

No. 680,273.

Patented Aug. 13, 1901.

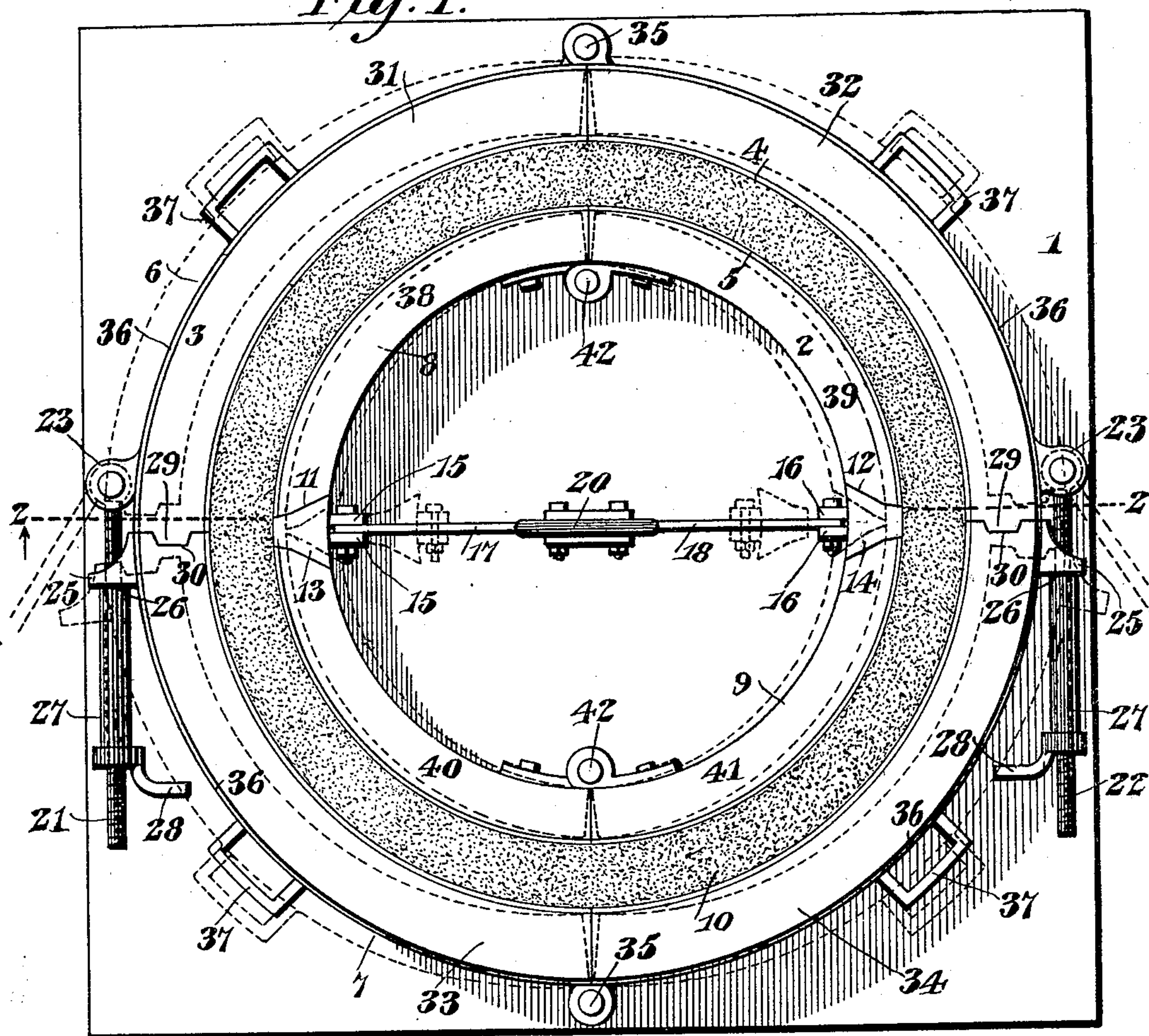
W. S. PARKER.  
MOLD.

(Application filed May 3, 1900.)

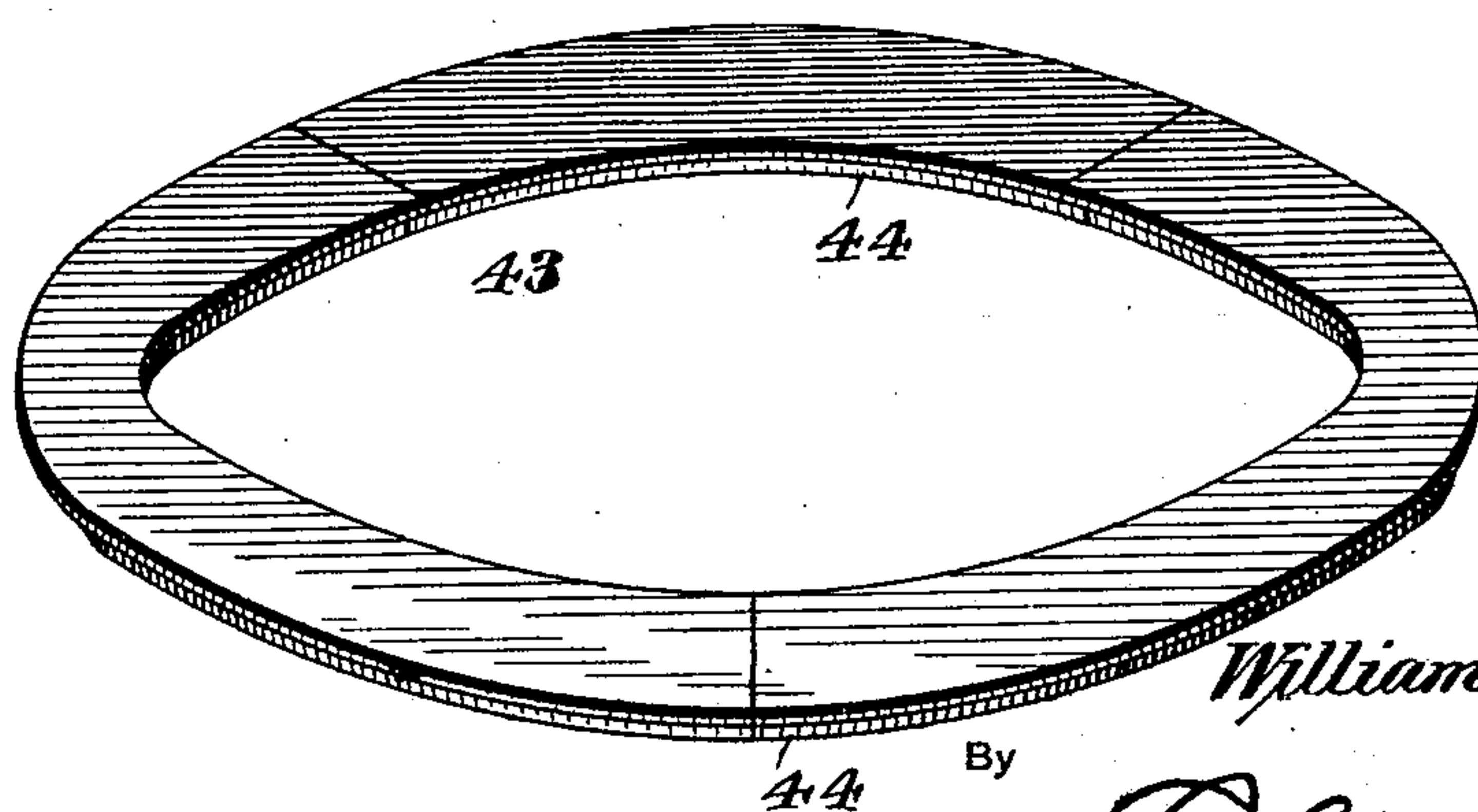
(No Model.)

3 Sheets—Sheet 1.

*Fig. 1.*



*Fig. 8.*



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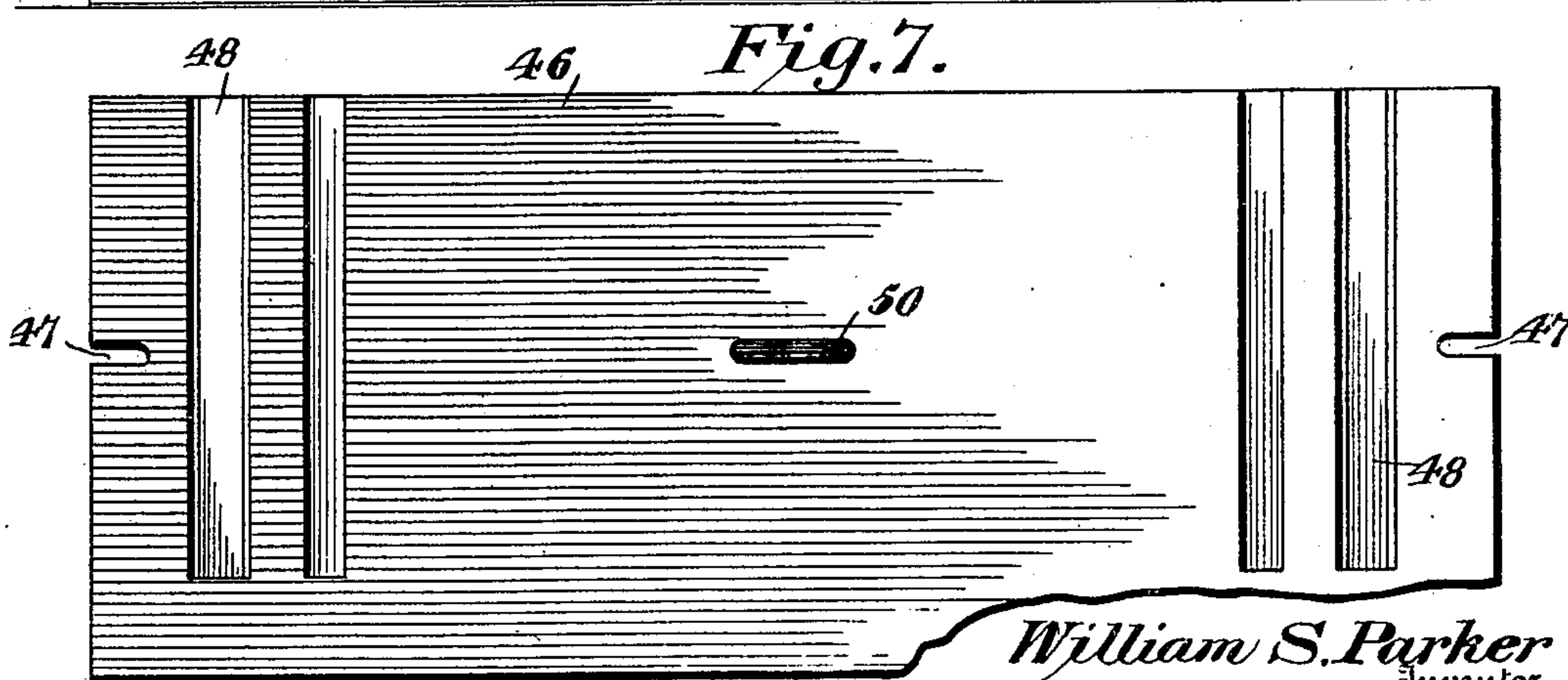
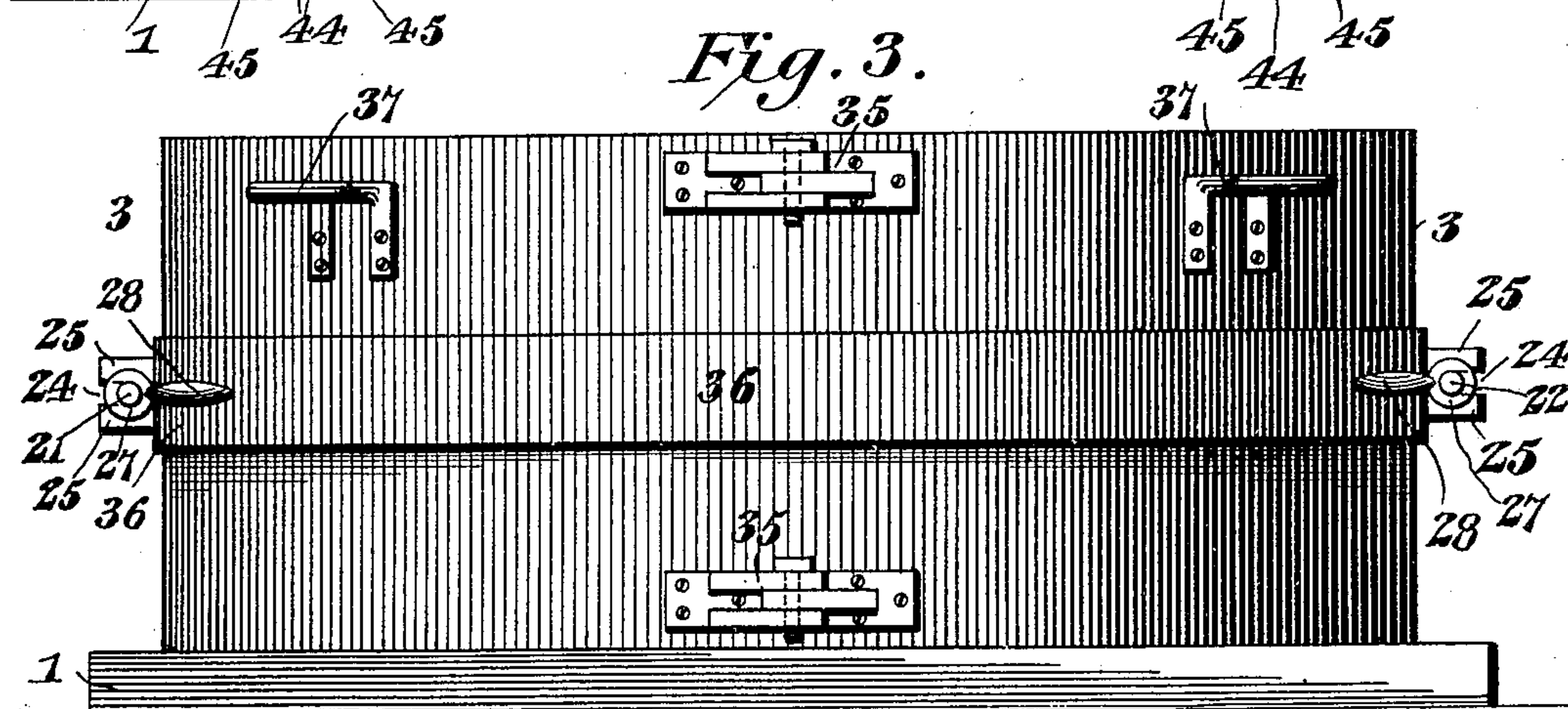
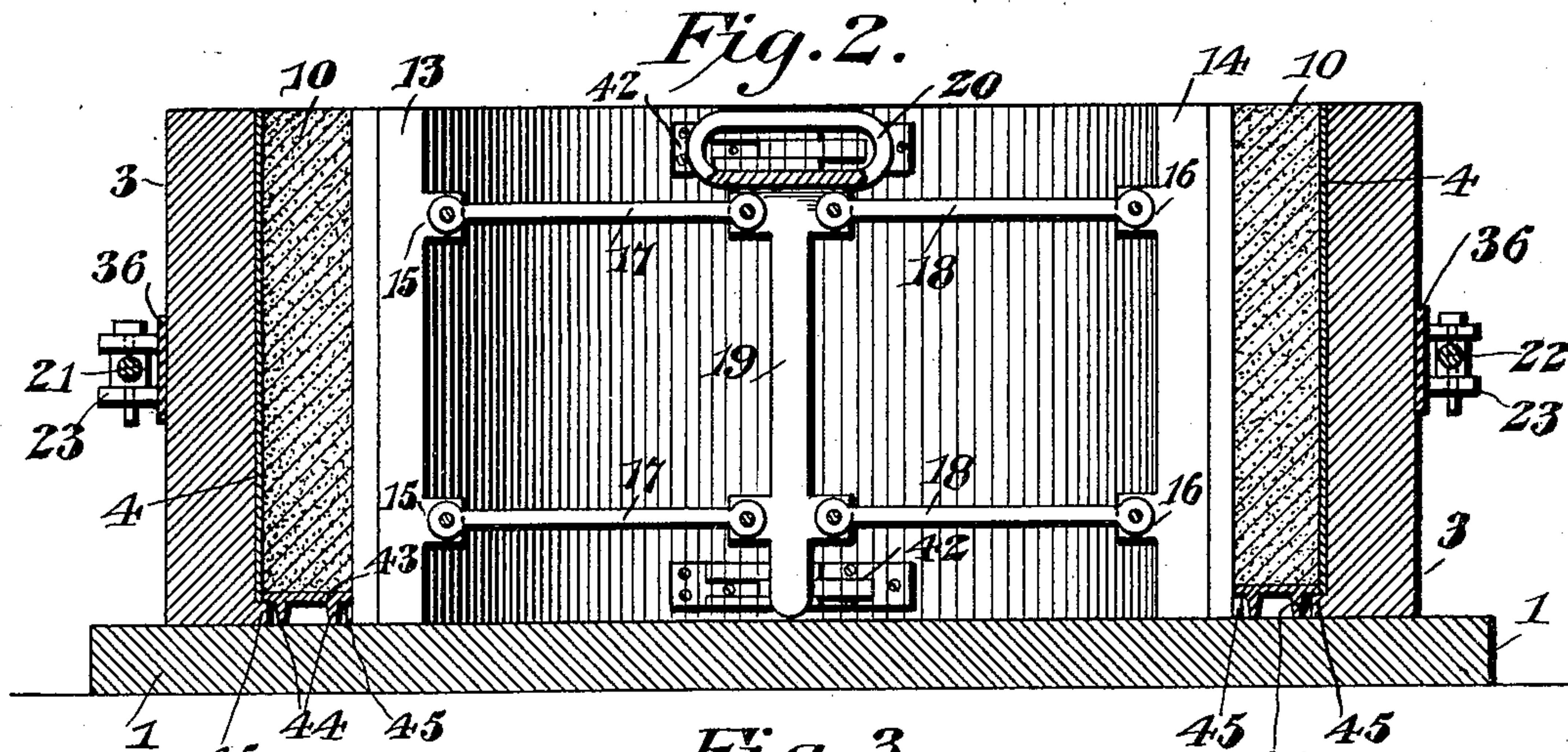


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(No Model.)

3 Sheets—Sheet 2.



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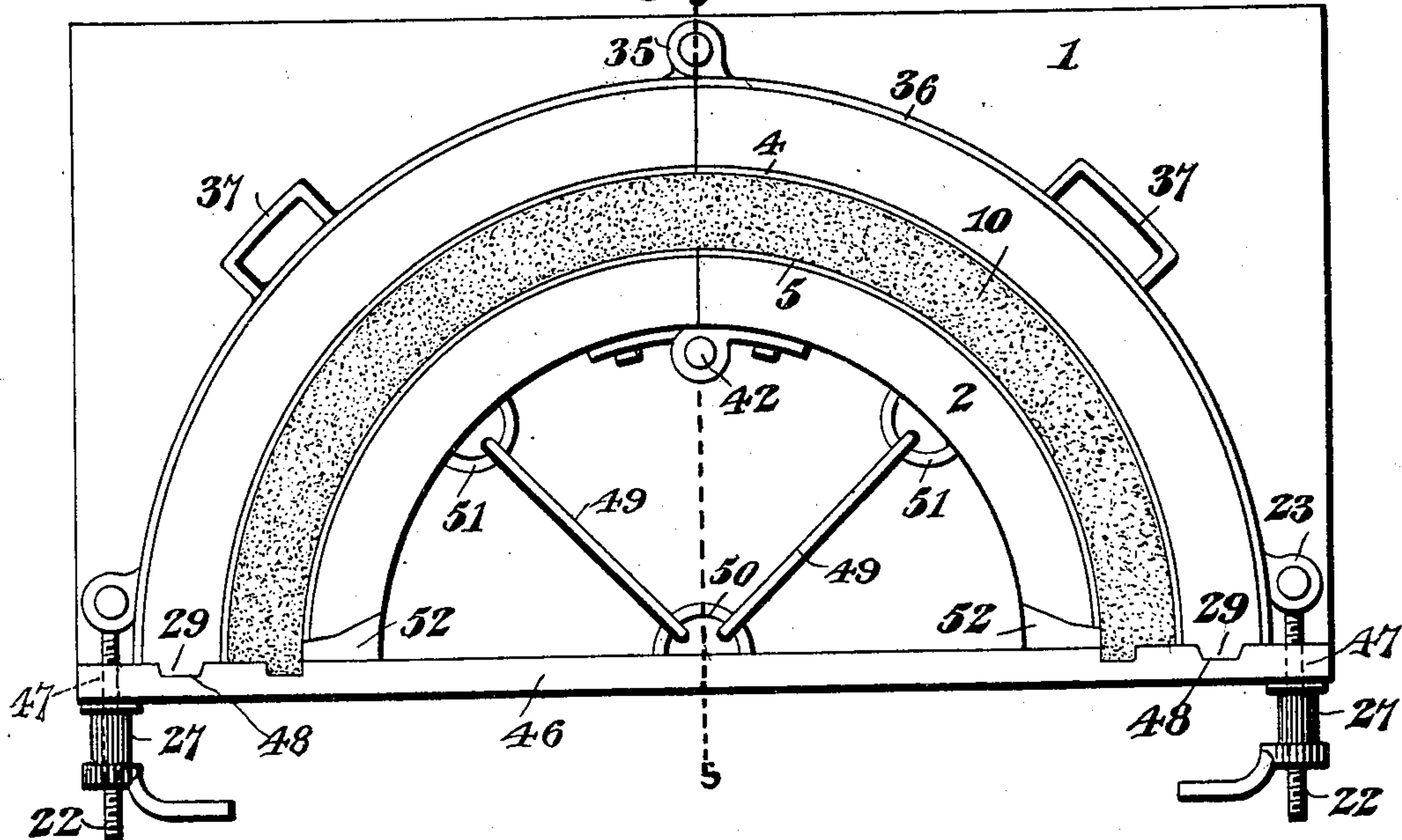
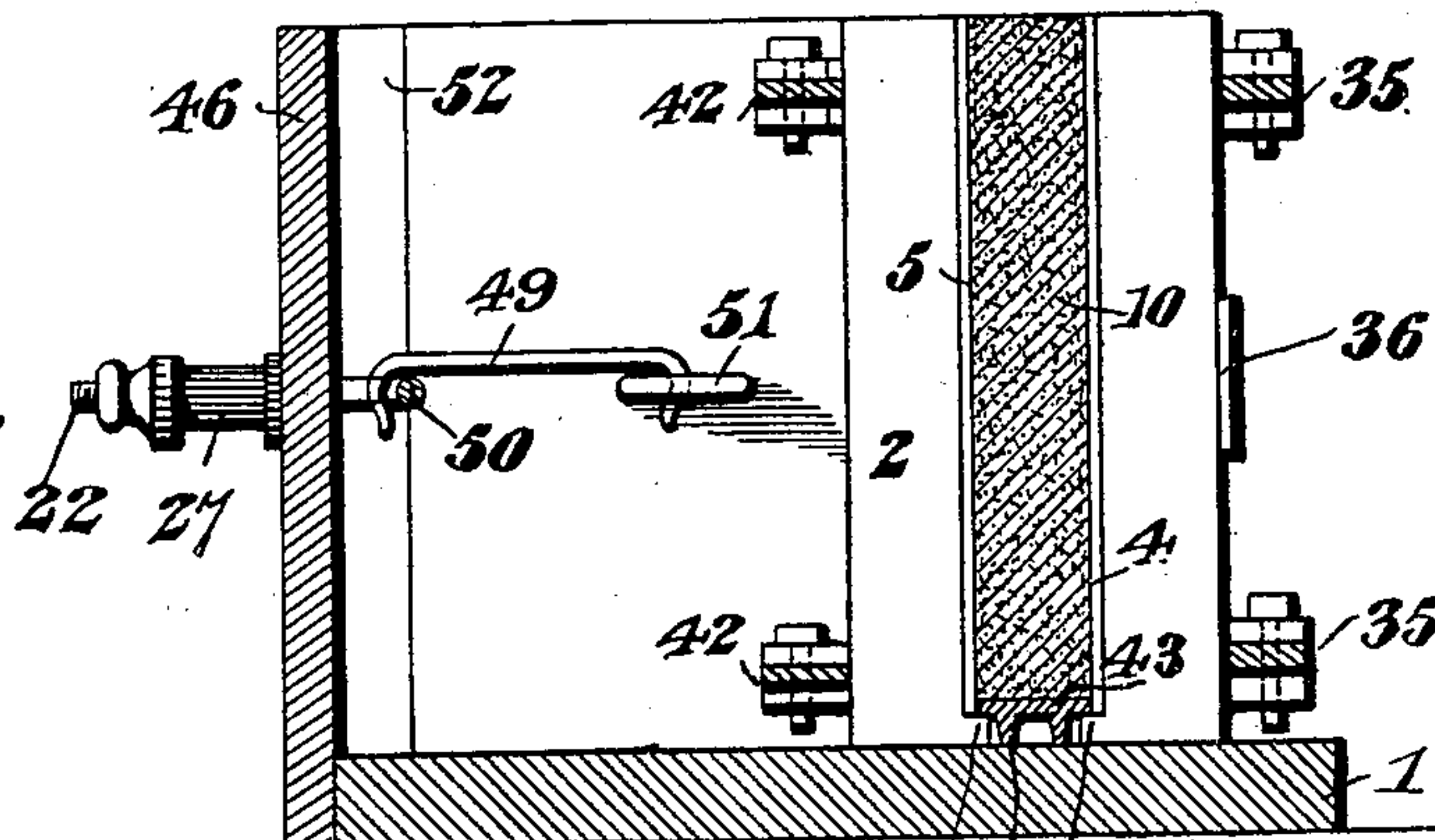
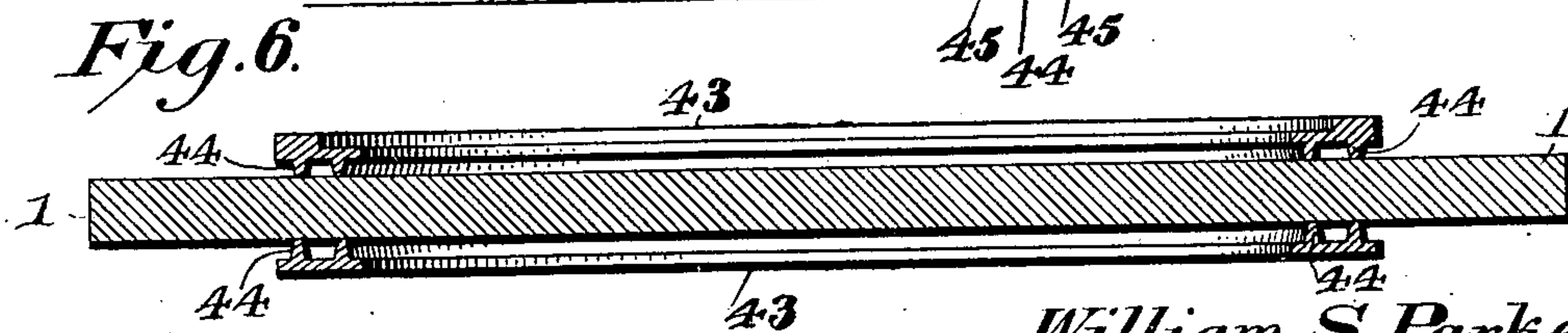
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*Fig. 4.**Fig. 5.**Fig. 6.*

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# UNITED STATES PATENT OFFICE.

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## MOLD.

SPECIFICATION forming part of Letters Patent No. 680,273, dated August 13, 1901.

Application filed May 3, 1900. Serial No. 15,393. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM SINK PARKER, a citizen of the United States, residing at Austin, in the county of Travis and State of Texas, have invented certain new and useful Improvements in Molds, of which the following is a specification.

My present invention relates to a novel mold intended more particularly for the molding of conduits of various forms in plastic material or material which during the operation of molding is in a plastic or viscous state and which after being molded is designed to be hardened either while in the mold or after its removal therefrom.

One object of the invention is to produce a mold comprising a plurality of separable sectional members which may be employed as component parts of molds for certain purposes or as complete molds for the casting of conduits, having the configuration of a section of the conduit designed to be cast by the mold in its complete or more extended embodiment.

A further object of the invention is to so construct the mold members that they may be readily withdrawn from the surface of the casting without danger of injury to the surface of the latter.

A further object is to provide efficient means for connecting the members, and the most important object is to provide means for expanding the sectional members of the inner shell of the mold and for permitting its contraction when it is desired to remove the mold from contact with the cast.

To the accomplishment of these several objects and others subordinate thereto, as will hereinafter more fully appear, my invention consists, essentially, in constructing a mold comprising inner and outer concentric shells, each comprehending a plurality of separable members, each of which latter comprise a plurality of hingedly-connected relatively movable sections, suitable means for connecting the members in a manner to permit their ready separation being provided.

The invention consists, further, in the employment of joint or key sections removably located between the opposing edges of the sectional members of the inner shell of the mold and connected by actuating mechanism, by means of which they are urged in opposite

directions to properly expand the inner shell and which permits of their retraction and removal to permit the disassociation of the inner shell from the casting, all as will hereinafter more fully appear.

In the accompanying drawings, Figure 1 is an end elevation or top plan view of my mold organized for the casting of a hollow conduit or pipe and showing in dotted lines the retracted positions of the joint members and the mold-sections deflected upon their hinges to release the cast. Fig. 2 is a diametrical sectional view on the line 2 2 of Fig. 1. Fig. 3 is a side elevation of the mold complete. Fig. 4 is an end elevation, partly in section, of one of the mold members organized for employment as a complete mold. Fig. 5 is a sectional view on the line 5 5 of Fig. 4. Fig. 6 is a detail view of a reversible foundation or base plate. Fig. 7 is a detail view of the end gate, and Fig. 8 is a detail view of one of the foot-plate sections.

Referring to the numerals of reference indicating corresponding parts in the several views, 1 indicates a base or foundation plate of any desired size or material, upon which my mold is designed to rest during the operation of molding. The mold comprehends concentric inner and outer shells 2 and 3 of any desired cross-sectional contour—as, for instance, cylindrical, polygonal, &c.—but shown in the accompanying drawings as cylindrical for the purpose of defining their essential characteristics. These shells may be made from any suitable material—as, for instance, wood or metal—but are preferably wood, having reinforcing surfaces or linings of thin sheet metal, the lining on the inner face of the outer shell being designated by the numeral 4 and that on the opposed outer face of the inner shell 2 being designated by the numeral 5. The outer shell is composed of two separable members 6 and 7, preferably of corresponding contour, and the inner shell 2 is likewise composed of two separable members 8 and 9, the contiguous members of the shells comprehending a member of the mold. Inasmuch as mold members constructed as thus far described might in some instances be effectively employed, I will proceed at once with a description of the means which I employ for connecting the mold



members, and will hereinafter return to the description of the individual mold members for the purpose of more fully defining their specific construction and arrangement.

5 The combined circumferential dimensions of the members 8 and 9 of the inner shell are somewhat less than the internal dimensions of the mold-chamber 10 intermediate of the shells, the purpose of this variance being to  
10 leave joint-spaces 11 and 12 intermediate of the contiguous edges of the shell for the reception of interposed joint or key members 13 and 14, preferably wedge-shaped, as shown, longitudinally coextensive with the  
15 inner shell and of a width corresponding to the thickness of the shell, so that when in place the joint or key members will completely fill the spaces between the edges of the shell members and will have their inner  
20 and outer faces located flush with the inner and outer faces of the shell. At suitable points upon the inner faces of the keys or members 13 and 14 are located inwardly-extending lugs or ears 15 and 16, to which are  
25 pivotally connected the outer ends of links 17 and 18, whose contiguous inner ends are likewise pivotally connected to what may be termed a "key-rod" or "actuator" 19, located  
30 axially within the inner shell and provided at its upper end with a handle or grip 20, and having its lower end extended into proximity to the face of the base-plate 1 for the purpose of limiting the downward movement of the key-rod 19 in a manner to prevent the  
35 projection of the members or keys beyond the outer face of the inner shell and into the mold-chamber. The links 17 and 18 and the intermediate key-rod 19 constitute, in effect, a toggle, designed, as the key-rod is urged up  
40 or down, to release the keys 13 and 14 or to cause them to be wedged firmly between the opposed edges of the inner shell for the purpose of urging the shell members to their proper relative positions to constitute a core.

45 The separable members 6 and 7 of the outer shell or mold proper are retained by locking-bolts 21 and 22, terminally pivoted, respectively, between horizontal-parallel bearing-ears 23, extending from the outer face of the  
50 member 6, for instance, adjacent to its edges. Any number of these bolts may be employed at the sides of the mold, according to the length of the latter; but for the purpose of illustration I have shown only one bolt at  
55 each side. The locking-bolts are designed to be swung into recesses 24, formed in the locking-lugs 25, which extend from the outer surface of the opposed member 7 and have straight bearing-faces 26, against which bear  
60 the elongated jam or locking nuts 27, screwed upon the free ends of the locking-bolts 21 22 and provided with handles 28, by means of which said nuts may be screwed against the faces 26 of the clamping-nuts for the purpose  
65 of drawing the locking-bolts longitudinally and securely clamping the contiguous edges of the shell 3 in contact. If desired, this

connection of the edges may be made more complete by providing one member with a longitudinal tongue 29, extending from its  
70 face and engaging a correspondingly-shaped groove 30 in the opposed edge face.

The mold constructed as described comprehends a complete embodiment of my invention in its broadest aspect, since it com-  
75 prises a mold composed of separable members and means for retaining them in proper relation to constitute a complete mold and core defining an intermediate mold-space or cast-chamber for the reception of the plastic  
80 or other material from which the cast is to be made; but, as premised, I have made provision for effecting the removal of the members from contact with the faces of the casting in a manner to absolutely insure the lat-  
85 ter against injury. This I accomplish by constructing each member of each shell in a series of segmental or other sections connected by intermediate hinges which permit the sections of the mold when the members  
90 are released to be swung outwardly or inwardly, as the case may be, to effect the complete separation of the mold from the cast without the possibility of marring the surface of the latter.

95 In the illustrated embodiment of the invention I form the members 6 and 7 of the outer shell in two sections, 31 and 32 designating the sections of the member 6 33 and 34 the sections of the member 7, the contiguous  
100 edges of the sections of each member being connected by one or more hinges 35, located beyond or outside of the shell. The particular manner of mounting the hinges 35 is not essential, provided they permit the shell-sec-  
105 tions to be swung back in opposite directions and limit their movement inwardly to such an extent as will produce the contour desired for the mold.

36 indicates a metal strap or band encircling  
110 the outer shell and divided at the edges of the members and sections and secured in any suitable manner, the object of this band being to stiffen the sections of the shell and prevent warping or other distortion when wood  
115 or other similar material is employed in the manufacture of the mold. Handles 37 may be extended from the band 36 upon each section for the purpose of facilitating the removal of the mold from the cast, and, as shown, the  
120 locking-lugs 25 may be formed integral to this band adjacent to the opposite edges of the member 7. The inner shell or core 2 is likewise constructed in sections, the members 8 and 9 of said core each being composed of  
125 two sections 38 and 39 and 40 and 41, the section of each member being connected by hinges 42, located adjacent to the inner periphery of the core or inner shell and designed to permit the sections of the members to be  
130 swung inwardly away from the inner face of the cast. Attention is here called to the fact that the hinges 35 and 42 are oppositely disposed—that is to say, they are exterior and



interior to the mold, respectively—in order that the relative adjustment of the sections of the inner and outer shell members will be limited in one direction to produce the proper interior and exterior contours of the mold and will be free to move in the opposite direction to permit the members to be moved away from the inner and outer faces of the cast.

At the bottom of the mold space or chamber 10 is located a sectional foot-plate 43, (best shown in Figs. 2 and 8 of the drawings,) which is intended to impart the desired configuration to the end face of the pipe or conduit cast in the mold. Each section of the foot-plate is supported upon legs 44, and the inner and outer shells of the mold are provided at the lower edges of their contiguous faces with oppositely-extending foot-plate flanges 45, which extend under the opposite edges of the foot-plate and serve to retain the shells in contact with the foundation or base plate when the plastic or viscous material is being poured into the mold-chamber 10. If preferred, however, the foot-plates 43 may be made continuous instead of sectional, and in some instances it may be desirable to form them integral with or otherwise fixed to the foundation or base plate, a variation of this latter arrangement being shown in Fig. 6 of the drawings, wherein I have shown a reversible base-plate provided upon its opposite faces with foot-plates or end mold-plates of different dimensions and designed for use in connection with molds of different forms, one of said foot-plates being designed for use in connection with the complete cylindrical mold shown in Fig. 1 and the foot-plate on the opposite side of the foundation being designed for use in connection with a culvert, to form which I employ only one of the mold members hereinbefore described.

In Fig. 4 of the drawings I have shown one of the mold members employed as a complete mold, the open longitudinal edges of the mold-space, which in this case is semicylindrical, being closed by an end gate 46, clamped against the diametrical face of the member by means of the locking-bolts 22, received within terminal recesses 47 in the end plates and drawn up by the jam-nuts 27, which in this organization of parts bear against the outer face of the end gate. The inner face of the end gate is grooved, as indicated at 48, opposite the edges of the outer shell for the reception of the tongues 29, extending therefrom, and where the cast is designed as a section of a transversely-continuous conduit the end gate is provided opposite the mold-chamber 10 with recesses or projections or such other contours as is necessary to impart the required shape to the edges of the cast for the purpose of facilitating the interfitting of two conduit-sections with break-joints at their intersections. For the purpose of securely retaining the inner shell member of the complete mold member when the end gate is employed I provide retaining-rods 49, hooked

over a keeper 50 at the middle of the inner face of the end gate and likewise hooked at their opposite diverging ends into keepers 51, extending from the inner faces of the inner-shell-member sections. The spaces at the opposite longitudinal edges of the inner shell member constituting one-half of the transverse dimension of the joint members or keys 13 and 14 are filled by means of wedge-shaped longitudinal plug-strips 52, inserted between the members of the end gate and the edge faces of the inner shell member, said wedge-shaped strips serving also to urge the edges of the inner shell member into position.

In operation a mold organized and arranged as shown is filled with concrete or other material in a plastic state, which completely fills the mold-chamber 10, receiving the configuration of such chamber and having its end formed in the desired manner by the foot-plate or end mold 43. The plastic material is then allowed to harden until it becomes a cast. When the proper time has arrived, the operator by pulling upwardly on the handle 20 of the key-rod 19 causes the keys or joint members 13 and 14 to be urged inwardly toward the center of the core and out of contact with the opposed longitudinal edges of the inner shell members 6 and 7. The keys and their connected actuating mechanism may then be entirely removed by drawing them endwise out of the cast, after which the sections of the members may be swung inwardly away from the inner face of the cast, and after the separation has been completely effected the inner shell members may be likewise withdrawn from the interior of the cast without liability of injury to the surface of the latter, it being observed that the inward movement of the member-sections withdraws the flanges 44 from beneath the inner edges of the foot-plates. The mold-core or inner shell having been entirely removed, it only remains to release the locking-bolts 22 by unscrewing the nuts 27 and swinging them out of engagement with the locking-lugs. The operator now completes the disorganization of the mold by grasping the handles 37 and swinging the sections of the outer shell members away from the outer face of the cast, simultaneously withdrawing the flanges 44 from beneath the outer edge of the foot-plate. The complete cast is then lifted from the foot-plate, and the mold is ready for reorganization and a repetition of the operation just described. It may be mentioned in passing, however, that when the mold is being organized the expansion of the joint members or keys 13 and 14 between the contiguous edges of the inner shell members is effected by urging the key-rod 19 downwardly, the toggle-key-actuating device serving to wedge the keys between the members to urge the latter into their proper positions and to retain them rigidly in place. When a single member is to be employed as a complete mold, the operation of molding is carried out substantially



in the manner described, the disorganization of the mold being effected by the release of the end gate through the detachment of the tightening-rods 49 and the locking-bolts 22, after which the inner and outer shell sections are withdrawn in the manner stated.

From the foregoing it will be observed that I have produced a simple, ingenious, and effective separable mold designed for the casting of conduits of various forms and comprehending separable members, each of which may be employed independently as a complete mold; but while the present embodiment of my invention is at this time deemed preferable I do not desire to limit myself to the structural details defined, but reserve the right to effect such changes, modifications, and variations as may come properly within the scope of the protection prayed, as it is obvious that the mold might be constructed in various forms to produce conduits or other articles of the desired contour and that the movable sections of the several members might be variously proportioned and arranged to accommodate the removal of the mold from the cast in accordance with the peculiarities of the contour of the latter.

What I claim is—

1. A mold comprising inner and outer shell members each composed of hinged sections, means for drawing the edges of the outer member into position, and means for urging the inner member into position.

2. A mold comprising an outer shell member composed of exteriorly-hinged sections, an inner shell member composed of interiorly-hinged sections, means for drawing the edges of the outer member into position, and means for urging the inner shell into position.

3. A mold comprising inner and outer shells, the inner shell being composed of members each comprising hinged sections, and means for urging apart the members of the inner shell.

4. A mold comprising inner and outer shells, the inner shell being composed of a plurality of members each comprising interiorly-hinged sections, joint members interposed between the opposed edges of the inner shell members, and means for urging the joint members in opposite directions to ex-

pand the inner shell or to permit its contraction.

5. A mold comprising separable members each composed of an outer shell having exteriorly-hinged sections, and an inner shell having interiorly-hinged sections, means for drawing the outer shell members together, and means for urging the inner shell members apart.

6. A mold comprising separable members each composed of an outer shell having exteriorly-hinged sections, and an inner shell having interiorly-hinged sections, means for drawing the outer shells of the members together, joint members intermediate of the opposed edges of the inner shells of the members, and means for urging the joint members in opposite directions to expand the inner shell or to permit its contraction.

7. A mold comprising separable members each composed of an outer shell having exteriorly-hinged sections, and an inner shell having interiorly-hinged sections, locking-bolts pivotally connected to the outer shell of one section, recessed locking-lugs projecting from the outer shell of the contiguous member and designed to receive the locking-bolts, jam-nuts carried by said bolts, wedge-shaped joint members intermediate of the contiguous edges of the inner shells of the contiguous members, a longitudinally-movable key-rod, and links pivotally connected at their opposite ends to the key-rod and joint members.

8. A mold comprising a base-plate, inner and outer flanged shells, and an intermediate foot-plate extending over the flanges of the shells.

9. A reversible base-plate for molds provided with foot-plates on its opposite faces.

10. A mold comprising inner and outer shell members, each composed of hinged sections, means for drawing one of said members into position, and means for urging the other member into position.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

WILLIAM SINK PARKER.

Witnesses:

J. BOULDIN RECTOR,  
W. F. MCGEHEE.