Oct. 6, 1931. J. J. F. BRAND 1,825,938

BRICK EMBOSSING MACHINE

Filed Nov. 3, 1928 4 Sheets-Sheet 1

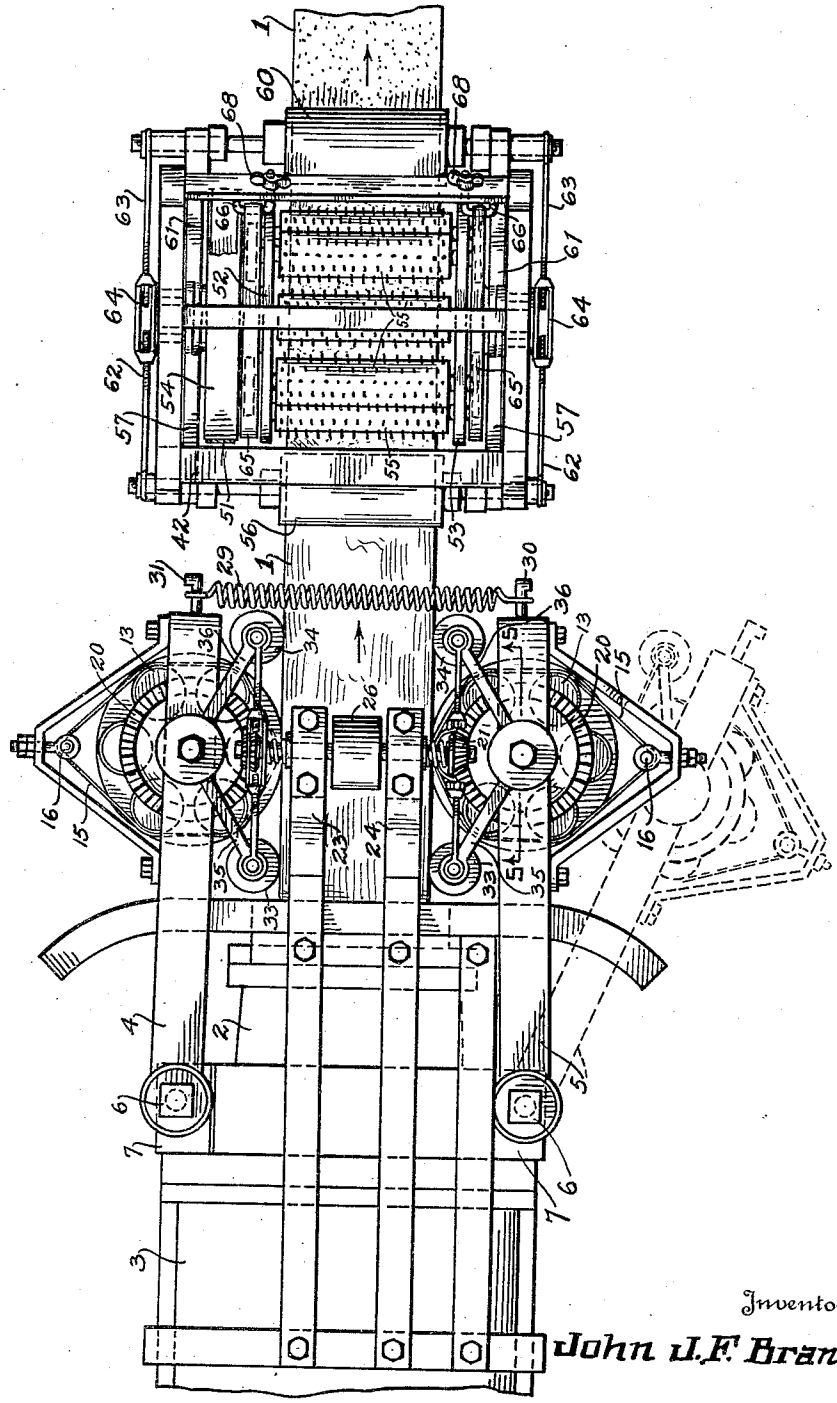


Fig. 1.

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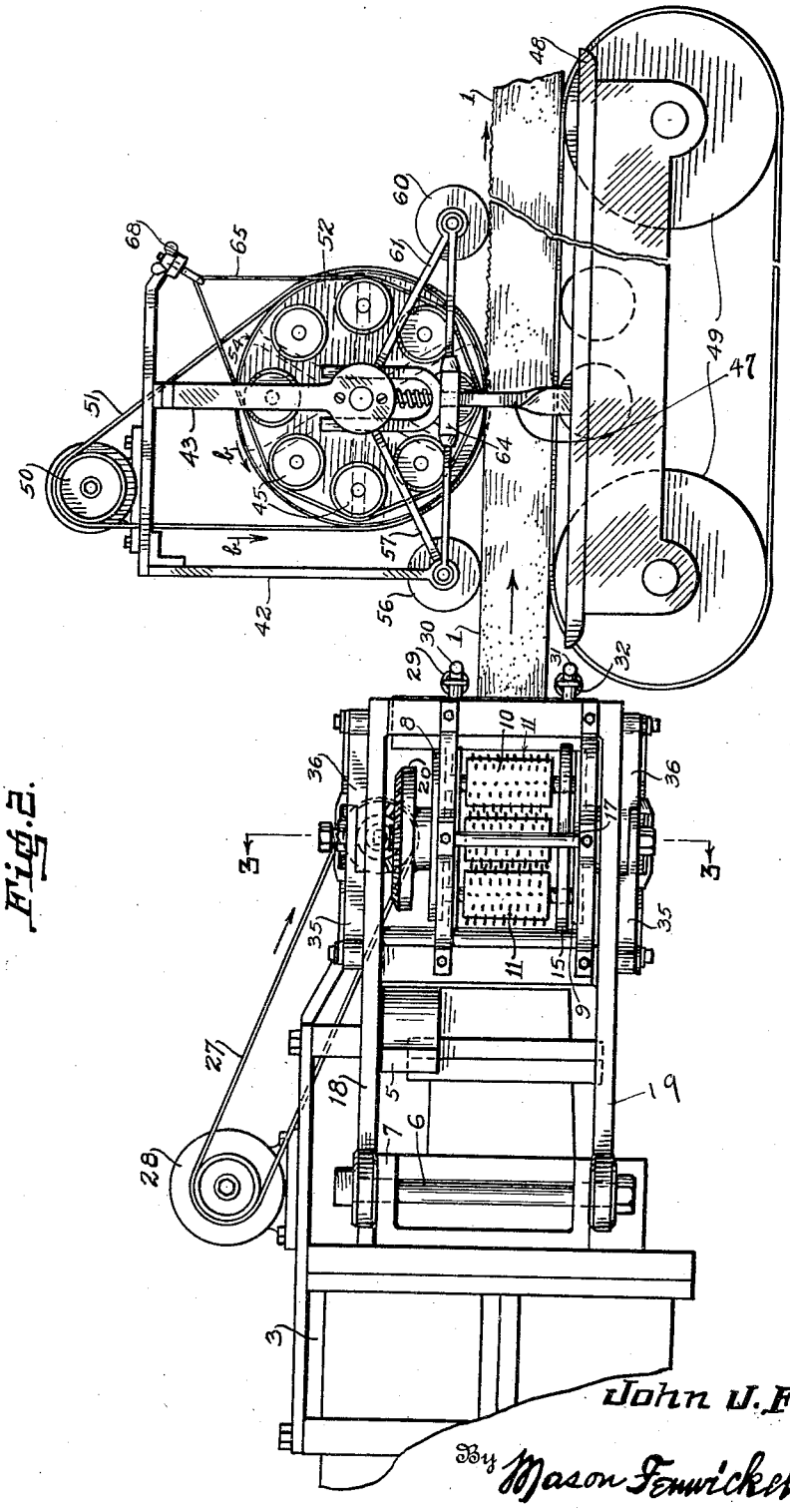


Fig. 2.

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BRICK EMBOSSING MACHINE

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Fig. 3.

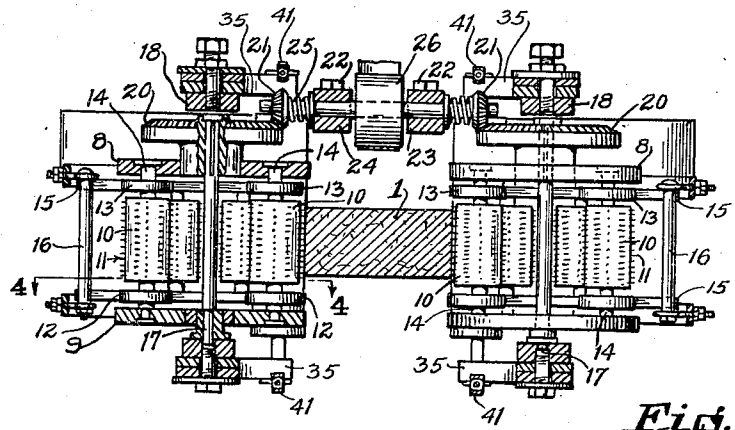


Fig. 5.

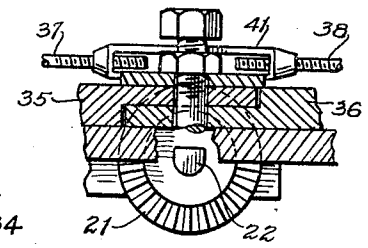


Fig. 4.

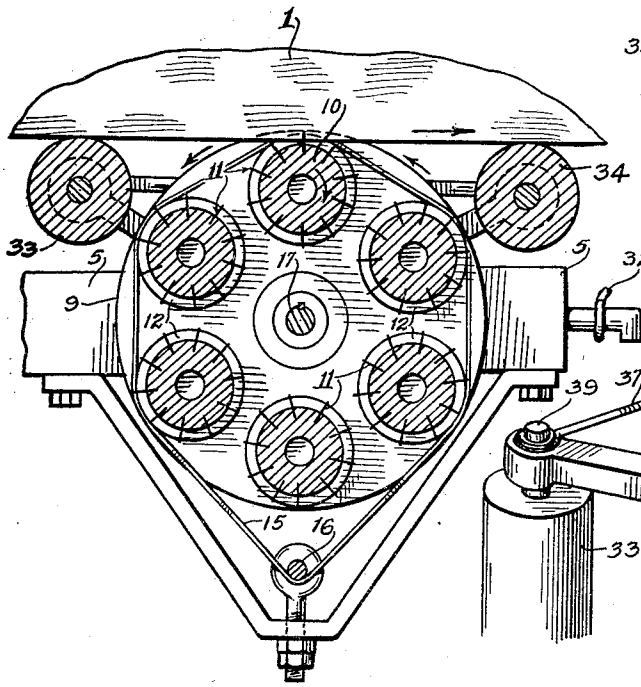
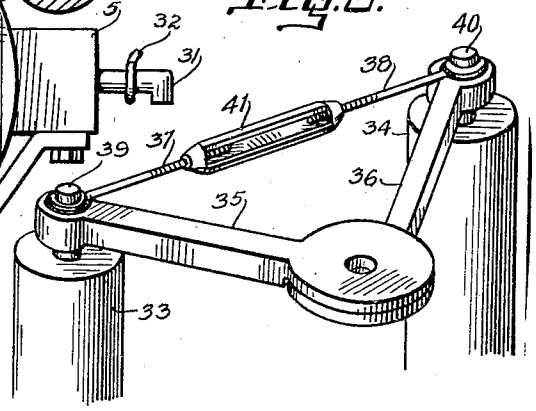


Fig. 6.



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BRICK EMBOSSING MACHINE

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Fig. 7.

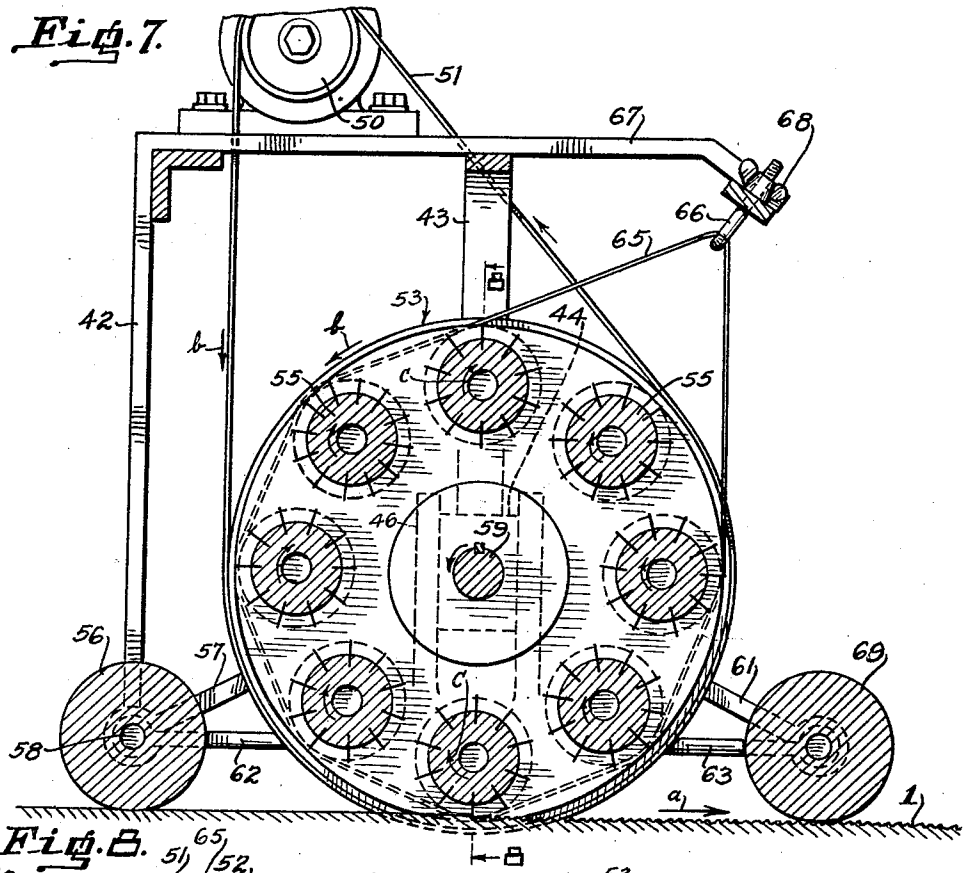
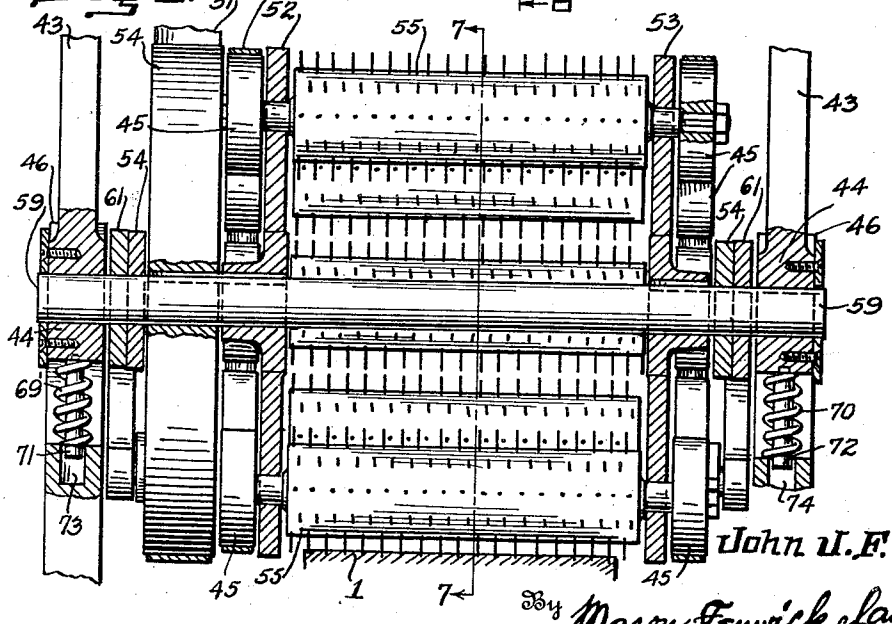


Fig. 8.



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Patented Oct. 6, 1931 1,825,938

UNITED STATES PATENT OFFICE

JOHN J. FRED BRAND, OF ROSEVILLE, OHIO

BRICK EMBOSSING MACHINE

Application filed November 3, 1928. Serial No. 317,064.

This invention relates to a method of impressing designs upon a brick ribbon during its extrusion from a forming machine and to an apparatus for carrying this method into effect.

It is the object of the present invention to provide a method and apparatus for impressing designs upon the brick ribbon, during its extrusion from the forming machine, without producing any scratching or shredding effect upon the extruded ribbon.

A further object of the invention is to provide an apparatus for embossing a moving clay column or ribbon without imposing any overload on the clay column and causing it to buckle.

Other objects of the invention will become apparent as the detailed description thereof proceeds.

In the drawings:

Figure 1 is a plan view of extruding end of a machine for forming a brick ribbon and of a conveyor for removing the ribbon from the machine with my embossing apparatus applied to the several parts of the machine;

Figure 2 is a side elevation of the parts shown in Figure 1;

Figure 3 is a vertical transverse section taken on the line 3—3 of Figure 2;

Figure 4 is a section on a large scale taken on the line 4—4 of Figure 3;

Figure 5 is a fragmentary sectional detail of mechanism for adjusting the apparatus to regulate the depth of the design impressed upon the brick ribbon;

Figure 6 is a fragmentary perspective view of adjusting mechanism to control the depth of the design impressed on the moving ribbon;

Figure 7 is a section taken on the line 7—7 of Figure 8;

Figure 8 is a section taken on the line 8—8 of Figure 7.

As shown in Figures 1 and 2 of the drawing, a brick ribbon 1 is extruded from a conductor 2 mounted on the framework 3 of an extruding machine, the details of which constitute no part of the present invention.

The present invention takes the form of attachments adapted to be mounted on the ribbon forming an extruding machine and to emboss or impress designs of various kinds upon the top and side of the ribbon during its movement from the machine. In order to emboss the sides of the ribbon, a pair of frames 4 and 5 are pivoted to the framework 3 to swing about a pivot bolt 6 suitably secured to brackets 7 formed on the framework 3.

The embossing devices carried by the frames 4 and 5 are identical so that a detailed description of one of them will suffice for both. Each of the embossing devices comprises a pair of disks 8 and 9 in which are rotatably a plurality of rollers 10 which are provided with suitable embossing means 11 which may take the form of pins or plates or designs of any desired shape and contour. Each of the rollers 10 has a pair of pulleys 12 and 13 secured to the trunnions 14 on opposite ends of the rollers. The pulleys 12 and 13 on all of the rollers 10 are engaged by a belt 15 which passes around and contacts with all of the pulleys but one and is supported by a pin 16 adjustably mounted on the disk supporting framework of the embossers.

The disks 8 and 9 are fixedly secured and spaced apart upon a shaft 17 which is rotatably mounted in horizontal members 18 and 19 of the frame 4 or 5 as the case may be. Secured to the upper end of the shaft 17 is a large bevel gear 20 adapted to mesh with a pinion 21 fixed on a horizontal shaft 22.

The horizontal shaft 22 is the drive shaft and is rotatably mounted in bearings formed in the members 23 and 24 extending from the framework 3 over the extruded brick ribbon or column. The pinion 21 is slidably mounted on the shaft 22, being keyed thereon in the usual manner. A spring 25 arranged between the bearing member 24 and the rear face of the pinion serves to force the pinion yieldingly outward from the center of the framework; and the pinion is rotated along with the shaft 22 by means of a pulley 26 fixed to said shaft and driven by belting 27 from a motor 28.

The embossing devices on opposite sides

of the column are identical in every respect and are symmetrically arranged relative to the extruding center of the machine. In order to maintain the embossing devices on opposite sides of the extruded column yieldingly in contact with said column, a long coil spring 29 (see Fig. 1) has its opposite end connected to projecting lugs 30 and 31 suitably fixed on the vertical front member of the frames 4 and 5. The spring 29 may be arranged above the extruded column, and a similar spring 32 may be arranged below the extruded column 1 and may be similarly secured to the members 4 and 5.

The springs 29 and 32 are designed to maintain the embossing devices in yielding contact with the sides of the extruded column, and are adapted to yield to compensate for irregularity in the width of said column.

In order to regulate the depth of the impressions produced on the sides of the extruded column, each of the embossing devices is provided with a pair of rollers 33 and 34 adapted to contact with the sides of the column or ribbon 1.

The rollers 33 and 34 are pivotally mounted in arms 35 and 36 which, in turn, are pivotally connected to each other and to the shaft 17. Rods 37 and 38 are pivoted to the trunnions 39 and 40 of the rollers 33 and 34 and have their free ends connected by a turn buckle 41 for drawing the rollers 33 and 34 toward each other or for separating them in order to adjust the embossing device as a whole toward and from the column 1 and thereby regulate the depth of the impressions formed in the sides of the said column. The operation of this adjusting mechanism will be obvious from inspection of Figures 4 and 6 of the drawing.

The top of the column 1 may be embossed by mechanism similar to that just described but in this case only one of the embossing devices can be operated and must be supported for operation independently of the other two embossing devices.

Referring to Figures 7 and 8, the top embossing device is shown as mounted on a frame 42 which is supported by a vertical member 43 terminating at its lower end in a block 44.

The block 44 is slidably mounted between the arms 45 and 46 of a yoke member 47 which is fixed to and extends substantially perpendicularly from a horizontal support 48 forming part of the framework of the conveyor belt 49 which supports and holds the extruded column 1.

A motor 50 drives the belt 51 to cause rotation of the disks 52 and 53 through the pulley 54 and embossing rollers 55 similar to the rollers 10 of the side embossing device. In order to adjust the depth of the embossing in the extruded column, the frame 42 is provided with a roller 56 at its lower end. An arm 57 is pivotally connected to the trunnion 58 of the roller 56 and has its free end pivoted to the shaft 59 on which the disks 52 and 53 are keyed.

A second roller 60 is connected pivotally to the shaft 59 by means of a rod 61 which is also pivotally connected to the arm 57 by a joint, similar to that which connects the arms 35 and 36 (see Figure 6). Rods 62 and 63 are connected by a turnbuckle 64 to adjust the rollers 56 and 60 toward and from each other in order to raise the embossing roller 55 toward and from the column 1.

A belt 65 which acts as a stationary friction tread, passes around a support 66 which may be adjusted in a horizontal member 67 of the framework 42 by means of a butterfly nut 68.

The duplicate driving devices and other duplicate operating mechanism have not been described in detail herein but are identified by similar reference characters arranged on opposite sides of the planes of symmetry. The blocks 44 are slidably mounted between the yoke arms 45 and 46 and are yieldably supported therein by means of springs 69 and 70 which surround rods 71 and 72 (see Figure 8) extending from the lower end of said block and slidable in bores 73 and 74, respectively, of the support 47 which also forms abutments for the lower ends of said springs.

The operation of the various embossing devices will be made clear by reference to Figures 7 and 8 of the drawing. As shown in Figure 7 the extruding column 1 is moving rectilinearly in the direction of the arrow *a* and the motor 50 is rotating the disks 52 and 53 in the direction indicated by the arrows *b*.

In order that the embossing rollers 55 may engage the column 1 without shredding or tearing the column it is essential that the rollers 55 rotate, when in engagement with column 1, in a direction opposite and at a peripheral speed equal to that of the embossing assembly as a whole.

This opposition in direction of rotation and this equality in opposite peripheral velocities of disks and the rollers carried thereby, make it possible to rotate the disk assembly at any desired speed and in either direction.

As shown in Figure 7, the disks 52 and 53 are rotated anticlockwise by the belt 51 and thereby cause one roller 55 after the other to contact with the moving column 1 and to be rotated in a clockwise direction as viewed in this figure. In order to avoid any drag or shredding action of the rollers 55 on the column 1, the rollers out of contact with said column and descending toward the latter are rotated by the belt 65 in the same direction as the roller in contact with the column is rotated. This means that as each roller approaches the column 1 it is moving at the same

speed as the roller in contact therewith and thereby offers no resistance to the movement of column 1 when it, in turn, arrives in embossing position at the column.

While I have shown the rollers rotated by the disks carrying them by a pulley and belt construction, the invention must not be considered as in any way limited to this construction. Obviously, the pulleys can be replaced by pinions, and an internally toothed gear, in mesh with these pinions and fixed to the framework, can be substituted for the belt operating the pulley. Other modifications will naturally suggest themselves to persons skilled in the art, and my invention is intended to include them within its scope, and will be claimed accordingly.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. Apparatus for embossing a face of plastic brick ribbon while it is travelling beyond the extruding point of an extruding machine, comprising a rotatable carrier, a plurality of embossing rollers mounted in said carrier on axes parallel to the face to be embossed, and adapted to be brought into operative relation to said face by the rotation of said carrier, means for rotating said carrier in such direction as to translate the rollers adjacent said ribbon longitudinally of said ribbon, and means for rotating said rollers while in operative relation to said ribbon in the opposite direction to, and at the same peripheral speed as the translatory movement of, the parts of said rollers coacting with said ribbon.

2. Apparatus for embossing a face of plastic brick ribbon while it is travelling beyond the extruding point of an extruding machine, comprising a rotatable carrier, a plurality of rollers mounted in said carrier on axes parallel to the face to be embossed and adapted to be brought into operative relation to said ribbon by the rotation of said carrier, means for rotating said carrier in such direction as to translate the rollers adjacent said ribbon longitudinally of said ribbon and a friction track engaged by said rollers while the latter are in operative relation to said ribbon, arranged to rotate said rollers in the opposite direction to, and at the same peripheral speed as the translatory movement of, the parts of said rollers coacting with said ribbon.

3. The combination with a machine for extruding a brick ribbon, of a pair of rectangular frames mounted on opposite sides of said machine and having one end of each pivotally connected thereto, a pair of spaced apart disks rotatably mounted on each of said frames, a plurality of embossing rollers rotatably mounted in said disks, means for rotating said disks in such direction as to translate the rollers adjacent said ribbon longitudinally of said ribbon, means for rotating said rollers in the opposite direction to, and at the same peripheral speed as the translatory movement of, the parts of said rollers coacting with said ribbon, and means connecting the free ends of said frames to each other and holding the embossing rollers mounted thereon in yielding contact with the brick ribbon.

4. The combination with a machine for extruding a brick ribbon, of a pair of rectangular frames mounted on opposite sides of said machine and having one end of each pivotally connected thereto, a pair of spaced apart disks rotatably mounted on each of said frames, a plurality of embossing rollers rotatably mounted in said disks, means for rotating said disk in such direction as to translate the rollers adjacent said ribbon longitudinally of said ribbon, means for rotating said rollers in the opposite direction to, and at the same peripheral speed as the translatory movement of, the parts of said rollers coacting with said ribbon, and means connecting the free ends of said frames to each other and holding the embossing rollers mounted thereon in yielding contact with the brick ribbon, and means mounted on each of said frames for regulating the depth of imprint of the embossing rollers on the sides of said ribbon.

5. The combination with a machine for extruding a brick ribbon, of a carrier rotatably mounted on said frame, embossing rollers mounted on said carrier to rotate about axes concentric with and parallel to the axis of said carrier, means for rotating the carrier on said frame, and means for rotating said rollers in the direction of rotation opposite to the direction of rotation of said carrier and at the same peripheral speed in said opposite direction.

6. In a machine for extruding a brick ribbon, a carrier corner rotatable on the frame of said machine, embossing rollers mounted to rotate on said carrier about axes parallel to and concentric with the axis of said carrier, means for rotating said carrier on said frame, means for rotating said rollers in the direction of rotation opposite to that of the carrier and at the same peripheral speed, and means for adjusting the carrier with its rollers relative to a brick ribbon being extruded from said machine.

7. The method of embossing a face of plastic brick ribbon while the latter is travelling from the extruding machine, comprising; moving successively a plurality of embossing elements translatorily, in the longitudinal direction of said ribbon, in contact therewith and at a speed not less than the speed of travel of said ribbon; and simultaneously rotating each embossing element while it is in contact with said ribbon in such direction as

to move the contacting portion thereof in a direction opposite to the direction of the said translatory movement and at the same speed at which said elements are moved translatorily forward.

In testimony whereof I affix my signature.

JOHN J. FRED BRAND.