

MACHINE FOR FLANGING SOFT METAL PIPES.

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1,383,839.

Patented July 5, 1921.

3 SHEETS—SHEET 1.

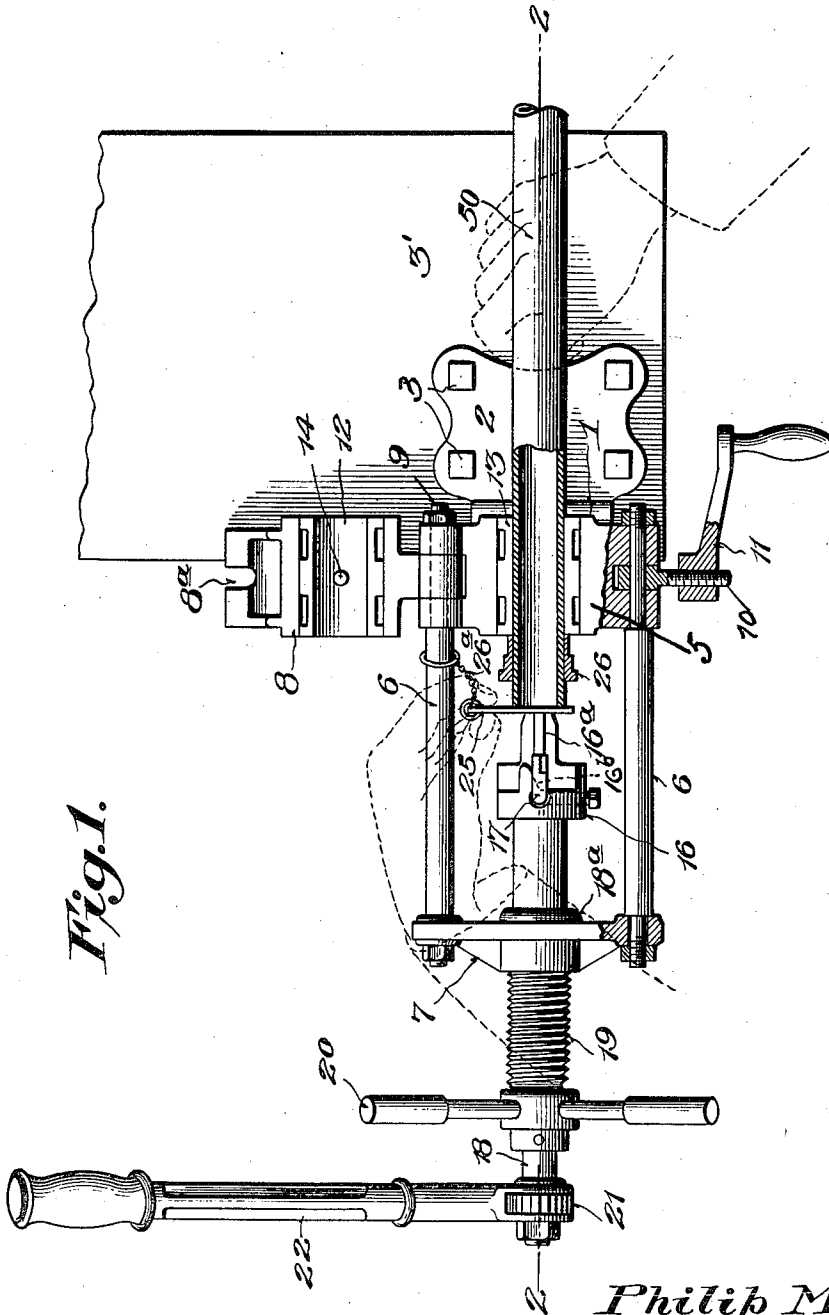


Fig. 1.

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Chas. L. Griestauer

Philip Mueller,
Anton C. Schuermann,

By James Cushman Reed

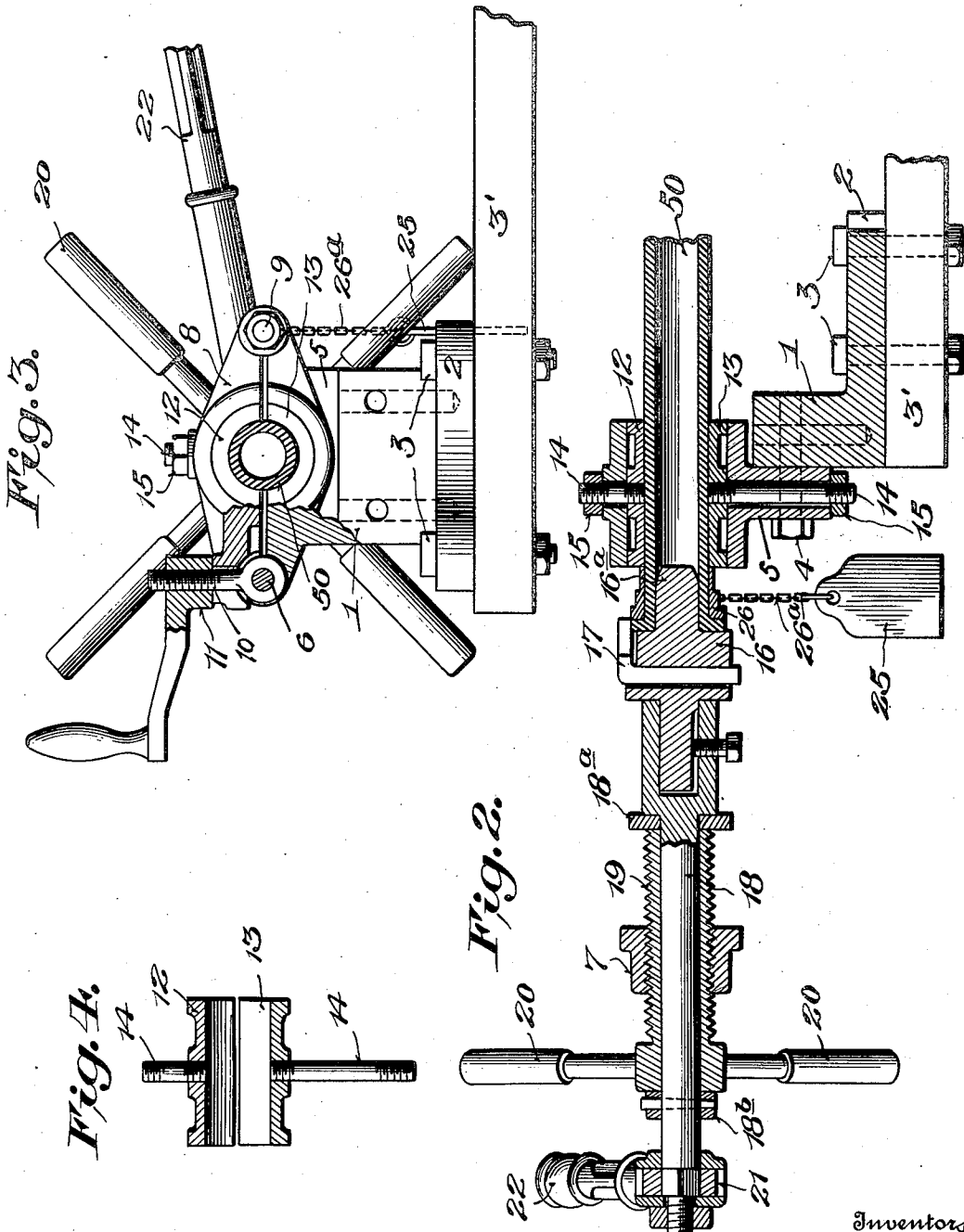
Attorneys

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Witness
Chas. L. Gristauer

Inventors
Philip Mueller,
Anton C. Schuermann,

By *Samuel Levenson* *Per*
Attorneys

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Fig. 6.

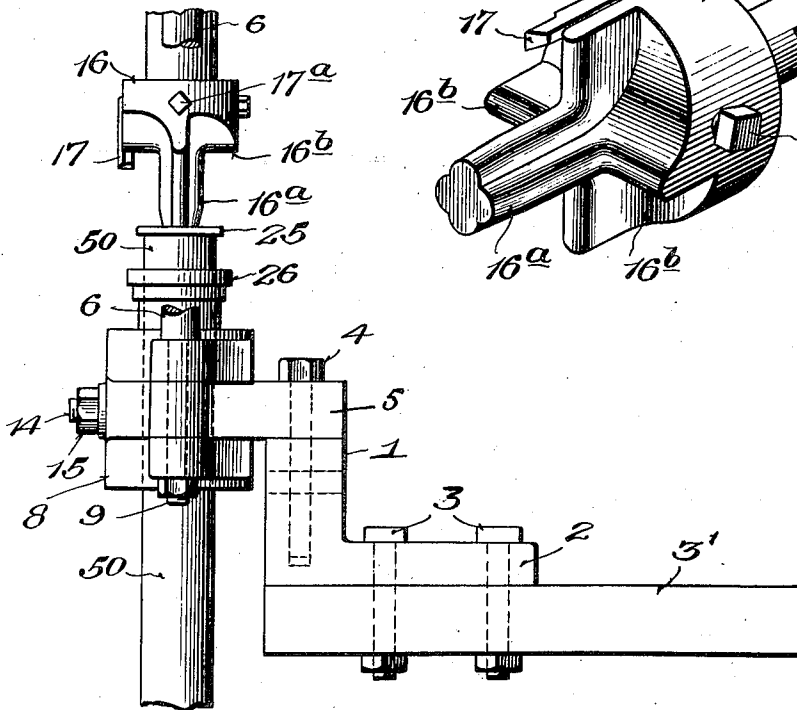


Fig. 5.

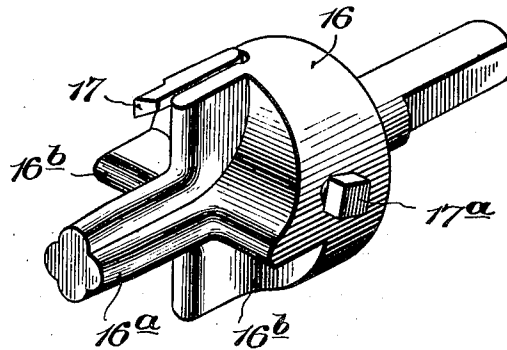
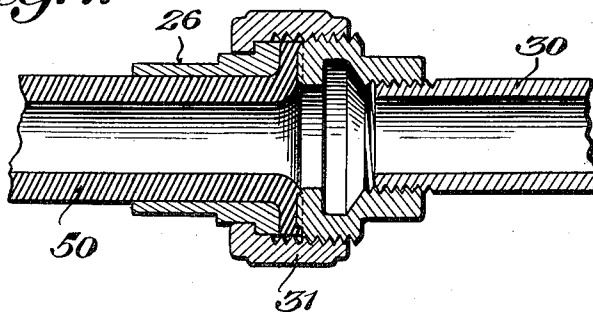


Fig. 7.



Witness

Chas. L. Gristauer

Inventors
Philip Mueller,
Anton C. Schuermann,

By *J. H. Leubman & Co.*

Attorneys

UNITED STATES PATENT OFFICE.

PHILIP MUELLER AND ANTON C. SCHUERMAN, OF DECATUR, ILLINOIS, ASSIGNORS
TO ADOLPH MUELLER, TRUSTEE, OF DECATUR, ILLINOIS.

MACHINE FOR FLANGING SOFT-METAL PIPES.

1,383,839.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that we, PHILIP MUELLER and ANTON C. SCHUERMAN, citizens of the United States, residing at Decatur, in the county of Macon and State of Illinois, have invented new and useful Improvements in Machines for Flanging Soft-Metal Pipes, of which the following is a specification.

The present invention relates to improvements in portable apparatus or machines adapted for forming flanges on the ends of soft metal pipes or tubes. In particular the invention is adapted for use in flanging lead pipe in order to adapt it for connection in "union lead flange couplings" such as are employed for connecting water supply street mains with the house service pipes.

The particular objects of the invention are to provide a simple and durable apparatus which may be attached to a bench or to a suitable support placed in the ditch containing the service pipe, and which is adapted for use in either a vertical or horizontal position.

In the accompanying drawings,—

Figure 1 is a plan of an embodiment of the invention, the pipe to be flanged being partially shown in section and the clamping jaws in open position.

Fig. 2 is a sectional view on the line 2—2 of Fig. 1.

Fig. 3 is an end view.

Fig. 4 is a detail of the bushings or liners of the clamping jaws.

Fig. 5 is a perspective view, on an enlarged scale, of the head of the flanging and trimming tool.

Fig. 6 illustrates the apparatus arranged for operating upon a vertical pipe, and

Fig. 7 is a sectional view of a connection between an iron main and a lead house service pipe, such as hereinbefore referred to.

Referring to the drawings, the apparatus or machine includes an angular base 1, which, as shown in Figs. 1 to 3, has its horizontal member 2 connected by suitable bolts 3 to a plank or other support 3'. To the vertical member of the base 1 is secured, as by screws 4, a member 5 of a rigid frame which includes rods 6 connected at one end to the member 5 and at their opposite ends to a yoke 7. The upper portion of the member 5 of the frame referred to constitutes the lower jaw of a pipe clamping

means, the upper jaw 8 being hinged at one end, as by a pivot pin 9, to said lower jaw and having at its other end a slot 8^a through which is adapted to extend a screw 10 shown as mounted on the reduced portion of one of the frame rods 6 and on which screw is mounted a nut 11 by means of which the two jaws may be held in closed relation.

Within the jaws referred to are arranged liners or bushings 12, 13, which directly engage the body of the pipe to be flanged in the apparatus. As shown, each of these liners is connected to one end of a screw 14 that extends outwardly through a suitable opening in the body of the jaw and on the ends of said screws are fitted nuts 15 by means of which the liners are securely held in position in the jaws, but may be readily removed and replaced to substitute similar parts adapted for grasping pipe of different diameters. It will be understood that the jaws of the clamp are cored to an inside diameter corresponding to the outside diameter of the bushings or liners and that the thickness of the latter will be varied to adapt the machine for use with pipe of different diameters. The flanging tool which comprises a suitable body 16 and a trimming knife 17 is shown as secured within a socket at one end of a spindle 18 that extends through an exteriorly threaded sleeve 19 which is fitted to a suitably threaded passage in the yoke 7 of the main frame.

By means of radially projecting handles the tool supporting spindle may be moved toward and from the pipe clamps, said sleeve abutting at one end against a disk 18^a loosely mounted on the spindle 18 and a collar 18^b being secured to the spindle beyond the other end of said sleeve. By means of a ratchet 21 and a pawl on a handle 22 cooperating therewith the spindle 18 may be rotated within the sleeve 19 to render the trimmer or cutter 17 operative as will be hereinafter referred to.

The forward end of the head 16 of the flanging tool is provided with a slightly tapered portion 16^a having substantially the shape of a cross which is adapted to fit tightly within the pipe to be flanged to prevent collapsing thereof during the flanging operation, and said forward portion of the head is further provided with rounded projections 16^b, shown as being four in number,

which are adapted to bear against the end of the pipe and form the same into a flange, the rounded surfaces between said projections assisting in producing a gradual flaring of the end of the pipe. The trimming tool or cutter 17 is fitted within a suitable opening in the head 16 and is held securely but adjustably in position by means of a suitable screw 17^a.

10 A plate 25, shown as connected with the main frame of the apparatus by a chain 26^a, is provided for gaging the distance which it is desired to have the pipe to be flanged project beyond the jaws, said plate being
15 initially positioned as shown in Fig. 1 against the extremity of the flanging tool and presenting a relatively large flat surface against which the end of the pipe to be flanged will abut.

20 The manner of using the apparatus may be briefly described as follows:

The flanging tool is moved away from the jaws by turning the feed screw 19, until the collar 18^a comes to a stop against the yoke
25 7 and, after liners of the required thickness have been secured in the jaws, the pipe 50 to be flanged is placed in the lower jaw and the upper jaw closed and secured thereon. The extent to which the pipe will project beyond the jaws is determined by the
30 operator holding the stop plate 25 as represented in Fig. 1.

The pipe having been thus positioned, a suitable sleeve or lead pipe coupling 26 is
35 slipped over the projecting end. The stop plate 25 is then moved from the end of the tube and the threaded sleeve 19 turned to carry the flanging tool toward the tube. Before the tool is inserted in the pipe, it is
40 thoroughly oiled. As the threaded screw is turned, the member 16^a of the flanging tool will enter the projecting end of the tube and the portions 16^b of said tool will act to expand or flare outwardly the end
45 of the tube so that an annular flange will be produced between the body of the tool and the sleeve 26 on the tube. During the longitudinal feeding of the tool by the action of the sleeve 19, a rotary movement
50 may also be imparted to the spindle 18, which will assist in forming the flange, and when the latter has been properly completed further rotation of said spindle will cause the cutter 17 to trim and smooth the edge
55 of the flange. When the flanging operation is completed, the feed screw is rotated in a reverse direction until the collar 18^a thereon strikes the yoke 7 of the main frame, at which time the flanging tool will
60 be completely disengaged from the pipe.

The nut 11 is then turned to release the jaw 8 which can be turned about pivot pin 9 to open position when the pipe can be readily removed.

65 It will be understood that the jaws and

flanging head 16 employed will be correctly proportioned to properly cooperate with the size of pipe to be flanged.

As shown in Fig. 6, the apparatus may be arranged to operate in a vertical direction as well as horizontally. For this purpose the upwardly extending member of the base 1 is provided with vertically extending sockets to receive the screws 4.

After the pipe has been flanged as described, it may be connected with a supply pipe 30 by a suitable coupling sleeve 31 engaging threads on the main and the sleeve 26.

Having thus described the invention what is claimed is:—

1. In a machine for flanging soft metal pipes, the combination of a frame provided with pipe holding jaws, a flanging tool supported by said frame at one side of said jaws, means for moving the tool toward
85 and from the jaws, and means supported by the frame for cooperating with the end of the tube to be flanged and determining the extent of projection of the pipe from the jaws.

2. In a machine for flanging soft metal pipes the combination of a frame provided with pipe holding jaws, a flanging tool supported by the frame, means for moving
90 said tool toward and from the jaws, and a stop plate flexibly connected with the frame and adapted to be positioned between the tool and jaws for determining the extent of projection of the pipe from the jaws.

3. An apparatus for flanging soft metal pipes comprising in combination a readily portable frame adapted to be secured to a suitable support and including pipe engaging jaws, a flanging tool support mounted in
105 said frame and adapted to be moved toward and from the said jaws, a flanging tool carried by said support and bodily movable therewith to and from operative relation with the end of a pipe engaged by said jaws, and means for rotating the flanging
110 tool independently of any movement of its support.

4. An apparatus for flanging soft metal pipes comprising in combination a readily portable frame, including pipe engaging
115 jaws, adapted to be secured to a suitable support so that said jaws will be positioned to engage either a vertically or horizontally extending pipe, a flanging tool support mounted in said frame and adapted to be
120 moved toward and from the said jaws, in either position of the latter, a flanging tool carried by said support and movable therewith to and from operative relation with the end of a pipe engaged by the jaws, and
125 means for rotating the flanging tool relative to its support.

5. An apparatus for flanging soft metal pipes comprising in combination a readily portable frame, including pipe engaging
130

jaws, adapted to be secured to a suitable support so that said jaws will be positioned to engage either a vertically or horizontally extending pipe, an exteriorly threaded, tubular, flanging tool support engaging a threaded bearing in the frame in axial alignment with a pipe engaged by said jaws, a flanging tool having its stem extending through said support and movable thereby to and from engagement with the end of a pipe engaged by the jaws, and means for rotating the flanging tool relative to said support.

6. An apparatus for flanging soft metal pipes comprising in combination, a readily portable frame, including pipe engaging jaws, and a flanging tool mounted in the frame and movable therein to and from operative relation to one end of a pipe engaged by the jaws, said tool having a rotatable head provided with centering and flanging projections, and a cutting edge arranged immediately adjacent a flanging projection.

7. An apparatus for flanging soft metal pipes comprising in combination a readily portable frame, including pipe engaging jaws, a flanging tool mounted in the frame and movable therein to and from operative relation to one end of a pipe engaged by the jaws, said tool having a rotatable head provided with centering and flanging projections, and a cutting blade adjustably mounted on the head of the flanging tool and projecting therefrom adjacent one of the flanging projections.

8. In a machine for flanging soft metal pipes, the combination of a readily portable frame provided with means for clamping a pipe to be flanged, a feed screw mounted in said frame in axial alignment with the pipe clamping means, a flanging tool having its stem supported solely by the screw, and means for rotating the tool relative to the screw.

9. In a machine for flanging soft metal pipes, the combination of a readily portable

frame provided with means for clamping a pipe to be flanged, a feed screw mounted in said frame in axial alignment with the pipe clamping means, a flanging tool having its stem supported solely by the screw, and movable therewith toward and from the pipe clamping means, and means for rotating the tool relative to the screw in any adjusted position.

10. In a machine for flanging soft metal pipes, the combination of a frame provided with means for clamping a pipe to be flanged, a tubular feed screw mounted in the frame in axial alignment with the pipe clamping means, a spindle extending through the feed screw, a flanging tool carried by the spindle beyond one end of the screw, and means on the spindle beyond the other end of the screw for rotating the spindle and tool.

11. In a machine for flanging soft metal pipes, the combination of a frame provided with pipe-engaging jaws adapted to be supported in either a vertical or horizontal position, a tubular feed screw mounted in said frame, a flanging tool supported by a spindle extending through the bore in said screw, a collar surrounding said spindle and adapted to cooperate with the frame to limit movement of the flanging tool away from the jaws, and means for rotating the feed screw.

12. In a machine for flanging soft metal pipes, the combination of a frame provided with pipe-engaging jaws adapted to be supported in either a vertical or horizontal position, a yoke projecting from the frame beyond one end of the jaws, a feed screw supported by the cross head of the yoke, a flanging tool detachably connected with the feed screw, means for rotating the feed screw, and means for rotating the flanging tool independently of the screw.

In testimony whereof we have hereunto set our hands.

PHILIP MUELLER.
ANTON C. SCHUERMANN.