

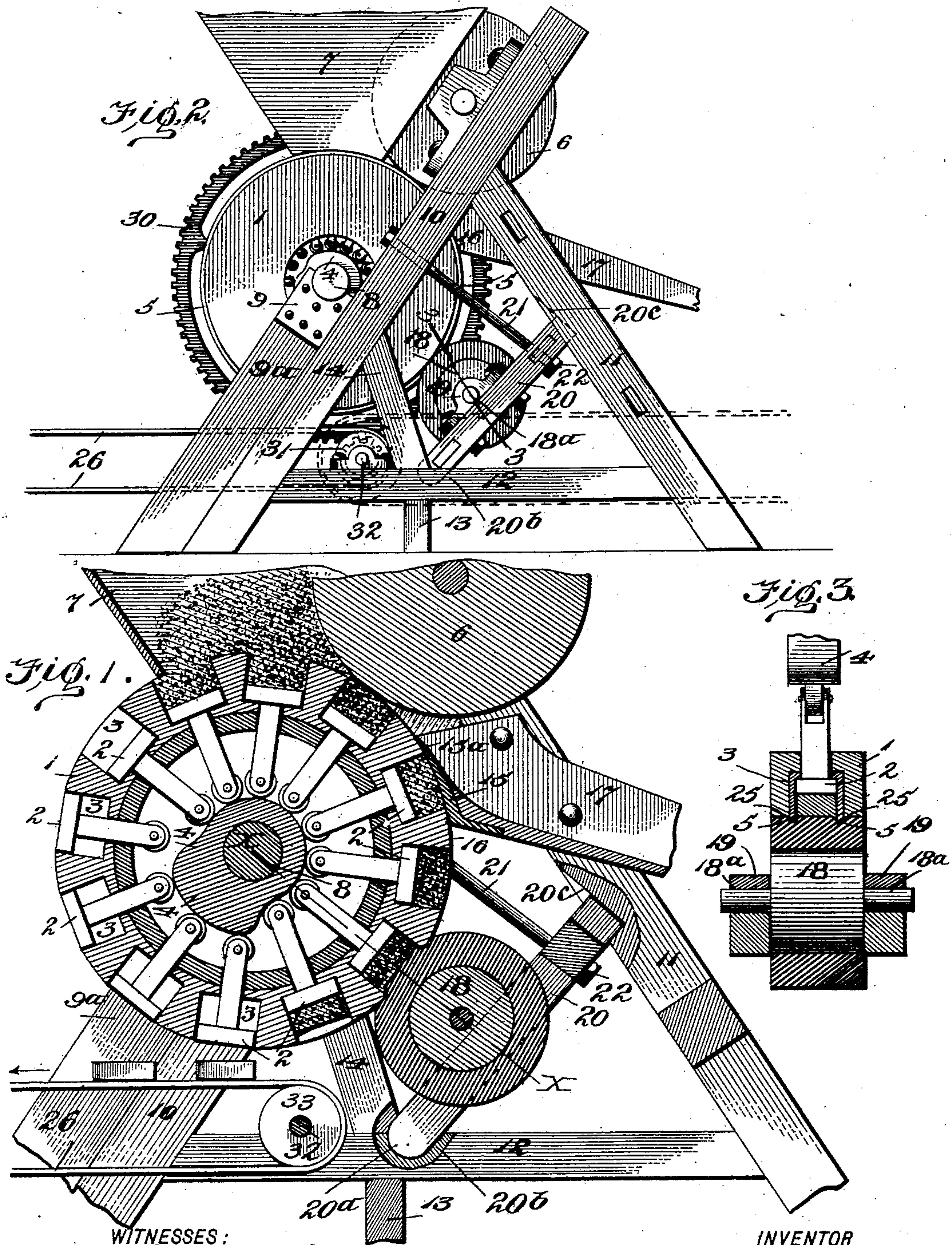
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C. R. MONROE.
BRICK MAKING MACHINERY.

(Application filed July 12, 1902.)

(No Model.)



WITNESSES:

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UNITED STATES PATENT OFFICE.

CHARLES R. MONROE, OF WASHINGTON, DISTRICT OF COLUMBIA.

BRICK-MAKING MACHINERY.

SPECIFICATION forming part of Letters Patent No. 713,570, dated November 11, 1902.

Application filed July 12, 1902. Serial No. 115,380. (No model.)

To all whom it may concern:

Be it known that I, CHARLES R. MONROE, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Brick-Making Machinery, of which the following is a specification.

My invention relates more particularly to improvements in that class of brick-machines having mold-wheels formed with molds in the peripheral face thereof; and the said invention has for its purpose to provide a simple and effectively-operating means for imparting a supplemental or final pressure to the brick, whereby to impart a smooth, dense, and hard finish to the same before it leaves the mold-wheel and in consequence avoiding the necessity of again subjecting the brick to a second pressure after it leaves the mold-wheel, as is now the common practice in making bricks.

In the use of the common form of mold-wheel having peripheral molds or pockets and reciprocally-moving plungers operating therein it is usual to scrape off the surplus clay from the pressed bulk after it has passed the cylinder that forces the clay into the molds. This operation, even when the knives are accurately adjusted, serves to roughen the outer surface of the pressed clay bulk within the mold and so disintegrate or act upon the brick as to make it necessary to subject the said brick to a second or supplemental pressure, which is generally effected by placing it in another mold and subjecting it to a final-pressure mechanism. To effect this latter pressure economically and quickly, the second mold into which the initially-pressed brick is fitted must be sufficiently larger than the mold or pocket in the mold-wheel to permit the said initially-pressed brick dropping therein, and by reason of such increased size of mold the bricks as they receive their second or final pressure are flattened and more or less so changed as to break the bond or original formation, thereby materially affecting their value.

I am aware that brick-machines have heretofore been provided in connection with the peripheral-pocket mold-wheel, a pressing-cylinder, a scraper, and means for effecting a supplemental final pressure to the brick, which coöperate with the mold-wheel before

the brick is discharged therefrom; but so far as I know such means has been in the nature of a fixedly-held plate having a concaved face adapted to be brought up snugly against the peripheral face of the mold-wheel. This form of supplemental pressing means has by practical experience been found not to effect all the results desired and not adapted to produce a uniform and proper pressing action of the initially-pressed brick.

In the operation of machines having a fixedly-held pressure-plate the initially-pressed clay bulk as it is drawn over the fixedly-held pressure-plate frequently has its outer face adhere to the said plate to such an extent that the surface after passing by the said fixedly-held plate is left roughened, and, again, by reason of the drag movement of the said initially-pressed bulk over such fixedly-held plate the body of such bulk is disturbed—that is, the density it had when it left the pressing-cylinder is so changed as to leave that portion of the brick that last passes by the said fixed plate the more compact and solid than that part that first entered against the fixed pressure-plate, thereby leaving the product one of non-uniform density, roughened, and unfinished and making it necessary to frequently finish or re-press the bricks subjected to such supplemental pressure by hand.

My invention differentiates from the type of supplemental-pressure means above noted in that the pressing-surface is movable—that is, it travels with the brick and in the same direction and does not subject the brick to a drag movement with a fixed part—such surface being also of a powerful yielding character, whereby during the pressing operation the brick-body will be positively engaged with uniform pressure against its entire surface, compressed within the mold to a density uniform in every direction, and in which the outer face will be left with a clean smooth finish, and the brick after it has thus received its final pressure left in condition to be dropped onto the take-off belt ready to be delivered onto the drying-compartment without any further pressing or forming.

My invention consists in certain novel constructions and combination of parts, all of which will be first described and then specif-

ically pointed out in the appended claims, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical longitudinal section 5 of a brick-machine embodying my improvements. Fig. 2 is a side elevation thereof. Fig. 3 is a detail horizontal section taken on the line 3 3 of Fig. 2.

Referring to the accompanying drawings, 10 in which like numerals indicate like parts in all the figures, 1 designates the mold-wheel, which is of that type having the molds or pockets in its peripheral face, and the said wheel is equipped with plungers 2, one for each 15 mold or pocket 3, and cam mechanism 4 of suitable construction so arranged as to discharge the brick after the same in my complete construction of machine shall have received its initial and final pressing operations.

20 In my construction of machine the peripheral face of the mold-surface of the wheel is projected slightly beyond the remaining face or edges of the wheel-periphery, as indicated by 5 5 in Fig. 3, the purpose of which will 25 presently appear.

The presser-cylinder 6 is mounted over the upper part of the mold-wheel and projected into the hopper 7 in the usual manner, and the same operates to force the clay into the 30 molds and impart an initial pressure thereto as the molds or pockets pass from the hopper under it.

The general arrangement of parts so far as described forms *per se* no part of my inven- 35 tion, they being of the common form of machine now in general use.

The mold-wheel 1 is mounted upon an axle 8, the ends of which seat in bearings 9, formed in the upper ends of timbers 9^a, supported 40 upon the long inclined timbers 10, that form a part of the strut-frame, which also includes the timbers 11, inclined in reverse direction to the timbers 10, which timbers rest upon the upper ends of the timbers 11.

45 12 indicates horizontal brace-timbers that extend across and join with the lower ends of the timbers 10 11.

13 represents a transverse base or strain beam, and 14 14 denote truss-braces that bear 50 on the timbers 12 at a point over the timber 13 and against the under side of the timbers 10. All of the several timbers referred to in practice are further braced by stay-bolts, &c., whereby to produce an entire supporting- 55 frame of great strength and rigidity.

A scraper 15 is secured to the framing in any suitable manner and at such points below the cylinder 6 that its edge 15^a will hang 60 on the peripheral face of the mold-surface at a point near the cylinder 6, and the said scraper is of sufficient width so its outer edges will bear upon the annular rim 16 of the mold-face, that projects slightly beyond the outer peripheral edges of the wheel, as hereinbefore set out, and to convey the scrapings from 65 the machine the scraper-body inclines down-

ward within a suitable offtake-trough 17, as clearly illustrated in the drawings. The supplemental pressing mechanism in my type of brick-machine is placed below the scraper, 70 and the same consists of a roller formed of a stock portion 18, of wood or metal, having end journals 18^a, mounted in bearings 19, fixedly held upon the upper edges of a pair of beams 20 20, adjustably supported on the main 75 frame, their lower ends being rounded, as at 20^a, and held in sockets 20^b, formed on the timbers 12, while their upper ends are movable within sockets 20^c of the timbers 11, as best shown in Fig. 1. 80

By supporting the members 20 20, as described, it is manifest their upper ends can be swung upwardly in the direction indicated by the arrow toward the mold-wheel, and to hold the said beams up to their adjusted 85 positions a hanger-rod 21 is provided at each side, the upper ends of which pass through the timbers 10 and have headed portions, and their lower ends pass through the upper ends of the timbers 20, said lower ends being 90 threaded to receive the adjusting and clamp nuts 22.

Upon the roller-stock 18 is mounted a thick rubber covering of substantially the length of the peripheral surface of the mold-wheel 95 1, said covering forming a squeezing-body for pressing the bricks held in the molds to a dense and uniform condition as they pass by the aforesaid roller.

In the practical construction the pressing- 100 roller is made of a sufficient diameter so that when said roller is brought into a tight frictional contact with the mold-wheel it will positively press flatly against an area equal or greater than the width of the mold, where- 105 by the said yielding surface, held in contact with the wheel 1, will act as a plunger-face having a width and length equal the width and length of the mold, and thus positively serve to press against the entire outer sur- 110 face of the brick, as illustrated in Fig. 3, by reference to which it will be seen that the plunger action of the yielding surface will be augmented or rendered the [more positive, as well as effectively preventing the 115 spreading of the clay over the outer edges of the mold by reason of offsetting the edges of the wheel 1, thereby producing, as it were, clearly-defined side ridges 25 in that part of the yielding surface of the roller that en- 120 gages the wheel 1, which prevents any side spreading of the clay, as before stated.

The object in supporting the roller in swinging-frame devices, as described and shown, is to provide a simple and effective 125 means whereby the pressure of the roller against the mold-wheel may be governed to suit the character of the clay to be worked, said adjustment being readily effected by tightening the nuts 22, and by fitting the 130 upper ends of the beams 20 in sockets, as described, the said ends, while being left free

to move vertically, are held from lateral motion, the lateral strain on the roller-supporting frame being taken up by the timbers 11.

By providing a means for effecting a final or supplemental pressure on the bricks, such as described and shown, I am enabled to complete the bricks so far as giving them their shape and pressure before they drop from the wheel onto the off-take belt 26.

In operation, the clay bulks having been initially pressed into the molds by the cylinder 6 and the exterior surplus clay smoothed off by the scrapers, the said bricks pass down into engagement with the presser-roll, which by frictional contact with the wheel 1 is caused to rotate in a like direction with the said wheel.

As a maximum pressure of the pressing-roll is on the line taken through the axis of the roller through the axis of the wheel 1, as indicated by X, it follows that as the bricks pass into engagement with the yielding pressure-surface of the said roll they will be first subjected to a progressively-increased pressure until the center of the mold comes in the plane of the line indicated by X, when the action of the roll will be in the nature of a powerful plunger-pressing action against the entire bulk within the mold. As the bricks pass beyond the line X the pressure thereon gradually decreases in such manner as not to effect the then-produced density and uniformity.

An essential advantage in providing a presser-roller having a yielding surface movable in a direction and speed the same as the wheel 1 is that at no time will the brick in passing by the said roller have a drag motion over such roller, and in consequence the shape and density of the brick are not thereby disturbed.

It will be understood the mold-wheel has a master-gear 30 on one of its axles, which gears with the pinion 31 on the drive-shaft 32, driven in any suitable manner, and which shaft also has a bolt 33, over which the off-take belt passes, as shown. The cam mechanism that operates the plunger of the mold-

wheel is so constructed in practice to push out the pressed brick as it passes over the receiving end of the aforesaid off-take belt.

From the foregoing, taken in connection with the accompanying drawings, it is thought the complete advantages of my invention will be readily understood. The same is of a very simple and stable construction, and by its use no handling of the brick is necessary to effect a final pressure thereof, as is now commonly done.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination with the mold-wheel; the cylinder and the supporting-frame including the timbers 11, said timbers having sockets; of the timbers 20 pivotally supported at their lower ends on the main frame, their upper ends projecting into the sockets of the timbers 11, and thereby held from lateral movement; the adjusting-rods supporting the upper ends of the timbers 20, and the presser-roller journaled on the said timbers, said roller having a yielding pressing-surface adapted to engage the mold-wheel periphery, as specified.

2. The combination with the mold-wheel having pockets in its peripheral face, the outer edges of which project beyond the face of the wheel, whereby an annular depressed surface is provided at each side of the mold-faces; of a presser-roll mounted upon the main frame; means for adjusting the pressure of the roller against the mold-faces, said roller having a bearing-face formed of a yielding material whereby said face will plunge into the molds of the wheel and compress the clay bulk therein, said yielding face being of sufficient length to lap over the annular side rims of the mold-wheel, all being arranged substantially as shown and for the purposes described.

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Witnesses:

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