

No. 618,350.

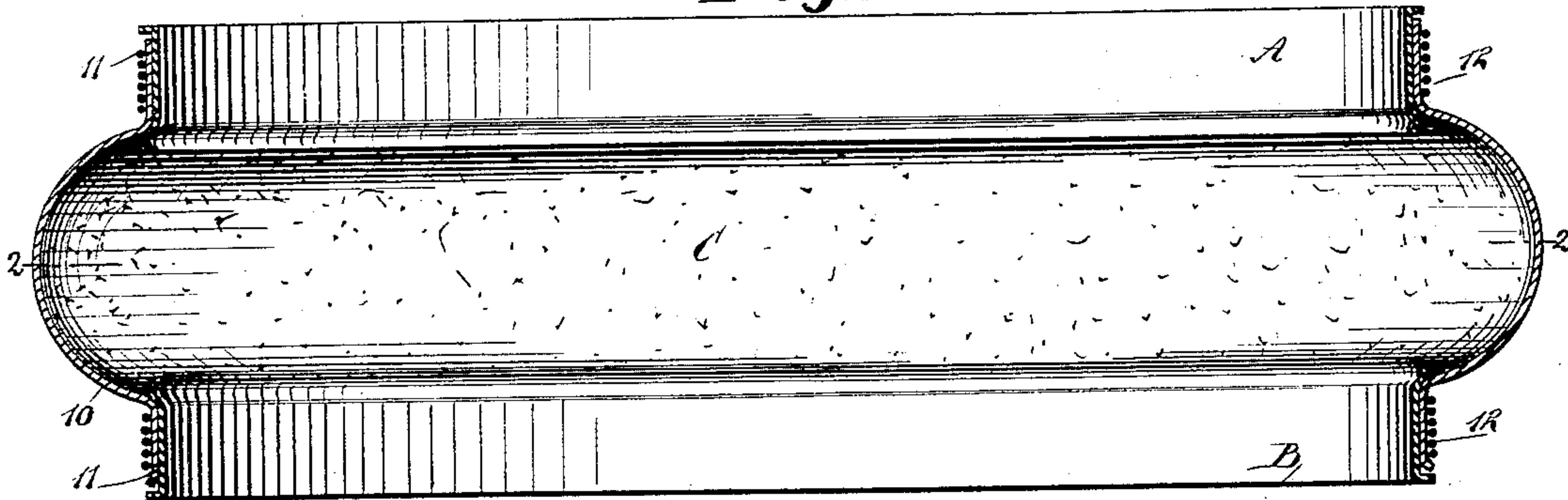
Patented Jan. 24, 1899.

J. HEARNE & C. LAWSON.  
DIAPHRAGM FOR GAS METERS.

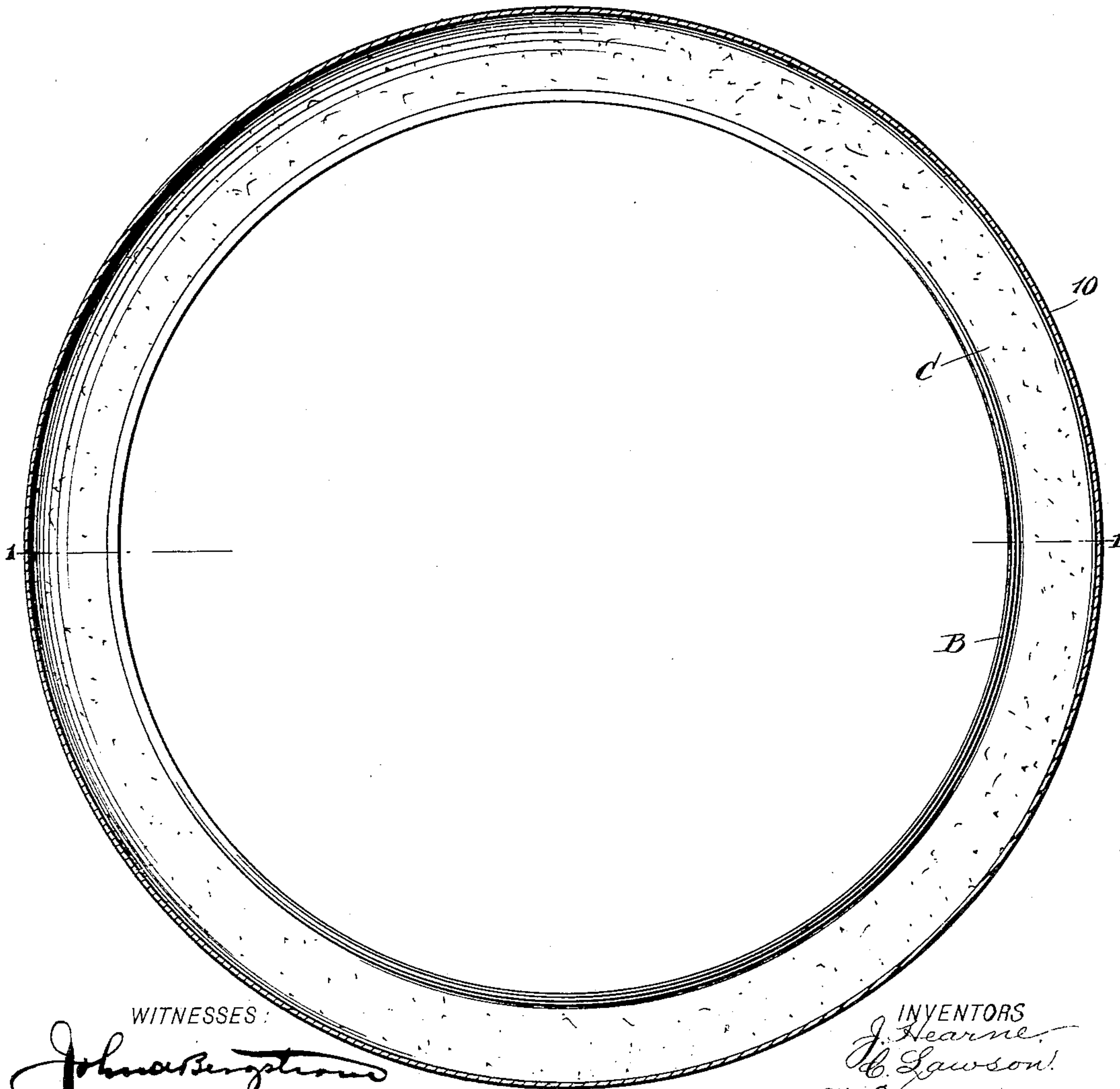
(Application filed Oct. 30, 1897.)

(No Model.)

*Fig. 1*



*Fig. 2*



WITNESSES:

*John S. Bingham*  
*J. H. Harker*

INVENTORS

*J. Hearne*  
*C. Lawson*

BY

*Wm. H. Harker*

ATTORNEYS.

# UNITED STATES PATENT OFFICE.

JOHN HEARNE, OF NEW YORK, N. Y., AND CHARLES LAWSON, OF BOSTON,  
MASSACHUSETTS.

## DIAPHRAGM FOR GAS-METERS.

SPECIFICATION forming part of Letters Patent No. 618,350, dated January 24, 1899.

Application filed October 30, 1897. Serial No. 656,907. (No model.)

*To all whom it may concern:*

Be it known that we, JOHN HEARNE, of New York, (Brooklyn,) in the county of Kings and State of New York, and CHARLES LAWSON, of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Annular Diaphragms for Gas-Meters, of which the following is a full, clear, and exact description.

Our invention is an improvement in the class of annular leather diaphragms for gas-meters. Such diaphragms have been attached at their upper and lower edges to two similar metal rings and constructed of two sections or pieces united by lap-seams; but this construction rendered them less flexible at two or more points and liable to leakage. We have devised a ring-diaphragm formed from a single seamless piece of leather which is free from these objections.

In the accompanying drawings, Figure 1 is a vertical section through the improved diaphragm on line 1 1 of Fig. 2. Fig. 2 is a horizontal section on line 2 2 of Fig. 1.

A and B indicate the upper and lower metal rings, and C the diaphragm proper, which is firmly secured to the latter.

The diaphragm is constructed of a single or integral piece of leather of such thickness as to have due flexibility. The diaphragm is so shaped that its body or middle portion 10 is swelled or crowning and convexed outward, as shown, while the end portions or bands 11 are alined in the same vertical plane and of less diameter than the body 10. The said bands are firmly secured to the metal rings A B by means of wire 12, which is wrapped thereon, as shown in Fig. 1. By making the diaphragm of one piece of leather, as described, the former sewed or shellaced joint is

avoided, leakage is prevented, friction is reduced, flexibility increased and rendered uniform, and the durability of the meter greatly increased.

To construct the diaphragm, we cut a ring of due width out of a flat piece of leather and draw it over a block or former having the same peripheral shape as the completed diaphragm is to have. The upper edge of such leather ring is then secured around the block by means of twine or wire, and the surplus portion of the leather below the point of attachment is worked into shape and properly distributed over the bulge and lower cylindrical part of the block by means of a smooth blunt tool. In other words, the leather is worked into itself, as it were, and takes the required shape whether in a wet or dry condition.

The diaphragm may be formed in the manner above described from an oval-shape leather piece cut out at the center or even from a rectangular leather piece having a central slit.

What we claim is—

As an improved article of manufacture, the annular diaphragm for a gas-meter, the same being constructed of a single seamless centrally-apertured piece of leather, and having the convex body portion, and alined upper and lower edges or bands, as shown and described.

JOHN HEARNE.

CHARLES LAWSON.

Witnesses to signature of John Hearne:

J. FRED ACKER,

E. B. MARSHALL.

Witnesses to signature of Charles Lawson:

JOHN MCGEE,

CHESTER H. BAKER.