

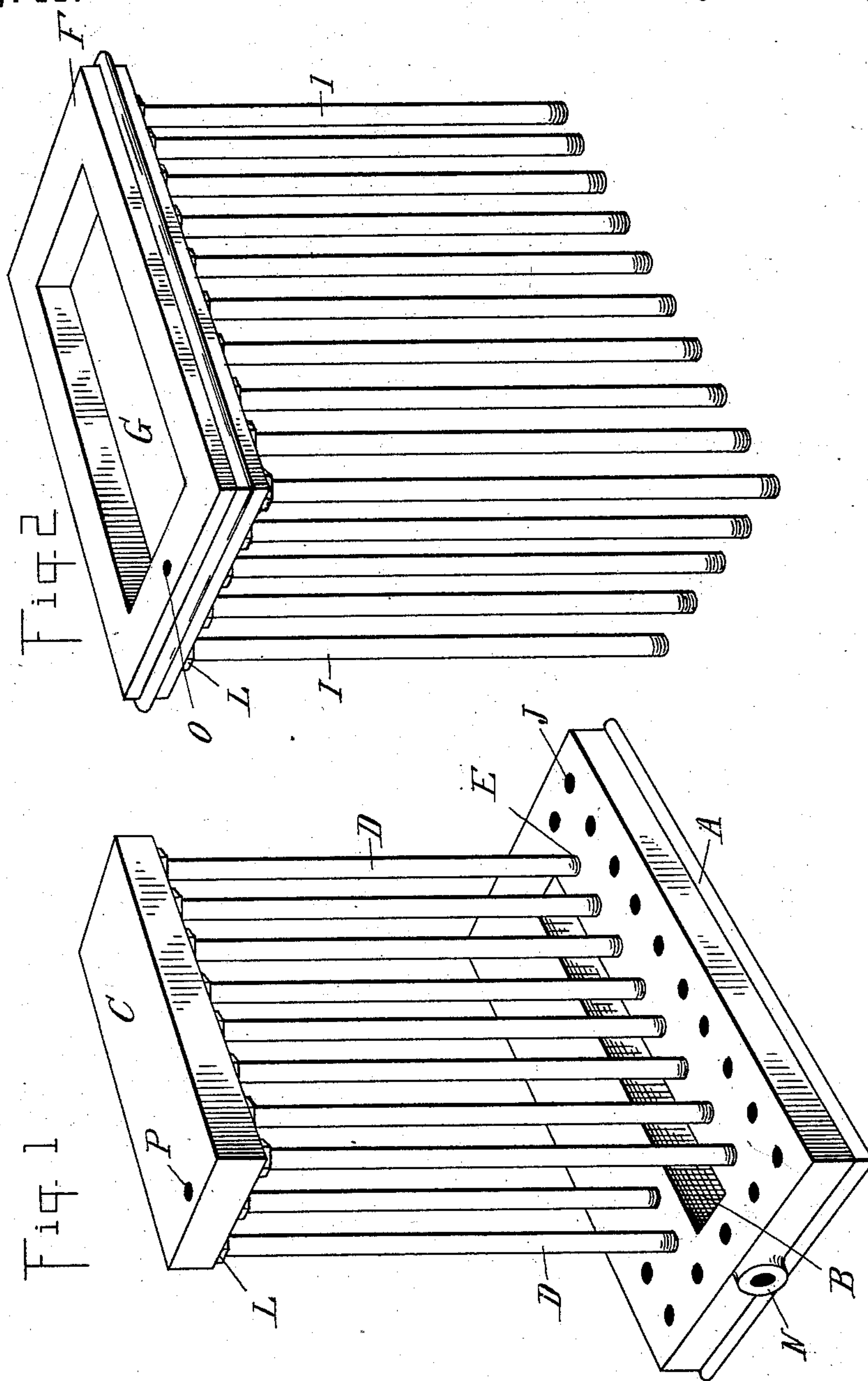
(No Model.)

2 Sheets—Sheet 1.

P. J. KENNEDY.  
RADIATOR.

No. 406,741.

Patented July 9, 1889.



Witnesses:

*P. M. Hulbert*  
*J. Paul Mayer*  
H

Inventor:

Patrick J. Kennedy  
By *Thos. S. Sprague & Son*  
Att'y.

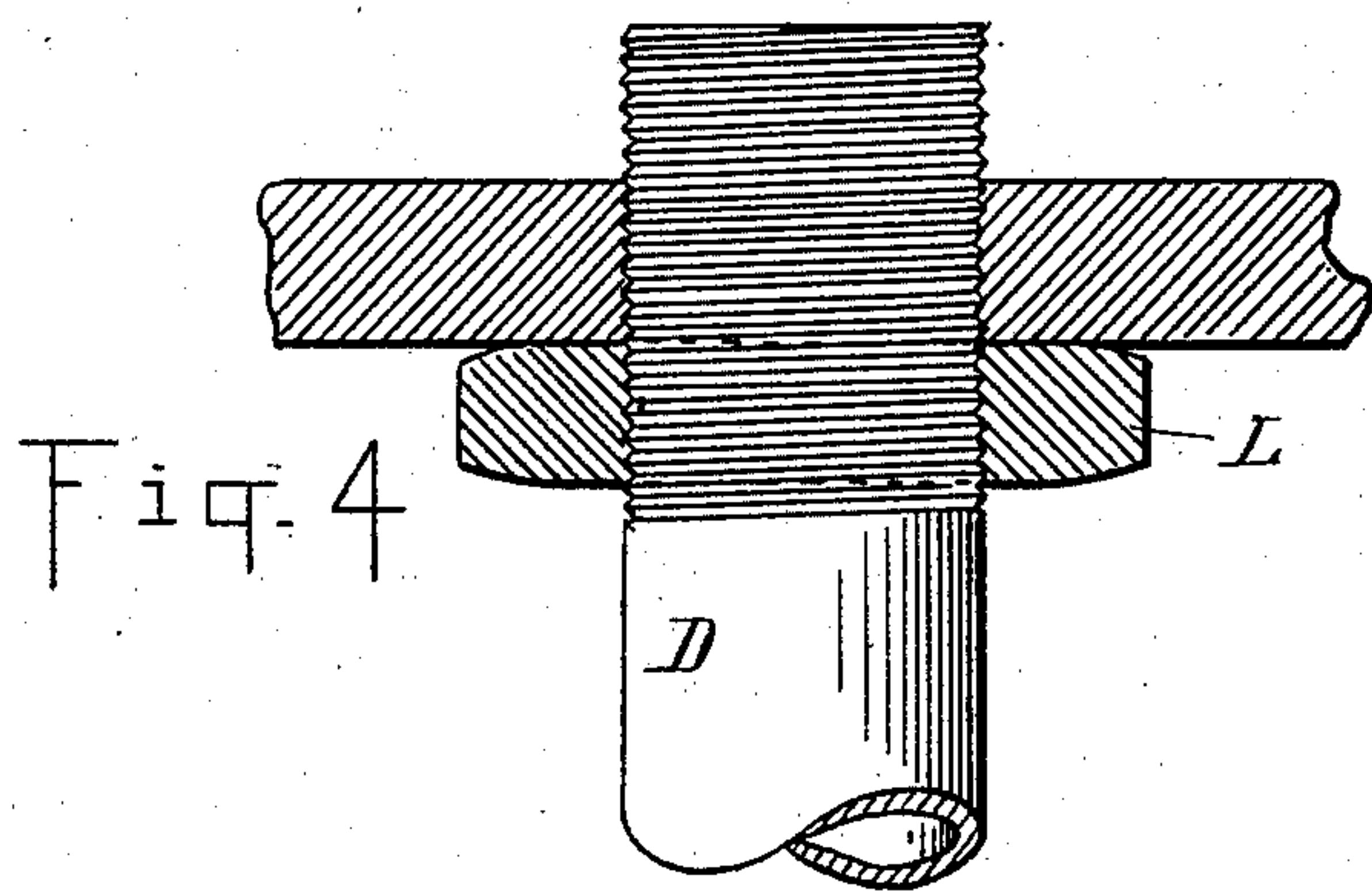
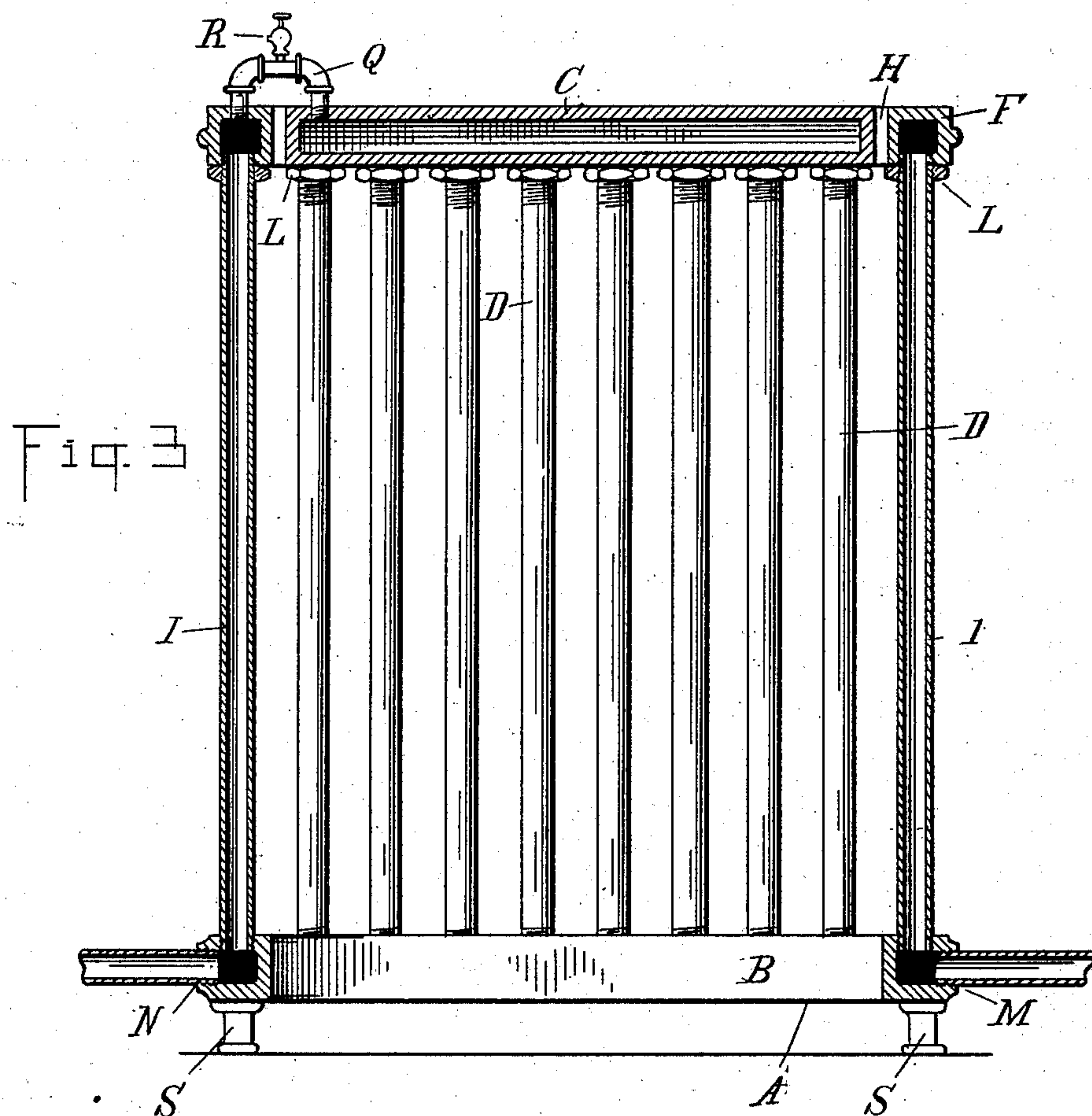
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# UNITED STATES PATENT OFFICE.

PATRICK J. KENNEDY, OF DETROIT, MICHIGAN.

## RADIATOR.

SPECIFICATION forming part of Letters Patent No. 406,741, dated July 9, 1889.

Application filed April 11, 1889. Serial No. 306,884. (No model.)

*To all whom it may concern:*

Be it known that I, PATRICK J. KENNEDY, a citizen of Great Britain, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Radiators, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to new and useful improvements in radiators especially intended for use with hot-water-circulating apparatus; and the invention consists in the peculiar construction of the parts, whereby the best results in radiation and circulation are obtained, together with great economy in manufacture and the ease in which the different parts of the radiator may be reached for the purpose of repairs, or any attention which it may be desired to give to it, all as more fully herein after described.

In the drawings which accompany this specification, Figure 1 is a perspective view of the inner section of the radiator with the hollow cast bottom and top. Fig. 2 is a detached perspective view of the outer tier of radiating-pipes with the hollow cast top. Fig. 3 is a vertical central section through my radiator, and Fig. 4 is an enlarged view showing the upper end of one of the radiating-pipes.

A is a hollow cast base, preferably of rectangular shape, and also preferably provided in the center with the aperture B to allow the ingress of cold air from the floor to replace the heated air as it rises.

C is a central hollow cast top, into which the inner tier of pipes D engage. These pipes at their bottom are secured in a series of holes E, arranged in suitable position in relation to the corresponding holes in the cast top C.

F is an outer hollow cast top or ring, of rectangular shape, as shown, and having the aperture G of suitably larger size than the cast top C, so that it will receive the same and leave a small space—such as H—between the two parts of the top thus constructed.

I is an outer series of radiating-pipes engaging at their tops into suitable screw-threads in the ring F and at their lower ends into the series of screw-threaded apertures J in the hollow cast base A.

In constructing my radiator, as shown, after

connecting the radiator-pipes of suitable length, I make a long screw-thread upon the upper ends, and upon that I screw down the lock-nuts L a suitable distance to allow the upper ends of the pipes D to engage into the hollow cast top C nearly the entire length of the screw-thread. When the series of pipes D are thus secured in the top, I place this top with the pipes upon the base A, and the lower ends of these pipes, having a suitable screw-thread cut thereon, engage into the screw-threaded apertures E in the hollow cast base, and each one may be secured in its corresponding aperture, and the lock-nuts L being then turned up tight against the cast top C the pipes are held firmly in their position. The same process of securing the pipes I into the ring F is then carried on, and the ring with its tiers of pipes is placed over the top C. The lower ends of the pipes I are engaged into the apertures J, screwed therein, and the lock-nuts set up against the top F, as before described.

It is evident, to dismantle the radiator, that all it is necessary to do is to loosen the lock-nuts, unscrew the pipes I, and lift off the outer cap with its pipes, and perform the same operation with the inner top and its pipes.

The hollow cast base A has the apertures M and N for connecting the inlet and outlet pipes therein.

In practice, the radiator being set up in position, the system is filled with water and each radiator is provided at the top with a suitable air-valve connecting into the apertures O P; or the apertures O P may be connected together by the pipe Q, and the single air-valve R will allow of the escape of the air from both parts of the radiator. The water entering through the pipe M will pass into the hollow cast base A, and it being warmer than the water in the radiating-pipes will both naturally displace the contents of the pipes D and I and the tops C and F, the cold water gradually descending and passing out through the exit N.

It is evident that this radiator may be tapped for inlet and outlet pipes in several different ways; and it is evident that the radiator may be inverted and the aperture P be used as an inlet and the aperture O as an exit for the water of circulation.

Suitable legs S, of any desired construction,



may be attached to the radiator, and its general form may be changed to suit the artistic taste of the manufacturer.

What I claim as my invention is—

- 5 1. In a radiator consisting of two series of piping, one within the other, each series connecting into a common hollow casting at one end and into a separate hollow casting at the other end, substantially as described.
- 10 2. The base A, having two series of screw-threaded apertures, the central cast top C, the outer cast top E, and two series of radiating-pipes connecting the two-part top with the base, substantially as described.
- 15 3. In a radiator, the base A, having two series of screw-threaded apertures and a central aperture, the central cast top C, the outer cast top E, the space H between two series of ra-

diating-pipes connecting the two-part top with the base, and a suitable air valve or valves in said top, substantially as described. 20

4. In a radiator, a central cast hollow top and an outer cast hollow top, each having a series of connecting-pipes, each pipe secured to the top by means of a long screw-thread 25 and a lock-nut, a screw-thread on the lower end, and a base common to both series of pipes, substantially as described.

In testimony whereof I affix my signature, in presence of two witnesses, this 3d day of April, 30 1889.

PATRICK J. KENNEDY.

Witnesses:

J. PAUL MAYER,

P. M. HULBERT.