

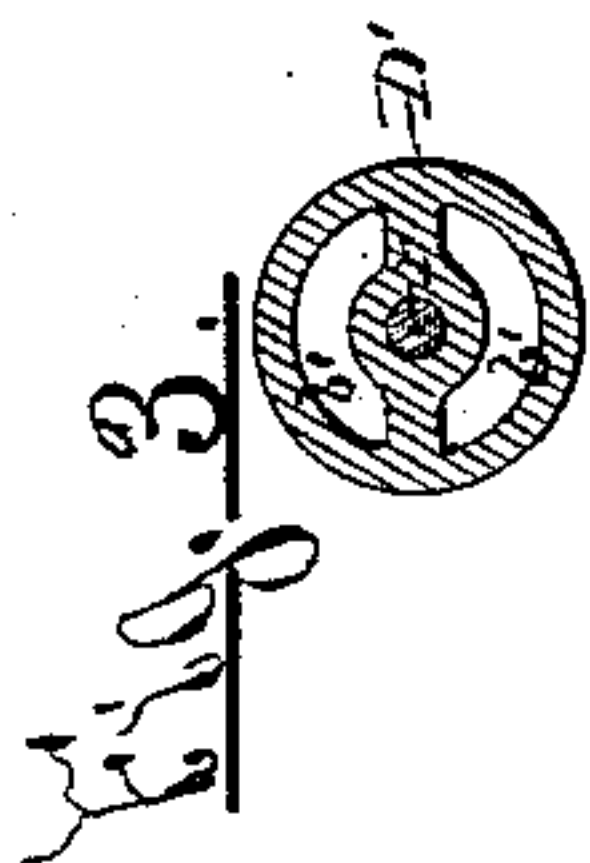
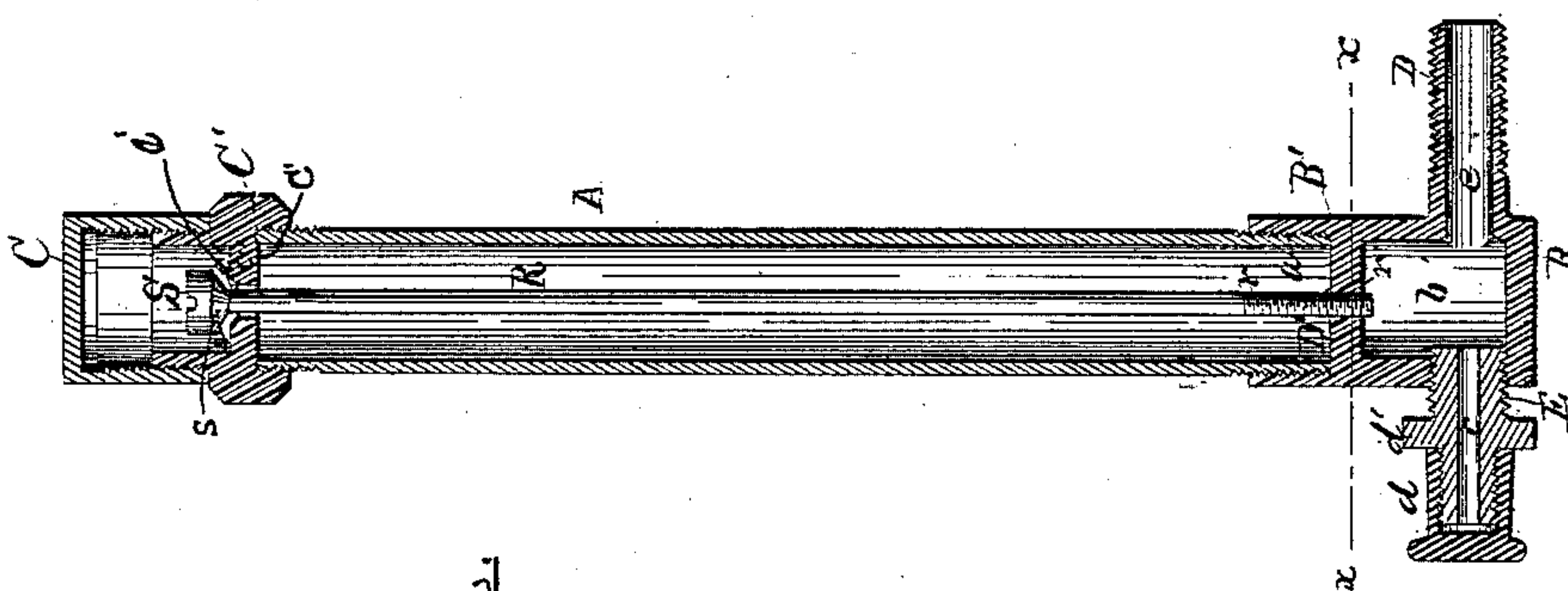
(No Model.)

E. P. WAGGONER.

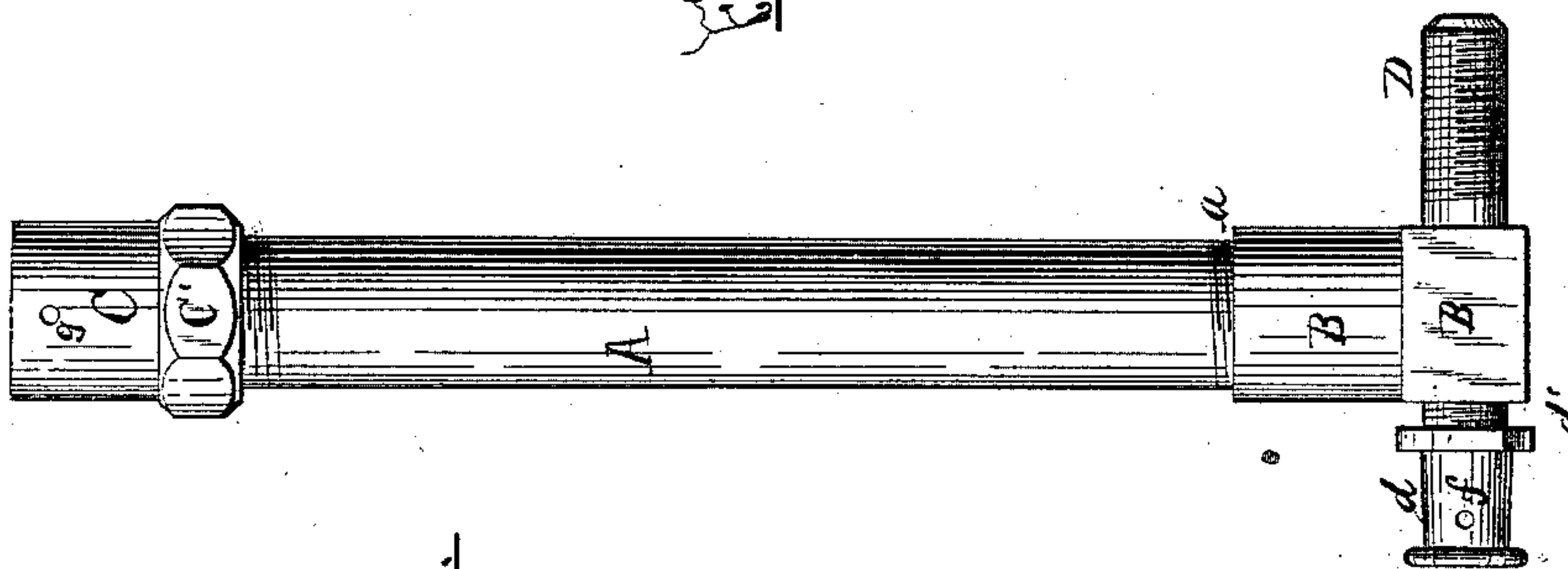
VENT PLUG FOR STEAM RADIATORS.

No. 379,260.

Patented Mar. 13, 1888.



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1.1.

WITNESSES:

WITNESSES:
Arthur C. Parsons.
E. C. Cannon.

INVENTOR

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Edward P. Waggoner
BY Hey & Gibbs
ATTORNEYS.

UNITED STATES PATENT OFFICE.

EDWARD P. WAGGONER, OF SYRACUSE, NEW YORK, ASSIGNOR OF ONE-HALF
TO THE PIERCE, BUTLER & PIERCE MANUFACTURING COMPANY, OF SAME
PLACE.

VENT-PLUG FOR STEAM-RADIATORS.

SPECIFICATION forming part of Letters Patent No. 379,260, dated March 13, 1888.

Application filed January 17, 1887. Serial No. 224,571. (No model.)

To all whom it may concern:

Be it known that I, EDWARD P. WAGGONER, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Vent-Plugs for Steam-Radiators, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention has reference to the class of devices employed upon steam-radiators for venting the same to secure a circulation of the steam; and the object of the invention is to so construct the vent-plug as to start the circulation of the steam immediately, and then have the plug automatically control the circulation by venting the same as required; and to this end the invention consists in a vent-plug for steam-radiators having an automatic and a positive vent arranged and located on the same stem connected with the steam-radiator, and also in detail construction and arrangement of the parts, all as hereinafter more particularly described, and pointed out in the claims.

In specifying my invention reference is had to the accompanying drawings, in which like letters indicate corresponding parts in all the views.

Figure 1 is a side elevation of my improvement for steam-radiators, illustrating the construction and arrangement of parts. Fig. 2 is a longitudinal vertical section of the same; and Fig. 3 is a transverse section taken on line *x*, Fig. 2.

The invention, as stated, consists, broadly, in the combination of an automatic and a positive vent for steam-radiators located on the same stem, and I do not restrict myself to any specific form of construction of the device; but the drawings herein illustrate my preferred example of the construction of the improved vent-plug; and the letter A represents the exterior tube or shell of the automatic vent-plug, and is provided with a thread, *a*, and with the cap C, having an aperture, *g*, for the escape of the steam.

Upon the interior of the cap C, I provide the disk *c'*, which may be formed integral with

the nut C', and provide a hole or aperture, *e'*, through the disk or head *c'* for the passage of the stem R, the head S of which has a bevel, *s*, corresponding with the contour of the recess *e'* in the head *c'*. The lower end of the stem R is provided with screw-threads *r r'*, which take in the threaded seat *r'* of the head D' in the coupling B'.

The tube A of the automatic vent-plug screws into the coupling B' of the positive vent-plug B, as best shown in the sectional view, Fig. 2.

The positive vent-plug is represented by B, and is provided with the coupling-extension B', having a threaded socket, into which the thread *a* of the tube A is screwed.

The positive vent-plug B is provided with the chamber *b* and the steam-inlet *e* in the screw-plug D, by means of which latter it is attached to the steam-radiator. The head D' is provided with passages *b' b'* for the escape of the steam from the chamber *b* into the tube A, and the chamber *b* is provided with the outlet *c* into the valve-screw *d*, which has the aperture *f* for the escape of the steam.

The valve-screw *d* is supported on the threaded plug E, which is screwed into the positive vent B, as best shown in the sectional view, Fig. 2.

It will be observed that the construction of the automatic venting-plug and its parts and the positive venting-plug B is substantially the same as of the segregated devices for this purpose in common use, and that the difference and novelty of my invention consists in combining the two so as to operate in conjunction with each other.

The automatic vent-plug and its parts operate by the expansion and contraction of the metal tube A to open and close the valve formed by the passage *e'* in the head *c'* and the head S of the screw R within the tube A, and the screw-threaded stem R serves to adjust the automatic vent to secure the desired result, while the plug B serves to vent the radiator positively by simply operating the screw-valve *d*, as in the ordinary positive vent-plug for steam-radiators.

By my invention it will be observed that the two forms of vent-plugs are combined in one device, and when it is desired to vent a steam-radiator the circulation of the steam can be quickly secured by turning on the positive vent and starting the circulation thereby, then closing the screw-valve *d*, which throws the steam upward through the passages *b' b'* and into the tube *A* of the automatic vent-plug, which operates the automatic vent and controls the circulation of steam thereafter automatically.

By my invention a great improvement is effected over the former vent-plug devices for steam-radiators, either automatic or positive, for the reason that in the automatic vent-plug as at present constructed very delicate adjustment of the stem *R* is required to make the device effective, and it is difficult to adjust the screw while the steam is rushing in; and, furthermore, such device is not uniform in its operation, particularly when the radiator becomes cold and the steam-pressure is forced in while the radiator is cold.

In my improvement the radiator is quickly vented in the first instance by the positive vent *B*, which is very effective in venting the radiator, and the automatic vent is brought into operation by shutting off the positive vent, as hereinbefore explained.

It will be readily understood that the stem *R* in the automatic vent can be adjusted very readily without difficulty to control the venting of the radiator after the circulation of the

steam therein has been secured by the positive vent.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A vent-plug for steam-radiators, composed of a screw-plug having a passage for the escape of steam and air extending through the same in open connection with the radiator and the air, a valve for closing the same, and an automatic expansion-tube mounted on the screw-plug and having openings connected with the passage in the screw-plug, substantially as and for the purpose set forth.

2. A vent-plug for steam-radiators, composed of the screw-plug *B*, having a passage for the escape of steam and air extending through the plug in open connection with the radiator and the air, a valve for closing the passage, the said passage enlarged at *b* and having openings *b'*, leading into the automatic expansion-tube *A*, and the automatic expansion-tube *A*, mounted on the screw-plug *B* over the enlargement *b*, substantially as and for the purpose set forth.

In testimony whereof I have hereunto signed my name, in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga, in the State of New York, this 27th day of December, 1886.

EDWARD P. WAGGONER.

Witnesses:

F. H. GIBBS,
E. C. CANNON.