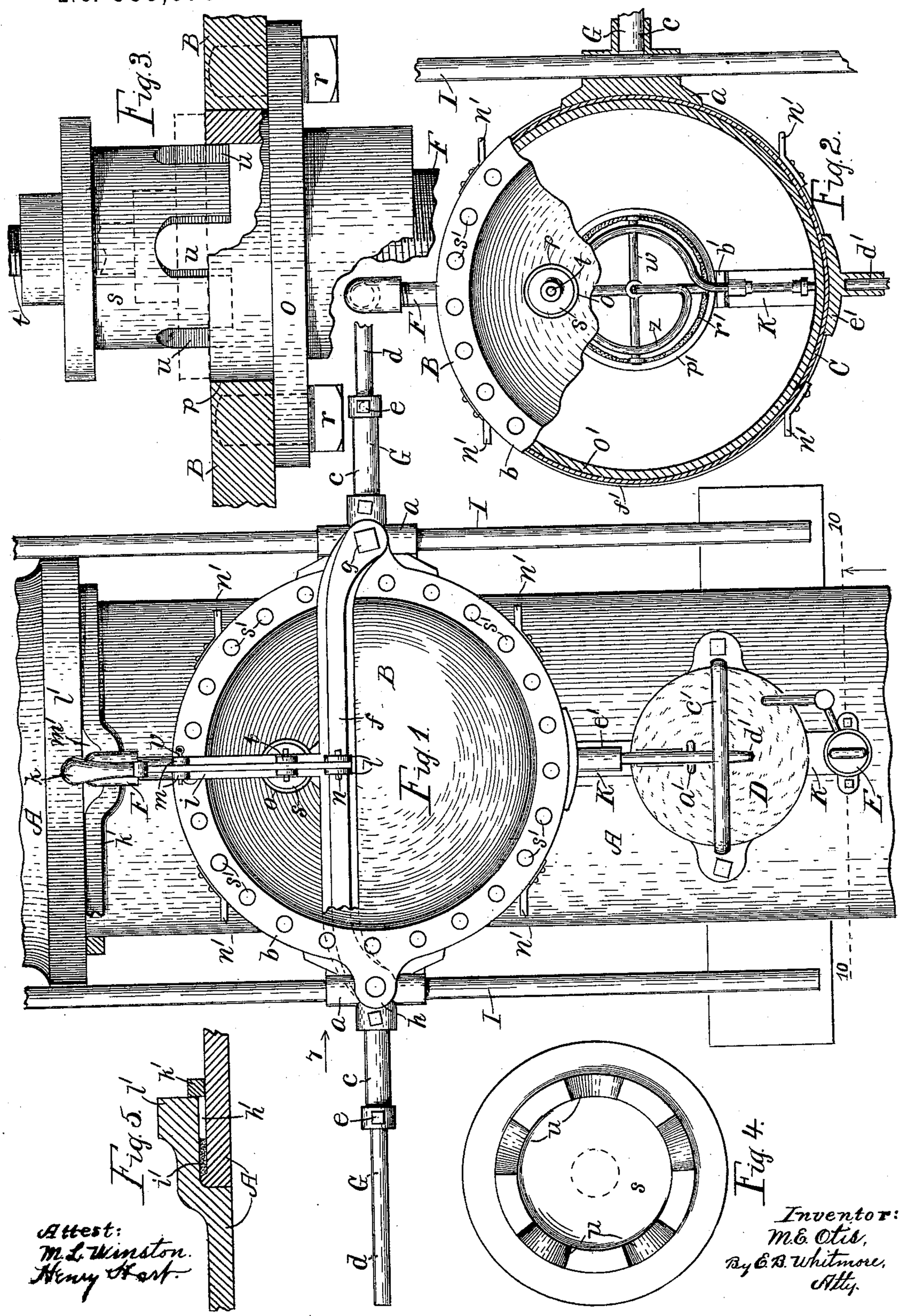
(No Model.) 3 Sheets—Sheet 1.

M. E. OTIS.

DEVICE FOR POURING PIPE JOINTS.

No. 583,579. Patented June 1, 1897.



Attest:
M. L. Winston.
Henry Hart.

Inventor:
M. E. Otis,
By E. B. Whitmore,
Atty.

(No Model.) 3 Sheets—Sheet 2.

M. E. OTIS.

DEVICE FOR POURING PIPE JOINTS.

No. 583,579. Patented June 1, 1897.

Fig. 6.

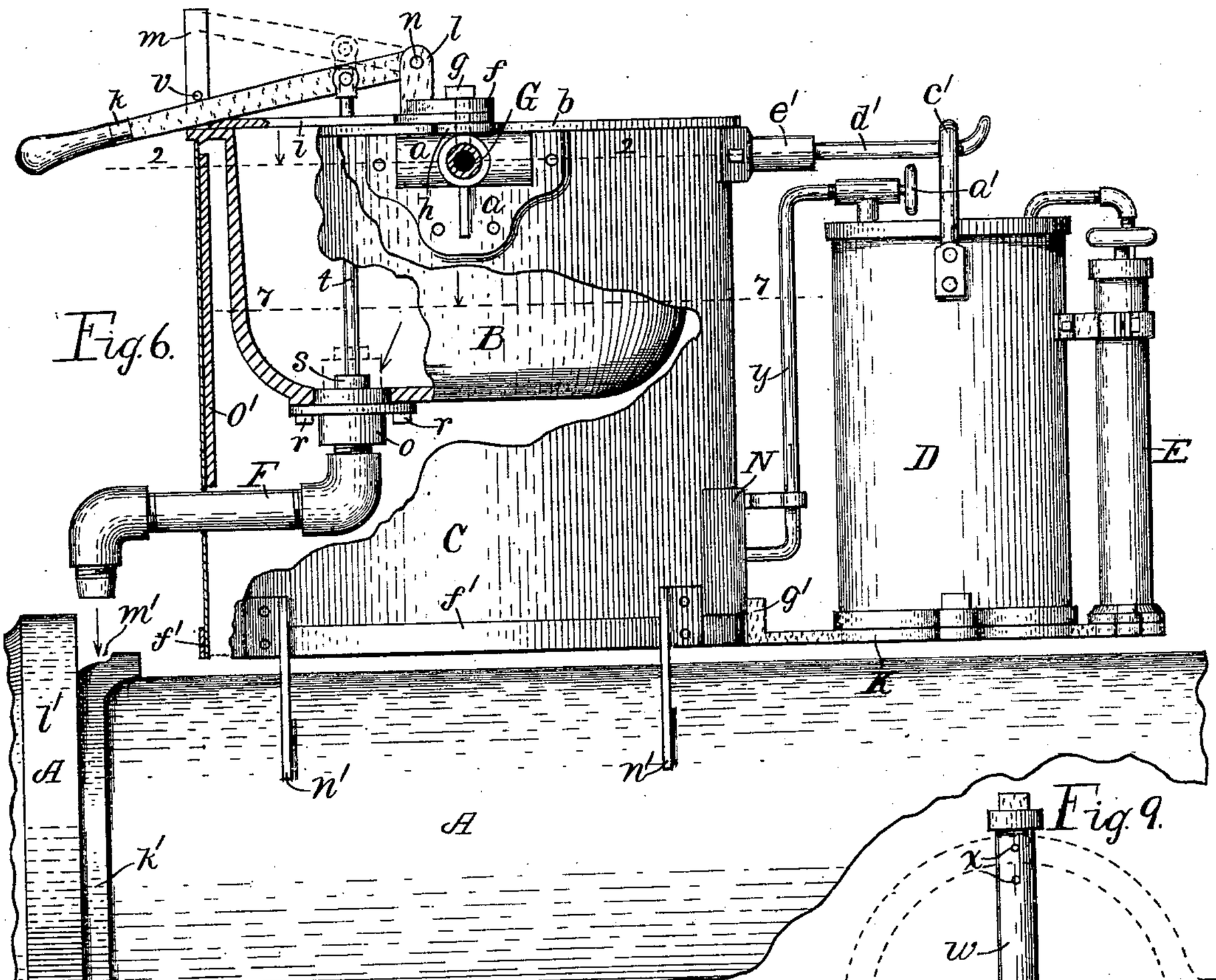


Fig. 9.

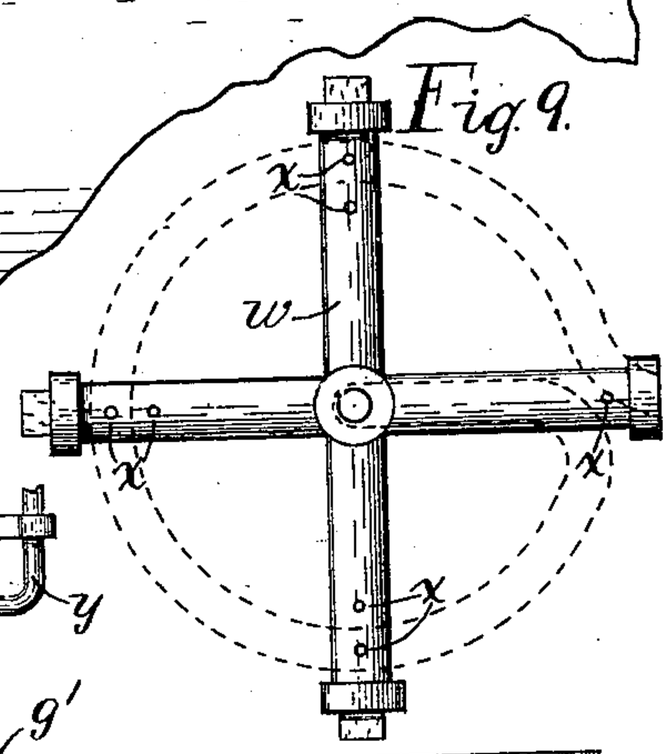


Fig. 8.

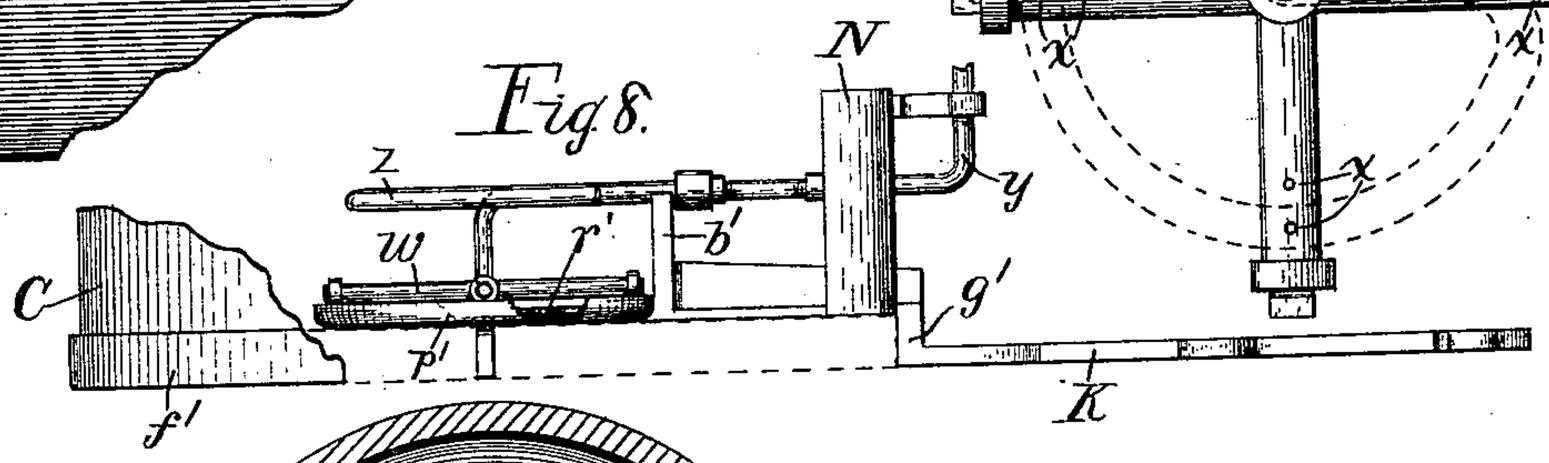
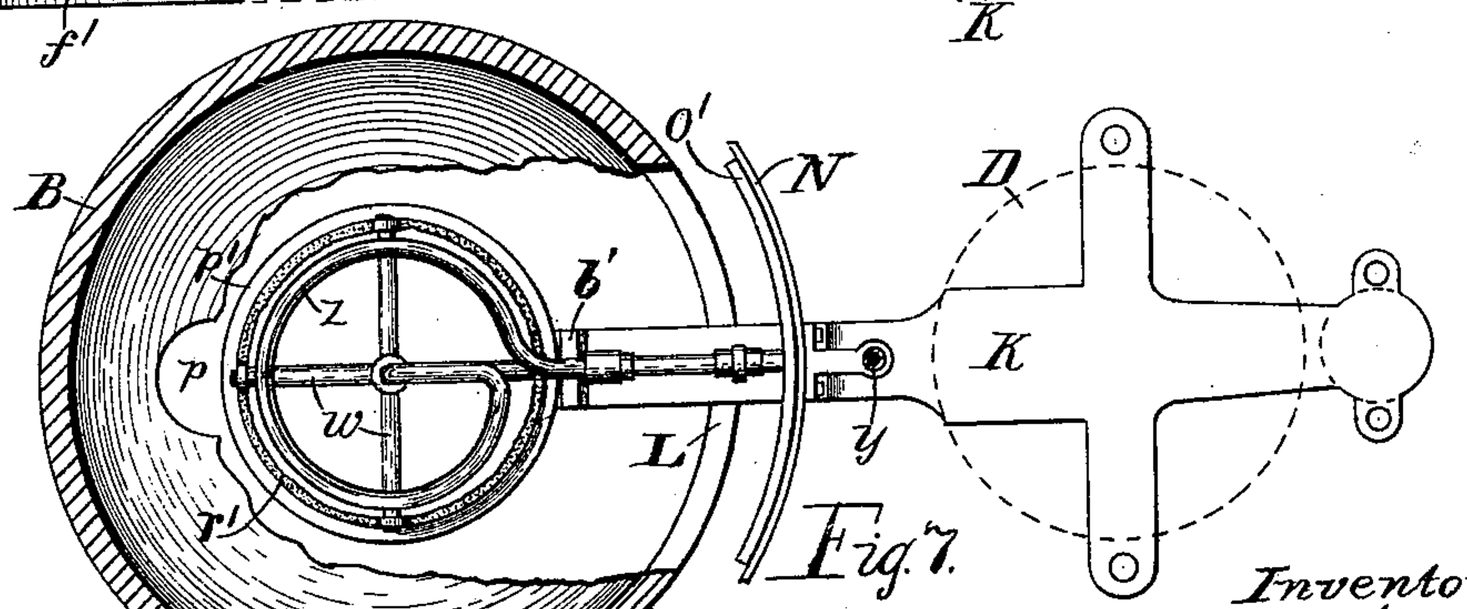


Fig. 7.



Attest:
M. L. Winston.
Henry Hart.

Inventor:
M. E. Otis,
By E. B. Whitmore,
Atty.

(No Model.) 3 Sheets—Sheet 3.

M. E. OTIS.

DEVICE FOR POURING PIPE JOINTS.

No. 583,579. Patented June 1, 1897.

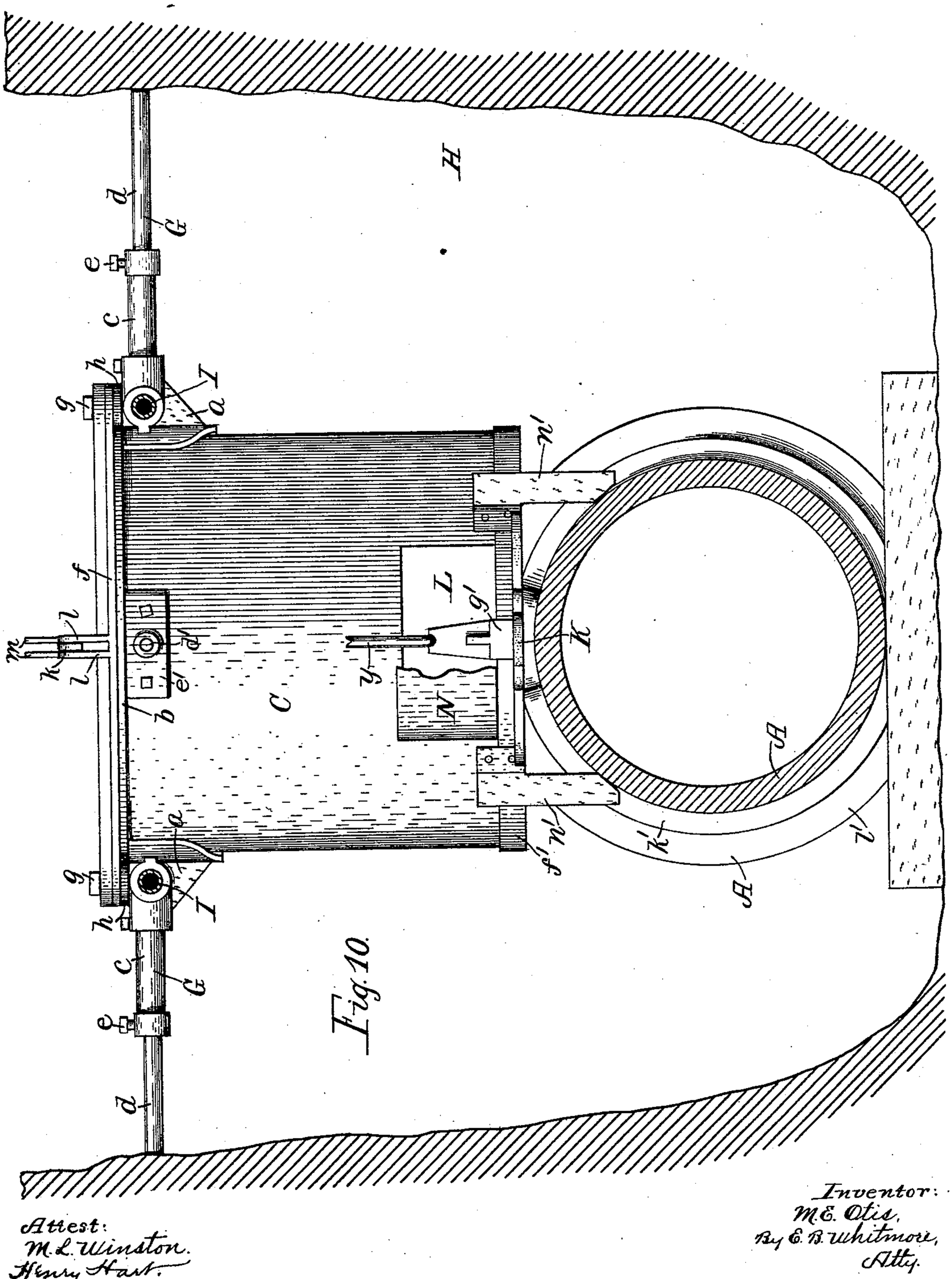


Fig. 10.

Attest:
M. L. Winston.
Henry Hart.

Inventor:
M. E. Otis,
By E. B. Whitmore,
Atty.

UNITED STATES PATENT OFFICE.

MARVIN E. OTIS, OF ROCHESTER, NEW YORK.

DEVICE FOR POURING PIPE-JOINTS.

SPECIFICATION forming part of Letters Patent No. 583,579, dated June 1, 1897.

Application filed November 14, 1896. Serial No. 612,102. (No model.)

To all whom it may concern:

Be it known that I, MARVIN E. OTIS, of Rochester, in the county of Monroe and State of New York, have invented a new and useful Improvement in Devices for Pouring Pipe-Joints, which improvement is fully set forth in the following specification and shown in the accompanying drawings.

Frequently long lines of pipe are used for conducting water or other fluids from one place to another. These lines of pipe, which are commonly laid in trenches dug in the ground, are made up of short sections joined at their ends to form a continuous conductor and in such a manner as to be firm and tight and without leak. The sections of pipe for conducting water, for example, are commonly joined at their ends by what is known as a "bell-joint." In this form of joint one end of each section is enlarged to form a "bell," so as to receive within it the normal end of another section, the annular space within the bell between the telescoped ends of the sections being filled with one or more substances, usually including lead, poured in in a molten state. As heretofore usually done, the lead is melted in a pot at the side of the trench and carried in hand-ladles to the joint to be poured. In working in this manner the lead, melted on the ground high above the pipe, requires to be carried in the ladles down into the trench or else handed to some one already therein. This process proves to be very inconvenient and troublesome, as the ladles filled with hot lead are heavy and difficult to manage, the molten metal being frequently spilled and endangering the workmen while being conveyed to the joint to be poured. Particularly is this the case when the pipe being laid is large in diameter and requires a large quantity of lead to a joint, sometimes several ladlefuls being necessary to fill a joint.

The object of my invention is to provide a device for conveniently and safely pouring these pipe-joints, the device being adapted to be used in the trench and to rest or stand directly upon the pipe while in use, the flow of lead being uninterrupted during the process of pouring a joint.

My improved device consists of a furnace and a melting-pot, together with other coacting parts and devices, the whole adapted to be carried along the pipe from section to section as the joints are successively poured.

The device as to all of its parts and the manner of use is hereinafter fully described and more particularly pointed out.

Referring to the drawings, Figure 1 is a plan of the device in position for use, parts being broken away. Fig. 2 is a plan of the furnace and melting-pot with some associated parts, mainly in horizontal section as on the dotted line 2 2 in Fig. 6, parts being broken away and omitted. Fig. 3 is a side elevation of the valve and some associated parts, parts being broken away and sectioned. Fig. 4 is a bottom view of the valve. Fig. 5 is a longitudinal section through a joint, showing the manner of joining two sections of a pipe. Fig. 6 is a side elevation of the device in position for use, seen as indicated by arrow 7 in Fig. 1, parts being broken away and vertically sectioned. Fig. 7 shows in plan the base of the heater and some associated parts, the pot being horizontally sectioned as on the line 7 7 in Fig. 6. Fig. 8 is a side elevation of parts seen as indicated by arrow 8 in Fig. 7, parts being broken away and omitted. Fig. 9 is a plan of the jet-tubes. Fig. 10 shows the device in use within the trench, the pipe being transversely sectioned. Figs. 3, 4, and 9 are drawn to scales larger than that of the other figures.

Referring to the figures, A A are sections of the pipe to be joined.

B, Figs. 1 and 6, is an iron pot in which the lead is melted.

C, Figs. 2, 6, and 10, is a circular sheet-iron jacket for inclosing and supporting the melting-pot.

D, Figs. 1 and 6, is a tank for holding gasolene, E being the hand-pump for forcing air into the tank.

F, Figs. 1 and 6, is a delivery-pipe for conducting the molten lead to the pipe-joint.

G G, Figs. 1 and 10, are extendible arms adapted to bear against the opposite walls of the trench H for aiding to steady the device upon the pipe.

I, Figs. 1, 2, and 10, are carrying-bars, by means of which two attendants are enabled to carry the device from place to place along the line of pipe.

The gasolene-tank and pump, with their

various connections, are of common kind and I do not claim them to be new.

The carrying-handles I I, which are made of gas-pipe, are held in rests *a a*, Figs. 1, 6, and 10, secured on opposite sides and at the top of the jacket immediately under the overhanging horizontal flange *b* of the melting-pot. These rests, bearing against the flange of the melting-pot, support the weight of the latter with its charge of lead while the device is being carried by the workmen along the pipe. The rests or brackets *a a* are formed with branches turned laterally in opposite directions, each of which serves to hold a short piece of pipe *c*, Figs. 1 and 10, made rigid in the rest. Within the pipes *c c* are held smaller pipes *d d*, adapted to move longitudinally in the pipes *c c*, so as to render each supporting-arm G G extendible, so that either may be lengthened or shortened to meet the respective faces of the two banks of the trench H in any given case, as clearly shown in Fig. 10. Detent-screws *e* serve to hold the parts *d d* in their various positions of adjustment in the pipes *c c*.

Across the mouth of the pot B is placed a horizontal bar *f*, Figs. 1, 6, and 10, held rigidly in place by bolts *g g*, passing through extended parts or lugs *h* of the flange *b* of the pot and threaded into the rests *a a*. These bolts reach downward so as to bear at their points against the carrying-bars I I to hold the latter in place in the respective rests. The bar *f* has a branch *i* extending from its middle point at right angles to the periphery of the flange *b* of the pot. This bar, with its branch, serves to hold a lever *k* between two pairs of standards *l l* and *m m*. The lever is pivoted at *n* between the standards *l l*, the standards *m m* acting as guides for the lever during its vertical movements.

A circular flanged valve-holder *o*, Figs. 1, 2, 3, and 6, occupies an orifice *p* in the bottom of the melting-pot, the flange meeting the under surface of the pot and secured to the latter by bolts *r r*. This holder *o* is hollow and serves to open a passage between the interior of the pot and the outflow-pipe F, to which holder said pipe is directly connected, as shown. The opening in the upper end of the holder is enlarged and adapted to receive within it a cylindrical valve *s*, the upper surface of the holder constituting a seat for the valve. A rod *t*, secured to the valve, extends upward and is joined to the lever *k*, by means of which the lifting or depressing of the lever respectively serves to raise the valve off of its seat or press it down thereagainst. The valve-rod *t* passes through the branch *i* of the bar *f*, the branch forming a guide for the rod. The valve, which is hollow, is formed with longitudinal openings *u*, Figs. 3 and 4, in through which the molten lead flows when the valve is raised and escapes out through the pipe F. A pin *v*, Figs. 1 and 6, inserted through the guides *m m* above the lever serves to hold the lever down and the valve closed to guard against the accidental escape of the melted lead while the apparatus is being carried from place to place along the pipe.

The burner for melting the lead consists of pipes *w*, Figs. 7, 8, and 9, having jet-openings *x* through their upper surfaces for the escape of gas to produce heating-flames. This burner, with the tank D, pump E, and other parts, is supported upon an iron base K, Figs. 6, 7, 8, and 10. This base K is formed to extend through an opening L in the side of the jacket C, so as to hold the burner under the melting-pot, (clearly shown in Fig. 7,) the tank and the pump being without the jacket.

A pipe *y*, communicating with the top of the tank, extends downward and turns horizontally through the opening L and is formed in a coil *z* above the jet-pipes *w* beneath the bottom of the melting-pot. The end of the pipe *y*, after making the coil, turns inwardly to the center of the coil, and bending downward in a line at right angles with the plane of the coil terminates in the jet-pipes *w*. The coil is over the outer jet-openings *x* of each pair, Fig. 9, so that the flames projecting therefrom will impinge directly against the coil, the flames from the inner openings passing within the coil on their way toward the bottom of the melting-pot. This construction and arrangement of the parts results in producing an intense heat beneath the melting-pot, which quickly reduces to fluidity the masses of lead placed in the pot.

The base K is formed with a horizontal shallow circular pan *p'*, Figs. 7 and 8, beneath the jet-pipes *w*, the latter being nearly in contact with the pan. This pan is made hollow and it is useful in part to reflect the heat of the burner upward against the bottom of the melting-pot. It also serves as a protector for the burner against injury from beneath, as, for instance, when the parts are being loaded into and unloaded from wagons in transporting the device from place to place and in otherwise handling the parts; but the principal use of the pan is to receive and hold a quantity of liquid gasolene for ignition for the purpose of starting the furnace at any time when cold. The liquid for this purpose may be allowed to flow out through the openings *x* into the pan by opening the valve *a'*, Figs. 1 and 6, above the tank, (which controls the passage through the pipe *y*,) or, better, a quantity of gasolene may be turned directly into the pan from another vessel. The pan is usually provided with a layer of asbestos *r'* for absorbing the liquid gasolene when turned in the pan.

The base K supports rigidly a cylindrical segment or plate N, Figs. 6, 7, 8, and 10, which constitutes a cover for the opening L when the burner is put in place within the jacket. The horizontal part of the pipe *y* pierces the part N and rests upon a standard *b'* of the base K within the jacket C. The construction is such that the base K with the tank D,

pump E, pipe *y*, plate N, and all of the parts of the burner constitute a single piece which may be connected with or disconnected from the jacket C and contained parts. The tank is provided with a bail *c'*, adapted to be held by the hooked end of a rod *d'*, Figs. 1 and 6, projecting laterally out from the jacket over the tank and held in a hub or seat *e'*, rigid with the jacket. The jacket is provided with a stiffening hoop or band *f'* at its lower open end, above which is the opening L. The base K is bent upward at *g'* and carried over said band, as clearly shown in Fig. 8, the lower edge of said band and the under surface of the part of the base K without the jacket being in a horizontal plane.

To detach or remove the burner from the jacket, the parts are simply lifted by means of the bail off of the holding-rod *d'* and then carried laterally directly away from the jacket to withdraw the coil and associated parts therefrom, the opening L being sufficiently large to allow the parts to pass freely out.

The burner is commonly removed from the jacket before the latter with the melting-pot is carried along the pipe within the trench.

To reconnect the burner with the jacket, the coil is carried horizontally through the opening L under the melting-pot and the bail of the tank hooked onto the holding-rod *d'*. The bearing of the bail upon the rod and of the base K upon the hoop *f'* constitute the two rests for the parts when the burner is in place upon the jacket.

In Fig. 5, at *h'*, is shown the space between the two sections of pipe A which is to be filled to form a tight joint. In practical work about one-third of this space is first filled with a fibrous packing-yarn *i'*, the remainder of the space being left to be filled with the molten lead. A dam *k'*, Figs. 5, 6, and 10, is temporarily put around the inner pipe snug against the end of the bell *l'* to prevent the escape of the inflowing lead. This dam is commonly a rope of yarn covered with clay or a strip of rubber placed around the pipe and secured at its ends; but the means of retaining the fluid lead in the space *h'* during the pouring of the joint is not essential to my invention, as any suitable and practical means for accomplishing the purpose may be employed. This dam or temporary holder for the lead, whatever may be its nature, is formed with an opening *m'*, Figs. 1 and 6, at the upper side of the pipe, into which the stream of flowing lead through the discharge-pipe F is directed.

If found convenient, the device may be provided with suitable feet *n'*, Figs. 1, 2, 6, and 10, to bear upon the surface of the pipe when the device is at rest. These feet, however, may or may not be employed. If the device is without them, the lower end of the jacket and the base K without the jacket will rest directly upon the pipe, the device being steadied in place and kept from rocking upon the convex surface of the pipe by means of the supporting-arms G G above described. The jacket is preferably lined with a sheet of asbestos *o'*, Figs. 2 and 6, from the top downward to a plane below the melting-pot. Also the plate N may be similarly lined, as shown in Fig. 7, if found necessary.

The products of combustion from the burner pass off through draft-openings *s'* in the flange *b*, Figs. 1 and 2, of the melting-pot, said openings communicating with the interior of the jacket.

What I claim as my invention is—

1. A device for pouring pipe-joints consisting of a portable melting-pot provided with means for supporting and steadying it upon a curved surface, means for carrying it from place to place, a conductor from the pot, and a heat-producing device detachably connected with the pot, substantially as set forth.

2. A device adapted to be used in a trench for pouring pipe-joints, consisting of a melting-pot, in combination with means for producing heat for melting metal in the pot, and means for conducting the molten metal into the joint between the pipes, said device being adapted to rest upon the pipe, and means adapted to engage the walls of the trench for steadying the device upon the pipe, substantially as specified.

3. A device for pouring pipe-joints consisting of a portable melting-pot, handles projecting to the front and rear of the same, laterally-projecting braces, a conductor projecting from the pot substantially in a line with the handles, and a burner projecting under the pot from the side opposite the conductor, substantially as set forth.

4. A device for pouring pipe-joints, consisting of a jacket provided with an opening in one side thereof, a melting-pot within the jacket provided with a conductor, and a platform detachably connected with the jacket, said platform being provided with a plate adapted to close the opening in the jacket, a tank upon the platform, a pipe leading from the tank, the inner end of which is provided with a burner, and the intermediate portion is connected with the plate, whereby the entire heating device may be removed from the jacket when desired, substantially as set forth.

5. A device for pouring pipe-joints consisting of a jacket, a melting-pot therein provided with a conductor for the metal, means for controlling the same, a platform and a rod secured to the jacket, a tank upon the platform and connected with the rod, a burner within the jacket under the pot, and a pipe leading from the tank through the jacket to the burner, substantially as set forth.

6. In a device for pouring pipe-joints consisting of a jacket provided with an opening near its lower end, of a melting-pot within the jacket provided with a discharge-opening and means for controlling the same, a platform secured to the jacket below the opening therein and provided with a plate and a support, a

tank upon the platform, and a pipe leading from the tank through the plate and having its inner end resting upon the support and provided with a burner, substantially as set forth.

7. In a device for pouring pipe-joints, the combination, with a portable melting-pot provided with means for supporting it upon the pipe, of adjustable means for steadying it in position, and a burner under the pot, substantially as set forth.

In witness whereof I have hereunto set my hand, this 12th day of November, 1896, in the presence of two subscribing witnesses.

MARVIN E. OTIS.

Witnesses:
ENOS B. WHITMORE,
M. L. WINSTON.