

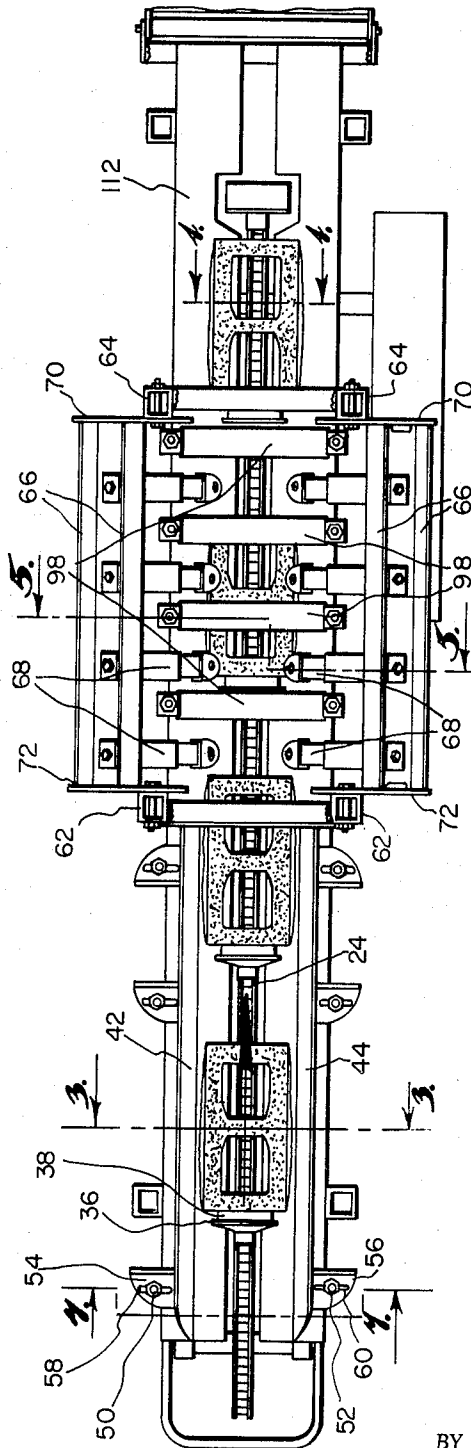
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B. L. MIZER ET AL
BLOCK FINISHING MACHINE

3,213,510

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3 Sheets-Sheet 1



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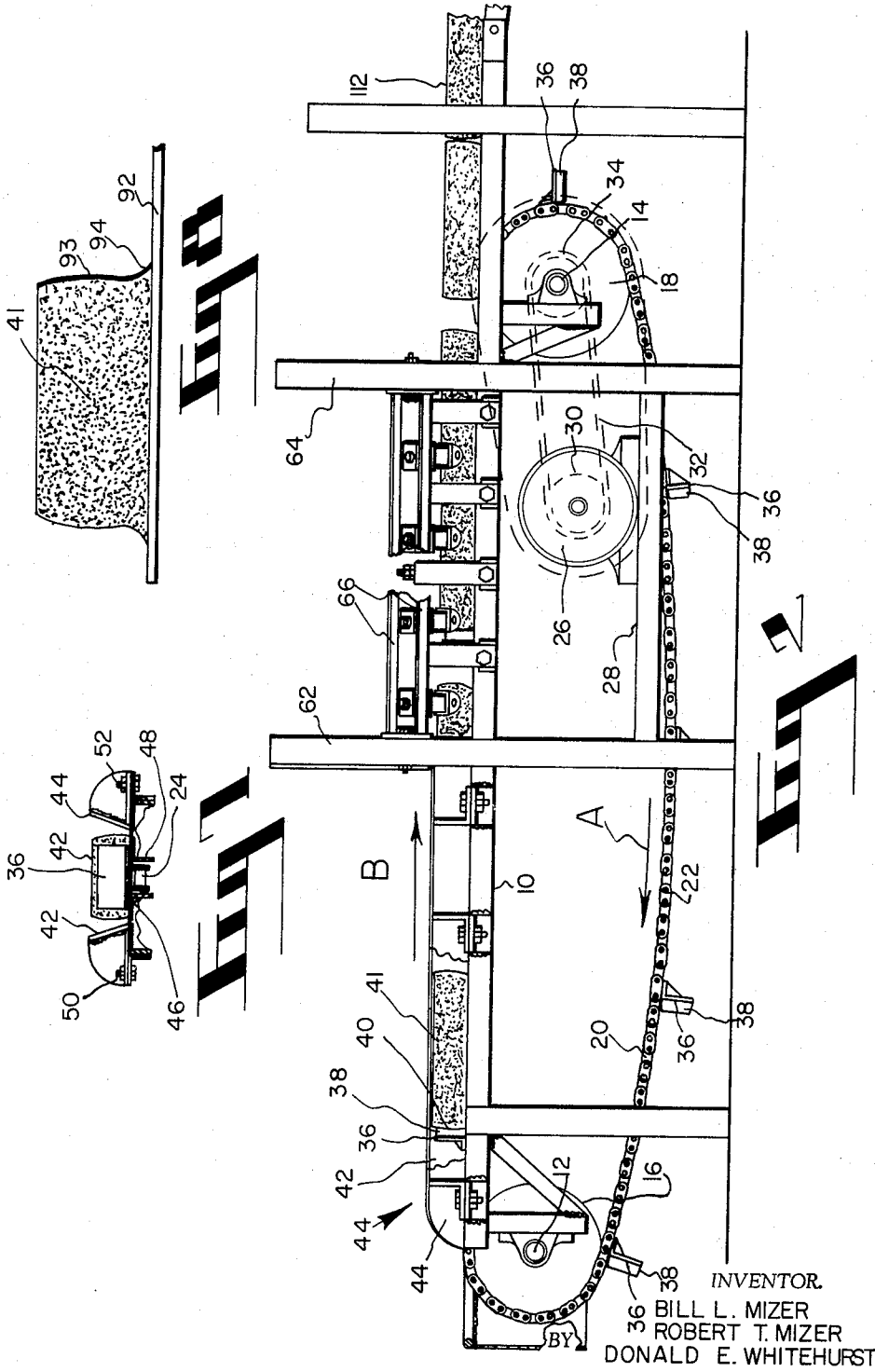
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Fig. 3



Fig. 4

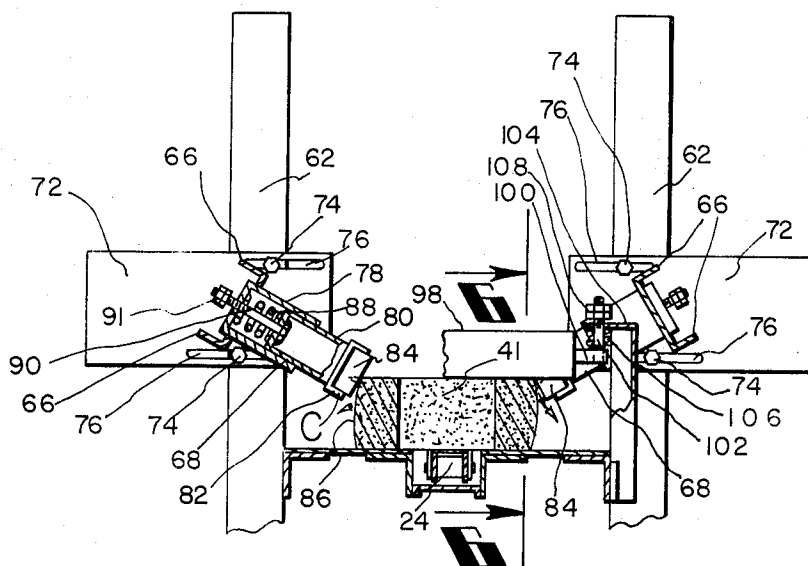


Fig. 5

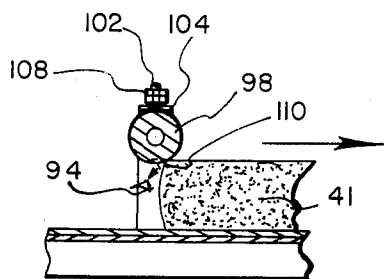


Fig. 6

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BLOCK FINISHING MACHINE

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3 Claims. (Cl. 25—1)

This invention relates to a block finishing machine and more particularly to a block finishing machine for removing cast flashing, or the like, projecting from the corner edges of concrete slump blocks, or other like structures.

In the manufacture of concrete blocks and particularly those known as slump blocks, various problems have been encountered with relation to flashing which is produced at the normally lower corner edges of slump blocks. Such flashing at the normally lower corner edges of slump blocks occurs at the upper surface of supporting pallets when these blocks are vibrated down into a slump condition. The projecting flashing, at the lower corner edges of the blocks, are objectionable and must be removed as a manufacturing process before the blocks are suitable in their most desirable form.

This flashing projecting from the corner edges of the blocks is quite sharp, yet strong, and requires substantial force for the removal thereof. Furthermore, it has been found that various methods may cause undue cracking of the body portion of the block when such flashing is removed. Accordingly, this flash removal problem has become quite important, particularly from the standpoint that the flashing must be removed yet the general configuration of the block, at the corner edges must be preserved.

While the slump blocks are generally of a convex, bowed configuration at their normally vertical surfaces, it is highly desirable to provide for substantially uniform mortar surfaces adjacent the blocks and to reduce the flashing at the corner edges of the blocks to a substantially uniform configuration longitudinally of these edges.

Accordingly, it is an object of the present invention to provide a block finishing machine for removing cast flashing projecting from the corner edges of slump blocks, or the like, which very efficiently removes the cast flashing from the edges of blocks, yet does not mar the general configuration of such edges.

Another object of the invention is to provide a very simple block finishing machine for removing cast flashing projecting from the corner edges of slump blocks, or the like, wherein a power operated conveyor is provided with means for forcefully moving and carrying slump blocks in adjacent relationship to a series of rollers which are spring loaded toward edges at the corners of blocks having projecting flashing thereon so that the rollers progressively roll upon and crack away these projecting flashing portions cast on the blocks during the production thereof.

Another object of the invention is to provide a block finishing machine wherein a conveyor moves slump blocks in an upside-down position so that rollers above the conveyor, disposed transversely of the conveyor, and axially at an angle to the sides of the block, will efficiently crack away and roll down the flashing edges of slump blocks, or the like, so that the corner edges of these blocks may be finished to a uniform and neat condition adjacent the ultimate mortar joints between such blocks when placed in a wall.

Another object of the invention is to provide a block finishing machine having a combination of axially horizontal rollers and rollers disposed axially at an angle to the horizontal and transversely of a conveyor on which

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blocks are carried into engagement with such rollers, whereby the corner edges of slump blocks having flashing projecting therefrom are engaged by the rollers at edges of the blocks which are parallel to the conveyor and also, at edges of the blocks transversely of the conveyor, at the leading and trailing portions of the blocks as they pass through the machine longitudinally of the conveyor.

Another object of the invention is to provide a block finishing machine having a novel combination of a conveyor and spring loaded rollers wherein the rollers are angularly disposed relative to corners of blocks passing therethrough and wherein these rollers are opposed to each other at opposite corner edges of the blocks so that the conveyor forces the blocks between the rollers and wherein the rollers are spring loaded in opposed relation to opposite corner edges of the blocks so that considerable pressure may be applied to these corner edges for rolling down and cracking away projecting flashing initially cast thereon.

Another object of the invention is to provide a block finishing machine wherein blocks may be continuously fed on a conveyor longitudinally through the machine and wherein rollers progressively are engaged by the flashing corner edges of the blocks as they are forcefully moved therebetween by the conveyor so that a continuous flow of concrete blocks may be passed through the machine of the invention and whereby all the blocks emerging therefrom have all of their flashing corners rolled down and broken away to a smooth uniform configuration compatible with the remaining edges at the corners of the blocks.

Another object of the invention is to provide a block finishing machine for removing cast flashing projecting from the corner edges of slump blocks, or the like, wherein a conveyor is provided with an upwardly projecting member having a resilient pad adapted to engage one edge of a block for forcing it between spring loaded rollers so that the block is cushioned while force is applied thereto for forcing the flashing edges of the block between the spring loaded rollers and breaking away the flashing by roller action thereon.

Further objects and advantages of the invention may be apparent from the following specification, appended claims, and accompanying drawings, in which:

FIG. 1 is a top or plan view of a block finishing machine in accordance with the present invention and showing a few blocks passing through the machine in the process of being finished;

FIG. 2 is a side elevational view of the block finishing machine of the invention taken from the line 2—2 of FIG. 1 and further showing portions thereof broken away and in section to amplify the illustration;

FIG. 3 is an enlarged vertical section of a block taken from the line 3—3 of FIG. 1, in a position wherein the block enters the machine and still retains its flashing to be removed by the machine;

FIG. 4 is an enlarged sectional view of a block taken from the line 4—4 of FIG. 1 and showing the block finished after the objectionable flashing has been removed therefrom by the machine;

FIG. 5 is an enlarged fragmentary sectional view taken from the line 5—5 of FIG. 1;

FIG. 6 is a fragmentary sectional view taken from the line 6—6 of FIG. 5;

FIG. 7 is a transverse sectional view taken from the line 7—7 of FIG. 1; and

FIG. 8 is a side elevational view of a slump block after it has been produced on a pallet and showing the slump flashing on the lower corner edges of the block which are contiguous with the pallet.

As shown in FIGS. 1 and 2 of the drawings, the block

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finishing machine of the invention is provided with a frame 10 having conveyor shaft bearings 12 and 14 carrying sprockets 16 and 18, respectively, on which an endless conveyor chain 20 is mounted. A lower run 22 of the chain 20 moves in a direction of an arrow A while an upper run 24 of the chain moves in a direction of an arrow B.

A motor 26 mounted on a cross member 28 of the frame is provided with a sprocket 30 engaging a chain 32 passing over another sprocket 34 on the shaft 14. Thus, the endless conveyor chain 20 is motorized to move in the directions of the arrows A and B.

Fixed to the chain 20 are cleats 36 which project upwardly at the upper run 24 of the chain when it moves in the direction of the arrow B. Fixed to the sides of these cleats 36 are soft or resilient pads 38 which may be made of rubber, or other equivalent material adapted to engage side walls 40 of blocks 41 disposed on the conveyor and moving in the direction of the arrow B. The machine is provided with a block entrance end 44 at which blocks are placed on the conveyor ahead of the cleats 36 and between upwardly extending guide members 42 and 44, shown best in FIG. 7 of the drawings. These guides 42 and 44 are upwardly diverging which facilitates the placement of blocks therebetween and above the run 24 of the endless conveyor chain 20.

Disposed directly below the cleats 36, as shown in FIG. 7 of the drawings, and at opposite sides of the chain 24, are angle shelf members 46 and 48 which serve as slideway supports for the blocks 41 as they move on the conveyor in the direction of the arrow B, in FIG. 2 of the drawings. It will be seen that the side plates 42 and 44 are secured by bolts 50 and 52 to the frame 10 and that the guides 42 and 44 are provided with mount plates 54 and 56 having slots 58 and 60 disposed laterally of the conveyor, the bolts 50 and 52 being extended through the slots 58 and 60 so that the side plates 42 and 44 may be adjusted laterally of the conveyor to accommodate blocks of different widths and these side plates 42 and 44 may also be adjusted to provide normal alignment of the blocks as they are placed on the conveyor so that they will ultimately be disposed between the block finishing rollers, as will be hereinafter described in detail.

Mounted on the frame 10 by means of uprights 62 and 64 are roller supporting frame members 66. It will be understood that a pair of the uprights 62 and 64, as shown in FIG. 1 of the drawings, are disposed on each side of the machine and that the roller supporting frame members 66 are similar in construction, at opposite sides of the machine. Thus, a plurality of roller supports 68 are mounted on the roller frame 66 at each opposite side of the conveyor 24.

The roller supporting frames 66, as shown in FIG. 5 of the drawings, are disposed between mounting plates 70 and 72 which are laterally adjustably mounted on the uprights 62 and 64 by means of bolts 74 which are disposed in slotted portions 76 in the plates 70 and 72.

The roller supports 68 are thus laterally adjustable relative to the conveyor run 24 in order to accommodate different size blocks, as hereinbefore described. The plates 72, being adjustable relative to the supports 62, as shown in FIG. 5, permit the rollers, as will be hereinafter described, to be aligned substantially with the guides 42 and 44, hereinbefore described.

Each roller support 68 is provided with a fixed cylindrical member 78 carried by the roller supporting frames 66. Telescopically mounted and fixed against rotation in the cylindrical member 78 is another member 80 having a bifurcated portion 82 at its inner end on which a roller 84 is rotatably mounted. The axis C of the roller 84 being at an angle to a side wall portion 86 of each block 41, the axis C also being at an angle to the longitudinal axis of the conveyor run 24, it being understood that the axis C of each roller 84 may be substantially 45

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degrees to the upper and lower planes of the blocks 41, shown in FIG. 5, and may be substantially transversely disposed relative to the conveyor 24. However, the exact angles may be varied in accordance with the particular size of the blocks and the character of the material and other factors.

A spring 88 contained in each cylindrical member 78 tends to project the roller support 80 in a direction toward the conveyor 24 and toward a corner edge of a block 41 to remove flashing therefrom, as will be hereinafter described.

A bolt 90 secured to each member 80 projects centrally of the spring 88 and is provided with nuts 91 thereon engageable with the outer end of the cylindrical member 78 to limit the inward projection of each roller 84 by the spring 88 when a block is not in position between the opposed rollers 84.

Thus, the rollers 84 may be in close proximity but slightly inward of the corner edges of a block previous to its entrance between the opposed rollers 84 and the nuts 91 in each of the bolts 90 thus limits the inward movement of the rollers 84 to a position slightly inward of the normal location of the opposed flashing on the blocks, as will be hereinafter described.

As shown in FIG. 8 of the drawings, a slump block 41 is produced on a pallet 92 and when the block is slumped to provide convex sides 93, lower corner edges of the blocks 41 slump laterally to provide flashing 94. This flashing is cured on the blocks and is objectionable since it projects along the ultimate mortar line between adjacent blocks in a formed wall.

As shown in FIG. 3, the blocks are laid on the conveyor of the present machine with the flashing 94 at the uppermost corner edges so that this flashing will contact the rollers 84 as the clips 36 force the blocks 41 through the machine and between the opposed spring loaded rollers 84.

It will be seen from an inspection of FIGS. 1, 2, and 5, that there are a plurality of the rollers 84 on each opposite side of the conveyor and that these rollers are opposed and in series providing for efficient and successive rolling and cracking action on the flashing 94 in order to remove this flashing down to a position 96, as shown in FIG. 3 of the drawings, so that the block 41 when it emerges from the machine, has the appearance, as shown in FIG. 4 of the drawings, in which upper and lower corner edges are quite uniform and symmetrical. Thus, these edges are then in condition for installation into a block wall adjacent normal mortar joints.

Secondary rollers of the machine, designated 98, are disposed with their axes transversely of the conveyor and their axes are substantially horizontal, all as indicated in FIGS. 1 and 5 of the drawings. Each of these rollers 98, as shown in FIGS. 5 and 6 of the drawings, is provided with an axle 100 about which each roller is rotatably mounted. Fixed to each opposite end of the axle 100 is a bolt 102 which projects through a frame member 104 of the machine frame, a spring 106 surrounds each bolt 102 and exerts downward force on each opposite end of the axle 100, thus spring loading each roller 98 downwardly. Stop nuts 108 on each bolt 102 are engageable with the upper portion of each frame member 104 in order to limit the downward movement of the peripheral portion of each roller 98 to a position slightly below the upper plane of each concrete block 41 so that flashing on the forward and rearward corner edges, at the upper plane of the block, are engaged by the rollers 98 as the blocks progressively roll thereunder. As each block proceeds forward under the rollers 98, the roller 98, as it rolls up over the leading edge of the block, it tends to crack away the flashing 94 and as it rolls downward over the trailing edge of each block, it tends to further crack away the flashing 94. Thus, these rollers 98, being in series, each engage the forward flashing edge of the block and each successively engage the flashing at

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the trailing edge so that these rollers in series, completely and uniformly crack away and remove and roll down the flashing edges of the blocks so that they are uniform around their edges, all as indicated in FIG. 4 of the drawings.

The actual operation of the rollers 98 passing over the trailing edges 110 of blocks 41, is shown in FIG. 6 of the drawings, where the flashing 94 is illustrated as being broken away, as the roller 98 rolls downward over the trailing edge of the block. This action is accomplished by means of the loading of the springs 106 all as hereinbefore described.

It will be seen that a continuous flow of blocks to be finished may be placed on the conveyor at its receiving end 44 and may be removed from the delivery end 112 of the machine, as desired. Since this machine is a continuously operable machine, it may be coordinated with automatic handling systems or it may be utilized with manual labor, as desired.

It will be obvious to those skilled in the art that various modifications of the present invention may be resorted to in a manner limited only by a just interpretation of the following claims.

We claim:

1. In a block finishing machine for removing cast flashing projecting from the corner edges of slump blocks, or the like, the combination of: a frame; a conveyor for forcefully moving and carrying blocks relative to said frame; rollers rotatably mounted on said frame and disposed to engage and bear against flashing projecting from corner edge portions of blocks carried on said conveyor; a second roller rotatably mounted on said frame above and axially transverse relative to said conveyor; means yieldably forcing said second roller downwardly toward said conveyor; a peripheral portion of said second roller thus normally disposed slightly below a level at which a plane of a block will pass when carried on said conveyor, said second roller thus disposed to roll over corner edge portions at the forward and rearward portions of blocks as they are carried longitudinally of said conveyor; a block carrying surface of said conveyor; the axes of said first mentioned rollers disposed at angles to said block carrying surface and to the top and side planes of said blocks.

2. In a block finishing machine for removing cast flashing projecting from the corner edges of slump blocks, or the like, the combination of: a frame; means for force-

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fully moving blocks relative to said frame; opposed rollers rotatably mounted on said frame and disposed to engage opposite upper corner edge portions of blocks to remove the flashing therefrom; second rollers axially disposed laterally of said conveyor and axially disposed horizontally to engage forward and rearward edges of blocks as they are moved along said conveyor, said second rollers yieldably loaded vertically and downwardly to a position slightly below the upper plane of such blocks as they pass on said conveyor whereby said rollers roll upward over the forward edges and downward over the rearward edges of said blocks as they pass along said conveyor; a block carrying surface of said conveyor; the axes of said opposed rollers disposed at angles to said block carrying surface and to the tops and side planes of said blocks.

3. In a block finishing machine for removing cast flashing projecting from the corner edges of slump blocks, or the like, the combination of: a frame; a conveyor having a block carrying surface for forcefully moving and carrying blocks relative to said frame; rollers rotatably mounted on said frame and disposed to engage and bear against flashing projecting from corner edge portions of blocks carried on said conveyor; whereby rolling action of said rollers removes said flashing away from said corner edges; the axes of said rollers disposed at an angle to the longitudinal axis of said conveyor; the axes of said rollers disposed at an angle to said block carrying surface and to the top and side planes of said blocks.

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