J. C. MITCHELL.

INNER FORM FOR CONCRETE PIPE MOLDS.

APPLICATION FILED SEPT. 21, 1920.

1,394,570. Patented Oct. 25, 1921.

Fig. 1

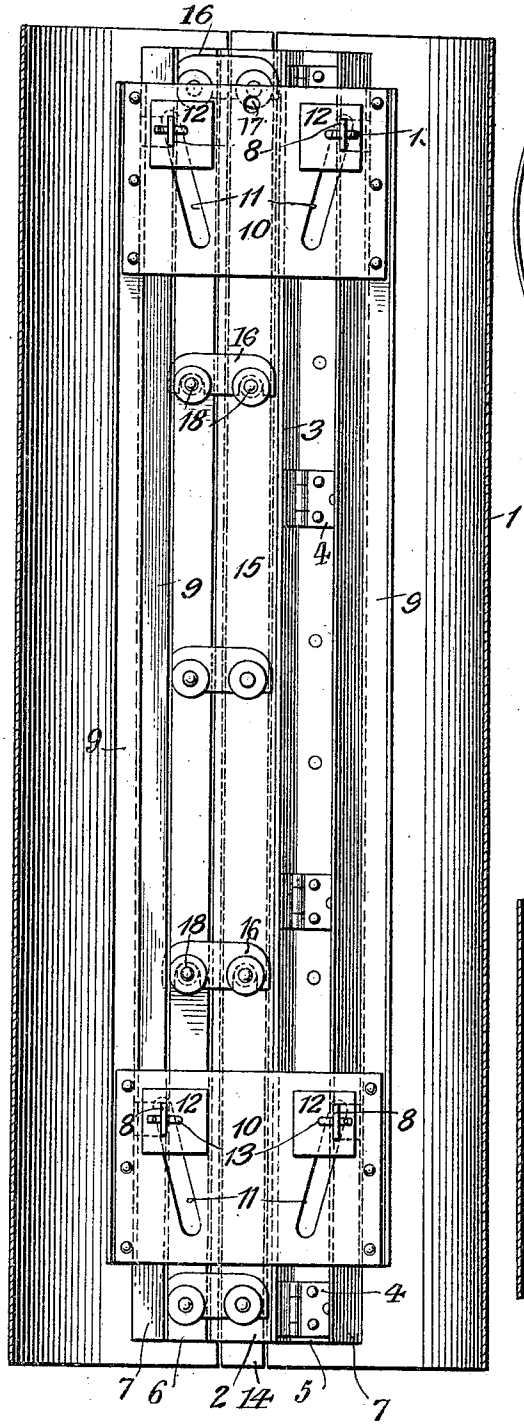


Fig. 2

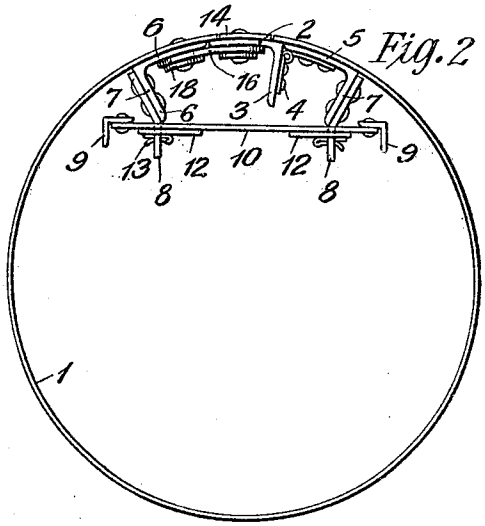


Fig. 3

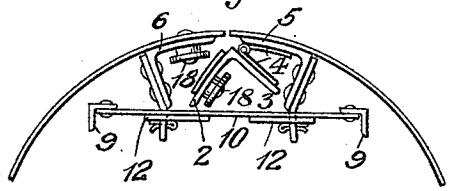
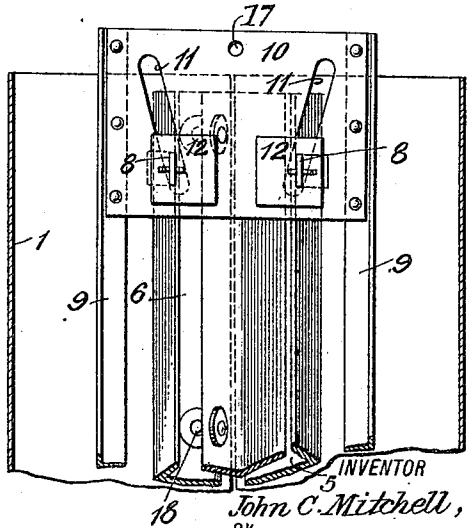


Fig. 4



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INNER FORM FOR CONCRETE-PIPE MOLDS.

1,394,570. Specification of Letters Patent. Patented Oct. 25, 1921.

Application filed September 21, 1920. Serial No. 411,721.

To all whom it may concern:

Be it known that I, JOHN C. MITCHELL, a citizen of the United States, residing at East Orange, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Inner Forms for Concrete-Pipe Molds, of which the following is a full, clear, and exact description.

In the manufacture of concrete pipes, either with or without reinforcements, it is customary to set up an outer and an inner mold or form, with an annular space between and to pack such space with the concrete. After the latter has set and sufficiently hardened the forms are removed. No difficulty is experienced in removing the outer mold or form, as this may be made up of longitudinally hinged sections which may be readily unlocked and spread. To remove the inner form is not, however, so simple a matter, for while this also may be made in hinged sections, great nicety in forming the joints is demanded. Great care must be exercised in locking them, and when they are released they are not easily collapsed and removed.

The object of the invention upon which is based my present application for Letters Patent is to provide a more readily removable inner form for pipe molds which may be easily manipulated and which by the mere act of removal will, in lieu of collapsing, as this term is generally understood, become of smaller circumference, and thus separate from the entire wall of concrete whereby it may be both separated therefrom and raised out of the pipe in and by a single operation. The improvement consists in the means which I have devised for securing this result.

In the drawings hereto annexed:

Figure 1 is a view in elevation of the inner surface of one-half of the inner form showing the means for locking it and for reducing its circumference on removal from a hardened pipe.

Fig. 2 is a top plan and part sectional view of the said means locked for use.

Fig. 3 is a similar view of the same parts in position to permit removal of the form.

Fig. 4 is a view in elevation of the upper part of Fig. 1, showing the parts in another position or condition.

In the drawings I have shown only the inner form which embodies my improvements. This consists of a sheet of metal or of any other suitable material which will have like properties, bent into cylindrical form and completed as a true cylinder by a hinged section 2. Said section has a substantially radial arm 3, secured to one member of a hinge 4, the other member of which is secured to a plate 5 conforming in shape to an arc of the circumference of the complete cylinder and secured to the inner surface of the sheet 1 near its longitudinal edge.

To the other edge of said sheet 1 is secured a similar plate 6, and both plates 5 and 6 have radial arms 7 to which are secured plates 8. the ends of which where they extend beyond said arms are normal to a chord of the circle of the complete cylinder.

A frame of which the bars 9—9 form the sides and which is completed by upper and lower end plates 10—10 constitutes a means for drawing together the two plates 5 and 6 and thus reducing the diameter of the form. For this purpose diagonal slots 11 are formed in the plates 10, the lower ends of said slots being closer together than the upper. Over the plates 10 are laid or secured washers 12, over the upper and more remote ends of the slots 11, and said washers contain slots through which project the ends of the plates 8. Pins or stops 13 of any suitable kind are inserted in the plates 8 and resting on washers 12 retain the frame 9 in upright and proper position.

To complete the surface of the cylindrical form there are secured to the plates 2 plates 14, as shown in Figs. 2 and 3.

On the inner surfaces of plates 2 and 6 are studs 18 which are engaged by plates 16 having slots or notches therein near their ends, and by this means, when the form is set up, it is locked in expanded condition by forcing the plate 16 down over the studs 18 until the notches therein lock with the studs 18.

To remove the form from a finished set or hardened pipe, the locked plates are first knocked off the studs 18 and the hinged section 2 swings inward. A chain from a crane is then attached to the upper plate 10, as by means of a hole or stud 17 provided for the purpose and simply drawn up. This raises the frame 9 with the result that the plates or arms 8 are drawn together by the inclined slots 11, and the two edges of the cylindrical form 1 are drawn together. This reduces the form in circumference and then, when the arms 8 have reached the ends of the slots. raises the form bodily from the pipe.

A great practical advantage is thus obtained in that the separation and removal of

the frame is effected by a single operation, resulting first in the contraction of the form and then in raising it from the finished pipe.

This device has proved of great practical value in the manufacture of very large pipe sections, and is much better adapted for such purpose than any device of which I have knowledge. For the manufacture of smaller pipe sections of, say, four feet in length and corresponding diameter, a somewhat similar but simpler form of device may be used to accomplish the same result, but this I have shown in another application for Letters Patent.

From an engineering standpoint the device herein set forth has proved to be a most valuable accessory in the manufacture of concrete pipes. It is simple in design and construction and is most efficient and practicable for its intended purpose.

In the above I have confined the description to concrete pipes, but it will be understood that the material of which said pipes are composed is immaterial. Nor is it of the essence of the invention that the form should be made of sheet metal, although this is the material preferred. Any other material may be used for this purpose, provided it accomplishes the same result in a similar manner.

What I therefore claim is:

1. A means for reducing the circumference of the inner form for molded concrete pipes comprising, in combination, a sheet metal form split longitudinally, a hinged section adapted to swing inwardly from one edge of the same, projections from the two edges and slotted plates with which such projections engage adapted to draw said projections and hence the edges of the form together after the hinged section of the same has been swung inwardly and when the slotted plates are moved longitudinally.

2. The combination with the inner form of a concrete pipe mold composed of a metal sheet cylinder longitudinally split, of a section of said cylinder hinged to one edge of the sheet and means for drawing together the edges of said sheet and reducing the diameter of the cylinder after the said hinged section is swung inwardly.

3. The combination with the inner form of a concrete pipe mold composed of a cylindrical metal sheet longitudinally split, of a section of said cylinder hinged to one edge of said sheet, projections from both of said edges, a frame having slotted plates with which said projections engage, the said slots being so formed as to draw said projections and with them the edges of the sheet together after the hinged section is swung inwardly.

4. The combination with the inner form of a concrete pipe mold composed of a cylindrical metal sheet longitudinally split, of a section of the cylinder hinged to one of the edges of the sheet, plates secured to the said edge and having normally parallel projections, plates adapted to be moved longitudinally in the form and provided with diagonal slots with which said projections engage, and by which they and the edges of the sheet are drawn together, after the hinged section is swung inwardly and the plates raised.

5. The combination with the inner form of a concrete pipe mold composed of a flexible cylindrical sheet longitudinally split, of a section of the cylinder hinged to one of the edges of said sheet, connecting plates adapted to interlock with said section and the adjacent edge of the sheet and means for drawing the two edges of the sheet together when unlocked, and after the hinged section is swung inwardly.

6. The combination with the inner form of a concrete pipe mold, composed of a cylindrical sheet of metal split longitudinally, of a section of the cylinder, hinged to one edge of said sheet, connecting plates adapted to be secured to the inner surface of said hinged section and to studs on the adjacent edge of the sheet to lock the two edges of the sheet together, and means for drawing the edges of the sheet together after its edges are unlocked and the hinged section swung inwardly.

7. The combination in an inner form of a concrete pipe mold of a sheet metal cylinder longitudinally split, of a section of said cylinder hinged to one edge of said sheet, projections from said section and from the adjacent edge of the sheet, a frame within the mold having members with which such projections engage and which when moved longitudinally after the hinged section has been swung inwardly, first reduce the circumference of the cylinder and then lift it from the pipe.

In testimony whereof I hereto affix my signature.

JOHN C. MITCHELL.