To all whom it may concern:

Be it known that I, Austin L. Vroman, a citizen of the United States, residing at Medford, in the county of Jackson and State of Oregon, have invented new and useful Improvements in Plumbers' Clamps, of which the following is a specification.

This invention relates to plumbers' clamps for use in holding elements together in making wiped or rolling joints, the object of the invention being to provide a simple, inexpensive, reliable and efficient construction of devices of this character for securely holding together in position a brass ferrule or nipple and a lead pipe, whereby the joint may be quickly and conveniently formed without the necessity of blocking up or weighting to hold the elements in place.

A further object of the invention is to provide a tool of the character described which may be adjusted to suit different lengths and diameters of parts to be joined, which may be easily and conveniently applied and removed, which will operate without injury to the parts clamped thereby, and which will take care of any expansion of the parts due to the heat from the joint.

The invention consists of the features of construction, combination and arrangement of parts herein fully described and claimed, reference being to the accompanying drawing in which:

Figure 1 is a view of the clamp as it appears with the jaws in closed position. Fig. 2 is a similar view, showing the clamping cone in section, and also showing the jaws spread and the device applied for clamping a lead pipe and brass nipple together. Fig. 3 is a detail transverse section through the rod and gripping jaws taken on a line through the gripping shoes. Fig. 4 is a vertical transverse section through the rod and gripping jaws taken on a line through the pivots of the jaws. Fig. 5 is a view similar to Fig. 2 showing a modification. Fig. 6 is vertical transverse section on the line 6-6 of Fig. 5.

The device comprises a rod or shank 1, which may be of suitable length and diameter, and which is provided at one end for a desired distance of its length with screw threads 2. At its opposite end the rod or shank is formed or provided with a wedge-shaped spreader 3 for cooperation with a pair of clamping jaws 4 and 5. These jaws have portions pivotally connected, as at 6 and bent or formed to provide a sleeve 7 which slidably engages the rod or shank 1, the construction being such that the jaws are movable longitudinally on the rod, and are also pivoted to swing laterally in directions toward and from each other for closing and opening movements. As shown each jaw 4 and 5 comprises a comparatively long and narrow body, the said jaws being formed with guide grooves or channels 8 on their inner faces to receive and engage the wedge-shaped spreader 3, whereby the jaws are held from lateral deflection in plane at right angles to their plane of pivotal motion and a firm and secure connection between the jaws, spreader and rod afforded. Each jaw is also provided with a renewable gripping member 9 upon the outer face thereof which gripping member preferably consists of a body or block of lead or other comparatively soft material which is adapted to engage the pipes or object without scratching or otherwise marring or injuring the same. Slidably mounted on the rod or shank 1 is a clamping cone or member 10, and engaging the threaded end 2 of the rod is a winged adjusting and clamping nut 11. Surrounding the rod or shank between this nut and the clamping cone 10 is a coiled spring 12, which is adapted for adjustment by the nut to hold the clamping cone in clamping position, while permitting of a yielding recession thereof to permit and compensate for expansion of the parts due to the heat from the joint.

The device may be used for clamping various elements together in making wiped or rolling joints, but in Fig. 2 I have illustrated one mode of use, which is sufficient to indicate in general the purposes of the invention. The device is shown in this particular for clamping a brass ferrule 13 against the end of a lead pipe 14 and to hold said parts assembled for the production of a wiped joint 15. In use, the ferrule 13 is fitted upon the end of the pipe 14 and the end of the rod carrying the clamping jaws inserted through the ferrule and into the pipe and the clamping cone 10 brought into position to fit within the ferrule. The rod is then adjusted to project the clamping jaws through the action of the wedge 3, by which the gripping members 9 are forced into gripping engagement with the pipe, thus holding the device from outward movement. The nut 11 is then adjusted to bring
the spring 12 into contact with the inserted cone 10 and to adjust said spring to the desired resisting tension. The pipe and ferrule will thereupon be firmly bound together so that the joint 15 may be formed in a ready and convenient manner. If there should be any expansion of the parts 13 and 14 due to the heat from the joint it will be evident that this will be permitted by outward movement of the conical clamp permitted by yielding action of the spring, thus effectually preventing cracking of or other injury to the formed joint.

From the foregoing description, taken in connection with the drawings, the construction, mode of operation and advantages of my improved plumber's clamp will be readily understood, and the advantages thereof appreciated. It will, of course, be understood that the device may also be used for holding a nipple and pipe assembled, and for performing various other similar operations in a reliable and efficient manner.

Instead of the jaws 4 and 5 being provided with the gripping members 9, said jaws may consist of channeled members 4' and 5', as shown in Figs. 5 and 6, which are pivotally connected by pins or bolts 15 to ears 16 carried by segmental gripping members 17, which construction adapts the grippers to have greater flexibility for adjustment to conform to the surface of the pipe 14. Furthermore, as the part 17 may be made of sheet steel, a greater bearing on the lead pipe may be obtained to prevent it from flattening under pressure, while the use of lead gripping members or large gripping blocks is avoided.

I claim:

1. A plumber's clamp comprising a rod or shank, a pair of pivoted clamping jaws slidably mounted upon one end of said rod or shank, said jaws having grooved guide surfaces, a spreader upon the rod or shank engaging said grooved guide surfaces, whereby through relative longitudinal motions between the rod and jaws the latter may be spread or permitted to close, a cooperating clamping member slidably mounted on the shank, and means for securing said clamping member in position.

2. A plumber's clamp comprising a rod or shank, clamping means at one end of said rod or shank including laterally movable clamping jaws and means for controlling the same, a sliding clamping element upon the shank, a nut adjustable upon the opposite end of the shank, and a coiled clamping and resistance spring upon the shank between said sliding clamping element and the nut.

3. A plumber's clamp comprising a rod or shank, a wedge-shape spreader at one end thereof, grooved clamping jaws slidably and pivotally engaging the shank and arranged for cooperation with said spreader, a clamping member on the shaft, and means for adjusting it in position.

4. A plumber's clamp comprising a rod or shank, a wedge-shape spreader at one end thereof, a pair of grooved clamping jaws slidably and pivotally mounted upon the shank for cooperation with said spreader, renewable soft metal clamping members carried by said jaws, a clamping member slidably mounted on the shank for cooperation with the jaws, means for retaining said clamping member in position.

5. A plumber's clamp comprising a rod or shank, gripping mechanism at one end of said rod or shank, including jaws adapted to be moved into and out of gripping position by a relative longitudinal motion of the shank, a clamping cone slidably mounted on the shank, a nut adjustable on the shank, and a coiled resistance spring upon the shank between the nut and cone.

In testimony whereof I affix my signature in presence of two witnesses.

AUSTIN L. VRCMAN.

Witnesses:

Geo. J. Kunzman,
E. Hill, Canaday.