H. J. GERBSCH.

BRICK MACHINE.

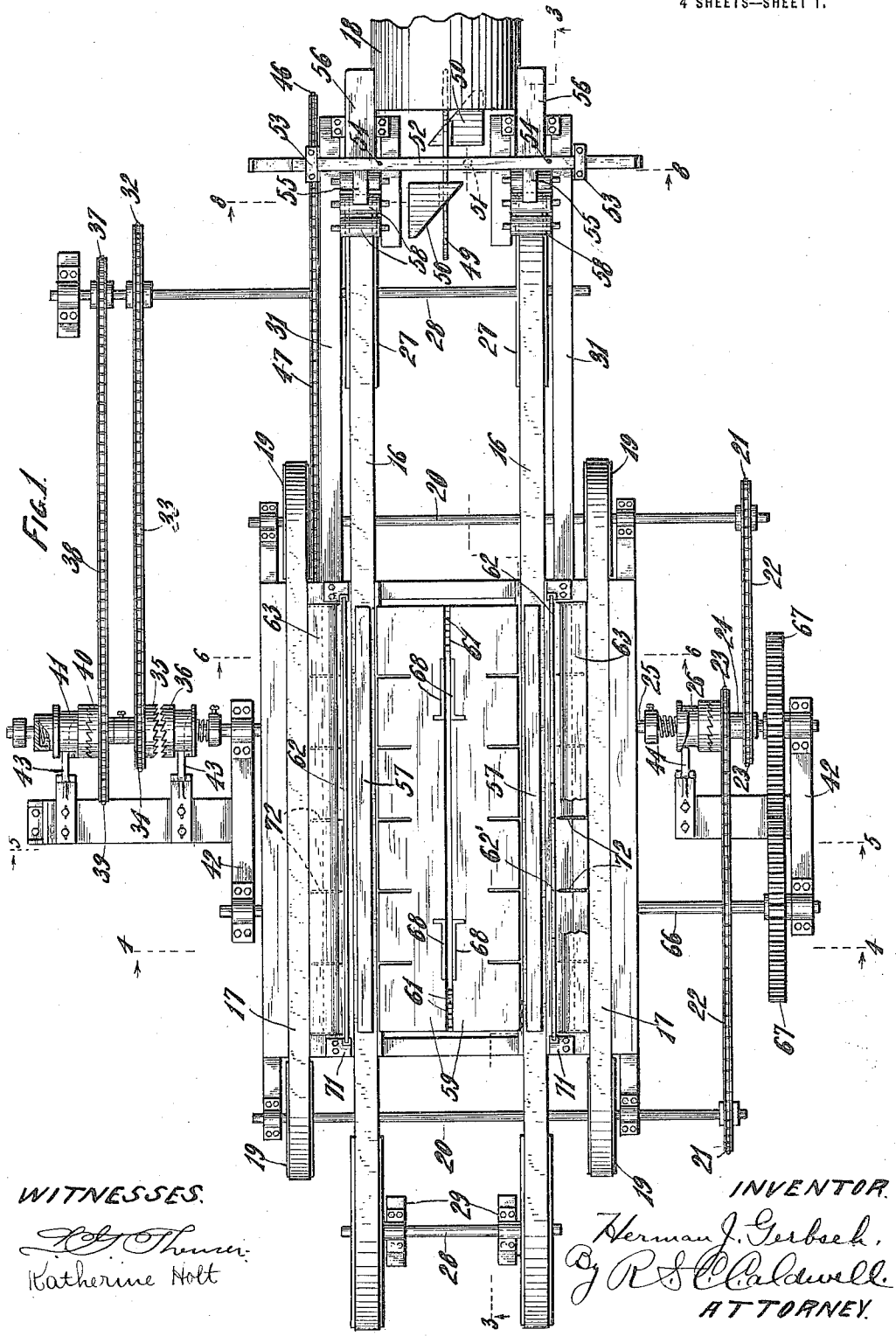
APPLICATION FILED MAY 26, 1915.

1,157,862.

Patented Oct. 26, 1915.

4 SHEETS—SHEET 1.

Fig. 1.



WITNESSES.

L. B. Thomas.

Katherine Holt

INVENTOR.

Herman J. Gerbsch.

By R. S. & C. Caldwell.

ATTORNEY.

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

H. J. GERBSCH.

BRICK MACHINE.

APPLICATION FILED MAY 26, 1915.

1,157,862.

Patented Oct. 26, 1915.

4 SHEETS—SHEET 2.

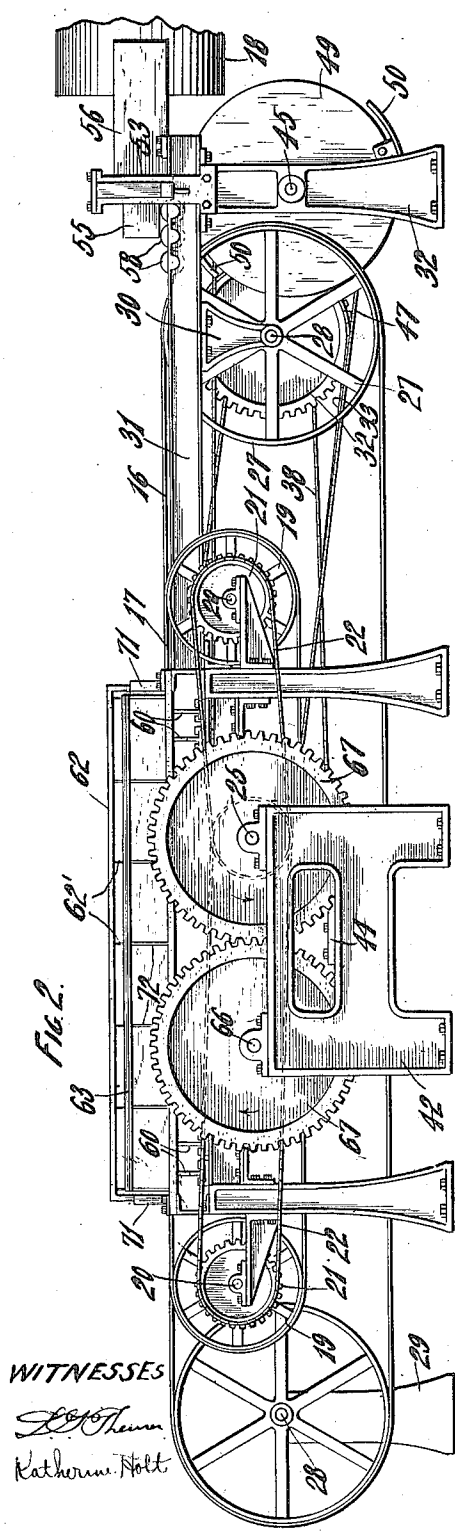


Fig. 2.

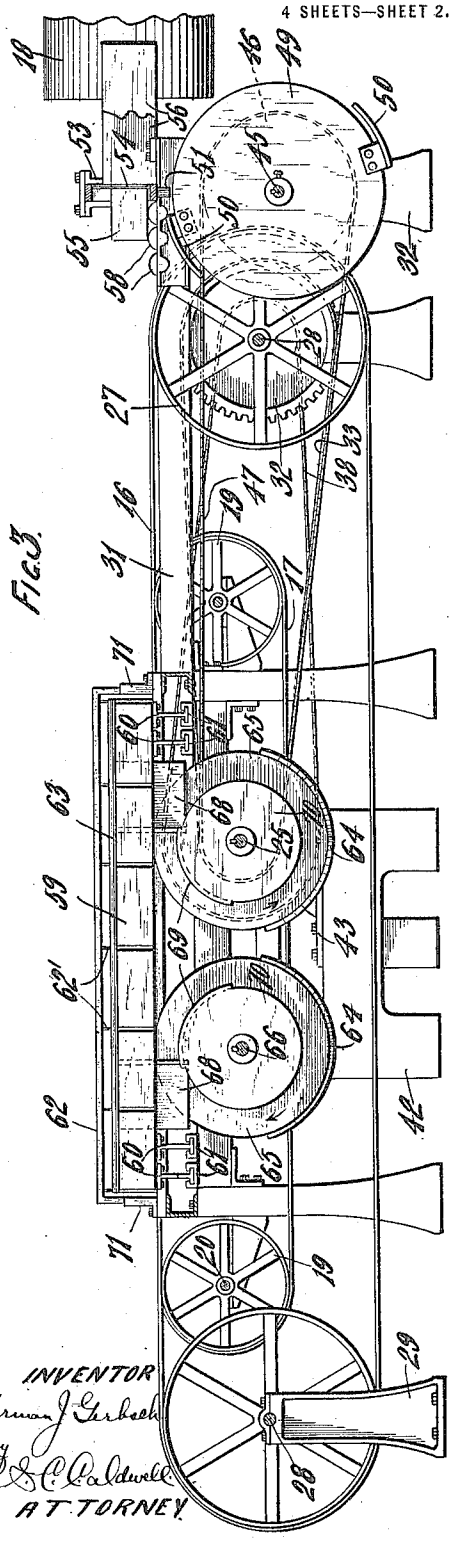


Fig. 3.

WITNESSES

E. F. Thum

Katherine Holt

INVENTOR

Herman J. Gerbsch

By R. S. & C. Caldwell

ATTORNEY

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

H. J. GERBSCH.

BRICK MACHINE.

APPLICATION FILED MAY 26, 1915.

1,157,862.

Patented Oct. 26, 1915.

4 SHEETS—SHEET 3.

FIG. 4

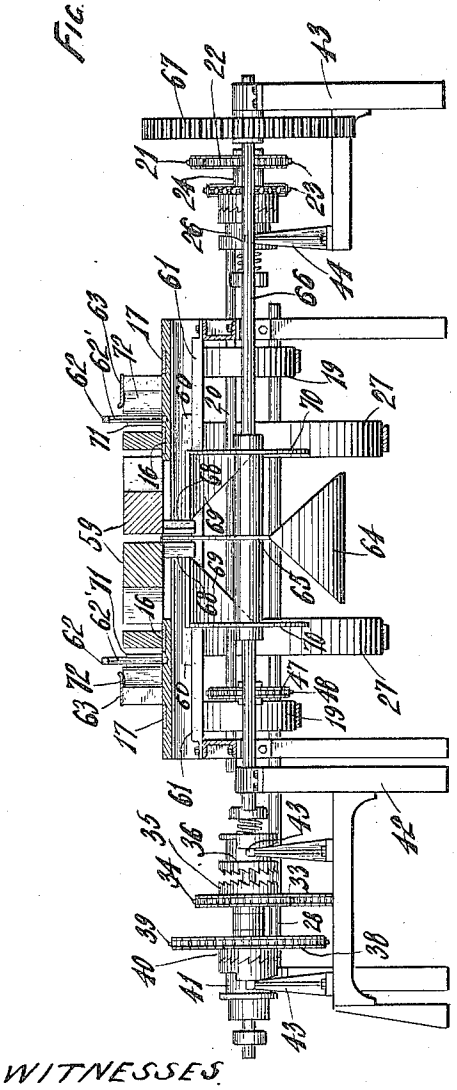
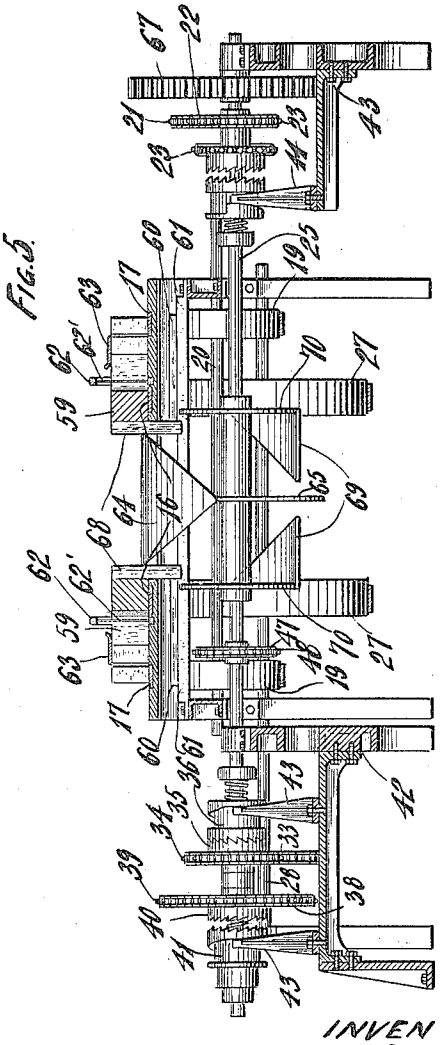


FIG. 5



WITNESSES.

Katherine Holt

INVENTOR

Herman J. Gerbsch.

By R. & C. Caldwell.

ATTORNEY

H. J. GERBSCH.

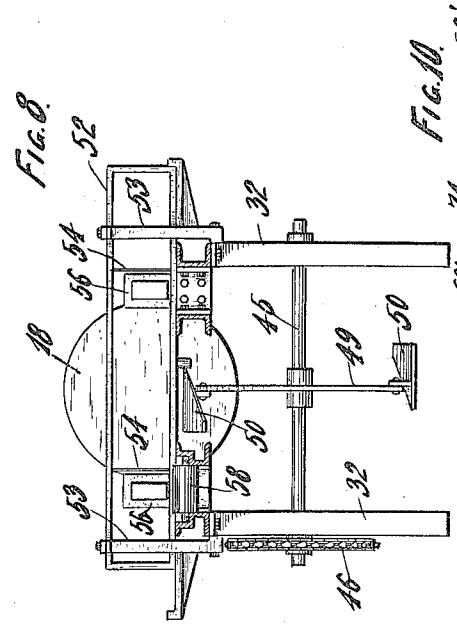
BRICK MACHINE.

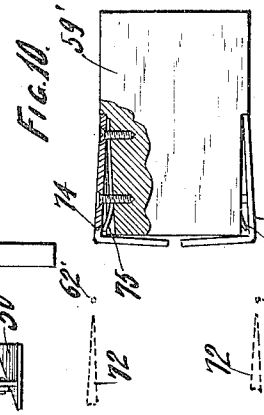
APPLICATION FILED MAY 26, 1915.

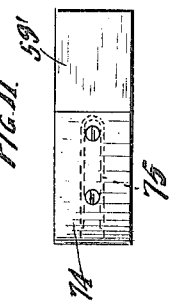
1,157,862.

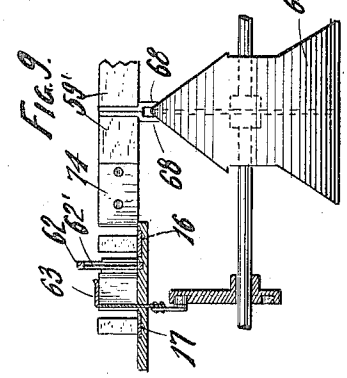
Patented Oct. 26, 1915.

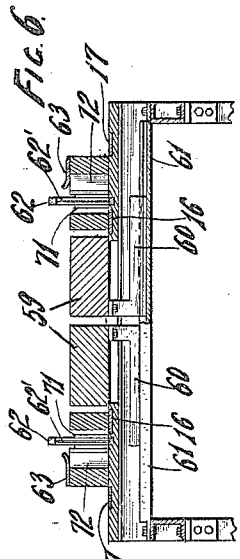
4 SHEETS—SHEET 4.

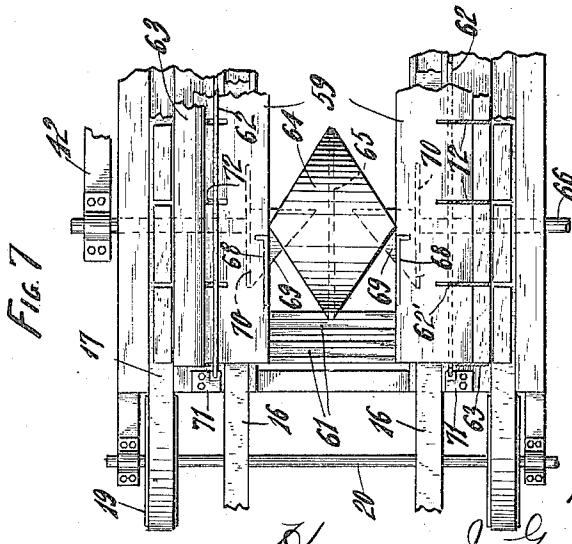












WITNESSES.

L. C. Themer

Katherine Holt

INVENTOR

Herman J. Gerbsch,

By R. S. & C. A. Caldwell.

ATTORNEY

COLUMBIA PLANOGRAPH CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

HERMAN J. GERBSCH, OF WAUSAU, WISCONSIN.

BRICK-MACHINE.

1,157,862. Specification of Letters Patent. Patented Oct. 26, 1915.

Application filed May 26, 1915. Serial No. 30,525.

To all whom it may concern:

Be it known that I, HERMAN J. GERBSCH, a citizen of the United States, and resident of Wausau, in the county of Marathon and State of Wisconsin, have invented new and useful Improvements in Brick-Machines, of which the following is a description, reference being had to the accompanying drawings, which are a part of this specification.

This invention has for its object to provide a machine for cutting clay into suitable lengths for forming bricks and for forcing the same through molds to smooth the surface thereof, the operation of the various parts of the mechanism being automatic so that the machine may be continuous in its operation.

Another object of the invention is to provide such a brick making machine in duplicate with the corresponding parts connected together and operated simultaneously.

Another object of the invention is to provide a machine for cutting the bricks by means of wires but immediately forcing them through molds or dies to smooth over the rough surfaces left by the cutting wires so that the bricks will have the finished appearance of pressed bricks.

Another object of the invention is to provide a brick cutting machine in connection with a clay kneading machine to take one or more columns of clay issuing from the kneading machine on conveyers traveling at the same speed therewith and cutting off said columns into bars of suitable length for treatment by the brick cutting portion of the machine and increasing the speed of travel of the conveyers to bring such cut off bars into position for such brick cutting operation and then reducing the speed of the conveyers for the ends of the columns next brought to bear thereon, thus adapting the machine for operation with a continuous operation of the clay kneading machine, though being intermittent in its operation of the brick cutting mechanism.

Another object of the invention is to perfect details of construction of a brick making machine.

With the above and other objects in view the invention consists in the brick machine as herein claimed and all equivalents.

Referring to the accompanying drawings, in which like characters of reference indicate the same parts in the different views, Figure 1 is a plan view of a brick machine constructed in accordance with this invention; Fig. 2 is a side elevation thereof; Fig. 3 is a longitudinal sectional view thereof on the plane of line 3—3 of Fig. 1; Fig. 4 is a transverse sectional view thereof on the plane of line 4—4 of Fig. 1, showing the plungers in their retracted position; Fig. 5 is a similar view on the plane of line 5—5 of Fig. 1, showing the plungers in their outermost positions; Fig. 6 is a detail sectional view on the plane of line 6—6 of Fig. 1, showing the slides on which the plungers are mounted; Fig. 7, is a detail plan view, partly in section, with the plungers in the position shown in Fig. 5, and showing the cam operating means therefor; Fig. 8 is a transverse sectional view on the plane of line 8—8 of Fig. 1 showing the operating means for the cut-off frame; Fig. 9 is a detail view with parts in the position of Fig. 4, and showing a modified form of operating cam and mold boxes and plungers; Fig. 10 is a detail plan view partly in section of one of the plungers of the modified form shown in Fig. 9; and, Fig. 11 is a side view thereof.

In these drawings 15 indicates a table upon which the brick cutting operation is performed, grooves being formed lengthwise therein for conveyer belts 16 and 17, the former for bringing slabs or bars of clay to the table from a brick machine, or what is here termed, "a clay kneading machine" 18, and the latter for conveying the cut bricks from the table. Conveyer belts 17 pass around pulleys 19 on shafts 20 which are journaled in suitable brackets at the ends of the table and are driven by sprocket wheels 21 on said shafts connected by chains 22 with sprocket wheels 23, both of which are fixed on a sleeve 24 which is loosely mounted on a driving shaft 25 but which may be operatively connected therewith by means of a clutch member 26 engaging clutch teeth on the sleeve 24. The conveyer belts 16 pass around pulleys 27 on shafts 28, one of which is journaled in suitable standards 29 beyond one end of the table, and the other of which is journaled in brackets 30 secured to the bottom of a pair of beams 31 which form an extension for the table connecting it with standards 32 beyond the other end of the table.

The belts 16 are driven from the driving shaft 25 by either of two driving connections, one of which produces a low speed of travel of the conveyer belts, while the other

produces a high speed of travel thereof. One of the shafts 28 carries a large sprocket wheel 32 connected by a chain 33 with a smaller sprocket wheel 34 on a clutch sleeve 35 loosely mounted on drive shaft 25 and adapted to be coupled therewith by means of a spring pressed clutch member 36, thus constituting the slow speed driving connection for the conveyer belt 16, while a small sprocket wheel 37 on said shaft 28 connected by a chain 38 with a large sprocket wheel 39 on clutch sleeve 40 loosely mounted on the drive shaft 25 and adapted to be coupled therewith by means of a spring pressed clutch sleeve 41 constitutes the driving connection for giving a fast speed of travel to the conveyer belts 16.

The drive shaft 25 is journaled in suitable bearing frames 42 and is driven by any suitable means, not shown, and the clutch sleeves 36 and 41 are alternately engaged with their respective complementary members by having cam grooves into which project stationary clutch operating fingers 43 on the bearing frame at this side of the machine, while a similar clutch operating finger 44 on the bearing frame at the other side of the machine by engaging the cam groove in the spring pressed clutch member 26 effects its engagement and disengagement with its complementary member to alternately drive the conveyer belts 17 and permit them to remain idle.

A shaft 45 journaled in the standards 32 is driven from the drive shaft 25 by having a sprocket wheel 46 connected by a chain 47 with a sprocket wheel 48 on shaft 25 and carries a disk 49 with diametrically opposite cam plates 50 with oblique front edges adapted in their travel to engage a downwardly extending pin 51 on a cut-off slide frame 52 which is mounted in guides 53 on the standards 32 so as to have a reciprocating motion across the machine as the result of such cam engagement. This cut-off slide frame has a pair of vertical cut-off wires 54 stretched thereacross, which during the movements of the frame are carried across the path of travel of the clay columns 55 issuing from the discharge spouts or dies 56 of the clay kneading machine 18, and in so doing at regular intervals cut off the ends of the clay columns into bars 57 of approximately the length of the table. The ends of the clay columns 55 between the points where they leave the ends of the spouts 56 and the points where they reach the conveyer belts 16 are supported by suitable lubricated rolls 58 supported in the table extension beams 31. During the time that the ends of the clay columns 55 are resting on the conveyer belts 16 said conveyer belts are driven at their slower speed which is approximately the speed at which the columns issue from the kneading machine, but as soon as the cut-off frame is operated to cut off the bars 57 the speed of the conveyer belts 16 is increased and they move at high speed until the bars 57 are in position upon the table to receive the cutting operation, the mechanism for which will be now explained.

A pair of multiple plungers 59 are mounted at their ends upon flanged slides 60 which travel transversely of the table in grooved guides 61, these slides and guides being located beneath the top of the table and the former connecting with the plungers 59 through a central opening in the top of the table, while said plungers are positioned to travel over the top of the table on the level of the tops of the conveyer belts. Each plunger member 59 has its outer edge slotted to divide it into a series of projections with their presser faces corresponding in shape and size to the faces of the bricks to be formed thereby, and in the inner positions of the plungers, as shown in Fig. 1, these presser faces lie clear of the path of travel of the clay bars 57 but close thereto. At the instant the clay bars reach the position to be operated upon by the plungers said plungers are forced outwardly to engage them and push them off of the conveyer belts 16 and through suitable cutting frames 62 on the other sides of the conveyer belts and into molding boxes 63. This movement of the plungers is preferably caused by cams acting at both ends thereof, such as cam plates 64 mounted on disks 65 on the drive shaft 25 and on a parallel companion shaft 66 similarly mounted and geared thereto by gear wheels 67. The pointed forward ends of these cam plates 64 enter between flanged engaging plates 68 extending downwardly from the inner edges of the plungers near both ends thereof and force them apart, thus moving the plungers outwardly from the position shown in Fig. 4 to the position shown in Fig. 5. Shortly after this outward movement of the plungers they are returned to their inner positions by cam plates 69 on disks 70 on said shafts 25 and 66, as shown in Fig. 4. During the time interval between the inward movement and the outward movement of the plungers the next pair of bars 57 is brought into position to be operated upon in the manner just described.

Each cutting frame 62 is removably mounted in upstanding grooved guides 71 on the table and fits into a groove in the surface of the table so that its bottom rail will be flush with the top of the table, and vertical wires 62′ stretched across it cut the slab or bar 57 into bricks as it is forced by the plunger and as the wires are in positions to enter the slots of the plungers the plungers continue their movement of the bricks into the brick molds or cells formed in the mold boxes 63 by vertical partitions

72 with sharpened front edges. These mold boxes 63 are secured in position on the table and their partition walls 72 being somewhat thicker than the cutting wires serve to reform the wire cut surfaces of the bricks so as to render them smooth and compact. The rear ends of the cells or compartments of the brick mold boxes are close to the edge of the conveyer belts 17, but the stroke of the plungers is just sufficient to carry the bricks to these rear edges of their reforming compartments, leaving it for the next series of bricks being forced into said compartments by the plungers to move them outwardly onto the conveyer belts 17 which at this time are idle by the disconnection of clutch 26 to avoid distortion of the newly formed bricks. When the bricks are in position on the belts 17 the clutch 26 is reengaged and they are conveyed thereby away from the machine, preferably being taken automatically from the belts 17 by means not shown.

The operation of the machine has been explained in connection with the description of the construction thereof.

In that form of the invention shown in Fig. 9 the plungers 59 are made longer and they are given a greater stroke so as to carry the bricks through the mold boxes and onto the conveyer belt 17, the cam 64′ being larger for this purpose and having a broken cam edge, the first part of which causes the plunger to force the slab of clay through the cutting frame and compress it firmly within the mold box 63 against a removable slide 73 which passes through a slot in the top of the table and may be moved by hand or by cams 73′ on shafts 25 and 66 so as to be removed from the path of the bricks as soon as the central parallel reduced portions of the cam surfaces are passing the engaging plates 68. The remainder of the cam surface forces the plungers farther in their outward movement to place the bricks on the conveyer belts 17. As soon as the plungers are withdrawn the slide 73 is returned ready for the next pressing operation. The plungers 59 are desirably made slightly larger than the mold boxes but compressible so as to fit therein when guided between the converging walls of the partition plates 72, this being permitted by the angular plates 74 which are loosely mounted in recesses at the ends of the plungers and are pressed outwardly by springs 75. With this form of the device the bricks are more firmly compressed within the mold boxes and are given a more finished appearance by reason thereof.

Either of the cutter frames 62 may be quickly removed and replaced with another in the event of a cutting wire becoming broken, and this without the interruption of the operation of the machine, for if there is a stroke of the plungers in the meantime, the sharpened front edges of the partitions 72 of the mold boxes may be relied upon for cutting the bricks apart.

What I claim as new and desire to secure by Letters Patent is:

1. In a brick machine, the combination with a clay kneading machine furnishing an uninterrupted flow of clay through a die opening, a conveyer for conducting the column of clay from the die opening of the clay kneading machine, a suitably operated cut-off means for cutting off a bar of clay of predetermined length from the end of the column, a table to which the cut off bar of clay is delivered by the conveyer, a series of stationary cutters on the table at one side of the conveyer, a series of plunger members on the table at the other side of the conveyer and adapted to move across the conveyer to force the bar of clay through the cutters, and means for driving the conveyer at an increased speed upon the operation of the cut-off means and until the bar of clay is in position to be operated upon by the plungers.

2. In a brick machine, a table, a series of vertical cutters thereon, a series of reciprocating plungers adapted in their movements to receive the cutters between them, a clay kneading machine for producing a continuous flow of clay column through a die opening, a cut-off means for cutting off the end of the clay column, and a conveyer operating at a greater speed than the flow of clay from the clay kneading machine for conducting the bar of clay cut off from the column to the table between the plungers and the cutters.

3. A brick machine, comprising a table, a series of cutters thereon, a series of reciprocating plungers adapted in their movements to receive the cutters between them, a pair of shafts carrying pulleys, a conveyer belt passing around the pulleys and upon the table between the plungers and the cutters, a drive shaft, a cut-off means driven therefrom and positioned beyond the receiving end of the conveyer belt, a clay kneading machine for producing a continuous flow of clay through a die opening across the path of travel of the cut-off means and toward the conveyer belt, a low speed driving connection and a high speed driving connection between the drive shaft and one of the shafts of the said pair of shafts, and cam operated clutches for alternately engaging the two driving connections for causing the conveyer belt to travel at a low speed while the column of clay rests thereon and for causing the conveyer belt to travel at a higher speed upon the operation of the cut-off means to rapidly deliver the cut off bar of clay to the space between the plungers and the cutters.

4. A brick machine, comprising a table, a delivery belt and a discharge belt traveling

thereon, cutters mounted on the table between the said belts, a series of reciprocating plungers adapted to move across the delivery belt and to receive the cutters between them, a clay kneading machine for delivering a flow of clay through a die opening to the delivery belt, a cut-off means for cutting off a bar from the end of the clay column, a drive shaft, a slow speed driving connection and a high speed driving connection between the drive shaft and the delivery belt, cam operated clutches for said driving connections causing the delivery belt to move at a high speed following the operation of the cut-off means and until the clay bar is delivered to the table and for causing the delivery belt to travel at a slow speed at other times, a driving connection between the drive shaft and the discharge belt, a cam controlled clutch connection therefor causing the discharge belt to remain idle during the movements of the plungers toward the cutters to receive the bricks cut off thereby.

5. In a brick machine, a series of cutters, a series of reciprocating plungers adapted to operate upon a bar of clay placed between the plungers and the cutters and to receive the cutters between the plungers during their movements, and remolding partitions in alinement with the cutters for smoothing the surface of the bricks forced between the cutters by the plungers.

6. In a brick machine, a series of cutters, a mold box having partitions in alinement with the cutters and a series of reciprocating plungers adapted to force a bar of clay between the cutters and into the mold box.

7. In a brick machine, a removable cutter frame, cutting wires stretched thereacross, a mold box having partitions in alinement with the cutting wires, and a series of reciprocating plungers adapted to force a bar of clay between the cutting wires and into the mold box.

8. In a brick machine, a table, a pair of delivery belts thereon for delivering bars of clay thereto, a pair of multiple plunger members on the table between the belts, flanged slides beneath the table secured to the plunger member, grooved guides beneath the table in which the slides travel and permitting the plunger members to have a reciprocating movement across the belts, a pair of suitably driven shafts extending beneath the table, disks on the shafts, cam plates on the disks, engaging plates on the plunger members engaged by the cam plates for reciprocating the plunger members, and cutters on the table alongside of the belts through which the bars of clay are forced by the reciprocating movements of the plungers.

9. In a brick machine, a clay kneading machine for producing a flow of clay column through a die opening, a suitably mounted reciprocating frame having a cut-off wire stretched thereacross and adapted to travel across the path of the column of clay flowing from the kneading machine, a suitably driven shaft, a disk thereon, a pair of oppositely directed cams on the disk, and a projection on the frame engaged by the cams for reciprocating the frame to cut off the column of clay into clay bars.

10. In a brick machine, a series of cutters, a series of reciprocating plungers adapted to operate upon a bar of clay placed between the plungers and the cutters and to receive the cutters between the plungers during their movements, mold boxes having remolding partitions in alinement with the cutters for smoothing the surface of the bricks forced between the cutters by the plungers, a slide extending across the mold boxes whereby the cut bricks may be forced thereagainst by the movements of the plungers, means for moving the slide into and out of such position to permit the plungers to force the bricks out of the mold boxes.

In testimony whereof, I affix my signature, in presence of two witnesses.

HERMAN J. GERBSCH.

Witnesses:
CHAS. MADER,
WM. F. MANECKE.

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