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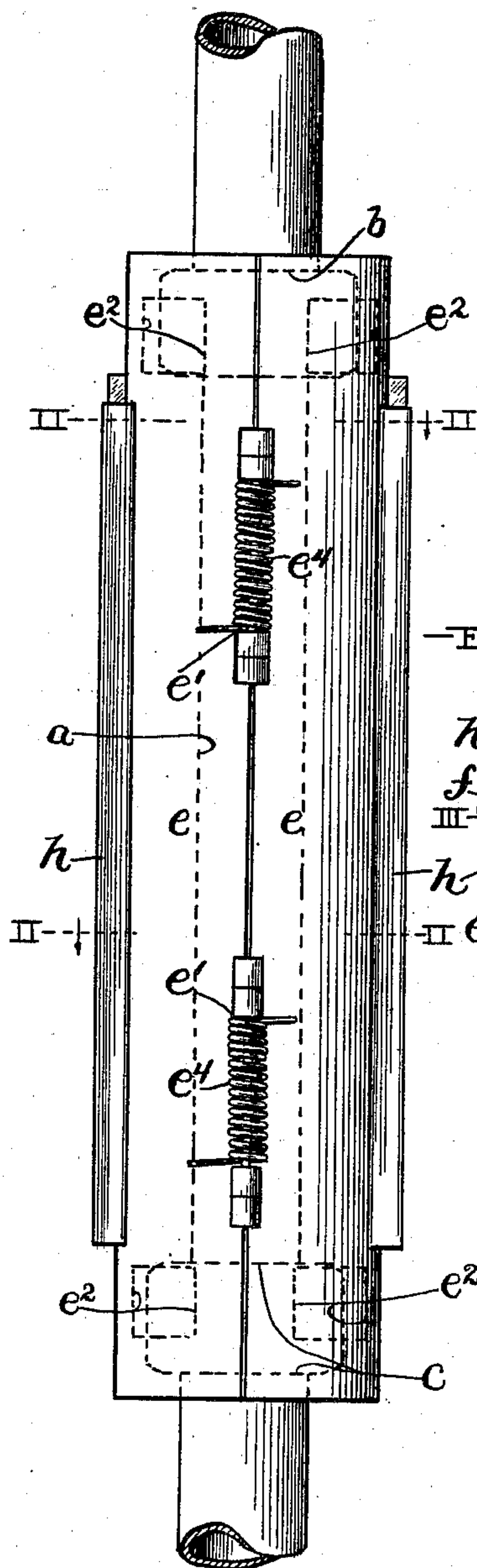
W. H. BROOKS & H. C. FISCHER.

GUARD FOR WATER GAGES.

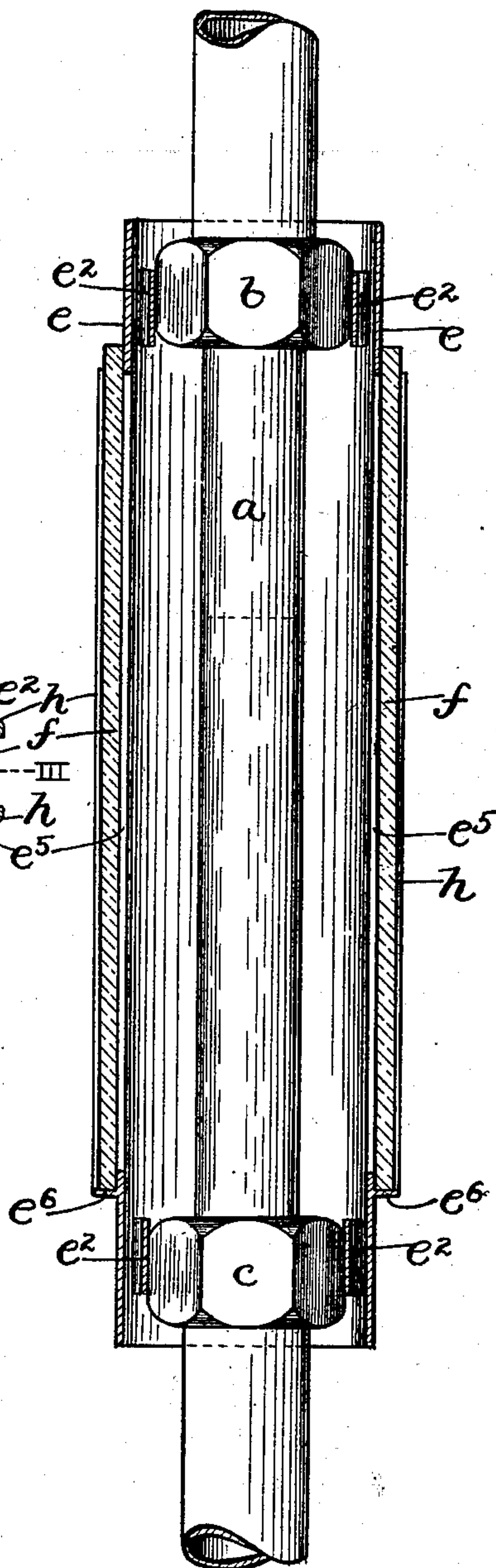
(Application filed May 23, 1900.)

(No Model.)

-FIG. I-



-FIG. III-



WITNESSES :

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UNITED STATES PATENT OFFICE.

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GUARD FOR WATER-GAGES.

SPECIFICATION forming part of Letters Patent No. 657,329, dated September 4, 1900.

Application filed May 23, 1900. Serial No. 17,737. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM H. BROOKS and HERMAN C. FISCHER, residents of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Guards for Water-Gages; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

Our invention relates to improvements in guards for water-gages that are employed in connection with and indicate the depth of water in a steam-boiler; and the invention relates more especially to a water-gage suitable for use upon locomotives.

The object of this invention is to provide a gage of the character indicated that is so safe and reliable in its operation that there is no liability of the engineer and fireman having charge of the locomotive upon which the gage is used being injured by any flying pieces of glass or scalded by escaping steam or hot water upon a breakage of the glass of the gage. Breakage of the glass of a gage of the character indicated is liable to occur at any moment and does occur not infrequently. The breakage may be the result of wear upon the glass, defects in the glass, excess of unequal pressure of steam within the glass, cold water lodging upon the hot glass externally, and pieces of coal or objects accidentally striking the glass. The importance, therefore, of a guard for the purpose indicated that will reliably protect the engineer and fireman from injury resulting as aforesaid is obvious.

To the end of attaining the object hereinbefore indicated our invention consists in certain features of construction and combinations of parts hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure I is a side elevation of a guard embodying our invention. Fig. II is a transverse section on either line II II, Fig. I. Fig. III is a side elevation largely in central vertical section on line III III, Fig. II.

Referring to the drawings, *a* designates the glass tube or glass of a water-gage suitable for use on locomotives, which glass is pro-

vided with an upper head *b* and a lower head *c*, to which are connected the different pipes, respectively, leading from the water-space and steam-space, respectively, of the boiler (not shown) and communicating in the usual manner with the lower end and upper end, respectively, of the chamber of the glass *a*.

Our improved guard consists of a case or sheath composed, preferably, of sheet metal and surrounding the gage and extending from top to bottom of the gage and preferably a short distance above and below the gage. The said case is open at its upper and lower ends and is larger in end elevation or transverse section than the gage, so as to form an annular space within the guard around the gage, which space accommodates the escape of the hot water and steam from the lower end and upper end, respectively, of the guard when the glass of the gage becomes broken, as hereinbefore indicated. The said case consists, preferably, of two halves or sections *e* and *e*, embracing opposite sides, respectively, of the gage and hinged together vertically and longitudinally of the gage at one side of the gage, so as to render the said sections *e* capable of being swung upon their said hinge connection from and toward each other. Each of the sections *e* is provided internally with a jaw or jaws *e*², arranged to snugly engage the gage externally in the closed position of the said sections *e*. Each section *e* is preferably provided with two jaws *e*², arranged adjacent to the upper head and lower head, respectively, of the gage and adapted to close against the adjacent gage-head in the closed position of the sections *e*. Each jaw *e*² of each guard-section *e* is arranged, preferably, opposite to a jaw *e*² of the cooperating guard-section. The hinge connection between the sections *e* is composed, preferably, of one or more suitably-applied spring-hinges *e*¹, whose springs *e*⁴ act to retain the said sections in their closed position. Obviously, therefore, the gage has its heads *b* and *c* clutched by and between the jaws *e*² of the sections *e*, and the spring or springs *e*⁴ act to maintain the said jaws in their operative position, and hence act to retain or hold the guard upon the gage. Each jaw *e*¹ of each guard-section *e* consists, preferably, of a strip or piece of corrugated sheet metal arranged

with its corrugations extending longitudinally of the guard or up and down and is soldered or otherwise secured to the said guard-section. The corrugated jaw illustrated possesses sufficient tension or springiness to facilitate its operation.

The free side edge of one of the sections *e* is provided with a groove or corrugation *e*³, extending longitudinally of and from top to bottom of the said section, and the arrangement of parts is such that the free side edge of the cooperating guard-section shall engage the said groove or corrugation in the closed position of the guard-sections, and thereby cause the guard-sections to laterally brace each other.

Each section *e* is provided, of course, with a window or sight-glass *f*, through which the glass of the gage is visible, and the metallic body portion of the said section *e* is provided with a slot *e*⁵, that extends longitudinally of the said section *e*, and the said sight-glass *f* is composed, preferably, of a piece of plate-glass about one-fourth of an inch in thickness and arranged so as to close the aforesaid slot and held in position by and between slideway-forming strips or bars *h*, that are rigid with the body portion of the said guard-section, arranged vertically and parallel and the distance apart required to accommodate the reception of the sight-glass between them, and the said guide-forming bars or strips somewhat overlap the outer side of the sight-glass, and thereby prevent lateral and outward displacement of the said glass.

A seat or stop forming shoulder *e*⁶ is formed upon and externally of each guard-section *e* at and between the lower ends of the strips or bars *h* of the said section, and the sight-glass *f* of each section *e* is introduced by placing it in line with the upper end of the space between the slideway-forming members *h* of the said section and thereupon sliding it into place between the said members *h*. The said sight-glass *f* is therefore removable, and the removability of the sight-glasses of the shield-section is obviously desirable to render them capable of being readily cleaned and maintained in a clean and operative condition.

We would here remark that our improved guard has been in use for some time, and the breakage of the glass of the gage under a pressure of one hundred and seventy-five pounds failed to injure the guard in any manner, and the steam and hot water escaped at the upper end and lower end, respectively, of the gage without resulting in any injury to the operatives present.

What we claim is—

1. A water-gage guard comprising a case composed of two sections arranged to embrace opposite sides, respectively, of the gage and hinged together by suitably-applied spring-hinges, and each of the said sections being provided with a window or sight-glass through which the glass of the gage is visible, and

one of the said sections, at its free side edge, being provided with a groove extending longitudinally of the said section and engaged by the free side edge of the companion section in the closed position of the said sections.

2. A water-gage guard comprising a case composed of two sections arranged to embrace opposite sides, respectively, of the gage, and having the dimensions required to render them capable, when they are closed together, of surrounding the gage and forming a space between the exterior of the gage and the internal surface of the said sections, jaws formed internally of the said sections and arranged to snugly engage the gage in the closed or operative position of the said sections, and means acting to close the said sections together and thereby cause the aforesaid jaws to hold the guard to the gage.

3. A water-gage guard comprising a case composed of two sections arranged to embrace opposite sides, respectively, of the gage and having the dimensions required to render them capable, when they are closed together, of surrounding the gage and forming an annular chamber or space between the exterior of the gage and the internal surface of the said sections, suitably-applied spring-hinges forming a hinge connection between the said sections, and the jaws formed internally of the said sections and arranged to snugly engage the gage in the closed or operative position of the said sections and, in conjunction with the springs of the aforesaid hinges, holding the guard to the gage.

4. A water-gage guard comprising a case composed of two sections arranged to embrace opposite sides, respectively, of the gage, means acting to close the said sections together, a pair of jaws arranged to engage the upper head of the gage in the operative position of the said sections and formed internally of and upon the different sections, respectively, and another pair of jaws arranged to engage the lower head of the gage in the operative position of the said sections and formed internally of and upon the different sections, respectively, substantially as and for the purpose set forth.

5. A water-gage guard comprising a case composed of a plurality of sections arranged up and down the gage and together surrounding the gage, means acting to close the said sections together, and jaws formed internally of the sections and arranged to snugly engage the gage in the closed or operative position of the said sections, and means acting to close the aforesaid sections together, and, in conjunction with the aforesaid jaws, hold the guard to the gage.

6. A water-gage guard comprising a case composed of two sections arranged to embrace opposite sides, respectively, of the gage, suitably-applied spring-hinges forming a hinge connection between the said sections, a pair of jaws arranged to engage the upper head

of the gage in the operative position of the
said sections and formed internally of and
upon the different sections, respectively, and
another pair of jaws arranged to engage the
5 lower head of the gage and formed upon and
internally of the different sections, respec-
tively, all arranged and operating substan-
tially as shown, for the purpose specified.

Signed by us at Cleveland, Ohio, this 8th
day of May, 1900.

WILLIAM H. BROOKS.
HERMAN C. FISCHER.

Witnesses:

C. H. DORER,
A. H. PARRATT.