

(No Model.)

L. J. CROSSLEY, R. HANSON & J. J. HICKS.

GLASS TUBE FOR WATER GAGES.

No. 349,271.

Patented Sept. 14, 1886.

Fig. 1.

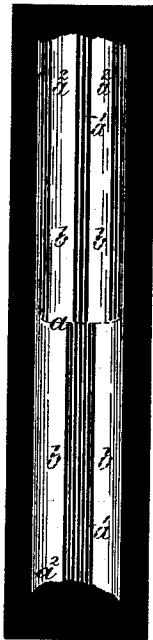


Fig. 2.



Fig. 3.

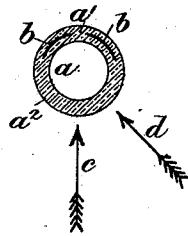
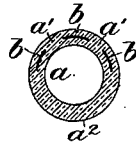


Fig. 4.



Attest

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UNITED STATES PATENT OFFICE.

LOUIS J. CROSSLEY AND RICHARD HANSON, OF HALIFAX, COUNTY OF YORK, AND JAMES J. HICKS, OF HATTON GARDEN, COUNTY OF MIDDLESEX, ENGLAND.

GLASS TUBE FOR WATER-GAGES.

SPECIFICATION forming part of Letters Patent No. 349,271, dated September 14, 1886.

Application filed November 28, 1885. Serial No. 184,206. (No model.)

To all whom it may concern:

Be it known that we, LOUIS JOHN CROSSLEY, carpet manufacturer, and RICHARD HANSON, engineer, both of Dean Clough Mills, Halifax, in the county of York, England, and JAMES JOSEPH HICKS, meteorological instrument manufacturer, of 8 Hatton Garden, in the county of Middlesex, England, have invented certain new and useful Improvements in Water-Gages, of which the following is a specification.

The invention relates to that class of water-gage in which the level of the water is seen through a glass tube. Formerly such gage-glass tubes were made entirely of clear glass; but of late years, in order to render the level of the water more clearly visible, they have been made of clear glass with a longitudinal stripe of white or colored enamel at the rear of the bore thereof, providing a backing of such a width as to cause the whole body of water in the tube to appear of the same color as that of the enamel stripe. They have also been made with a comparatively narrow stripe of red or other bright-colored enamel on a broader background or backing of white enamel. These two arrangements have proved greatly superior in use to gage-glasses made entirely of clear glass. We have, however, succeeded in still further improving the manufacture of gage-glasses.

We are aware that it has been proposed to divide the backing of a gage for the purpose of admitting light to enable the height of the liquid to be seen; but in such case the stripes thus formed have extended so far toward the front of the tube as to be useless for our purpose. In our present invention we simply divide the backing, shown in our Letters Patent No. 182,192, dated September 12, 1876, so as to leave a clear stripe or stripes of clear glass without increasing the width of the backing, so that the liquid contained in the tube may appear of greater width than the backing, and the gage be adapted for use, as hereinafter described.

Our invention is represented in the accompanying drawings, of which Figures 1 and 2 represent elevations of part of a gage-glass seen from different points of view, and Fig. 3 is a cross-

section of the same, and Fig. 4 is a cross-section of another gage-glass.

According to our invention, we apply to the rear of the bore of the gage-glass tube *a* two or more longitudinal stripes, *b*, of enamel, which are separated from each other by a space or division, *a'*, of clear glass, thus forming a divided backing. This backing is of less width than the tube, for the object hereinafter stated. These enamel stripes *b* may be all of the same color or they may be of different colors. We however prefer to make them of white enamel, as by so doing the gage-glass will stand better in use than when employing other and different colored enamels. By these means, when two strips, *b*, of enamel are employed, and the gage-glass *a* is seen from the front in the direction of the arrow *c*, it will have the appearance above the water-line of a couple of comparatively broad stripes, *b*, of enamel, divided from each other by a narrow division, *a'*, of clear glass. A stripe, *a'*, of clear glass will be clearly seen at the outer edge of each enamel stripe, while below the water-line there will be seen down the center thereof a stripe, *a'*, of clear glass much broader than the part thereof shown above the liquid, and on each side of such central stripe, *a'*, of clear glass the tube will appear to be lined to the edge thereof with enamel *b*. When, however, such gage-glass is seen at a certain considerable angle from either side thereof—say in the direction of the arrow *d*—it will show below the water-line one broad band, *b*, of enamel, bounded on each edge with a narrow stripe, *a'*, of clear glass, while above the water-line there will be seen two stripes, *b*, of enamel, of unequal widths, divided from each other and bounded on their outer edges with stripes *a'* of clear glass, of unequal widths, and along the entire length of the gage-glass on one side thereof will be seen, apparently on the exterior thereof, a narrow stripe of enamel. At the intermediate points of view the variation in appearance presented by the gage-tube above and below the water-line is equally distinct. By making these stripes of white enamel the gage-glass will stand better in use than when employing different-colored enamels. When

employing more than two stripes of enamel, we preferably make them narrow and of about the same width as that of the clear glass between them, as shown at Fig. 4, and we also preferably employ such a number of these stripes as will extend about from a third to nearly half round the circumference of the glass tube. By this last arrangement the tube has nearly the same appearance, whether seen from the immediate front or from somewhat wide angles at the sides thereof.

The width of the enamel stripes *b* and of the clear glass between them may be somewhat varied.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is—

A water-gage glass tube provided with a backing formed of stripes of white or colored enamel having a clear glass space between

them, the stripes being located at the same distance from the axis of the bore, and the stripes and clear glass space between them being of less width than the tube, substantially as set forth.

LOUIS J. CROSSLEY.
RICHARD HANSON.
JAS. J. HICKS.

Witnesses to the signatures of the said Louis John Crossley and Richard Hanson:

JNO. ED. JONES,
Sobr., Halifax.

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Witnesses to the signature of the said James Joseph Hicks:

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