April 21, 1925. 1,534,768

D. BROWN

BRICK MACHINE

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Fig 1

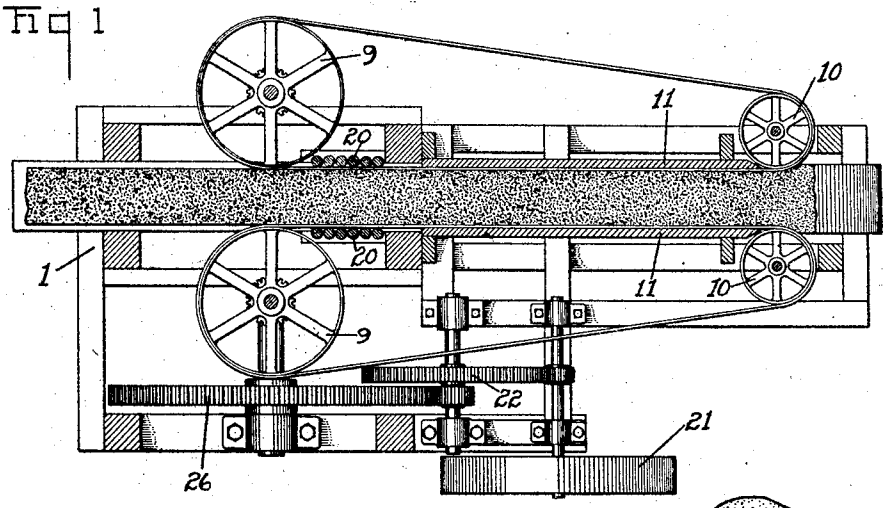
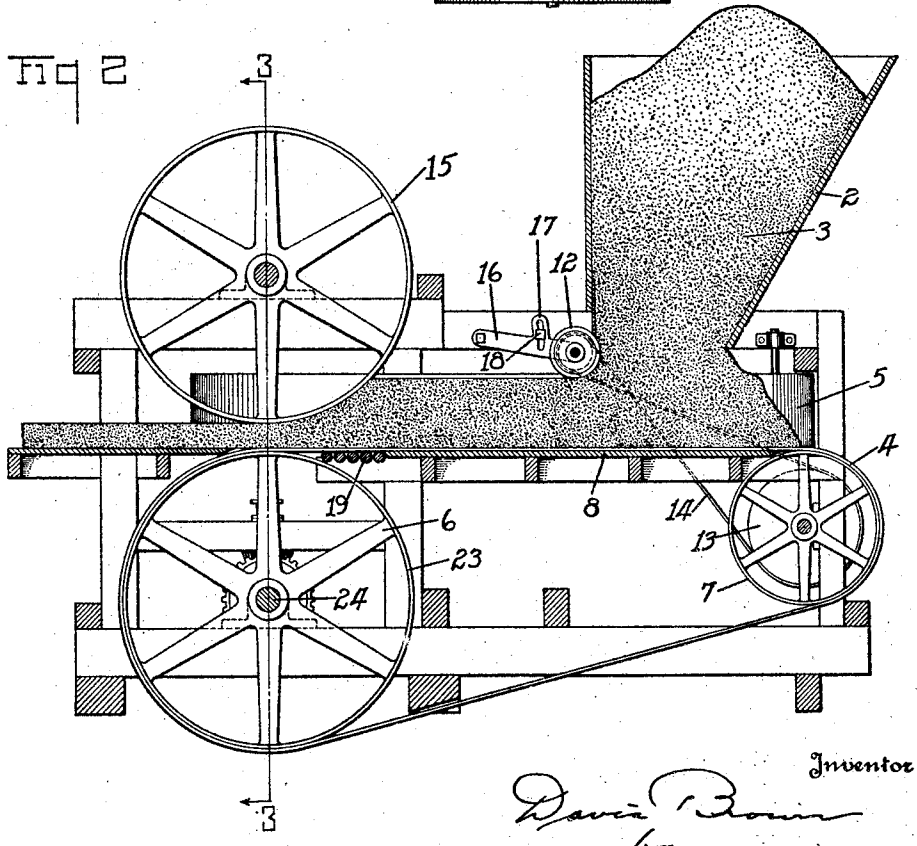


Fig 2



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D. BROWN

BRICK MACHINE

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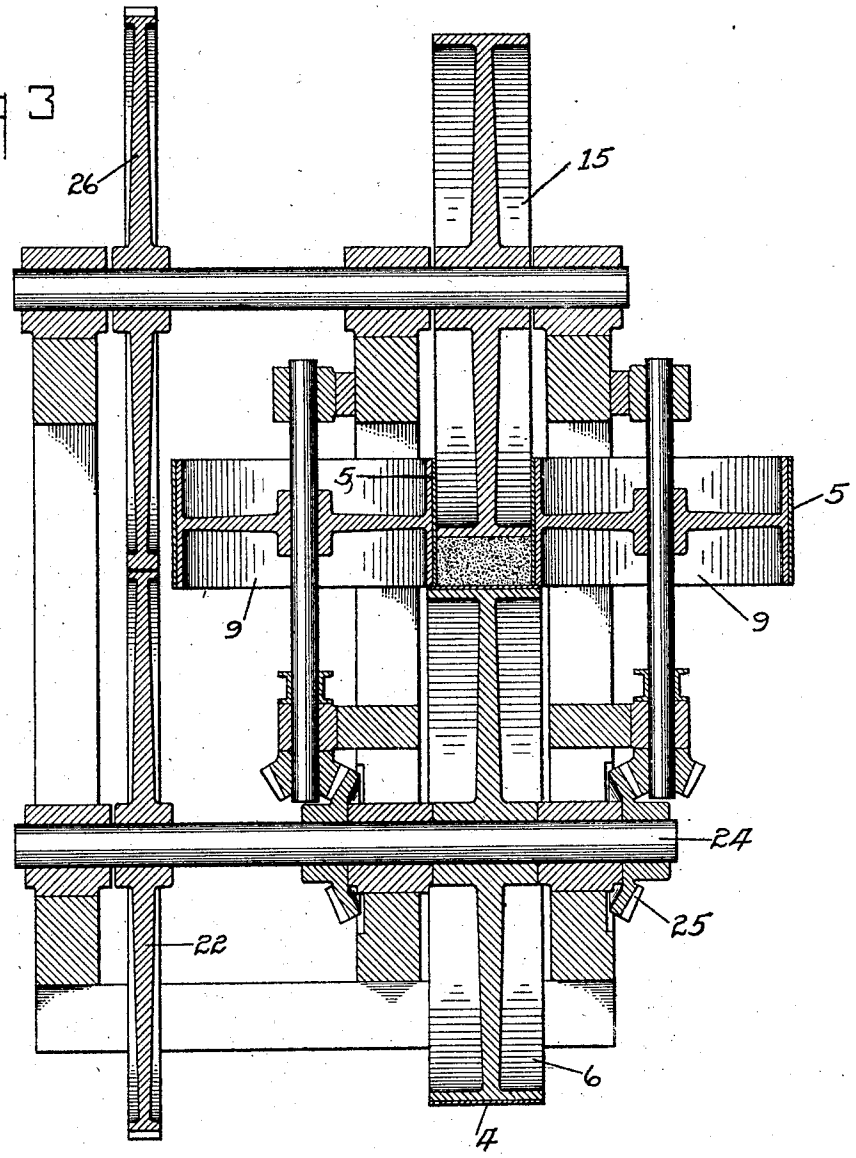
Fig 3



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BRICK MACHINE

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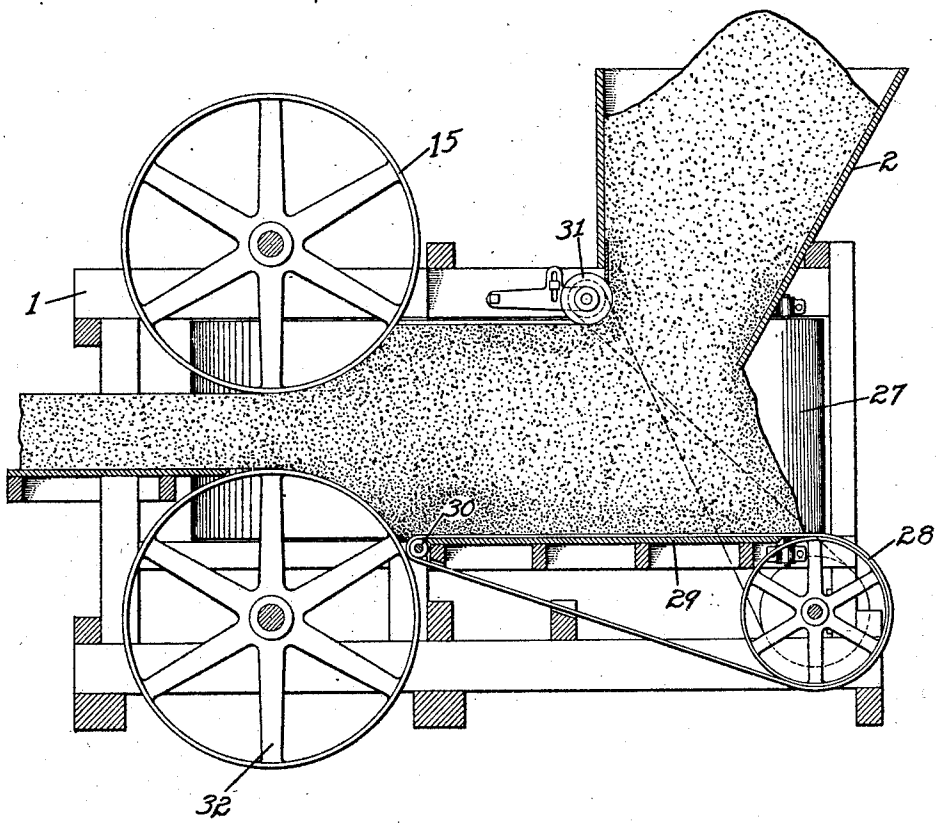
Fig 4



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Patented Apr. 21, 1925. 1,534,768

UNITED STATES PATENT OFFICE.

DAVIS BROWN, OF BUCYRUS, OHIO.

BRICK MACHINE.

Application filed November 22, 1923. Serial No. 676,262.

To all whom it may concern:

Be it known that I, DAVIS BROWN, a citizen of the United States, and a resident of Bucyrus, in the county of Crawford and State of Ohio, have invented a new and useful Brick Machine, which invention is fully set forth in the following specification.

My invention has for its object to provide a brick machine wherein the clay is continuously formed into a column by a means that will prevent the formation or eliminate voids that might otherwise exist in the clay column, and at the same time, produce a uniform density throughout the clay column and without stratification.

Ordinarily clay columns formed by brick machines are produced by extrusion that causes a variable degree of compression in the clay and consequently a variable degree of compaction and furthermore the clay is forced to move at variable rates within the die which produces a stratification that results in the production of internal strains in the brick when fired. When clay is forced through a die it travels at different rates of speed throughout the cross section of the die and produces lines or planes of partial separation or cleavage, some portions thereof being stronger than others. When a screw auger is used to generate pressure to force the clay through the die the column is built up of succeeding layers which produce an additional source of weakness in the structure of the column and consequently in the brick when fired.

The object of my invention is to supply the right quantity of clay to the clay column as it is being formed and compress the clay between the surfaces of bodies moving at the same rate of speed that the clay column moves to produce a practically homogenous structure that may be cut into bricks or blocks.

When the bricks, produced in accordance with my invention, have been fired they will resist the spalling action due to changes of temperature when used as refractory brick and, when used as paving blocks they will resist abrasion and, to a very marked degree, show less tendency to "cobble".

The invention may be contained in structures of different forms. To illustrate a practical application of the invention I have selected two structures containing the invention as examples of such structures and shall describe them hereinafter. The structures selected are illustrated in the accompanying drawings.

Fig. 1 illustrates a top view of a brick machine containing my invention, a part of the machine being shown in section. Fig. 2 illustrates a vertical sectional view of the machine shown in Fig. 1. Fig. 3 is a sectional view taken on the line 3—3 indicated in Fig. 2. Fig. 4 illustrates a vertical sectional view of a nodified form of the machine.

In the figures, 1 indicates the supporting frame of the machine. Suitable hoppers 2 for the clay are supported on the frames and are so located as to supply the clay to the column forming elements. In the form of construction shown in Figs. 1, 2 and 3 the clay 3 is fed upon a belt 4 that moves beneath the mouth of the hopper 2. It is also fed between the belts 5 that are located at right angles to the belt 4. The belts 4 and 5 move at the same speed and form a channel into which the clay is fed from the hopper 2. The belt 4 is drawn from beneath the hopper by the pulley wheel 6, it being guided by the pulley wheel 7. The belt moves on the surface of a table 8 which supports the major portion of that part of the belt between the pulleys 6 and 7. The belts 5 are actuated and directed by the pulley wheels 9 and 10. They are maintained in position by means of the boards 11 that are located at right angles to the table 8. Thus the belts are maintained in trough shape notwithstanding the load due to the weight of the clay.

The clay is fed downwards towards the belts in such a manner as to produce a supply of the proper amount of clay. This may be done by any suitable means, such as by the adjustable roller 12 which is driven by a wheel 13 that is connected to the pulley wheel 7. The wheel 13 is connected to the roller 12 by the belt 14. The under side of the roller 12 moves in the direction that the clay is carried by the belts 4 and 5, and operates to roughly form the column.

The roller 12 is located in a pivoted frame 16 having slotted ears 17 in which the bolts 18 are located whereby the frame 16 may be adjustably secured in any position to the frame 1 within the limitations of the slot and so as to feed the proper quantity of clay. Thus a column of clay is formed at the mouth of the hopper 2 and is carried

forward to the compression wheel 15, that moves at the same speed as the belts.

The compression wheel 15 is located between the belts 5 and above the wheel 6. Its under surface also moves in a direction that the clay column is moved by the belts. It however, is located so that the points on its under surface approach the belt 4 as the wheel 15 is rotated and the clay is carried forward. This compresses the clay to a certain extent and delivers a column having a thickness greatly reduced from that which is produced at the mouth of the hopper 2 and drawn from beneath the roller 12 by the belts 4 and 5. Also the reduction is gradual and uniform and so as to eliminate all voids that may exist in the clay. The size of the column and, consequently, the quantity of the clay that is directed to wheel 15 to be compressed may be regulated by the adjustment of the roller 12.

As the compression wheel 15 is rotated and the wheel compresses the column of clay to the desired proportions there will be a zone of pressure in advance of the delivery point of the compressed clay which will be transmitted to the belts. In order to sustain the belts and yet permit their movement, this zone is surrounded by rollers of small diameter that are pivotally supported in the frame 1. The rollers 19 are located beneath the belt 4 and above a part of the wheel 6 and the rollers 20 are located back of the belts 5 and in close proximity to the wheels 9. As the voids of the clay are eliminated by the compression wheel 15 the column leaves the belts 4 and 5 and moves along the table. It may then be cut into any suitable lengths by a suitable cutting machine in the manner which is well known in the art.

To produce a ware of the highest quality it is necessary to regulate the amount of pressure applied from the loosely prepared clay. If the pressure is too slight it will permit the existance of voids in the column, on the other hand too great a pressure causes the clay or portions thereof to flow over itself, or other portions, and set up laminations similar to that which occurs when the clay is forced through a die. The regulation of the clay supply in part is automatic, it being regulated according to the amount that will be fed between the pulley wheels 6 and 9 and the compression wheel 15, the compression wheel 15 operating to back the clay up if too large a quantity is supplied. The amount of clay fed, however, is to a certain extent controlled by the adjustment of the roller 12.

For driving the parts, the driving pulley 21 is connected by suitable reduction gear wheels 22 to the pulley 23 that is located on the shaft 24. The pulleys 9 are connected to the shaft 24 by means of the beveled gear 25. The compression wheel 15 is connected to the gear wheel 26 that meshes with one of the gear wheels 22 and which is located on the shaft 24.

In the form of construction shown in Fig. 4, a compression wheel is also used in opposition to the compression wheel 15 and the clay is fed between the belts 27 and on to the belt 28. The belt 28 moves over the table 29 and a small pulley or roller 30 that is located at the end of the table 29. The supply of clay fed to the belts 27 and 28 is regulated by the roller 31.

The compression wheels 15 and 32 are located between the belts 27. The compression wheel 15 operates from above as in the case of compression wheel used in the structure illustrated in Figs. 1, 2 and 3 while the compression wheel 32 operates from below and so as to sufficiently compress the clay as it is being conveyed to the wheels 15 and 32 by the belts 27 and 28.

It is well known that different clays vary in characteristics and that some varieties require more pressure than others. By my invention is provided a means for regulating the supply of clay and consequently the pressure to which it is subjected with the required exactness. The dimensions of the column may also be greatly varied. A very thin column may be produced for production of tile, or a thick column may be produced for making blocks for tanks. Also columns may be formed of the required size for producing paving blocks.

I claim:

1. In a brick machine, a plurality of wheels for shaping the sides of a clay column, means for actuating the wheels and belts for feeding the clay to certain of the wheels, one of said wheels having a portion extending within the edges of two of the belts for compressing the clay.

2. In a brick machine, a plurality of wheels for shaping the sides of a clay column, means for actuating the wheels, belts for feeding the clay to the wheels, two of said wheels having portions extending within the edges of two of the belts for compressing the clay.

3. In a brick machine, a plurality of wheels for shaping the sides of a clay column, means for actuating the wheels and belts movable over certain of said wheels for feeding the clay to the wheels, one of said wheels having a portion extending within the edges of two of the belts.

4. In a brick machine, a plurality of wheels for shaping the sides of a clay column, means for actuating the wheels, belts movable over certain of said wheels for feeding the clay to the wheels, one of said wheels having a portion extending within the edges of two of the belts and rigid members for supporting the belts.

5. In a brick machine, a plurality of wheels for shaping the sides of a clay column, means for actuating the wheels, belts movable over certain of said wheels for feeding the clay to the wheels, one of said wheels having a portion extending within the edges of two of the belts, rigid members for supporting the belts and a plurality of sets of rollers for supporting the belts and located in proximity to the last described wheel.

In testimony whereof I have hereunto signed my name to this specification.

DAVIS BROWN.