July 3, 1923. 1,460,451

M. J. SMITH

CONCRETE PIPE MACHINE

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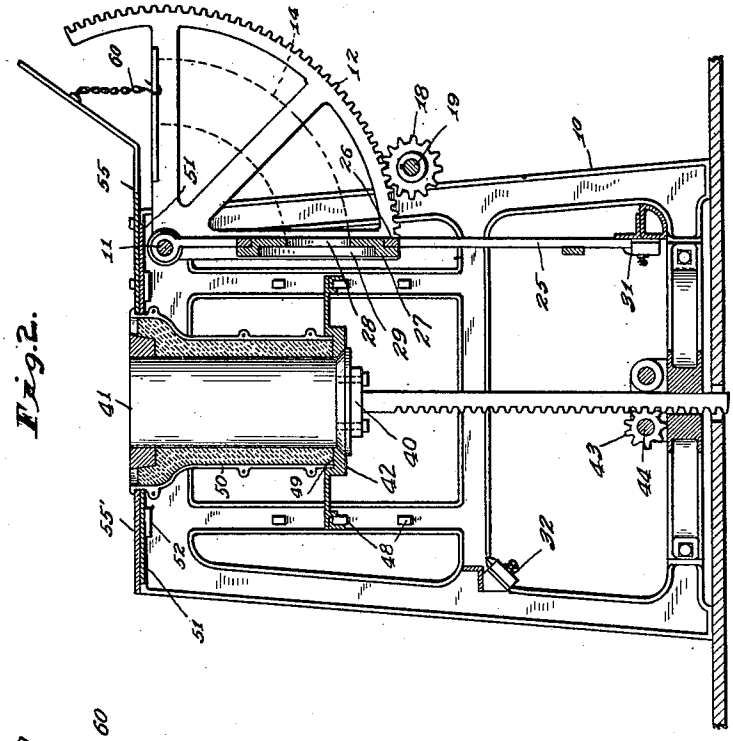


Fig. 2.

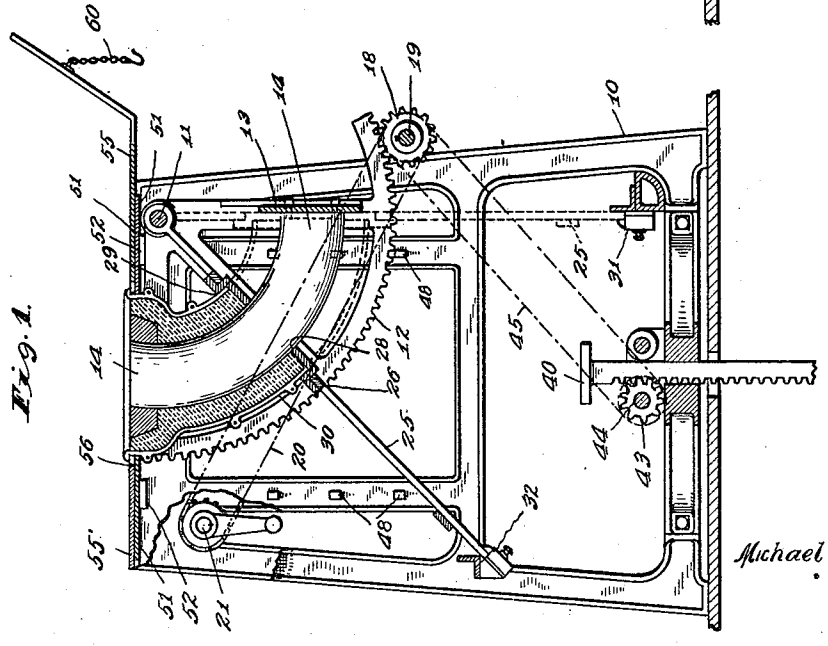


Fig. 1.

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Fig. 4.

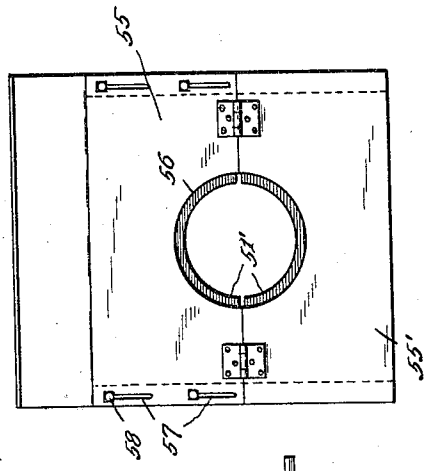


Fig. 5.

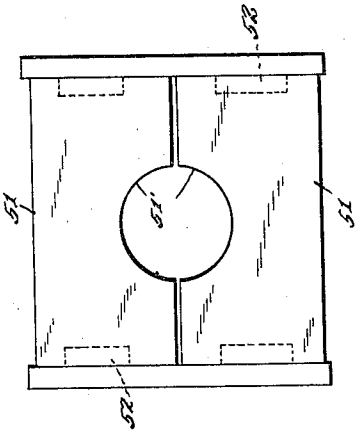
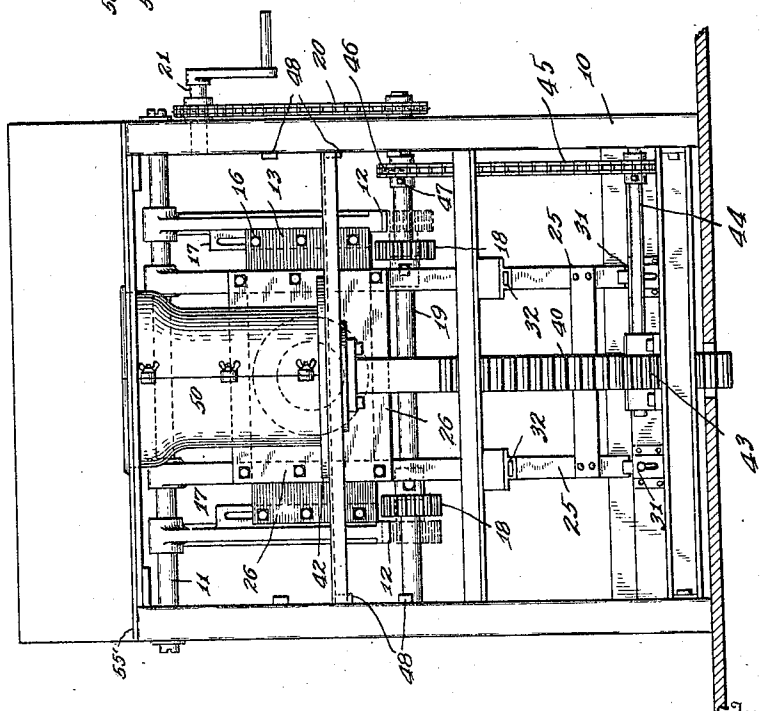


Fig. 3.



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Fig. 6.

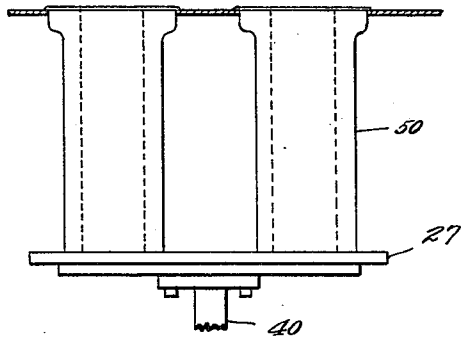


Fig. 7.

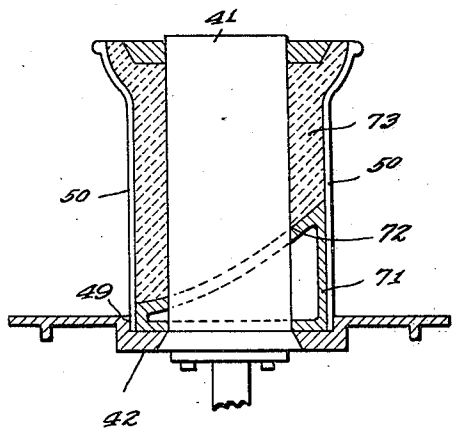


Fig. 8.

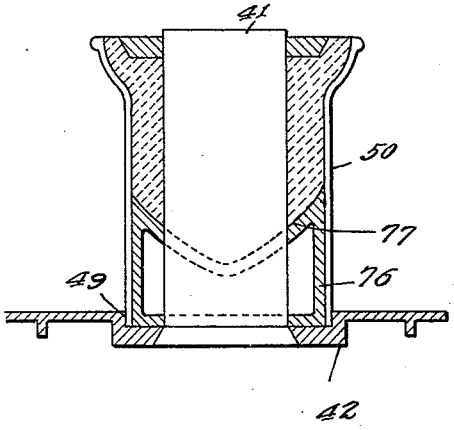
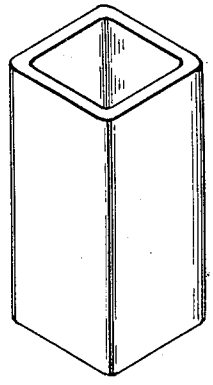


Fig. 9.



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Patented July 3, 1923. 1,460,451

UNITED STATES PATENT OFFICE.

MICHAEL J. SMITH, OF TACOMA, WASHINGTON.

CONCRETE-PIPE MACHINE.

Application filed July 20, 1922. Serial No. 576,202.

To all whom it may concern:

Be it known that I, MICHAEL J. SMITH, a citizen of the United States, residing at Tacoma, in the county of Pierce and State of Washington, have invented a new and useful Concrete-Pipe Machine, of which the following is a specification.

The object of my invention is to make a compact, efficient machine by means of which the hand production of concrete pipe and fittings may be facilitated.

The accompanying drawings illustrate my invention. Fig. 1 is a side elevation in partial vertical section of a machine embodying my improvements, the parts being shown in cooperative relationship to facilitate the production of an eighth bend pipe fitting; Fig. 2 is a view similar to Fig. 1 with the parts in cooperative relationship to facilitate the production of a straight bell end pipe; Fig. 3, a side elevation of the machine as shown in Fig. 2 on a plane at right angles to the plane referred to; Fig. 4 a plan of the upper end or work table of the main frame; Fig. 5, a plan of a pair of the supplemental guide plates; Fig. 6, a fragmentary side elevation indicating the possibility of simultaneous formation of two pipe sections; Fig. 7, a fragmentary section illustrating the fitting used in the production of a portion of a Y pipe fitting; Fig. 8, a similar view showing the attachment used in forming a portion of a T; Fig. 9, a perspective view of a polygonal pipe which may be produced in this machine.

In the drawings, 10 indicates a main frame near one of the upper corners of which is arranged a shaft 11 to which are secured two segment arms 12, 12 connected by a plate 13 to which may be bolted a segmental core 14 of any desired radius and diameter. In order that cores of different radii may be brought into proper position relative to the axis of shaft 11, plate 13 is adjustably secured to segments 12 in any desirable manner such as the bolts 16 and the slotted shelves 17.

The teeth of segments 12 mesh with pinions 18 carried by a shaft 19 connected by chain 20 with a crank operating shaft 21 arranged at a point of convenient access near the upper forward corner of the main frame. The gears 18 are longitudinally shiftable on shaft 19, into and out of mesh with the teeth of segments 12, as indicated in Fig. 3.

Journaled upon shaft 11 is a frame 25 comprising a plate 26 which is perforated to receive any one of a series of bottom plates 27. Each bottom plate 27 is provided with a perforation 28 of such diameter as to closely fit one of the cores 14 to be used in the machine and this perforation will bear such relation to plate 27 that it may be brought into co-axial relationship with the particular core 14 with which it is to be used. The plate 27, co-axial with its perforation 28, will be provided with an annular pocket 29 adapted to receive the lower end of an appropriate mold 30 conveniently of the two-section type, appropriately formed and proportioned to form the external mold for a desired pipe elbow section.

As pipe elbow sections are generally either one-eighth turn or quarter turn, the frame 25 may be held in either one of two appropriate positions, as indicated in full and dotted lines in Fig. 1, by means of latches 31 and 32.

In order that straight pipe sections, as well as elbow sections, may be formed in my machine, the segments 12 and the frame 25 may be swung back to the position shown in Fig. 2 and a core plunger 40 projected upwardly in position to form, at an appropriate height, a support for core 41, which may be vertically reciprocated through the central opening of a pallet 42, by means of a pinion 43 carried by shaft 44 connected by chain 45 with a pinion 46 on shaft 19. Pinion 46 is provided with a set screw 47 by means of which it may be conveniently connected to and released from shaft 19.

Any one of a series of pallets 42, having

a central perforation of appropriate size to co-operate with the desired core 41, may be supported in the desired vertical position by means of supporting lugs 48 on frame 10, each pallet being preferably provided in its upper surface with an annular seat 49 into which the lower end of the sectional mold 50 is seated.

For the purpose of holding the upper ends of the molds 30 or 50 in properly centralized position, I provide pairs of plates 51, 51 which are slidably supported in the upper end of frame 10 upon suitable supporting shelves 52. Each pair of plates 51 is centrally notched in one edge, as indicated at 51′ (Fig. 5) to properly cooperate with a mold of specified diameter.

Surmounting the shelves 52 is a primary work table comprising a pair of hinged sections 55, 55′, the adjacent edges of which are notched to form an opening 56 having a diameter slightly in excess of the diameter of the largest mold which is to be used and, in order that this perforation may be centralized with relation to the axis of any particular core which is to be used, I provide the section 55 with slots 57 through which the retaining bolts 58 pass into the main frame 10. The section 55 is provided with a chain 60 which may be utilized to support the segments 12 in the position shown in Fig. 2 when said segments are thrown back out of the way of that portion of the apparatus which is utilized in the formation of straight pipe sections.

In order to produce Y's, I provide a fitting or insert 71 (Fig. 7) which may be set in the lower end of a straight pipe mold 50, said insert being suitably perforated in order to slip over a core 41. The upper face 72 of the insert 71 is appropriately formed, as indicated in Fig. 7, to produce a beveled end of the pipe casting 73 of such form that said casting may be cemented upon the side of a straight pipe which has been suitably cut away to receive it, so as to form a Y.

Similarly, as shown in Fig. 8, I provide an insert 76 having a crotch-like upper end 77 for use in forming the stem of a T or right angled Y.

I claim as my invention:

1. A pipe molding machine comprising a main frame, a core carrier pivotally supported in said main frame, means for swinging said core carrier in the frame, comprising a segmental gear on the carrier and a pinion meshing with said gear, a curved core, means for detachably connecting said curved core to the carrier concentric with the axis of the carrier, a swinging mold support co-axial with the core carrier and means for holding said mold support in different positions of angular adjustment.

2. A pipe molding machine comprising a main frame, a core carrier pivotally supported in said main frame, means for swinging said core carrier in the frame, a curved core, means for detachably connecting said curved core to the carrier concentric with the axis of the carrier, a swinging mold support co-axial with the core carrier and means for holding said mold support in different positions of angular adjustment.

3. A pipe molding machine comprising a main frame, a core carrier pivotally supported in said main frame, a curved core, means for detachably connecting said curved core to the carrier concentric with the axis of the carrier, a swinging mold support co-axial with the core carrier and means for holding said mold support in different positions of angular adjustment.

4. A pipe forming machine comprising a main body, a curved core, means for supporting said curved core, a pivoted mold support having its axis concentric with the core, and means for holding said mold support in different positions of angular adjustment.

5. Pipe forming machine comprising a main frame, a curved core carried by said main frame, a mold support swinging about the axis of the curved core, a cup-like mold carrier carried by said mold support and having a perforation through which the core is projected and means for holding the mold support in different positions of angular adjustment.

6. A pipe forming machine comprising a main frame, a segmental core carrier journaled on the main frame, a segmental core carried by said carrier, a mold carrier swinging about the axis of the core carrier, a cup-like mold receiver carried by the mold carrier and provided with a perforation through which the core is projected, and means for holding the core carrier in different positions of angular adjustment, and means for holding the mold carrier in different positions of angular adjustment.

7. A pipe forming machine comprising a main frame, a segmental core carrier journaled on the main frame, a segmental core carried by said carrier, a mold carrier swinging about the axis of the core carrier, and means for holding the core carrier in different positions of angular adjustment, and means for holding the mold carrier in different positions of angular adjustment.

8. In a pipe forming machine the combination with a core, of a tubular mold, means for holding said mold in co-active relationship with the core, and a perforated insert sleeved into the mold and over the core and provided with an inclined upper face.

9. In a pipe forming machine the combination of a core carrier, a work table having a mold receiving perforation, means for

holding said table in various positions of lateral adjustment upon the main frame, and a pair of notched mold-supporting plates slidably supported on the main frame beneath the work table.

10. In a pipe forming machine the combination of a core carrier, a work table having a mold receiving perforation, and means for holding said table in various positions of lateral adjustment upon the main frame.

In witness whereof, I MICHAEL J. SMITH have hereunto set my hand at Tacoma, Washington, this 15th day of December, A. D. one thousand nine hundred and twenty-one.

MICHAEL J. SMITH.