which further includes a rotary arm for supporting said gripper assembly, said rotary arm being pivoted intermediate its ends for pivotal movement in a substantially horizontal plane with said gripper assembly mounted adjacent one end thereof, and a second gripper assembly mounted adjacent the other end of said rotary arm, said rotary arm being disposed with respect to said two conveyors such that the first said gripper assembly is enabled to pickup a layer of bricks from the first said conveyor and deposit it at said stacking station, while said second gripper assembly is enabled to pick up a second layer of bricks from said second conveyor and deposit it on top of said first layer at said stacking station with the longitudinal direction of the rows of bricks in said second layer disposed at right angles to the longitudinal direction of the rows in said first layer.

11. Apparatus according to claim **8**, which further includes a shove-off platform onto which brick are fed on a plurality of elongated brick-carriers with the longitudinal axes of the brick-carriers disposed perpendicular to the direction in which said carriers are fed onto said shove-off platform, conveyor means on opposite sides of said shove-off platform forming therewith, a shove-off path in alignment with the longitudinal axes of said brick-carriers on said shove-off platform, said conveyor means being arranged to travel in opposite directions away from said shove-off platform, a shove-off mechanism for alternately ejecting the bricks on said brick-carriers first onto the conveyor means on one side of said shove-off platform and then onto the conveyor means on the opposite side of said platform, said shove-off mechanism comprising a chain mounted adjacent said platform and having a pusher disposed in said shove-off path, said chain being enabled to move alternately in one direction and then the other, said bricks being shoved together on their car-

riers by said pusher into rows extending perpendicular to the direction of travel of said conveyor means, a stacking conveyor onto which said bricks are transferred, said gripper assembly being disposed adjacent one of said oppositely directed conveyor means for lifting a layer of bricks comprising a plurality of said rows of bricks in unison from said conveyor means and depositing said layer on said conveyor, and a second gripper assembly disposed adjacent the other conveyor means on the opposite side of said platform for lifting layers of bricks on said other conveyor means and depositing them on said stacking conveyor in the same manner as said first gripper assembly.

12. Apparatus as defined in claim **11**, which includes drive means for said stacking conveyor wherein said stacking conveyor is advanced in steps so that a plurality of said layers may be deposited on each stack.

13. Apparatus according to claim **8**, wherein said gripper assembly further includes means for displacing certain of said individual gripper members lengthwise of said rows of bricks with respect to other rows in order to stagger said rows longitudinally.

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