2 Sheets—Sheet 1.

J. ROBERTSON.

MACHINE FOR MAKING PLUMBER'S TRAPS.

No. 192,192. Patented June 19, 1877.

Fig: 1

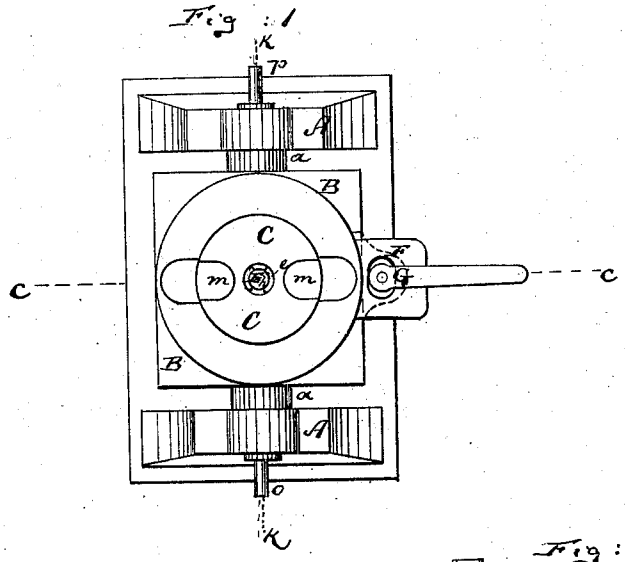


Fig: 2

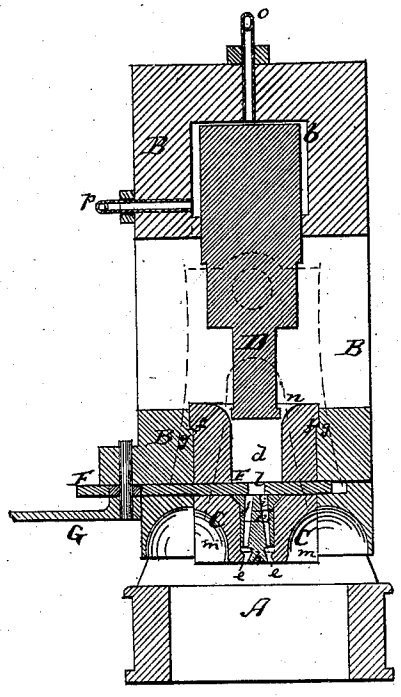
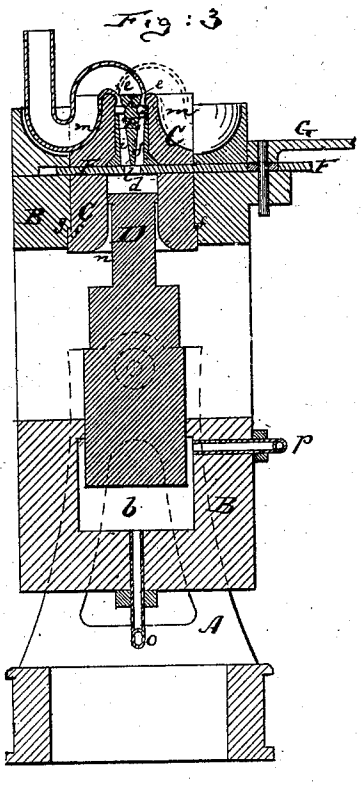


Fig: 3



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2 Sheets—Sheet 2.

J. ROBERTSON.

MACHINE FOR MAKING PLUMBER'S TRAPS.

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Fig: 4

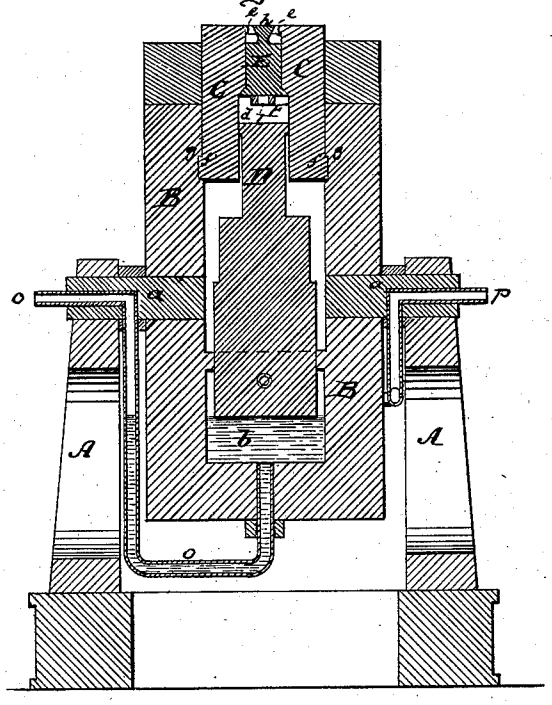


Fig: 5

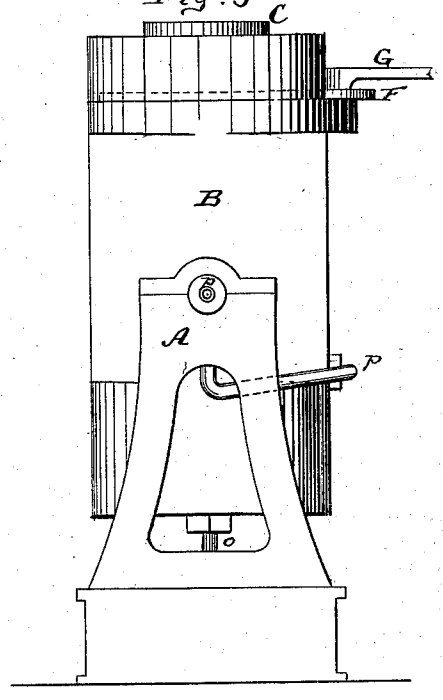


Fig: 6

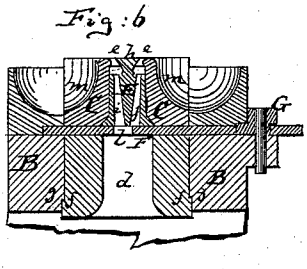


Fig: 7

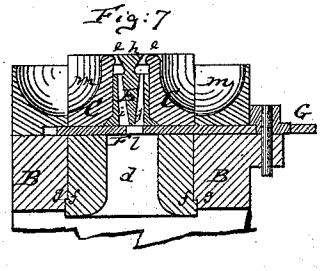


Fig: 8

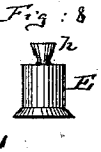


Fig: 9

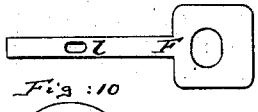


Fig: 10

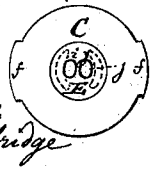


Fig: 11

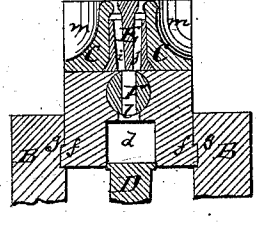
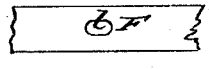


Fig: 12



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UNITED STATES PATENT OFFICE.

JOHN ROBERTSON, OF BROOKLYN, NEW YORK.

IMPROVEMENT IN MACHINES FOR MAKING PLUMBERS' TRAPS.

Specification forming part of Letters Patent No. **192,192**, dated June 19, 1877; application filed April 23, 1877.

To all whom it may concern:

Be it known that I, JOHN ROBERTSON, of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Machine for Making Lead Traps, of which the following is a specification:

This invention relates to a new machine for making the S-shaped lead traps used under water-closets, kitchen-sinks, and the like, the machine operating in connection with a press, by which the lead is forced through an annular outlet, the amount of material ejected being regulated by a movable perforated valve, which serves to admit more material to that side of the annulus at which the convex curve of the trap is to be formed than to that side at which the concave portion is to appear.

Means for regulating such discharge of lead directly within the annulus have already previously been devised; but my invention differs from these in applying the valve, which has but one aperture in the line of two separate lead-passages that lead to and enter the annulus, and not directly within the annulus, as heretofore.

By this means a more perfect and absolute adjustment of the material is obtained, as the separate columns of lead in the two separate channels are under separate control, the lead after issuing from the passages uniting readily within the annulus into the tubular form required.

My invention consists in a new arrangement of core and core-holder, having the two passages aforementioned, and forming also an annular constriction-chamber, in which the lead issuing from said two passages unites into a tube.

It also consists in the combination, with a core-holder having said two passages, of a perforated valve, which can be adjusted to either admit an equal quantity of lead into both passages when a straight tube is required, or more into one than into the other, or vice versa, when it is desired to form a bend in said tube.

The invention also consists in forming pockets in the outer part of the casing, which forms the wall of the constriction-chamber, which pockets allow the pipe formed by the machine to bend in the making of the curves without materially diminishing the strength of the said casing.

The invention also consists in hanging all that part of the machine which contains the lead-chamber, the core, and the constriction-chamber on trunnions, so that it can be reversed to be charged with lead and heated, and in other details of invention hereinafter more fully described.

In the accompanying sheets of drawing, Figure 1, Sheet 1, represents a plan or top view of my improved machine. Fig. 2, Sheet 1, is a vertical central section, showing the mold reversed for filling and heating. Fig. 3, Sheet 1, is a similar section thereof, showing the machine in position for making a lead trap, the line *c c*, Fig. 1, indicating the plane of section. Fig. 4, Sheet 2, is a vertical section of said machine on the line *k k*, Fig. 1. Fig. 5, Sheet. 2, is a side elevation of the machine. Figs. 6 and 7, Sheet 2, are vertical central sections of the mold, showing the valve in different positions. Fig. 8, Sheet 2, is a detail side view of the core and core-holder. Fig. 9, Sheet 2, is a plan view of the sliding valve. Fig. 10, Sheet 2, is a detail bottom view of the core and core-holder and of the casing which incloses the same. Fig. 11, Sheet 2, is a vertical central section of a modification of the invention. Fig. 12, Sheet 2, is a detail plan view of the rocking valve used therein.

Similar letters of reference indicate corresponding parts in all the figures.

A represents the frame of the machine. In it is hung, by trunnions *a a*, a metal block or frame, B, which, at one end, forms a chamber, *b*, for the reception of an hydraulic ram, D, while the other end holds the steel shell C that constitutes the lead-chamber *d* and the constriction-chamber *e*. The steel shell C has projecting shoulders *f*, which hold it in place against a shoulder, *g*, formed in the hollow of the block B. The ram D, which is moved by water let into the chamber *b*, enters also the lead-chamber *d*, as shown in Figs. 2, 3, and 4, to eject the lead therefrom. E is the core and core-holder. It is inserted into the

shell C from below, and is provided with a conical base or projecting shoulder, which prevents the pressure beneath from displacing it in an upward direction. This core-holder does, at its upper end, terminate in the core proper, *h*, which is a very short projection of inverted truncated conical form, of a less diameter than the body of the core-holder.

The upper end of the core proper is substantially flush with the upper end of the shell or chamber C, and between them is formed the constriction-chamber *e*, which is an annular chamber, contracted toward its upper end, as clearly shown in Figs. 4, 6, and 7. Into this constriction-chamber enter two upright passages, *i* and *j*, which traverse the core-holder E lengthwise on opposite sides of its axis. The lower ends of these passages communicate, through an aperture, *l*, of a movable valve, F, with the lead-chamber *d*, as indicated in Figs. 4, 6, and 7, and also in Fig. 11.

When the chamber *d* is charged with lead, and the ram D moved upward, the lead will, through the aperture *l* of the valve, and through the passages *i* and *j*, pass into the constriction-chamber *e*, where it is caused, by the pressure and by the contracted form of the chamber, to fill said chamber *e* entirely, and issue therefrom in form of a tube or pipe.

The valve F is movable, and may be moved, if sliding, by a suitable cam-lever, G, or by other means; or it may be made to rock, as in Fig. 11.

Whenever the valve is so set that its aperture *l* will leave an equal opening into each of the passages *i j*, as in Fig. 3, the pipe issuing from the machine will be straight.

In Fig. 3 the trap is represented as complete, with the exception of the last straight end, and it is set to form the same.

When the valve is set to open the passage *i* more than the passage *j*, as in Fig. 6, more metal will pass through *i* than through *j*, and the pipe issuing will, therefore, curl or bend, as by dotted lines in Fig. 3, the excess of material passing through *i* forming the convex part, and the lesser amount of material passing through *j* forming the concave part of the pipe-bend.

If the valve be moved to admit more lead to the passage *j* than to the passage *i*, as in Fig. 7, the lead will also curve, but in the reverse direction.

Thus, by merely sliding or rocking the valve, the pipe issuing from the machine can be first made straight, next curved to one side, then to the other, and, finally, again straight, all as required for making an S-shaped trap.

I deem the construction of the core-holder, core, constriction-chamber, and their combination with the perforated valve, to be of especial value, not only as regards the greater certainty and accuracy in the distribution of the lead, but also as regards the strength and firmness of the core, which, when the distribution is caused to take place directly within an annular chamber, must be of considerable length, and is, consequently, weak and unable to withstand the increase of pressure on either side; consequently the long cores either yield, thereby causing the lead tube to be of unequal thickness, or they break and spoil the entire machine.

The steel shell C should also be of considerable strength, and yet it must be thin where the tube is to bend over its edge. I have provided it with pockets *m m* at its outer part. Into these pockets the pipe is properly folded or fed, as indicated in Fig. 3, and yet the remainder of the shell C is very strong, and not liable to burst, which is frequently the case where shells are made of the same thickness throughout, as mine is at the pockets.

When the frame or block B is swung on its trunnions to bring the mold part C to the bottom, as in Fig. 2, the lead-chamber *d* can be filled through a suitable aperture, *n*, and the shell C and core and lead-chamber equally and properly heated by a flame placed underneath. This heating of the parts is necessary for a proper operation of the machine; but in all the machines heretofore made it was impossible to heat them equally, whereas unequal heating is very objectionable. I therefore attach much importance to the use of the swinging mold.

The water is supplied to the chamber *b* by a pipe, *o*, which passes through one of the trunnions *a*, and another pipe, *p*, which also passes through one of the trunnions, serves to discharge the water from the chamber *b*. The said pipes do, therefore, not interfere with the proper manipulation of the machine on its trunnions or pivots.

I claim as my invention—

1. The core-holder E, provided with two passages, *i* and *j*, and with the projecting core proper *h*, substantially as herein shown and described.

2. The combination of the core-holder E and core *h* with the outer shell C, forming the constriction-chamber *e*, substantially as herein shown and described.

3. The combination of the movable valve F, having the aperture *l*, with the core-holder E, having the separate passages *i* and *j*, and with the lead-chamber *d*, substantially as herein shown and described.

4. The combination of the movable perforated valve F and lead-chamber *d* with a mold, having two passages, *i* and *j*, that lead into an annular constriction-chamber, substantially as herein shown and described.

5. The shell or casing C of the constriction-chamber, said shell having the pockets *m m*,

substantially as and for the purpose herein shown and described.

6. The mold B C E, provided with trunnions *a a*, and pivoted in the frame A, so that it can be reversed, substantially as herein shown and described.

7. The combination of the block B, having trunnions *a a*, with the chambers *b d*, ram D, and mold C E, all arranged substantially as herein shown and described.

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F. V. BRIESEN.