R. EMERY.

BRICKMAKING MACHINERY.

APPLICATION FILED AUG. 27, 1915.

1,190,742.

Patented July 11, 1916.

2 SHEETS—SHEET 1.

FIG.1.

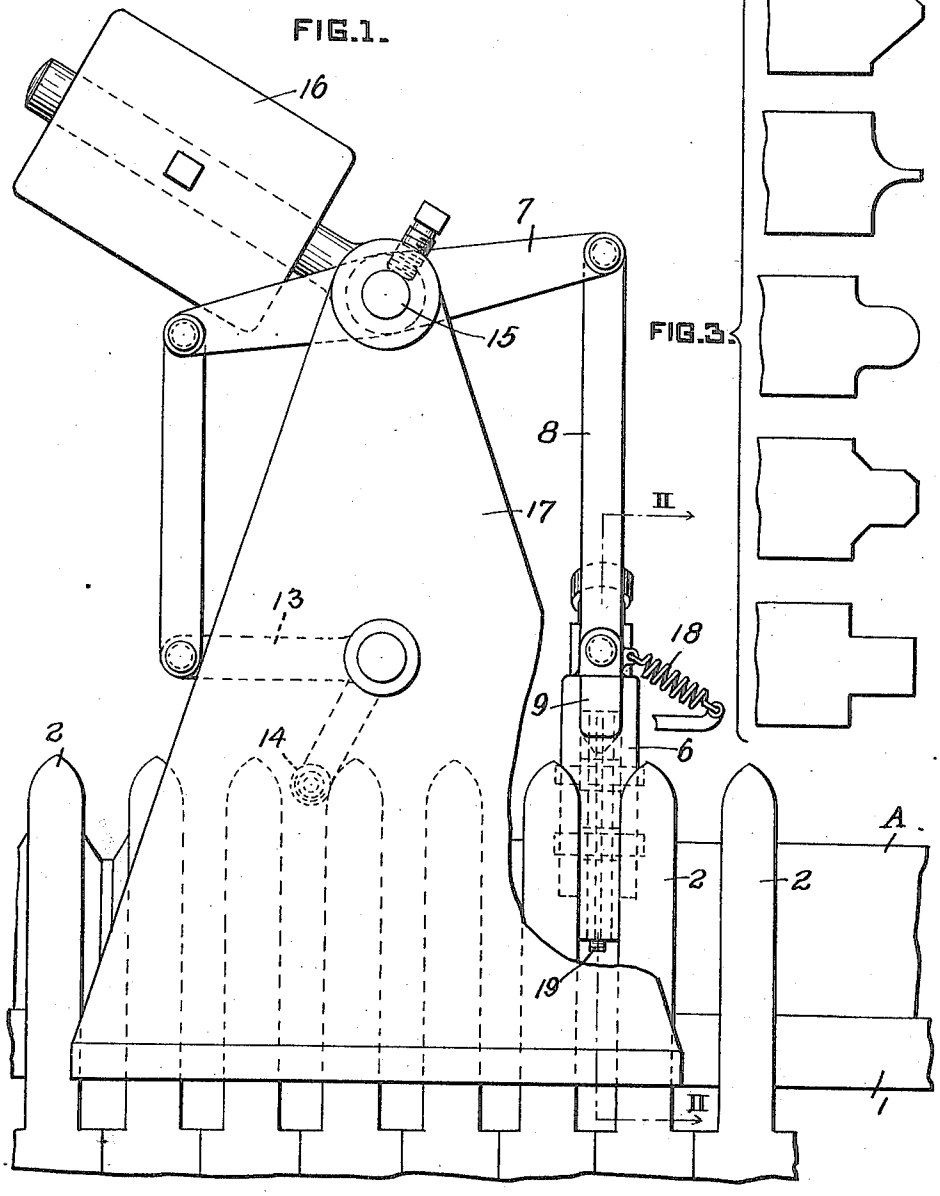


FIG.3.

WITNESSES

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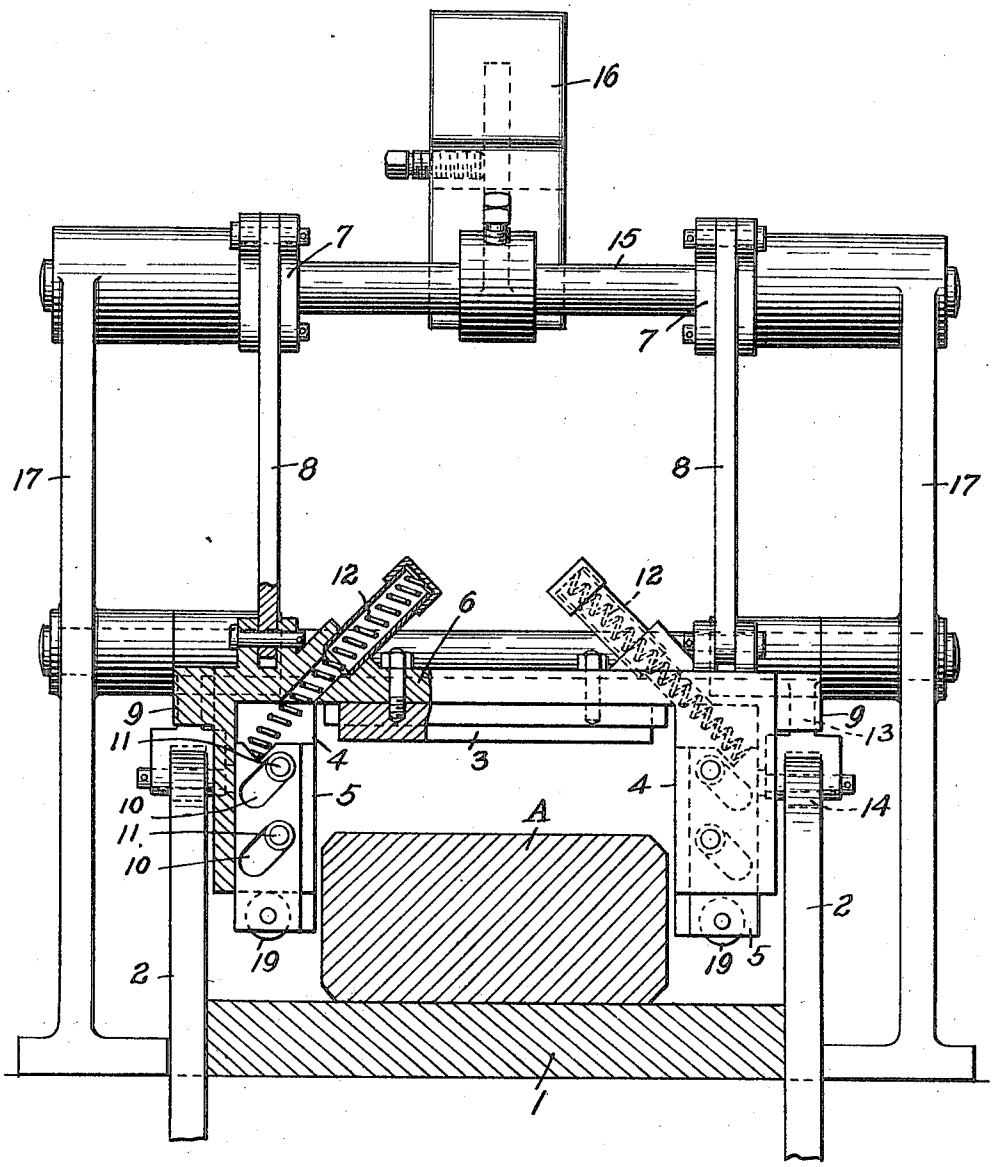
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2 SHEETS—SHEET 2.

FIG. 2.



WITNESSES

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UNITED STATES PATENT OFFICE.

ROBERT EMERY, OF MOUNT OLIVER, PENNSYLVANIA.

BRICKMAKING MACHINERY.

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To all whom it may concern:

Be it known that I, ROBERT EMERY, residing at Mount Oliver, in the county of Allegheny and State of Pennsylvania, a citizen of the United States, have invented or discovered certain new and useful Improvements in Brickmaking Machinery, of which improvements the following is a specification.

My invention relates to improvements in brick-making machinery, and consists in an adjunct or supplemental apparatus which may be added to a brick-cutting table, with the object in view of compressing, facing, and shaping the edges of the bricks in the course of their formation.

In the accompanying drawings Figure 1 shows the apparatus of my invention in side elevation, the frame of the machine being broken away in part to afford clearer illustration of details; Fig. 2 is a view partly in front elevation and partly in vertical section of the same machine. The plane of section is indicated at II—II, Fig. 1. In Fig. 2 the cutting table and a clay column resting on the table are also shown and in vertical section. Fig. 3 indicates some of many specific variations in shape which may be given to the faces of the dies of my apparatus.

Brick-cutting machinery in common use today (such, for example, as Bensing's automatic side-cut brick table) includes an endless traveling carrier called the table, two rows of teeth arranged each in endless succession one on either side of the table and advancing with it, and a rotary cutting wheel, whose several cutters entering the spaces between the teeth effect synchronism in the movement of the parts and also cut the column of clay which advances on the table into individual "green" bricks. In the drawings the table of such a machine is indicated at 1, the teeth at 2, and an advancing column of clay at A.

The apparatus of my invention is arranged to coöperate with the moving table and its lateral rows of moving teeth, preferably on the side of the rotary cutter from which the clay column advances, and accordingly my apparatus operates preferably on the uncut column of clay, and not on the severed green bricks; although, as will be explained in the sequel, the apparatus of my invention and the cutting apparatus are so severally related to the advancing column of clay that they successively act at points of determined relation in the length of the column.

The apparatus consists of dies, ordinarily three in number, 3, 4, and 5, mounted and driven to engage and exert compressing, smoothing, or shaping action upon the advancing clay column at recurrent intervals upon its exposed upper and marginal surfaces—which surfaces are the edges of the bricks ultimately cut from the column.

The dies are carried in a frame 6. This frame extends transversely of and above table 1; it is reciprocable vertically, and to this end in the embodiment of the invention here shown it is hung from levers 7 oscillatory on a horizontal pivot. Furthermore, the frame is so mounted that while maintaining a truly vertical position it may travel forward in the direction in which the table advances and then recede in opposite direction. To this end the connection between frame 6 and levers 7 is through links 8 pivoted at one end to the frame and at the other end to the lever. The frame 6 is further provided with laterally extending lugs 9 so arranged and proportioned that when the frame 6 is in the upper portion of its path of vertical reciprocation the teeth 2 of the table pass beneath without making contact, but when the frame descends these lugs enter between adjacent pairs of teeth and then the teeth serve as guides directing and controlling the progress of the frame and determining with precision the location of the successive engagements of the dies which the frame carries with the advancing column of clay. It will of course be understood that, so long as the lugs 9 are engaged between teeth 2, the frame will be advancing with the table and the clay column upon it.

The die or dies 3 for engaging the upper surface of clay column A advancing on table 1 are preferably mounted as shown, rigidly upon the frame and the thrust of the descending frame is exerted directly through them to smooth, consolidate or shape the clay surface. The dies 4 and 5 for engaging the lateral surfaces of the column are movable in the frame in a transverse direction, to exert simultaneously inward pressure on opposite sides of the column. To effect this result the mounting of these lateral dies may be such as the drawings show: they are mounted to move both

vertically and transversely in slide-ways in the frame; they are provided with outwardly and downwardly inclined slots 10, through which pass, from side to side of the slide-ways, pins 11; and the dies themselves, when the frame 6 is raised, depend below the lower edge of the frame. By this construction, as the frame descends the lower ends of the dies 4 and 5 engage the surface of table 1 on either side of the column A and as the frame descends farther the pins 11 bearing on the inclined faces of slots 10 force the dies inward to engage the column A; as the frame rises the weight of the dies and the inclination of their slots causes them to move outward and downward again. Suitable springs 12, preferably arranged to exert their tension in directions truly parallel to slots 10 may be employed to augment the force of gravity and more certainly cause dies 4 and 5 to open and descend in the frame when they have performed their office and the frame 6 is ascending. It will further be observed of springs 12 that they may be relied upon to cushion the stress which the dies exert upon the sides of the clay column. Friction rollers 19 may be provided, if desired, in the table-engaging ends of dies 4 and 5.

Provision is made to effect one reciprocation of frame 6 while table 1 advances through the interval at which the teeth 2 are spaced along its sides. A pair of bell-crank levers 13 are mounted to swing on a horizontal pivot; one arm of each lever is bifurcated and in its bifurcated end carries a roller 14 and this roller 14 in the range of the swing of the lever alternately rises above and descends into the path of advance of the teeth 2 on either side of table 1. The other ends of the bell-crank levers 13 engage the levers 7 (as shown, through a connecting link). The arrangement is such that as levers 13 swing through their normal range, bringing rollers 14 alternately into the path of and above the path of advance of teeth 2, the frame 6 alternately rises so that its lugs 9 stand above the path of advance of teeth 2 and descends to bring the lugs into engagement between these teeth. The frame 6 reciprocates through a greater interval than the swing of rollers 14. Means are provided for causing the parts to normally assume the positions shown in Fig. 1, the rollers 14 in pin-engaging position, the frame 6 elevated. Any suitable means may be provided. I preferably pivot the levers 7 by securing them to a suitably journaled axle shaft 15 and attach a weight 16 to an arm extending from the shaft. As shown, this axle shaft 15 as well as the pivot support for the bell-crank lever 13 may be mounted in a common frame 17.

It remains to be noted only that the teeth 2 as they are ordinarily used are of substantially the shape shown in the drawings. They are long and of uniform width, and the spaces between them are of uniform width; their upper ends are pointed in rounded blunt points.

The operation of the machine will readily be understood. The parts being in the position shown in Fig. 1, let it be understood that the table 1 with its teeth 2 is moving from right to left. The teeth against whose upper rounded ends the rollers 14 are bearing will in their further advance swing levers 13 upward (raising weight 16) until rollers 14 clear their upper tip ends. Such upward swing of levers 13 effects a corresponding downward traverse of frame 6. Frame 6 in this downward movement at first descends free until lugs 9 are engaged between pairs of teeth 2; thereafter, in its further descent, the frame 6 advances from right to left in unison with table 1 and its teeth 2, and, standing in substantially vertical position, is guided by and between opposite pairs of teeth 2. As the frame 6 approaches the lower limit of its descent the dies 3, 4, and 5 engage the clay column A from above and also upon opposite sides and exert upon it their intended action, whether of compression, smoothing or shaping. Immediately upon the passing of rollers 14 over the tips of the teeth 2 by which they have been engaged (at which instant frame 6 is at the lower limit of its oscillation and the dies which it carries exerting their maximum effect) weight 16 swings lever 7 in opposite direction, raises frame 6 and turns bell-crank levers 13 in opposite direction. In this movement rollers 14 swing down the rear faces of the teeth 2 by which they had previously been engaged and engaging the front faces of the next advancing teeth arrest the motion imparted by weight 16. At the same time frame 6 rises. During the beginning of this rise, and so long as lugs 9 extend between teeth 2, frame 6 continues its right to left advance with table 1, but as soon as the lugs are free of the pins 2 the frame swings back and ultimately assumes the position shown in Fig. 1. Thereupon the cycle of operation is repeated.

If desired a spring 18 may be provided to more certainly carry frame 6 back from left to right when on rising it is free from teeth 2.

Fig. 3 shows in cross section perpendicular to their faces dies which may be used, and indicates that the dies may be shaped as may be desired to effect a superficial molding to the as yet uncut bricks. And in this connection it is to be noted that these same teeth 2, which in the manner described above guide the descending frame 6 and determine the particular points along the length of the column at which the dies shall

exert their action, guide the rotary cutter also and determine the particular points at which the cutting of the column shall occur to form the individual bricks. This cutter is old and its operation in connection with an advancing table and with the lateral rows of teeth is well known. That part of the brick-cutting machine is not shown, but it will be understood that ordinarily the cuts occur at points midway between each pair of adjacent teeth. From the foregoing description it is plain that in action the dies come into play their center points engaging the column midway between each pair of pins 2. It follows then that each die acts on the adjacent edges of two bricks and that the conformation of the die from center line to side determines the conformation of the brick from edge toward center line. Thus the margins of the bricks may receive special shaping or the surface between the margins may be shaped as desired. Various special shapes may be given to the dies; or, if they are square faced, they will exert no special shaping upon the clay but merely a truing, compressing and smoothing effect.

I claim as my invention:

1. In a brick-making machine the combination of a movable clay-carrying table provided with marginal rows of teeth and a die-carrying frame reciprocable to and from engagement with such teeth and movable when such engagement exists in unison with said table.

2. In a brick-making machine the combination with a movable clay-carrying table, a die frame movable transversely of the direction of table advance, opposite dies borne in said frame and movable therein in opposite directions oblique to the direction of frame movement, said dies normally extending beyond said frame and by virtue of such extension engaging said table while said frame is in course of its said transverse movement.

3. In a brick-making machine, the combination of a supporting table, a die-frame movable transversely opposite the surface of said table, opposite slide-ways in said frame extending in the direction of frame movement, dies arranged in said slide-ways, said dies being provided with oblique slots, and pins extending across said slide-ways and through the oblique slots in said dies.

4. In a brick-making machine, the combination with a movable clay-carrying table of a member reciprocable above and in a plane perpendicular to said table, a hanger pivoted to said reciprocable member and a die pivoted to said hanger.

5. In a brick-making machine, the combination of a movable clay-carrying table provided with marginal rows of teeth, a die reciprocable opposite the face of said table into and out of engagement with said teeth, a trigger movable in response to advance of said teeth and means for imparting movement from said trigger to said die.

6. In a brick-making machine, the combination of a movable clay-carrying table provided with marginal rows of teeth, a die reciprocable opposite the face of said table and into and out of engagement with said teeth, a bell-crank lever pivoted opposite one line of such teeth, and movable by said teeth in their advance out of their path of advance, means tending to bring said lever into the path of pin advance, and means for imparting movement from said bell-crank lever to said die.

In testimony whereof I have hereunto set my hand.

ROBERT EMERY.

Witnesses:

BAYARD H. CHRISTY,

G. G. TRILL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."