2 Sheets—Sheet 1.

A. P. PITKIN.

PAPER MACHINERY.

No. 24,819. Patented July 19, 1859.

Fig. 1.

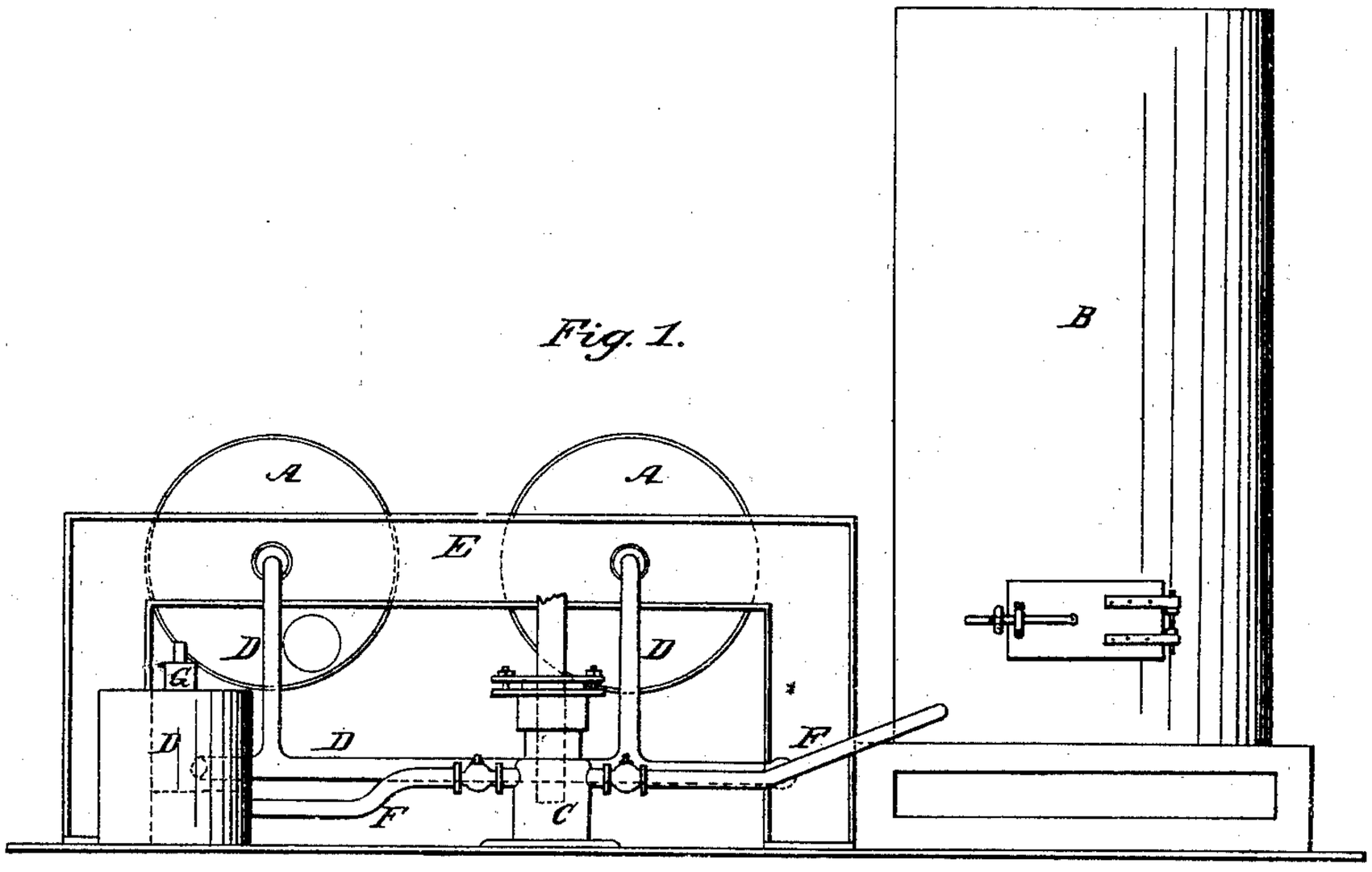
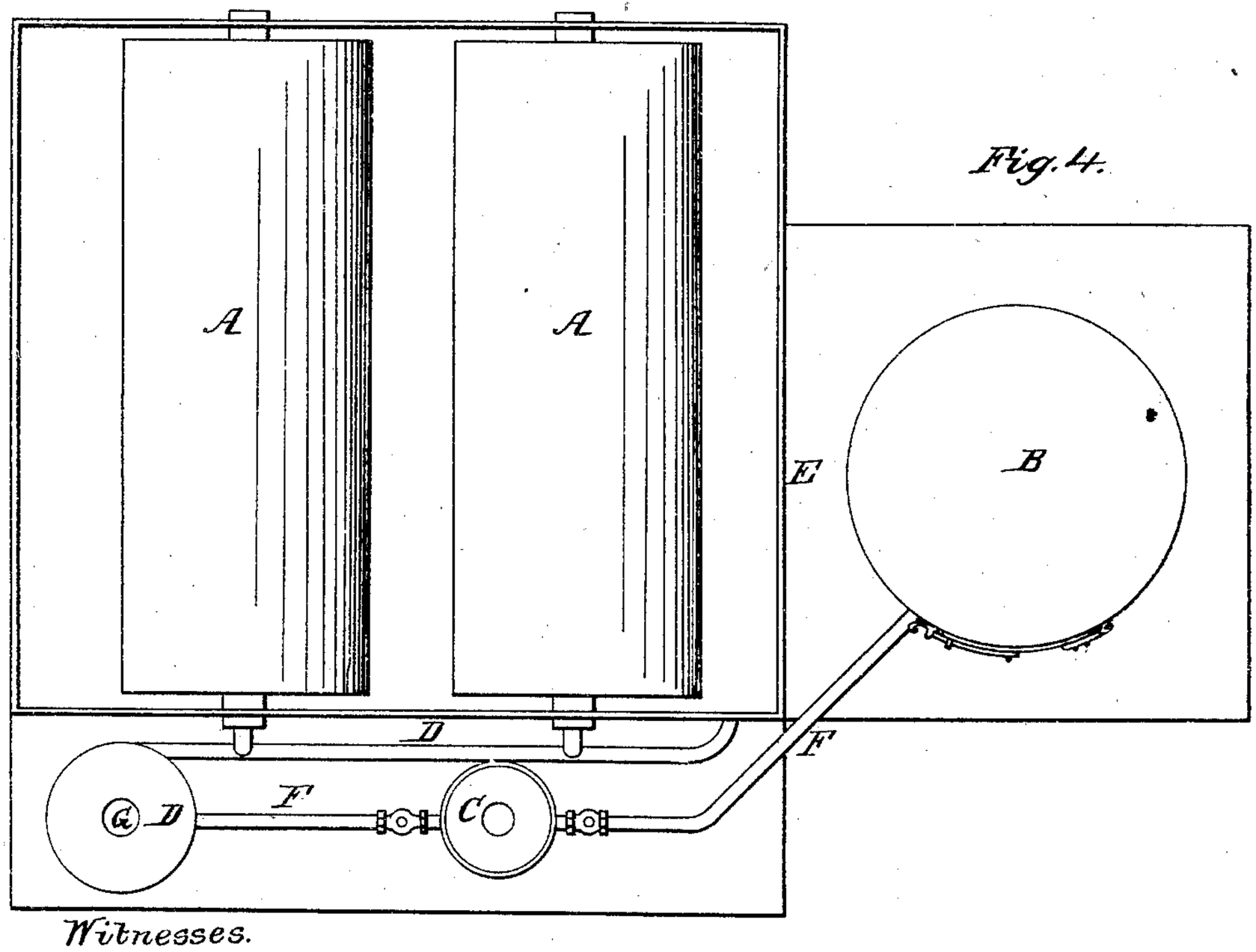


Fig. 4.



Witnesses.

Edward M. Bliss.

Jeremy W. Bliss.

Inventor.

A. P. Pitkin.

2 Sheets—Sheet 2.

A. P. PITKIN.

PAPER MACHINERY.

No. 24,819. **Patented July 19, 1859.**

Fig. 2.

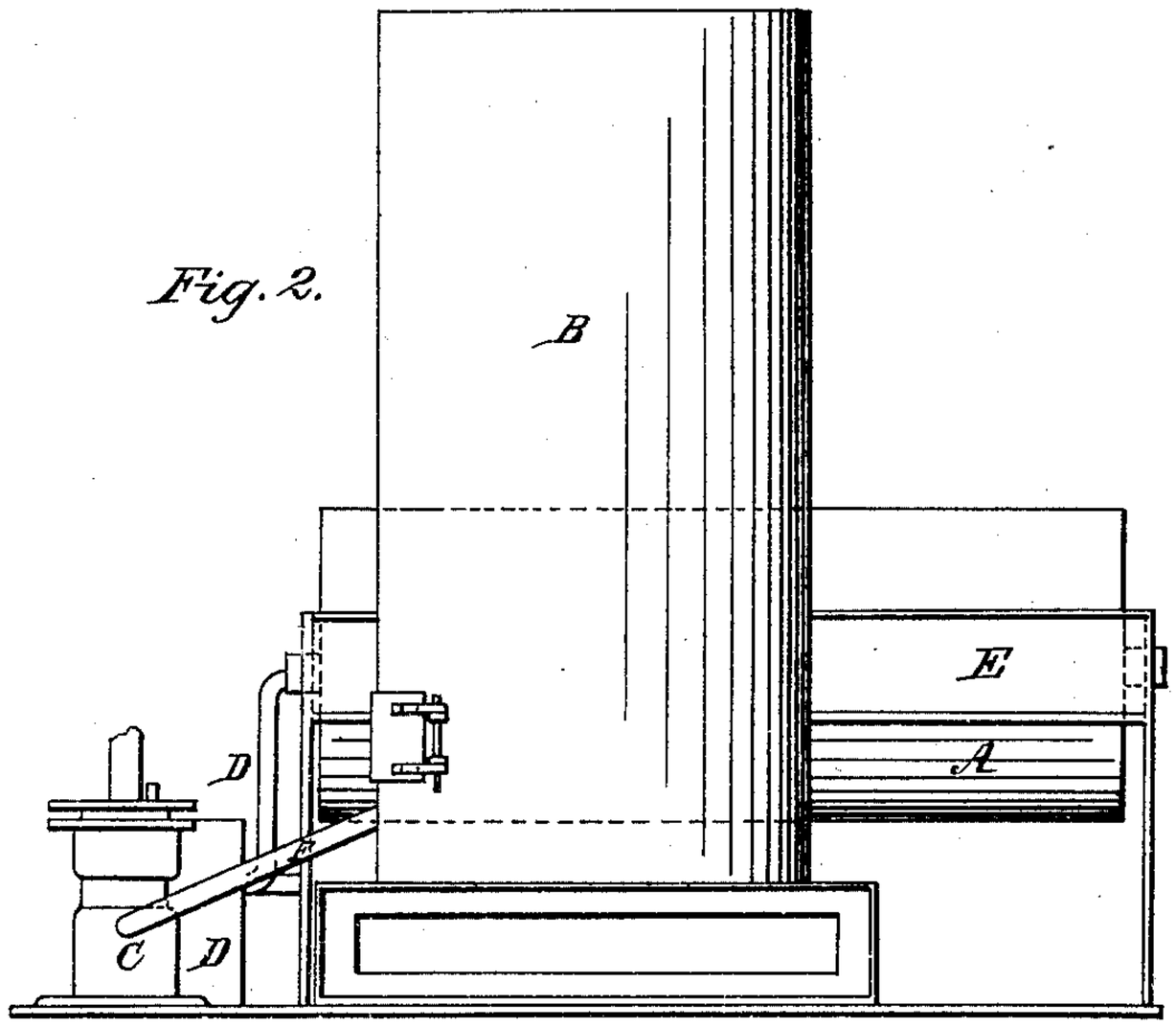
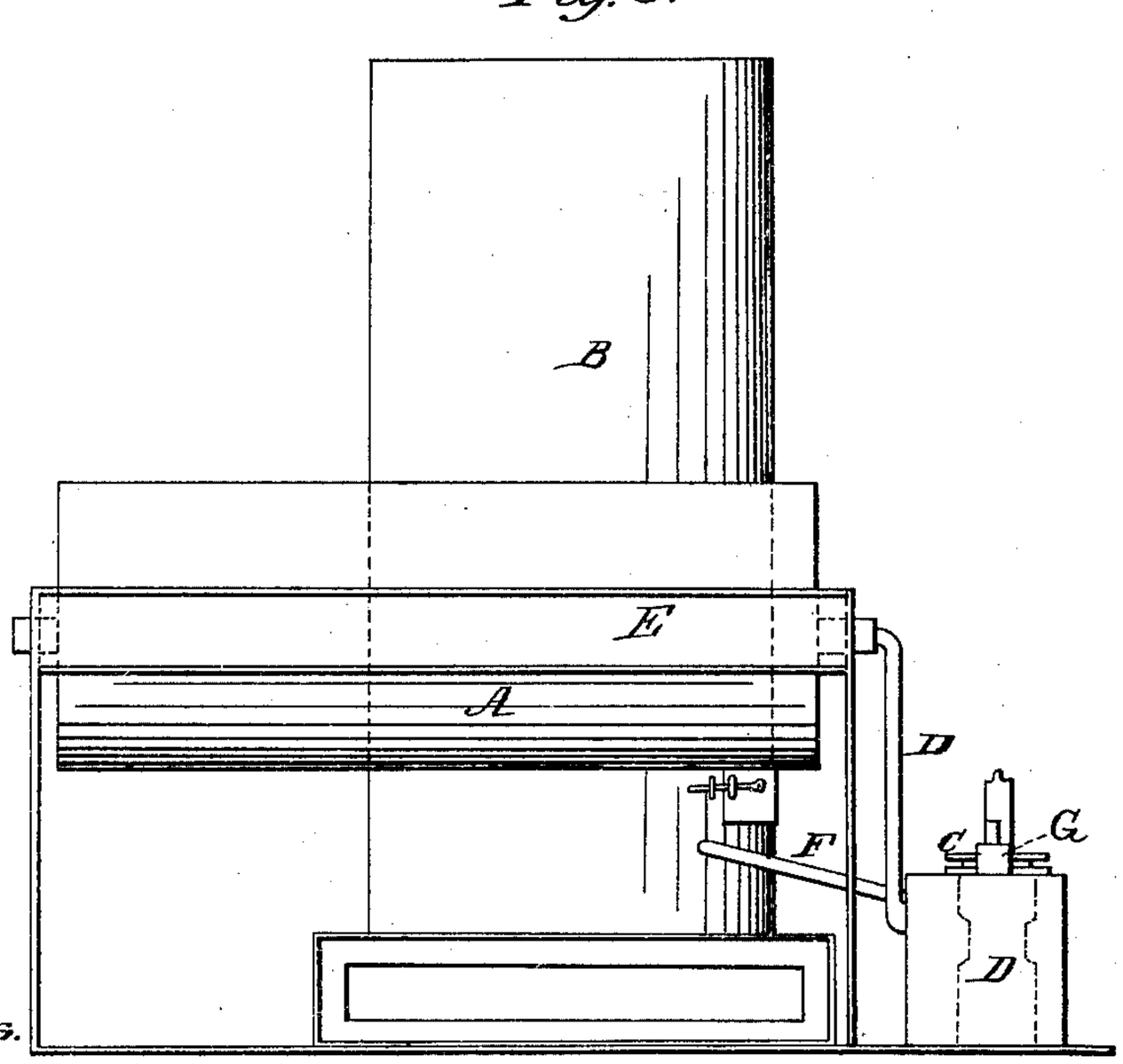


Fig. 3.



Witnesses.
Edward M. Bliss.
Jeremy W. Bays.

Inventor.
A. P. Pitkin

UNITED STATES PATENT OFFICE.

A. P. PITKIN, OF HARTFORD, CONNECTICUT.

MODE OF HEATING DRYING-CYLINDERS BY STEAM.

Specification of Letters Patent No. 24,819, dated July 19, 1859.

To all whom it may concern:

Be it known that I, A. P. PITKIN, of Hartford, county of Hartford, and State of Connecticut, have invented certain new and useful Improvements in the Use of Machinery Well Known to Produce an Important Result in the Manufacture of Paper; and I do hereby declare that the same is described and represented in the following specification and drawings, and to enable others skilled in the art to make and use the same I will proceed to describe the construction and operation, referring to the drawings, in which the same letters indicate like parts in each of the figures.

The nature of my improvement consists in the new mode, or new application of machinery to produce an important effect or result, or both, viz, taking the condensed steam or water from the drying cylinders of a paper machine, or from the discharge pipes, or a closed vessel, connected with the same (either one or the whole as may be convenient) by means of a pump or pumps and returning it into the boilers under a pressure, and at as near the original temperature of the steam as possible by not allowing of its being discharged into an open vessel, thereby greatly reducing its temperature by coming in contact with the atmosphere, and further by preventing the escape of the great amount of steam (as in the old method) through an open pipe, cock or an inverted siphon, and further the arrangement of the vacuum valve in connection with the cylinders and pumps, in such a manner that should the supply of steam by any means be cut off, and the pumps continue to operate, the valve will open and thereby prevent the collapsing of the cylinders by producing a vacuum.

To be more particular in reference to the vacuum valve I would further say, that should the steam be accidentally or otherwise shut off from the cylinder, and the pumps continue to operate and produce a vacuum in the cylinders they would be liable to collapse from the external pressure of the atmosphere, the cylinder not being capable of standing a pressure of fifteen pounds to the square inch with safety. Now it will be readily seen that the vacuum valve will open and thereby prevent the pumps producing a vacuum should they continue to operate after the steam is shut off.

In the accompanying drawings Figures 1, 2 and 3 show side elevations. Fig. 4 shows a top view.

A, are drying cylinders for paper machinery.

B is a steam boiler.

C, is a pump.

D, are discharging pipes or closed vessels.

G is a vacuum valve.

E is the frame work to which the operating parts are attached or secured.

F are connections from the paper machinery to the boiler B.

The operation of this improvement will be understood from the following.—The pump is (or may be) kept in constant operation while the cylinders A, are in use, and whenever any condensed steam or water is deposited in the discharge pipe or closed vessel the pump will immediately return the same into the boiler, and in case the steam should at any time be shut off from the drying cylinders and the pump continue to work, the vacuum valve will open and thereby prevent the collapsing of the cylinder, it being understood that paper machine cylinders will not stand a great pressure, either internally or externally.

The object and advantage therefore to be derived by this improvement is, preventing of the escape of the great amount of steam (as in the old method) and also the returning of condensed water and steam into the boiler at as high a temperature as possible, without allowing its coming to the atmosphere to escape, or lessen its temperature, thereby saving a great amount of fuel and keeping a more uniform pressure and temperature on the drying cylinders A at all times.

In the old method the cylinder or discharge pipe is left open at the end allowing the steam to escape more or less as the pressure varies. Now it will be readily seen that by my improved mode operation, not steam escapes, and consequently I have a more uniform pressure and temperature on the drying cylinder at all times which is of the greatest importance. The old method is attended with great inconvenience for want thereof.

I do not claim the pumping of condensed steam or water into a steam boiler, for this I am aware has been done; neither do I claim any device or arrangement of pipes, scoops or siphons for discharging the water from paper machine-cylinders.

I claim—

In combination the closed heating cylinders force pump vacuum valve and connecting tubes substantially in the manner as and for the purpose setforth.

A. P. PITKIN.

Witnesses:
EDWARD M. BLISS,
JEREMY W. BLISS.