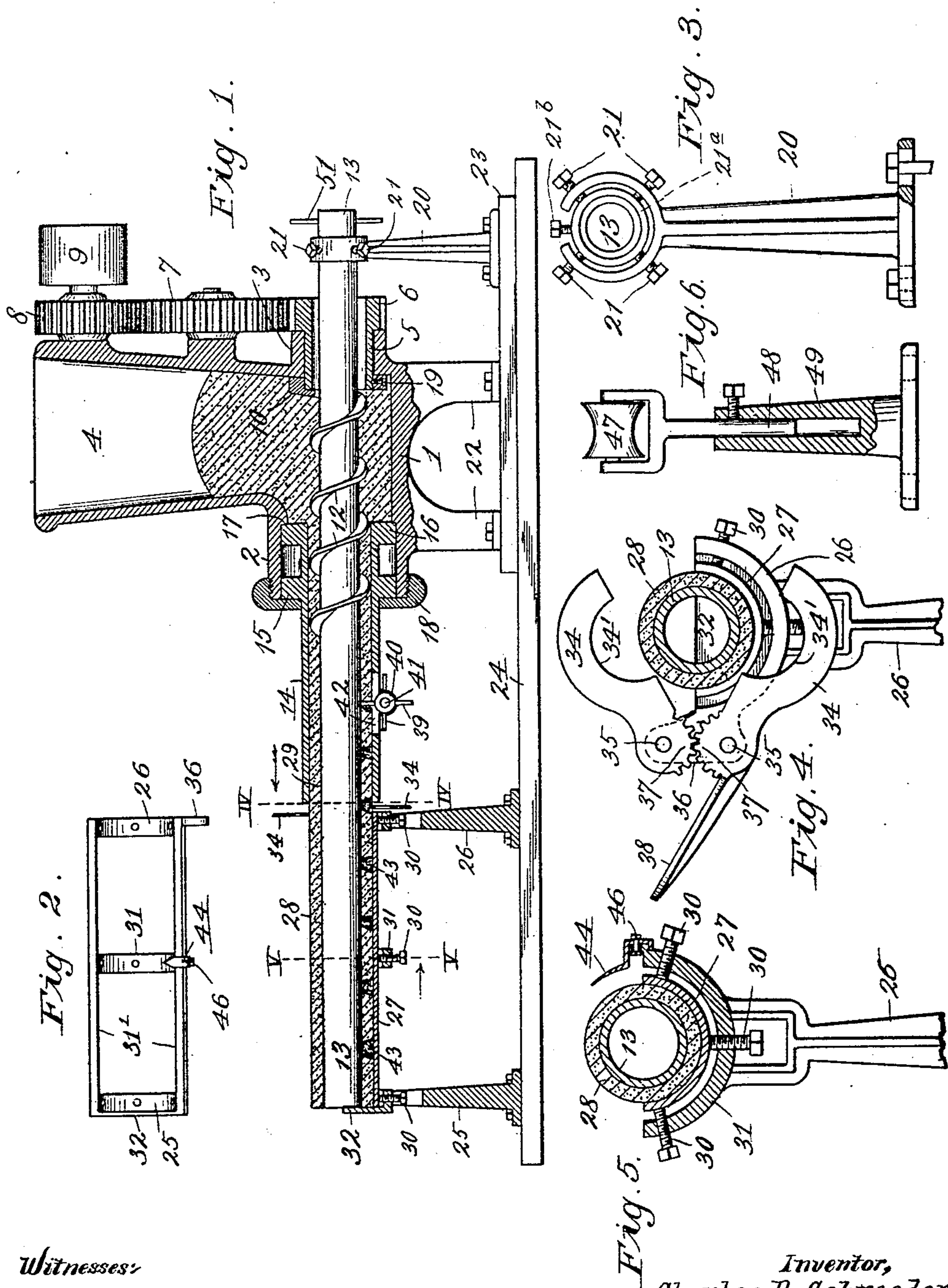


No. 854,000.

PATENTED MAY 21, 1907.

C. D. SCHROEDER.
MACHINE FOR MAKING CEMENT TILES, POSTS, PICKETS, &c.
APPLICATION FILED OCT. 23, 1905.



Witnesses:
R. Hamilton.
J. Moore.

Inventor,
Charles D. Schroeder
By F. G. Fischer
Atty.

Adams, 517, 510, Apr. 3, 1894 (25-14)
Durant, 576, 260, Feb. 2, 1897 (25-20)
Strike, 658, 534, Sep. 25, 1900 "

UNITED STATES PATENT OFFICE.

CHARLES D. SCHROEDER, OF KANSAS CITY, KANSAS.

MACHINE FOR MAKING CEMENT TILES, POSTS, PICKETS, &c.

No. 854,000.

Specification of Letters Patent.

Patented May 21, 1907.

Application filed October 23, 1905. Serial No. 284,059.

To all whom it may concern:

Be it known that I, CHARLES D. SCHROEDER, a citizen of the United States, residing at Kansas City, in the county of Wyandotte and State of Kansas, have invented certain new and useful Improvements in Machines for Making Cement Tiles, Posts, Pickets, &c., of which the following is a specification.

My invention relates to improvements in a machine for making tubular cement tiles, or pipe, and which is also adaptable to the making of hollow cement fence-posts, and metal-cored fence-pickets.

The invention consists in the novel construction, combination and arrangement of parts hereinafter described, and more particularly pointed out in the claims.

In order that it may be fully understood, reference will now be made to the accompanying drawings, in which:—

Figure 1 represents a vertical longitudinal section, partly in elevation, of a machine embodying this invention, showing a fully formed tile ready to be cut off. Fig. 2 is a top plan view of the supporting frame of the off-bearing plate, the knives being detached. Fig. 3 is an enlarged end elevation of the guide-stand for the tile-making core, showing a section of said core therein. Fig. 4 is an enlarged section, taken on line IV—IV of Fig. 1, showing the device for severing the tile from the body of material. Fig. 5 is an enlarged section, taken on line V—V of Fig. 1, showing the offbearing-plate, its support, the tile, and the core. Fig. 6 is a partial sectional view of a modified guide for cores when fence-posts or pickets are being made.

In said drawing 1 designates a chamber provided at opposite ends with axially-alined extensions 2 and 3, respectively, and with a superimposed hopper 4 which receives the material. One of the extensions, 3, forms a bearing for the combined journal and hub 5 of a cog-wheel 6, which is driven by two cog-wheels 7 and 8, mounted on stub shafts. The upper cog-wheel 8 is integral with or secured to a belt pulley 9. Detachably secured to or upon the inner end of hub 5 is a collar 10, to which is secured one end of a helical feeder or conveyer 12. This feeder is hollow and guides, but is not secured to, a tubular metal core 13, which extends freely through the bore of cog-wheel 6 and through and beyond the chamber 1 a suitable distance. As shown, when the space surrounding this core is filled with material, the core

is partially supported by said material. Its end adjacent to cog-wheel 6 is guided or held in axial alinement by a device shown in Figs. 1 and 3 and described below.

14 is a tubular die, the inner end of which is formed with two annular flanges 15 and 16. The inner flange 16 abuts against a shoulder 17 of extension 2. The outer flange 15 snugly fits within said extension 2 and is drawn inwardly by a shoulder nut 18, which screws upon the end of said extension. Thus the die 14 is held solidly concentric with the core 13. The bore of the die is slightly larger than the diameter of the feeder 12, and when there is no material between the die and the core, the latter will be supported by the feeder, resting within the die.

The feeder-collar 10 is provided with a set-screw 19, engaging the hub of cog-wheel 6. By loosening said screw, the feeder may be removed from the machine, and another feeder of different diameter, substituted therefor.

The stand 20, by which one end of the core 13 is supported, has its upper end formed as shown in Fig. 3, and provided with two or more set-screws 21 for centering a bearing-ring 21^a, for supporting one end of the core. A section of said core is shown in position. Said bearing-ring is so adjusted as to hold the core concentric with cog-wheel 6, but is sufficiently loose to permit longitudinal motion of the core.

The legs 22 of the chamber 1, and the stand 20, are mounted on a base 23, which is mounted on a large surface 24. Of course they may be mounted directly on the surface 24 if so preferred.

Mounted on the surface, beyond the end of the die 14, in alinement with the core 13, are two (or more) stands 25 and 26, which support an off-bearing plate, or tile receptacle, 27. In Fig. 1 this receptacle is shown as containing a newly formed tile 28, which has not yet been cut off from the body of the material 29. As the tiles are cylindrical, the upper face of the offbearing plate 27 is concave, and fits the under portion of the tile 28, as shown in Fig. 5. Said plate 27 is supported by set-screws 30, passing through the U-shaped upper ends of the stands 25, 26. The curvature of said U-shaped portions is sufficiently large to permit the reception of off-bearing-plates that will fit the largest diameter of tiles that the machine can form. The tile shown is of a large or medium size for

Pat. & Free, 298,000, Feb. 5, 1884 (25-14)

this machine. An intermediate support 31 provided with set-screws 30, may be employed, for the offbearing-plate 27. Said support 31 is supported by longitudinal bars 5 31 connecting the upper ends of stands 25 26 as shown in Fig. 2. The offbearing-plate may be lifted from its support for the purpose hereinafter explained. The end stand 25 is provided with an upwardly projecting 10 stop 32, against which the core 13 impinges at the end of its forward movement.

Before describing the remaining appurtenances of the machine, its operation up to this point will be described: A core 13 and a 15 die 14, of sizes corresponding to the internal and external diameter of the tiles to be made, are fitted into the machine. The spiral feeder 12 employed, must loosely fit within the die and around the core. The set-screws 20 21 of stand 20 are adjusted to bring ring 21^a in axial alinement with the core. An offbearing-plate 27 of the right curvature is mounted on its stands, and is brought into register with the end of the die 14 by operat- 25 ing the set-screws 30. The initial position of the core 13 is with its ends about flush with the outer end of the die 14. The material, which is composed of suitable proportions of sand and cement, mixed and very 30 slightly moistened with water, is dropped into the hopper 4. The pulley 9 is driven slowly, by an engine or motor, (or if hand-power be preferred, a crank may be substituted for the pulley) in the proper direction to cause the 35 feeder 12 to slowly push the material outward through the die 14. The friction between the material and the core 13 will cause the core to slide outward with the material, so that by the time the soft tile has reached 40 the stop 32, the core will have arrived at the same point. The lower half of the tile is now inclosed between the core and the offbearing-plate 27. The tile is now cut off at a point close to the end of the die by a device 45 shown enlarged in Fig. 4. The same comprises a pair of knives 34, pivotally mounted upon studs 35 supported by a lug 36 cast on the upper end of the adjacent stand 26. The pivoted ends of the knives are provided with 50 intermeshing segmental cog-gears 37, by means of which the two knives are held in the same relative positions to the tile and the core 13. The cutting edges 34 are semi-circularly curved to fit the circumference of 55 the core when closed upon it. The lower knife is provided with a hand-lever 38. By depressing said lever the knives are made to cut through the tile, leaving that portion which lies upon the offbearing-plate free to 60 be carried away to dry. An operative now draws back the core 13 until its end is again even with the end of the die 14, and another operative lifts the offbearing-plate 27 from its support and lays it with its tile in a drying 65 room or in the sun, where the tile will be-

come hard. Another offbearing-plate is placed upon the stands, in contact with the die, as quickly as possible, and the formation of the next length of tile proceeds. The rotation of the feeder need not necessarily be 70 arrested while the offbearing-plates are being changed. To facilitate the withdrawal of the core 13, it is provided with a suitable handle. As shown, projecting handles 51 75 are easily provided by drilling a hole through the core and driving a round rod through the hole.

If in practice I find that the material composing the tile will hold together without the core moving outwardly therewith, I hold said 80 core stationary with a set-screw 21^b extending through ring 21^a. By thus securing the core the time and labor required in withdrawing it from the tile will be saved.

For some purposes and localities, there is a 85 demand for perforated tiles; the perforations permitting water to enter the tiles from the soil in which they are buried, and to be carried away through the tiles. For perforating the tiles I have invented a simple, effective 90 and automatic device shown in Fig. 1. It consists of a plurality of (preferably four) perforating fingers 39, mounted radially upon a hub 40, the shaft 41 of which is set transversely and supported by a bearing bracket 95 attached to the die 14; preferably to its lower portion. A slot 42, just large enough to permit the fingers 39 to revolve therethrough, is cut longitudinally in the die. The shaft is set so that the inner ends of the fingers will 100 touch, or nearly touch, the core 13, successively. The operation is thus: one of these fingers will always be in contact with the tube of material. As the material advances the finger in advance will turn downward, 105 while the next following finger will turn upward, thereby penetrating the material and forming an outwardly flaring hole 43 in the tile. The fingers acting in succession produce an evenly spaced series of holes 43, as 110 shown. The action is automatic.

The formation of a tile equal in length to the off bearing-plate 27 has been described. When tiles of less length are to be made, they are cut off when the end of the core arrives at 115 a certain point. To locate this point, a gage 44 is employed (Figs. 2 and 5). A longitudinal slot may be cut in the side bar 31, and a bolt 46 passed through the slot and through a hole in the gage, thus the gage may be set at 120 any point within the length of the slot. Or, if preferred, the gage may be slidably attached to said bar without slotting the latter.

Dies and cores of different diameters may be provided, with nuts 18 to fit the different 125 dies, so that several sizes of tile may be turned out by the same machine. The set-screws of the offbearing-plate stands are obviously adjustable to fit offbearing-plates of different diameters. 130

This machine may be adapted for making tubular cement posts, by simply removing the core 13 and substituting a roller support shown in Fig. 6 for that shown in Figs. 1 and 3 and using a proper die. In this case, instead of the withdrawn core 13, permanent cores, the same length as that of the posts, are employed. The cores are cut from iron pipe. They are introduced in the same manner as the tile core 13, and are supported by the feeder 12 and by a roller 47, mounted on a vertically-adjustable stand 48—49, which is set up in place of the stand 20. When these cores emerge from the die, with their coating of cement, the cement is cut off, as usual, and the cores are, or may be, left in the posts. These posts may be of any preferred form externally square, hexagonal, octagonal, or round, according to the shape of the die used. The roller 47 is evidently preferable to the supporting device shown in Fig. 3, as the cores can be laid directly upon the roller, while if the other device were used they would have to be passed lengthwise through the bearing ring 21^a.

Pickets for fences may also be made by this machine. A suitable die is substituted. The cores or reinforcements for pickets may be solid rods about one inch in diameter, though pipe may be employed for this purpose. These reinforcements are left in the pickets for strengthening the same.

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

1. In a machine of the character specified, the combination of a chamber having an extension, a tubular die secured in said extension and forming a reduced extension thereof, a helical feeder extending into the die, means for rotating said feeder, means for guiding a core through said feeder, an offbearing-plate arranged in alinement with the die, and means for supporting said offbearing-plate.

2. In a machine of the character specified, the combination of a chamber, having an outlet opening, a tubular die secured in said opening and extending outwardly, a helical feeder extending into the die, means for rotating said feeder, a core extending slidably through said feeder, a tile-receptacle arranged in alinement with the die, and means for supporting said tile-receptacle.

3. In a machine of the character specified, the combination of a chamber, a tubular die communicating therewith, a tile-receptacle arranged in alinement with the die, means for supporting said receptacle, a helical feeder within the chamber, means for turning said feeder within the chamber, a core extending through said feeder and through the die, and projecting in opposite directions from said chamber, and means for guiding the portions of the core which so project.

4. In a machine of the character specified, the combination of a chamber, a tubular die communicating therewith, a tile receptacle arranged in alinement with the die, means for supporting said receptacle, a helical feeder within the chamber, means for turning said feeder within the chamber, a core extending through said feeder and through the die, and projecting in the opposite direction from said chamber, means for guiding the portion of the core which so projects, and an offbearing-plate arranged in alinement with the die.

5. In a machine of the character described, a cutting off device comprising, in combination with a core, a pair of opening and closing knives arranged at opposite sides of the core, said knives having semicircular cutting edges which fit the core when closed, means for causing the knives to move simultaneously, and means for actuating them.

6. In a machine of the character specified, in combination with a core, a pair of pivotally-movable knives arranged oppositely with respect to the core, said knives having semicircular cutting edges which fit the core when closed, the pivotal portions of said knives having intermeshing segmental gears, and a lever for actuating the knives.

7. In a machine of the character specified, the combination of a core, a tubular die, an automatic rotary perforator attached thereto, a tile receptacle registering with outer end of the die, a stand supporting said receptacle, and a pair of opposed cutting-off blades, having semicircular edges said blades being geared together and supported by said stand.

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

CHARLES D. SCHROEDER.

Witnesses:

J. MOORE,

LESLIE E. BAIRD.