

F. TEICHMAN.
 APPARATUS FOR CONSTRUCTING CONCRETE PIPES.
 APPLICATION FILED JULY 3, 1907.

930,813.

Patented Aug. 10, 1909.

3 SHEETS—SHEET 1.

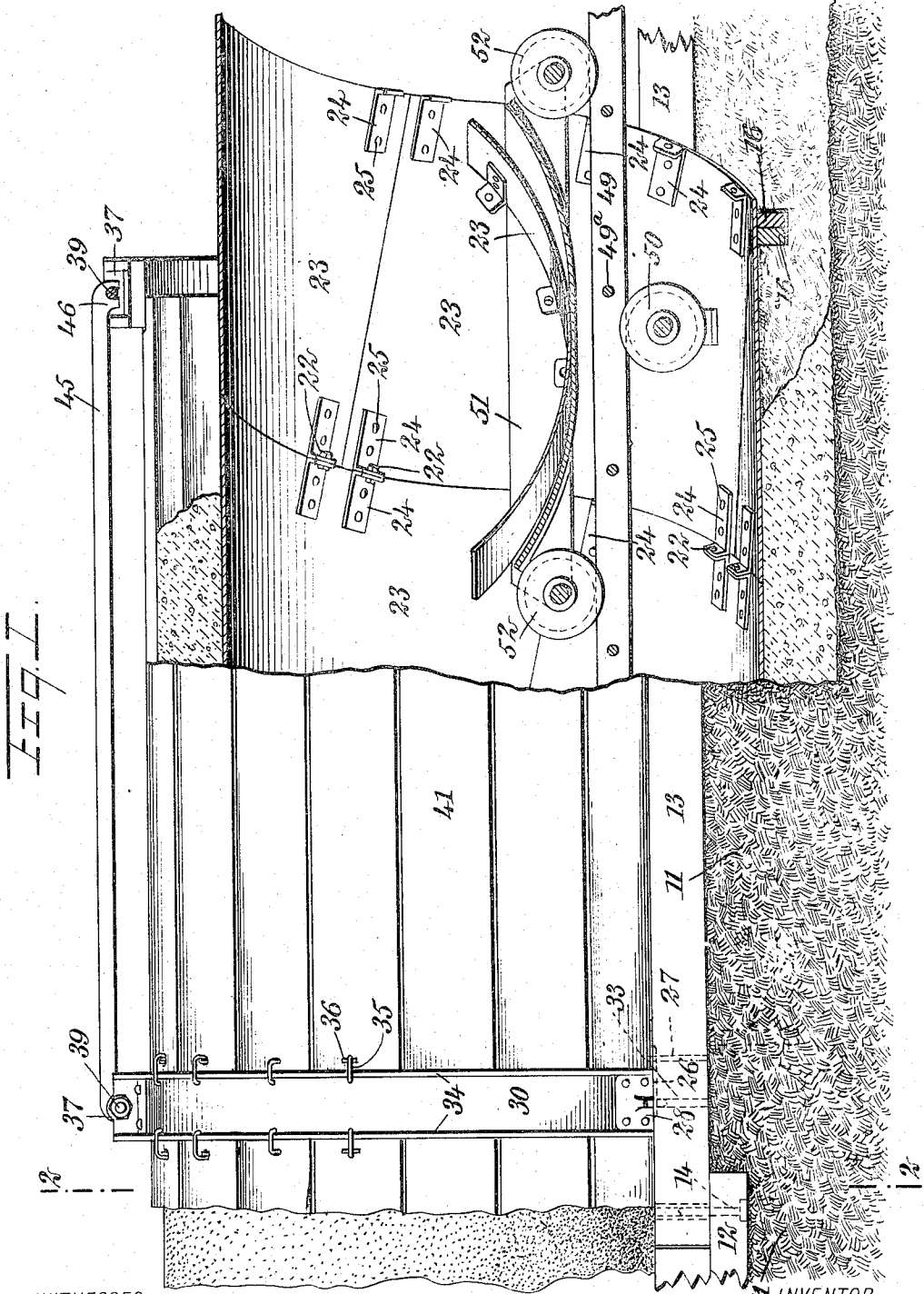


Fig. 1.

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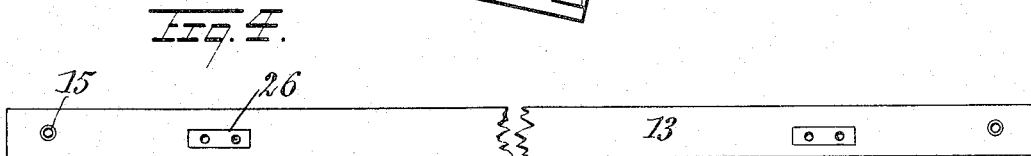
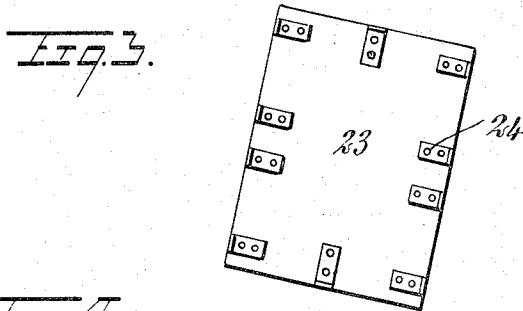
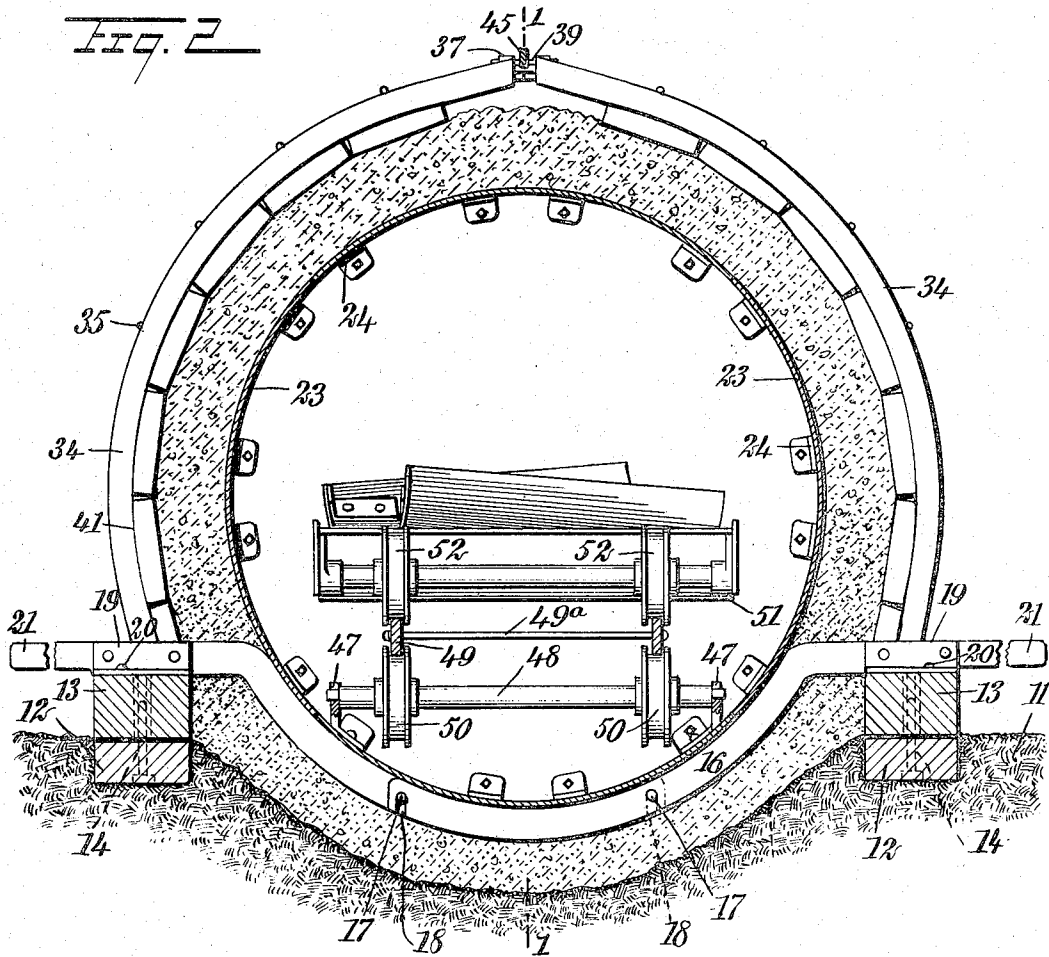
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

Fig. 5.

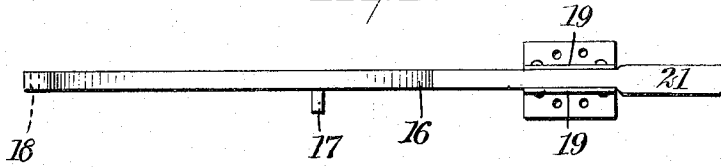


Fig. 6.

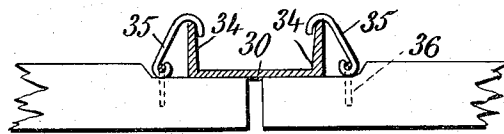


Fig. 7.

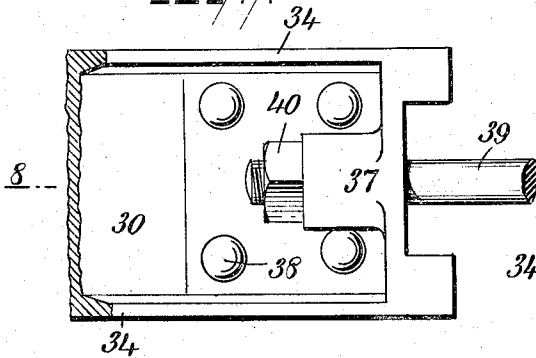


Fig. 8.

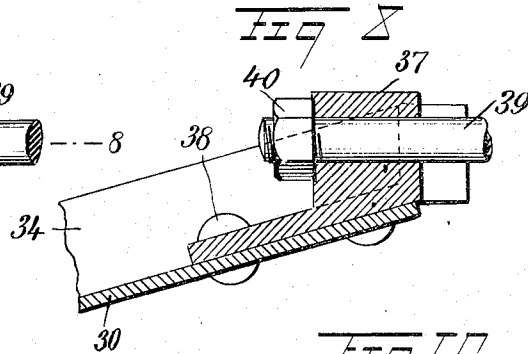


Fig. 9.

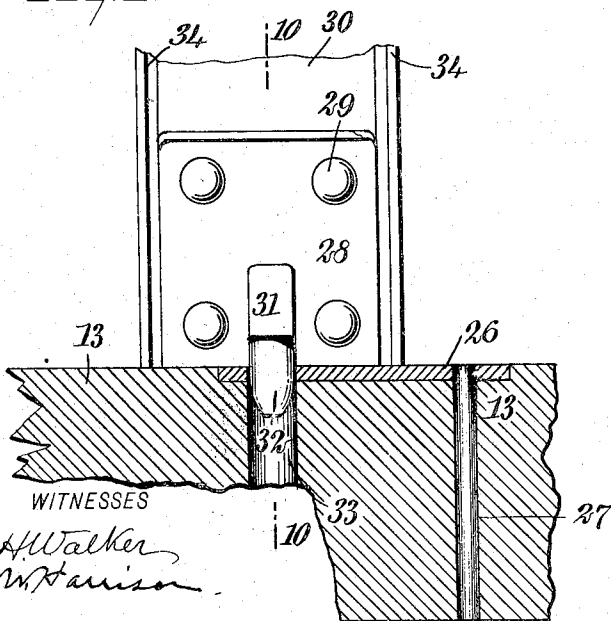
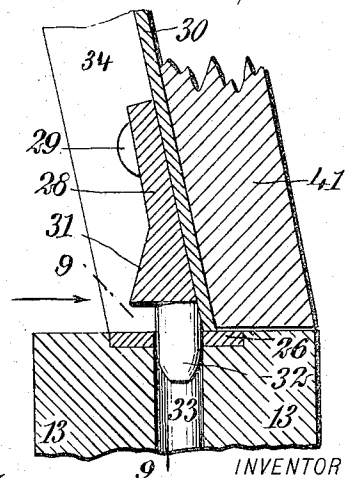


Fig. 10.



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UNITED STATES PATENT OFFICE.

FRANK TEICHMAN, OF SAN FRANCISCO, CALIFORNIA.

APPARATUS FOR CONSTRUCTING CONCRETE PIPES.

No. 930,813.

Specification of Letters Patent.

Patented Aug. 10, 1909.

Application filed July 8, 1907. Serial No. 362,593.

To all whom it may concern:

Be it known that I, FRANK TEICHMAN, a citizen of the United States, and a resident of San Francisco, in the county of San Francisco and State of California, have invented a new and Improved Apparatus for Constructing Concrete Pipes, of which the following is a full, clear, and exact description.

My invention relates to concrete pipe constructions, my more particular purpose being to provide certain general improvements in the molds for cheapening the building of concrete pipes.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a view partly in side elevation and partly in vertical longitudinal section, on the line 1—1 of Fig. 2, showing the inner mold, the outer mold and the concrete pipe between the molds, this view further showing a car and movable track which may be conveniently used in the process of construction; this view showing also how the plates of the inner mold build up in spiral lines and how the longitudinal joints are staggered; Fig. 2 is a vertical section showing the same parts; Fig. 3 is a reduced plan of one of the plates used in the construction of the inner mold. Fig. 4 is a reduced plan view of one of the sills which are disposed upon opposite sides of the concrete pipe to support certain parts; Fig. 5 is a plan view of one of the parts used in pairs for forming inverted arches to temporarily support the inner mold, before it is supported by the concrete placed under and around this mold; Fig. 6 is a section through one of the arcuate ribs employed to hold the lagging of the outer mold; Fig. 7 is a fragmentary plan of the upper end of one of these arcuate ribs and means for attaching it to the opposite rib so as to form a pair of ribs for the support of the lagging of the outer mold; Fig. 8 is a central section upon the line 8—8 of Fig. 7, showing how the arcuate ribs of each pair are connected by means of a bolt; Fig. 9 is a section upon the line 9—9 of Fig. 10, looking in the direction of the arrow and showing the lower end of one of the arcuate ribs and the manner of its support relatively to the sill and other parts; and Fig. 10 is a central section upon the line 10—10 of Fig. 9.

The ground is shown at 11, and sunken into it are sill-blocks 12 which support the sills 13, the latter being arranged parallel with each other and spaced apart according to the width desired for the concrete pipe to be formed. Pins 14, which form part of the sill-blocks, fit into holes 15 of the sills and thereby locate and connect the latter.

Supports for the inner mold are each formed of two members 16, each member being provided with a pin 17 and slot 18. These members are so arranged that the pin 17 of one passes into the slot of the other. In this manner the two members constitute a support having the shape of an inverted arch. Angle-plates 19 are riveted to the supports. The supports rest with these angle-plates upon the sills 13 and the angle-plates are secured to the sills by pins 20, which fit into the holes 27 of the sills. The ends 21 beyond the angle-plates serve as handles.

The inner mold is made up of metallic plates 23 having angle-brackets 24. These plates 23 are fitted together in such manner that they constitute a continuous spiral (see Fig. 1), the plates of one turn of the spiral breaking joint with the plates of the next turn. The plates are held together by bolts 22, that pass through the angle-brackets of adjoining plates. The angle brackets are secured to the plates by rivets 25.

My purpose in arranging the plates of the inner mold into a general spiral form is to facilitate the removal and replacement of the plates as the work proceeds. With spiral plates the extreme rear plate is brought forward and made the extreme front plate, and all plates are the same in construction and operation, while with plates arranged in rings the plate that is the last in erecting a ring and the first in dismantling a ring must have a special provision to make such dismantling, with the ring surrounded by concrete, possible.

Plates 26 are sunken into the sills 13. To the lower end of each rib 30 of the outer mold is riveted a plate 28 by rivets 29. This plate has a lug 31 terminating in a pin 32, which enters a hole in the plate 26 and sill 13, this hole being shown at 33. The rib 30 is provided with flanges 34 integral therewith. Links 35 of metal (made preferably from wire) are adapted to engage the peripheral edges of the flanges 34, and each link 35 is pivotally held in position by an eye-pin 36.

A lug-plate 37 is mounted upon the upper end of each rib 30, being secured thereto by aid of rivets 38. A bolt 39 and nut 40 hold together the two ribs 30 of a pair of ribs. The lagging 41, held in position by the ribs 30, constitutes the outer mold.

Spacing rods 45 (see upper portion of Fig. 1) are provided at each end with a fork 46, which is slipped over the bolts 39, thus holding the ribs at the topmost point in proper position. Similar spacing rods may be employed at other points of the ribs if they are required, for pipes of larger diameter.

Some of the plates 23 may be provided with bearings 47, so disposed that when the plates are connected with others these bearings will be in the position indicated at the bottom of Fig. 2. Mounted upon these bearings are axles 48 carrying grooved pulleys 50, which support rails 49. These rails are connected together by stay-rods 49^a and constitute a track. This track may be moved along endwise and secured in any desired position.

A car 51 travels with grooved wheels on the rails 49. This car is to carry the plates 23, etc., of the inner mold, when dismantled, to the forward end for erection at that point. The car is pulled forward or backward by ropes.

While the inner and outer molds are in this instance shown, for convenience, as substantially cylindrical in cross section, I do not limit myself to the particular forms shown. Neither do I limit myself to the precise shape of any part nor to any given materials used in the construction of the parts.

I also reserve the right to stiffen the plates of the inner mold by angle irons or similar means, or to use brace rods, above the area required for the car, for the stiffening of the inner mold.

For the support of inner mold I do not limit myself to the peculiar form of supports, made in pairs as shown, but may use any similar means for support of inner mold, the supports resting on sills and being pinned thereto, and the two parts of each pair of supports being removable sidewise.

Having thus described my invention, I

claim as new and desire to secure by Letters Patent:

1. In a pipe mold, the combination of a plurality of plates disposed edge to edge so as to form a spiral winding of tubular form, the plates of one turn of the spiral being so disposed as to break joint with the plates of the adjacent turn, and fastenings connecting said plates detachably together.

2. The combination of a plurality of plates connected together edge to edge and bent into spiral form, the edges of one turn of the spiral abutting those of the adjacent turn, and angle plates mounted upon said metallic plates, an angle plate upon one metallic plate being detachably connected with an angle plate of another metallic plate, for the purpose of holding said metallic plates together temporarily.

3. The combination of a plurality of plates placed together edge to edge in a general spiral form and arranged so as to form a continuous tubular member, and means for securing said plates detachably together.

4. The combination of an inner mold of tubular form, a car track mounted therein and provided with rollers whereby it is supported, said track being secured tentatively in position and movable bodily in the general direction of its length, and a car mounted upon said track and movable relatively to the same.

5. The combination of an inner mold, a plurality of supports, each formed of two members connected directly together for the purpose of temporarily supporting said inner mold, an outer mold adjacent to said inner mold, supports for said outer mold, and sills common to said supports of said outer mold and said supports for said inner mold, for the purpose of securing concentricity of both of said molds.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

FRANK TEICHMAN.

Witnesses:

WALTON HARRISON,
EVERARD B. MARSHALL.