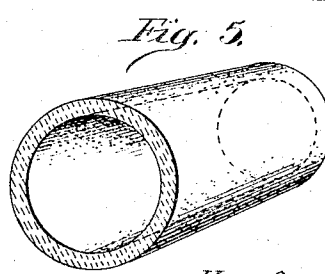
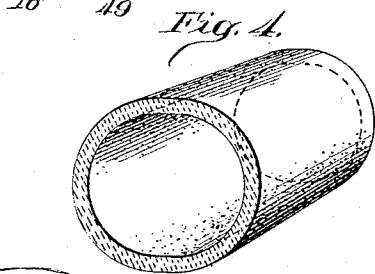
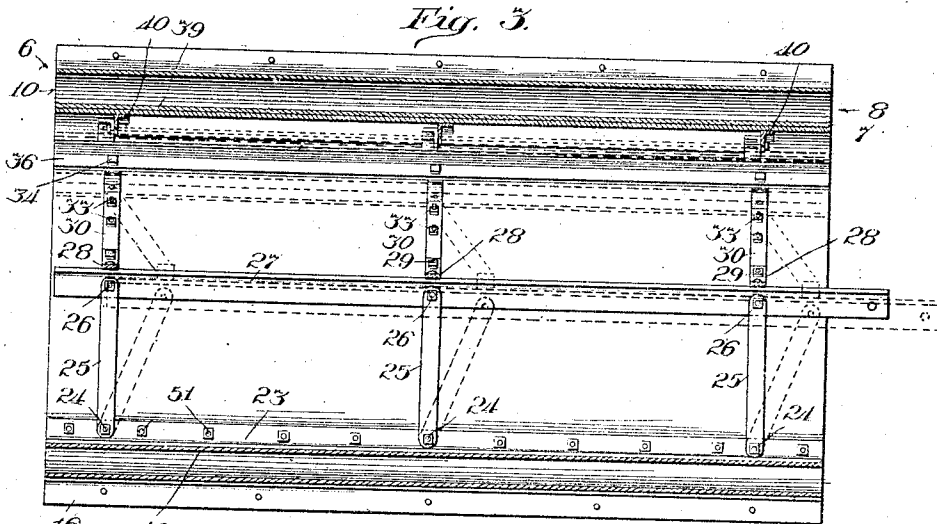
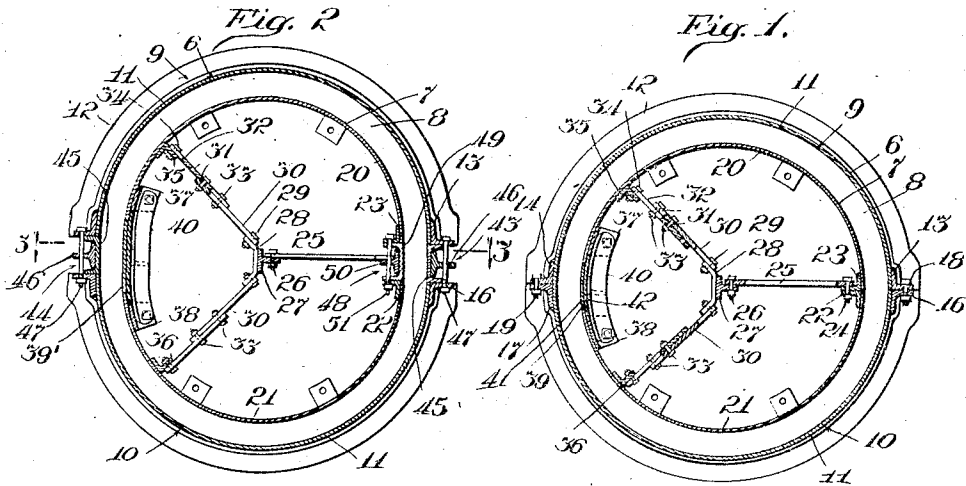


H. E. BURNS.
CONCRETE PIPE FORM.
APPLICATION FILED MAR. 30, 1917.

1,289,109.

Patented Dec. 31, 1918.



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UNITED STATES PATENT OFFICE.

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CONCRETE-PIPE FORM.

1,289,109.

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To all whom it may concern:

Be it known that I, HOWARD E. BURNS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Concrete-Pipe Forms, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to concrete pipe forms and has for its object the provision of a pipe form consisting of an outside form and a core, together with instrumentalities for collapsing the core to permit removal thereof from the finished concrete pipe and for changing the shape and size of the form within certain limits to enable the construction of concrete pipes of different sizes and shapes.

The device of my invention consists generally of an outside form composed of two main sections, each one semi-circular in shape arranged to be bolted, or otherwise secured, together to form a circular form for the outside of a concrete pipe. The inside form is constructed so that it may be collapsed to permit its removal after the concrete has set. To enlarge the inner and outer form I provide fillers which are inserted between the two semi-circular sections of the outer form. Inserts are also provided for the inner form so that it may also be enlarged to correspond with the outer form.

These and other features of my invention will be pointed out with greater clearness in connection with the accompanying drawings wherein,

Figure 1 is an end elevational view of the form of my invention, the form being arranged to cast a circular pipe;

Fig. 2 is a view similar to Fig. 1 showing the form enlarged to cast a pipe of larger cross sectional area than the pipe cast by Fig. 1;

Fig. 3 is a horizontal cross sectional view taken along the line 3—3 of Fig. 2 looking in the direction indicated by the arrows;

Fig. 4 is a fragmentary perspective view of a pipe produced by the form shown in Fig. 2; and

Fig. 5 is a fragmentary perspective view of a concrete pipe formed by the form 55 shown in Fig. 1.

Similar characters of reference refer to similar parts throughout the several views.

Referring first to Fig. 1, 6 designates the outside form and 7 the inside form. The concrete pipe is formed in the space indicated at 8 between the inner and outer forms. The outer form 6 consists of two sections 9 and 10, each section comprising a metallic plate 11 having reinforcing channel irons 12 attached thereto. The section 9 is provided along one of its edges with an angle iron 13 and along its opposite edge with an angle iron 14. These angle irons are attached to the metallic plate 11 by rivets, or any suitable means. The base plate 11 of the section 10 carries along one of its edges an angle iron 16 and along its opposite edge an angle iron 17, the angle irons being attached to the base plate 11 in any suitable manner. The angle irons 13 and 16 are provided with apertures arranged to register with each other and through which several bolts 18 are arranged to extend. The angle irons 14 and 17 are provided with similar registering apertures through which the bolts 19 are permitted to extend.

The inner form 7 consists of two plates 20 and 21, the plate 21 being provided along one of its edges with an angle iron 22, and the plate 20 with an angle iron 23. These angle irons are provided with registering apertures through which bolts 24—24 extend. Pivotally attached to each one of the bolts 24, as most clearly shown in Fig. 3, is a plurality of arms 25—25, the inner end of each arm being pivotally attached at 26 to a T bar shown at 27. This T bar is rigidly attached to a channel 28 one side of which is pivotally connected at 29 to the arms shown at 30. The outer end of each one of the arms 30 is provided with the two bolts shown at 31—31 which are arranged to register with two of three apertures provided in the cooperating arm 32, there being one arm 32 employed for each arm 30. When the form is used for casting a pipe having a substantially circular cross section the arms 32 and 30 assume the position illustrated in Fig. 1 and are held in this position by the bolts shown at 33—33 which extend

through the apertures 31 and through the outer two apertures provided in the arm 32. The outer end of each of the arms 32 is pivotally connected at 34 with an angle iron 35 rigidly carried by the plate 20. A similar pivotal connection is provided between the channel iron 28 and the angle iron 36 rigidly carried by the plate 21.

The edge of the plate 20 opposite the angle iron 23 carries a plurality of angle irons 37 and the plate 21 is provided with similar angle irons, as shown at 38. Interposed between the edges of the plates 20 and 21 is a filler 39 which is held in place by suitable angle irons 40 bolted to the angle irons 37 and 38. The filler 39 comprises the two strips 41 and 42, the former of which extends between the edges of the plates 20 and 21, and the latter extends between the angle irons 37 and 38, as most clearly shown in Fig. 1.

In removing the outer form the bolts 18 and 19 are removed. To remove the inner form it is necessary to collapse the same and this is accomplished by detaching the filler 39 from the angle irons 37 and 38, or by detaching the filler 39 from the irons 38 and swinging the filler inwardly about the bolts connecting it with the irons 37. The filler is then removed and the T bar 27 moved from the position shown in full lines in Fig. 3 to the position shown in dotted lines. This movement results in movement of the arms 25—25 about their pivot points 24—24 and an inward pull on the free ends of the sections 20 and 21. This inward pull on the free ends of the sections 20 and 21 serves to contract the sections so that the entire inner form may be removed.

In the casting of a concrete pipe which has a substantially elliptical or oval shape the novel arrangement of inserts shown in Fig. 2 is employed. To enlarge the outer form 6 the two inserts 43 and 44 are put in place between the edges of the sections 9 and 10. Each insert consists of a channel iron 45 to which is rigidly attached a T bar 46 provided with apertures which register with the apertures provided in the adjacent angle irons so that the bolts 47—47 may be utilized to hold the two sections, together with inserts, in place. To enlarge the inner form 7 the sections are separated by removing the bolts 24 and the insert 43 interposed between the angle irons 23 and 22. This insert consists of a channel iron 49 and a T bar 50 rigidly attached to the channel iron. The T bar contains apertures which register with the bolt apertures in the angle irons 23 and 22. The several arms 25 are pivotally attached to the bolts 31, as illustrated in Fig. 2. The several bolts 31 are removed and the arms 32 moved from the positions shown in Fig. 1 to the positions shown in Fig. 2 so that the inner two apertures of each one of

the arms 32 register with the apertures in the adjacent arm 30. The several arms 30 and 32 are then connected by the bolts 31, as illustrated, and the insert 39' put in place between the free ends of the plates 20 and 21. This insert 39' is somewhat wider than the insert 39 shown in Fig. 1 and serves to give the inside form the required shape to produce a pipe having a substantially elliptical or oval shape.

By providing a number of inserts of different widths I am enabled to construct a concrete pipe having practically any shape or size within certain limits. In order that the free ends of the sections 20 and 21 of the inner form may be pulled inwardly upon movement of the several arms 25 about their pivot points the sections 20 and 21 are made partially flexible.

Having thus described my invention what I claim as new and desire to secure by Letters Patent of the United States is:

1. In a pipe form the combination of an inner form consisting of two substantially semi-circular sections, means for connecting two of the longitudinal edges of said sections together, devices attached to the sections at points opposite the connection of said sections for moving the free ends of said sections outwardly to expand the form, and a filler between the free ends of said sections.

2. In a pipe form the combination of an inner form consisting of two substantially semi-circular sections, means for connecting two of the longitudinal edges of said sections together, devices attached to the sections at points opposite the connection of said sections for contracting the sections to permit removal of the inner form from the pipe, and a filler between the free ends of said sections, the said filler being pivotally secured to one of said sections.

3. In a pipe form the combination of a substantially circular split form cylinder, devices provided on the inside of the cylinder and connected thereto on opposite sides of the slit for expanding and contracting the form, and a filler arranged to be inserted into the slit between the free ends of the form.

4. In a pipe form the combination of an inside form consisting of two substantially semi-circular sections, means for connecting said sections together along two of their longitudinal edges, a plurality of arms spaced longitudinally within the sections and pivoted to the sections at points opposite the free edges of the sections, a bar pivoted to the opposite ends of said arms, a plurality of arms pivotally connected between the bar and the free ends of said sections, and a filler arranged to be inserted between the free ends of said sections.

5. In a pipe form the combination of an

inside form consisting of two substantially semi-circular sections, means for connecting said sections together along their longitudinal edges, comprising a pair of fillers, a plurality of arms spaced longitudinally within the sections and pivoted thereto at points opposite the free edges of said sections, a bar pivoted to the opposite ends of said arms, and a plurality of adjustable arms pivotally connected between the bar and the free ends of said sections.

6. An inside pipe form comprising a pair of flexible semi-circular sections, means for connecting said sections together along two of their longitudinal edges, a filler pivoted to one of the sections along its longitudinal edge opposite the said connection, devices carried by the other section for locking the filler in place between the longitudinal edges of the sections opposite the said connection,

and means for moving inwardly one of the edges adjacent said filler.

7. An inside pipe form comprising a pair of semi-circular sections, means for connecting said sections together along two of their longitudinal edges, a filler pivoted to one of the sections along its longitudinal edge opposite the said connection, devices carried by the other section for locking the filler in place between the longitudinal edges of the sections opposite the said connection, and means for contracting the sections when the filler is swung inwardly about its pivot.

In witness whereof, I hereunto subscribe my name this 21st day of March, A. D. 1917.

HOWARD E. BURNS.

Witnesses:

A. G. McCaleb,
Robert F. Bracke.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."