March 2, 1954 T. M. WIGLEY 2,670,515

CONCRETE PRODUCT MACHINE

Filed Aug. 15, 1951 4 Sheets-Sheet 1

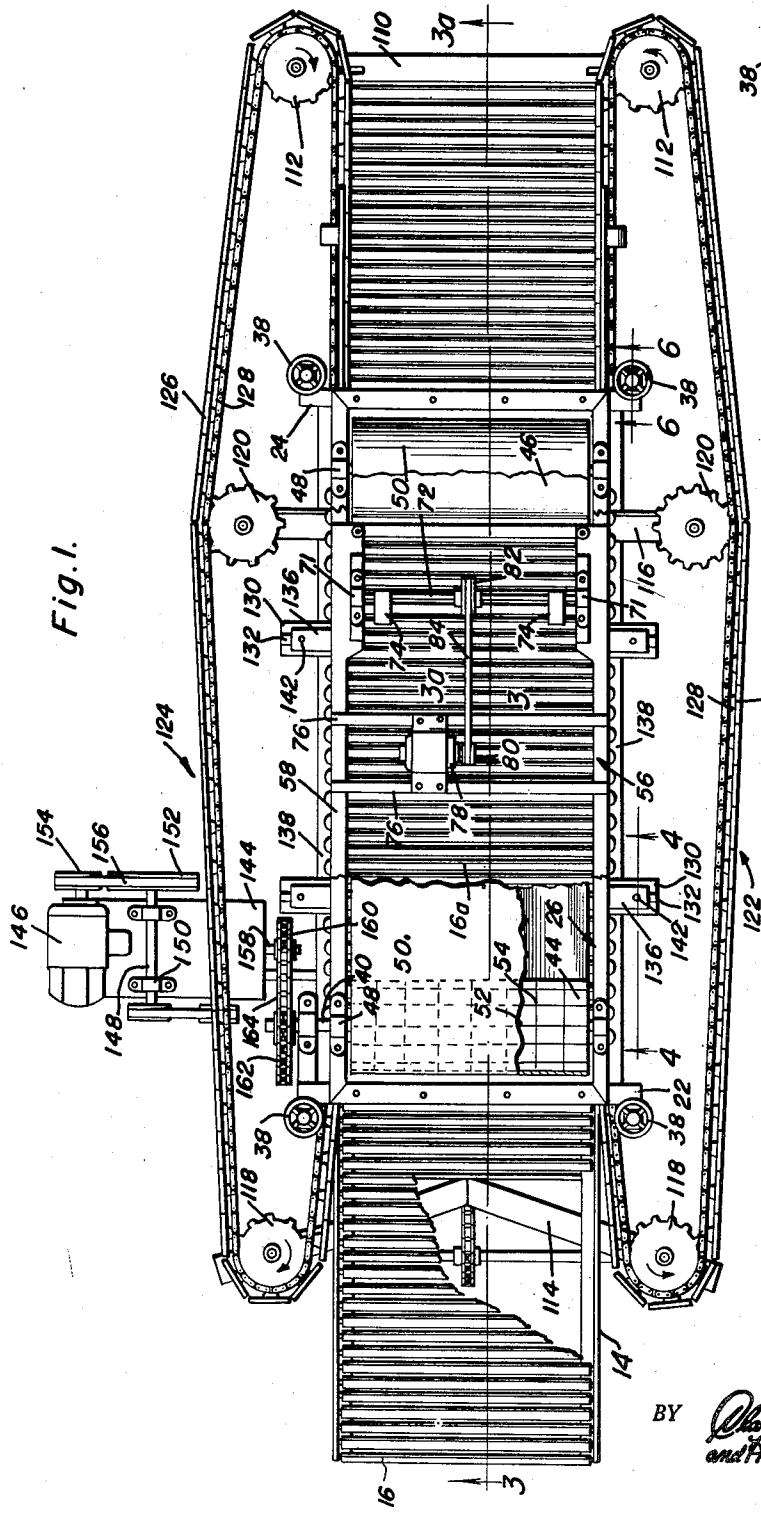


Fig. 1.

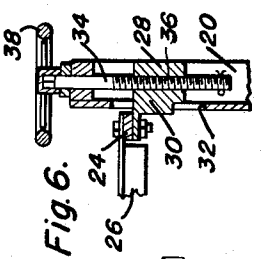


Fig. 6.

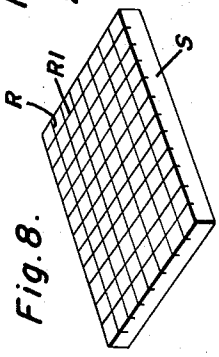


Fig. 8.

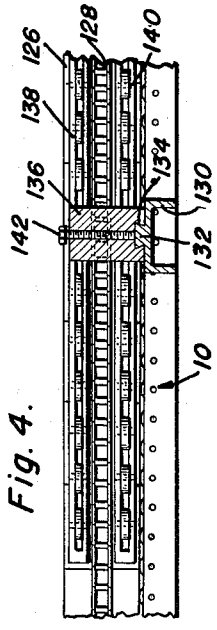


Fig. 4.

Tom M. Wigley
INVENTOR.

BY Thomas A. O'Brien and Harvey B. Jacobson
Attorneys

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CONCRETE PRODUCT MACHINE

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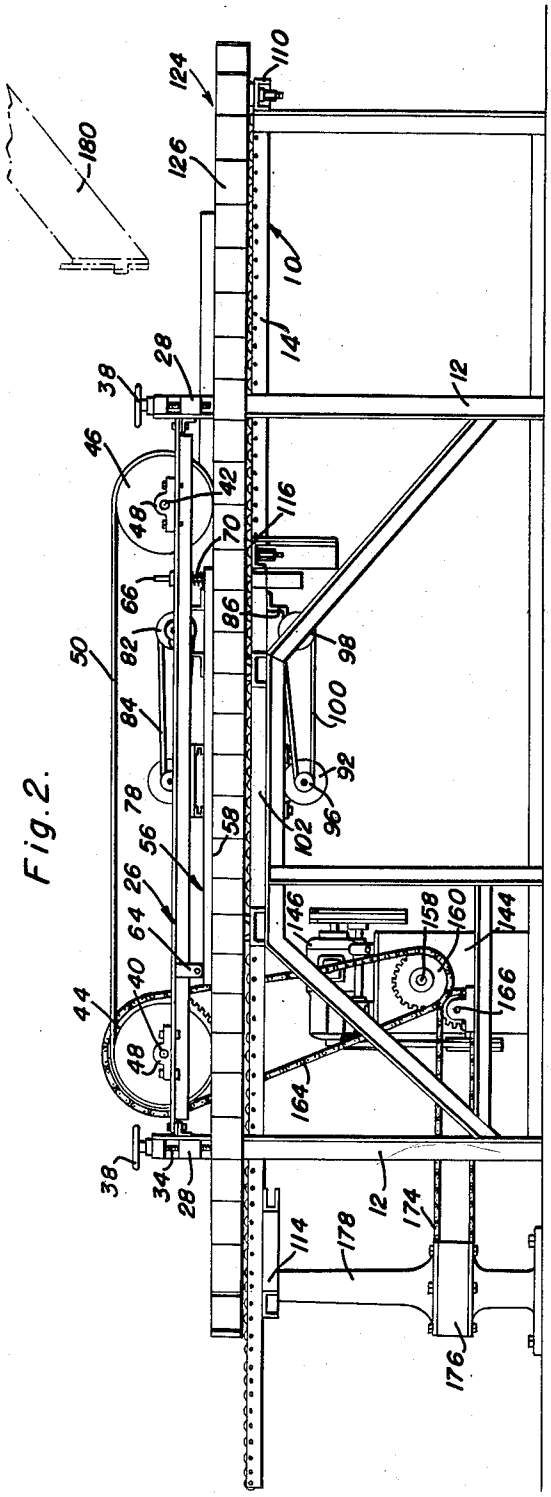


Fig. 2.

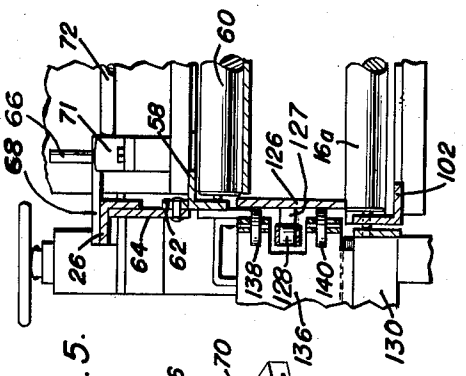


Fig. 5.

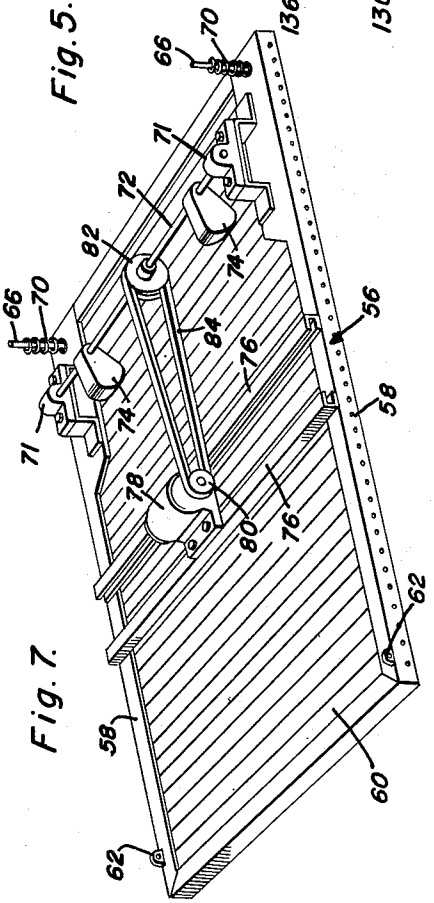


Fig. 7.

Tom M. Wigley
INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

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CONCRETE PRODUCT MACHINE

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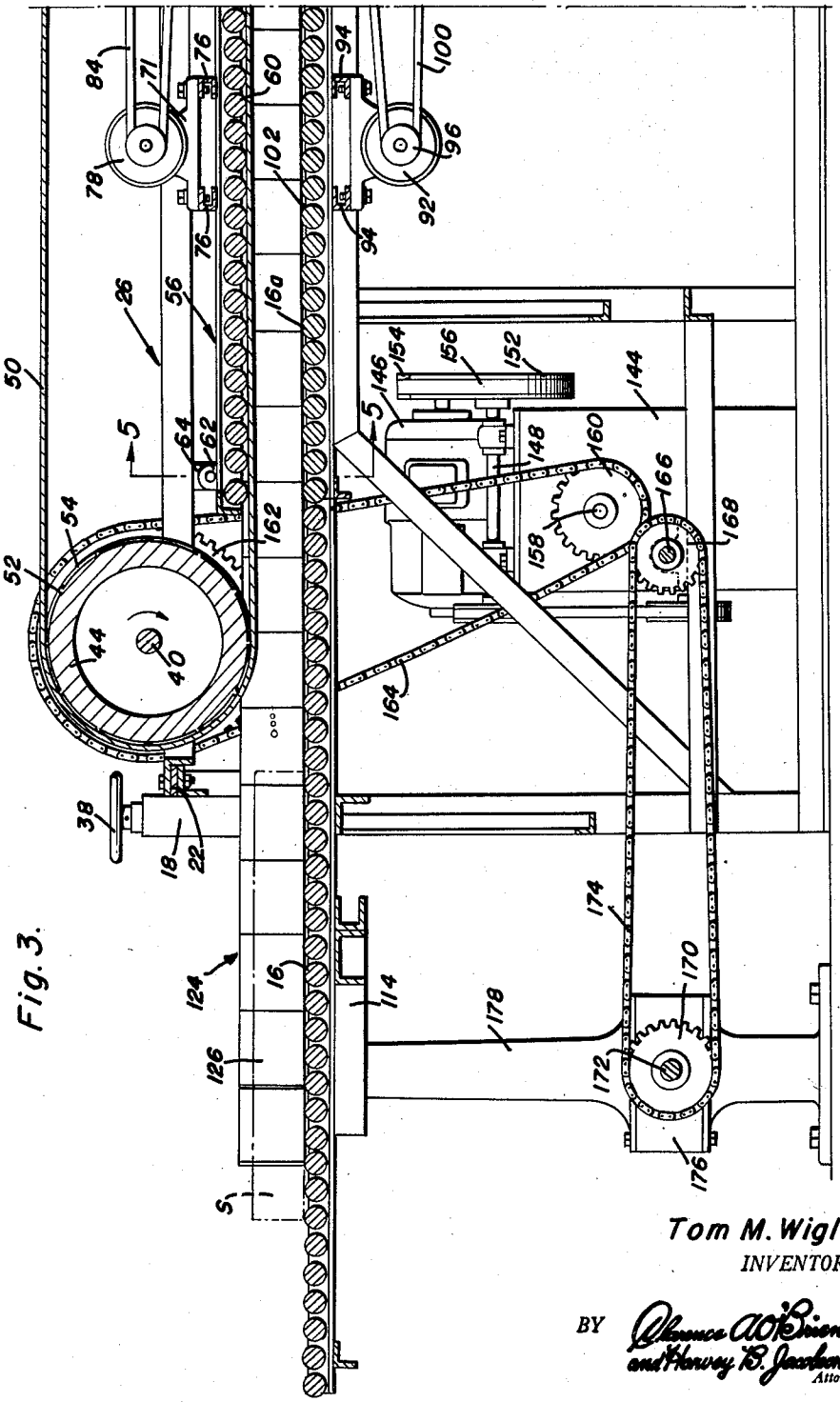


Fig. 3.

Tom M. Wigley
INVENTOR.

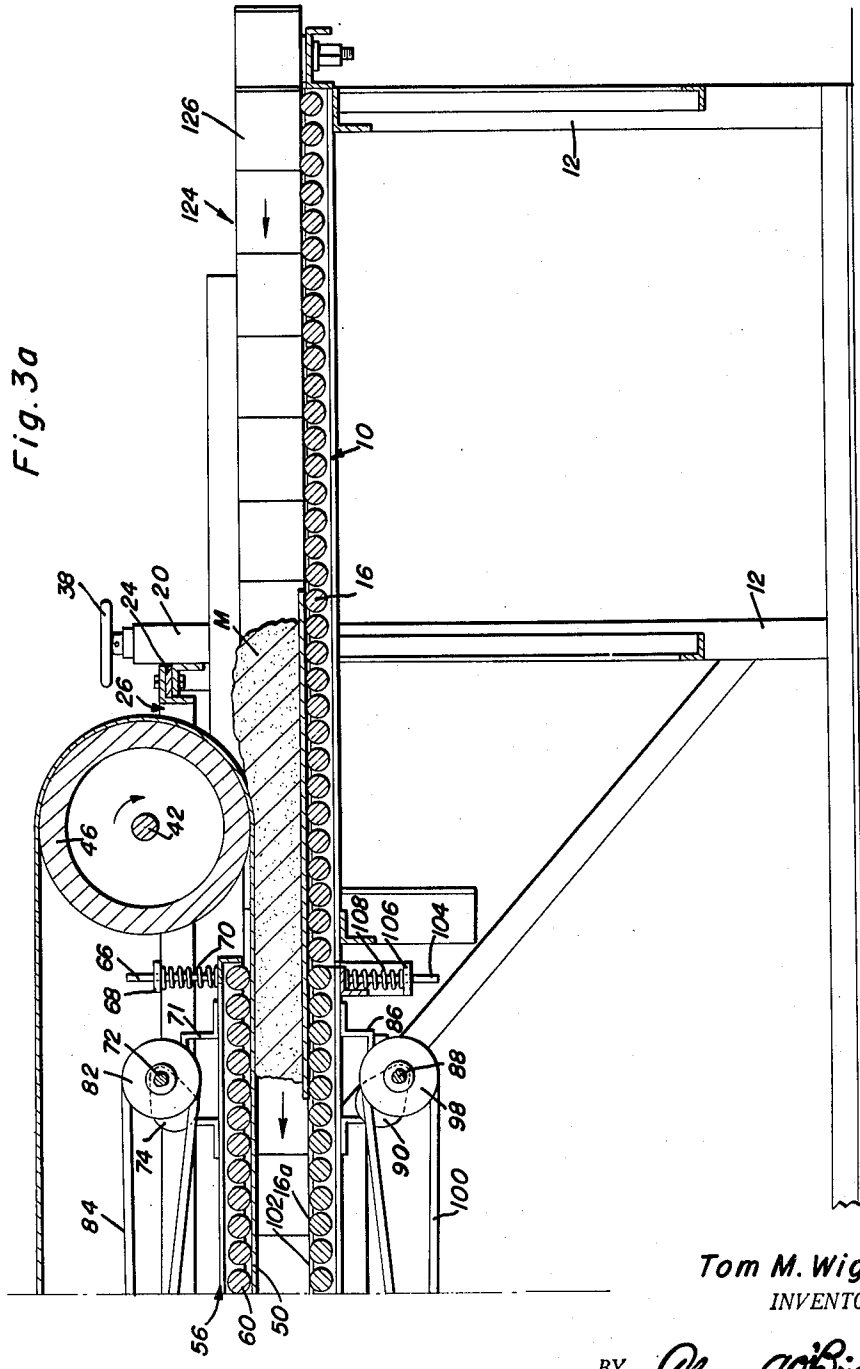
BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

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CONCRETE PRODUCT MACHINE

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Fig. 3a



Tom M. Wigley
INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

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CONCRETE PRODUCT MACHINE

Tom M. Wigley, Lubbock, Tex.

Application August 15, 1951, Serial No. 242,018

9 Claims. (Cl. 25—42)

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This invention relates to new and useful improvements in article handling apparatus and the primary object of the present invention is to provide a machine for forming and shaping concrete slabs as the concrete is moved from one end of a frame to the other end of the frame.

Another important object of the present invention is to provide a concrete shaping and forming machine composed of a pair of endless, horizontally rotating side forming members that will determine the width of a concrete slab formed therebetween and which members will move the slab from one end of a frame to the other end thereof while forming the sides of the slab.

A further object of the present invention is to provide a machine for manufacturing prefabricated building material, ornamental veneering stone, brick and tile, including upper and lower relatively adjustable vibrating members between which a moldable material is moved by power driven side forms, whereby a slab may be formed of a predetermined thickness.

A still further aim of the present invention is to provide a concrete products machine that is simple and practical in construction, strong and reliable in use, efficient and durable in operation, inexpensive to manufacture, install and service, and otherwise well adapted for the purposes for which the same is intended.

Other objects and advantages reside in the details of construction and operation as more fully hereinafter described and claimed, references being had to the accompanying drawings forming part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a plan view of the present invention and with parts broken away for the convenience of explanation;

Figure 2 is a side elevational view of Figure 1;

Figure 3 is an enlarged fragmentary longitudinal vertical section view taken substantially on the plane of section line 3—3 of Figure 1 to show one end of the machine;

Figure 3a is an enlarged fragmentary longitudinal vertical sectional view taken substantially on the plane of section line 3a—3a of Figure 1 to complete the half shown in Figure 3;

Figure 4 is an enlarged longitudinal sectional view taken substantially on the plane of section line 4—4 of Figure 1;

Figure 5 is an enlarged detail vertical sectional view taken substantially on the plane of section line 5—5 of Figure 3;

Figure 6 is an enlarged detail vertical sectional

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view taken substantially on the plane of section line 6—6 of Figure 1;

Figure 7 is a perspective view of the frame member and the rollers and vibrator carried thereby and removed from the rest of the machine; and,

Figure 8 is a perspective view of a slab formed by the present machine.

Referring now to the drawings in detail, wherein for the purpose of illustration, there is disclosed a preferred embodiment of the present invention the numeral 10 represents a supporting frame composed of angle iron members that are suitably secured and braced together. The frame 10 is elongated and legs 12 support the frame in a substantially horizontal position.

The longitudinal angle iron side members 14 of the frame 10 are provided with longitudinally spaced apertures in their vertical flanges that rotatably support the reduced ends of rollers 16. The rollers are spaced parallel to each other and extend transversely and horizontal between the members 14.

Forward and rear short posts 18 and 20 rise from the frame above the rollers. The forward posts 18 are joined by a cross bar 22 and the rear posts are joined by a cross bar 24. Both bars 22 and 24 extend transversely of the frame and are spaced above the rollers 16.

A rectangular, open, support 26 of angle iron construction is supported on the posts 18 and 20 for vertical adjustment while remaining horizontal. The ends of the support 26 are bolted to the cross bars 22 and 24 and the cross bars are secured to vertical slides 28 carried by the posts and having portions 30 extending through vertical slots 32 in the posts.

Vertical, screw threaded rods 34 are rotatably supported by the posts and receivably engage internally threaded vertical bores 36 in the slides 28. Hand wheels 38, secured to the upper ends of the rods 34, constitute a means whereby the rods may be manually rotated to selectively raise and lower the slides.

The supporting shafts 40 and 42 of hollow forward and rear drums 44 and 46 are rotatably supported in bearings 48 mounted on the ends of the support 26. An endless belt or rubber web 50 is trained about the drums 44 and 46. The drum 44 is formed with a plurality of circumferentially spaced longitudinal ribs 52 and a plurality of longitudinally spaced circumferential ribs 54, that will form recesses R and R1 respectively, in a block or slab S formed by the present machine.

An open substantially rectangular angle iron frame member 56 is supported from the support 26 and include side portions 58 that are formed with longitudinally spaced apertures rotatably receiving the reduced ends of upper spaced parallel horizontal rollers 60.

Ears 62 rising from the forward end of frame member 56 are pivoted to ears 64 depending from the support 26, to permit vertical swinging movement of the frame member. The rear end of the frame member 56 carries a pair of upstanding short rods 66 that are slidably received by ears 68 extending horizontally from the support 26. Springs 70 surround the rods 66 and are biased between the ears 68 and the frame member 56 to urge the latter toward the lower rollers 16.

Suitable means may be employed for preventing the rods 66 from disengaging the ears 68, such as nuts threaded on the rods 66, although the lower flight of belt 50 extends under the rollers 60 to perform this result.

Means is provided for vibrating the frame member 56 and this means comprises a pair of bearings 71, rising from the rear end of the member 56, that rotatably support a transverse shaft 72 carrying eccentrically mounted weights 74. Cross channels 76 fixed to the central part of frame member 56 carry an electric motor 78 whose drive shaft supports a pulley 80 that is connected to a pulley 82 on shaft 72 by an endless pulley belt 84.

A vibrator unit similar to that described above is supported indirectly by the frame 10 and consists of bearings 86 depending from the frame 10 that rotatably support a lower transverse shaft 88 carrying eccentrically mounted weights 90. An electric motor 92 supported beneath the frame 10 by cross channels 94 supports a pulley 96 on its drive shaft that is connected to a pulley 98 on shaft 88 by a pulley belt 100.

It should be here noted, that an intermediate portion of the frame 10, below the support 26, accommodates a lower, open, rectangular angle iron frame member 102 whose forward end is pivoted to the sides of the frame 10 and whose rear end carries depending short rods 104 that are slidably received by brackets 106 depending from the frame 10. Spring 108 surround the rods 104 and are biased between the brackets 106 and the frame member 102 to urge the latter raised. It is the frame member 102 to which the bearings 86 and channels 94 are secured in order to permit vibration of the frame member 102 and the transverse rollers 16a carried thereby.

The outwardly projecting slotted ends of a rear support 110 fixed to the frame 10 slidably adjustably support horizontal gear wheels 112 and this is likewise true of forward support 114 and intermediate support 116 that are carried by the frame 10 and which support horizontal gear wheels 118 and 120, respectively.

Endless side forms or conveyor members 122 and 124 extend about the gear wheels and longitudinally of and alongside the frame 10 but above the rollers 16, 16a. These members 122 and 124 are each composed of a plurality of links or flat plates 126. The adjacent plates are suitably secured, as at 127, to or connected to an endless sprocket chain 128 that will engage the gear wheels.

Horizontal guide channels 130 project laterally from the frame 10 and are formed with dovetailed ribs 132 on their upper faces that slidably enter dovetail grooves 134 in the lower ends of blocks 136. Upper and lower roller or bearing

units 138 and 140 are supported behind the inner flights of the member 122 and 124, and are mounted on the blocks 136. Set screws 142 adjustably carried by the blocks 136 are manually adjustable to engage the ribs 132 to adjust the blocks on the ribs and the bearing units against the inner flights of the members 122 and 124.

Means is provided for rotating the conveyor members 122 and 124, the drum 44 and the gears 118. This means comprises a gear box 144 supporting on its upper wall a motor 146 and a shaft 148, the latter being carried in bearings 150. One end of the shaft 148 supports a pulley 152 that is connected to a pulley 154 on the drive shaft of the motor by a pulley belt 156.

The other end of shaft 148 is operatively connected to a shaft 158 through reduction gearing (not shown) in the housing 144. One end of shaft 158 supports a sprocket 160 that is connected to a sprocket 162 on shaft 40 by a sprocket chain 164.

Another shaft 166 projects from the housing 144 and is operatively connected to shaft 148. The shaft 166 supports a sprocket 168 that is operatively connected to a sprocket 170 on a shaft 172 by a sprocket chain 174. The ends of shaft 172 enter the intermediate casing portions 176 of columns 178 that rotatably support the vertical shafts for gears 118 and the gear supporting shafts in columns 178 are connected to the ends of shaft 172 by beveled gears or the like.

In practical use of the present invention, a moldable material in viscous form, is dropped onto a platter on the rollers 16 at the rear of frame 10 from a suitable hopper 180.

The horizontally adjustable side forms 122 and 124 are adjusted to the proper width of the desired finished product and the upper conveyor 50 is adjusted vertically by hand wheels 38 to produce the desired thickness of finished product.

The side forms 122 and 124 and the upper form 50 are set in motion at the desired speed to produce the required rate of horizontal travel through the machine and serve the dual purpose of providing the necessary force to move and shape the top and two sides of the mixture M. These forms provide the power through contact with the mixture on these three faces, the bottom side being free to move with the pallet over the rollers 16, 16a.

As the mixture moves through the vibrating sections 58, 102, the vibration causes the mixture to set and become firm enough to handle after leaving the machine.

Although the machine is designed with the idea that the side and upper conveyors will move and form the mixture, in some instances to increase production, small individual forms can be placed side by side, filled with concrete and moved through the machine. Under these conditions the side conveyors would serve as conveyors only while the upper conveyor would still serve as a form for the top surface of the mixture.

In view of the foregoing description taken in conjunction with the accompanying drawings, it is believed that a clear understanding of the device will be quite apparent to those skilled in this art. A more detailed description is accordingly deemed unnecessary.

It is to be understood, however, that even though there is herein shown and described a preferred embodiment of the invention, the same is susceptible to certain changes fully compre-

hended by the spirit of the invention as herein described and the scope of the appended claims.

Having described the invention, what is claimed as new is:

1. A machine for manufacturing prefabricated building material, said machine comprising an elongated frame, horizontal side by side rollers mounted transversely of the frame, a vertically adjustable horizontal support mounted on the frame above the rollers, additional horizontal rollers extending transversely of the frame and supported on the support in parallel relation to the first-named rollers and overlying the first-named rollers, a power driven endless belt mounted on said support and including a lower flight extending under the said additional rollers and spaced above the first-named rollers, and combined conveyor and slab forming means supported along the sides of the frame and extending upwardly from the first-named rollers for engaging articles supported by the first-named rollers to move the articles from one end of the frame to the other, the first-named rollers extending substantially throughout the length of said lower flight, and a frame member supporting the additional rollers, means pivotally securing one end of said frame member to the support, means slidably securing the other end of the frame member to the support, and spring means urging said other end of said frame member toward the first named rollers.

2. A machine for shaping concrete products comprising an elongated frame, a lower series of spaced parallel horizontal rollers supported on the frame and extending transversely of the frame, a support adjustably secured to the frame directly above the rollers and manually adjustable toward and away from the rollers, an elongated frame member vertically swingably supported by the support over the rollers, an upper series of spaced parallel horizontal rollers supported transversely across the frame member and overlying the lower series of rollers and spaced vertically therefrom, a pair of drums supported for rotation on the ends of the support member and extending transversely of the frame member, an endless belt trained about the drums and including a lower flight extending under the upper series of rollers and spaced above the lower series of rollers, endless, power driven, horizontal form members supported at the sides of the frame between the upper and lower series of rollers, and means yieldingly urging the frame member downwardly relative to the support and against the lower flight.

3. The combination of claim 2 wherein one of said drums includes a plurality of circumferentially spaced longitudinal ribs and a plurality of longitudinally spaced circumferential ribs adapted to form depressions in a slab of concrete engaging the portion of the lower flight of the belt beneath the ribbed drum.

4. The combination of claim 2 wherein said form members include inner flights paralleling the longitudinal axis of the frame, said form members each being composed of a plurality of links pivotally connected together.

5. The combination of claim 2 and a power driven shaft supported on and disposed transversely of said frame member, and eccentric weights on said shaft to vibrate the frame member during rotation of the shaft.

6. A machine for shaping concrete products comprising an elongated frame, a lower series of spaced parallel horizontal rollers supported on the frame and extending transversely of the frame, a support adjustably secured to the frame directly above the rollers and manually adjustable, while remaining horizontal, toward and away from the rollers, an elongated frame member vertically swingably supported by the support over the rollers, an upper series of spaced parallel horizontal rollers supported transversely across the frame member and overlying the lower series of rollers and spaced vertically therefrom, a pair of drums supported for rotation on the ends of the frame member and extending transversely of the frame member, an endless belt trained about the drums and including a lower flight extending under the upper series of rollers and spaced above the lower series of rollers, endless, power driven, horizontal form members supported at the sides of the frame between the upper and lower series of rollers, and means yieldingly urging the frame member downwardly relative to the support and against the lower flight, said frame member being pivotally secured at one end to the support for vertical swinging movement, said last-named means including means slidably securing the other end of the frame member to the support, and spring means urging the said other end of the frame member toward the lower series of rollers and against said lower flight.

7. The combination of claim 2 and means slidably and adjustably mounted on said frame and engaging the horizontal form members, said form members including straight portions engaged by said slidably and adjustably mounted means and retained parallel to each other.

8. A machine for shaping concrete products comprising an elongated frame, a plurality of spaced parallel horizontal rollers mounted on and extending transversely of the frame, posts extending upwardly from the frame, a rectangular open support overlying the rollers, means slidably adjustably securing the corners of the support to the posts for vertical adjustment of the support selectively toward and away from the rollers, an elongated frame member vertically swingably attached at one end to the support, means slidably securing the other end of the frame member to the support, spring means yieldingly urging the frame member downwardly toward the rollers, an upper series of spaced parallel horizontal rollers on the frame member overlying the first-named rollers and extending transversely of the frame above the first-named rollers, a pair of drums rotatably supported on the support and paralleling the upper rollers, said upper rollers occupying substantially all of the space between the drums, an endless web trained about the drums and having a lower flight engaged by and underlying the upper rollers, and a pair of endless, power driven, horizontal form members supported at the sides of the frame between the first-named rollers and the upper rollers.

9. A machine for shaping concrete products comprising an elongated frame, a plurality of spaced parallel horizontal rollers mounted on and extending transversely of the frame, posts extending upwardly from the frame, a rectangular open support overlying the rollers, means slidably adjustably securing the corners of the support to the posts for vertical adjustment of the support selectively toward and away from the rollers, an elongated frame member vertically swingably attached at one end to the support, means slidably securing the other end of the frame member to the support, spring means yield-

ingly urging the frame member downwardly toward the rollers, an upper series of spaced parallel horizontal rollers on the frame member overlying the first-named rollers and extending transversely of the frame above the first-named rollers, a pair of drums rotatably supported on the support and paralleling the upper rollers, said upper rollers occupying substantially all of the space between the drums, an endless web trained about the drums and having a lower flight engaged by and underlying the upper rollers, and a pair of endless, power driven, horizontal form members supported at the sides of the frame between the first-named rollers and the upper rollers, and a power driven vibrator supported on said frame member at the end thereof slidably secured to the support.

TOM M. WIGLEY.

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