

No. 766,899.

PATENTED AUG. 9, 1904.

F. POHLMANN.
CONCRETE OR LIKE GIRDER.
APPLICATION FILED JUNE 6, 1903.

NO MODEL.

Fig. 1.

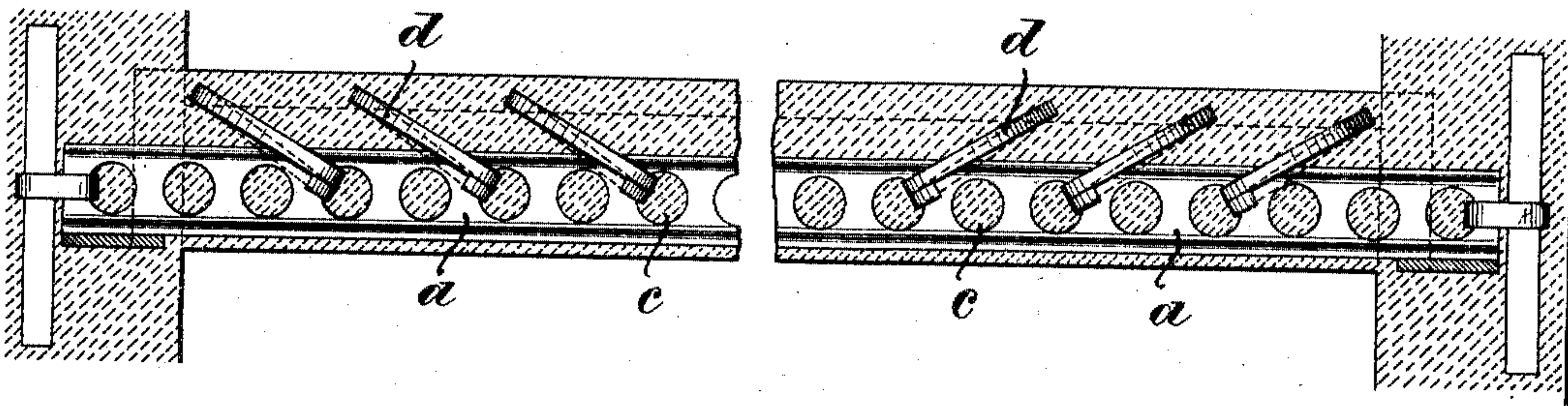


Fig. 2.

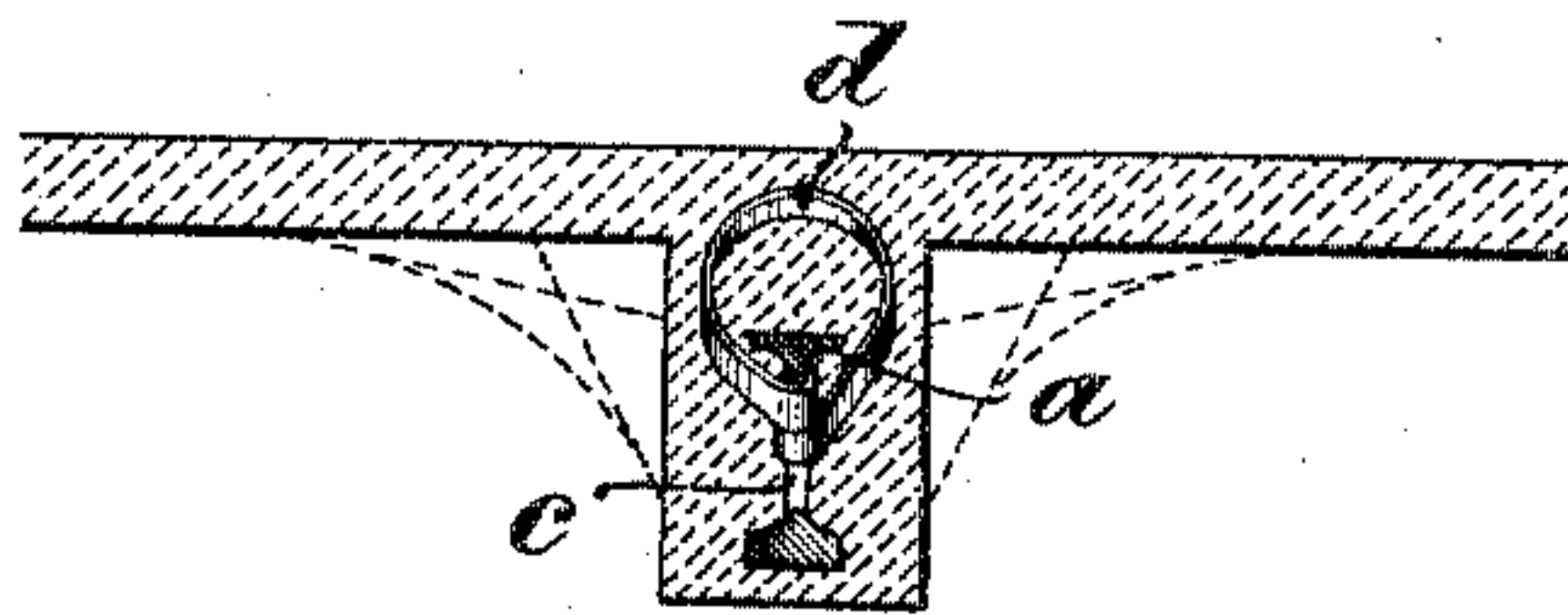


Fig. 3.

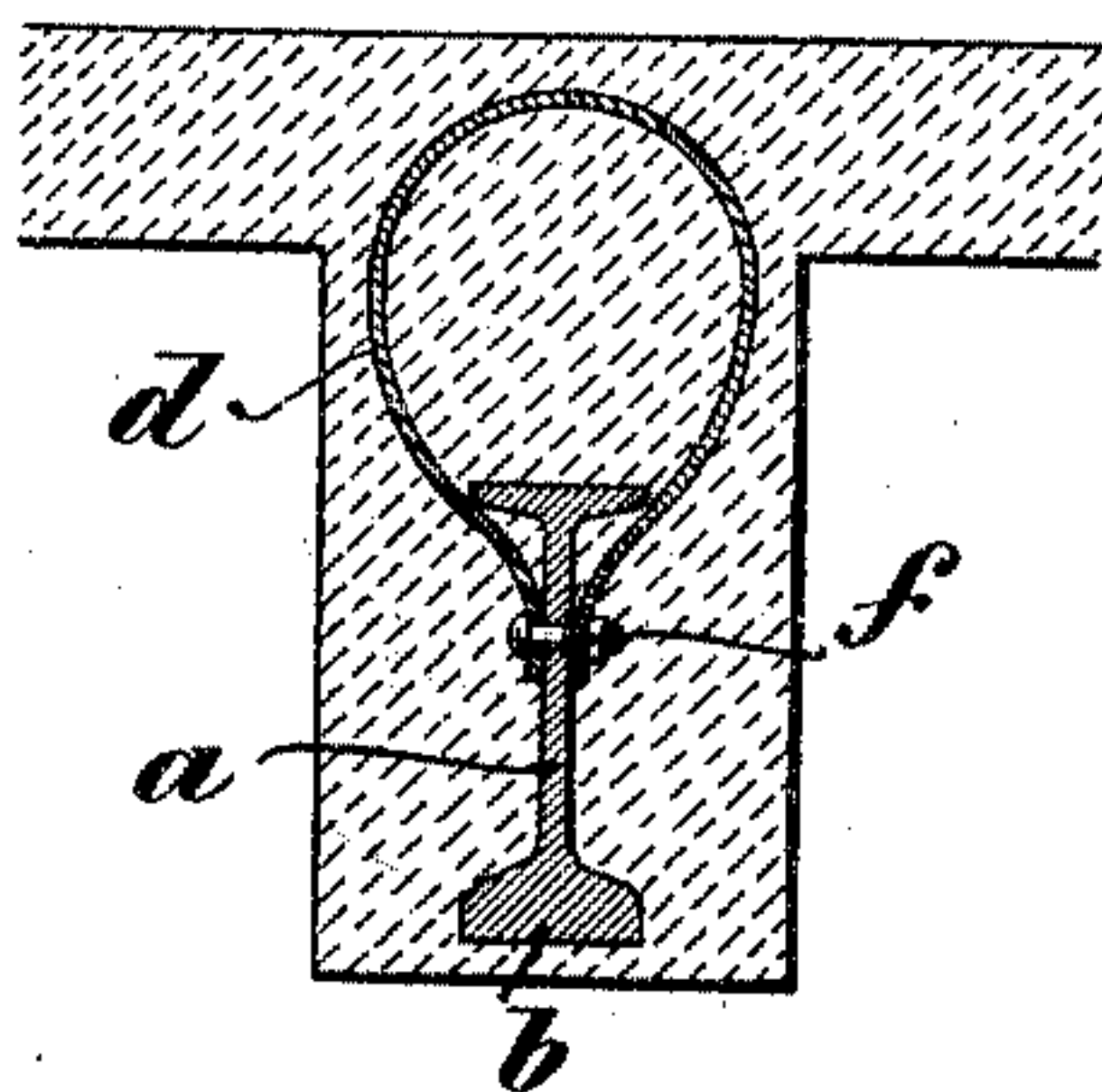


Fig. 4.

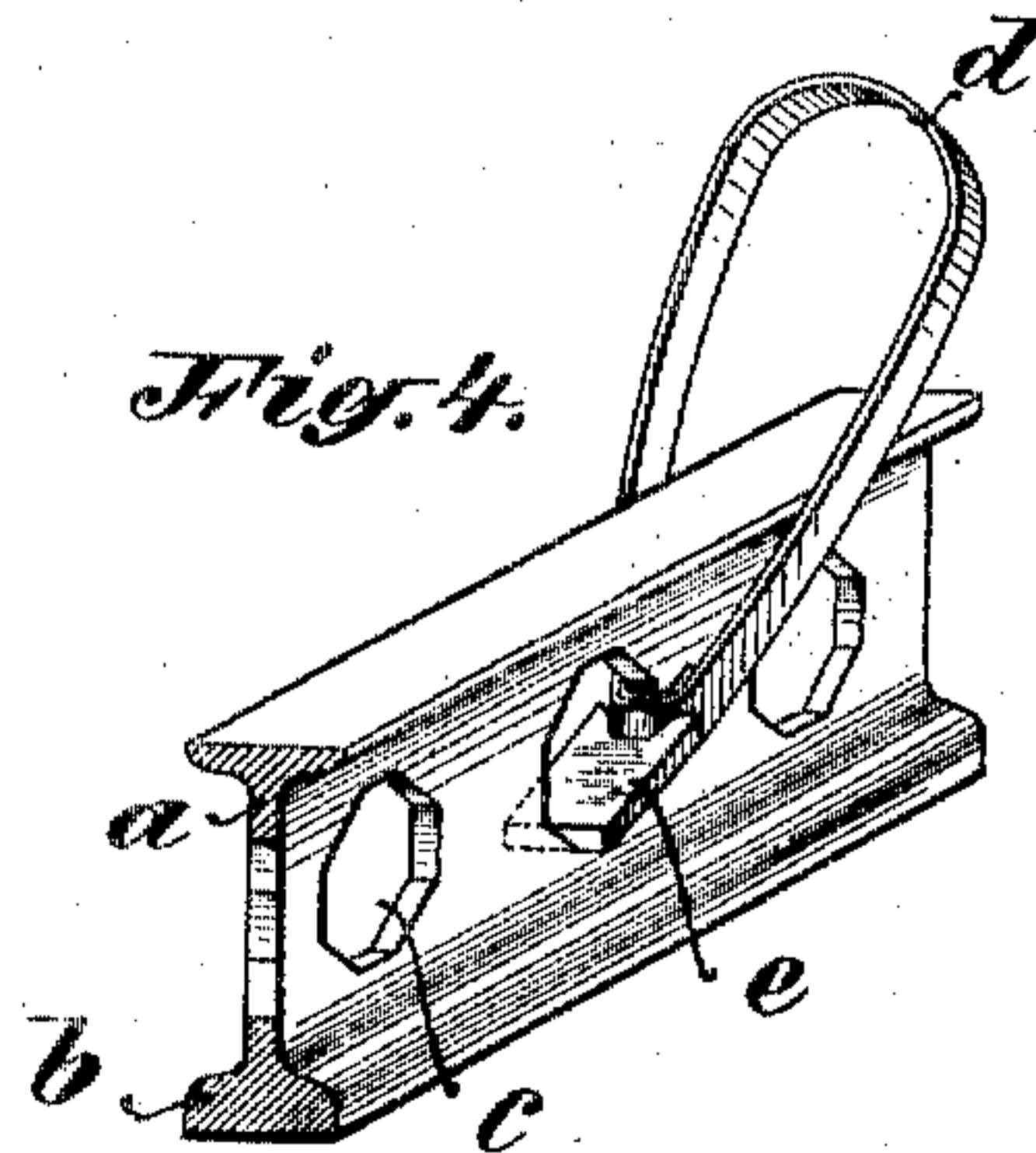


Fig. 5.

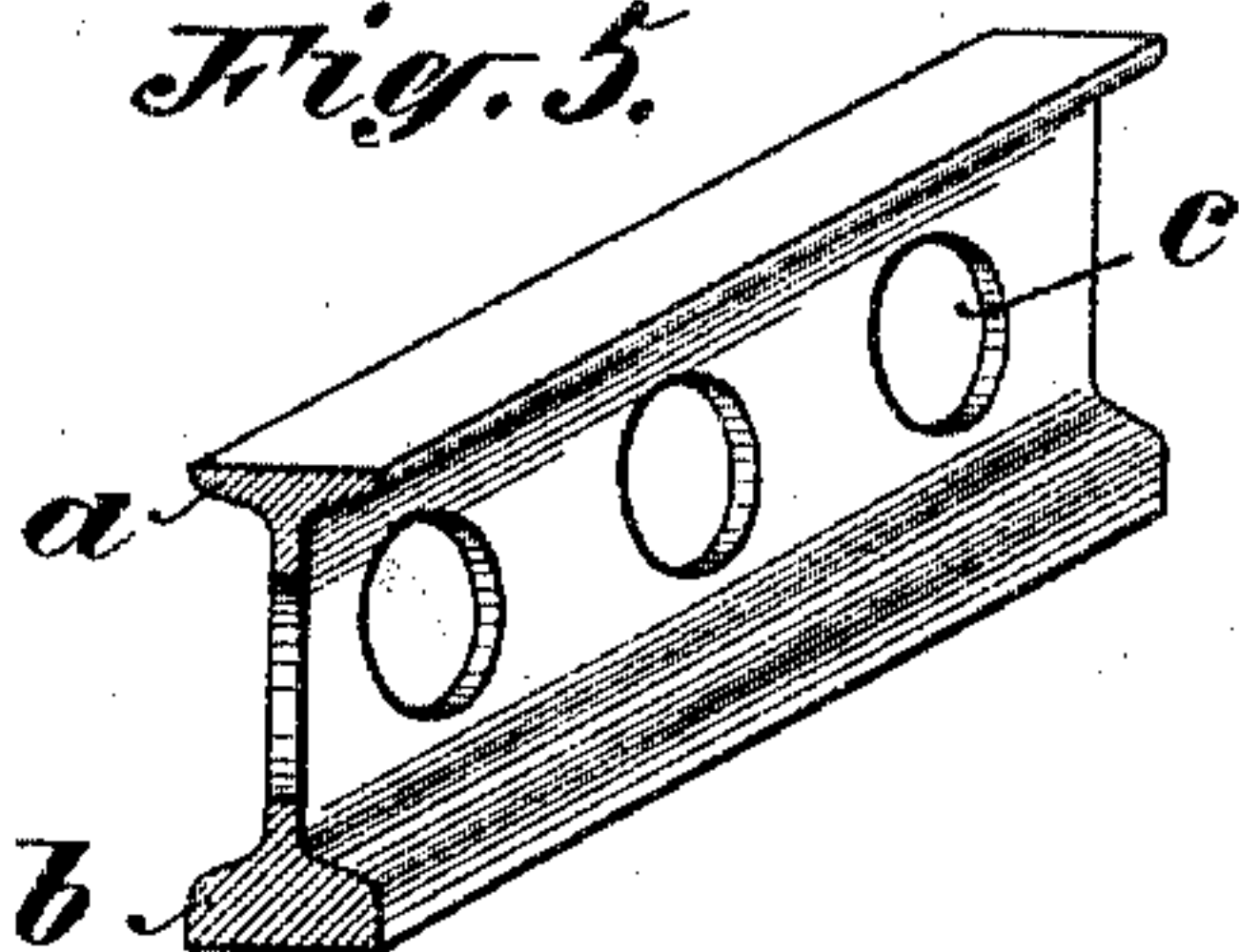
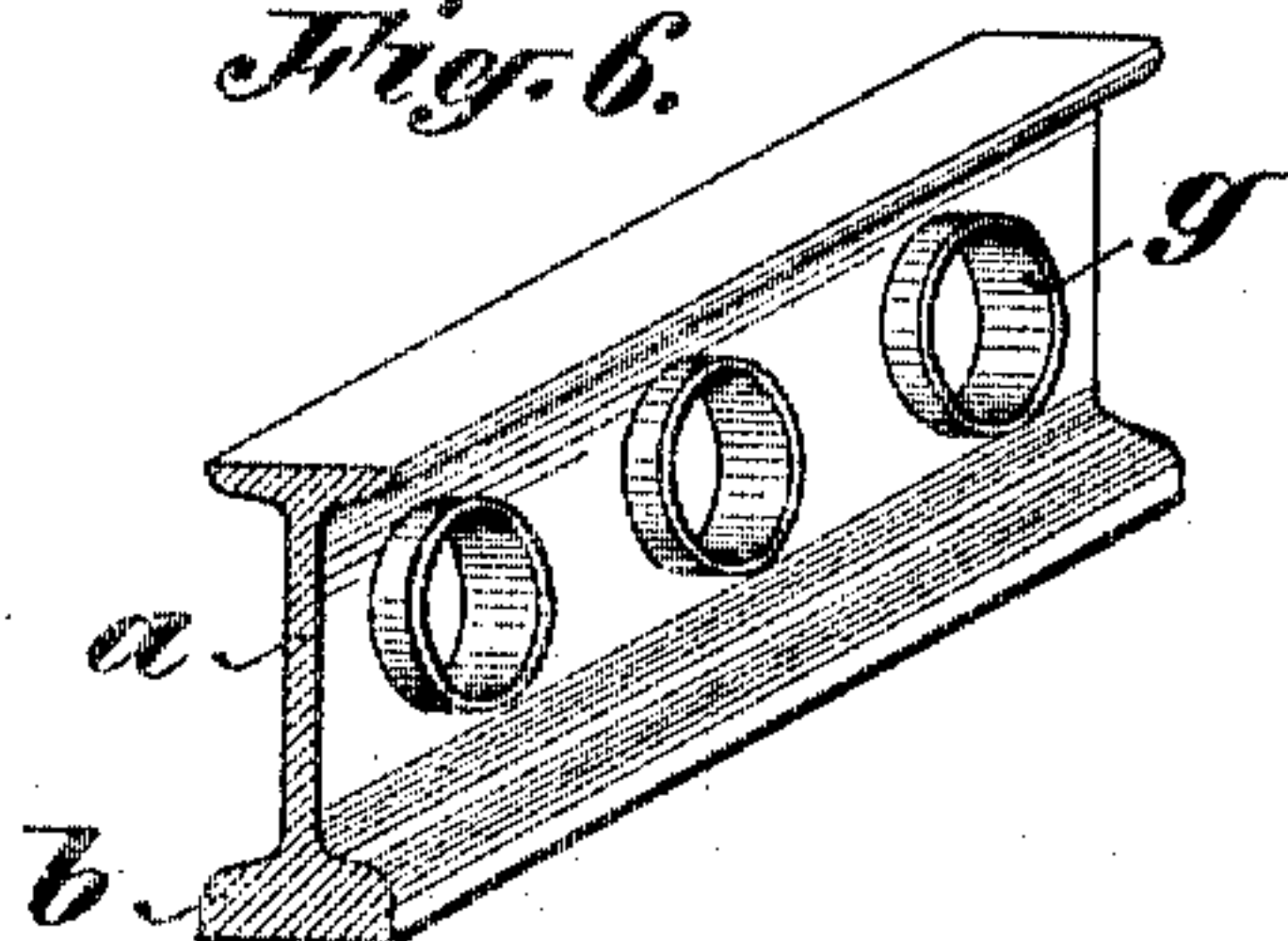


Fig. 6.



Witnesses:

W. H. Hobbs

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Inventor:

Fritz Pohlmann
by *Marcellus Bailey*
atty

UNITED STATES PATENT OFFICE.

FRITZ POHLMANN, OF SCHÖNEBERG-BERLIN, GERMANY.

CONCRETE OR LIKE GIRDER.

SPECIFICATION forming part of Letters Patent No. 766,899, dated August 9, 1904.

Application filed June 6, 1903. Serial No. 160,379. (No model.)

To all whom it may concern:

Be it known that I, FRITZ POHLMANN, a subject of the King of Prussia, residing at No. 37 Hohenstaufenstrasse, Schöneberg-Berlin, Kingdom of Prussia, German Empire, have invented new and useful Improvements in Concrete or Similar Girders, of which the following is a specification.

This invention relates to a new construction of concrete girder by means of which a considerable saving in iron can be effected by statically utilizing the filling material forming the connection between the ceilings and the girder.

In the accompanying drawings, Figure 1 is a longitudinal section, partly in elevation, of a concrete girder constructed in accordance with this invention. Fig. 2 is a transverse section of the same. Fig. 3 is a sectional view of the iron girder and loop. Fig. 4 is a similar view of a perforated iron girder and loop. Fig. 5 is a perspective view of the perforated iron girder. Fig. 6 is a perspective view of the iron girder with flanged holes.

Like letters indicate like parts throughout the drawings.

The upper iron flange and the upper half of an ordinary I-girder *a* is partly replaced by concrete material. A similar construction is known in armored concrete girders, where the lower flange of the girder is replaced by bar (round or square) iron surrounded by concrete; but in that case there is the drawback that the iron armor in itself before the stone or concrete material has been added has little or no stability. This drawback is obviated in the present invention by using strong rolled-iron beams *b* for the part exposed to tensile stress. Its bending strength is calculated to be sufficient for supporting the weight of the wooden binding-joists required for making the ceiling and the weight of the stone or concrete itself. In this way there is no necessity for supporting the binding-joists by scaffolding, and said binding-joists can be attached direct to the iron part in the same way as for ordinary girders, besides which the ceilings need not be made until after the roof has been completed, as the iron part of the girder sufficiently strengthens the walls. In order to

make the iron part of suitable shape for its action in the stone, the mass of metal is concentrated at the part *b* subjected to the greatest stress. The cross-section is therefore unsymmetrical relatively to the horizontal axis, and the tensile stress produced in the concrete girder is taken up by the lower thickened flange *b* of the iron girder. The sheering stress acting on the concrete girder is taken up by connecting the iron part with the stone or concrete material in the best possible way. This connection is effected partly by the adhesion of iron and concrete and partly by mechanical means.

The iron part is provided throughout the whole of its length with holes *c*, arranged at small intervals and of such height as to occupy nearly the whole height of the web. When embedded in the concrete, the filled holes transmit the sheering stress produced by the tensile strains on the perforations of the iron, acting as stone rivets. In order to obtain a greater bearing-surface in the perforated girders, the holes can be provided with flanges *g*, Fig. 6.

For increasing the resistance against tensile stress metal bands or loops *d* may be attached near the ends of the iron girders by screws *f*, rivets, or the like, or they may be passed through the holes *c*, Figs. 1, 3, and 4, and secured in their position by wedges or stays *e*, Fig. 4.

What I claim as my invention, and desire to secure by Letters Patent of the United States, is—

1. In a concrete girder the combination with the concrete material, of a metal beam having an upper flange and a lower flange of greater thickness than the upper flange and a web provided with perforations extending from near the lower flange to near the upper flange.

2. In a concrete girder the combination with the concrete material, of a metal beam having an upper flange and a lower flange of greater thickness than the upper flange and a web provided with flanged perforations extending from near the lower flange to near the upper flange.

3. In a concrete or similar girder in combination with the concrete material of a metal

beam having a lower thickened flange and web with metal bands or loops attached thereto, substantially as and for the purpose stated.

4. In a concrete or similar girder the combination, of the concrete material with a metal beam having a lower thickened flange, web provided with holes, and metal bands or loops secured in said holes, substantially as and for the purpose stated.

10 5. In a concrete or similar girder the combination, of the concrete material with a metal beam having a lower thickened flange, web

provided with holes, and metal bands or loops passed through the holes and secured in their position by wedges or stays, substantially as 15 and for the purpose stated.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

FRITZ POHLMANN.

Witnesses:

WOLDEMAR HAUPT,
HENRY HASPER.