

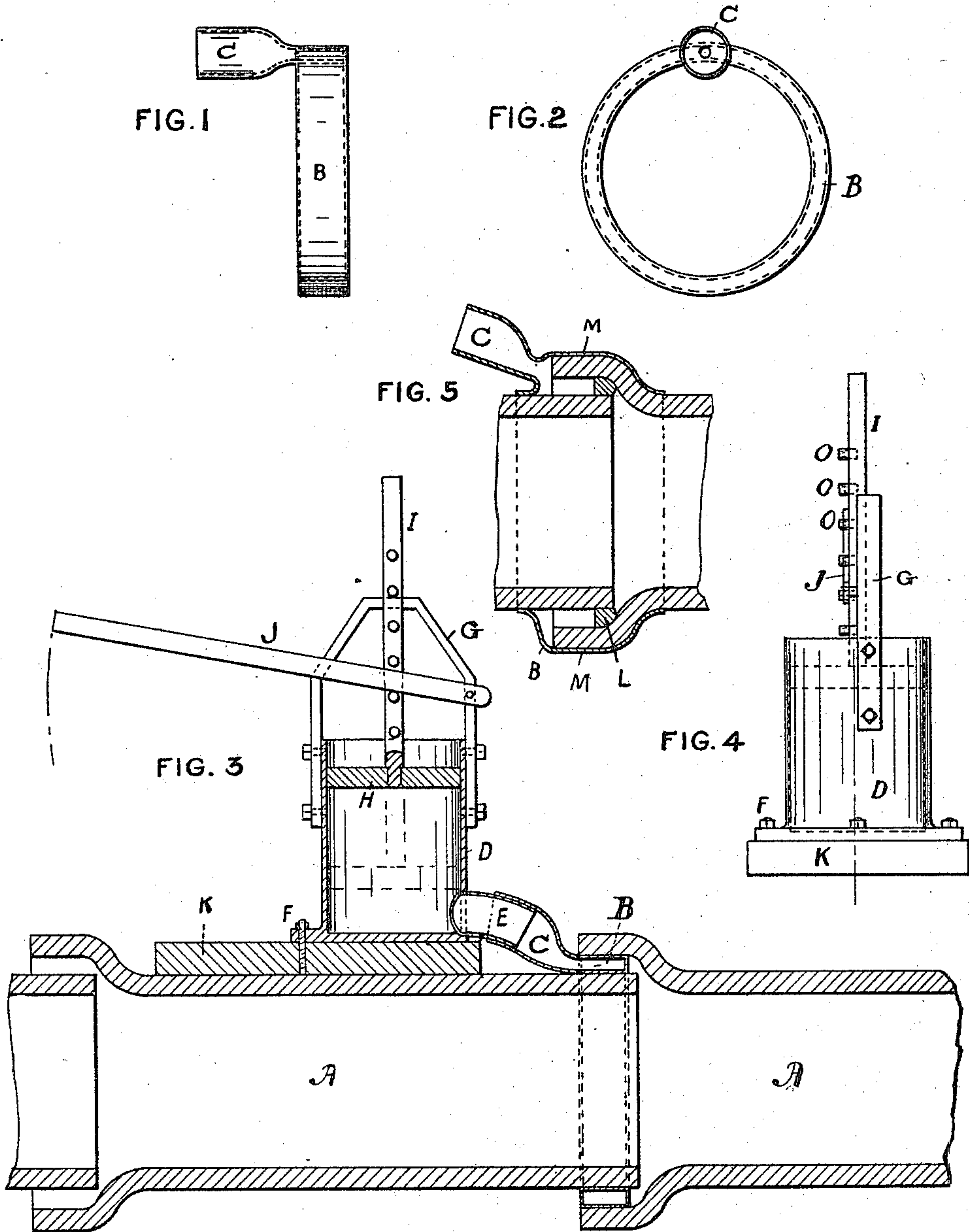
(No Model.)

G. LEHLBACH.

MAKING JOINTS OF PIPES HAVING BELL ENDS.

No. 572,901.

Patented Dec. 8, 1896.



WITNESSES:

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UNITED STATES PATENT OFFICE.

GUSTAV LEHLBACH, OF JERSEY CITY, NEW JERSEY.

MAKING JOINTS OF PIPES HAVING BELL ENDS.

SPECIFICATION forming part of Letters Patent No. 572,901, dated December 8, 1896.

Application filed July 27, 1895. Serial No. 557,383. (No model.)

To all whom it may concern:

Be it known that I, GUSTAV LEHLBACH, a citizen of the United States, residing at Jersey City, in the county of Hudson and State of New Jersey, have invented a new and useful Method of Joining Sections of Sewer, Water, or other Pipes Having Bell and Spigot Ends, of which the following is a specification.

The object of my invention is to make a perfectly tight joint with more certainty and convenience than can be made by the methods now in use.

The invention consists in the improved device for filling the joints of connecting pipes with cementitious matter and in the arrangements and combinations of parts, all substantially as will be hereinafter set forth, and finally embraced in the clauses of the claim.

I obtain the desired object by the devices and arrangements shown in the accompanying drawings, in which—

Figure 1 is a longitudinal view of the ring-shaped mortar-bag. Fig. 2 is a transverse view of the same. Fig. 3 is a longitudinal vertical section through the center of the mortar-injector resting on top of the pipe, showing the method of making the joint with a mortar-bag. Fig. 4 is a side-elevation view of the mortar-injector; and Fig. 5 is a longitudinal vertical section of a pipe-joint with a ring-band cover, preferred under ordinary conditions.

Similar letters refer to similar parts throughout the several views.

The ring mortar-bag, as shown in Figs. 1 and 2, is composed of two parts, namely, the body of the bag B and the funnel-lip C, and may be made of canvas, cotton sheeting, or other suitable flexible material of such shape and size that when completely filled it will fully occupy the space between the bell and spigot of the pipes to be joined.

The annular portion B, which may be a bag-like receptacle for mortar, as described, or a cover M for forming with the bell and spigot ends the receptacle for mortar, as hereinafter provided, is adapted to extend around the pipe-section A and either enter the joint formed by the bell and spigot ends or overlie and continuously inclose the same.

The mortar-injector (shown in Figs. 3 and 4) comprises a cylindrical receptacle D, open

at its upper end to receive the fluid mortar and at its lower end provided with a discharge tube or spout E, adapted to enter or communicate with the funnel-lip C. Said cylindrical receptacle is provided with a suitable bed-plate K, the parts being held together by lugs F. At its upper open end said cylinder is provided with a bail-like guide G, having a slot or recess at the top to receive and hold the piston-rod I. With the cylinder is arranged a piston, plunger, or pressure-head H, to the upper side of which is fastened the said rod I, the latter extending from said piston vertically to said guide G, along and against which it operates reciprocally.

The textile fabric of the cover being porous admits an easy outflow of air from all parts of its texture and yet prevents an outflow of cement, and thus, as the latter is forced into the chamber beneath said cover, the air flows out and allows the cement to be thoroughly compressed in the joint and the air to be fully forced out, so that the cement is non-porous and makes a tight joint thoroughly impervious to water.

The piston-rod I has at the side opposite that at which it bears on the guide a series of projecting bearings O, which may be of the form of pins, as indicated in Fig. 4. On these a hand-lever J, fulcrumed, preferably, at one side of the bail-like guide, may be pressed to force the piston downward and press the fluid mass of mortar downward and causing it to flow out through the discharge tube or spout E into the funnel-lip or feed-duct C. The lever J is loosely held upon its fulcrumal pin to freely admit of the lever being transferred from one bearing to another, and is so disposed in its relation to the piston-rod I as to force the same against the bail and thus hold it in the slot or recess therein and cause said rod to maintain a vertical position.

By the construction described the piston and its rod are readily separable and removable from the cylindrical receptacle to allow the latter to be filled with semiliquid or plastic mortar fluid under pressure.

When the annular bag B is employed, the operation of imperviously packing or filling the bell end with mortar is performed by first

slipping the said annular bag over the spigot end of a pipe-section and inserting said spigot end into the bell end of the pipe already laid, the annular bag being properly adjusted inside the joint or in the space between the bell and the spigot. Then the mortar-injector is brought into communication with the feed duct or lip C, as shown in Fig. 3, by drawing the said feed-duct over the discharge-tube and holding said parts in inseparable relation by a clamp-ring (not shown) or other suitable device, in which relation said parts are held during the subsequent operations.

The cement mortar, mixed sufficiently soft or fluid to be readily forced into the mortar-bag, is then filled into the cylinder, the piston being unshipped for the purpose, which the construction of the injector allows readily to be done. The piston is then reinserted into the cylinder and the mortar is forced into the bag under pressure by the force exerted upon the lever J, as will be readily understood by reference to the drawings.

Where the space between the spigot and the bell is small and irregular, as it frequently is in pipes as at present constructed, rendering the easy adjustment of the bag within the joint difficult and obstructing the free flow or pressure of the mortar into the same, to secure the desired impermeability I provide an annular band-like cover M, having the feed-duct C extending from one side, as in the construction before referred to. This cover is made of canvas, cotton sheeting, or other flexible but strong material capable of resisting the pressure due to the downwardly-forced piston acting upon the cement mortar. The band is of sufficient width to cover the joint and is to be fastened more or less imperviously to the pipe-sections on opposite sides of said joint by means of strong twine or other suitable devices, (not shown,) so that the mortar will be prevented from flowing or being forced out from the cover and wasted and so that a pressure can be maintained during the period of fluidity, a packing L of suitable material having been previously inserted and rammed home in the bell against the inside end thereof, so as to prevent the mortar in its more or less fluid or plastic state from being forced into the interior of the pipes when the pressure is applied. The object is secured or effected by filling the cylinder with liquid, fluid, or thinly-plastic mortar, such, preferably, as contains hydraulic cement, which will quickly set or harden when allowed to remain in position at rest; then arranging the piston, the lever, and other appliances in position, as described, and forcing said piston downward upon said cement mortar, by which means said cement mortar is forced outward through the feed spout and duct into the joint, the pressure from behind causing said cementitious matter to enter all recesses and crevices in the joint into very intimate connection or contact with the walls of the joint. Having thus

been applied to the joint, said mortar may be and is maintained under abnormal pressure until it is set and hardened sufficient to prevent its falling away from the walls of the joint.

Having thus described the invention, what I claim as new is—

1. In a device for filling the joints of connecting pipe-sections with cement, the combination with the receptacle D, having an open upper end adapted to allow the withdrawal of the piston, the bail fastened to said receptacle at its opposite ends and turned over and above the open end of the receptacle, a piston separable from said receptacle, a piston-rod having said piston at one end and at its upper opposite end bearing at one of its sides against one side of the bail and at its opposite side provided with a series of bearings, and a hand-lever fulcrumed upon said bail and adapted to press against the side of the piston-rod and hold it against the bail when forcing down the piston, substantially as set forth.

2. The combination with a receptacle for fluid cement mortar, a piston and means for operating the same, a duct from said receptacle, and a textile cover pervious to air in connection with said duct and adapted to be applied to the pipe-joint, substantially as set forth.

3. The combination with a receptacle for fluid cement mortar, a piston and means for operating the same to force the fluid cement mortar from said receptacle, a duct of porous textile fabric in connection with said receptacle to receive the mortar therefrom and a textile cover adapted to be fastened over the pipe-joint, said parts being arranged and adapted to operate, substantially as set forth.

4. In a device for filling the joints of connecting pipe-sections with cementitious matter, the combination with the mortar-receptacle D, separate and independent of the said sections, a cover adapted to extend around the pipe and convey the mortar into the joint formed by said sections, a duct connecting said receptacle and cover, a bail serving as a guide or bearing, a piston, a piston-rod extending from said piston to said bail, and having bearing o, and a lever fulcrumed on said bail, and engaging said piston-rod to depress the same, substantially as and for the purposes set forth.

5. In a device for filling the joints of connecting pipe-sections with fluid cementitious matter, the combination with the receptacle D, having an open upper end, a spout at its lower end, and a bail extending over and above said open end and recessed to receive the piston-rod, a piston, a piston-rod, extending from said receptacle upward through said open end of the receptacle and engaging the said bail, a lever engaging the piston-rod, and means for transmitting the fluid cementitious matter to the joint under pressure, substantially as set forth.

6. In a device for filling the joints of connecting pipe-sections with fluid cementitious matter, the combination with the receptacle D, separate from and independent of the pipe-sections, and having an open upper end adapted to allow the withdrawal of the piston, a bail extending over said open end, a piston separable from said receptacle, a piston-rod having a series of bearings, and adapted to press against said bail, a duct leading from said receptacle to said pipe-section and a cover for conveying the cementitious matter around the joint under pressure of said piston, substantially as set forth.

7. In a device for filling the joints of connecting pipe-sections with solidifiable cementitious fluid, the combination with a cylindrical receptacle D, separable from and independent of the pipe-sections, mounted upon a bed-plate K, and, at its upper end, having an opening to allow the insertion of the mortar and the withdrawal of the piston, a bail extending over and above said opening, a piston and its rod the latter bearing at one side of said bail, a lever bearing against said piston-rod at the side opposite that engaged by the bail, a duct leading from the receptacle to the pipe-sections, and a cover, all said parts being arranged and combined substantially as set forth.

8. The combination with a cylinder, independent of and separate from the pipe-sections, its piston and means for operating said piston in said cylinder, a duct leading from said cylinder to said pipes, and a band-like cover of textile fabric adapted to be fastened over the joint formed by the meeting ends of the pipe-sections, and form a receptacle with said meeting ends, substantially as set forth.

9. The device for filling the joints of pipes with cementitious matter consisting of a receptacle D, separable from and independent of the pipe and open at its upper end, a bail

extending over and considerably above the open end, of said receptacle, a lever fulcrumed at one side of said bail a piston working within the receptacle, a piston-rod a series of lateral projections, and bearing on said bail, and held thereagainst by said lever, said lever being loosely fulcrumed to allow a free transfer from bearing to bearing, a duct and means for leading the cementitious matter, around the pipe, substantially as set forth.

10. The combination with the cylindrical receptacle for mortar separable from and independent of the pipes, a duct consisting of flexible textile fabric leading to a cover adapted to surround the pipe at the joint formed by the sections, said cover consisting of a band of textile fabric adapted to be bound around the pipe over the joint to close the same, and a piston and means for operating the same, all arranged and operating, substantially as set forth.

11. In a device for filling the joints of connecting pipes with a solidifiable cementitious fluid, the forcing apparatus comprising a cylinder, open at its lower end to allow an ejection of the fluid under pressure, and open at its upper end to allow the removal of the piston, a piston hugging the walls of said cylinder and removable from said cylinder through said upper openings, a bail or guide G, extending over said open upper end, a piston-rod, having a series of projections at one side and bearing on said bail at the other, and a lever loosely fulcrumed on said bail and movable laterally away from the piston-rod to admit a free transfer from one projection to the next, said parts being arranged and combined, substantially as set forth.

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Witnesses:

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HERMAN B. LEHLBACH.