

UNITED STATES PATENT OFFICE.

PHINEHAS BALL, OF WORCESTER, MASSACHUSETTS.

IMPROVEMENT IN TAPPING WATER-PIPES.

Specification forming part of Letters Patent No. 45,964, dated January 24, 1865.

To all whom it may concern:

Be it known that I, PHINEHAS BALL, of the city and county of Worcester, and State of Massachusetts, have invented certain new and useful Improvements in the Method of Tapping Water-Pipes; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 represents a cross-section of my tap-holder as applied to one kind of water-pipes. Fig. 2 represents a top view of a sectional part of tapping-clamp. Fig. 3 represents a bottom view of Fig. 2; and Fig. 4 represents a section on line A B, Fig. 1.

In the drawings, A represents a wrought-iron hoop or band, the inner surface of which is covered with a cement lining, B, the whole forming a section of one kind of pipes. Pipes made after this plan are usually covered by cement upon the outside when they are laid in the trenches, or with some other substance that will protect the iron from the effects of moisture. Much difficulty has been experienced heretofore in tapping this kind of pipe, especially under pressure, and the most common method adopted has been to solder the tap C to the top of the pipe. To this mode are many objections. Some of the more important may be enumerated thus: The taps are usually made of brass or some similar metallic compound or alloy, and it has been found objectionable where any abiding permanency was required to form the union by soldering. Again, in order to solder at all with any degree of expedition, the taps must be soldered to the tops of the pipes, and consequently the taps stand in a vertical position upon the top of the pipe, and the projection *a* of the stop or plug G is thus brought into a horizontal position, whereby, after the connection is formed and a box placed over the tap, the stop or plug G cannot be turned or opened and shut without making a wrench or key specially adapted for such use, and such key or wrench must be made in a different form from those used where the plug is placed in a vertical position, and are, besides, far more difficult to operate. Again, when the taps are soldered on there is great danger and liability of wrenching or breaking them off while open-

ing and closing the plugs to shut off or let on the water.

Still another objection to soldering on the taps results from the necessity of always having an experienced plumber in order to have the work even so performed as to give temporary satisfaction, and this involves much additional expense and trouble. The services of one extra hand is thus required in addition to the carrying to and from the shop of all the tools and apparatus necessary for use in soldering.

To all of the above objections must be added those resulting from the great uncertainty of making perfect joints, even with the aid of the best plumbers, in view of the fact that the work has to be performed in wet and muddy trenches and upon cold pipes.

By my mode of tapping the pipe all of the above objections are obviated, while the lateral service-pipes can be connected with the main pipes without the introduction of goose-necks or quarter-circles, which are always necessary where the taps are soldered on, it being necessary to solder them on top of the main pipe.

By my method the tap-holder P is cast with the clamp-piece H, and upon the inner surface is cut the female thread *b*, to receive the male thread *c* of the tap C, as fully shown in Fig. 1. The under surface of the clamp H is hollowed out from E to E' and from F to F', as is fully indicated in the drawings, Figs. 1, 3, and 4. The bottom or inner side of the tap-holder C is also hollowed or cast with a circular groove for the reception of a packing, I, for a purpose which will be hereinafter described. The clamp part H, to which is connected the tap-holder C, is held to the pipe in this instance by a secondary clamp-piece, H', in combination with the clamping-bolts J and nuts *d*.

The operation is as follows: The cement is removed from the outer surface of so much of the metal part of the pipe as is necessary to allow of the proper fit of the clamping-pieces H and H', when the cavities upon their inner surfaces are well filled with cement, more being put in than what is sufficient to fill such cavities even full. The clamping-pieces are now placed in proper position around the pipe, and clamping-bolts J J inserted and their

nuts *d d* turned up, whereby the pieces *H H'* are drawn closely and firmly upon the pipe. At the same time the cement is caused by the great pressure to fill compactly and in the most perfect manner the space left between the clamping-irons and the metal *A* of the pipe, thus preventing all corrosion of the metal pipe *A*, and at the same time forming a tight and perfect joint entirely around the flange *e* upon the inner side or surface of the tap-holder *D*. The plug *G* is now turned so as to bring the hole or opening *f* in line with the hole *g* in the tap *C*, when the drill is inserted and the hole *h* drilled in the pipe, after which the drill is withdrawn, the plug turned into the position shown in Fig. 1, and the necessary service-pipe attached to the end *K* of the tap *C*.

The object of applying the packing *I* in the manner described is to avoid the possibility of the water reaching the cement until it has become perfectly hard. Instead of filling the cavity in clamping-irons *H H'* with American or Roman cement, it may be filled with oil-putty or a composition of coal-tar, asphaltum, and clay.

For the packing within the flange *e*, rubber, leather, or lead will answer a good purpose.

The space between the ends *L L* of the clamping-irons can be filled in with cement after the latter are properly put on.

From the foregoing description it will be seen that by my improved method of tapping water-pipes, that the operation can be performed by the ordinary hands employed upon the works, while the connection of the service with the main pipes is of the strongest and most perfect character. The taps, too, can be as readily applied to the sides of the main pipes as to the tops, and hence the plugs can always be so arranged as to occupy a vertical position, as indicated in the drawings, whereby they can be turned as readily almost as if they were above ground.

Having described my improved method of tapping water-pipes, what I claim as of my invention, and desire to secure by Letters Patent, is—

1. The combination of the clamping-irons *H H'* with the pipe *A*, tap-holder *D*, and tap *C*, substantially as and for the purposes described.

2. The combination of the clamping-iron *H* with the tap-holder *D* and tap *C*, substantially as and for the purposes described.

3. The combination of the packing *I* with pipe *A*, tap-holder *D*, and tap *C*, substantially as and for the purposes described.

PHINEHAS BALL.

Witnesses:

THOS. H. DODGE,
J. HENRY HILL.