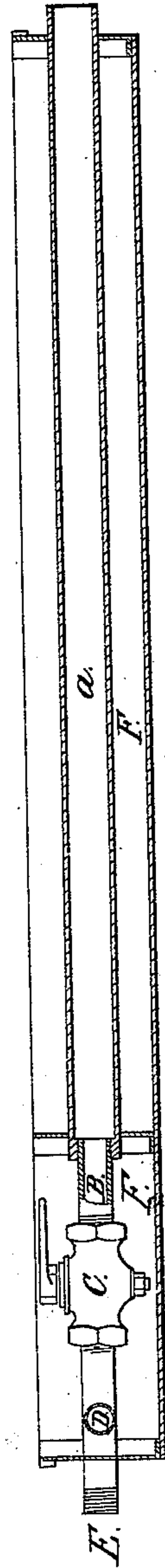
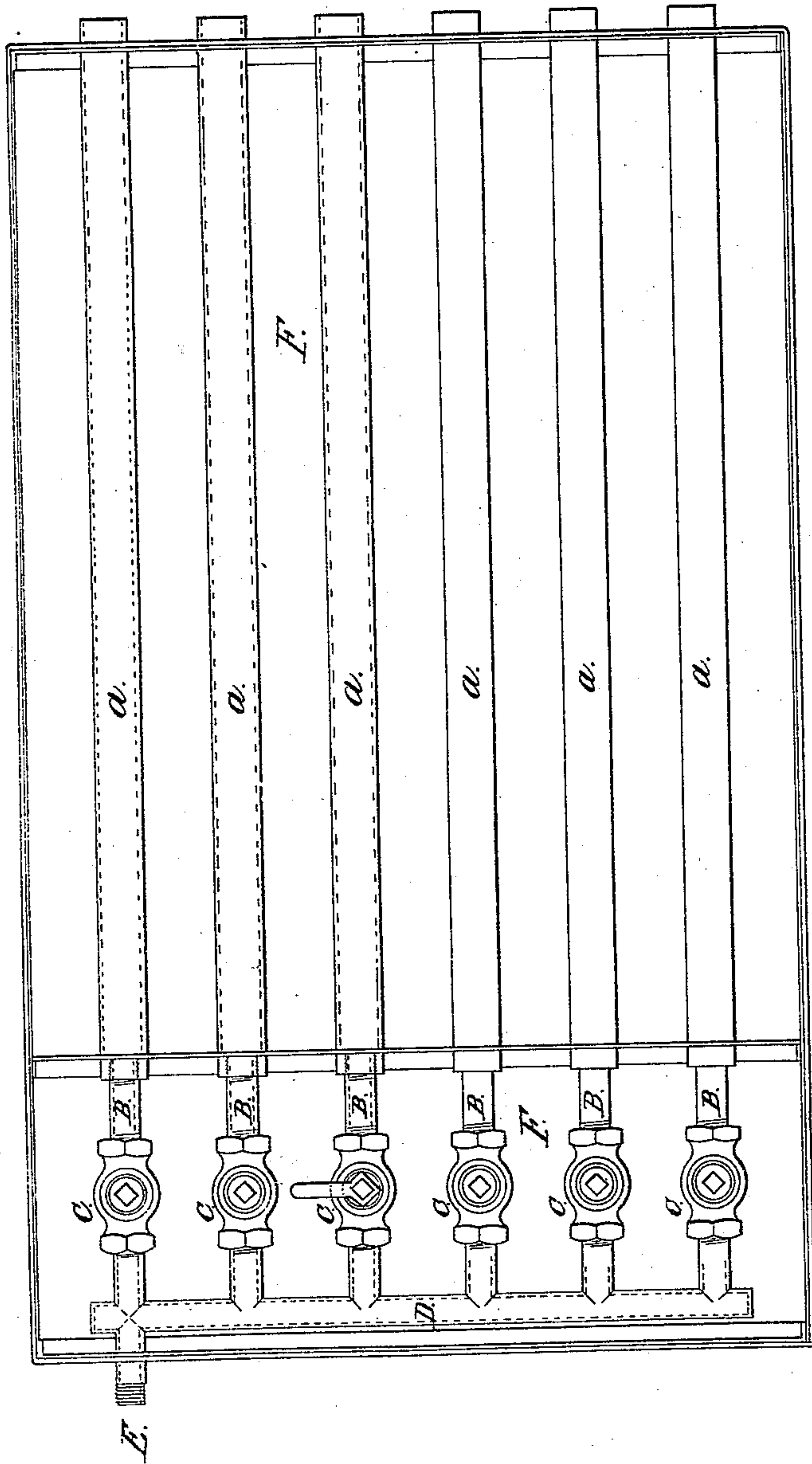


S. R. Divine.
Soap Cutting.

Nº 93,972.

Patented Aug. 24, 1869.



Witnesses,
Henry W. Brewster
W. R. Connolly

Inventor:
Silas R. Divine

United States Patent Office.

SILAS R. DIVINE, OF NEW YORK, N. Y.

Letters Patent No. 93,972, dated August 24, 1869; antedated August 7, 1869.

IMPROVEMENT IN COOLING SOAP, AND FORMING THE SAME INTO BARS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that SILAS R. DIVINE, of the city, county, and State of New York, have invented a new and improved Mode of Cooling and Barring Soap; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature of my invention consists in introducing soap, while in the hot and fluid state, into metallic tubes, of the size and shape required for bars of soap, allowing it to congeal, and subsequently forcing out the soap in the form of long bars, to be cut in lengths that may be required.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

I construct my pipes of metal, iron, brass, copper, or other metal, of a rectangular or other form, to serve as a mould for the soap.

As a material for pipes, I prefer copper, as it possesses great conductive power for heat, and may be made comparatively thin and light, and yet have sufficient strength to withstand the pressure necessary in expelling the cold bar of soap.

For cooling the soap rapidly, I immerse the pipes in cold water, which end is secured by employing a tank of suitable dimensions, and allowing the tubes to protrude through opposite sides or ends of the tank, by water-tight joints, and filling the tank with water, sufficient to surround the tubes on every side.

I prefer to lay the pipes horizontally in the tank, for convenience of working.

The pipes may be filled with hot soap by exhausting the air at one end, and allowing the soap to flow in at the other, by letting it run in from a reservoir, (one end of the tube being stopped,) by pumping, or other convenient means.

After the soap congeals, the bar may be expelled from the tube by a piston or plunger, fitting the bore of the tube, or by pneumatic or hydrostatic pressure.

But the plan which I practically employ, is to expel the cold bar with hot soap, forced in by a pump at one end, the congealed soap leaving at the other.

I do not entirely expel the hard soap in the tube, but leave a short length within the tube, to serve as a plug, to prevent the fluid soap from running out.

I find that it is not practicable to use tubes of very great length, on account of the great pressure required in forcing cold soap from a tube, and the consequent increase of power required, and the danger of bursting the pipe.

I employ pipes twelve feet long, and when they are rectangular, of the size two and a quarter by two and a half inches, the initial pressure required to move the cold soap amounts to two hundred or two hundred and twenty pounds per square inch.

After the cohesion of the congealed soap to the sides of the tube is broken, the pressure required to keep the bar moving will not exceed forty pounds to the square inch.

Now, to operate a number of tubes in succession, with one pump, and without interruption, I employ the following means, and here reference will be had to the accompanying drawings:

A A A are pipes for moulding the soap, said pipes being laid in the tank.

B B B are small pipes, with union-coupling.

C C C are cocks, for letting in and shutting off hot soap. These cocks I denominate switch-cocks.

D is a distributing-pipe, connecting with the whole series of switch-pipes.

E is a pipe, connecting the distributing-pipe and pump.

F is the tank, divided into two compartments, the longer one containing the soap-tubes, surrounded with cold water, and the shorter one containing the switch-pipes, cocks, and distributing-pipes.

This latter compartment contains hot water, to keep the soap from congealing in the switch-pipes and distributing-pipe.

Suppose the whole series of pipes to be filled with cold soap, and all the cocks closed; now, when the first cock is opened, and the pump set in action, forcing in hot soap, the cold bar of soap will be expelled from the other end of that tube. When it is nearly expelled, (leaving enough for a plug to retain the fluid soap,) the second cock is opened, and the first shut off, when another bar will be expelled from the second tube, and so on through the series, all the cocks being operated in succession.

Cold water is kept constantly running in the tank containing the soap-tubes, the surplus water running out by an overflow.

The tubes for moulding the soap can be made of other than rectangular forms, if desired.

The bars, as they issue from the tubes, can be received upon a table, and cut into such lengths as may be required.

The advantages of this mode of cooling and barring soap are a saving of time and labor.

The soap is harder, when made by this method.

The bars, in drying, preserve their form better than those made by the present methods, as they shrink equally, and do not warp.

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

1. Cooling soap, in the form of bars, in tubes of metal.

2. Cooling the soap by means of water surrounding the tubes.

3. Forcing the soap from the tubes by pneumatic, hydrostatic, or piston-pressure, or by displacement with hot soap, introduced by pump or otherwise.

4. Switching from one tube to another, substantially as described.

SILAS R. DIVINE.

Witnesses:

WM. H. MORGAN,

HENRY M. BREWSTER.