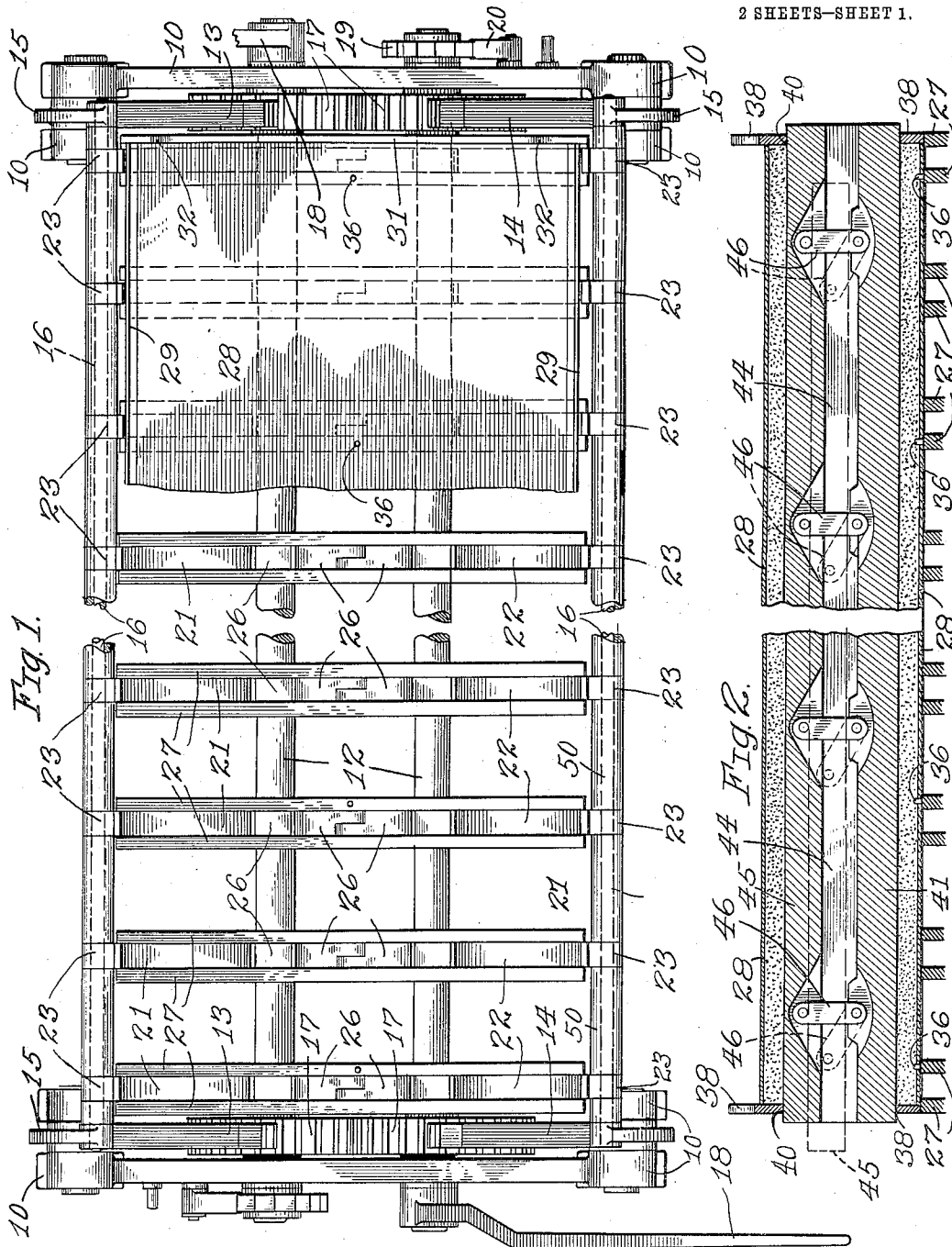


J. PETERSON.
 APPARATUS FOR FORMING CONCRETE COLUMNS.
 APPLICATION FILED MAR. 12, 1913.

1,126,853.

Patented Feb. 2, 1915.

2 SHEETS—SHEET 1.



WITNESSES:

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 A. N. Mowell

INVENTOR:

By John Peterson
 Proctor & Sprinkle

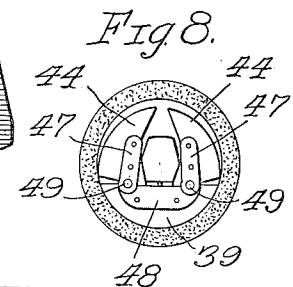
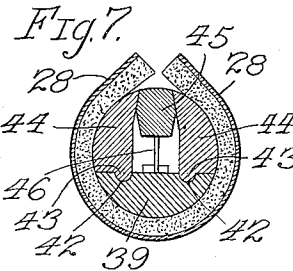
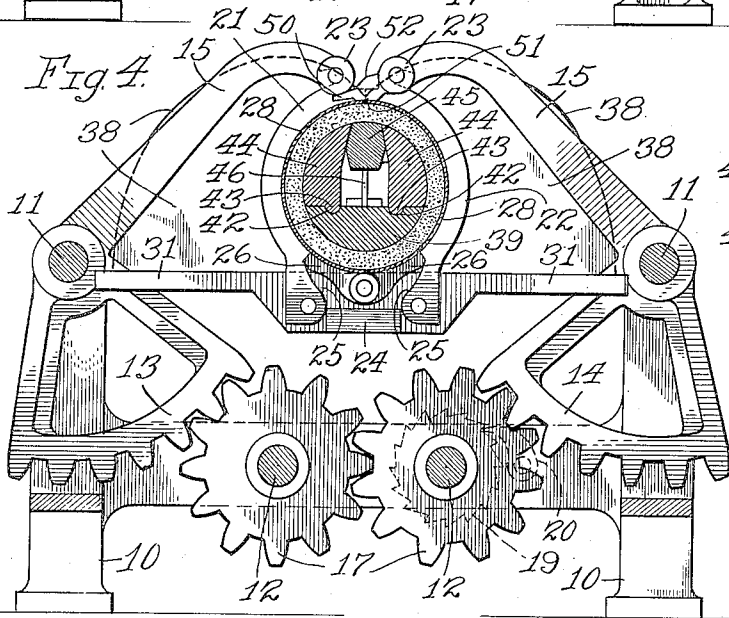
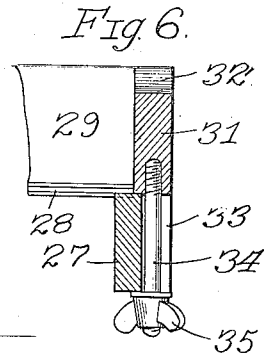
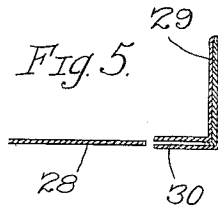
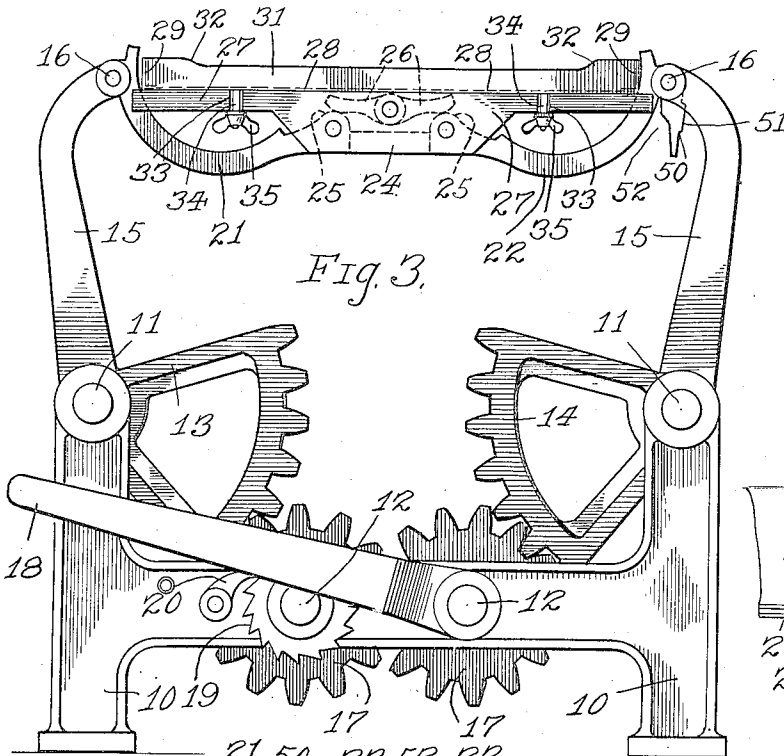
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2 SHEETS—SHEET 2.



WITNESSES:
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UNITED STATES PATENT OFFICE.

JOHN PETERSON, OF CHICAGO, ILLINOIS.

APPARATUS FOR FORMING CONCRETE COLUMNS.

1,126,853.

Specification of Letters Patent.

Patented Feb. 2, 1915.

Application filed March 12, 1913. Serial No. 753,733.

To all whom it may concern:

Be it known that I, JOHN PETERSON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Apparatus for Forming Concrete Columns, of which the following is a specification.

This invention relates to the formation of hollow cylindrical columns of plastic material and the principal object of the invention is to provide a new and improved apparatus for forming hollow columns from plastic material and for providing improved apparatus which is effective and efficient in operation.

A further object of the invention is to provide a removable core which is readily placed in position and easily removed from the column when it is formed.

A still further object of the invention is to provide improved means for pressing the abutting edges of a sheet of plastic material together at the place where they abut to make a smooth, clean joint.

For the attainment of these ends and the accomplishment of other new and useful objects as will appear, this invention consists in the features of novelty in the construction, combination and arrangement of the several parts generally shown in the accompanying drawings and described in the specification but more particularly pointed out in the appended claims.

In the drawings: Figure 1 is a plan view of an apparatus of this class constructed in accordance with the principles of my invention; Fig. 2 is a sectional view of a part of the apparatus with the core in position; Fig. 3 is a view in elevation of one end of the apparatus before the column is formed; Fig. 4 is a cross sectional view after a column has been formed; Fig. 5 is a detail view of the removable side strips for gaging the depth of the plastic material; Fig. 6 is a detail view of the fastening means for one of the end members; Fig. 7 is a detail view illustrating the position of the core and the layers of plastic material just before the two edges are joined; and Fig. 8 is an end view of a core in removable position in a formed column.

This invention relates to the construction of hollow columns by turning up the edges of a properly proportioned sheet of plastic

material about the central core and to the application of pressure to the sheet of plastic material at the juncture of the two edges whereby a smooth, firm joint is produced, and to the removal of the core when the column has become set.

Referring more particularly to the drawings, a plurality of standards 10 are spaced apart in accordance with the length and size of the column, and each provides spaced bearings for a pair of short shafts 11 and a second pair of shafts 12. Toothed segments 13 and 14 each having an extending arm 15 are mounted upon the shafts 11, and mounted in the ends of corresponding arms of the several segments are shafts 16, by means of which the arms are moved in unison.

Mounted on the shafts 12 are gears 17 which mesh with each other and with the segments 13 and 14, respectively, so that the rotation of one of the shafts 12 will cause a corresponding rotation of the other shaft 12, of both of the segments 13 and 14 and consequently of the shafts 11 and of the arms 15 of the said segments. In order to effect this movement both of the shafts 12 are provided with a power lever 18, at ends opposite to each other and in order to lock the shafts in a fixed position one or both of the shafts 12 are each provided with a toothed ratchet 19 with which a pawl 20 engages.

Supported by the arms 15 at the extremities thereof and by the shafts 16 are a plurality of yokes 21 and 22 which are each formed with hooks 23 looped over the shafts and with the other ends pivotally connected to a support 24. These yokes 21 and 22 are arcuate in form and are so disposed with each other that when rotated about their point of pivotal support, their outer ends will abut with their inner surface forming a circle next adjacent the support 24. Adjacent their point of pivotal support they are each provided with a cam surface and pivotally mounted to the table. Adjacent the point of pivotal support of the yokes are supplemental arms 26 which are each adapted to engage the cam surface 25 of the respective yokes on one side and with their other side forming a continuance of the inner edge of the yoke, so that the arms 26 will fill the space in the yokes formed by the cam surface 25 and when the yokes are in closed position, as shown more clearly by Fig. 4, will form a complete circle.

The upper surface of the support 24 forms a table 27 which extends the whole width of the apparatus and is slightly wider than the circumference of the column to be formed.

5 When the arms 15 are in extended position, as illustrated by Fig. 3, the table is in position between the arms of each set and the yokes 21 and 22 are disposed so that their outer ends extend slightly above the edges of the table. In this position the arms are below the upper surface of the table so that a plain, level surface is provided.

To properly apportion the plastic material of which a column is to be constructed a sheet 28 of flexible material of the proper width and length is placed upon the table and along the sides of the sheet a pair of removable side strips 29 are disposed. These strips are preferably formed, as shown more clearly in Fig. 5, and comprise a substantial L-shaped section with a recess 30 therein which adapts the side strip to be slipped over the side edges of the sheet 28 and to be easily removable therefrom at will. These side strips 29 are preferably of the proper height of a layer of plastic material for the column to be made. At the ends of the sheet 28, and at the end supports are end pieces 31. These end pieces are of the proper height and form so that a straight edge moved across the end piece will form a layer of plastic material on the sheet 28 and between the side pieces 29 of exactly the proper thickness, and with the plastic material disposed in precisely the proper manner to form a column of the desired circumference and thickness. For this purpose the end members 31 are formed with thickened or enlarged portions 32. In order to secure the end pieces 31 to the table 27, the latter is provided at the ends with recesses 33 and depending from the end pieces 31 are threaded rods 34 adapted to be disposed in the recesses 33 and having winged nuts 35 movable thereon which are adapted to engage the end edge of the table 27 and to hold the end pieces firmly in position.

In order to retain the sheet 28 in proper position upon the table 27, the table is provided with projections 36 and the sheet 28 is provided with corresponding perforations which engage with the projections and hold the sheet firmly in position. These projections are preferably of a length to extend only through the sheet itself and therefore do not mar the column.

After the sheet of plastic material has been properly apportioned and is of the proper consistency, the end pieces 31 are removed and the end plates 37 substituted therefor. These end plates are each provided with a perforation and are secured in position by fastening devices similar to those shown in Fig. 6 and are sufficient in height and length to prevent the plastic material

from spilling or escaping at the ends when the column is being formed.

In order to make the column of the proper internal diameter and thickness, a core is necessary and a removable core 39 is preferable. The perforations 40 are preferably of a size to just receive the core 39 and to hold it firmly in position while the column is being formed. This also permits of the same core and end plates being used for columns of any length.

The preferred form of removal core is shown more clearly in Figs. 2, 4, 7, and 8 and comprises a segment 41 having longitudinal grooves 42 in each of which a rounded projection 43 of segments 44 are rotatable. These segments 44 are spaced apart and between them is disposed a movable member 45 which is pivotally connected by means of links 46 to the segment 41 so that the member 45 is in extended position when the links 46 are at right angles to this member 41, whereby the member 45 may be "knocked down" by a movement in either direction from this position. When the links are in extended position the edges of the member 45 engage the free extremities of the segments 44 and the outer edges of the member 45, and the segments 44 and 42 form a complete cylinder having an outside diameter the same as the desired inside of the column to be formed. The segments 44 are secured to the segment 41 at the ends thereof by means of plates 47, 48 and pivots 49, or in any other suitable manner.

Pivotally connected to one of the shafts 16 between the yoke members mounted thereon are members 50 having a flat surface 51 on one side and a surface 52 inclined thereto toward the end on the opposite side. When a column is being formed and just before the arms 15 are brought together, as shown in Fig. 4, these members 50 are rotated about the shaft 16 until the inclined surface 52 is beneath the opposite shaft 16, whereupon the surface 51 will be directly over the juncture of the edges of the sheet 28. The continued movement of the lever 18 will cause the inclined surface 52 to slip beneath the opposite shaft 16 causing pressure to be applied by these members 50 at this joint whereby a smooth and intimate joint is formed.

In operation the plastic material is placed upon a sheet of flexible material 28 upon the table 27 in the position shown by Fig. 3. In this position the side strips 29 and the end pieces 31 are in position and the plastic material is properly apportioned by running a straight edge over the end members 31 and leveling off the surface thereof. The end pieces 31 are then removed, the end plates 37 are substituted, and the removable core 39 held in position by the end plates. The pawl 20 is released from en-

gagement with the ratchet 19 and the lever 18 is moved until the edges of the sheet of plastic material are nearly abutting, as for example, the position represented by Fig. 7.

5 When in this position the strips 29 are removed, the members 50 are placed so that their outer ends will slip beneath the other shaft 16 and further compression is applied to the column by the continued movement
10 of the lever 18 in the same direction as before. The pressure applied will form a smooth column of the proper diameter and thickness; binding rings (not shown) may then be placed about the column and the
15 column removed from the machine and allowed to dry. When sufficiently dry the core 39 is loosened by moving the member 45 in either direction, whereupon the side segments 44 will take the position shown by
20 Fig. 8, and the core can then be readily removed.

It is obvious that columns of any desired length, thickness or diameter may be formed by simply varying the elements by means of
25 which the columns are formed.

What I claim is:

1. In a column forming apparatus, the combination with a table for supporting a layer of plastic material, of means secured
30 thereto for bending the edges of the plastic material until they abut and for holding the edges abutting until the plastic material unites.

2. In a column forming apparatus, the
35 combination with table members for supporting a layer of plastic material, and means secured to the said members below the upper face thereof for bending the opposite edges of the layer of plastic material
40 upwardly until they abut and for holding the edges abutting until the plastic material unites.

3. In hollow column forming apparatus, the combination with table members for
45 supporting a layer of plastic material, of yoke members pivotally mounted thereon and movable upwardly over the table to form a closed circle, and means in connection with the yokes for supporting the table.

50 4. In an apparatus of the class described, the combination with table members, of yokes pivotally mounted at one end thereto, and means in connection with the free ends of the yoke for swinging them upwardly
55 over the table until they abut, the said yokes forming a closed circle above the table members.

5. In an apparatus of the class described, the combination of slotted table members,
60 and cooperating yokes pivotally mounted in the slots and movable upwardly until they abut forming an inner complete circular opening.

6. In an apparatus of the class described,
65 the combination with table members hav-

ing slots therein, of yokes pivotally mounted in the slots and movable to form a closed ring, and arms supported by the table member and engaged by the yokes in their
70 movement and adapted to form with the yokes a closed circular opening.

7. In an apparatus of the class described, the combination with table members, of
75 yokes pivotally mounted thereto spaced apart and movable to form a closed opening on one side of the table, and pivotally mounted arms engaged by the yokes in their movement and adapted to form with the
80 yokes, when in abutting position, a closed circular opening.

8. In an apparatus of the class described, the combination with spaced standards, of
85 shafts having bearings in the standards, toothed segments having arms projecting therefrom mounted upon the shafts, gears meshing with each other and with the
90 toothed segments, shafts connecting the arms of each set of segments, table members, yokes pivotally connected at their inner ends to the table members having hook portions to engage the shafts at the ends of the
95 arms, and means to raise and lower the table members and to simultaneously move the yokes below and above the table members.

9. In an apparatus of the class described, the combination with spaced standards, of
100 shafts having bearings in the standards, toothed segments having arms projecting therefrom mounted upon the shafts, gears meshing with each other and with the
105 toothed segments, shafts connecting the arms of each set of segments, table members, yokes pivotally connected at their inner ends to the table members having hook portions to engage the shafts at the ends of the
110 arms, releasable means to hold the table in its raised position, and a lever in connection with one of said gears whereby the rotation thereof will affect the movement of the table up and down and the corresponding movement of the yokes out of and into a circular
115 inclosing position.

10. In an apparatus of the class described, the combination with table members for
115 supporting a layer of plastic material, of a collapsible core, and means for bending the edges of the plastic material about the core until they abut and for holding the edges
120 abutting until the plastic material unites.

11. In an apparatus of the class described, the combination with table members for
125 supporting a layer of plastic material, of a collapsible core, supporting means at the ends of the layer for the core, and means for bending the edges of the plastic material about the core until they abut.

12. In an apparatus of the class described, the combination with means for supporting
130 a layer of plastic material, of mechanism

in connection with said means for bending the edges of the plastic material until they abut, and means in connection with said mechanism to compress the plastic material at the abutting portion whereby a smooth firm joint is produced.

13. In an apparatus of the class described, the combination with means for supporting a layer of plastic material, of collapsible cores, mechanism in connection with said means for bending the edges of the plastic material about the core until they abut, and means in connection with said mechanism to compress the plastic material against the core along the line of the abutting edges to form a smooth firm joint.

14. In an apparatus of the class described, the combination with means for supporting a layer of plastic material, of mechanism for bending the edges of the plastic material until they abut, said mechanism comprising parallel sets of arms, and shafts connecting the arms of each set, and compression devices mounted upon one of the shafts and movable into engagement with the abutting edges of the plastic material and with the other shaft, whereby the abutting edges will be forced together to form a smooth joint.

15. In an apparatus of the class described, the combination with means for supporting a layer of plastic material, of mechanism for bending the edges of the plastic material until they abut, said mechanism comprising parallel sets of arms, and shafts connecting the arms of each set, and members pivotally connected to one shaft having a straight face on one side and a face inclined thereto on the other side whereby the ends of the members may be inserted below the other shaft before the edges of the layer are in abutting position to compress the straight faces of the members against the abutting edges of the layer to form a smooth joint when they are abutted.

16. In an apparatus of the class described, the combination with a flexible sheet for supporting a layer of plastic material of removable strips temporarily disposed along the edges thereof and means to bend the plastic material until the edges abut after the strips are removed.

17. In an apparatus of the class described, the combination with a flexible sheet for supporting a layer of plastic material, of mechanism for bending the edges of the sheet and plastic material until the edges of the sheet abut, and removable strips disposed along the sides of the sheet and adapted to measure the thickness of the layer of plastic material and removable from the edges of the sheet before the said edges abut.

18. In an apparatus of the class described, the combination with table members, of a

sheet of flexible material disposed thereon for supporting a layer of plastic material, yokes in connection with the table members, mechanism for moving the yokes to bend the edges of the plastic material upwardly until they abut, said members substantially L-shaped in cross section with a recess in one of the arms of the L adapted to fit over the edges of the sheet and removable therefrom, said side members being removable before the edges of the plastic sheet are in abutment, and means to compress the plastic material along the line of abutment.

19. In an apparatus of the class described, the combination with table members, of a flexible sheet disposed thereon, and means at the ends of the sheet removably attached to the table members for gaging the thickness of plastic material upon the said sheet.

20. In an apparatus of the class described, the combination with supporting members, of flexible material disposed thereon for supporting a layer of plastic material, side members removably positioned along the side edges of the sheet, end members removably secured to the support at the ends of the sheet and of a variant thickness to form a gage for the entire sheet of plastic material, whereby a hollow column of plastic material may be formed when the edges of the sheet abut, and means for abutting the edges of the plastic sheet.

21. In an apparatus for forming cylindrical columns, the combination with table members, of a sheet of flexible material disposed thereon for supporting a layer of plastic material, gaging members at the ends of the flexible sheet, threaded pins depending from the gaging members at spaced distances apart, the table members being formed with recesses to receive the threaded pins, and winged nuts adjustable upon the threaded members to secure engaging members releasably in position.

22. In an apparatus for forming columns, the combination with a table, of means for supporting a layer of plastic material thereon, means for gaging the depth of the plastic material, end plates removably secured to the ends of the table, and means for bending the edges of the plastic material between the end plates until they abut to form a cylindrical column.

23. In an apparatus for forming hollow cylindrical columns, the combination with table members, of means for supporting a layer of plastic material thereon, removable means for gaging the size and depth of the layer of plastic material, removable plates adapted to be placed at the ends of the layer of plastic material when its size and depth are determined, a core held in position by the end plates, means in connection with the end plates for holding the core in position, and means for bending the edges of the plas-

tic material about the core between the end plates until the edges of the plastic material abut.

24. In an apparatus of the class described, the combination with means for supporting a layer of plastic material, of a collapsible core, mechanism for bending the edges of the plastic material about the core until they abut, said core comprising three segments to one of which two of the others are pivotally connected, a member disposed between the two pivoted segments, and links connecting the member to the first mentioned segment and adapted to be moved outwardly with the links to form, with the two pivoted segments and with the other segment, a cylindrical member which is collapsed when the said member is moved longitudinally of the other members.

25. In an apparatus of the class described a collapsible core comprising a segment, two segments pivotally connected to the first mentioned segment at spaced distances from each other having outer extremities which incline toward each other, and a member disposed between the two pivoted segments having an inclined surface to force the pivoted members apart at their outer extremity and comprising, with all of the segments, a structure whose cross section is of any desired shape, and link to connect the member to the first mentioned segment so that when the links are at right angles thereto the member will force the two pivoted segments in their distended position, the said member being movable inwardly upon the links whereby the two pivoted members may be moved inwardly at their outer extremities and the core collapsed.

26. In an apparatus of the class described, the combination with means for supporting a layer of plastic material, of gaging means for measuring the size and depth of the

plastic material, removable end plates disposed at the ends of the measured layer of plastic material, a collapsible core having segments pivotally connected together and a longitudinally movable member to engage the segments and press them outwardly, means in connection with the end plates for supporting the core, mechanism for bending the edges of the plastic material about the core until they abut, and compression devices in connection with said mechanism operable simultaneously therewith during the abutting operation to compress the abutting edges of the plastic material to form a smooth joint at the junction thereof.

27. In an apparatus for forming hollow cylindrical columns, the combination of perforated end plates, of a core positioned by the perforations in the plates, and means for bending a sheet of plastic material about the core.

28. In an apparatus for forming hollow cylindrical columns, the combination with a core, of end plates with perforations therein to hold and position the core and adjustable along the core to vary the length of the formed column, and means to bend a sheet of plastic material about the core.

29. In an apparatus for forming hollow cylindrical columns, the combination with perforated end plates, of a collapsible core adapted to be inserted therethrough and positioned thereby, and means for bending a sheet of plastic material about the core.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, on this 10th day of March, A. D. 1913.

JOHN PETERSON.

Witnesses:

K. N. NONNELL,
ALLENA OFFUTT.