

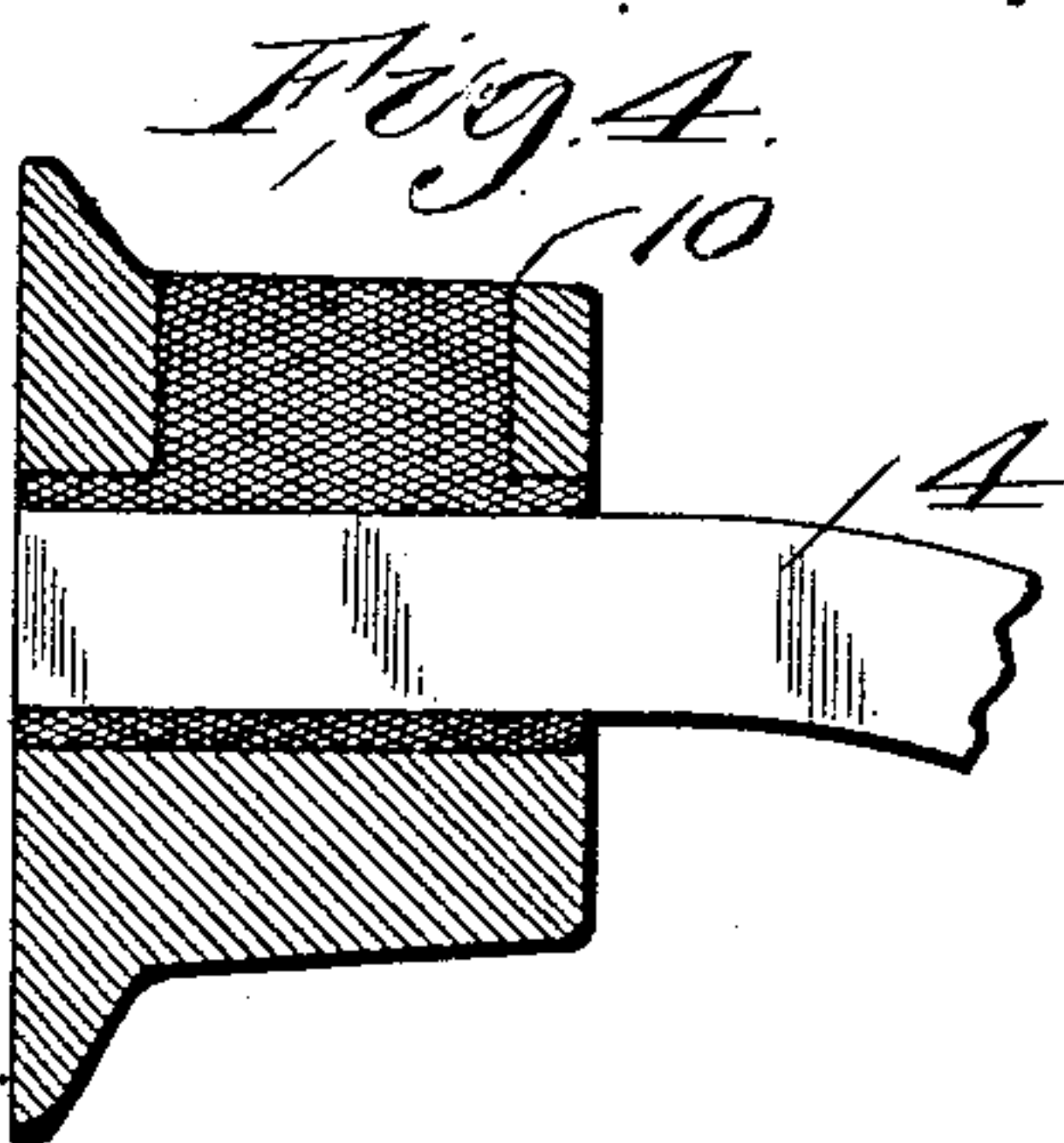
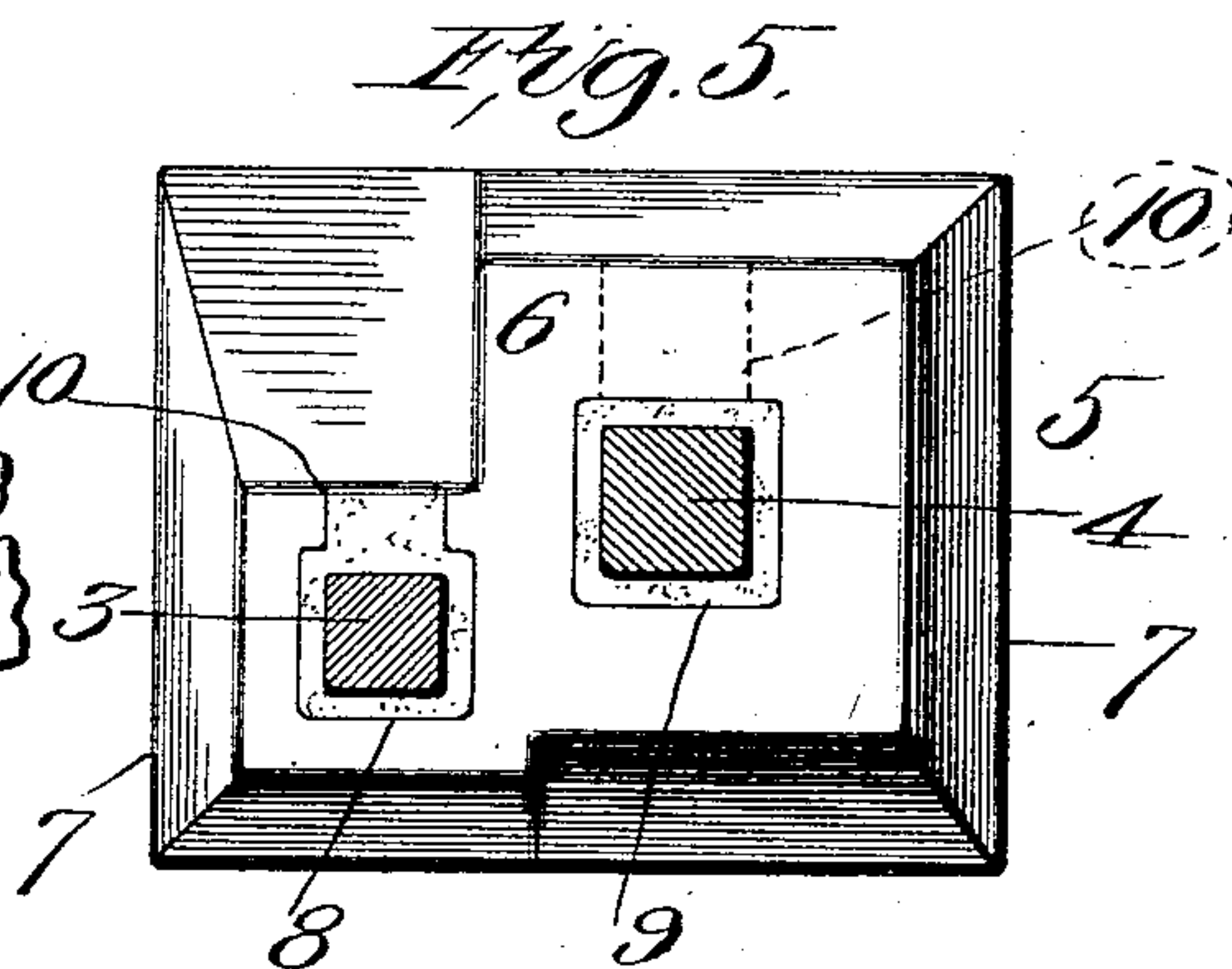
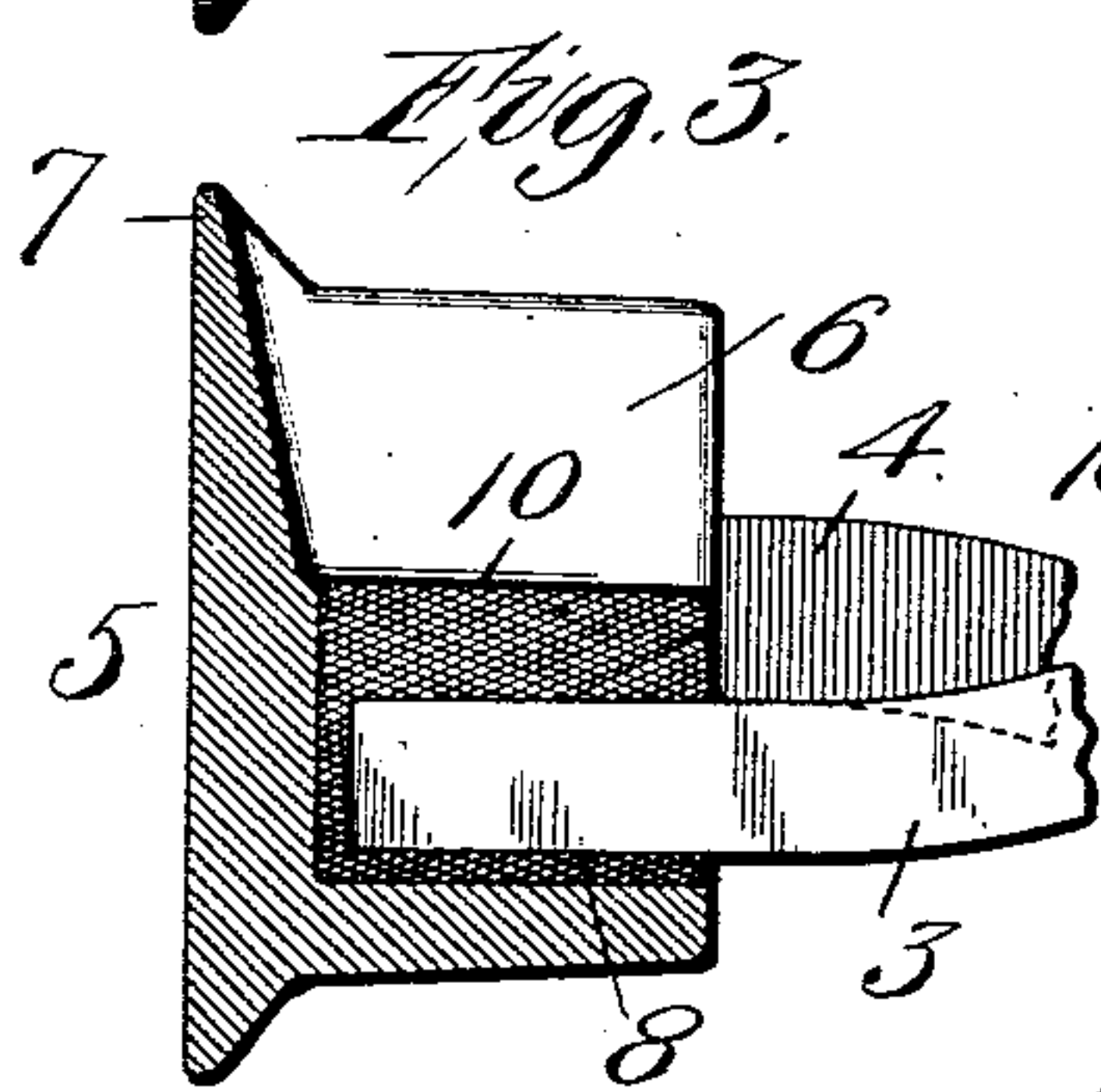
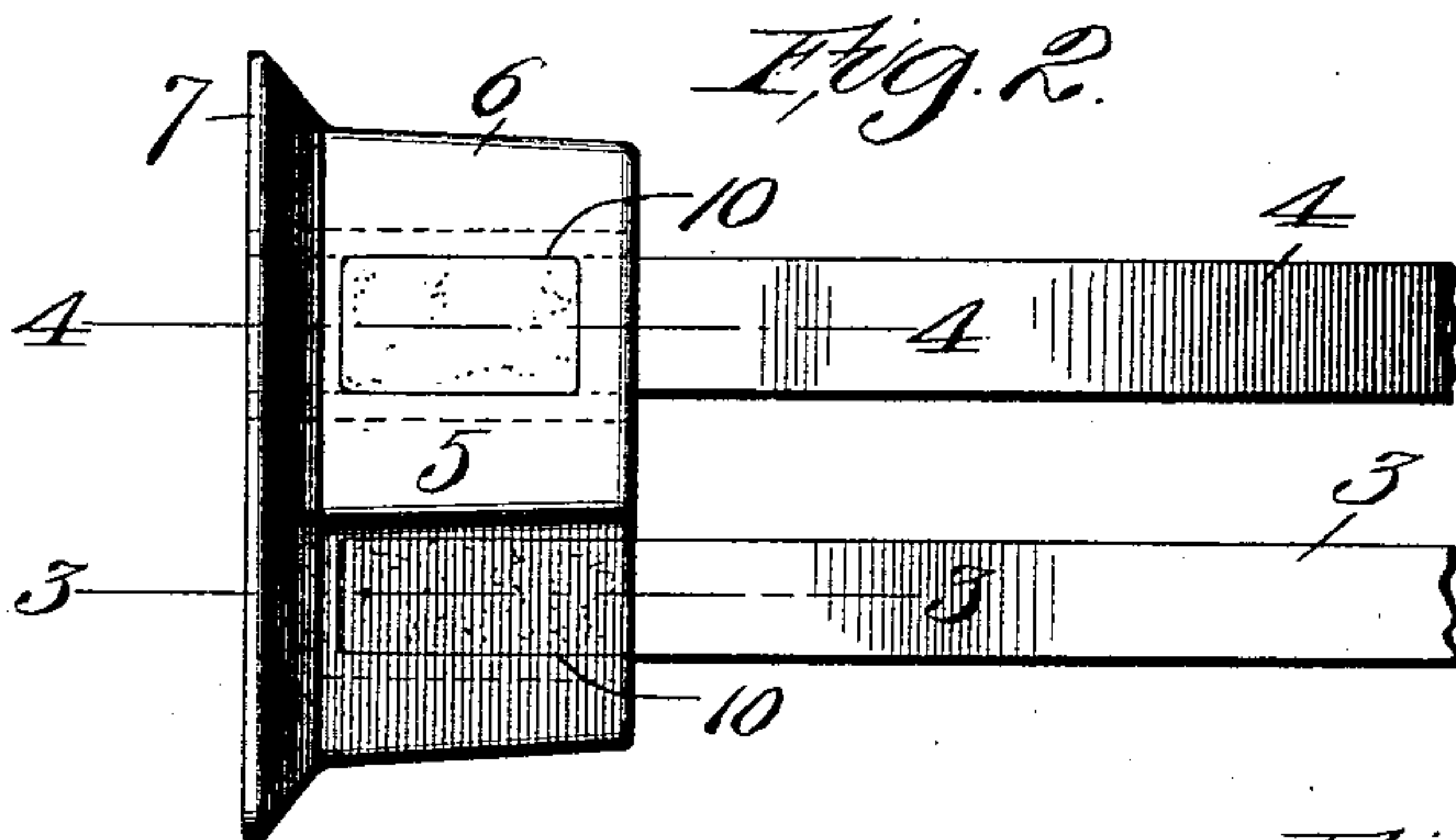
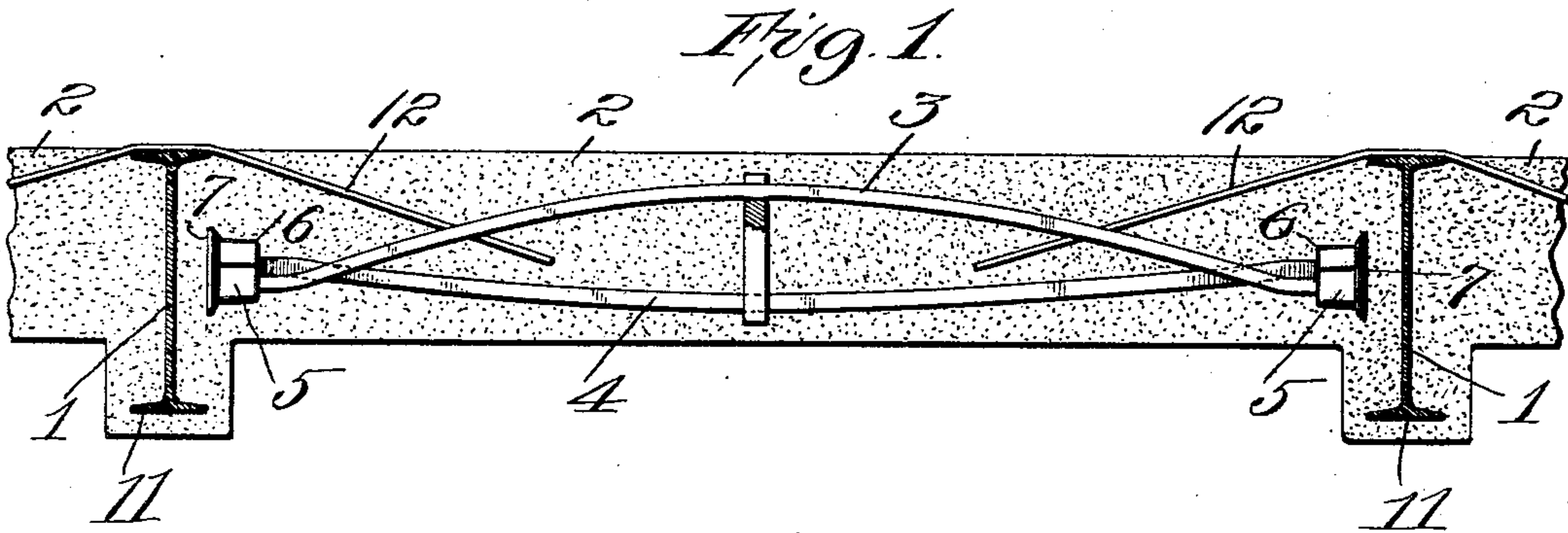
No. 746,009.

PATENTED DEC. 8, 1903.

P. M. BRUNER.
FLOOR AND STRENGTHENING MEMBER THEREFOR.

APPLICATION FILED AUG. 27, 1902.

NO MODEL.



Witnesses:
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UNITED STATES PATENT OFFICE.

PRESTON M. BRUNER, OF LEBANON, ILLINOIS.

FLOOR AND STRENGTHENING MEMBER THEREFOR.

SPECIFICATION forming part of Letters Patent No. 746,009, dated December 8, 1903.

Application filed August 27, 1902. Serial No. 121,161. (No model.)

To all whom it may concern:

Be it known that I, PRESTON M. BRUNER, a citizen of the United States, residing at Lebanon, St. Clair county, Illinois, have invented a certain new and useful Improvement in Floors and Strengthening Members Therefor, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a view showing a section of a floor, the truss and tie-rods being shown in side elevation. Fig. 2 is a top plan view of one end of the truss. Fig. 3 is a sectional elevation on about the line 3 3 of Fig. 2. Fig. 4 is a sectional elevation on about the line 4 4 of Fig. 2; and Fig. 5 is an elevation showing the inner face of one of the truss-heads, the bars being shown in section.

My invention relates to improvements in the construction of floors and the like and to strengthening members used in such constructions, my invention relating particularly to the construction of floors of concrete and the like.

Iron bars have been introduced in concrete floors for the purpose of increasing the tensile strength, and it has been found that if an iron bar which has a length of about twenty-five times its diameter is embedded in concrete and the concrete permitted to set about said bar the concrete and iron so firmly unite that when subjected to pulling strain the bar will break before pulling from the concrete. In order to effect this union between the iron and concrete, the bar must remain in a fixed position until the concrete has hardened, for if the bar should slip ever so little during the hardening of the concrete the bond would be permanently broken. In order to hold the bar rigid during the hardening of the concrete, it has been customary to connect a bar to the beams between which said bar extends; but this construction is objectionable, owing to the fact that should a floor-section between two beams fall the bar is twisted and the beams are frequently pulled into such positions that they fail to support the adjacent floor-sections, and these adjacent sections fall or are weakened.

My object is to provide such construction that the bar is not attached to the beams and is held firmly in position during the hardening of the concrete.

A further object is to so construct a floor that the sections are in a measure tied to the beams, but can fall without twisting or displacing a supporting-beam.

To these ends and also to improve generally upon structures of the character indicated my invention consists in the various matters hereinafter described and claimed.

Referring now more particularly to the drawings, 1 1 represent supports in the form of floor-beams, and 2 concrete floor-sections supported by said beams. Embedded in the concrete intermediate the said beams is a strengthening member, which is here shown as a truss, having a compression member 3 and a tension member 4. The bars constituting said compression member and tension member are rigidly secured to enlarged heads 5, and as in the construction of the floor concrete is tamped or otherwise firmly packed about said heads they serve to anchor the strengthening member and to firmly hold the same in position during the time that the concrete is hardening. Preferably the head is a casting and has a body portion 6, which is provided with a laterally-extending flange 7 at its outer end—that is, the end removed from the center of the truss—and the body portion of the head is irregular in cross-section, as shown in Fig. 5, so that several angles are presented to the embedding-concrete. Longitudinal seats 8 and 9 are provided in the head for the ends of the rods forming the tension and compression members, and openings 10 communicate between said seats and the outer surface of the head. The rods being placed in position in the proper seats, some suitable binding material having the property of rigidly uniting the bars and the head is poured into the openings 10 and permitted to firmly set about the bar ends. Zinc is preferably employed for this purpose.

In constructing the floor I prefer to employ beams having base-flanges 11, and the truss is placed in such position that its heads lie over the said flanges, so that a head is supported upon the material intermediate a base-flange and said head. As will be readily seen,

the strengthening members are not connected to the beams; but their enlarged heads anchor the bars firmly in the concrete and are so embedded therein that any movement of the bars during the hardening process is impossible.

In order to tie floor-sections to the beams and at the same time permit a floor-section to fall without twisting its supporting-beams, rods 12 can be laid over or secured to the beams, the ends of a rod extending upon opposite sides of its supporting-beam and the portion of a rod upon a side of a beam preferably inclining downwardly and away from the top of the beam. These rods tend to hold the concrete upon a beam; but should a floor-section break the concrete can fall and slip from its supporting-rod without twisting or bending the beam. Should the bond between the concrete and its tie-rod not permit the concrete to slip from said rod, the floor-section can still break without twisting the supporting-beams, for as each rod has only one end in connection with the beam the rod is not strained in such manner that the beam is twisted, but said rod merely swings upon the beam as a pivot.

Manifestly the strengthening member need not be a truss, but can be a bar rigidly secured to the before-mentioned heads.

I am aware that many minor changes in the construction, arrangement, and combination of the several parts of my device can be made and substituted for those herein shown and described without in the least departing from the nature and principle of my invention.

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

1. In a floor or the like, a support, a floor-section, a tie-rod tying said section to said support and having a free end connected to said floor-section, and means for holding said tie-rod upon said support and preventing said tie-rod from bodily moving from said support in the direction of strain; substantially as described.

2. In a floor or the like, a support, a floor-section of the character of concrete, a tie-rod tying said section to said support and having a free end embedded in said concrete, and means for holding said tie-rod upon said support and preventing said tie-rod from bodily moving from said support in the direction of strain; substantially as described.

3. In a floor or the like, a plurality of floor-sections, and a tie member tying said sections together, the connection between said member and both of said sections being such that it can be broken under abnormal strain; substantially as described.

4. In a floor or the like, a plurality of floor-sections, and a tie member tying said sections together and having free ends connected to

the respective said sections; substantially as described.

5. In a floor or the like, a support, floor-sections extending upon opposite sides thereof, and a tie member tying together said sections and said support, said tie member extending across said support to be supported thereby and being connected to said floor-sections in a manner to permit either of said sections to be disconnected therefrom under abnormal strain; substantially as described.

6. In a floor or the like, a support, floor-sections upon opposite sides thereof, and a tie member tying said support and said floor-sections together, said tie member extending across said support to be supported thereby and having free ends connected to said floor-sections; substantially as described.

7. In a floor or the like, a support, floor-sections of the character of concrete upon opposite sides thereof, and a tie-rod extending across said support to be supported thereby and having its free ends embedded in the concrete of the respective said floor-sections; substantially as described.

8. In a floor or the like, the combination with supports, of a floor-section of the character of concrete intermediate said supports, and inclined tie-rods extending from said supports and buried in said concrete, each of said rods being connected to but one support; substantially as described.

9. In a floor or the like, the combination with supports, of a floor-section of the character of concrete upon said supports, a strengthening member embedded in said concrete and detached from said supports, and tie-rods upon said supports and buried in said concrete, each of said rods being connected to but one support; substantially as described.

10. A device of the character indicated comprising a bar, an enlarged head having a body portion in which said bar is rigidly seated, and a flange upon said body portion; substantially as described.

11. A strengthening member of the character indicated comprising a bar, and an end head secured thereto by material cast thereupon; substantially as described.

12. A device of the character indicated comprising a bar, a head provided with a seat receiving said bar, and binding material of the character of zinc in said seat and securing said bar and head together; substantially as described.

In testimony whereof I hereunto affix my signature, in the presence of two witnesses, this 25th day of August, 1902.

PRESTON M. BRUNER.

Witnesses:

GEORGE BAKEWELL,
G. A. PENNINGTON.