

(No Model.)

3 Sheets—Sheet 1.

J. I. KNAPP, J. C. MCKENZIE & W. HUMPHREY.

BRICK OR TILE MACHINE.

No. 364,826.

Patented June 14, 1887.

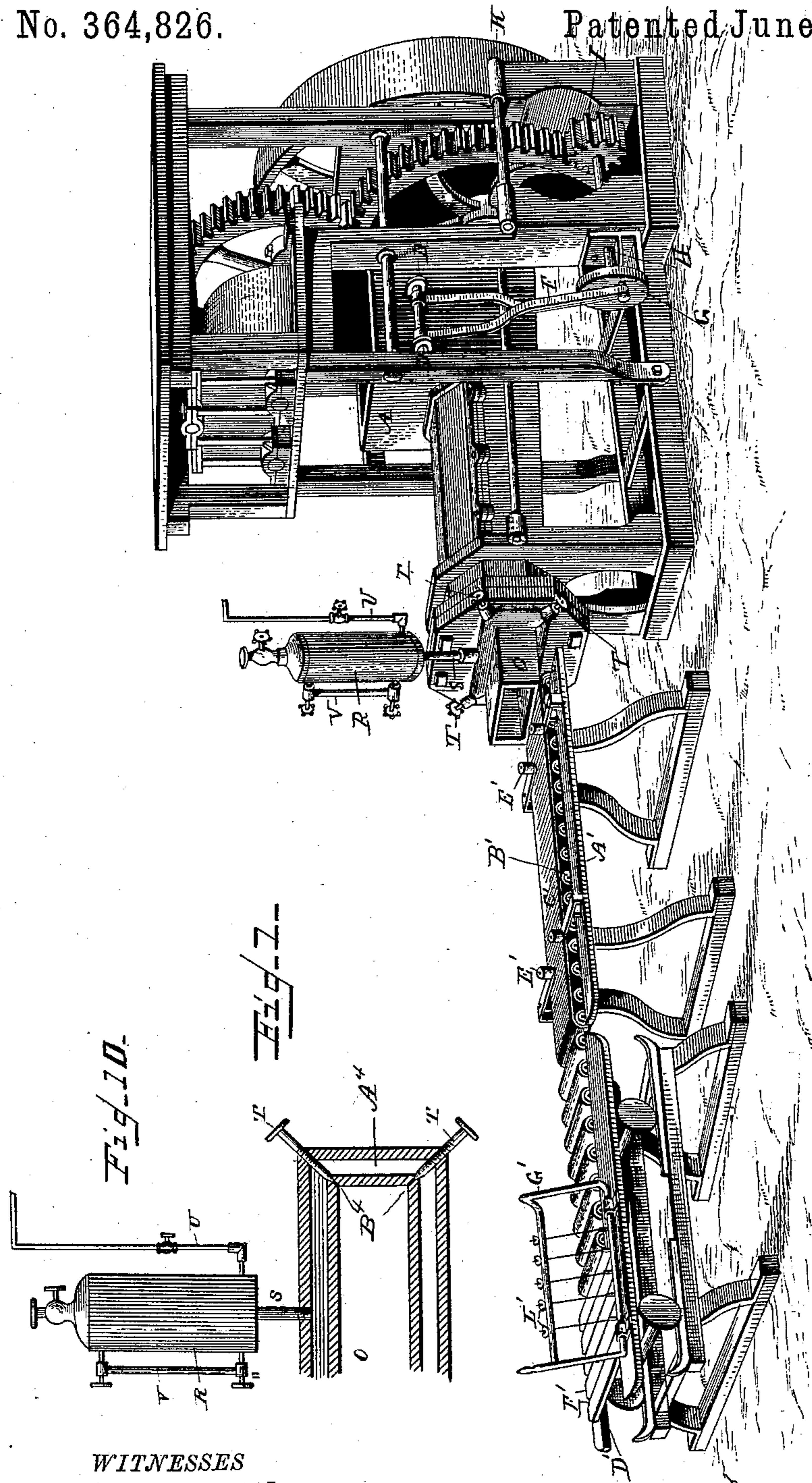


Fig. 10.

Fig. 11.

WITNESSES

Edwin L. Yewell,

W. W. Simsbrough

INVENTORS

John I. Knapp
Jos. C. McKenzie
Wm. Humphrey

By
W. W. Simsbrough
Attorney

(No Model.)

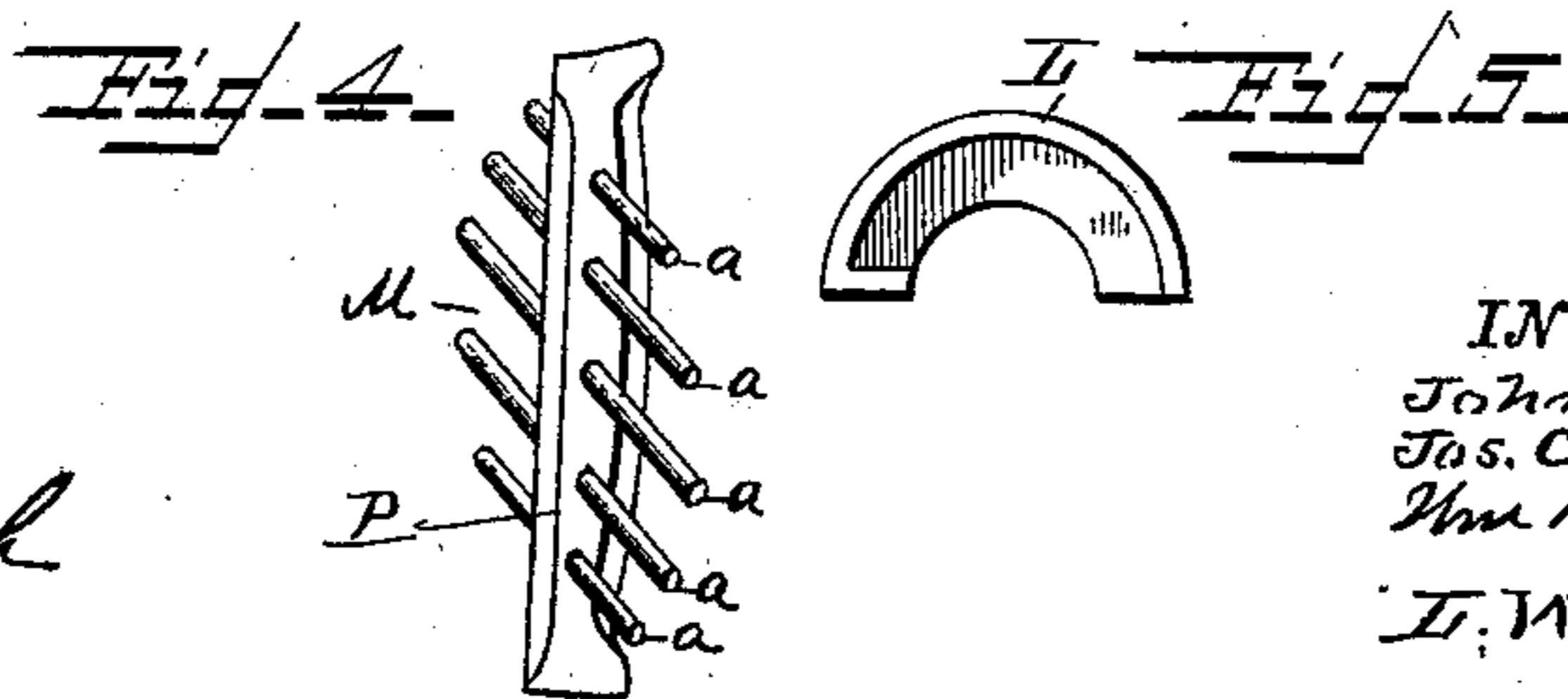
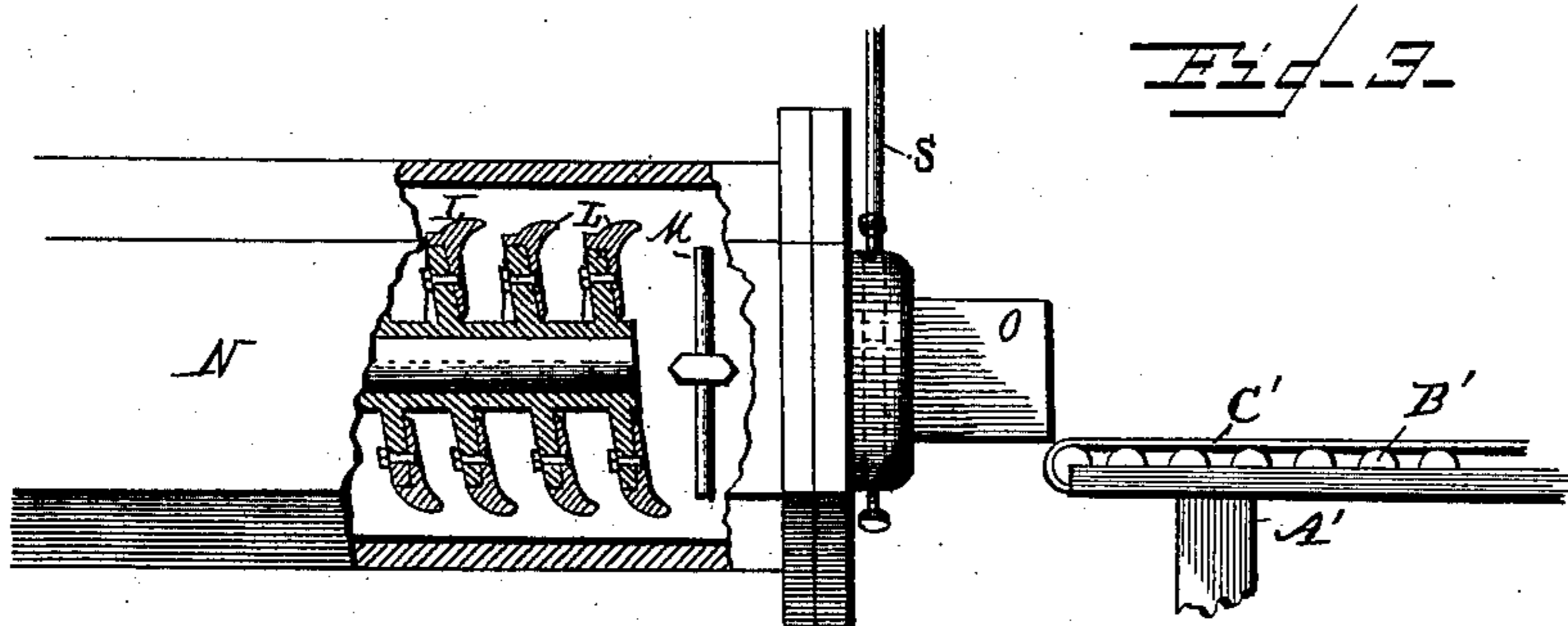
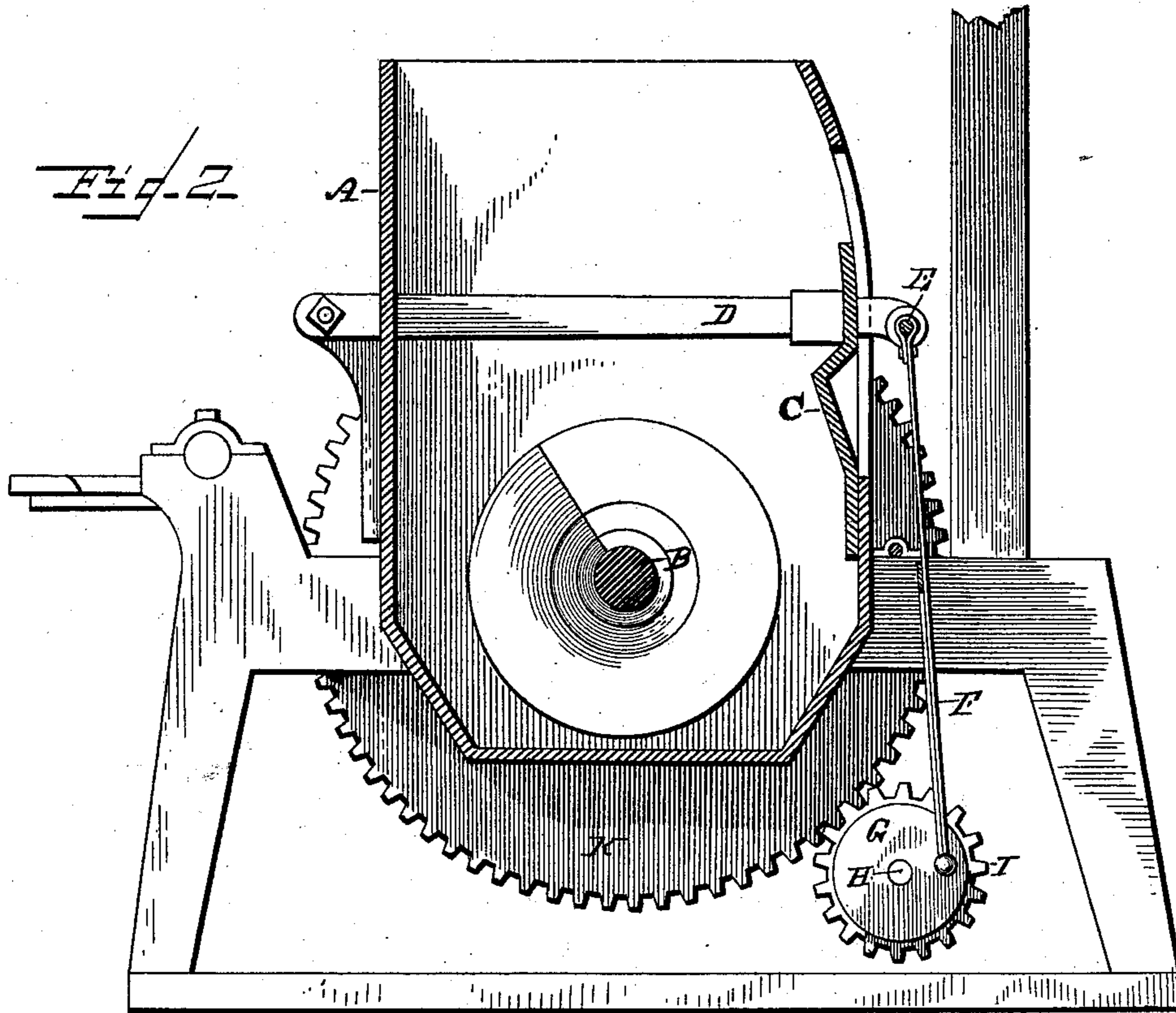
3 Sheets—Sheet 2.

J. I. KNAPP, J. C. MCKENZIE & W. HUMPHREY.

BRICK OR TILE MACHINE.

No. 364,826.

Patented June 14, 1887.



WITNESSES

Edwin L. Yewell,
W. H. Simsabaugh

INVENTORS

John I. Knapp
Jos. C. McKenzie
Wm. Humphrey
By
T. W. Simsabaugh

Attorney

(No Model.)

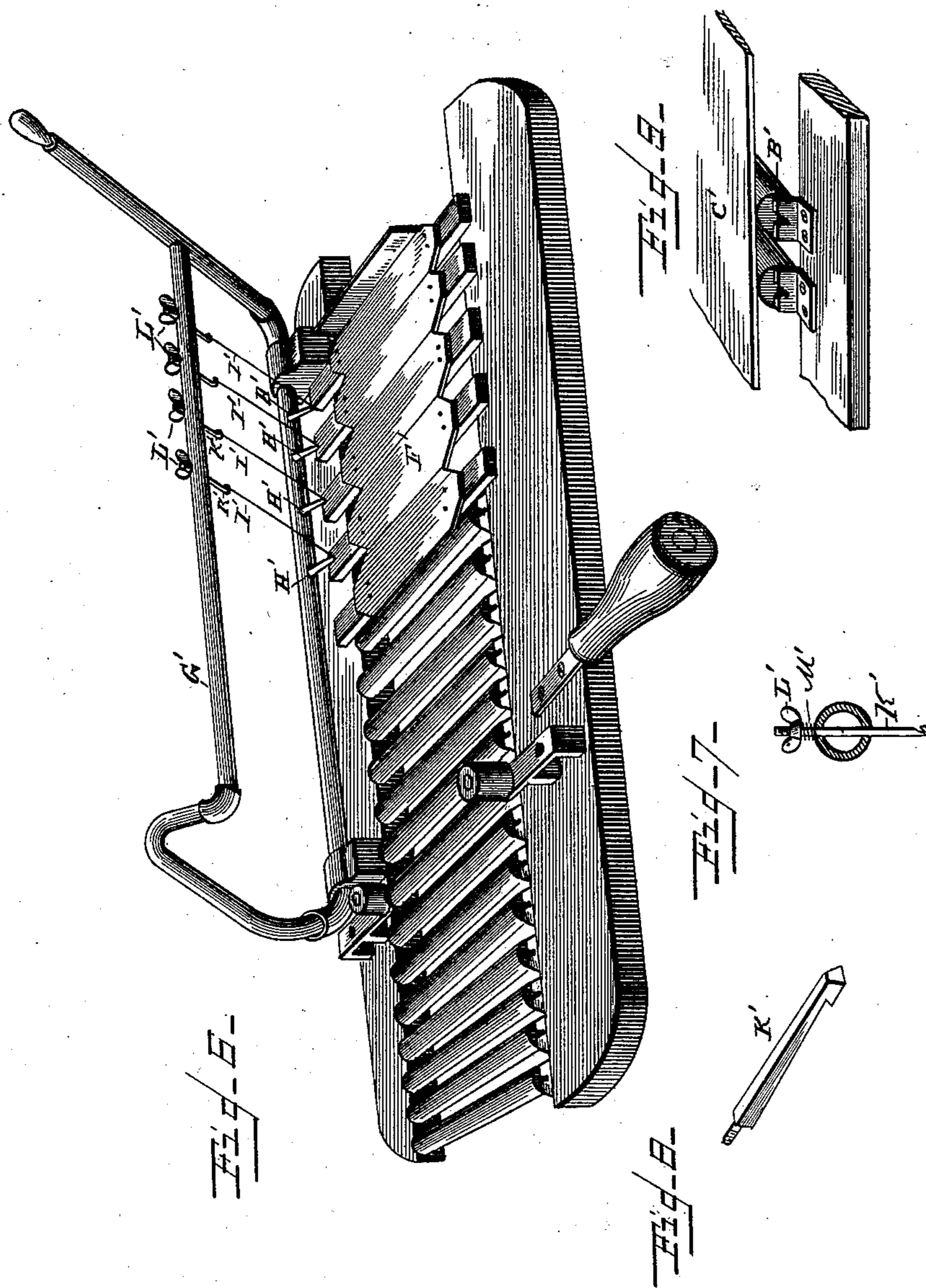
3 Sheets—Sheet 3.

J. I. KNAPP, J. C. MCKENZIE & W. HUMPHREY.

BRICK OR TILE MACHINE.

No. 364,826.

Patented June 14, 1887.



WITNESSES

Edwin D. Yewell,
M. Sinsabaugh

INVENTORS

John I. Knapp
Jos. C. McKenzie
Wm. Humphrey
By
I. W. Sinsabaugh
Attorney

UNITED STATES PATENT OFFICE.

JOHN I. KNAPP, JOSEPH C. MCKENZIE, AND WILLIAM HUMPHREY, OF
ADRIAN, MICHIGAN.

BRICK OR TILE MACHINE.

SPECIFICATION forming part of Letters Patent No. 364,826, dated June 14, 1887.

Application filed September 23, 1886. Serial No. 214,376. (No model.)

To all whom it may concern:

Be it known that we, JOHN I. KNAPP, JOSEPH C. MCKENZIE, and WILLIAM HUMPHREY, citizens of the United States, residing at Adrian, in the county of Lenawee, State of Michigan, have invented certain new and useful Improvements in Brick and Tile Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

Our invention relates to improvements in brick and tile machines.

The object of our invention is to improve in several essential features the well-known McKenzie machine; and to this end our invention consists in locating in the feed-hopper a plunger or feeder, which forces the clay down into the grinding-chamber and prevents the same from clogging in the hopper.

Our invention consists, further, in placing a disintegrator at the rear end of the die, which breaks up the laminous structure of the clay column and renders it more uniform.

Our invention consists, further, of a lubricating device, substantially as described, located in the die, by means of which the weaker clays are readily made into brick and the stronger and more stubborn clays are worked with reduced power.

Our invention consists, further, of a cutting-table provided with a slatted platform, through which the cutting-wires are caused to pass, said slats being covered with rubber or other suitable material, for a purpose which will be more fully hereinafter explained.

Our invention consists, further, in regulating the tension of the cutting-wires by means of springs or a yielding connection, whereby the wires will give when they come in contact with a stone or other obstruction.

Our invention consists, further, in certain details of construction, which will be fully described, and pointed out in the claims.

In the drawings, Figure 1 is a view in perspective of a brick and tile machine with some of our improvements shown. Fig. 2 is a sectional view of our machine, showing the feeder or plunger for forcing the clay down to the pugging-shaft. Fig. 3 is a side view,

partly in section, of the front end of the machine. Fig. 4 is a view in perspective of the disintegrator. Fig. 5 is an end view of one of the detachable blades. Fig. 6 is a view in perspective of the top portion of the cutting-table. Fig. 7 is a sectional view of the wire-tightening device. Fig. 8 is a perspective of one of the wire-holding pins. Fig. 9 is a view in perspective of a portion of the stationary table. Fig. 10 is a sectional end view of a portion of the die, showing the oil-ducts and the valves for controlling the flow of the oil to the die.

The auger for forcing the clay through the die, the devices for imparting a rotary motion to the auger, the chamber in which the auger is mounted, and the die through which the clay is forced to give form to the clay column are all of the well-known types or forms common to the McKenzie machine, and need not be described in detail at this time. Only such parts will be referred to as will clearly point out the improvements.

A indicates the feed-hopper, into which the clay is fed from suitable reducing or crushing rolls to the auger or screw shaft B.

C is a plate or plunger secured to the arms D. Said arms may be pivoted at one end, as shown in the drawings. The arms D may pass through the hopper and lie snugly against the inside of each end of the same, one end of said arms or levers being connected by a rod or bar, E.

F is a rod or pitman, the upper end of which is bifurcated and secured to the rod or cross-bar E, the lower end of said pitman being secured eccentrically to the disk G, secured to the front end of the shaft H, the rear end of said shaft being provided with a pinion-wheel I, which meshes with the gear-wheel K on the outer end of the auger-shaft. It will be noticed that as the shaft H and disk G are revolved the outer ends of the bars D and the plunger or plate C will be moved up and down, which not only prevents the clay from sticking to the sides of the feed-hopper, but forces it down into the grinding-chamber, so that it is brought into contact with the mixing-blades and forced forward without interruption

through the die of the machine. This is an important improvement on the machines formerly in use, for the reason that the clay is prevented from clogging up at the side of the 5 auger-shaft and against the sides of the feed-hopper, and at the same time insures the forcing through the die of a solid and uniform body of clay.

L is a supplemental or false blade or point 10 adapted to fit onto the blades of the auger, so that when these supplemental or false blades become worn they can be replaced by new ones, thus keeping the section-blades of full size and the machine at all times supplied with 15 sharp full auger-blades.

M is a disintegrator located in the front end of the mixing or pugging chamber N, between the end of the auger-shaft B and the rear end of the die O. The disintegrator consists of a 20 bar, P, of metal, having its edges beveled, so as to offer less resistance to the column of clay. The bar P is provided with a series of transverse bars, *a*, which serve to break up the laminous structure of the clay column, caused 25 by the rotation of the auger. The rear end of the die O is provided with an internal duct or cavity, A', which communicates with the reservoir or vessel R by means of the pipe S, and also with the interior of the die by means 30 of small openings or ducts B' at the corners thereof, said ducts being opened and closed, or the amount of the lubricant admitted to the column of clay being regulated by means of the valves or cocks T. The reservoir 35 or chamber R is of the well-known kind used for this purpose, and need not be further described. Suffice it to say that the pipe S extends up into the reservoir or chamber near to the top of the same, and when said reservoir is filled with the lubricating compound 40 steam is admitted into the bottom of the chamber R through the pipe U, said pipe being connected to the boiler or other source of pressure. If steam and oil are used, the heat 45 of the steam keeps the lubricant in a fluid or melted condition, and as the oil will float on top of the water produced by the condensed steam a constant supply of oil under pressure will be forced into the ducts or passages lead- 50 ing to the die.

V is a glass tube connected at both ends to the chamber R, and by which means the quantity of oil in the chamber can be readily determined. It is only essential in making brick 55 from a large solid column of clay that the column should be lubricated, and more especially at the corners, so as to reduce the friction of the same on the die, and by the use of the lubricator just described, in connection with the 60 disintegrator, the weaker clays are readily made into brick, the stronger and more stubborn clays are worked with less power, and the brick produced are of a superior quality, having the texture of the hand-made with the 65 finish of the re-pressed brick, and of much greater strength.

A' is a stationary table located directly in

front of the die O, the top of which is provided with a series of rollers, B', and around which is placed an endless band, C', of rubber 70 or other suitable material. The column of clay as it is forced from the die is received on the stationary table A', and the endless belt C' being free to move, the clay column is carried along on the table by the force exerted 75 in the expressing-screw to the cutting-table D', suitable vertically-mounted rolls E' serving to guide the clay column in its transit over the stationary table.

D' is the cutting-table, mounted on wheels 80 and adapted to be moved back and forth toward and from the stationary table A', and the clay column when forward in position for being cut rests on a rubber-covered slatted 85 platform, F'. The slats of the platform are covered with rubber or other suitable material, the edges of the covers being so close together that they will clean the cutting-wires as they pass down between the rubber strips. 90 By having the yielding rubber strips for supporting the column of clay while it is being cut much larger wires for cutting may be employed without injuring the edges of the brick, and the elastic edges of the strips will allow 95 small stones or lumps to be crowded through between them.

G' is a frame in which the cutting-wires are strung, said frame being pivoted to one side of the moving cutting-table. One side of said 100 frame is provided with pins H', to which one end of the cutting-wires is secured. The other end is secured to the hooked pins K' and passed through the other side bar of the cutting-frame. The pins K' are held in position 105 in the frame by means of thumb-nuts L', a coiled spring, M', being interposed between the side bar and nut, so as to form a yielding or flexible fastening for the wires. The object of this yielding or flexible connection of 110 the wires to the wire-carrying frame is to regulate the tension and allow the wires to yield when brought into contact with stones, roots, or other hard substances, and thus prevent the wires from being broken.

What we claim is— 115

1. A brick and tile machine of the character described, the feed-hopper of which is provided with a plunger or reciprocating plate for forcing the clay from the side of the 120 hopper to the mixing-blades of the machine.

2. In a brick or tile machine of the character described, the plate or plunger C, secured to the pivoted arms D, and adapted to be reciprocated in the feed-hopper, in combination 125 with the pitman F and devices, substantially as described, for operating the plunger, as set forth.

3. The disintegrator M, composed of the bar P and the transverse bars *a*, the bar P being adapted to fit in recesses formed in the 130 end of the mixing-chamber, as set forth.

4. A brick or tile machine of the character described, the die of which is provided with oil ducts or cavities which communicate with

the interior of the die at the corners thereof by suitable ducts, said ducts being controlled by suitable valves or cocks, as set forth.

5 5. A brick and tile machine of the character described, the brick-die of which is provided with ducts entering the die at the corners thereof, said ducts being controlled by suitable valves, T, in combination with the pipe S, chamber or reservoir R, and steam-
10 pipe V, as set forth.

6. A cutting-table for brick-machines of the character described, provided with slats, between which the cutting-wires pass, said slats being covered with rubber strips or other
15 similar material, which project over the edges of the slats, as set forth.

7. In a device for cutting brick and tile from a column of clay, the springs M', located on the wire-holding pins K' and interposed between the adjusting-nut L' and frame G', 20 whereby the wires are adapted to yield when brought in contact with a stone, roots, or other hard substances, as set forth.

In testimony whereof we affix our signatures in presence of two witnesses.

JOHN I. KNAPP.

JOSEPH C. MCKENZIE.

WILLIAM HUMPHREY.

Witnesses:

SAMUEL P. DRAW,
M. D. HALSEY.