

D. C. TURNER.

Apparatus for the Manufacture of Bromine.

No. 137,512.

Patented April 1, 1873.

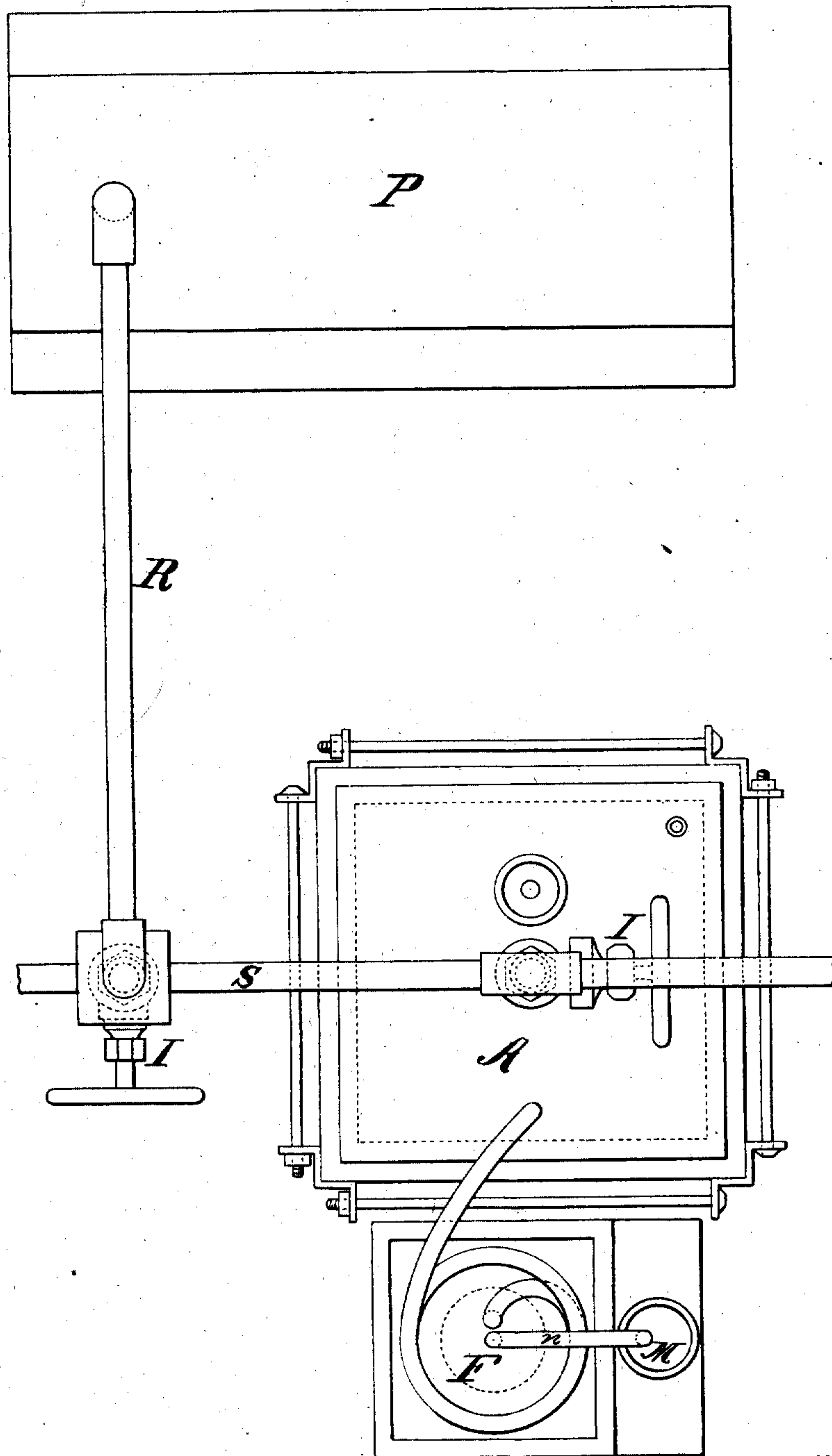


Fig. 1.

WITNESSES

Villette Anderson.
G. E. Upham.

INVENTOR.

D. C. Turner.
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Attorneys.

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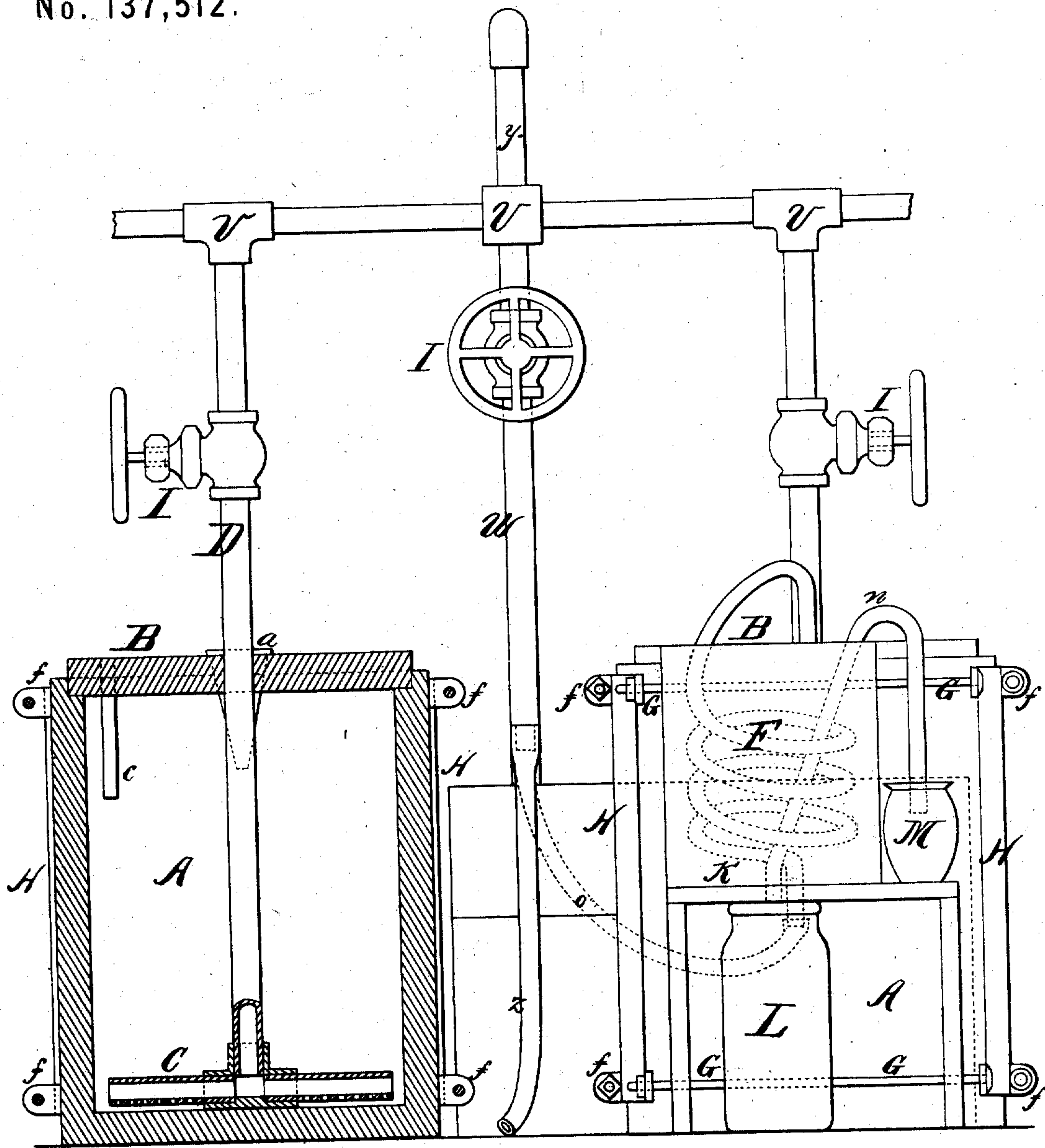


Fig. 2.

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UNITED STATES PATENT OFFICE.

DEWITT C. TURNER, OF CLIFTON, WEST VIRGINIA.

IMPROVEMENT IN APPARATUS FOR THE MANUFACTURE OF BROMINE.

Specification forming part of Letters Patent No. **137,512**, dated April 1, 1873; application filed March 21, 1873.

To all whom it may concern:

Be it known that I, DEWITT C. TURNER, of Clifton, in the county of Mason and State of West Virginia, have invented a new and valuable Improvement in Apparatus for Manufacturing Bromine; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawing is a representation of a plan view of my apparatus. Fig. 2 is a sectional view of the same.

My invention relates to means for the distillation of bromine from bittern or the brine that remains in salt-works after the salt is concreted; and consists in the novel construction and arrangement of the devices hereinafter described and claimed, by which the manufacture of bromine is designed to be cheapened and simplified.

A A of the drawing represent two rectangular stills or tanks, each of which is constructed of a solid cube of sandstone excavated at its center, and is supplied with a sandstone lid or cover, B. In this lid I place a funnel, *a*, and a spout, *c*, as represented on the left-hand figure of Sheet No. 2. In the lower part of each of these stills I arrange a steam-pipe, marked C, having perforations on its lower side to provide for the passage of steam to the contents of the still, as mentioned hereafter. D represents a steam-pipe, which passes through the top of the still, and is attached at will to the steam-pipe C. The chemicals required in the manufacture of bromine have a tendency to saturate the walls of the stills and soften them to such an extent as to render them comparatively worthless after use of about seven months, more or less. To remedy this defect and preserve the still I construct angle-irons, marked H, and arrange them vertically on the outside of each corner of the still. These angle-irons have ears *f*, through which are passed the clamping-bars G, and the still is clamped and held firmly in place by means thereof. The thread and nut on the end of each of these bars G enable the operator to tighten the clamp at will. The letter F represents

my condensing worm or cooler arranged in the tank K, which tank is attached to the side of the still A, and the worm F leads from said still into said tank. The letter L represents a receiving-jar, arranged under the tank K to receive the bromine from the condensing-worm. The letter *n* represents a tube for conducting vapor from the jar L to the jar M, which latter jar is arranged, as shown, on the right-hand figure of Sheet 2. The letter P represents a boiler and furnace for the manufacture of steam, and R is a steam-pipe, leading from said boiler to the connecting-pipe S, or to a pipe, *y*, as shown on the drawing. To this pipe S is attached the steam-pipe D, before mentioned. My plan contemplates the arrangement of a series of stills side by side, all to be supplied with steam from one boiler-pipe. I therefore construct the connecting-pipe S of the length required for the series and unite the pipes D therewith by means of the T-shaped couplings V, as shown. The letter W represents a steam-pipe leading from the pipe S downward, to the bottom or lower end of which I attach a tube, Z, or flexible hose O, as occasion may require.

When desirable I use the tube Z for heating purposes; but when the worm requires cleansing I attach the hose to the steam-pipe and pass a current of steam upward through the same. I find this method of cleansing the worm both rapid and effective.

The letters I represent globe-valves or stop-cocks, arranged upon the various steam-pipes, as shown, and which enable the operator to control the flow of steam at discretion.

To operate my device the bittern is placed in the stills through the funnels in their lids. The usual chemicals found effective in the manufacture of bromine are then introduced through the tubes *c*. I then introduce the steam through pipe D. The vapor is carried through the condensing-worm and deposited in the form of liquid bromine in the jar L. The vapor which arises on the bromine in said jar is conducted through the tube *n* to the jar M, from whence it is returned to the still. The tube *n* also serves as a ventilator to carry off the surplus air in the receiving-jar.

By my method of arranging the perforated steam-pipe C near the bottom of the still I

am enabled to clean said bottom of the condensed salt that may collect thereon by means of steam only, thereby obviating the difficulty heretofore encountered of cleansing such stills by removing the funnel and scraping the salt from the bottom by a sharp instrument. By this arrangement also I am enabled to secure a more uniform motion and heat to the contents of the still than is possible by the ordinary method of introducing the steam through one side of the still.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a bromine-still the angle-irons H and

clamping-bars G, constructed and arranged substantially as described.

2. In apparatus for manufacturing bromine, the combination of the steam-pipe W, hose O, and worm F, substantially as and for the purpose mentioned.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

DEWITT C. TURNER.

Witnesses:

J. L. ROBERTS,

J. J. GRIGGES.