June 18, 1946. F. L. CANTRALL ET AL 2,402,367

BRICK MAKING MACHINE

Filed Dec. 16, 1944 4 Sheets-Sheet 1

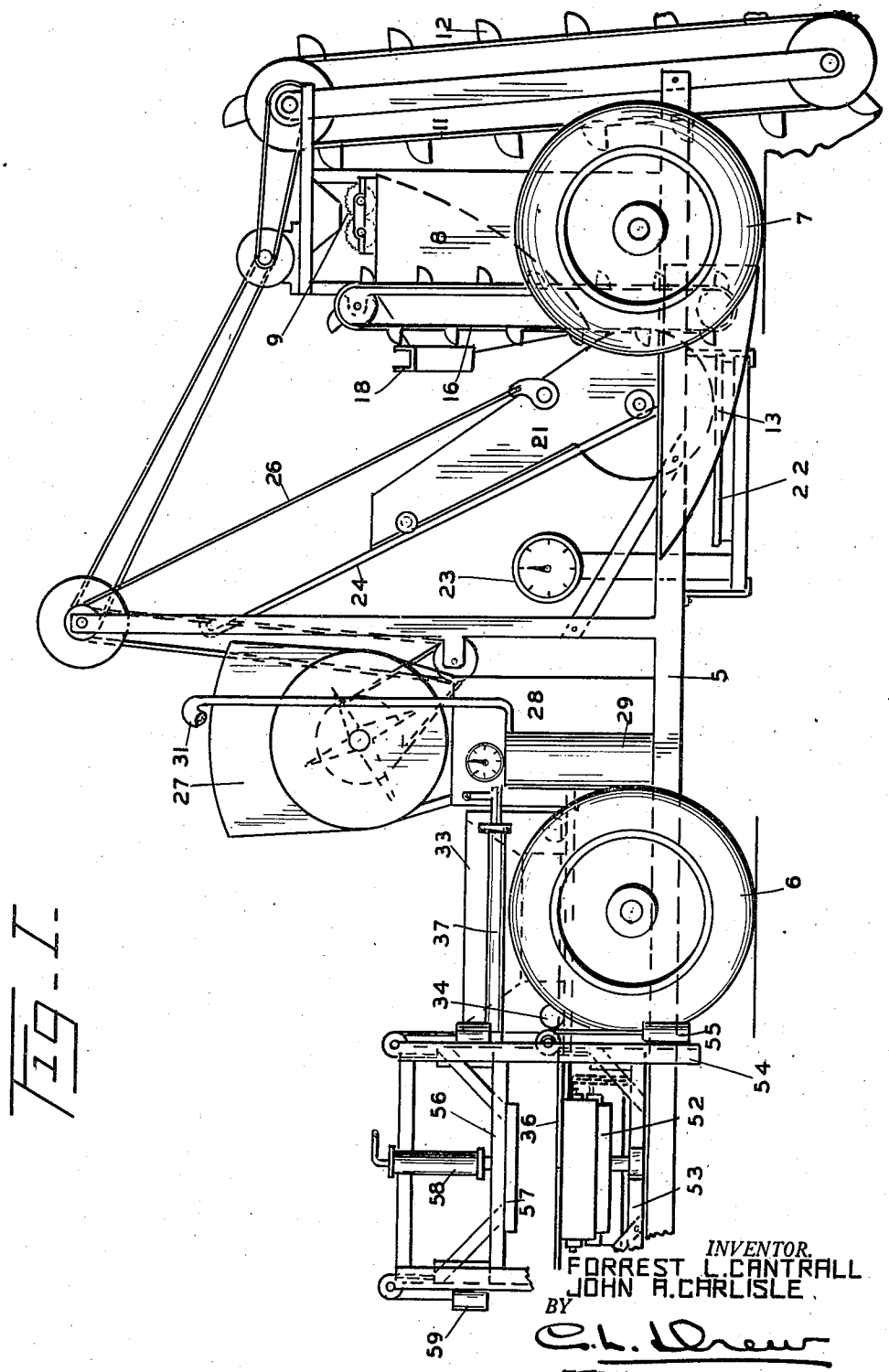


FIG. 1.

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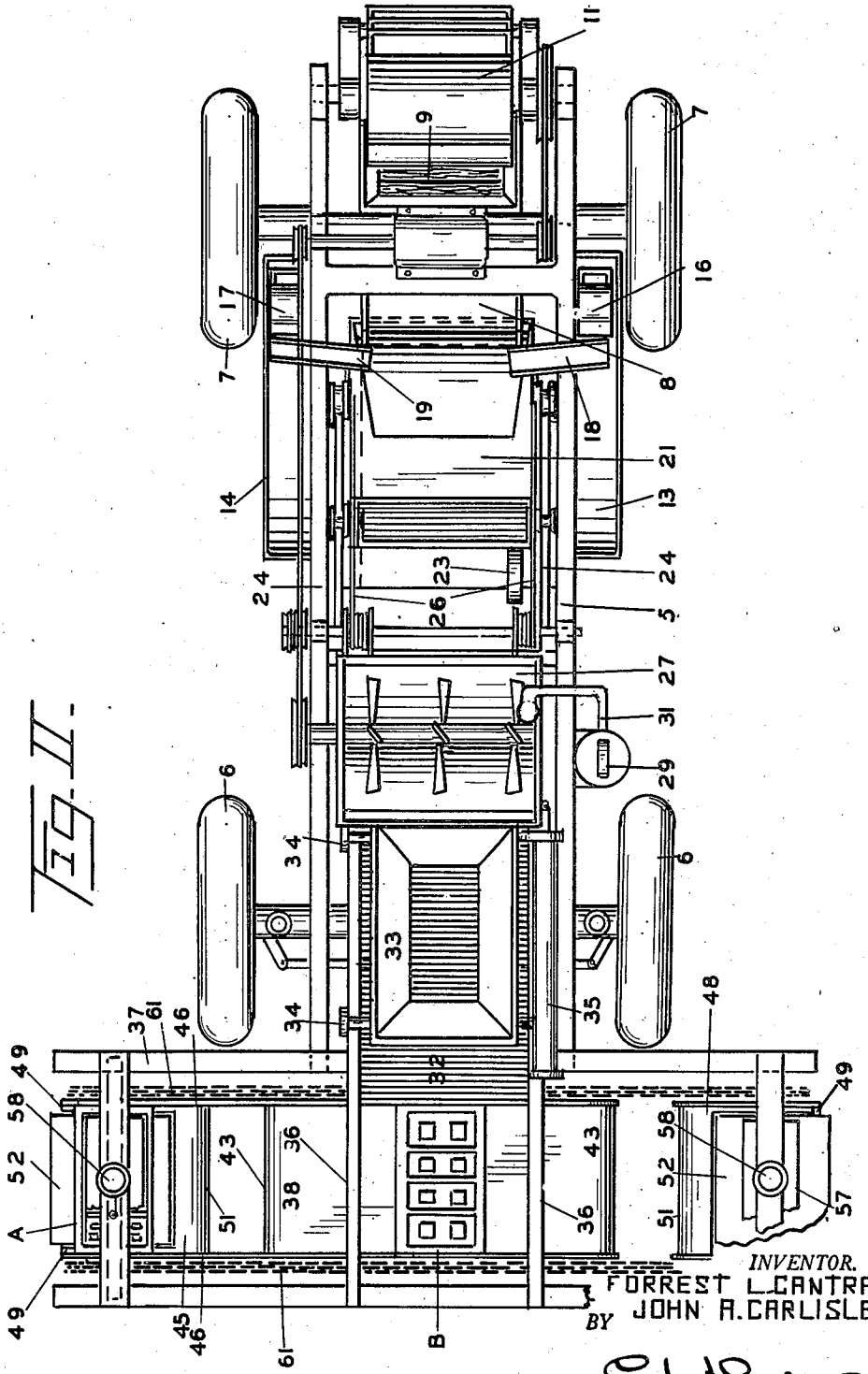


FIG. II.

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BRICK MAKING MACHINE

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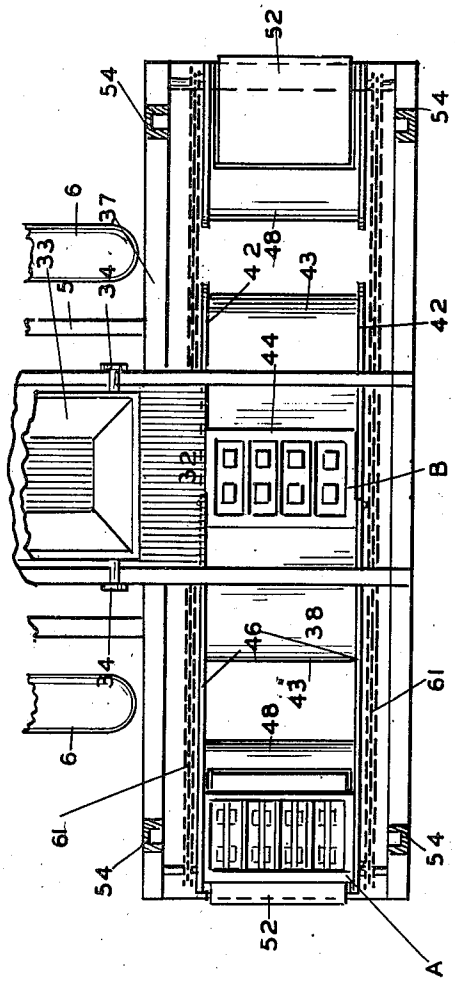


FIG. III.

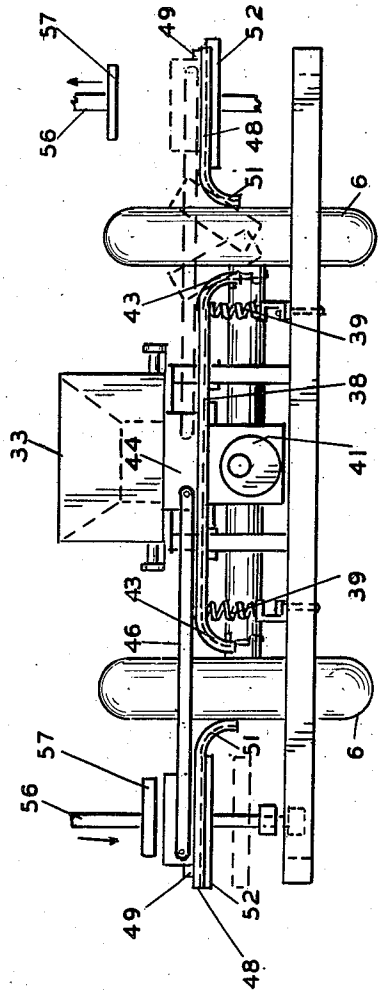


FIG. IV.

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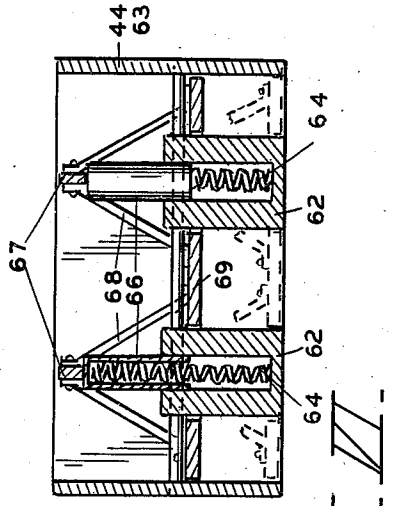


Fig. V.

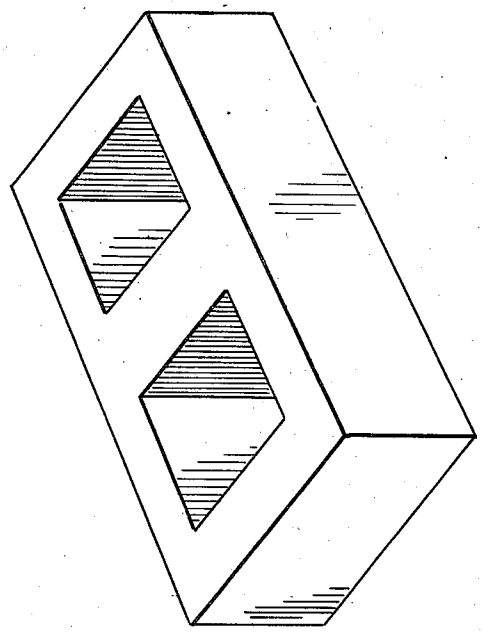


Fig. VI.

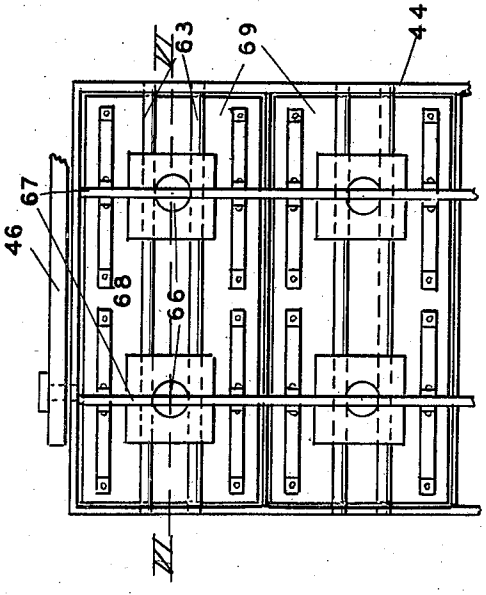


Fig. IV.

Fig. VII.

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Patented June 18, 1946 2,402,367

UNITED STATES PATENT OFFICE

2,402,367

BRICKMAKING MACHINE

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Application December 16, 1944, Serial No. 568,466

2 Claims. (Cl. 25—41)

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This invention relates to improvements in brick making machines.

The principal object of this invention is to produce a machine wherein the raw materials enter the machine at one end, pass through the machine and emerge at the opposite end a finished product.

A further object is to produce a machine wherein all of the bricks constructed will have a uniform texture, and therefore, a uniform strength.

A further object is to produce a device of this character which may be readily transported from place to place, so as to utilize the available materials without the necessity of transporting the major portion thereof.

A further object is to provide means whereby all of the materials will be mixed in a definite proportion, irrespective of local conditions, as for instance, the amount of moisture in the sand, or other ingredients being used.

Other objects and advantages will be apparent during the course of the following description.

In the accompanying drawings forming a part of this specification and in which like numerals are employed to designate like parts throughout the same,

Fig. I is a side elevation of our machine.

Fig. II is a top plan view of Fig. I.

Fig. III is a fragmentary cross-sectional view of the rear, or molding end of the machine.

Fig. IV is a rear elevation of Fig. III diagrammatically illustrating the turn over and injector mechanism.

Fig. V is a fragmentary bottom view of one of the molds on an enlarged scale.

Fig. VI is a cross sectional view taken on the line 6—6 of Fig. V, and

Fig. VII is a perspective view of a completed brick.

In the manufacture of brick it has been customary to haul the various ingredients from the source of supply to the brickyard and to then mix the same in a more or less haphazard manner, with the result that the bricks so formed are of uneven texture and consequently uneven strength. We have, therefore, provided a machine which will combine the various ingredients in correct proportion and will thoroughly mix the ingredients, mold the same and eject the same as a finished product.

In the accompanying drawings wherein for the purpose of illustration is shown a preferred embodiment of our invention, the numeral 5 designates the frame of the machine which has ground engaging wheels 6 and 7. These wheels are so

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arranged that the steered wheels 6 are at the rear of the machine.

Mounted on the frame 5 is a hopper 8, above which are crushing rollers 9. These crushing rollers are driven in any convenient manner and are so positioned as to receive material discharged from a belt conveyor 11, which conveyor has buckets 12, which are adapted to pick up material at a point below the ground surface, upon which the wheels 6 and 7 rest.

Secured to the sides of the frame are receptacles 13 and 14, each one of which has a bucket conveyor, as shown at 16 and 17 respectively, which in turn discharge material into the chutes 18 and 19 respectively. These chutes, together with the hopper 8, discharge into a traveling bucket 21, the lower portion of which rests upon a scale platform 22 supported beneath the frame 5.

A dial and pointer 23 indicate the pressure or load in the bucket 21. This bucket 21 travels on tracks 24 and is elevated through the medium of cables 26. When the bucket is at the top of its travel it will tip and discharge into a mixer 27, which mixer is mounted on a water tank 28. A measuring tank 29 is connected to the tank 28, and has a discharge pipe 31, which discharges into the mixer 27.

The measuring tank 29 has an indicator, whereby the exact amount of water placed in the measuring tank and discharged may be accurately determined.

Positioned directly to the rear of the mixer is a platform 32 on which a traveling hopper 33 slides, the bottom of this hopper having intimate contact with the platform. Guide wheels 34 maintain this hopper in alignment with tracks 36. This hopper may be moved back and forth in any convenient manner, but I have here shown a hydraulic cylinder and piston arrangement 35 for accomplishing the movement.

Secured to the frame 5 and arranged transverse thereof is a rectangular frame 37 upon which the molding apparatus is mounted. The molding apparatus consists of a vibrating table 38, which is mounted on springs 39, and vibrated by an eccentrically mounted weight 41. This table has upturned guide flanges 42 and downturned ends 43, the result being that either of the mold boxes 44 may be slid upon the table in either direction, but when at rest, one will be directly in line with the movement of the traveling hopper 33.

There are two mold boxes which are connected together by links 46, and in order to distinguish

the action of the two molds, the same are designated by the letters "A" and "B."

In the same plane as the table 38 are similar tables 48, each of which is provided with a stop, as shown at 49, the purpose of which will be later seen, and each has a down-turned end 51. These tables 48 each have incorporated therein, a take-off table 52, which is mounted on a vertically movable frame 53, which travels in the uprights 54, and is supported by counterweights 55. (See Fig. I.) These same supports 54 also serve to slidably mount a frame 56 and an ejector plate 57.

A hydraulic cylinder 58 serves to move the ejector plate 57 downwardly while counterweights 59 serve to return it to its normal or elevated position. A chain drive, shown at 61, serves to move the molds "A" and "B" from a filling to a discharge position and vice versa.

Referring now to Fig. V, it will be noted that the mold 44 consists of a series of sections, and as each are identical, but one will be described. The purpose of this mold is to construct a hollow or cored brick, as shown in Fig. VII.

Mounted in each section of the mold are core blocks 62 and held in position by rods 63. These core blocks are hollow so as to house springs 64, which springs, in turn, support a casing 66, which is attached to cross rods 67. These cross rods have braces 68, which carry an ejector plate 69, which ejector plate has a neat sliding fit inside of the mold section and around each core block.

The result of the construction thus far described is that assuming that the machine has been moved into position where proper material is available and the machine is put into operation, the conveyor buckets 12 will elevate material and discharge it to the crushing rollers 9, which will, in turn, crush the material to a uniform size.

From the crushing rollers the material passes through the hopper 8 and into the bucket 21, the lower portion of which rests upon the scale platform 22. At the same time the crushed material is being discharged into the bucket, sand from the receptacle 14 is elevated and discharged into the bucket, and cement from the receptacle 13 is also elevated and discharged into the bucket.

When a predetermined weight of material has been placed in the bucket 21, the same is elevated and dumped into the mixer 27. Water is now discharged from the measuring tank 28 through the pipe 31 into the mixture and the entire mass is thoroughly mixed, after which it is discharged into the traveling hopper 33, which hopper 33 holds enough material to make a number of bricks before refilling.

As a consequence, the portion of the machine thus far described can be kept in almost continuous operation while the molding operation is also taking place, assuming that the parts are in the position shown in Fig. III, that is, one mold being in alignment with the hopper 33 and the other mold being at the left of the drawing and in discharged position.

We will now assume that the hopper 33 is moved rearwardly to a point above the mold B, and thus the material will drop from the bottom of the hopper into the mold. At this time the operator actuates the vibrating mechanism, which will cause the material to completely fill the mold and pack itself to a proper degree.

The hopper will now be returned to the position of Fig. III, and by actuating the chains 61, the mold "B" will be moved toward the right of the drawings and the mold "A" will follow.

As the two molds reach the break between the tables 38 and 48 the advancing end of the mold will drop down the curved ends 51 and 43 of the tables 48 and 38 respectively and assume a vertical position. As they further advance they will climb the curved ends of the tables 38 and 48 now being encountered in their line of movement. As a result, both molds have been turned over, the mold "A" from discharge position to filling position in alignment with the hopper 33 and the mold "B" from filling position to discharge position at the far right of the drawings. On the backward movement the reverse will take place.

The operator now operates the hydraulic cylinder 58, which moves the ejector 57 downwardly against the rods 67. These rods will in turn move the mold ejector plate 69 downwardly, pushing the molded bricks out of the mold. The weight of the bricks being ejected will be sufficient to overcome the counterweights 55; thus the bricks are transferred from the mold to the take-off table.

The stops 49 serve to limit the endwise movement of the molds "A" and "B" in their travel; consequently, when the mold "A," for instance, is against its stop 49, the mold "B" will be in exact position to receive the material from the hopper 33, and also the opposite is true; when the mold "B" is in discharge position the mold "A" will be in correct filling position.

Thus, it will be seen that we have devised a machine which will accomplish all the objects above set forth.

It is to be understood that the form of our invention herewith shown and described is to be taken as a preferred example of the same and that various changes relative to the material, size, shape and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

Having thus described our invention, we claim:

1. A brick molding apparatus comprising a mold supporting vibrating table, spaced tables in the same plane with said first mentioned table, a mold positioned on said vibrating table, a second mold positioned on one of the other of said tables, links connecting the near side of said first mentioned mold to the far side of the second mentioned mold, all of said tables having curved adjacent ends, and means for alternately moving said molds from said vibrating table to said spaced tables whereby as said molds pass from one table-supporting surface to the next table-supporting surface a turning over of the mold will occur in the space between the tables.

2. A brick molding apparatus comprising a mold supporting vibrating table, spaced tables in the same plane as said first mentioned table, each of said tables having their adjacent ends curved downwardly, a mold mounted on said vibrating table, a second mold positioned on one end of the other of said tables, means for moving said molds simultaneously, whereby the mold on said vibrating table moves to the remaining table, and the other of said molds moves to said vibrating table, said molds being pivoted whereby during their course of movement said molds will drop into the space between said table, following the curvature of the ends of the tables, and will then rise back onto the next engaging table, each mold making a complete half-turn in transit.

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