

H. BESSER.
SECTIONAL METALLIC CENTERING FORM.
APPLICATION FILED SEPT. 18, 1909.

963,984.

Patented July 12, 1910.

2 SHEETS—SHEET 1.

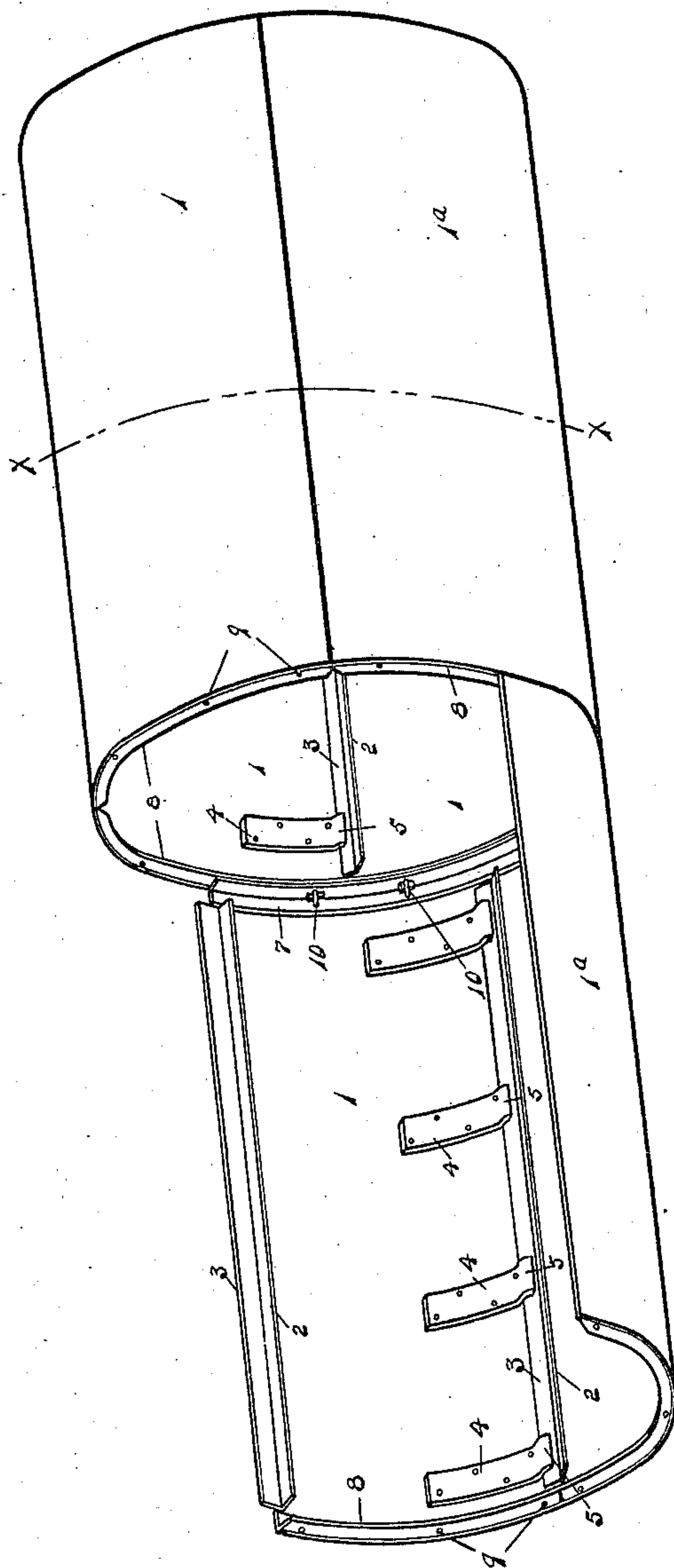


Fig. 1

WITNESSES:

Roy Wallis.
Ralph S. Warfield.

INVENTOR

Herman Besser

BY

Geo. B. Wilcox

ATTORNEY

H. BESSER.
SECTIONAL METALLIC CENTERING FORM.
APPLICATION FILED SEPT. 18, 1909.

963,984.

Patented July 12, 1910.

2 SHEETS—SHEET 2.

FIG. 3

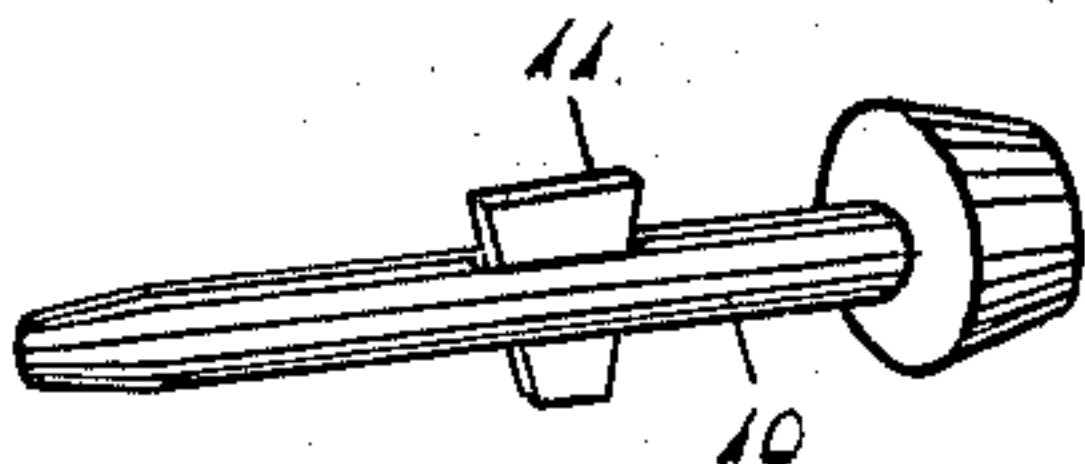
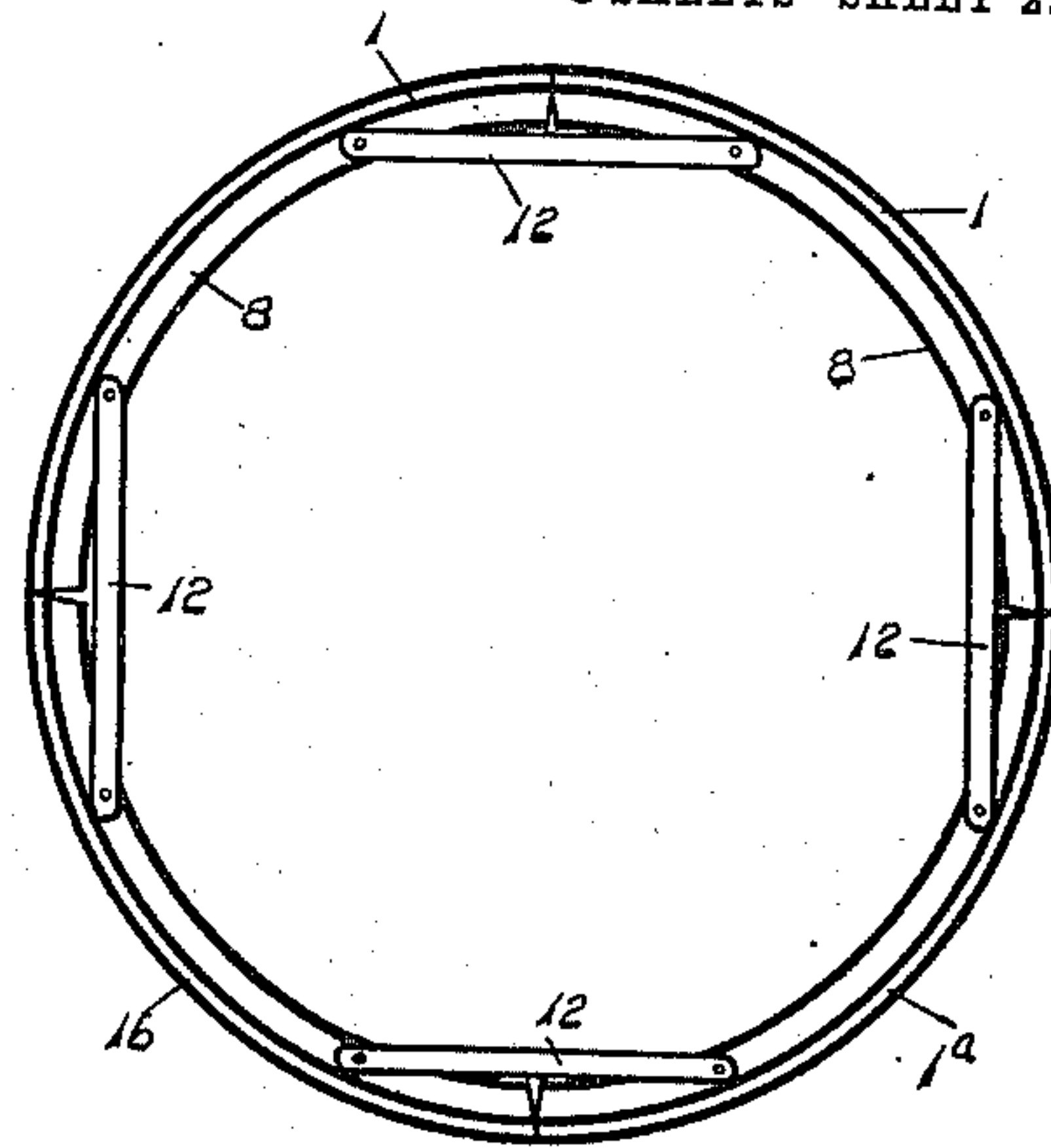


FIG. 4



FIG. 5

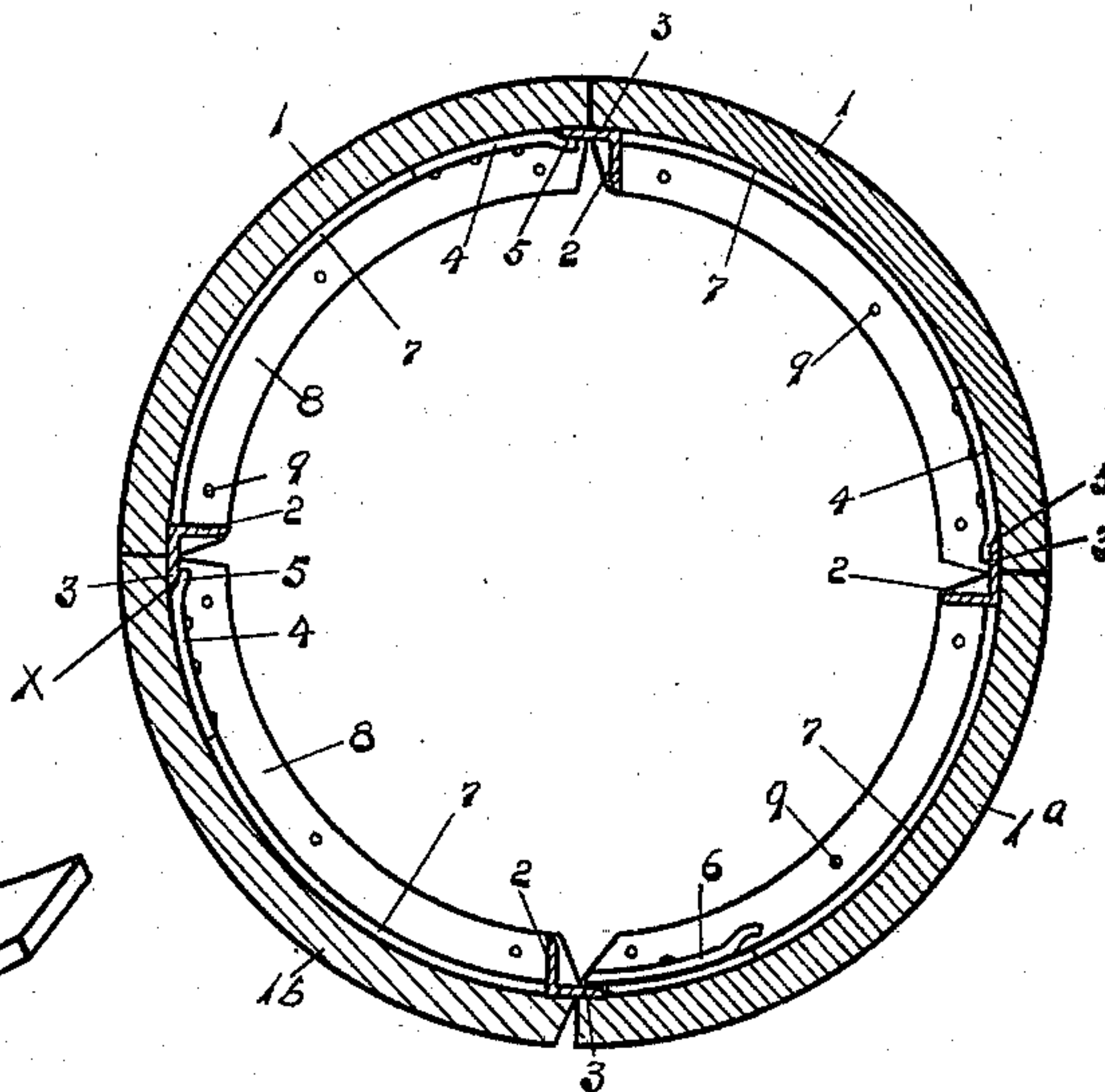


FIG. 2

WITNESSES:

Roy Wallis.
Ralph S. Warfield.

INVENTOR

Herman Besser

BY

Geo. B. Wilcox
ATTORNEY

UNITED STATES PATENT OFFICE.

HERMAN BESSER, OF ALPENA, MICHIGAN.

SECTIONAL METALLIC CENTERING-FORM.

963,984.

Specification of Letters Patent.

Patented July 12, 1910.

Application filed September 18, 1909. Serial No. 518,334.

To all whom it may concern:

Be it known that I, HERMAN BESSER, a citizen of the United States, residing at Alpena, in the county of Alpena and State of Michigan, have invented certain new and useful Improvements in Sectional Metallic Centering-Forms; 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 relates to sectional metallic centering forms for the construction of monolithic sewers, conduits, culverts and the like.

One object is the provision of a form of the character which can be placed as a whole in the trench, surrounded with plastic material as cement, and then removed before the concrete surrounding the form has become dry.

Another object is the provision of sectional forms adapted to be arranged in series, the sections of the form first placed adapted to be taken out and removed through the remaining elements of the series of forms with ease and despatch.

Still another object is the provision of means for removably securing the individual members of the series of forms together, whereby the forms constitute a sectional cylinder of any given length.

A still further object is the provision of locking means for releasably locking the sections of each form rigidly together and in perfect alinement, whereby they cannot sag out of shape.

By means of my invention, I am enabled to lay sewers, conduits and the like without having to leave any considerable amount of open trench ahead or behind. The operation of constructing sewers, conduits, culverts and the like is continuous. The placing of the concrete, the setting up and taking down of the forms, and the digging of the trench can all be proceeded with simultaneously, nor does one step have to wait for the other.

To these and other ends, therefore, my invention consists in certain novel features and combinations such as will be more fully described hereinafter and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a perspective view showing the complete

form joined to an incomplete form, the whole constructed in accordance with my invention, Fig. 2 is a cross-sectional view on line $x-x$ of Fig. 1, the thickness of the shell being exaggerated for sake of clearness, Fig. 3 is an end view showing the employment of tie bars on the end form of a series, Fig. 4 is a detail view of one form of fastening means for connecting the individual members of a series of forms, and Fig. 5 is a detail view illustrating one form of releasable locking means for retaining the sections of a form in position.

Heretofore in laying monolithic sewers and like structures, it has been the practice to first place the lower half or invert of a form in position and after the material surrounding such lower half has set, place thereon the upper half or crown and surround that with plastic material as concrete. Such independent sectional forms are, as a rule, strengthened or braced so that when the complete form is set up, the interior or bore thereof is obstructed by braces, cross-supports and the like. Furthermore, it is necessary to dig a trench of considerable length which is kept open for a long time, disfiguring the street and oftentimes rendering it impassable. Furthermore, in using forms of this character, it is necessary that a large amount of blocking and rollers be provided for bringing the sections ahead, nor is it possible to remove the forms first placed in position, until the material surrounding the entire series of forms has hardened. Thus, it is necessary for the operator, after laying a section of the sewer, to wait until that portion of the section last laid has hardened before removing the forms because, under this method, the forms last laid are the forms first removed. Obviously, this necessitates the provision of a large number of forms which are not continuously used.

One advantage resulting from my invention is that with my forms, the form first laid is the form first removed and such form can be knocked down, drawn through the forms last placed in position, and set up again, as soon as the concrete surrounding the first form has attained its initial set. By this means it is obvious that only a comparatively small number of forms is necessary in building sewers and the like in accordance with my invention, the open trench can be more quickly filled in and indeed, as

a matter of fact, the crew is kept close together, better results are obtained from their labor, and the forms can be placed in position to receive the concrete as fast as five or six feet of open trench is made.

Referring to the drawings, 1, 1, 1^a indicate a plurality of segmental sections adapted to be assembled to constitute a sectional form which is preferably cylindrical in cross-section as shown. In the drawings, I have shown such form as consisting of four separable sections, it being obvious that a smaller or greater number of sections may be used to constitute a form, although in practice, I would not use less than three sections.

As one means for releasably securing the sections together to make the form, I provide one longitudinal edge of each section with an angle bar 2, the flange 3 of which projects beyond the edge of the section on which the angle bar is secured. This angle bar 2 is secured to the inner face of the section, its projecting flange 3 being adapted to overlap the inner face of the next adjacent section. The opposite longitudinal edge of each of the sections 1, 1, 1^a, 1^b, is provided with a strap 4 having an offset lip 5, between which and the inner face of the section is received the overlapping flange 3 of the angle bar on the longitudinal edge of the next adjacent section. It will be noticed that the edges of the sections 1, 1, 1^a squarely abut each other and the locking means above described, while simple, is very efficient and serves to interlock the sections rigidly together in perfect alinement to prevent the sections from sagging relative to each other. One section 1^a of each form is provided with a turn button 6 pivoted securely to the inner face thereof in place of the lip 5, such turn button adapted to overlap the flange 3 of the angle bar 2 on the section next adjacent thereto, to enable the sections to be disassembled when desired. In setting up the form, the section 1^b is the last section to be placed in position and in taking down the form, all that is necessary is to swing the turn button 6 on its pivot until its outer end releases the flange 3 on the section next adjacent thereto, whereupon the bottom section 1^b may be swung inward on the point X as a pivot, after which the remaining sections are easily drawn inward to disassemble the form.

As one means for maintaining a series of the forms in alinement, I provide the opposite ends of each section with angle bars 7, the radially extending flanges 8, 8, of which are apertured as at 9. These segmental flanges 8, 8, are located at the opposite ends of the respective forms and are adapted to abut similar flanges carried by the ends of adjacent forms, in such manner that the apertures 9, 9 will register, such apertures

adapted to receive the pins 10 held in place in any suitable manner as by means of the wedge-shaped cross keys 11.

In disassembling one form relative to the adjacent forms, it is first necessary to remove the cross keys 11 and the pins 10, before the sections composing the form are swung inward.

When the end of the trench is reached, or when leaving the forms in place over night, it is desirable that the sections constituting the end form be held rigidly in position, to which end I have provided the chord bars 12, 12, extending between the adjacent sections and secured in place in any convenient manner as by means of the pins 10 and cross keys 11, such chord bars connecting the respective sections against relative movement.

An inspection of Fig. 1 will show that the successive forms break joints relative to each other, whereby a stronger and more compact and firm construction results.

In taking down the forms, the sections are not sprung but are merely taken apart, thereby saving much time and labor and retaining the forms always in shape.

It will also be seen that the interior or bore of the forms is not obstructed but is left entirely open for passage back and forth, and should a heavy rain flood into the forms, no obstruction to the passage of the water would be afforded to cause it to dam up.

The operation of my device may be briefly described as follows: When a sufficient length of trench has been dug, a bed of plastic material may be laid in the bottom of the trench and the forms set up or placed in assembled position on the bed, after which the form is covered or inclosed by plastic material. If desired, earth can be filled in along the walls of the trench as the plastic material is laid up on both sides of the forms, thus filling in the trench. As the length of the trench increases, additional forms are placed therein as above described, the adjacent ends of the forms being releasably connected. This process is continued, the trench being excavated as needed, so that only comparatively few feet of trench are open at one time. When the plastic material around the form first placed in position has become sufficiently hard, the workman crawls through the forms subsequently laid, and releases the turn button on section 1^a of the form first laid, swinging such section inward until it is released from the remaining sections of the first form, after which such remaining sections may be removed inwardly and drawn through the series of subsequently laid forms until the open portion of the trench is reached, whereupon the disassembled form is set up in position with its end adjacent the end of the form last placed.

From the foregoing it will be seen that I

have devised a continuous method of building monolithic structures as tunnels, sewers and the like, with economy, as a large number of molds are unnecessary.

5 To set up a form constructed in accordance with my invention, the flanges along the longitudinal edges of the sections are inserted beneath the offset lips of the straps on the next adjacent section, the final section 1^a being placed in position and the turn button 6 rotated so as to overlap the longitudinal extending flanges of the adjacent section, thus completing the form and preventing its disengagement. The sections 15 cannot slide endwise relative to each other, on account of the end flanges 8, which lie in the paths of movement of the flanges 3 on the successive adjacent sections.

It is evident that changes might be made 20 in the form and arrangement of the several parts described without departing from the spirit and scope of my invention.

Having thus fully disclosed my invention, what I claim as new, is:—

25 1. A centering form comprising a plurality of separable segmental sections; an angle bar secured to one inner longitudinal edge of each section, the projecting flange of said angle bar overlapping the inner edge of the 30 next adjacent section; a plurality of straps,

each formed with an offset lip, said straps secured to the remaining longitudinal edge of each section; a turn button secured to the inner face of one of said sections and adapted to overlap the flange of the angle bar of 35 the next adjacent section.

2. A centering form comprising a plurality of separable segmental sections; an angle bar secured to one inner longitudinal edge of each section, the projecting flange of said 40 angle bar overlapping the inner edge of the next adjacent section; a plurality of straps, each formed with an offset lip, said straps secured to the remaining longitudinal edge of each section; a turn button secured to the 45 inner face of one of said sections and adapted to overlap the flange of the angle bar of the next adjacent section, together with segment-shaped angle bars secured to the opposite ends of each section, said angle bars arranged with one flange radial, said radial 50 flange being apertured, and securing pins received in said apertures.

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

HERMAN BESSER.

Witnesses:

IDA MIDDLEAUGH,
W. R. McPHEE.