(No Model.)

J. BAADE.

MOLD FOR MAKING SEWERS.

No. 405,652. Patented June 18, 1889.

Fig 1.

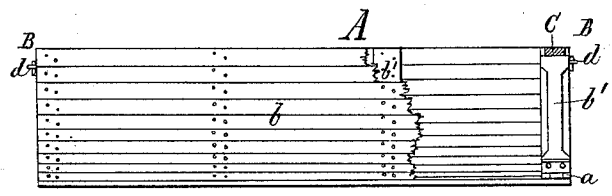


Fig 2.

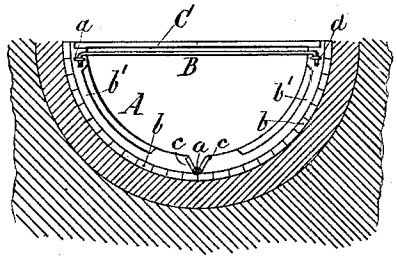


Fig 3.

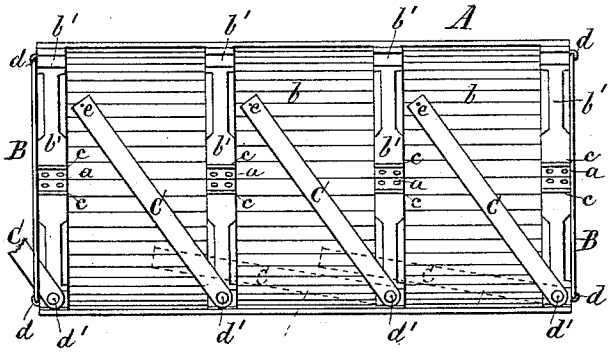


Fig 4.

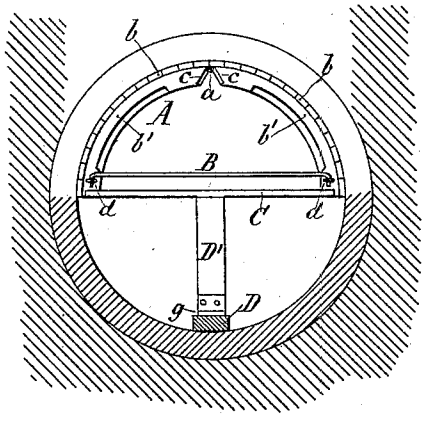


Fig 5.

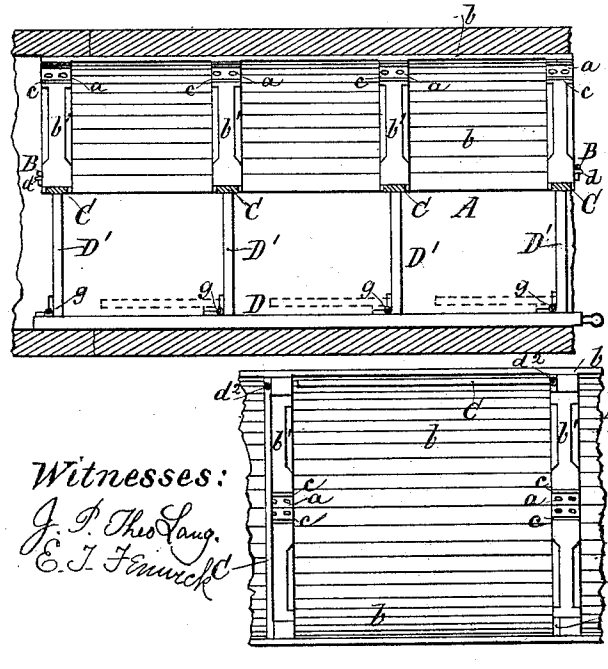


Fig 6.

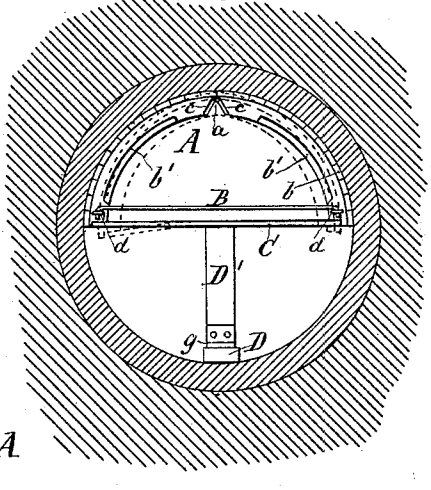


Fig 7.

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UNITED STATES PATENT OFFICE.

JOHN BAADE, OF WACO, TEXAS.

MOLD FOR MAKING SEWERS.

SPECIFICATION forming part of Letters Patent No. 405,652, dated June 18, 1889.

Application filed December 14, 1888. Serial No. 293,575. (No model.)

To all whom it may concern:

Be it known that I, JOHN BAADE, a citizen of the United States, residing at Waco, in the county of McLennan and State of Texas, have invented certain new and useful Improvements in Molds for Making Sewers of Concrete, Brick, or Stone; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention consists in certain novel constructions, combinations, and arrangements of parts whereby a jointed expansible and contractible semicircular mold for making sewers of circular, elliptical, or ovate form, either of concrete, brick, or stone, is produced, as will be hereinafter described and specifically claimed.

In the accompanying drawings, Figure 1 is a side view of my improved mold, partly in elevation and longitudinal section, as adjusted for molding the lower half of a sewer which is of circular form in cross-section. Fig. 2 is a cross-section of the mold shown in Fig. 1, illustrating also its mode of use in molding a section of the lower half of a circular sewer. Fig. 3 is a top view of the mold shown in Figs. 1 and 2 as it appears after its expanding and staying braces have been moved on their pivots or hinges to positions which will not interfere with the mold being contracted for withdrawal from the section of the said lower half of the sewer which has been molded. Fig. 4 is a cross-section of the mold as adjusted for molding a section of the upper half of the sewer upon an already molded section of the lower half. Fig. 5 is a vertical longitudinal section of the mold, as shown in Fig. 4, illustrating a section of the upper half of the sewer molded upon a section of the lower half. Fig. 6 is a cross-section of the mold and sewer section shown in Fig. 5, the parts being shown by full lines in the position they occupy when the mold is expanded and the mold by dotted lines in the form it assumes when the props are turned down, as shown by dotted lines in Fig. 5, and the braces moved on their pivots or hinges to either the position shown by full or dotted lines in Fig. 3; and Fig. 7 is a top view of the mold modified in its construction, the braces being hinged to the sides of the ribs of the mold instead of pivoted on top of the same.

A in the drawings represents a semicircular mold, formed of two or any desirable number of segmental or quadrantal-shaped portions united by hinges *a*. The respective portions of the mold shown are constructed of thin strong sheathing-boards *b*, nailed to quadrant-shaped ribs *b'*, cut away on a bevel *c* at their ends, where the leaves of the hinges are applied, so as to permit the hinges to fold when the mold is to be contracted for withdrawal from the section of a sewer which has been molded by it. Near the other ends of the ribs eye-staples *d* are provided, and into these thrusting tie-rods B, having angular fastening ends, are placed for holding the mold in proper condition while being handled or transferred from one point to another. Below these tie-rods to the ends of each of the ribs strong braces are connected, either by pivots *d'*, as shown in Fig. 3, or by hinges d^2 to the sides of the ribs, as in Fig. 7. The preferable construction and arrangement of these braces is that shown in Fig. 7, as they can be turned closer around to the inside surface of the mold when hinged, as shown in the said figure, than when pivoted, as in Fig. 3. The pivoted braces may be fastened at their free ends by pins passed through holes *e* and into the ribs; but if the braces are hinged, as shown in Fig. 7, they will rest upon shoulders formed by cutting notches *f* in the end portions of the ribs, and may not require to be pinned. By means of the braces the quadrant portions of the mold A are kept expanded, so as to form a true semicircle, and the mold is stayed firmly while in use for molding either the upper or lower half of the circular sewer. When the braces are turned toward the sides of the molds and the tie-rods withdrawn, the quadrant portions of the mold can be folded on the hinges *a*, as illustrated by dotted lines in Fig. 6, and thus be freed from objectionable frictional contact during its withdrawal from the section of sewer which has been molded.

The mold thus far described serves for molding the lower half of a sewer; but for molding the upper half a longitudinal sill-

piece D is provided below and directly in line with the hinges *a*, and to this sill-piece a series of props *d'* are connected by hinges *g*, so as to be adjustable to either vertical or horizontal positions, as illustrated by full and dotted lines in Fig. 5. The sill-piece sustains the props and the props sustain the braces and the quadrant portions of the mold, as well as the upper section of the sewer while being molded, as illustrated in the drawings.

The mold may be of any desired length or diameter—say from one to ten or sixteen feet, and the ribs placed from twelve to fourteen inches apart, the sheathing one by three inch lumber, the sill-piece two by six inch lumber and extending from end to end of the mold, and the props two by four inch lumber.

The cross-sectional form of the mold may be either semicircular or semioval; or, if desirable, in order to form ovate sewers, two jointed molds might be employed in constructing such form of sewer, and these molds, respectively, might be so shaped as to jointly produce the sewer of ovate form.

Operation: In making a concrete sewer with my mold, concrete made of gravel and cement—mixed one to five parts and medium damp—is placed in the bottom of the trench and tamped. The mold is then adjusted upon this bed and concrete placed and tamped all around it level with its top, as illustrated in Figs. 2 and 4. The braces are now turned to either of the positions shown by full and dotted lines in Fig. 3, and the mold folded, as illustrated by dotted lines in Fig. 6, and moved to the next section of the sewer, one of the ends being left extending about six inches in the section just molded, so as to prevent crumbling or breaking down of the finished section during the tamping operation. After the bottom half of the sewer is finished and has become well "set," the sill-piece with its hinged props is placed in the center thereof and the mold inverted and placed upon the adjustable props, as shown in Fig. 4, and concrete tamped all around it, as illustrated in Figs. 5 and 6. The props are then turned down, as shown by dotted lines in Fig. 5, the braces turned to the position shown in Fig. 3, and the mold folded, as shown by dotted lines in Fig. 6, so as to be drawn out easily. The mold is again set and adjusted for molding another section of the sewer in the same manner, as described. The sewer, when finished, has a true smooth surface on its inside.

My sewer-mold differs from other expansible and contractible molds which form a complete or nearly complete circle in being in cross-section in form of either a half-circle, half-ellipse, or half-ovate, and in being reversible and adapted to be supported at different altitudes, whereby a complete cylindrical or other analogous shaped sewer can be molded by a comparatively cheap device—viz., a single half-mold furnished with propping adjuncts, the lower half of the sewer being molded first and the upper half second or last.

What I claim, and desire to secure by Letters Patent, is—

1. An expansible and contractible reversible mold for sewers, in form in cross-section of either a semicircle, semi-ellipse, or semi-ovate, formed of segmental or quadrantal portions hinged together and stayed by swinging braces, substantially as described.

2. An expansible and contractible reversible mold for sewers, in form in cross-section of either a semicircle, semi-ellipse, or semi-ovate, formed of segmental portions hinged together and provided with stay-braces and thrusting tie-rods, substantially as described.

3. An expansible and contractible reversible mold for sewers, in form in cross-section of either a semicircle or semi-ovate, formed of segmental portions hinged together and provided with swinging braces and adjustable props, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN BAADE.

Witnesses:
W. W. MULLETT,
J. R. SANDERSON.