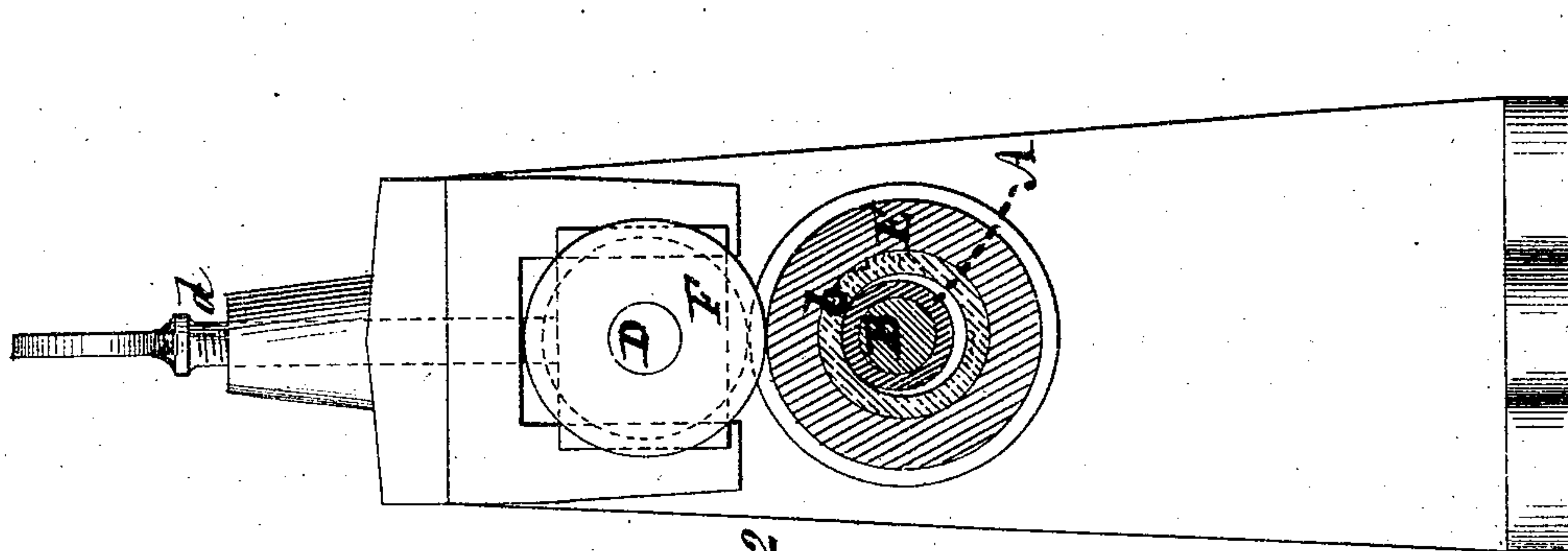
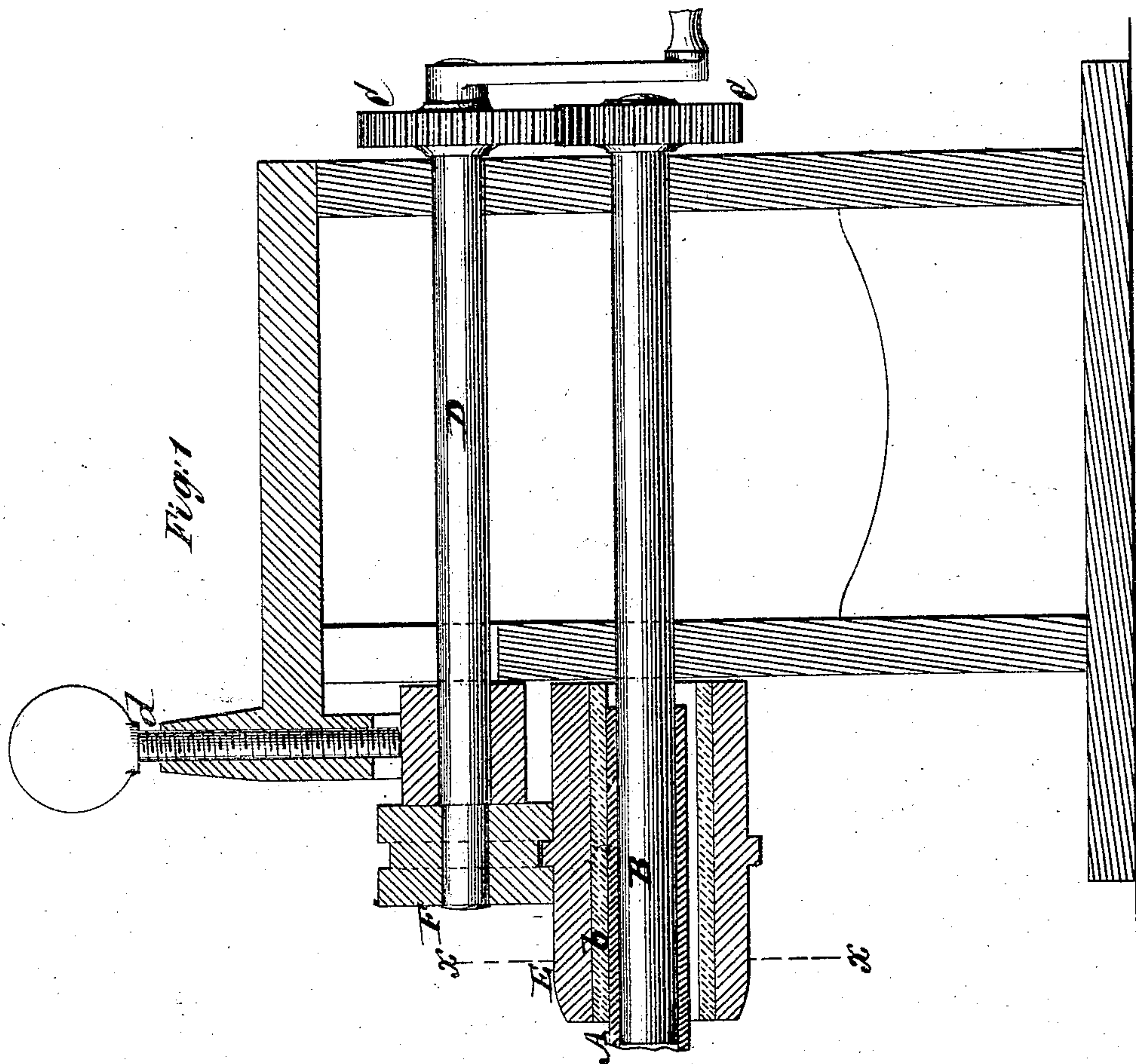


J. A. LOWE.

Machines for Testing Lead Castings.

No. 153,583.

Patented July 28, 1874.



Witnesses:

Michael Ryan  
Edw. Haynes

Fig. 2

James A. Lowe  
by his Attorney  
Brown & Allen

# UNITED STATES PATENT OFFICE.

JAMES A. LOWE, OF NEW YORK, N. Y.

## IMPROVEMENT IN MACHINES FOR TESTING LEAD CASTINGS.

Specification forming part of Letters Patent No. **153,583**, dated July 28, 1874; application filed July 6, 1874.

*To all whom it may concern:*

Be it known that I, JAMES A. LOWE, of the city of New York, in the county and State of New York, have invented an Improvement in Testing Lead and other Soft-Metal Castings, of which the following is a specification:

In lead and other soft-metal tubular or hollow castings, including stench-traps, pipes, and other articles, it has heretofore been found almost impossible to detect, with certainty at least, defects in the same arising from said castings being what are termed "air-bound"—that is, with air-flaws or cavities in the metal, covered or closed up by an outer crust. This often leads to very serious results. The object of this invention is to determine when such castings are free from said defects. To this end the invention consists, first, in a process in which a rubber or other elastic roller, under pressure, is applied to or rubbed over the surface of the casting. This causes the metal to break, sink, or yield wherever the casting is air-bound, and so to make known the defect. The invention also consists in a machine for testing such hollow or tubular castings, applicable more particularly to pipes or the straight portions of stench-traps, in which a revolving mandrel carrying the article to be tested is used, in connection with a surrounding elastic-lined roller, free to revolve on the pipe or article, and having pressure applied to it by an upper roller in gear with the mandrel.

Figure 1 represents a longitudinal vertical section of a machine in illustration of my invention, and Fig. 2 a transverse section of the same on line *x x*.

A is a straight piece of lead or other soft-metal pipe, and which may be the one leg or straight portion of a stench-trap. This pipe is slipped on or over a revolving hard mandrel, B, which may be driven by gearing C C from an upper shaft, D, or otherwise. Around the pipe A is a roller or sleeve, E, having an

elastic lining, *b*, and thus constituting an elastic roller. This roller is free to rotate, and is borne down with any desired degree of pressure on the pipe or casting A by means of an upper roller, F, on the shaft D, and adjustable by a screw, *d*, or otherwise. In this way, or by these means, an elastic pressure is brought to bear upon the whole exterior surface of the casting, under exposure to the elastic roller E, as against or as supported by the mandrel B, the elastic surface of the roller E conforming to any irregularities of surface in the casting, and the latter being exposed to such elastic pressure over its entire surface, so that, wherever the same is air-bound, a sinking or yielding of the metal will be apparent, and thus the defect be detected.

To apply the process involved in this machine to castings which are crooked or of irregular form—as, for instance, the curved or bent portion of a stench-trap—the elastic surface of the testing-roller may be on the exterior of the latter, and said roller be run over or applied to the surface of the casting by hand, said casting being supported internally by a hard core or mandrel, or left free of such support, according to the nature of the casting, which, when crooked, or sufficiently strong to bear the external pressure applied to it, may be tested without internal support from a mandrel.

I claim—

1. The process of testing lead and other soft-metal hollow castings by the application of an elastic roller, under pressure, to the surface of the casting, substantially as specified.

2. The combination of the elastic-lined roller E, the revolving mandrel B, and the rotating pressure-roller F, essentially as described.

JAMES A. LOWE.

Witnesses:

MICHAEL RYAN,  
VERNON H. HARRIS.