C. A. WILSON.

Steam Gage.

No. 56,135. Patented July 3, 1866.

Fig. 1.

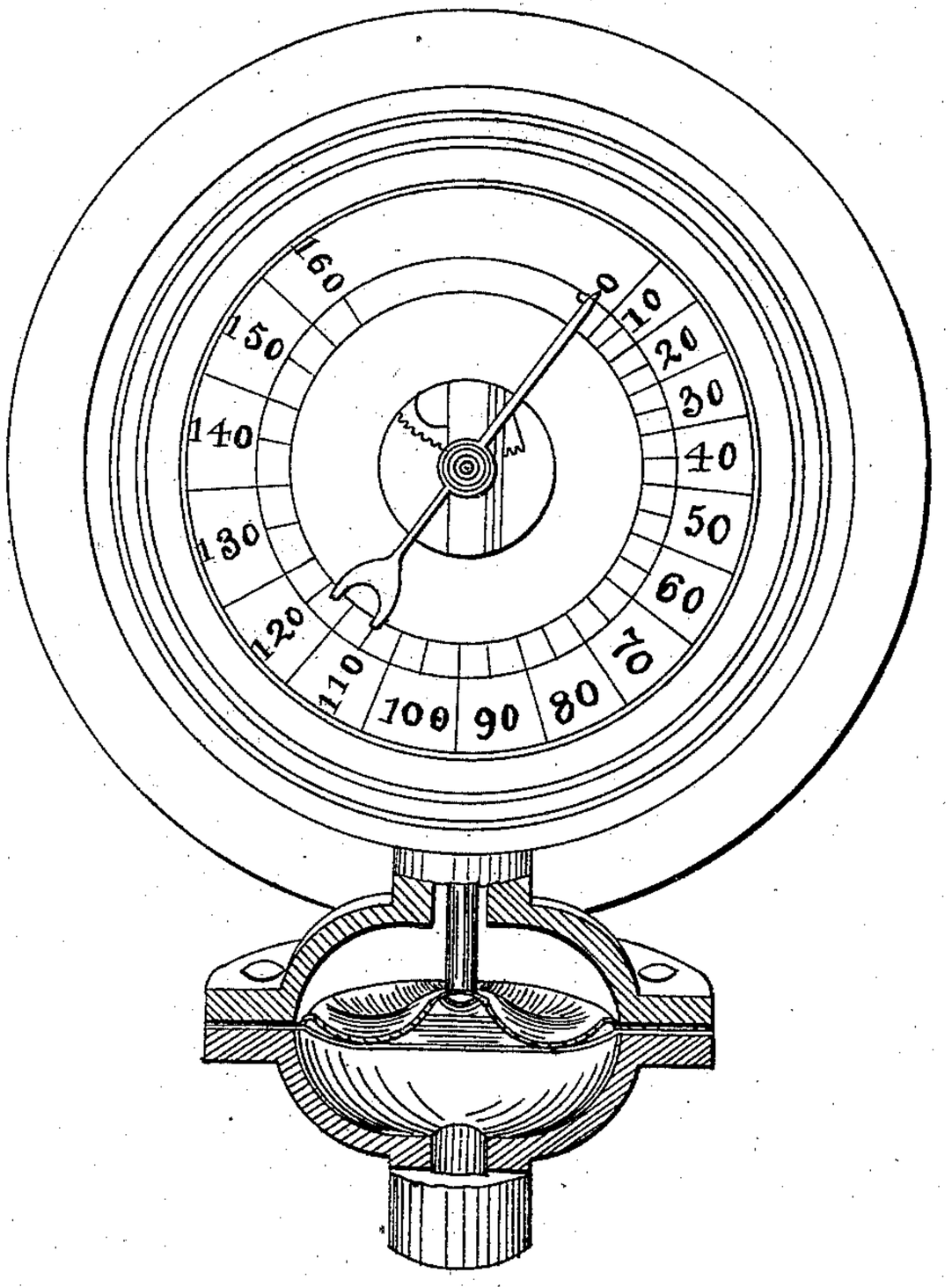

Fig. 2

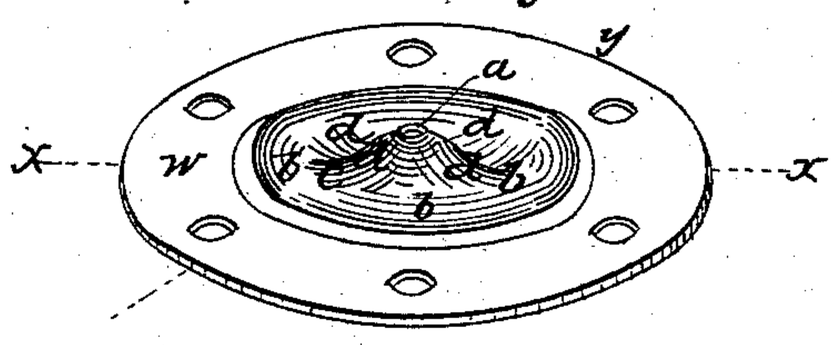

Fig. 3

Fig. 4

WITNESSES

H. Whitney

James H. Layman

INVENTOR

C. A. Wilson

By Knight Bros

Attys

UNITED STATES PATENT OFFICE.

CHARLES A. WILSON, OF CINCINNATI, OHIO.

IMPROVEMENT IN STEAM-GAGES.

Specification forming part of Letters Patent No. **56,135**, dated July 3, 1866.

To all whom it may concern:

Be it known that I, CHARLES A. WILSON, of Cincinnati, Hamilton county, Ohio, have invented a new and useful Improvement in Steam-Gages; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification.

This is an improvement in the class of steam gages or indicators which operate by the deflection of a corrugated diaphragm or disk; and it consists in a form or arrangement of corrugations which secures a wider and more uniform range of action, while at the same time enabling the use of stouter and more durable material.

Figure 1 is an axial section of a gage embodying my improvement. Fig. 2 represents a form of my diaphragm. Figs. 3 and 4 are axial sections of my diaphragm, taken at the lines *x x* and *y y*, respectively.

My diaphragm A is struck up or stamped between suitable dies, so as to have a series of annular and concentric corrugations crossed by a series of radial corrugations.

My concentric corrugations I form substantially as follows: *a* is a central elevation, having concentric with it and being surrounded by an annular depression, *b*, which is, in turn, encircled by an annular elevation called the "marginal" corrugation, *c*.

The above concentric corrugations are crossed at right angles by a series of equidistant radial elevations, *d*, whose ridges are tangential, or nearly so, to the plane *w* of the diaphragm, and by an intervening series of radial depressions, *e*.

Diaphragms heretofore used having only concentric corrugations have been nearly worthless, from their extremely limited range and from their great diminution of motion or sensibility with an increase of pressure. These defects have been due to the want of adequate relief at the higher pressures afforded to the web between the center and circumference, and to the opposing actions of the ridges and the valleys, the metal suffering expansion in the former and contraction in the latter, so as to brace against each other and to hold the web in a rigid condition.

The above condition of rigidity I have effectually overcome by the introduction of radial corrugations, which, traversing the annular ones, hold in reserve, as it were, a surplusage of metal, which enables the web under high pressures to approximate a conical form of greater or less elevation.

The expansion and ascent of the web is materially facilitated by the marginal corrugation *c*, which relieves the metal by performing the duty of a hinge.

It will be seen that the radial corrugations act to break the arch of the annular ones, and thus to render them flexible; also, that as the diaphragm approximates the form of a cone the arches formed by the radial corrugations become flattened out, and thus yield more readily to the deflecting force; and hence the graduations on my dial at 150 to 160 are actually wider than from 0 to 10, instead of being a very small fraction thereof, as with the customary disk-gages.

I claim herein as new and of my invention—

The diaphragm A for steam-pressure gages, when constructed with intersecting corrugations, as and for the purposes set forth.

In testimony of which invention I hereunto set my hand.

C. A. WILSON.

Witnesses:

GEO. H. KNIGHT,

JAMES H. LAYMAN.