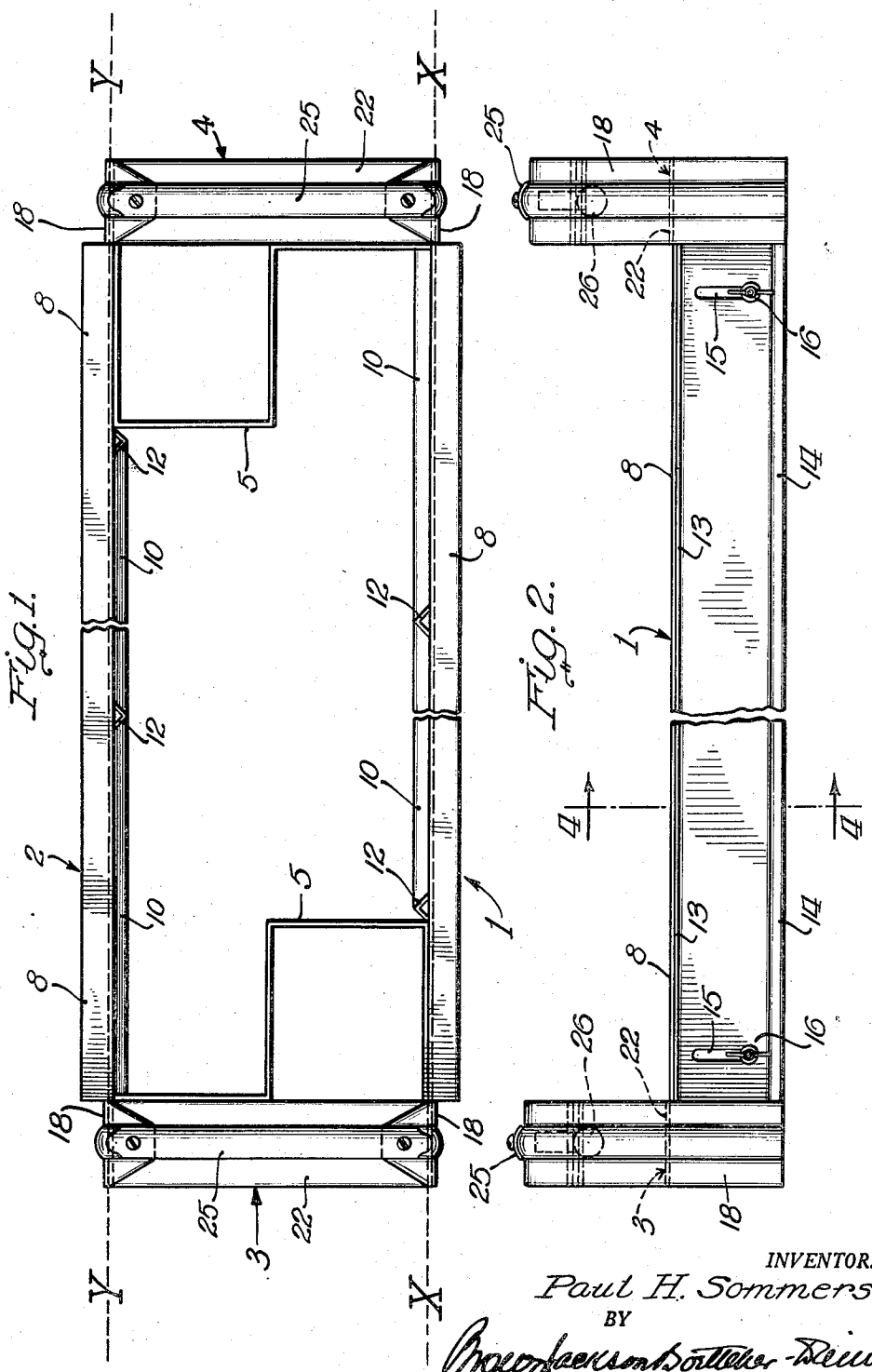
Sept. 22, 1953 P. H. SOMMERS 2,652,714

MEANS TO FACILITATE THE LAYING OF MASONRY UNITS

Filed July 9, 1949 5 Sheets-Sheet 1



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MEANS TO FACILITATE THE LAYING OF MASONRY UNITS

Filed July 9, 1949 5 Sheets-Sheet 2

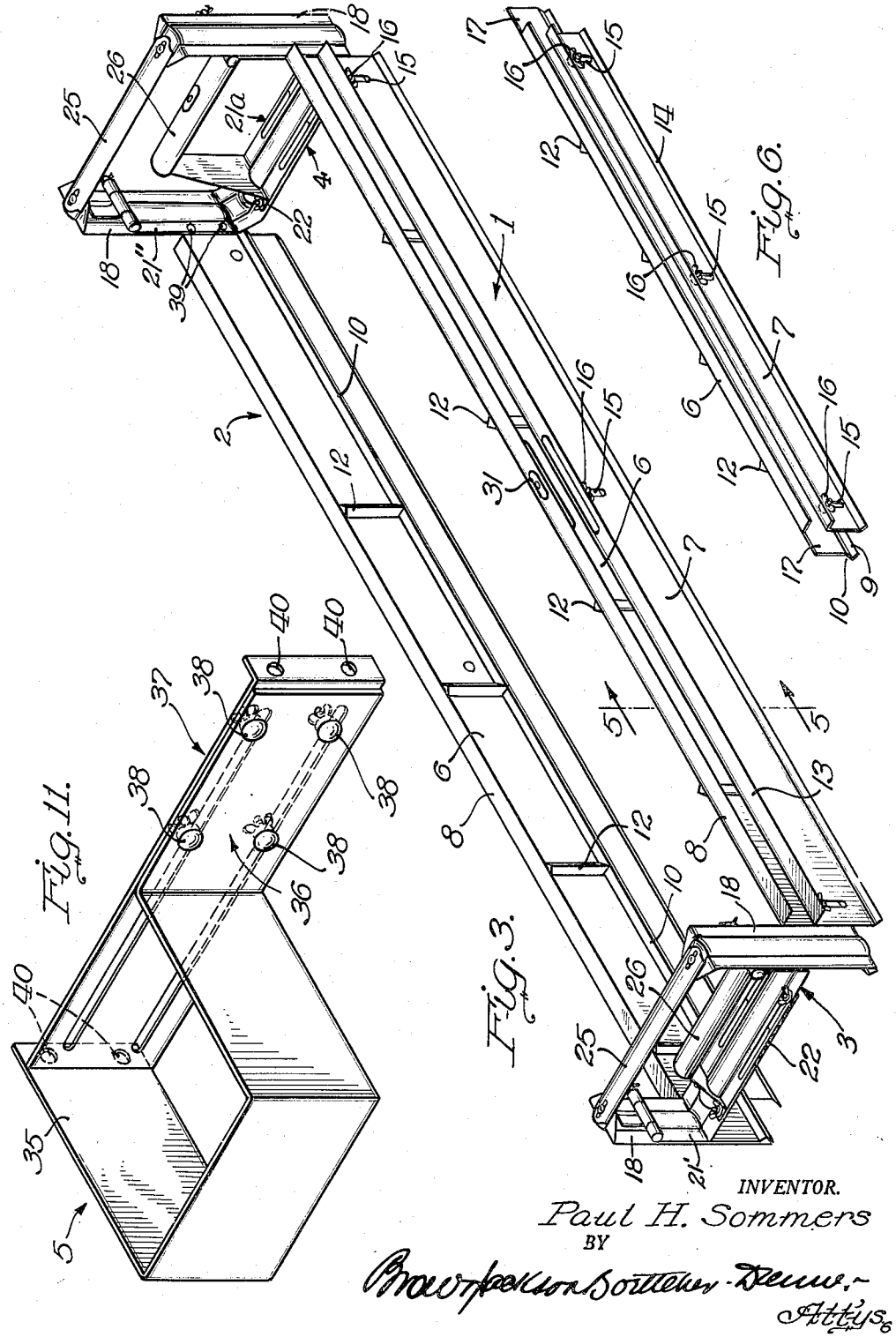


Fig. 3.

Fig. 11.

Fig. 6.

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Filed July 9, 1949 5 Sheets-Sheet 3

Fig. 2A.

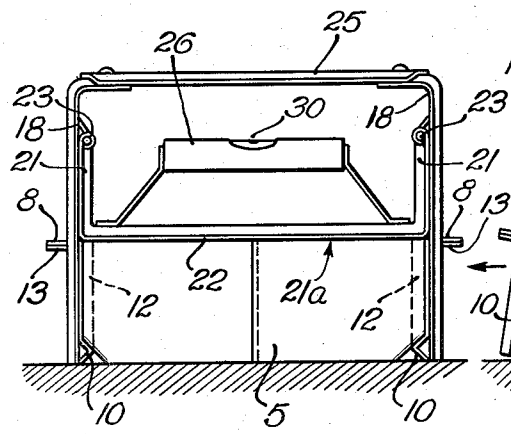


Fig. 2B.

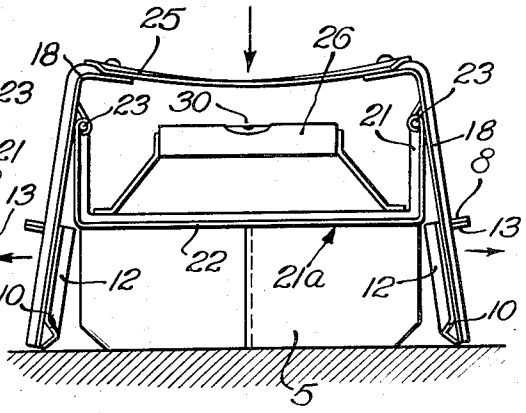


Fig. 4.

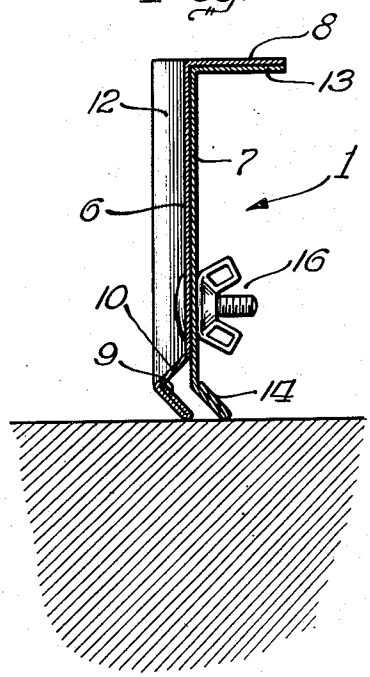
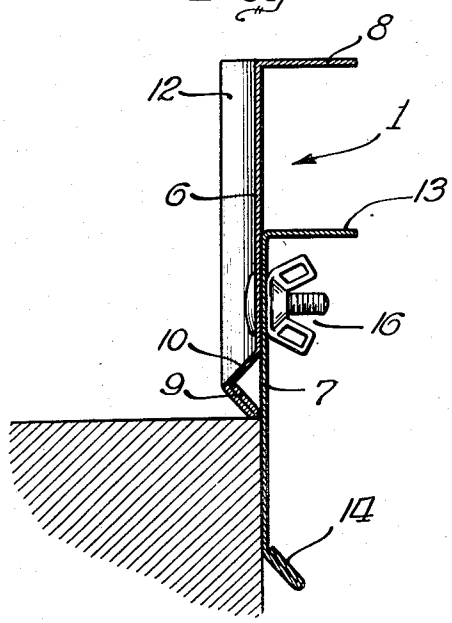


Fig. 5.

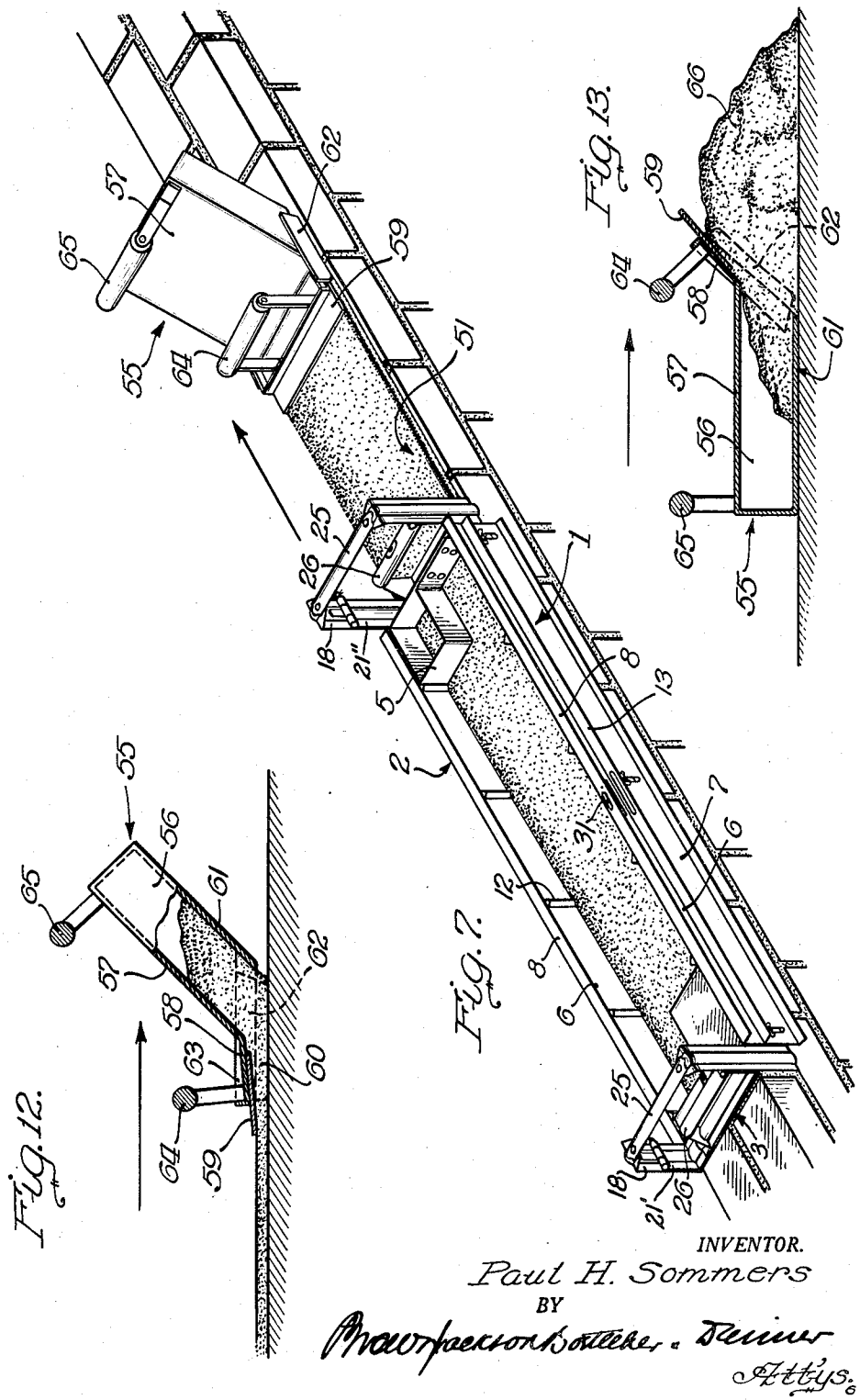


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MEANS TO FACILITATE THE LAYING OF MASONRY UNITS

Filed July 9, 1949 5 Sheets-Sheet 5

Fig. 8.

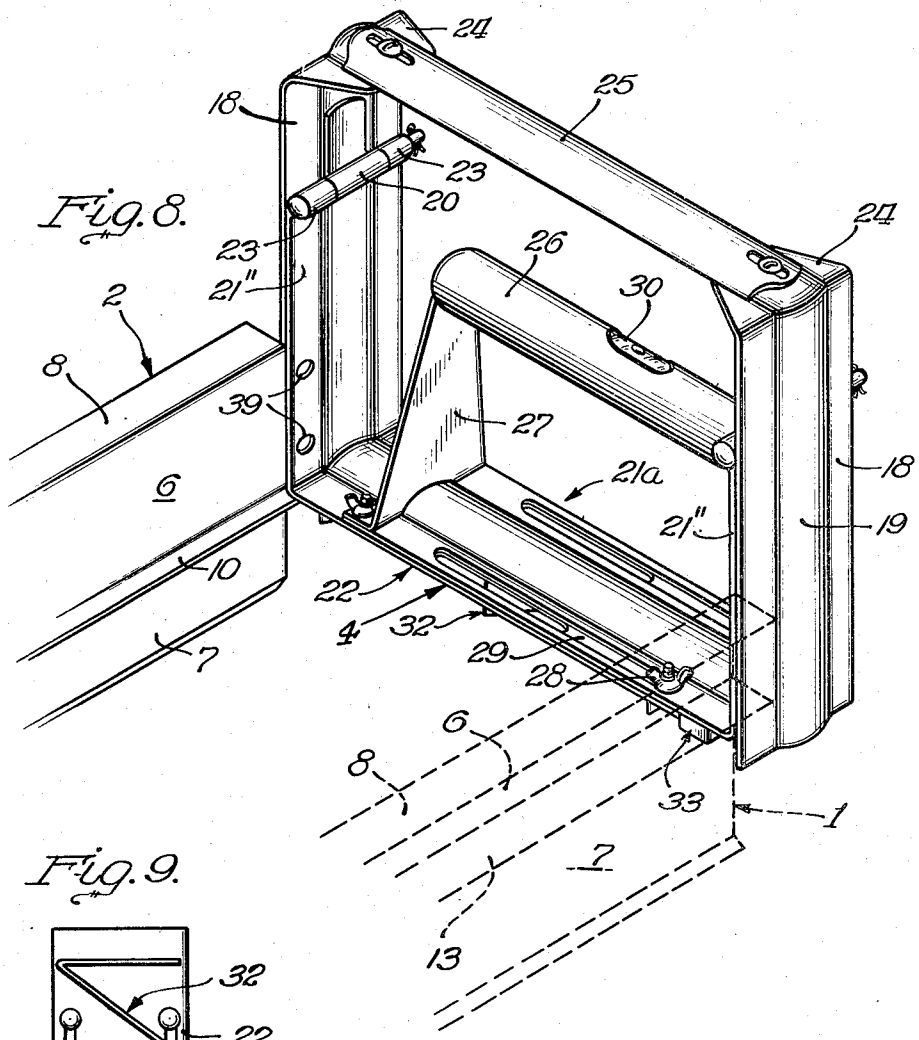


Fig. 9.

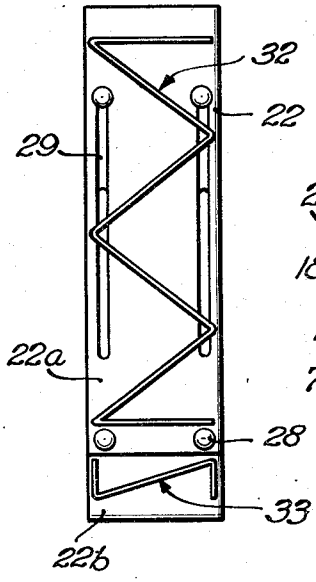
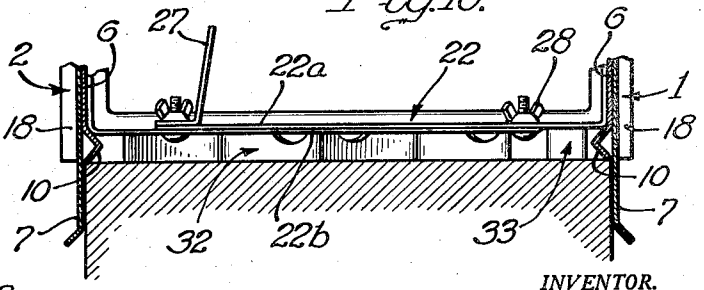


Fig. 10.



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Patented Sept. 22, 1953

2,652,714

UNITED STATES PATENT OFFICE

2,652,714

MEANS TO FACILITATE THE LAYING OF MASONRY UNITS

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Application July 9, 1949, Serial No. 103,865

12 Claims. (Cl. 72—129)

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This invention relates to the art of masonry and is more particularly concerned with the laying of masonry units into a wall. The laying of bricks will be employed herein as an illustrative use of my invention, but the invention is not to be limited to the laying of bricks, as it has application to other masonry units as well.

In my copending application, Serial Number 93,078 and Serial Number 95,126, I have disclosed the concept of simplifying the art of brick laying by relieving the workman of the necessity for exercising the skill of the trained artisan. The basic requirements in laying bricks are to embed them on all sides, except their exposed faces, in mortar, and to pile them on top of each other. But the skill of the artisan is required to do this according to a regular pattern with the bricks properly aligned with each other, with the mortar joints of the proper thickness, and the wall true straight and vertical. In my prior applications, I disclosed guiding means which supplies the guidance of the basic operations to the point where the skill of the artisan is not needed, and the basic operations of embedding the bricks in mortar and piling them on top of each other when performed under the guidance of the device will automatically be done with such regularity, spacing, alignment and fidelity to the desired dimensions and positional requiremnts as to produce a satisfactory wall. In brief, the skill of the artisan is supplied by the device, with the result that an unskilled operator can lay bricks into a satisfactory wall with ease and expedition.

The laying of bricks with the aid of the aforesaid guiding device involves the basic operations above referred to, but the specific acts performed are different from the unaided laying of bricks because of the presence of the device. In other words, the device not only guides the position, spacing and alignment of the bricks, but guides or indicates the specific acts to be performed to secure the performance of the basic operations in a satisfactory manner.

The present invention is an improvement upon the aforesaid prior inventions in several respects. A feature of improvement resides in the provision of a guiding device which will guide the laying of the first course upon a slab or foundation, and then, by a readily accomplished adjustment, guide the laying of subsequent courses.

The requirements for guiding the laying of the first course upon a foundation, a slab or upon the ground are different from the requirements for guiding the laying of subsequent courses. According to my prior applications, either a separate device for the first course was intended to

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be used, or the first course required more skill than was necessary for the subsequent courses. Now according to this feature of the present invention, the same device will supply guidance equally for the first course and for subsequent courses. This obviates a difficulty in the way of general use of my device, as it gives the unskilled operator complete confidence in his ability to perform the laying of bricks from the ground up. The means by which I accomplish this result is to provide a main plate of the height required to guide the placing of a bed of mortar and the laying thereupon of a brick or gang of bricks at the proper level, and adjustably attached to it an auxiliary plate which may be extended down a suitable distance below the first plate to act as a guide for the device for laying each subsequent course upon a previously laid course. The auxiliary plate may be used additionally to level the device upon the foundation for placing the first course.

Another feature of improvement resides in the provision of a removable end closure for the rear or starting end of the device. This is particularly useful for the starting of a course, either the first course or any subsequent course. It allows the mortar bed to be confined at the starting end as well as throughout the rest of the enclosure provided by the device.

Another feature of improvement introduced by the present invention resides in the method of and means for laying the mortar bed. According to this feature, the mortar bed is laid for considerable distance upon the slab, ground, foundation, or other support for receiving the first course, and thereafter the guiding device is located upon the said support, straddling a part of the mortar bed and gaining support at each side of the bed, and the guiding device guides the laying of bricks upon the said bed. For the initial or first course, the device may rest upon the edges of the main plates to hold it at the proper level. If necessary for leveling up the device both ways, the edges of the auxiliary plates may be lowered to gain the desired support. For the first and subsequent courses, the device is provided at its front end with a foot consisting of a thin strip disposed edgewise preferably in zigzag fashion and capable of cutting edgewise down through the mortar bed without substantial disturbance of the same and resting upon the base surface or upon the backs of the course below it, i. e., the course just completed.

For spreading the bed of mortar, I may use the motar spreader of my prior application, Serial Number 95,297, or a device having a similar

organization for spreading a layer of mortar of predetermined width and of a predetermined thickness upon the support, for either the first course or any subsequent course. This allows a uniform bed of mortar of exactly the right thickness to be laid simply, easily and quickly.

A further feature of improvement resides in refinement of mechanical details to simplify and reduce the cost of construction and to permit the performance of the required functions in a new and better manner. Among these is, first, improvement in the operating mechanism for opening and closing the plates, and for locking them in closed position by use of a convex steel strip which acts like a toggle; second, improvement in the reach construction to facilitate adjustment of the width of the device for a wider wall; third, improvement in the end block to make it adjustable as to width and as to position, for a wider wall. Other incidental improvements will be apparent from the following detailed description of certain embodiments of my invention.

Now in order to acquaint those skilled in the art with the manner of constructing and operating my device, I shall describe, in connection with the accompanying drawings, in which similar reference numerals indicate similar parts, a specific embodiment of my invention.

In the drawings:

Figure 1 is a plan view of a device embodying my invention as equipped for a starter course;

Figure 2 is a side elevational view of the same;

Figure 2A is an end elevation of the device of Figures 1 and 2 with the side plates closed;

Figure 2B is an end elevation with the sides open;

Figure 3 is an isometric view of a device similar to that of Figures 1 and 2, with the end blocks removed and the auxiliary plates lowered as used for a second or subsequent course;

Figure 4 is a cross section on the line **4**, **4** of Figure 2;

Figure 5 is a similar cross sectional view taken on the line **5**, **5** of Figure 3;

Figure 6 is an isometric view of one of the guide plates with the auxiliary plate lowered in the same position as shown in Figure 3;

Figure 7 is an isometric view of the mode of use of the device of my invention with a mortar applicator for previously laying of the mortar bed in advance of several brick-laying operations;

Figure 8 is an isometric view of the right hand reach of the device shown in Figure 7, illustrating the use of the Z-bar knives under the reach for penetrating the mortar bed of Figure 7.

Figure 9 is a bottom plan view of the Z-bar knives on the adjustable reach of Figure 8;

Figure 10 is an elevational view of the Z-bar knives on the bottom of the adjustable reach;

Figure 11 is an isometric view of the adjustable offset and wall member or end block which may be used at either end of the device of Figures 1, 2, 3 and 8;

Figure 12 is a vertical longitudinal section through the mortar applicator shown in Figure 7; and

Figure 13 is a similar section showing the mortar applicator being loaded with mortar.

In the laying of a wall upon a flat slab or upon the ground or upon a foundation which is wider than the wall to be laid, the guiding of the initial course of bricks presents a distinct problem from that of continuing a wall after such wall

is once started. In starting a wall in the usual method, leads are generally started by a brickmason at each corner and/or at intermediate points along the wall. A string line is then stretched from corner to corner along the top of the succeeding brick courses and brick are then laid to this line. By use of the present device, I propose to start the brick work without the necessity of leads. To accomplish this, I simply snap a chalk line along the foundation, so that the machine may have some means of being guided when it is used as a starter. Subsequent courses automatically align themselves.

The device of my present invention, illustrated in Figures 1, 2, 3 and 7, is adaptable to starting the first course on the slab, and of thereafter guiding subsequent courses upon each other. Referring to Figures 1, 2, 3 and 7, the left hand end of the device, as illustrated in these figures, may be regarded as the starting end or rear end of the device, since in the normal course of use, bricks will be laid beginning at the one end, which in this case is at the left, and will be progressively laid toward the other, which in this instance is the right hand end, and thereafter the device will be released and advance in steps toward the right, which may be regarded as the advance end of the device.

The device comprises essentially a front guiding plate **1**, and a rear guiding plate **2** with a reach **3** at the rear or starting end, and a similar reach **4** at the forward or advancing end. By the term "reach" there is herein designated the horizontally extending connecting part or frame bracket and its appurtenances having the function of a supporting frame upon which the plates **1** and **2** are supported. Thus "reaches" **3** and **4** extend across or reach across the top of the wall and are supported upon the wall and serve the function which is performed by the frame of a machine. These "reaches" are relatively stationary when movable parts, to be described hereinafter, are moved to open and to close the device. Obviously, instead of working from left to right, one may work in the opposite direction with equal facility, but for purposes of explanation, the above terms of description are employed. At each end, there is a removable end block **5**. In the device of Figures 1 and 2, the guide plates **1** and **2** are identical, and the reaches **3** and **4** at the ends are also identical, and so are the end blocks **5**, **5**. Each guide plate consists of two parts, as illustrated in Figures 4, 5 and 6, namely, a main plate **6** which consists of a sheet metal strip stamped or rolled to form, and an auxiliary plate **7**, likewise made of sheet metal rolled or stamped to form. These plates are shown in contracted position in Figure 4 with their lower edges on the same level. They are shown in extended position in Figures 5 and 6 with the auxiliary plate dropped down to embrace the edges of the bricks in the previously laid course.

The plate **6** is formed with an upper flange **8**. The flange is formed at right angles to the main body of the plate **6**, and it serves as a stiffening means and as a guide means for a screed where it is desired to use the same. At its lower margin, the plate **6** is reenforced by folding back the edge as indicated at **9** and by forming adjacent thereto a V-shaped groove or bead **10** which extends longitudinally of the lower edge and is convex inwardly. This bead in use recesses the horizontal joint between courses. The plate **6** additionally has vertical beads **12** which join the

lower longitudinal bead 10, these vertical beads 12 being spaced apart the pitch distance of bricks laid in the finished wall, and producing recessed vertical mortar joints on the face of the wall.

The auxiliary plate 7 is likewise flanged at its upper edge at 13, and the lower margin thereof is folded back and flared out, as indicated at 14, to facilitate the application of the device to the lateral surfaces of the brick to be clamped. This flare is optional. By means of slots 15, 15 in plate 7 and bolts seated in plate 6 and provided with wing nuts at 16, 16, the auxiliary plate may be lowered from the position shown in Figure 4 to the position shown in Figures 5 and 6. Figures 1 and 2 indicate the auxiliary plates in the raised position of Figure 4, whereas Figure 3 indicates the auxiliary plates as lowered to the position indicated in Figures 5 and 6. It will be seen from Figure 6 that the auxiliary plate extends only as far as the length of the flange 8, which is confined to subtsantially the distance between the reaches 3 and 4, the said plate 6 having the flanges terminated a short distance from the ends so as to provide flat end portions 17, 17 which lie under and are connected to arms 18, 18. Referring to Figure 8, the arms 18, 18 preferably are formed of stamped sheet metal or plate and in section consist of a pair of flat straight margins lying in the same plane with a groove or channel 19 formed of the metal between said margins. The extensions 17, 17 of the main plate member 6 are attached to the lower end of the arms as by welding or riveting. Intermediate their ends, the arms 18 each have a hinge eye member 20 secured to the inner side thereof. As will be appreciated, the hinge eyes 20 could also be formed by striking a tongue out of the material of each arm. The arms 18 are adapted by means of the hinge eyes 20 for connection with the reach bracket member 21*a* which is of generally U-shape, consisting of a transverse base 22 and vertical posts 21, 21 formed out of a stamping of sheet or plate stock. The base member 22 and the posts 21 are formed with a central bead or channel extending inwardly, and they have the outer margins lying in the same plane, so that the posts 21, 21 may fit flat against the arms 18, 18 when the said arms 18, 18 are locked in vertical position which corresponds to the closed position of the guide plates 1 and 2. The upper ends of the posts are cut out in the center, so as to leave extensions which are curled into hinge eyes 23, 23 registering with the hinge eye 20 and being adapted to have a hinge pin passed through the eyes 23 and 20 to form a hinge. The upper ends of the arms 18, 18 are bent inwardly at substantially right angles to form lugs 24, 24 for operating the said arms. A concaved spring steel strip 25 is releasably clamped as by means of screws to each of the lugs 24, 24 at its ends, and this strip with the convex face disposed upwardly lies above a tubular handle portion 26 which is disposed immediately below the said steel strip 25 and is supported at its left end by a bracket member 27, and connected thereby to the base 22. The other end of the handle 26 is connected to the adjacent post 21. The base 22 is constructed of two parts which overlap. One part is connected to the left hand post 21 and the other part is connected to the right hand post 21, and these overlapping horizontal parts are fastened together by means of bolts and wing nuts 28 passing through slots 29. Thereby the length of the reach and the corresponding space between the guide plates 1 and 2 may be adjusted for different sizes of bricks or

for different thicknesses of wall. The adjustment is intended to be great enough to permit the increase in width from a two-brick width wall approximately 8", to a three-brick width wall, approximately 12". The bracket 27 which is connected to the left hand end of the handle 26, as shown in Figure 8, is connected to the upper one of the two base member 21*a* namely, that one which is formed integral with the post 21 at the right, and the handle 26 is at its right hand end connected directly to the post 21 at the right, so that the adjustment may be made as to width without disturbing the handle 26, in relation to its post and its base plate portion. In adjusting the space between plates 1 and 2, the concave steel strip is replaced by a strip of the proper length for the specific adjustment desired. The lugs 24 or the strip 25 may be slotted if desired for providing minor adjustment in width of wall. Since brick comes only in definite sizes, the adjustment does not call for many interchangeable parts. Any preferred form of length adjusting means for the strip 25 may be employed.

The handle 26 at one or both ends is provided with a spirit level 30 and one or both the main plates 6 may be provided with a like spirit level 31, as shown in Figure 3, disposed under the flange 8, a suitable depression 32 in the top of the flange 13 of the auxiliary plate 7 permitting the flanges 8 and 13 to be brought close together as shown in Figure 4. By means of these spirit levels, transverse and longitudinal, horizontal alignment may be assured. The same provision of two spirit levels at right angles is preferably made on each form of the device herein referred to.

The end blocks 5, one of which is illustrated in Figure 11, as applicable to the embodiment of Figure 3 are made up of overlapping steel plates bent to the desired form. Thus one plate, namely 35, is bent into a rectangular, boxlike form, which occupies substantially the space of one-half of the length of the unit being laid, namely, one-half of a brick in this case, and the full width of the unit. It has a lateral extension 36 which overlies the other plate 37. The plate 37 is slotted, and the two overlapping plates are provided with bolts and wing nuts, such as illustrated at 38, so that by telescoping the two overlapping plates 36 and 37, the end block may be extended to occupy the full space between the guide plates 1 and 2, and be supported on the posts 21, 21, a pair of bolt holes 39 being provided on the inner margins of the posts 21, 21. Matching holes 40, 40 are provided on the parallel flange portions of the plates 35 and 37. Such end blocks 5 are adapted to be located in either end of the device shown in Figures 1, 2 2A and 2B, and also, if desired, they may be employed in the device of Figures 7 and 8 at the forward end. If necessary, an extension strip may be employed to connect the block 5 with the left hand reach 3 shown in Figures 1, 2 2A and 2B.

In the device of Figures 1 and 2, both the reaches 3 and 4 have the base member 22 disposed at a height above the lower edge of the plate 6 by a distance equal to the vertical thickness of a brick plus the thickness of the mortar bed under the same. The left hand end block 5 in this form of the device is disposed below and substantially even with the reach and extends forwardly of the same, as illustrated in Figure 1.

The function of the reaches 3 and 4 is to serve as pedestal or frame members. They rest upon

the wall and support the weight of the entire device. The plates 1 and 2 are carried upon arms 18, 18 which are hinged at 23, 23 to the reaches to permit the plates to be swung outwardly away from the wall. The reaches 3 and 4 have vertically disposed stops or shoulders formed on the outside of the upturned ends or posts 21, 21. When the lower ends of the arms below the pivots 23, 23 are swung to the limit inwardly, they engage the said stops or shoulders, and the expanding toggle effect of the members 25, 25 is to clamp said arms 18, 18 flat against the posts with the guide plates 1 and 2 in the vertical position, and to lock them in that position against any reasonable force exerted on the plates tending to spread them. Such spreading is prevented by the strut effect of the members 25, 25 between the pairs of arms 18, 18. As previously explained, the reaches 3 and 4 rest upon the wall with the rear reach 3 supported upon bricks previously laid in the course under construction (see Figure 7). The front reach 4 is supported upon the bricks in the course previously completed. The reaches are generally similar in construction with the pivots 23, 23, at the same horizontal level, but in the preferred embodiment shown in Figure 3 when the device is equipped for the laying of additional courses upon a previously laid course, the bottom of the front reach is disposed below the bottom of the rear reach by a distance substantially equal to the vertical thickness of the masonry units to be laid. The bottom part of the forward reach 4 carries the strips 32, 32 which are disposed edgewise, as shown in Figures 9 and 10, to form the so-called leveling knives which cut through the bed of mortar to gain support from the top surface of the bricks in the previously laid course. The height of these leveling knives is substantially equal to the thickness of the mortar bed. The bottom of the rear reach 22, shown at the left of Figure 3, rests flat upon the course previously laid to support the rear end of the device at the desired level. As will be appreciated from the foregoing, the vertical posts of the two reaches are of different lengths, the posts of the rear reach 3, as indicated at 21', being shorter, by substantially the thickness of a masonry unit, than the posts, as indicated at 21'', of the front reach 4.

The working space within which the next extension of the mortar bed and the laying of the next group or gang of bricks is to be accomplished, lies endwise of the wall between the said reaches 3 and 4. Hence, these reaches are not in the way, and do not interfere with depositing the mortar bed, laying the bricks, and filling in the vertical joints, and the subsequent operation of opening up the plates 1 and 2 for advancing the entire device to its next forward position. In that advance position, the reaches 3 and 4 again rest upon the appropriate parts of the wall, and the plates 1 and 2 are swung to closed position, thereby preparing the device for the next operation involved in an extension of the course of bricks being laid.

The device shown in Figures 1, 2, 2A, 2B, and Figure 4 is equipped for laying the first course upon a flat slab. In that event, the reaches may be of equal height. But when the device is employed for continuous laying of courses, as shown in Figures 3 and 7, upon previously laid courses, the rear end block 5 may be omitted, and the forward reach is preferably of greater height than the rear reach. Since the bricks

previously laid in the course under construction will confine the mortar bed at the rear of the device, the offset end block is not necessary after a course is once started.

To initiate laying of the first course of bricks upon a slab or flat surface, a line is first drawn along the outer edge, and, is desired, along the inner edge of the wall to be laid for guiding the location of the guiding device of my invention. The device shown in Figures 1 and 2 is thereupon set upon the slab or other surface with the edge of the front plate 1 aligned with the line X, and if a similar line Y is drawn, the back place 2 is to be in alignment with the same. The end blocks 5, 5 then close off the space at the ends, and the guide plates at the sides close off the space at the sides in which a mortar bed is to be laid. By depositing a predetermined measure of mortar in the said confined space, and leveling off the same with a screed, a suitable mortar bed is provided for starting the course. The bricks are then laid in place, guided by the face plates 1 and 2 and spaced by the vertical beads 12 to fill in, for example, a gang of eight bricks with their outer faces in contact with the plates 6, 6 of the guide plates 1 and 2.

A measured quantity of mortar may then be deposited on top of the bricks so laid, and filled into the vertical joints between the bricks and any excess struck off by reference to the level of the flanges 3, 3, the bricks being tamped down into place wherever necessary to bring them to the level with the said flange 8.

After the first gang of bricks is laid by the device of Figures 1 and 2 the guide plates 1 and 2 are opened by squeezing toward the handle the curved steel strip 25 which connects the two arms 18, 18 and swings the upper ends of the said arms towards each other, at both reaches, thereby releasing the guide plates from the gang of bricks laid in the course under construction. The horizontal beads 10, 10 and the vertical beads 12, 12 are disengaged from the mortar joints, respectively. Thereupon after the first gang of bricks is laid in the course, the end block 5 at the left or rear end of the device is removed, so that the bottom portion 22 of the reach 3 may rest upon the last two bricks of the gang of bricks just laid, with the horizontal and vertical beads registering, with the mortar joints established by the first gang of bricks.

In placing the device of Figure 1 for the second and subsequent gangs of bricks to be laid, the left hand reach 3 rests upon the bricks laid in the course under construction, whereas, the right hand end of the device is supported upon the end block 5 and the edges of the side plates 1 and 2 resting on the slab or foundation. Thereupon, another bed of mortar is laid between the ends of the bricks just laid and the end block 5 at the right hand end of the device, another gang of bricks is laid guided by the end block and the horizontal and vertical beads to space the bricks and align them in the wall. The vertical mortar joints are filled in, the bricks tamped down, and leveled, the device is opened up to disengage the bricks laid and is moved forward, and the laying of the first course thus proceeds.

After the first course is completed, and the next course is to be laid, the left hand end block 5 may be replaced. The auxiliary plates 7 are dropped down into position shown in Figures 5 and 6, so that these auxiliary plates may extend downwardly below the top of the bricks laid and grip the inside and outside surfaces of the wall

as shown in Figure 5. The laying of the first gang of the new course, with the end block 5 to limit the mortar bed at the left hand end, assuming that the course is being extended towards the right, is the same as previously described. After the first gang of the new course is laid, then the end block 5 under the reach 3 is removed, and the laying of bricks then continues until the course is completed.

The device of Figure 3 is substantially identical with the device of Figure 1, except that in this case, the reach 4a at the right or forward end has the base 22 of the bracket 20 disposed at the level of the lower edge of the main plate 6 of each of the guide plates. In other words, the bottom of the reach bracket 20, and the lower edges of the two guide plates, when the auxiliary plates are raised in the position shown in Figure 4, lie in the same plane. At the left hand end, i. e., at reach 3, the bottom 22 of the reach bracket lies at the level of the flange 8 of each of the side plates 1 and 2, the same as in Figures 1 and 2. As previously explained, the removable end blocks 5 shown in Figure 11 may be attached at each end of the device shown in Figure 3 for starting of a course, and the end block at the rear or left hand end of the device of Figure 3 is removed after the course is started, and for the second and subsequent gangs of bricks laid in the course. The reach bracket may have the bottom 22 thereof rest upon the two end bricks in the previously laid gang to hold the device at the proper level. The device of Figure 3 may be employed with the auxiliary plates 7 raised for starting a course upon a slab or other flat support wider than the wall, and the side plates 7, 7 may then be dropped, as shown in Figure 6 for subsequent courses after the first course is laid.

In the foregoing description, it is assumed in each case that the mortar bed is laid within the confines of the device for each gang of bricks laid.

According to the method and apparatus illustrated in Figures 7 to 10, inclusive, a bed of mortar of considerable length along the wall may be laid in advance of the laying of the several gangs of bricks in order to facilitate the operation of laying bricks in the wall. In brief, the laying of individual beds of mortar inside the confines of the guiding device of my invention upon each advance of the same, consumes an undesirable amount of time as compared with the pre-laying of a track of mortar upon the wall, or upon the initial foundation.

The guiding device or template of my invention for operation with a pre-laid bed of mortar, as illustrated in Figures 7 to 10, is substantially identical with the device shown in Figure 3, with this modification, namely, that under the reach bracket at the advance end of the device shown in Figure 7, the base 22 of the reach bracket extends down only to the top of the horizontal bead 10 on each of the side plates 1 and 2, so that it would normally rest upon the top surface of the pre-laid bed of mortar 51 shown in Figure 7 when the beads 10, 10 on the side plates 1 and 2 rest upon the upper edges of the brick in the course just laid, as illustrated in Figure 5. However, since the mortar is yielding and is not a firm surface to support the weight of the device, and any pressure exerted on the base of the bracket would tend to displace the mortar and disturb the evenness of the layer, a support for the right hand reach 4 must be gained in some manner. To meet this requirement, I provide on the base of the reach bracket a zigzag strip 32 consisting of a thin strip of metal of the width of the thickness of the mortar bed, as illustrated in Figures 8 and 10, which strip constitutes a leveling knife that cuts through the mortar bed down to the surface of the bricks underneath, and secures a firm support therefrom. This should preferably be disposed in a zigzag fashion and is termed the Z-bar knife or leveling knife. This Z-bar knife may be made in one piece where the reach is not of the adjustable type, but in the adjustable arrangement shown in Figures 3, 8, 9 and 10, and utilized in the operation illustrated in Figure 7, one part of the Z-bar knife is supported on the lower overlapping plate 22a, and a short section of the Z-bar knife illustrated at 33 is supported on the other overlapping part of the bottom of the reach bracket 22b, as is illustrated in Figures 9 and 10. The vertical height of the leveling knife, as shown in Figures 8 and 10, is equal to the height of the horizontal bead 10, and is equal to the thickness of the mortar bed 51. The reason for the two separate parts of the Z-bar knife is to permit adjustment of the width of the reach as previously explained. The mortar bed 51, which is pre-laid upon the surface upon which a course of brick is to be laid, is put in position by the mortar applicator 55, which lays a bed of mortar of uniform thickness and of predetermined width upon the surface upon which a course of bricks is to be laid. This mortar applicator is shown in my co-pending application, Ser. No. 95,297, filed May 25, 1949. It comprises a boxlike body 56, which has its walls terminated so as to define a diagonal opening at the working end, the opposite end being closed preferably by a permanent end wall. The longer side wall 57 is connected to a tapered throat wall 58, and a flexible troweling plate 59 extends from the said throat wall 58 for smoothing the top surface of the plaster which is fed by gravity from inside the chamber 56 through the throat portion 60, and under the troweling plate 59. The shorter wall 56 terminates at a point above the bottom of the guide runners 62 which are adjustably attached at each side to the frame of the device. The frame comprises a strap of metal 63, extending along the edges of the opening and over the junction of the throat wall 58 and the troweling plate 59. A front handle 64 is connected to this frame, and a rear handle 65 is connected to the rear of the boxlike body 55. As shown in Figure 12, the chamber 56 may be filled or partially filled with mortar from a pile of mortar 66 disposed upon a suitable flat surface by scooping the same up with the shorter wall 61 resting upon the mortar board or other support of the pile 66. Thereupon, the device is turned upside down to cause the mortar to gravitate to the rear end of the chamber and then, by applying the runners 62 to the surface upon which the mortar is to be deposited, and moving the device to the left as viewed in Figures 7 and 11, a bed of mortar shown at 51 of a uniform depth and of a width just short of the width of the brick wall, is laid either upon the foundation surface, or upon a succeeding course of bricks upon which further bricks are to be laid, as shown in Figure 7.

The operation of laying bricks into a wall according to the method disclosed in Figure 7 involves the following:

For a starter course upon a slab, upon the ground, or upon a foundation of suitable width and length, a line is first drawn to guide the lay-

ing of the mortar and erecting the wall. Initially, the guide plates 1 and 2 have the auxiliary plates 7, 7 raised to the position shown in Figure 4, so that the lower edges may rest upon the surface of the foundation. The end blocks 5, 5 may be put in place at each end of the device. These end blocks may be disposed with their lower edges extending down only to the top of the horizontal bead 10, so that they are only a brick height in depth and the side plates 1 and 2 are closed and locked by the straightening out of the curved strips 25.

These curved strips 25 act very much like toggles, in that so long as the strip is substantially straight and is curved, it presents a very considerable column strength against the ends or lugs moving towards each other, but pressure upon the central part of the strip in a downward direction flattens the strip out and breaks the column strength and pulls the two ends of the arms which carry the side plates towards each other, thereby swinging the side plates open. To close the side plates the central part of the strip is pulled upward, and it springs back with a snap into straight position, thereby locking the plates against opening by the column effect of the said flexible strip 25. This same action is obtained in the devices of Figures 1, 2 and 3.

To lay the initial bed of mortar 51 with the applicator 55, the applicator is first filled with mortar as shown in Figure 12, and then is raised upwardly as by being lifted by the handle 64, so that the mortar fills the rear or closed end of the chamber 56. Then by tipping down the open end of the device onto the surface upon which the mortar bed is to be laid, and drawing the device to the right, as shown in Figure 7, a bed of mortar of uniform thickness will be neatly troweled upon the surface, and this bed will be of predetermined width, which in the present instance lies just inside the edges of the bricks previously laid, or the bricks to be laid, so that when the guide plates 1 and 2 are closed upon the edge of the mortar bed, the same will fill the space between the plates to the top of the horizontal beads 10, 10. Preferably, the thickness of the bed is slightly in excess of that required for the horizontal joint, so that some of the mortar may be forced up in the vertical joints between bricks. The thickness of the mortar bed may be adjusted by raising and lowering the runners 62 at the opposite sides of the mortar applicator 55. When a mortar bed 51 has been laid for a considerable distance along the line drawn upon the foundation for determining the edge of the wall, the guiding device of Figure 7 is then closed upon the edges of the mortar bed with the auxiliary plates 7 raised and with the Z-bar extending below the bottom of the reach 4, as shown in Figure 10. Bricks are laid against the faces of the guide plates 1 and 2 and spaced by the vertical beads 12 to complete a gang of bricks which fills the device. Thereupon additional mortar for the vertical joints is put in place and deposited in the vertical spaces between adjacent bricks, transversely and longitudinally. The bricks are tamped down even with the horizontal flanges 8 of the guide plates 1 and 2. The excess mortar is struck off. The device is then opened up by gripping the handles 26 and the flexible strips 25 to squeeze the two together, whereupon the arms 18, 18 swing together at their upper ends and apart at their lower ends around the hinges 23 to free the side plates 1 and 2 of the bricks just laid. Thereupon the device is advanced to the right, as shown in Figure 7, and the reach 3 rests upon the bricks previously laid, as illustrated in Figure 7, the Z-bar cutting down through the mortar bed and resting upon the surface upon which the mortar bed is laid, and a second gang of bricks is laid inside the device.

The pre-laying of the mortar bed 51 expedites the placing of bricks in the course under construction.

For the second course, the auxiliary plates 7 on the main guide plates 1 and 2 are lowered, as shown in Figure 5, so that the device guides itself upon the course previously laid, and the laying of bricks in the course proceeds as shown in Figure 7. Where the pre-laid mortar bed 51 is employed, the end block at the left hand or rear end of the device for starting a course is not necessary, and may be omitted.

I do not intend to be limited to the specific details shown and described, except as they are made essential by the following claims, since those skilled in the art will, from the above disclosure, be able to adapt the present invention.

I claim:

1. A device of the class described comprising a pair of substantially U-shaped frame members carrying hinge members at the upper ends of the legs thereof, a handle connected to each of said frame members and disposed between the legs of the same, a pair of arms pivoted intermediate their ends on each of said frame members upon said hinge members, a spring metal strip of upwardly convex cross section connecting the upper ends of said arms on each of said frame members and forming a strut between said arms, holding them in substantially vertical position on the sides of said frame, each of said strips being disposed above the respective handle and being capable of being pressed downwardly to pull the upper ends of the arms together and to swing the lower ends of the arms apart, and a pair of face plates connected to the lower ends of said arms.

2. The device of claim 1 wherein each substantially U-shaped frame member comprises two parts, each having a vertical leg and a horizontal leg, said horizontal legs overlapping and at least one of them having a slot, and a clamping bolt disposed in the slot for allowing adjustment of the spacing apart of the vertical legs.

3. The device of claim 1 wherein each of said frame members and the arms thereon are formed of strips of sheet metal with an offset bead formed in the central part of the strip for strengthening the same, the tops of the legs of each frame member having the flat portions outside the bead formed into a pair of spaced knuckles, the arms having knuckles aligned with the knuckles of the frame, knuckle pins extending through said aligned knuckles, the curved strip seating upon the bead at the upper ends of said arms.

4. The combination of the device of claim 1 with an offset end wall comprising a pair of overlapping plates having pin and slot adjustment for width and having their ends connected to the legs of at least one of the frame members.

5. In a guide device of the class described, a pair of oblong main plates disposed in substantial parallel vertical planes with their upper and lower edges horizontal and parallel, each plate having an upper outwardly extending edge and having a longitudinal bead at its lower edge defining a space for a bed of mortar, the height of the plates above the bead defining a space for the reception of masonry units to be laid in a wall, an auxiliary plate disposed against the outside of

each plate, each auxiliary plate having a pin and slot connection with the main plate whereby it may be adjusted vertically relative to its main plate, said auxiliary plate being retractible vertically to bring its lower edge up to the lower edge of the main plate, the lower margins of the auxiliary plates being adapted when extended below the edges of the main plates to engage the sides of the wall upon which masonry units are to be laid, said main plate having arm means, a pair of reach members transverse to the main plates for supporting the guide device upon the wall being constructed, the said arm means of said main plates being pivotally connected to said reach members, and actuating means comprising a flexible strut disposed over the reaches and connected to the arm means of said main plates for swinging the plates, said actuating means being depressed at its central part on the pivots, said actuating means when straightened out into horizontal position being self-locking against pressure applied to the plates when the plates are in vertical parallel position.

6. The device of claim 5 wherein the main plates have inwardly extending vertically disposed beads for spacing the masonry units longitudinally along the wall.

7. The device of claim 5 with a detachable filler block and endwall unit attached to the forward reach for defining the forward extent of the mortar bed to be laid between the plates.

8. The device of claim 5 wherein each of the reach members comprises two overlapping and nesting parts connected by a pin and slot connection whereby the reaches may be extended or shortened to adjust the spacing of the plates for various thicknesses of wall to be laid.

9. The device of claim 5 with leveling knife members extending down from one of said reach members to support said reach member upon the course of masonry units previously laid.

10. In combination, a pair of U-shaped reach brackets consisting of a forward reach bracket and a rear reach bracket, a pair of side plates hingedly mounted at substantially the same level to the posts of said U-shaped brackets, an offset end wall supported on the forward reach bracket and disposed between the forward ends of said side plates, the reach bracket at the forward end having leveling knife means on its under surface to support the base of said forward reach above a bed of mortar upon the surface on which a course of brick is to be laid, the posts of said rear reach being shorter than the posts of said forward reach for support upon the surface of the bricks previously laid in the course under construction, the top of said side plates being level with the base of said rear reach.

11. In a device of the class described, a pair of reaches, a pair of face plates having arm means hingedly mounted on said reaches, said reaches being disposed at each end of said face plates, connecting means extending between said arm means above the hinged mountings of said arm means, said connecting means holding said face plates in vertical position and in spaced parallel relation, horizontal beads on the insides of the lower margins of said face plates, auxiliary plates attached to the outside of said face plates and forming extensions of said face plates below said beads, said auxiliary plates having pin and slot connection with said face plates, whereby said auxiliary plates are retractable upward to bring their lower edges up to the level of the lower edges of said face plates for starting a course of bricks upon a flat supporting surface, and an offset end plate attached to the reach at the forward end of the device and forming an end block, the offset of said end plate being of a width less than the spacing between said face plates and being of a relatively short length with respect to the length of said face plates, said offset end plates being of a height substantially equal to the height of said face plates and having its upper edge substantially even with the tops of said face plates.

12. In a device of the class described, a pair of reaches, a pair of face plates having arm means hingedly mounted on said reaches, said reaches being disposed at each end of said face plates, connecting means extending between said arm means above the hinged mountings of said arm means, said connecting means holding said face plates in vertical position and in spaced parallel relation, horizontal beads on the insides of the lower margins of said face plates, auxiliary plates attached to the outside of said face plates and forming extensions of said face plates below said beads, said auxiliary plates having pin and slot connection with said face plates, whereby said auxiliary plates are retractable upward to bring their lower edges up to the level of the lower edges of said face plates for starting a course of bricks upon a flat supporting surface, an offset end plate attached to the reach at the forward end of the device and forming an end block, the offset of said end plate being of a width less than the spacing between said face plates and of a relatively short length with respect to the length of said face plates, said offset end plate being of a height substantially equal to the height of said face plates and having its upper edge substantially even with the tops of said face plates, the bottom surface of said forward reach and the bottom surface of said offset end plate being disposed substantially at the level of the top of said beads, and a spacing strip disposed edgewise on the bottom of said forward reach, said spacing strip being of a height substantially equal to the height of said bead.

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