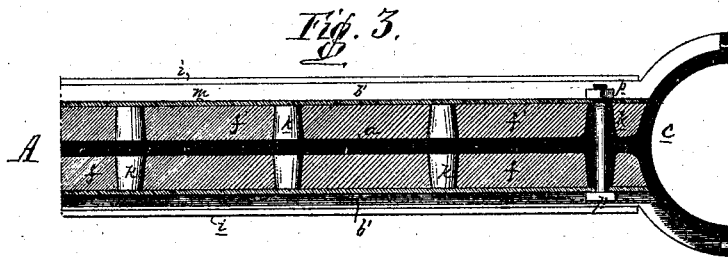
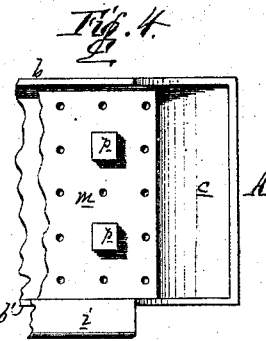
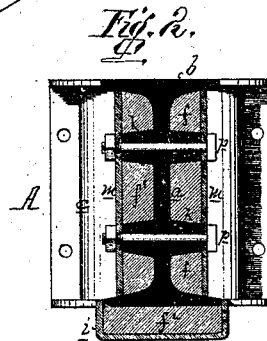
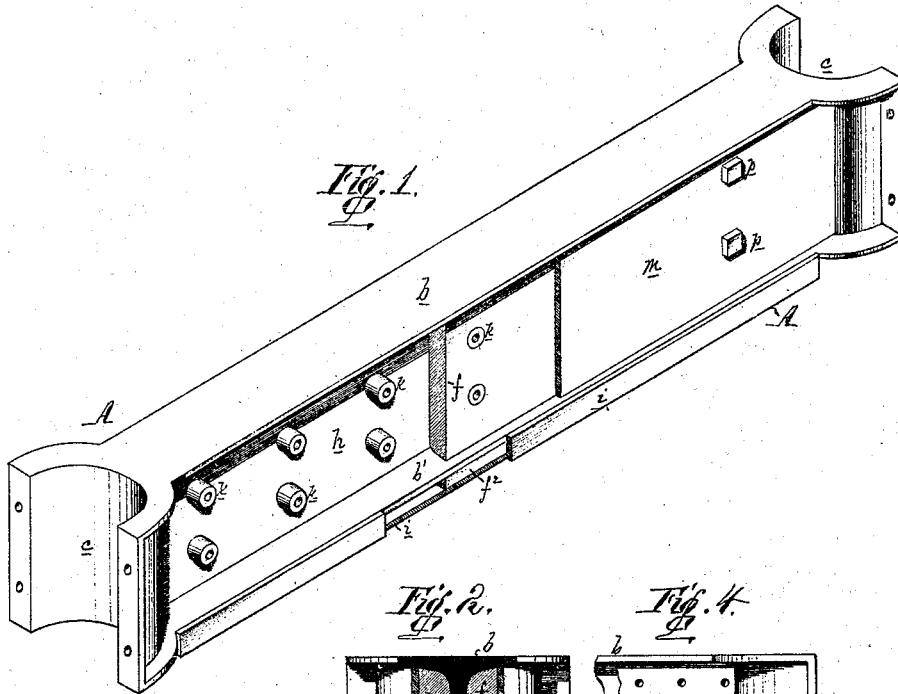


W. W. Hughes,

Girder.

No. 111,063.

Patented Jan. 17. 1871.



Witnesses { *Ing. B. Harding*
John Parker

W. W. Hughes
by his Atty.
Howe and Son

United States Patent Office.

WILLIAM WESLEY HUGHES, OF PHILADELPHIA, PENNSYLVANIA.

Letters Patent No. 111,063, dated January 17, 1871.

IMPROVEMENT IN BEAMS OR GIRDERS FOR FIRE-PROOF STRUCTURES.

The Schedule referred to in these Letters Patent and making part of the same.

I, WILLIAM WESLEY HUGHES, of Philadelphia, county of Philadelphia, State of Pennsylvania, have invented an improved Beam or Girder, of which the following is a specification.

Nature and Object of the Invention.

My invention consists of a beam or girder incased in or coated with plaster of Paris or other non-conducting material, for the purpose of preventing the injury or destruction of the said beam or girder in case of fire.

Description of the Accompanying Drawing.

Figure 1 is a perspective view of my improved beam or girder, with a portion of the coating removed;

Figure 2, a transverse section of the same;

Figure 3, a sectional plan on the line 1 2, fig. 2; and

Figure 4, a view of part of one end of the beam, showing a modification.

General Description.

A represents an I-beam, such, for instance, as are commonly used for the support of the floors of buildings, *a* being the web; *b* and *b'*, the upper and lower flanges; and *c c*, semicircular enlargements at each end, by which the said beam can be secured in the usual manner to supporting-columns and to other adjoining beams.

I propose to inclose or coat the beam with plaster of Paris, or with other suitable non-conducting material, which will protect and prevent the destruction or warping and twisting of the beam in case of fire.

In the beam illustrated in the drawing, a mass of plaster of Paris, *f*, is cast into the recess *h*, at one side of the beam, and a similar mass, *f'*, into the recess at the opposite side of the beam, the bottom of the latter being protected by another mass of plaster, *f''*, contained in a casing, *i*, of sheet-iron, which is bolted or otherwise secured to the lower flange and ends of the beam.

The top of the beam may also be coated, if desired, but this portion of the beam will, in most cases, be sufficiently protected by the arched masonry or brick-work extending transversely from beam to beam, for the support of the floor above.

For the purpose of causing the plaster to adhere to the beam I form on the sides of the latter, at points directly opposite to each other, a number of projections, *k*, and the plaster may be concealed and prevented from cracking off at points between the projections by sheet-iron or other plates *m*, secured to the opposite sides of the beam by bolts or rivets *p*, which are passed through holes formed in the said projections, and extending through the beam. These holes enable bolts to be passed through any of the projections, and serve, at the same time, to reduce the weight of the beam.

The plates *m* can be perfectly plain, or they may be perforated with holes, as shown in fig. 4, for the purpose of admitting air to the plaster beneath.

In some instances the plates *m* can be dispensed with, in which case the surface of the plaster or mastic filling may be suitably ornamented.

It will be evident that my invention can be applied to any of the beams or girders in common use, as well as to the I-beam, illustrated in the drawing; and it can also, in some instances, be applied to wooden joists for the purpose of preventing the destruction of the same by fire.

Claim.

As a new article of manufacture, a beam or girder, to the sides of which plaster of Paris or other non-conducting material is confined, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

W. W. HUGHES.

Witnesses:

WM. A. STEEL,
HARRY SMITH,