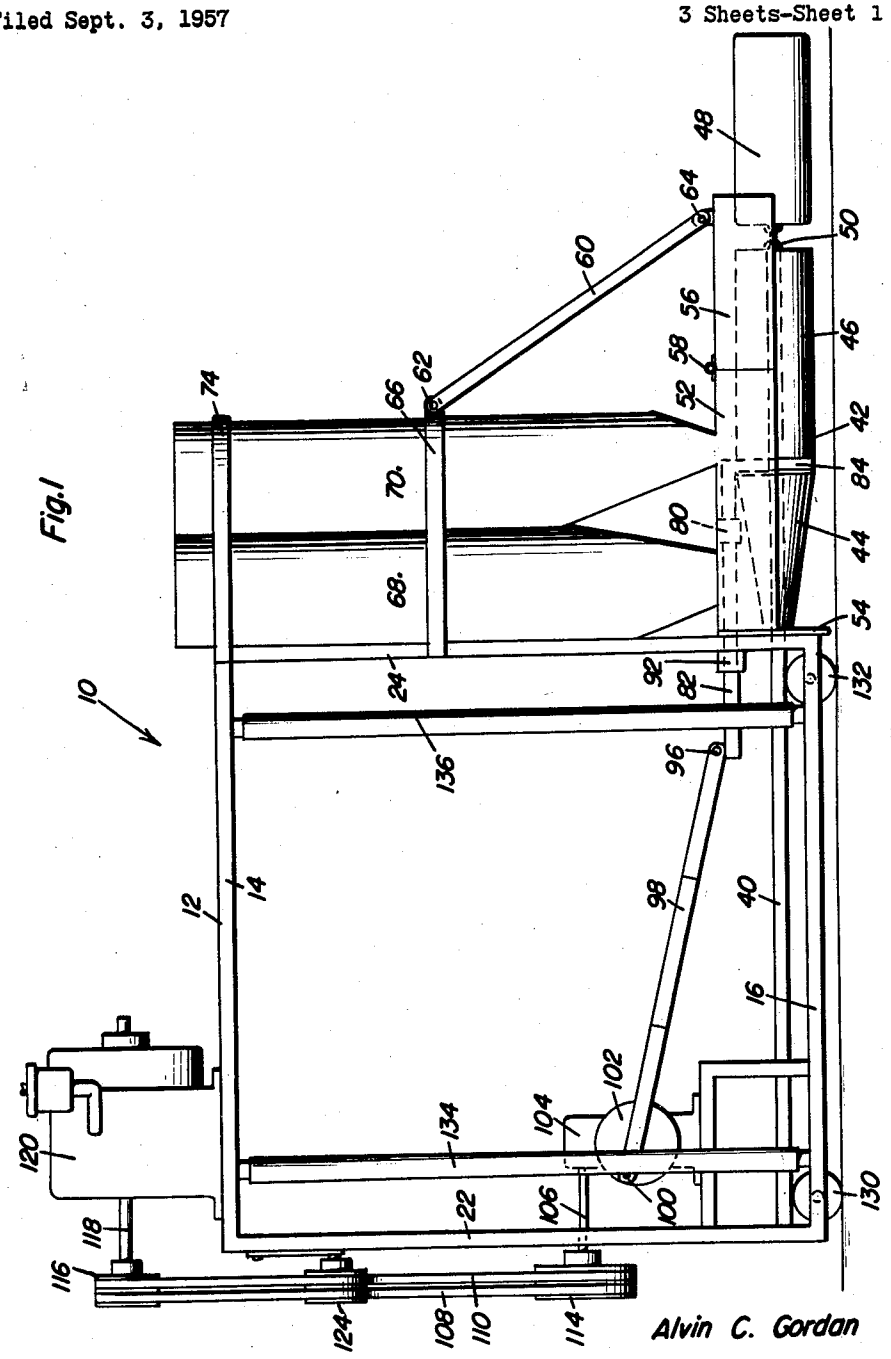
Aug. 16, 1960 A. C. GORDAN 2,948,942

CONCRETE PIPE MACHINE

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Fig. 1



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Fig. 6

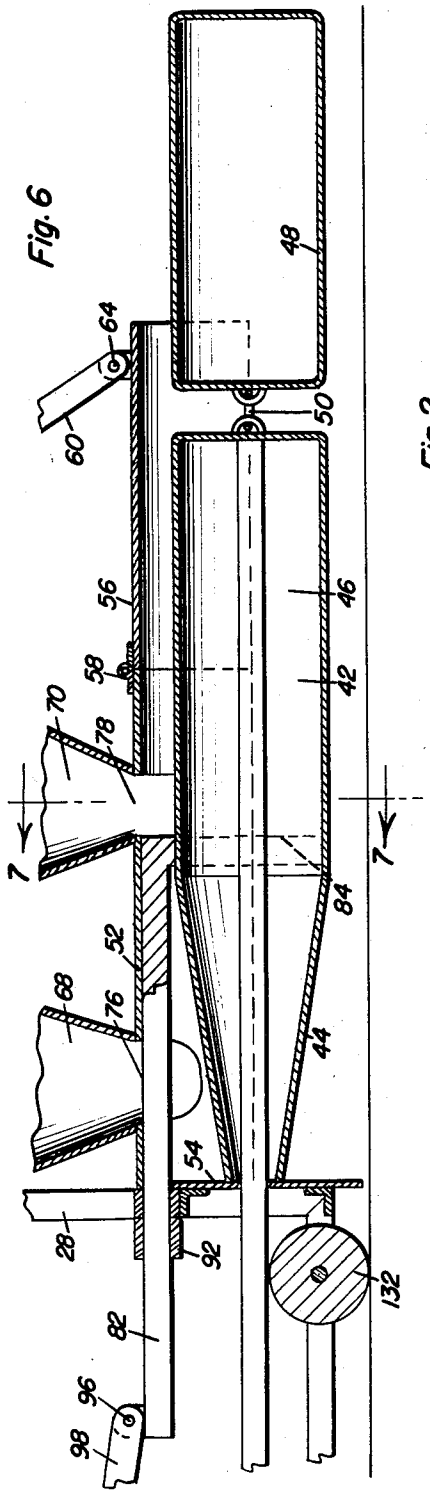


Fig. 2

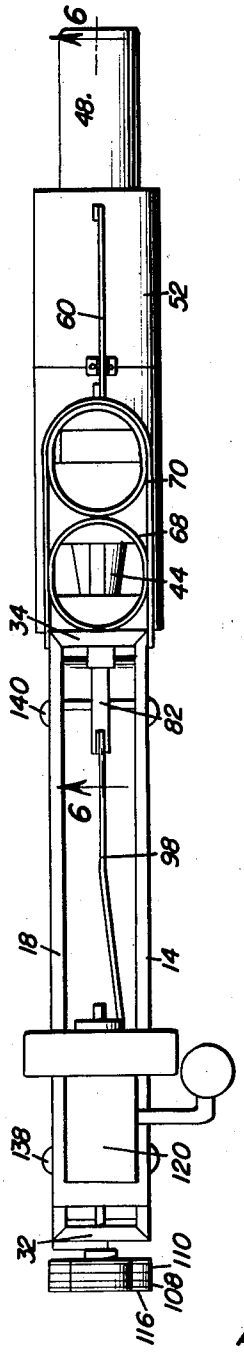
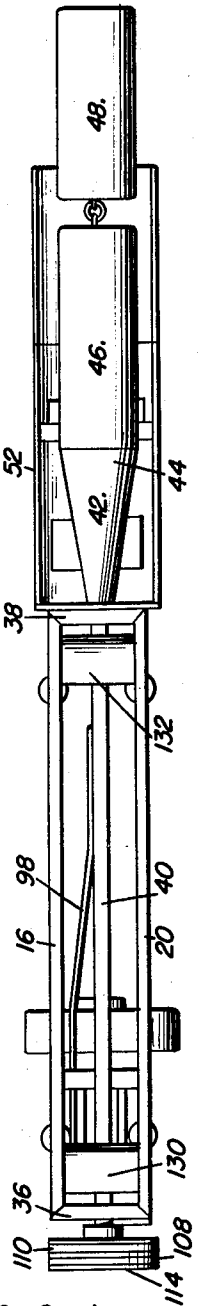


Fig. 3



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CONCRETE PIPE MACHINE

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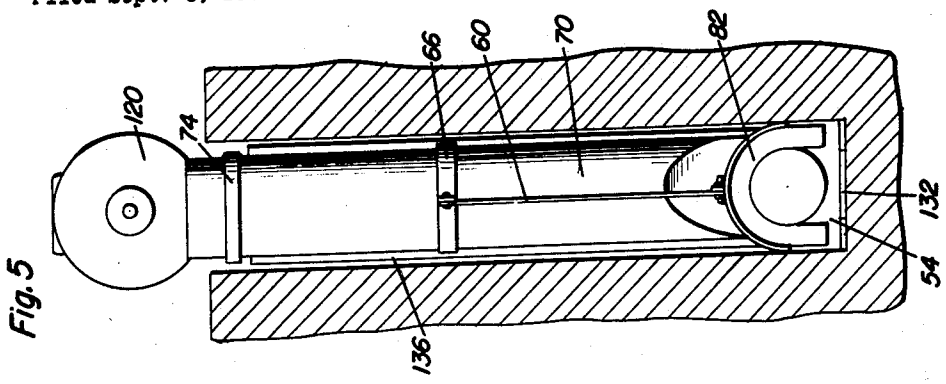


Fig. 5

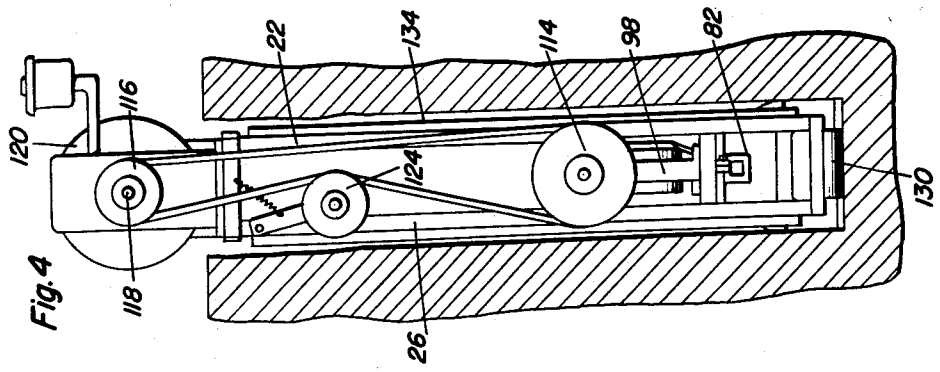


Fig. 4

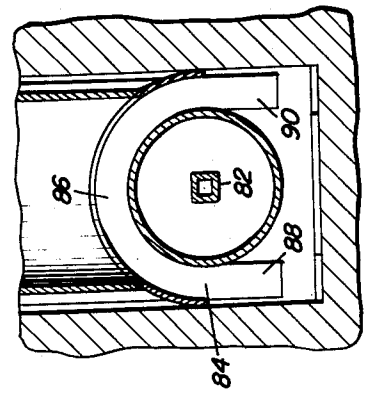


Fig. 7

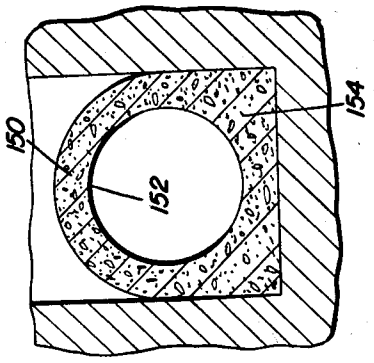


Fig. 8

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CONCRETE PIPE MACHINE

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Filed Sept. 3, 1957, Ser. No. 681,655

1 Claim. (Cl. 25—32)

This invention relates to a concrete pipe forming machine, and more particularly to a machine for forming in a trench a continuous and jointless pipe of concrete or similar material.

The primary object of the present invention resides in the provision of a machine for forming continuous and jointless concrete pipe in a trench without requiring the use of external forms.

A further object of the invention resides in the provision of a self-propelled concrete pipe forming machine which moves ahead as the concrete pipe is constructed and deposited in a trench.

A further object of the invention resides in the provision of a concrete pipe forming machine which is adapted to pack concrete to the extent that it is solid enough to stand alone without external forms.

Still further objects and features of this invention resides in the provision of a concrete pipe forming machine that is simple in construction, efficient in operation, and relatively inexpensive to construct, thereby permitting extensive use thereof.

These, together with the various ancillary objects and features of the invention which will become apparent as the following description proceeds, are attained by this concrete pipe forming machine, a preferred embodiment of which has been illustrated in the accompanying drawings, by way of example only, wherein:

Figure 1 is a side elevational view of the concrete pipe forming machine comprising the present invention;

Figure 2 is a top plan view of the invention;

Figure 3 is a bottom plan view of the concrete pipe forming machine;

Figure 4 is a front end elevational view illustrating the machine in a ditch or trench which latter is shown in vertical transverse section;

Figure 5 is a rear end elevational view of the invention shown in Figure 4;

Figure 6 is an enlarged sectional detail view of the invention as taken in vertical longitudinal section along the plane of line 6—6 in Figure 2 illustrating in particular the construction of the arcuate plate and associated hoppers, together with the construction of the drum;

Figure 7 is a vertical sectional detail view on an enlarged scale as taken along the plane of line 7—7 in Figure 6 illustrating in particular the shape of the tamper; and

Figure 8 is a vertical sectional detail view illustrating the form of a completed pipe constructed while employing the invention.

With continuing reference to the accompanying drawings wherein like reference numerals designate like parts throughout the various views, the reference numeral **10** generally designates the concrete pipe machine comprising the present invention, and which includes a frame **12** having spaced pairs of longitudinally extending horizontal members **14, 16, 18** and **20** interconnected by pairs of vertical frame members **22, 24,** and **26** and **28,** as well as pairs of transverse horizontally extending frame members **32, 34** and **36, 38.**

Fixed to the frame is an alignment shaft **40** to which a drum **42** is rigidly attached, the drum **42** having a substantially conical portion **44** at the front end thereof and a cylindrical portion **46** at the rear end thereof. A follower drum **48** of resilient material is secured, as at **50,** to the cylindrical portion **46** of the drum.

Overlying the drum **42** is an arcuate plate **52** which is secured to the frame. A front plate **54** is positioned immeidately in front of the conical portion **44** and likewise is secured to the frame. The arcuate plate **52** is provided with a section **56,** hinged, as at **58,** and braced by means of brace **60** which is connected as at **62** and **64** to the supporting frame member **66** for hoppers **68** and **70** and to the hinged portion **56** of the arcuate plate, respectively. The plates **52, 54** and **56** comprise a form for shaping the top surface of a concrete pipe being formed in a trench by this apparatus.

In addition to the frame member **66,** frame member **74** is also provided for holding the hoppers **68** and **70** in place. The arcuate plate **52** has a pair of apertures **76** and **78** therein in alignment with the hoppers **68** and **70** which extend through the apertures. Adjustable closure members of any suitable construction, not shown, may be provided for the opening **76** or **78** and for the hoppers as desired to permit the openings to be adjusted in size for control of the rate of flow through the apertures and into the space below the arcuate plate **52.**

Extending from the plate **56** is a guide **80** for the rod **82** of a tamper **84,** the tamper being of a horseshoe shape having an upper arcuate portion **86** and depending legs **88** and **90.** This can be best seen in Figure 7. The rod **82** extends through a suitable support or guide **92** carried by the frame **24** and extends through the plate **54** and has pivotally connected, as at **96,** a pitman **98** pivoted as at **100** eccentrically on a disk **102** rotatable through a gear box **104** by the shaft **106.** The driven shaft **106** is driven by means of endless belts **108** and **110** entrained about pulley **114** on the shaft **106** and also about pulley **116** on the drive shaft **118** driven by a suitable motor **120.** The motor **120** may be an electric motor if electric power is desired, or may be a conventional gasolene motor, which motor is mounted on the frame **12.** A belt tightener **124** of conventional construction is provided.

In order to enable the concrete pipe forming machine to be moved within the trench, rolls which rotate about horizontal axees are mounted between the frame members **16** and **20** and are indicated at **130** and **132.** Pairs of side rollers **134, 136,** and **138, 140** are supported by the longitudinally extending horizontal frame members which are adapted to minimize friction and permit movement of the device should it engage the sides of the trench or ditch.

In operation, dry mix concrete is positioned within the hoppers **68** and **70.** The dry mix concrete having just enough water therein to enable it to set will pass through the openings **76** and **78** going both below and above the drum **42.** Reciprocating movement of the tamper **84** will cause the mix to become solid enough to be self supporting without the necessity of use of forms or the like. Further tamping movement against the cement deposited will cause the machine to progress forwardly as more and more mix is tamped. The weight of the machine and the force applied by the tamper, together with the amount of material being dispersed, will determine the rate of forward movement of the machine. The follower **48** which is behind the core formed by the drum **46** will insure that the interior of the pipe remains circular and free of protrusions. The ensuing pipe will be of the shape as is seen best in Figure 8, having an arcuate upper portion **150,** a central bore **152,** and a lower portion **154** substantially filling the ditch or trench in which the pipe is laid.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous

modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

A concrete pipe forming machine comprising a relatively narrow frame mounted upon supporting rollers and adapted to be received in a trench in which a concrete pipe is to be formed, said frame having vertically disposed rollers mounted on opposite sides for engagement with the sides of a trench, a longitudinally and horizontally extending arcuate plate mounted on said frame and extending rearwardly therefrom within said trench for sharing the top and side surfaces of a pipe to be formed, a rearwardly extending arcuate auxiliary plate hingedly mounted on the rear end of said first mentioned plate, brace means connecting said auxiliary plate and said frame to hold said auxiliary plate in operative position, an elongated cylindrical drum carried by said frame disposed longitudinally thereof in spaced relation beneath said plate to provide a core, the forward end of said drum being tapered to provide a conical forward nose portion, a hopper for concrete mounted on said frame and disposed directly above said nose portion for discharging concrete around said nose portion and into the bottom

of the trench to form the bottom portion of the pipe, a second hopper for concrete mounted on said frame rearwardly of said first hopper and disposed above the cylindrical portion of said drum for discharging concrete around the upper and side surfaces of said drum to fill the space between the concrete deposited from the first hopper and the lower surface of said plate, a reciprocating tamper mounted on said frame between said drum and said plate, said tamper surrounding the upper side surfaces of said drum and extending downwardly to a point substantially in alignment with the lowermost surface of said drum and movable from a point between said first and second hoppers to a point rearwardly of said second hopper to compact concrete deposited between said plate and said drum and means for reciprocating said tamper.

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