Oct. 4, 1932. A. SAPIN 1,880,360

MACHINE FOR MAKING CONCRETE PIPES

Filed Dec. 9, 1930 2 Sheets-Sheet 1

Fig. 1.

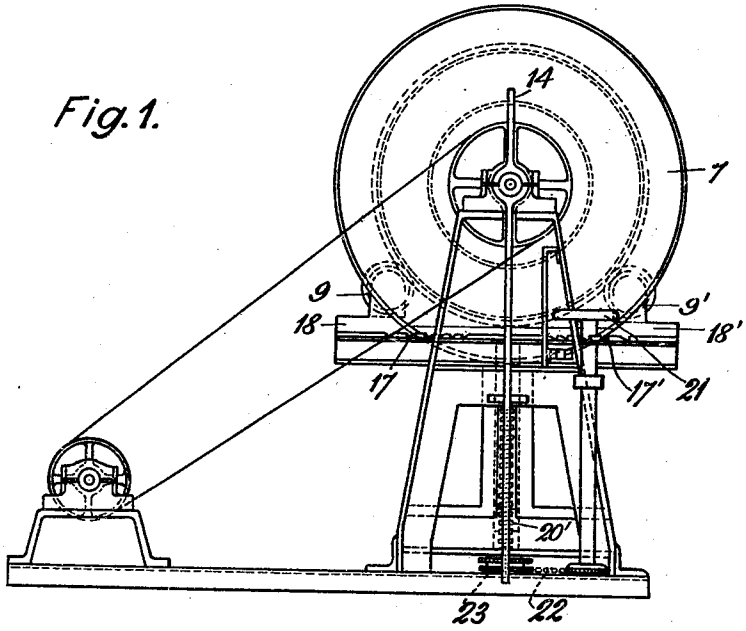
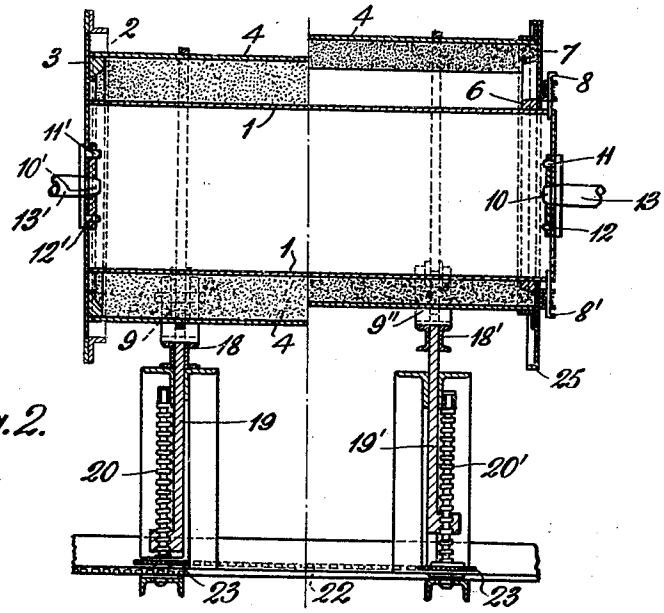


Fig. 2.



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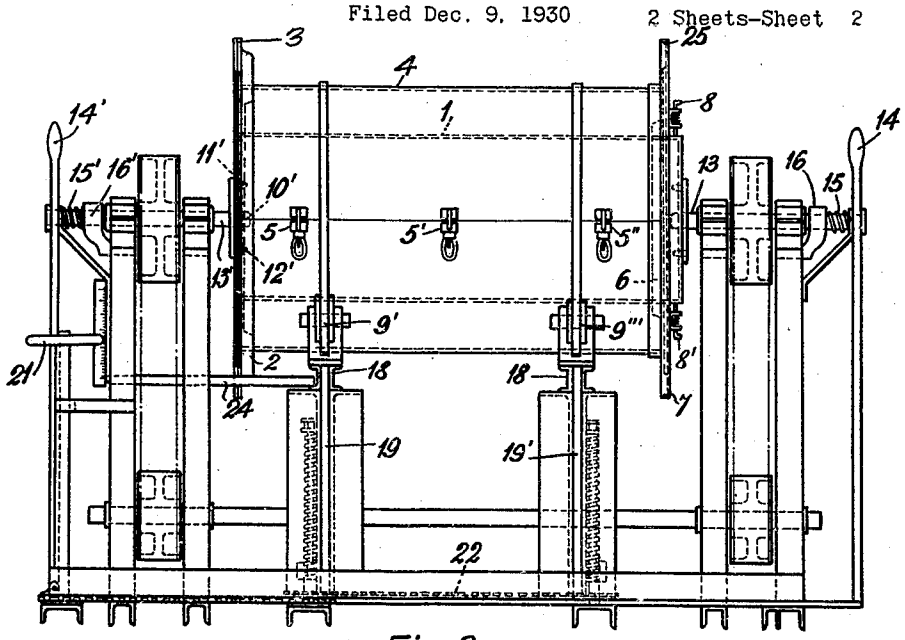

Fig.3.

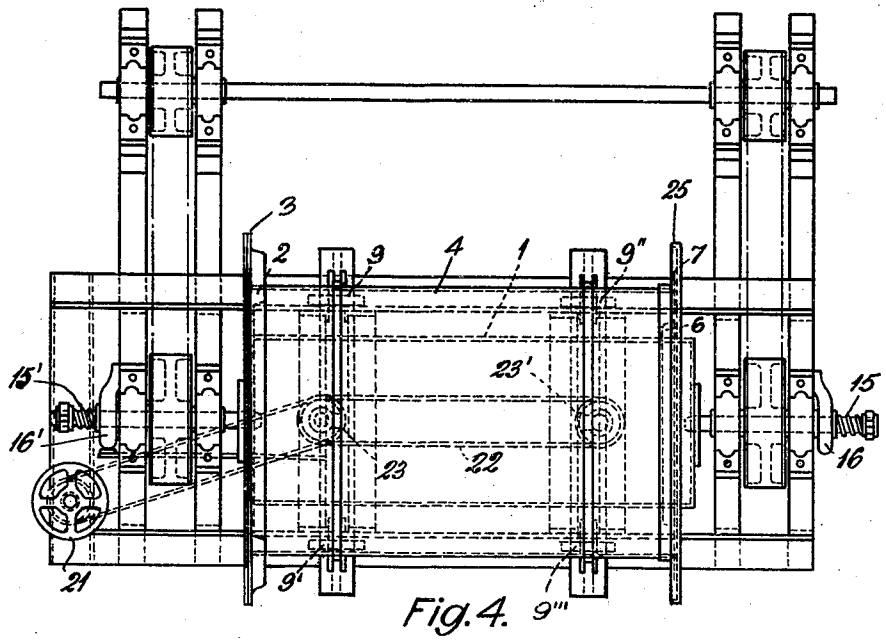

Fig.4.

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UNITED STATES PATENT OFFICE

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MACHINE FOR MAKING CONCRETE PIPES

Application filed December 9, 1930, Serial No. 501,011, and in France March 3, 1930.

At present concrete pipes are made by hand tamping the material into the space between two coaxial cylindrical surfaces. Such a hand operation is slow and expensive, and further lacks uniformity. The tamping is not uniform over the whole length of the tube however much care is taken. Moreover the successive layers are not homogeneous, through irregularities in the tamping, the different periods of adding the material and so forth. It often happens therefore that heterogenous sections are formed in which there are cracks or fissures, the development of which under use or shocks finally leads to complete failure of the tube.

The object of the present invention is a machine for making cylindrical tubes of compressed concrete avoiding the disadvantages above mentioned.

Not only is the time of fabrication considerably reduced but the products obtained are homogeneous and their thickness absolutely regular over the whole length. It further enables tubes of widely varying diameters and thicknesses to be made.

The accompanying drawings diagrammatically illustrate a simple embodiment of the invention.

Figure 1 is an end elevation.

Figure 2 shows juxtaposed half views in section of the positions of the cylinders at the commencement and end of the operation respectively.

Figure 3 is a front elevation, and

Figure 4 is a plan view.

In the following description for the sake of simplicity no reference is made to parts not necessary for understanding the invention.

A cylindrical core 1 having an end plate 3 fast thereon is stood upright and the washer 2 which moulds the spigot end connection of the tube is placed on the end plate 3. The mould 4 comprising two semi-cylinders abutting on two diametrally opposite edges and held together by devices 5, 5′, 5″ is placed concentrically round the core. The cylindrical annulus thus formed is now charged with the material from which the tube is to be made. At the top of the core is placed the washer 6 which forms the socket end of the tube. Finally the cover plate 7 is placed in position and fixed by cotters 8. The mould thus charged and closed is turned on its side and placed on rollers 9, 9′, 9″, 9‴. In the end plates of the core are three apertures, of which one 10 and 10′ serves for centreing while the others 11 and 11′, and 12 and 12′ serve for driving the core.

Driving is effected through shafts 13 and 13′ which can slide axially through pulleys driven, for example by a motor. These shafts have suitable pins engaging in the respective sets of apertures 10, 11, 12 and 10′, 11′ and 12′.

Levers 14 and 14′ through springs 15 and 15′ and stops 16 and 16′ effect the axial displacements of the shafts, either engaging, or disengaging them when the work is finished.

The charged mould resting on the rollers is engaged by the shafts and the motor started. The core is rotated on its axis. Owing to its free support on the rollers, the other cylinder also rotates. The material between the rotating cylinders therefore undergoes a thorough rolling.

The rollers whose transverse separation can be adjusted as desired according to the diameter of the tube to be made, by means of notches such as 17, 17′. . . symmetrically located with respect to the diametral plane of the machine, are carried on bearings 18, 18′ secured on sliding supports 19, 19′ which can be raised or lowered by vertical screws 20, 20′ rotatable from a hand wheel 21 through a chain 22 and pinions 23, 23′.

The machine being set in action as above described the hand wheel 21 is turned to raise the rollers. The core continues rotating on its axis which remains fixed in position while the external mould cylinder carried by the rollers also continues to rotate about its axis but the latter is displaced parallel with itself in a vertical plane. On the lower side the cylindrical surfaces move closer together under the continuous rise of the rollers. In this region therefore the material is tamped or rolled.

An indicating hand 24 following the displacement of the rollers shows on a scale

when the final thickness of the tube is reached. This thickness cannot be accidentally reduced since the external cylinder is finally stopped by the washer 2 and by the flange 25 of the cover 7.

It should be pointed out that the thickness thus obtained is absolutely regular from end to end and over the whole section of the tube. It will be understood that the plastic material used for making the tube must be sufficiently stiff to retain the position into which it is rolled.

The machine is then stopped, the levers 14 actuated to disengage the shafts 13, and after the material has set the mould removed and then opened.

As above mentioned the drawings are only given by way of example. The new machine can be considerably varied in the form of its parts, in their dimensions, and in other details without affecting the invention.

What I claim is:—

1. In apparatus for making moulded pipes, the combination of an outer mould cylinder, a full length core within said cylinder, means for rotating said core and means for relatively radially displacing said core and cylinder with their axes parallel.

2. In apparatus for making moulded pipes, the combination of an outer cylindrical mould, an inner full length cylindrical core, means for rotating one of said cylindrical members, and means for relatively radially displacing said cylindrical members with their axes parallel.

3. Apparatus for moulding pipes comprising an outer cylindrical mould, end covers for said mould, a full length cylindrical core in said mould, means for rotating said core and means for moving said mould radially with its axis parallel to the axis of said core.

4. In apparatus for moulding pipes the combination of an outer hollow mould having its moulding surface in the form of a full length surface of revolution, a core in said mould having its surface in the form of a surface of revolution, means for rotating one of said moulding members, and means for relatively radially moving said moulding members with their axes parallel.

5. In apparatus for moulding pipes the combination of an outer hollow mould having its moulding surface in the form of a full length surface of revolution, a core in said mould having its surface in the form of a surface of revolution, means for rotating one of said moulding members, means for relatively radially moving said moulding members with their axes parallel, and means for indicating the extent of said relative movement.

6. In apparatus for moulding hollow bodies of revolution the combination of an outer hollow mould having its moulding surface in the form of a surface of revolution, a full length core in said mould having its surface in the form of a surface of revolution, means for rotating one of said moulding members, and screw mechanism for moving the other of said moulding members transversely with respect to the first.

7. In apparatus for moulding hollow bodies of revolution the combination of an outer hollow mould having its moulding surface in the form of a surface of revolution, a full length core in said mould having its surface in the form of a surface of revolution, roller supports for said mould, means for rotating said core, and screw mechanism for moving said rollers in a transverse direction with respect to said moulding members.

8. In apparatus for moulding hollow bodies of revolution the combination of an outer hollow mould having its moulding surface in the form of a surface of revolution, a full length core in said mould having its surface in the form of a surface of revolution, means for rotatably supporting said mould, aligned end shafts adapted to be engaged with and disengaged from said core to enable said core to be rotated and said moulding members to be removed, and means for displacing said supporting means transversely with respect to said core.

9. In apparatus for moulding pipes the combination of a full length horizontal cylindrical core, a horizontal detachable two part cylindrical mould enclosing said core, rollers rotatably supporting said mould, screw mechanism for lifting and lowering said rollers, and means for rotating said core.

10. In apparatus for moulding pipes the combination of a full length horizontal cylindrical core, a horizontal detachable two part cylindrical mould enclosing said core, rollers rotatably supporting said mould, screw mechanism for lifting and lowering said rollers and aligned end shafts adapted to be engaged with and disengaged from said core to enable said core to be rotated and said moulding members to be removed.

In testimony whereof I have signed my name to this specification.

A. SAPIN.