

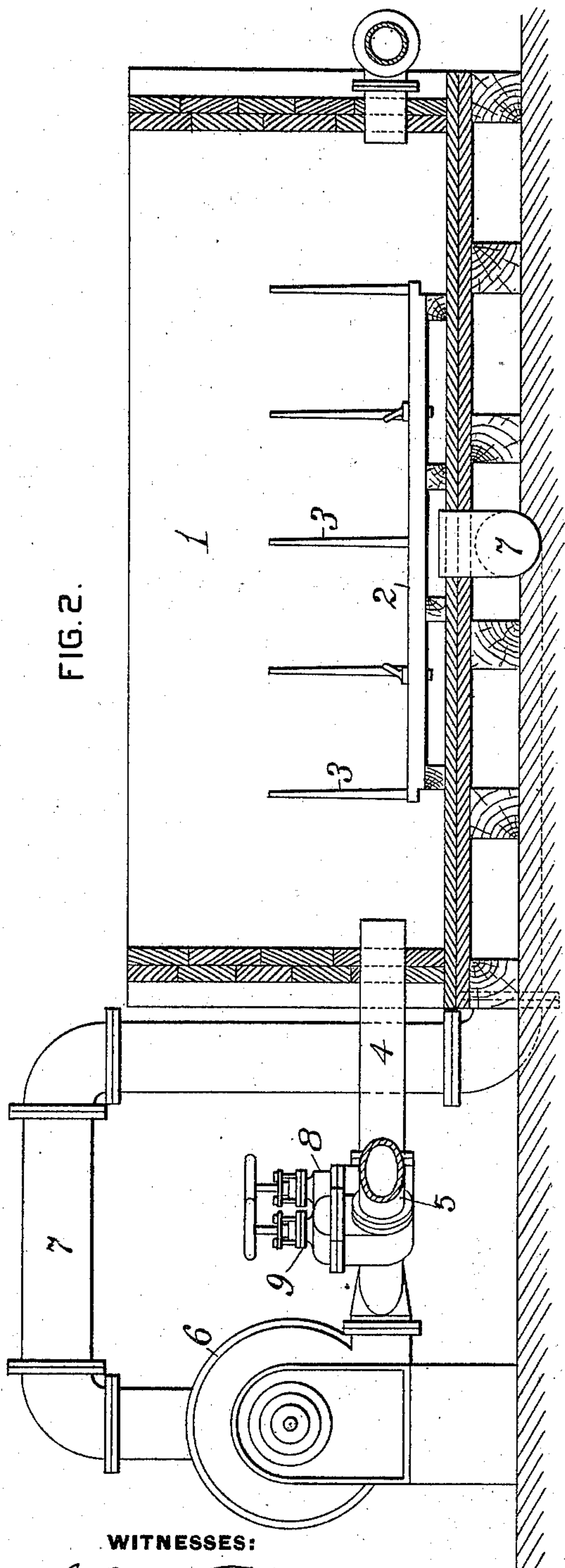
(No Model.)

G. G. McMURTRY.  
PICKLING APPARATUS.

No. 575,404.

Patented Jan. 19, 1897.

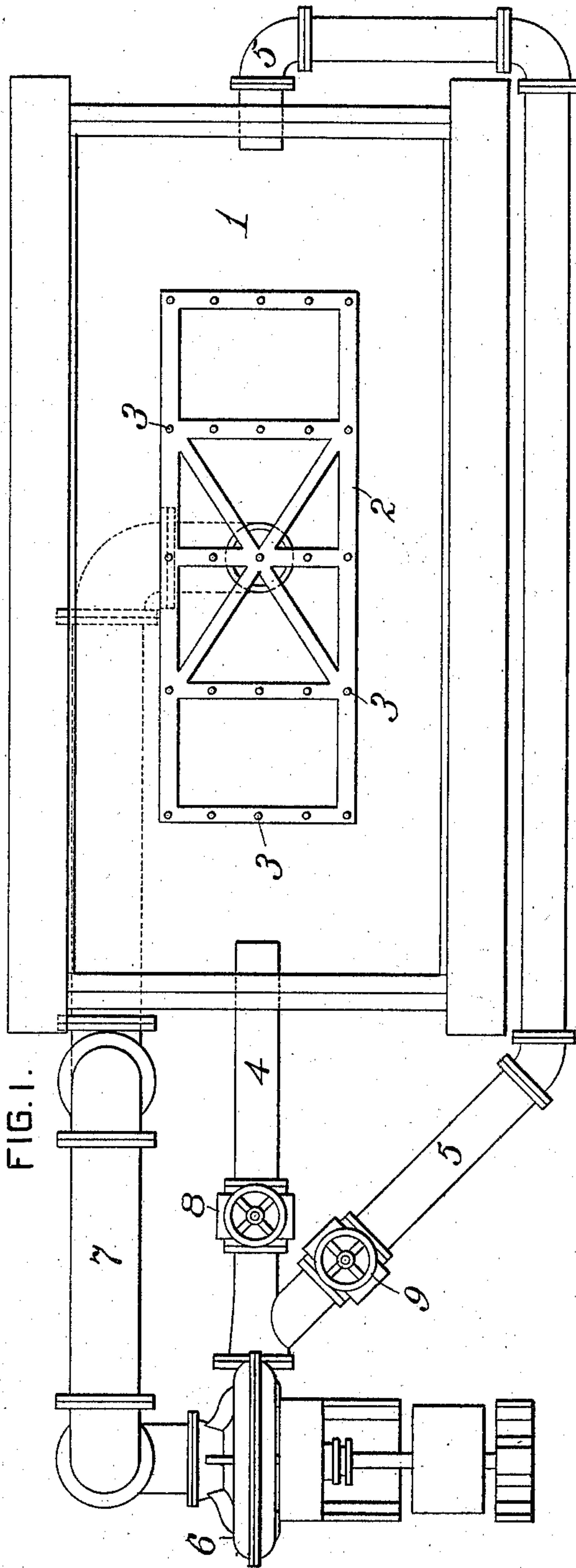
FIG. 2.



WITNESSES:

*Chas. F. Miller*  
*A. E. Gaither*

FIG. 1.



INVENTOR,

*George G. McMurry*  
*by Danvers Wolcott*  
Att'y.



# UNITED STATES PATENT OFFICE.

GEORGE G. McMURTRY, OF ALLEGHENY, PENNSYLVANIA.

## PICKLING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 575,404, dated January 19, 1897.

Application filed August 1, 1896. Serial No. 601,313. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE G. McMURTRY, a citizen of the United States, residing at Allegheny, in the county of Allegheny and State of Pennsylvania, have invented or discovered certain new and useful Improvements in Pickling Apparatus, of which improvements the following is a specification.

The invention described herein relates to certain improvements in apparatus for pickling and cleaning metal sheets, and has for its object a construction whereby a more rapid and violent movement of the liquid along the surfaces of the sheet can be effected, the movement of such liquid being in such direction as to cause the opening up of the sheets, so as to render all parts of the surface accessible to the liquid.

In general terms the invention consists in the construction and combination substantially as hereinafter more fully described and claimed.

In the accompanying drawings, forming a part of this specification, Figure 1 is a top plan view of my improved apparatus. Fig. 2 is a sectional elevation of the same, and Fig. 3 is a view similar to Fig. 1 of a modification of the apparatus.

In the practice of my invention I employ a vat 1, of any suitable dimensions, having arranged therein a frame 2, provided with a series of uprights 3 for supporting the sheets to be cleaned in a vertical position. Through the ends of the vat or tank 1 are inserted the ends of pipes 4 and 5, whose opposite ends are connected to a pump 6, of any suitable construction, whereby a rapid movement of the liquid can be effected. This pump 6 is also connected by a pipe 7 to the vat or tank 1, the pipe preferably entering the tank through the bottom and at about the middle thereof. In the pipes 4 and 5 are arranged valves 8 and 9 for the purpose of controlling the flow of liquid from the pumps through these pipes.

In operating my improved apparatus the sheets are arranged between the pins 3 in such manner that their edges will be toward the discharge ends of the pipes 4 and 5. The pump is now operated and the liquid is drawn from the tank through the pipe 7 and dis-

charged into the tank again with considerable force through the pipe 4, the valve 9 in the pipe 5 being closed. As the stream of liquid from the pipe 4 strikes the edges of the sheets they will be separated to a slight extent, so as to permit the liquid to flow over the inner surfaces. After the liquid has been forced through the pipe 4 for a considerable time the valve 9 is opened and the valve 8 closed, thereby reversing the movement of the stream of liquid through the bath. The stream entering through the pipe 5 will open or support the ends of the sheets adjacent to such pipe, thereby allowing the circulation of the water over the inner surfaces of such sheets.

In lieu of the construction shown by Figs. 1 and 2 the arrangement shown in Fig. 3 may be employed. In this arrangement I employ two pumps 6<sup>a</sup> and 6<sup>b</sup>, arranged, respectively, adjacent to opposite ends of the vat or tank. Each of these pumps is provided with a pipe 7<sup>a</sup>, entering the tank at the end opposite to that at which the pump is located, through which liquid is drawn from a tank, and also with a pipe 10, entering the tank at the same end at which the pump is located, for discharging the water into the tank. In operating this form of apparatus one of the pumps is operated for a considerable length of time, the liquid being drawn from one end of the tank and discharged into the opposite end thereof, thereby producing a complete movement of the liquid from one end of the tank between the sheets to the opposite end thereof. By stopping one of the pumps and starting the pump at the opposite end a reverse circulation of the liquid is effected.

It will be readily understood by those skilled in the art that the end to and circulation effected by the apparatus, as shown in Fig. 3, may also be effected by the employment of one pump which has two pipes connected to opposite ends, respectively, of the tank or vat, said pump-supply pipes being provided with valves whereby they may be closed at will.

I claim herein as my invention—

1. In a sheet-pickling apparatus, the combination of a tank or vat, a pump having supply and discharge pipes so connected to the tank or vat as to produce a movement of liq-

uid therethrough and means for supporting the sheets in a vertical position parallel to the line of movement of the liquid through the tank, substantially as set forth.

- 5 2. In a sheet-pickling apparatus, the combination of a tank having two supply-pipes connected with opposite ends of the tanks, a discharge-pipe connected to the tank, a pump connected to the supply and discharge pipes,  
10 valves arranged in the supply-pipes and

means for supporting the sheets in the tank in a vertical position parallel with the line of flow of the liquid through the tank, substantially as set forth.

In testimony whereof I have hereunto set 15 my hand.

GEORGE G. McMURTRY.

Witnesses:

WM. D. HALL,

JNO. Q. COCHRANE.