No. 684,258. Patented Oct. 8, 1901.

P. H. JACKSON.

PORTABLE CONCRETE BEAM.

(Application filed May 29, 1901.)

(No Model.)

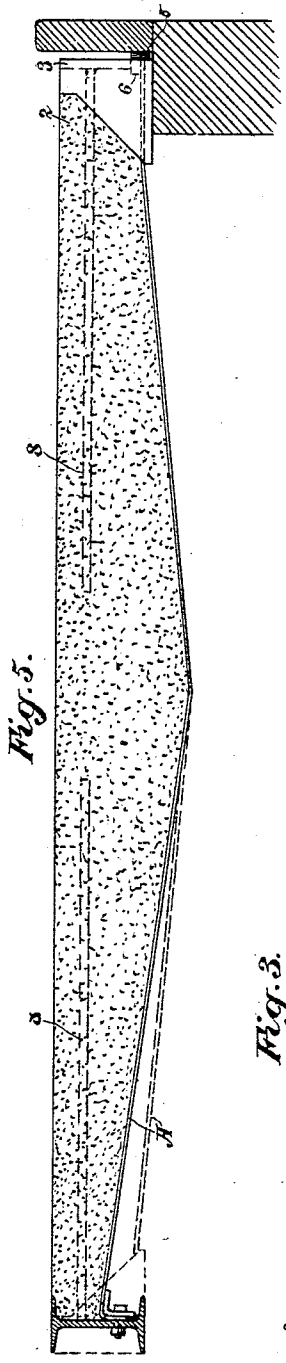


Fig. 5.

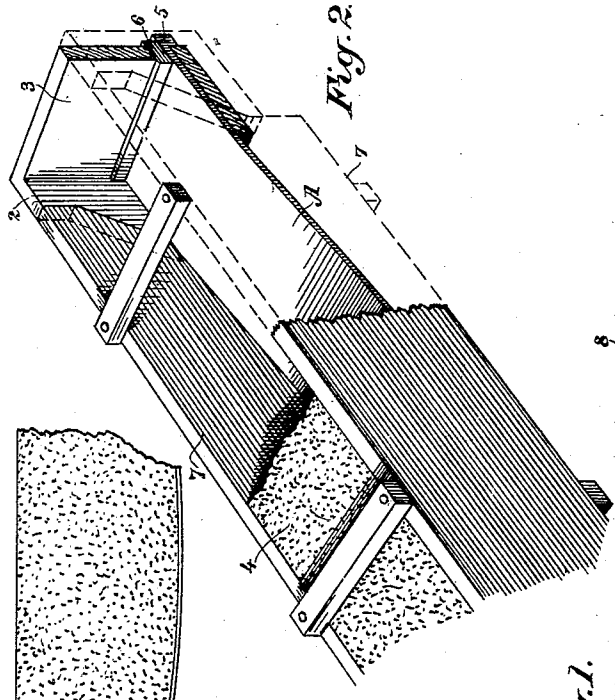


Fig. 2.

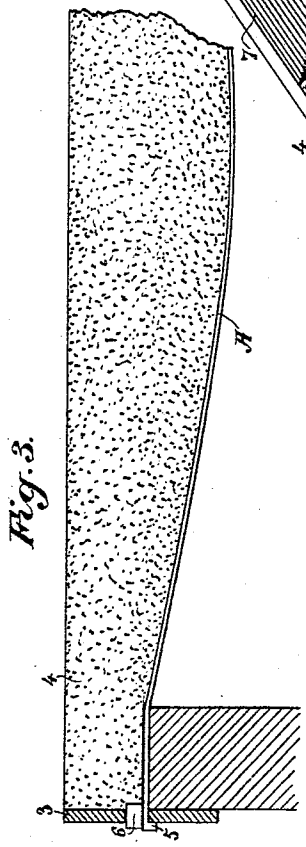


Fig. 3.

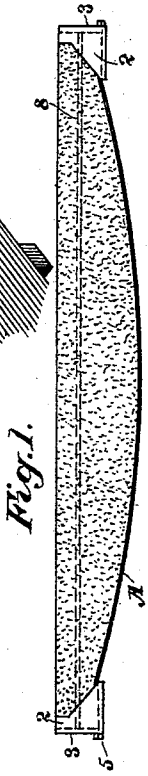


Fig. 1.

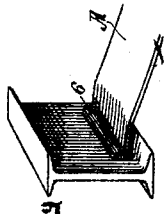


Fig. 4.

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UNITED STATES PATENT OFFICE.

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PORTABLE CONCRETE BEAM.

SPECIFICATION forming part of Letters Patent No. 684,258, dated October 8, 1901.

Application filed May 29, 1901. Serial No. 62,372. (No model.)

To all whom it may concern:

Be it known that I, PETER H. JACKSON, a citizen of the United States, residing in the city and county of San Francisco, State of California, have invented an Improvement in Portable Concrete Beams; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to an improved beam which is especially adapted for building purposes.

It consists of the parts and the constructions, arrangements, and combinations of parts which will be hereinafter described and claimed.

Figure 1 is a view of a complete portable beam, being detached. Fig. 2 is a detail of the end fastening. Fig. 3 shows a sectional modification of using an end plate instead of a skewback. Fig. 4 shows a short section of a beam as end support. Fig. 5 is a view of a complete beam, showing one end connected to an I-beam.

As shown in the drawings, A is a flat metal tie or strap having any suitable or desired width and of a length sufficient to extend between the points of support upon which the completed beam is to rest. The curvature of this tie may be any suitable or well-known form. I prefer to make it in what is known as the "catenary" curve, as giving the best results of strength and support. Its ends 2 are fastened to separate abutting metal plates or to metal skewbacks, as at 3. A very suitable way of making this connection is to slot the end plates of a width sufficient to admit the width of the tie. Upon the ends of the tie are formed or welded lugs, as at 5. These lugs are formed, preferably, on the lower surface of the tie, and the openings in the end plates are sufficiently deep to allow the lugs to be passed through the plates, and then drop, so as to rest behind the plates and engage with the rear portions. The ties can then be secured to these end plates by keys or plugs 6, driven in above them, so as to prevent the disengagement of the lugs. These skewbacks are made of box or other form and are kept at certain distances apart in the direction of the length of the beam by wooden or other braces 7, and these at the same time form the shape of the sides of the proposed beam. Upon each side of the tie boards or sheets are fixed, having as great a depth at the center as will extend from the lowest point of depression of the tie up to approximately a level with the top of the end supports or skewbacks. These boards are clamped or connected together at certain distances apart to prevent their spreading, and thus form a channel for the reception of the concrete. The concrete mixture may be any suitable or well-known compound for the purpose and is filled into the space between the sides, as shown at 4, and well compacted. When it has become hard and strong by age, the sides and braces may be removed, and the result will be an independent portable beam with end abutments in readiness to be used wherever required. Its ends may be set upon walls, as any other I-beam, and form a support for a floor, wall, or the like. When thus employed, the forces of compression, tension, and transverse strain are all resisted in this portably-built beam. This beam differs from any of those beams which are formed of metal ties having their ends attached to cross beams or girders and upon which a filling of concrete or similar material may afterward be placed. Such beams cannot be employed without having the girders or other supports to which they may be attached; but my improved portable beam can be placed at any point where there may be supports for the ends in the same manner as in other beam or girder. The formula for computing the strain on a tie of this description would be similar to that employed for computing the strains upon ropes or chains used in suspension-bridge construction. The weight of about one-half the load borne by the beam is supported on the edges of the skewbacks and tends to slightly incline forward or inward the top of the skewback, and thus tends to increase more uniformly the compression over the upper portion of the end of the concrete beam. In order to strengthen it against lateral and other deflection, the width is made sufficient in proportion to the length, and in cases of long spans where it cannot otherwise be done an iron, steel, or other metal rod or bar 8, preferably having roughened sides, extends lengthwise within the beam. This bar 8 may either extend the full length above the flat

metal tie or it may be made in two sections extending into the beam from opposite ends, these bars being first placed and the plastic material afterward filled in about them.

It will be understood that these beams may be made with the supports and skewbacks at both ends, or one end may be thus equipped and the other connected or supported in some other manner, as by a beam or girder. Such a construction is applicable where an iron or steel beam or girder is used extending parallel with the front of the building and between it and the street-curb to support sidewalk-lights, as shown in Fig. 5. On the outer side my composite beam may have one end fastened to the side of this girder and the other end resting on the exterior or retaining wall, with the outer end of the tie attached to a skewback, as above described. This construction saves the expense of a girder, which must be used in present construction.

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

1. An independent composite beam, consisting of a flat metal tie curved from end to end and forming the bottom surface of the beam said tie having an abutting metal end plate or skewback, and a filling of concrete material resting upon the tie and extending between the end plates.

2. A composite beam consisting of a metal tie curved or bent downwardly between its ends said tie forming the bottom surface of the beam, a filling of concrete upon the top of the tie, and abutments at either end of the tie acting against the ends of the concrete body in the transmission of compressive strains.

3. A composite beam consisting of a metal tie curved or bent downwardly between its ends said tie forming the bottom surface of the beam, a filling of concrete material upon said tie, skewbacks or abutments at the ends of the tie against which said filling abuts, and means for bracing the beam against endwise thrust.

4. A composite beam consisting of a metal tie curved or bent downwardly between the ends, lugs formed or secured upon the ends of the tie, plates or skewbacks having slots made through them for the reception of the ends, keys by which the lugs are locked in said plates, and a filling of concrete material extending between the end plates or skewbacks, and forming with these and the tie a complete portable beam.

5. A composite beam consisting of a flat metal tie having a downward convexity between its ends, end plates or skewbacks, means for connecting the tie therewith, one or more bars or rods extending from the end plates into the space above the tie, and a filling of concrete resting upon the tie surrounding the bars and abutting against the end plates or skewbacks to form a portable beam.

6. A composite beam consisting of a flat metal tie curved or bent from end to end having one end attached to a cross-girder and the other end attached to an abutting plate or skewback, said tie forming the bottom surface of the beam, and a filling of concrete material resting upon the tie and extending between the girder at one end and the end plate or skewback on the other end.

In witness whereof I have hereunto set my hand.

PETER H. JACKSON.

Witnesses:
S. H. NOURSE,
JESSIE C. BRODIE.