Nov. 12, 1929. S. M. DUTY 1,735,497

PROCESS AND APPARATUS FOR FORMING FACE BRICK

Filed Sept. 3, 1926 2 Sheets-Sheet 1

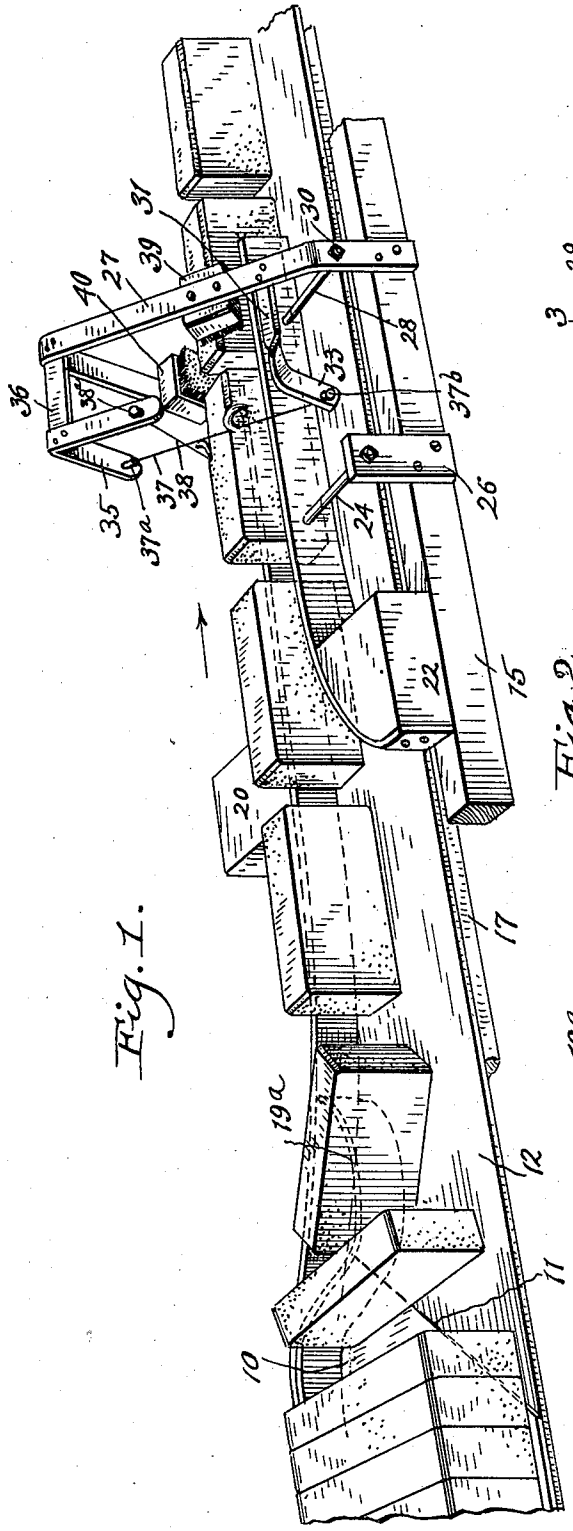


Fig. 1.

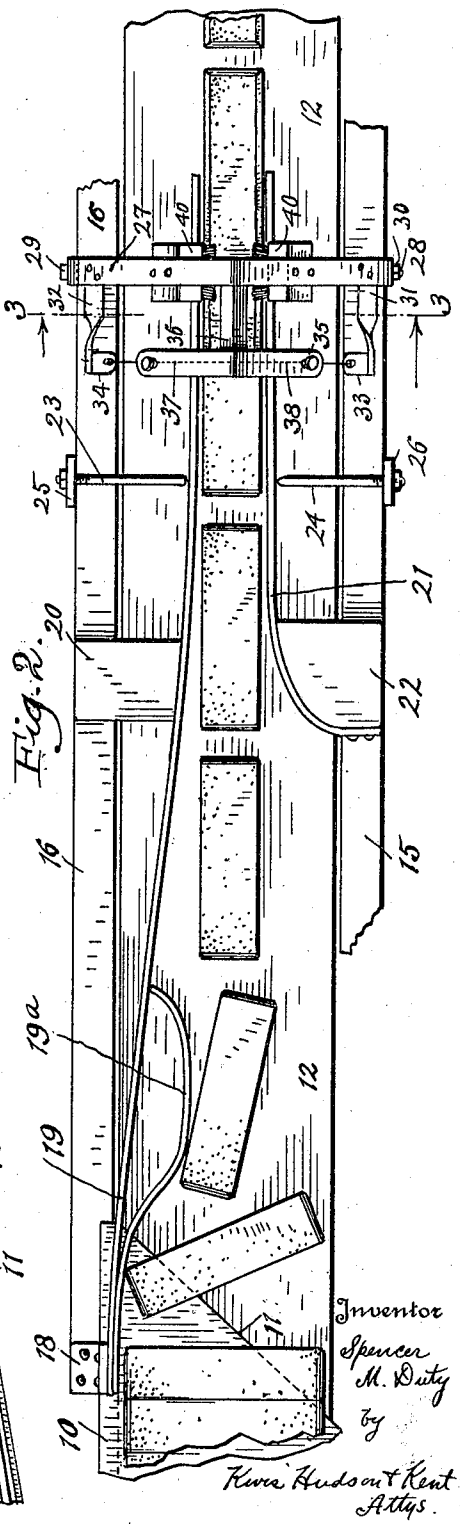


Fig. 2.

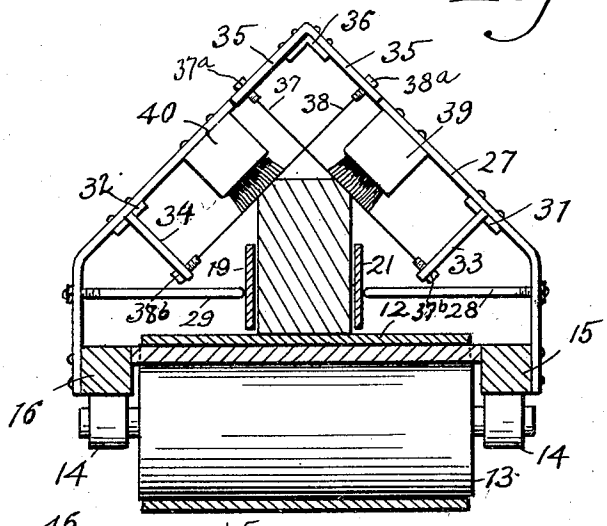
Inventor
Spencer M. Duty
by
Kerr, Hudson & Kent
Attys.

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Fig. 3.



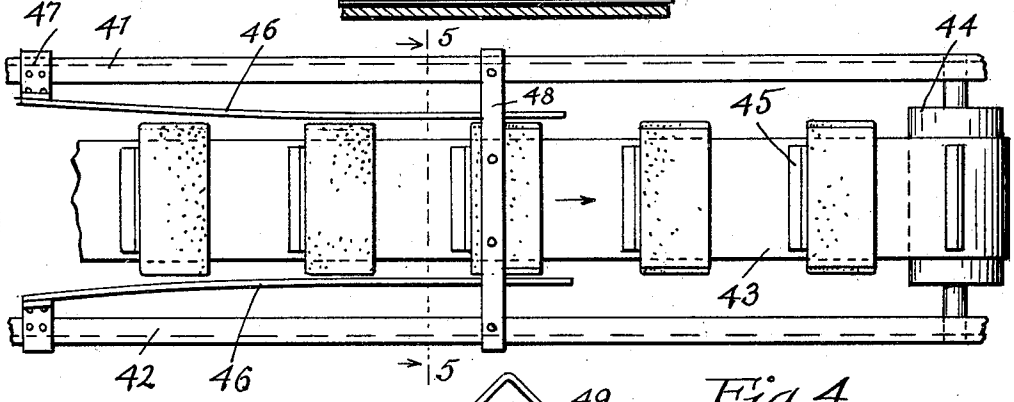


Fig. 4.

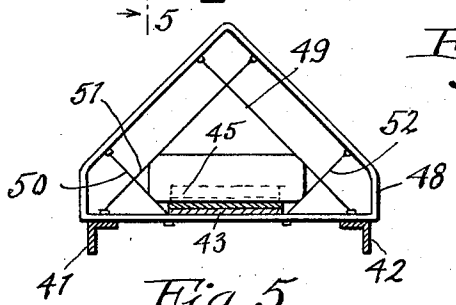


Fig. 5.

Inventor

Spencer M. Duty

By Kerr Hudson & Kent.

Attorneys.

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UNITED STATES PATENT OFFICE

SPENCER M. DUTY, OF CLEVELAND, OHIO, ASSIGNOR TO THE MEDAL BRICK AND TILE COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO

PROCESS AND APPARATUS FOR FORMING FACE BRICK

Application filed September 3, 1926. Serial No. 133,401.

This invention relates to a method and apparatus for forming face brick, as used in the construction of dwellings and other buildings, and relates more particularly to the manner in which the edges of the brick are treated to produce an unsymmetrical, natural and pleasing effect apparent in the wall of the built-up structure.

A further object of the invention resides in the feature of feeding the brick singly to a portion of the apparatus and permitting them to assume a lateral or rocking motion while passing a cutting mechanism so as to formulate an irregular and unsymmetrical edge cut thereon.

Another object of the invention is to provide a means for adjusting the side sway or lateral motion of the brick so as to produce cuts of different depths, that is, permitting the brick in its advancement past the cutter to sway more or less, depending upon this adjustment, so that the brick will have a freer movement or a more restricted movement, thereby affecting the depth of the cut along the edge.

A final object of the invention resides in the production of brick which when built up into walls and the like, having a joiner of mortar between the brick, has the appearance of being old or weathered, and, due to the irregular exposed edges of the brick and the substantial filling of the mortar therein, presents to the eye an artistic, natural quality distinguished from the ordinary mechanical and monotonous appearance prevailing with the use of ordinary square or round brick.

Attempts have been made to produce brick which when built up into walls would have this so-called "charm" present in the early type of buildings and to endeavor to attain this result, the brick have been rounded off along their edges, and when built up with mortar, the mortar is somewhat recessed or brushed out so as to give the wall a weathered appearance. However, if the edges had a stiff, regular, mechanical edge the effect would be exactly contrary to that desired.

There have been a great many attempts in the past few years to reproduce a brick which when built up into a structure would have the appearance of a weathered wall resembling the walls of the very old buildings, but all of the methods have been more or less mechanical so that the result has been a symmetrical or mechanical wall with no pleasing appearance.

It has been concluded that in order to reproduce a structure of this nature, having this weathered appearance, it is necessary to have a so-called naturally formed edge on the brick and to secure this natural edge, I provide an apparatus through which the brick travels but at the same time permit the brick to assume a natural position, within certain bounds, as they pass the cutter which trims off the edges. Thus, they are permitted to travel in a more or less swaying manner so that the edge of the brick is cut, depending upon the position they assume or take during the cutting operation. As a result, the cut edges are unsymmetrical, the face of the brick varying considerably throughout its entire length and the result is that the finished structure embodying these brick presents a remarked resemblance to that of a weathered wall of early buildings. Furthermore by mixing brick having edges cut in accordance with this invention with square edge brick the resulting wall structure presents a marked variation in the apparent sizes of the brick and mortar joints producing a very artistic result which heretofore has not been present in actual brick construction.

With the objects above indicated and other objects hereinafter explained in view, my invention consists in the method and apparatus hereinafter described and claimed.

Referring to the drawings:

Fig. 1 is a perspective view of the apparatus used with my method showing the relative position of the brick.

Fig. 2 is a longitudinal top plan view of Fig. 1.

Fig. 3 is a vertical cross sectional view taken on the line 3—3 of Fig. 2.

Fig. 4 is a longitudinal top plan view of the apparatus employed for trimming off the shorter edges.

Fig. 5 is a vertical cross sectional view taken on line 5—5 of Fig. 4.

In the drawings, 10 represents a bottom plate adapted to receive the cut wet brick after being cut from the continuous column of plastic material forced through the die of the ordinary brick forming machine. This bottom plate 10 is secured to the machine by suitable supporting means and its extreme outer end is provided with a diagonally sheared portion 11, as clearly shown in Fig. 1. A conveyor belt 12 extends beyond this diagonal end 11 of the bottom plate 10 and is adapted to travel about suitable rollers, one of which is indicated at 13, which rollers are journaled in bearings 14 secured at opposite ends of the apparatus to the longitudinally extending side strips 15 and 16. It should be understood that the direction of movement of the belt 12 is away from the base plate 10, and further, that one of the rollers is driven by any suitable means. The longitudinally extending side strips 15 and 16 are secured in any suitable manner to the floor, or base, of the apparatus and extend along each side of the conveyor belt 12. A suitable supporting plate 17 is secured to the longitudinally extending side members 15 and 16 at the upper portion thereof, and this plate acts as a supporting means for the conveyor belt 12. It should be here stated that the conveyor belt 12 is adapted to pass under the diagonal edge 11 of the bottom plate 10 for a purpose which will be hereinafter described.

Secured to the upper surface of the longitudinally extending side member 16 and at the end adjacent the bottom plate 10 is an angle 18 which has mounted to its upstanding leg a guide 19. This guide 19 extends forwardly from the base plate 10 to a position substantially parallel with the median line of the apparatus. The guide 19 is maintained in this relative position by means of a block 20 secured to the upper surface of the longitudinally extending side member 16, the block 20 extending inwardly therefrom into engagement with the guide 19, but these two members are in no way connected together.

There is also secured to the upstanding leg of the angle 18, and inside of the guide 19, a deflecting member 19^a which extends forwardly and inwardly therefrom and is so formed and positioned as to act as an abutment and deflector for the brick, as will be hereinafter described.

A similar guide 21 extends substantially parallel to the guide 19 and on the opposite side of the median line of the apparatus, and has its forward end secured by means of bolts to the block 22 mounted upon the upper surface of the longitudinally extending side member 15 at a point approximately opposite the block 20. The free ends of these guide members 19 and 21 are adapted to move inwardly toward each other, but the outward movement of the guides is regulated by adjustable rods 23 and 24 mounted in uprights 25 and 26, these uprights being attached by means of bolts to the longitudinally extending side strips 15 and 16. These rods 23 and 24 are screw threaded at their outer ends and extend through openings in the upper portion of the uprights 25 and 26 and toward the guides 19 and 21, the inner ends of the rods being close to, but in fact at a variable distance from the guides 19 and 21 so that the outward movement of the guides is checked thereby.

Beyond the uprights 25 and 26 a triangularly shaped bracket 27 is also secured by means of bolts to the longitudinally extending side members 15 and 16, the apex of the bracket being directly over the median line of the apparatus. Rods 28 and 29, similar to the rods 23 and 24 are adjustably supported by the bracket 27, these rods extending inwardly toward the guides so as to limit the outward movement of the free ends thereof. The material comprising the guides 19 and 21 should be such as to permit exceptional flexibility therein so that the portions extending freely beyond the blocks 20 and 22 will be spread apart at the least pressure to an extent permitted by the adjustable rods 23 and 24 and 28 and 29.

Flat iron straps 31 and 32 are secured by means of rivets to the lower end of the bracket 27, but above the rods 28 and 29, and extend rearwardly toward the rods 23 and 24. The free ends of the strap irons 31 and 32 are twisted and extend downwardly to form depending legs 33 and 34. An angle 35 having its apex in the same horizontal plane as the apex of the bracket 27 is secured thereto by means of an angle 36 riveted to each member, the angle 35 being substantially in the same vertical plane as the depending legs 33 and 34 of the strap irons 31 and 32.

A wire 37 is secured to the lower end of one leg of the angle 35 as indicated as 37^a and extends downwardly and angularly across the median line of the apparatus and is secured to the lower end of the depending leg 33 of the strap iron 31, as indicated at 37^b. A wire 38 similar to wire 37 is secured to the lower end of the opposite leg of the angle 35, as indicated at 38^a and extends downwardly and angularly across the median line of the apparatus and is secured to the lower end of the depending leg 34 of the strap iron 32, indicated at 38^b. It should be stated that the wires are so disposed that they will trim off the upper edges of the brick as they pass thereunder, as clearly shown in Fig. 1. The tension of the wire may also be adjusted which materially aids in obtaining the irregular edge cut on the brick.

Between the apex of the bracket 27 and the strap irons 31 and 32 there is mounted, by means of screws, a pair of brushes 39 and 40, one of these brushes being positioned on each side of the bracket 27 and in a position to

engage the cut portions of the brick after they have passed beyond the cutting wires 37 and 38 so as to brush off or roughen the cut surface.

The brick are fed onto the belt 12 and assume a substantially longitudinal and successive position. This belt carries the brick past the cutter, and due to the flexibility and resiliency of the belt together with the play or resiliency of the guides, the edges of the brick are irregularly and unsymmetrically trimmed while being free to move laterally between the guides. This produces an irregular and unsymmetrical edge cut along on the brick which has not been heretofore produced by the methods described. This lateral movement of the brick permits one edge to be cut more than the other, depending upon the direction in which the brick sway. Under these conditions the side faces of the brick vary from approximately 1¼″ to 2″. The cut edges of the brick are then cleaned off and roughened as they pass the brushes 39 and 40.

It is sometimes desirable to produce a deeper and more wavy cut along the long edges of the brick, and in order to obtain this additional wavy effect the supporting plate 17 may be omitted and the belt 12 supported by means of rollers 13 alone. This permits the brick to assume a rocking motion besides the lateral motion as they are fed past the cutter on the belt, the cutting of the edges in no way interfering with this rocking or lateral motion.

It is sometimes desirable to have the long edges of the ends of the brick trimmed off in a similar manner to that which has been heretofore described. An apparatus for so trimming the edges is clearly illustrated in Figs. 4 and 5.

Longitudinally extending side members 41 and 42 are secured to any suitable supporting base (not shown). A conveyor belt 43 extends between the longitudinally extending side members 41 and 42 and passes over rollers 44 at each end of the belt, which rollers are journaled in suitable bearings mounted upon the longitudinally extending side members 41 and 42. This belt 43 is provided with a plurality of angles 45 riveted thereto, the upstanding leg extending transversely of the direction of movement of the belt 43. Flexible guides 46 are positioned on each side of the belt 43, one end of which is secured to the upstanding leg of an angle 47 bolted to the upper surface of the longitudinally extending side members 41 and 42, the free ends of the guides extending forwardly. A bracket 48 is mounted on the upper surface of the longitudinally extending side members 41 and 42 and extends transversely of the belt 43. This bracket 48 is provided with wires 49 and 50 extending parallel to each other and secured to the bracket, and a further pair of wires 51 and 52 extend parallel to each other but at right angles to the wires 49 and 50, and these wires are also secured within the bracket 48. These wires are so arranged that as the brick passes therethrough the four long edges of the short sides of the brick are trimmed at once.

The brick are placed by hand upon the belt 43 so that one of the long sides engages with the upstanding leg of the angle 45. The belt being flexible causes the brick to pass in a more or less rocking condition through the cutter, and the flexibility of the guides 46 permits the brick to move laterally on the belt while passing through the cutter, this combined action causing the edges of the brick to be cut irregularly and unsymmetrically. It should be understood that all of the brick are not necessarily trimmed along the long edges of the ends as there are only certain instances in which it is desirable to have these edges trimmed in the manner described.

While I have described the method and preferred apparatus in connection therewith, it is to be understood that I do not intend to limit myself to the specific structure employed, as the invention resides in the feature of producing an irregular and unsymmetrical cut along the edges of brick during the trimming of which the brick are moved on a flexible belt or conveyor through the cutter in a lateral or swaying manner, as clearly disclosed in the appended claims.

Having thus described my invention, I claim:

1. The herein described method of forming brick which comprises forming a brick body of wet plastic material, advancing the brick so that irregular lateral motion may be imparted thereto, and at the same time causing edges thereof to be trimmed.

2. The herein described method of forming brick which comprises forming a brick body of brick forming material, conveying the body past a cutter to trim the edges, the said brick and cutter having an irregular relative lateral motion during the trimming operation.

3. The herein described method of forming brick which comprises forming a brick of wet brick forming material, advancing the brick in successive arrangement past a cutter to trim the edges, imparting a motion to the brick as they pass the cutter to cause the edge thereof to be cut in an irregular and unsymmetrical manner.

4. In an apparatus for trimming the edges of brick, a support adapted to receive the brick as they are formed, means for cutting the edges of said brick, means for conveying the same past the cutting means, and means for imparting an irregular lateral motion to the brick while the same are being cut.

5. In an apparatus for trimming the edges of brick, a base adapted to receive the brick as they are formed, means for cutting the

edges of the brick, means for conveying the brick past the cutting means, and yieldable guiding means for guiding the brick past the cutting means so as to cause a non-uniform edge.

6. In an apparatus for trimming the edges of brick, a support adapted to receive the formed brick, a conveyor for said brick, means positioned in the line of movement of said conveyor for trimming the edges of the brick, and resilient means for guiding the brick during the trimming operation.

7. In an apparatus for trimming the edges of brick, a support adapted to receive the formed brick, a resilient conveyor for said brick, means for positioning the bricks in successive alignment on said conveyor, cutting means positioned above and adapted to engage the edges of said brick, and resilient means for guiding the brick through the cutting means to cause an irregular movement of said brick.

8. In an apparatus for trimming the edges of brick, a support adapted to receive the brick after they are formed, means for conveying said brick, resilient guides for said brick, and cutting means above said guides adapted to engage the upper edges of said brick.

9. In an apparatus for trimming the edges of brick, a support adapted to receive the formed brick, a cutter for cutting the edges of the brick, a belt for conveying the brick past the cutter, and resilient guides for positioning the brick as they pass the cutter.

10. In an apparatus for trimming the edges of brick, a support adapted to receive the formed brick, a belt for conveying the brick away from the support, a cutter above the belt adapted to trim the edges of the brick as they are fed past the cutter by the belt, and resilient guides for guiding the brick past the cutter so as to cause a non-uniform edge cut on the brick.

In testimony whereof, I hereunto affix my signature.

SPENCER M. DUTY.