

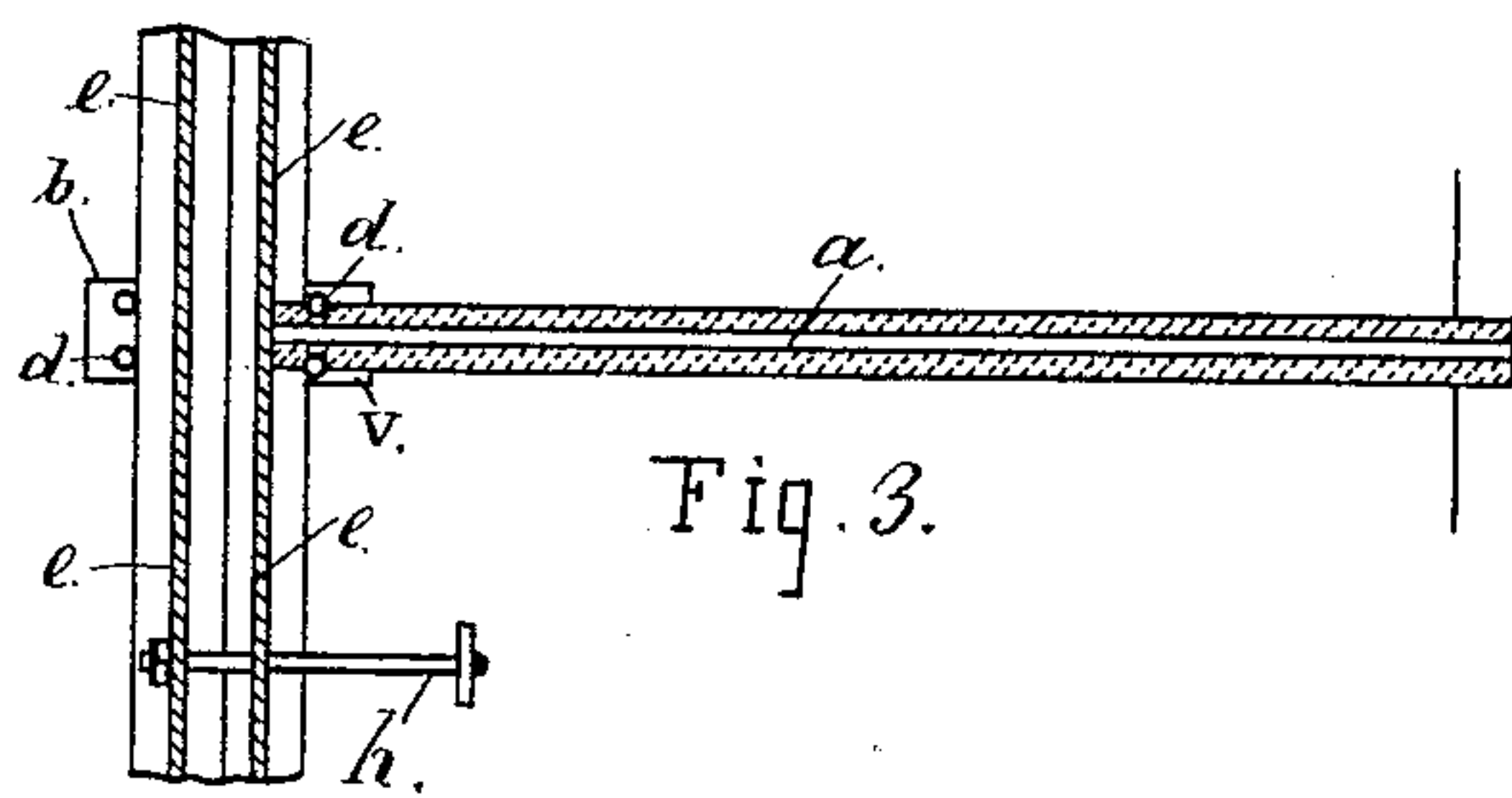
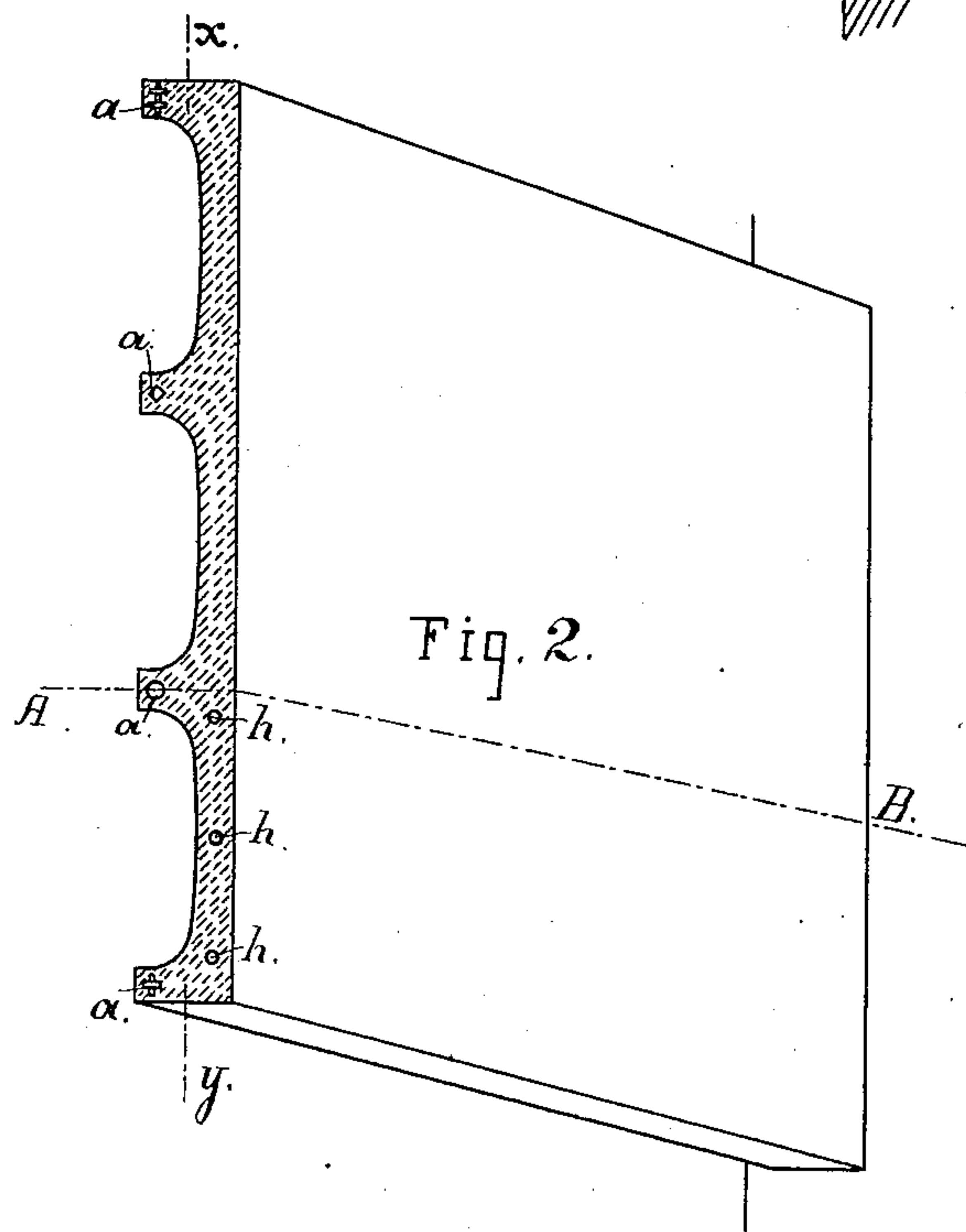
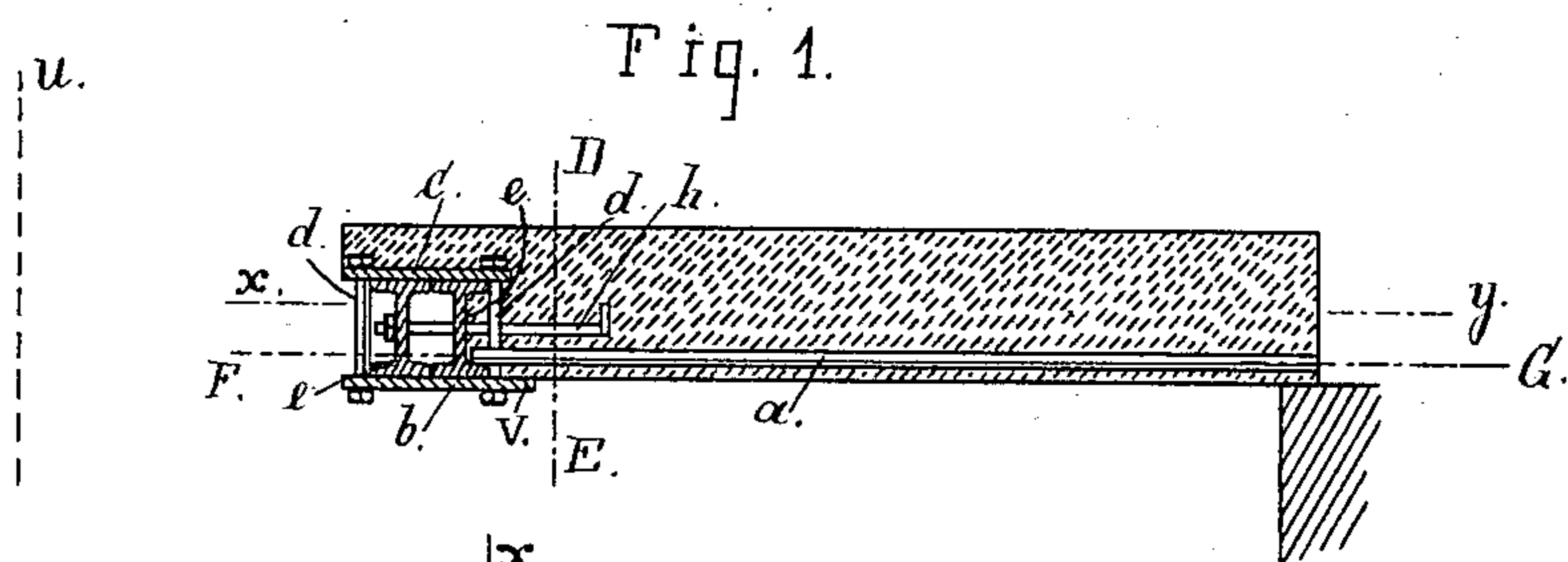
(No Model.)

P. H. JACKSON.

## CONSTRUCTION OF SIDEWALKS AND FLOORS OVER CHAMBERS AND EXCAVATIONS.

No. 366,840.

Patented July 19, 1887.



Witnesses:

Win. Mayer  
Jas. B. Lane.

Inventor:

INVENTOR:  
Peter H Jackson

# UNITED STATES PATENT OFFICE.

PETER H. JACKSON, OF SAN FRANCISCO, CALIFORNIA.

CONSTRUCTION OF SIDEWALKS AND FLOORS OVER CHAMBERS AND EXCAVATIONS.

SPECIFICATION forming part of Letters Patent No. 366,840, dated July 19, 1887.

Application filed October 6, 1886. Serial No. 215,504. (No model.)

*To all whom it may concern:*

Be it known that I, PETER H. JACKSON, of San Francisco, State of California, have invented certain new and useful Improvements in the Construction of Sidewalks and Floors Forming Roofs to Cellars, Basements, or other Chambers or Excavations; and I declare the following to be a full, clear, and exact description thereof, sufficient to enable any person skilled in the art to which my invention belongs to make and use the same, reference being had to the accompanying drawings, forming part of the specification.

My invention relates to certain improvements in the construction of sidewalks and floors forming roofs to cellars, basements, or other chambers or excavations formed of arches with metallic ties built in them along their length at or near their bottom to furnish the required tensile strength, together with a metallic girder extending across their ends, on the side of which the arches rest and are supported, and with connections and other improvements pertaining thereto.

Between the fronts of buildings and the sidewalk in many cases an areal space has to be provided, which is either covered by illuminating-tiles of iron and glass or open iron gratings, and in other cases the space is uncovered, and a stairway leads from the sidewalk to the basement, and for fire-proof floors spaces have to be left for stairways leading from one floor to another; also, openings are left for other purposes—such as light-holes, elevators, &c.—and for these purposes a girder has to support the ends of the arches.

Should the ends of the arches rest upon the top of the girder, the girder would set below the ends of the arches and would take up room in the apartment below, reducing the height from the floor to the under side of the girder, which is objectionable, particularly where the height of the story is small, which in many cases forbids its use.

The object of this invention is to make a strong and substantial side connection of the girder to the artificial stone or concrete arches, or brick and cement or brick and concrete arches, the ends of which abut against its side, and it is also a suitable support for the ends of brick arches laid up in cement or concrete,

with the top surface of artificial stone or concrete to resist the compressive force.

Figure 1 is a longitudinal section through the line A B of Fig. 2. The supporting-girder shown in Fig. 1 is omitted in Fig. 2 in order to show the ends of the arches.

In Fig. 1, in front of the girder, is shown a vertical line, *u*. Between this line and the girder is the areal or other space before mentioned.

From the girder extending to the right hand in Fig. 1 are artificial-stone or concrete arches, or arches of brick laid up in cement or concrete with the top surface of artificial stone or concrete to resist the compressive force. Along the length and near the bottom of the arch is shown a metallic tie, *a*, with roughened or other holding-surface to the cement or concrete, or brick and cement or brick and concrete arches, which prevents the tie slipping through when subjected to severe tensile strain, the top surface of the arches to be of artificial stone or concrete to resist the compressive force.

Portland-cement concrete is comparatively very weak in resisting tension, and the ties at the bottom supply that deficiency, the top surface of artificial stone or concrete resisting the compressive force having high resistance thereto.

The ends of the arches at their footings rest on a metallic tongue or shoe, which extends out from the side of the girder, which is shown to be composed of two rolled-iron beams, or may be of one, three, or more metal beams, as may be found necessary for strength, the girder to be of any length required, and to rest on end supports.

The bottom flange of the girder, is not sufficiently wide to receive the ends of the arches at their bottom and permanently rest upon it; and the flange having an incline on its top, which would tend to press the girder away from the arches or wedge the arches away from the girder.

The metallic shoe shown in Fig. 1 consists of a bottom plate that has a tongue or ledge, *V*, projecting out from the side at the bottom of the girder to receive and securely hold at the bottom the end of the concrete or other arch. This bottom plate, which extends across



the bottom of the girder, is secured by means of suspension-bolts to a top plate directly over it, which distributes the load of the arch across the top of the girder, which may be of any number of separate beams, the projecting part and bolts forming a shoe for the arch, and in addition the suspension-bolts being built in the arch aids in holding the arch up to the girder.

Anchor or tie bolts *h* extend through the beams of the girder with the inside part built in the arch, and the other end having a screw-thread and nut, so that, when the arches have become solid and hard, by screwing up the nut the arches are held firmly to the girder.

Fig. 2 is a perspective view of the sidewalk or floor arched beneath, omitting the girder, commencing on the line D E in Fig. 1, and extending to the right. The ends of the metallic ties *a a* are shown built in near the bottom of the arches and extending their length.

Fig. 3 is a plan view of the bottom portion of the arch on a line of F G in Fig. 1, showing the metallic tongue or ledge of the shoe with bolts front and back, which pass up through the top plate, *c*, from which they receive their support.

When the girder is in position with the metallic shoes attached, centers are formed to shape the bottom of the arches, which fit closely around the shoes and against the bottom flange of the girder, and for artificial stone or concrete arches, after a thin layer of concrete material has been laid on evenly over the centers and on the bottom of the metal tongues or shoes, then the prepared metallic ties are laid on, extending into the shoe with the end close up to the girder and over the whole length of the intended arch, then is applied over the ties liquid Portland cement, and the balance of the material is filled in and properly rammed and the top finished for a walking surface, and when all has become hard and strong by age the centers are dropped and the shoes support the ends of the arches.

Where brick and cement or brick and concrete is used, it takes the place of the concrete arch up to within a few inches of the top, where artificial stone or concrete is laid on and resists the compressive force, and also forms the walking surface.

Referring to Figs. 1, 2, and 3, *e e* are the metal beams forming the girder.

*a a* are metal ties extending along and near the bottom of the arch, and may be of any shape or form to hold to the surrounding cement or concrete.

*b* is the metallic bottom plate with the projecting tongue V, which supports the bottom end of the arch.

*c* is the metallic top plate resting on the top of the beams of the girder and distributing the load over them.

*d d d d* are four bolts connecting the bottom to the top plates.

*h* is the anchor or tie bolt secured to the girder, and extends into the concrete or other material of the arch and may be introduced wherever required.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A sidewalk or floor forming a roof to a cellar, basement, or other chamber or excavation, constructed with a series of arches composed of concrete, artificial stone, or brickwork, with longitudinal ties built in along at or near the bottom of the arches, in combination therewith of a transverse girder having attached to it and extending out from its side metallic tongues or projecting pieces which sustain the ends of the arches and ties, substantially as herein described.

2. A sidewalk or floor forming a roof to a cellar, basement, or other chamber or excavation, constructed with a series of arches composed of concrete, artificial stone, or brickwork, with longitudinal ties built in along at or near the bottom of the arches, in combination therewith of a transverse girder having attached and extending out from its side metallic shoes, the shoes consisting of a top and bottom plate extending across the girder and connected by suspension-bolts, which sustain and hold the end of the arch and distribute the weight over the top of the girder, substantially as herein described.

3. A sidewalk or floor forming a roof to a cellar, basement, or other chamber or excavation, constructed with a series of arches composed of artificial stone, concrete, or brickwork, with longitudinal ties built in along at or near the bottom of the arches, in combination therewith of a transverse girder having metallic shoes to support the ends of the arches, and ties and anchors between the shoes securing the girder to the arches, substantially as herein described.

PETER H. JACKSON.

Witnesses:

JAMES B. LANE,  
HENRY HAUSTEIN.