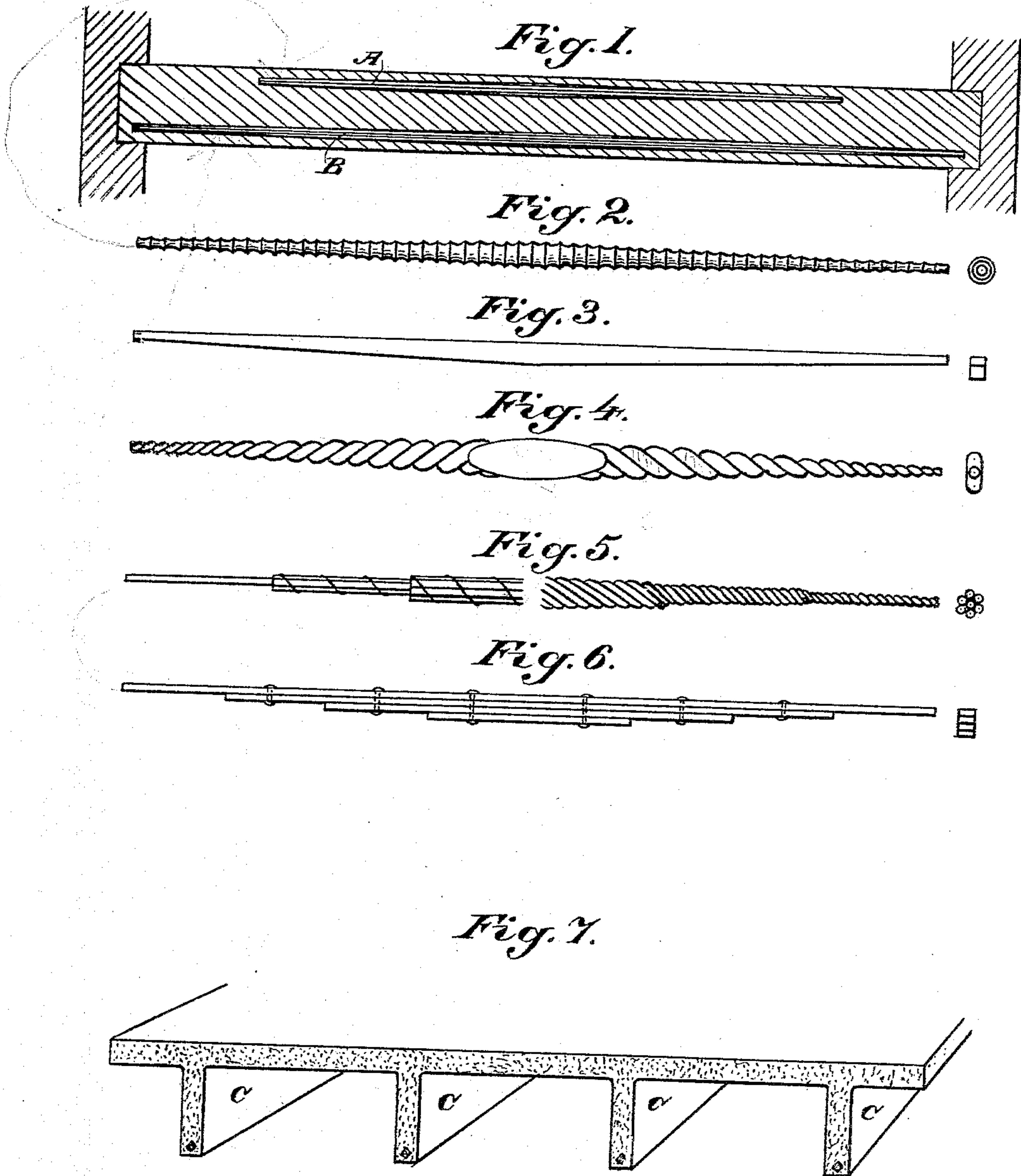


(No Model.)

E. L. RANSOME.
BUILDING CONSTRUCTION.

No. 516,111.

Patented Mar. 6, 1894.



Witnesses,
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UNITED STATES PATENT OFFICE.

ERNEST LESLIE RANSOME, OF OAKLAND, CALIFORNIA.

BUILDING CONSTRUCTION.

SPECIFICATION forming part of Letters Patent No. 516,111, dated March 6, 1894.

Application filed September 1, 1893. Serial No. 484,576. (No model.)

To all whom it may concern:

Be it known that I, ERNEST LESLIE RANSOME, a citizen of the United States, residing at Oakland, in the county of Alameda and State of California, have invented certain new and useful Improvements in Building Construction; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

In the accompanying drawings illustrative of my invention Figure 1. is a section of a concrete floor, strengthened by iron bars "A—B" in the way now well known to concrete experts, bar A being placed in the upper portion of the floor to assist in resisting the compressive strain which occurs there, while bar B is placed in the lower portion of the floor to resist the tensile strain which occurs at that point. Fig. 2. is an improved compression bar of cast iron. Fig. 3. is an improved tension bar with parallel sides. Fig. 4. is an improved tension bar with sides parallel in the middle portion. Fig. 5. is an improved compound tension bar, built up with a number of wires, rods or bars; they may be either bundled or twisted together. Fig. 6. is an improved compound tension bar with parallel sides. Fig. 7. is a sectional view of a beam floor in which C. C. C. C. are the beams.

It has been customary for many years past to increase the strength of concrete floors by the use of bars of iron placed in the lower part of the floor to give to it the required tensile strength; of late years this system has been enlarged by the use of bars of cast iron placed in the upper portion of the floor to increase the resistance of the floor to the compressive or crushing strain that occurs there. Various forms have been given to this iron to cause a more perfect bond between the iron and concrete; but heretofore these bars have been of a uniform size from end to end, subject only to such slight variations as were occasioned by the various shapes of the keying or bonding devices. It is well known that in concrete floors of this construction, the tensional strain at the lower part and the compressive strain at the upper part are the greatest in or about the center of the floor span and the least where the floor rests upon

its supports. Therefore in using tension or compression bars of uniform dimensions throughout their length great waste of metal occurs and my invention consists of using bars of maximum size about their center and tapering or stepping smaller from that point to the ends, grading the taper or steps to suit the strains that the bar will be subjected to. These bars can be forged, rolled, cast or otherwise formed with any of the usual bonds on or in their surfaces for their more perfect union with the concrete. They may consist of one piece as in Figs. 2, 3, and 4 or several pieces twisted or otherwise bound together as in Figs. 5 and 6. In this I do not limit myself to any particular form of bond for my improvement in the bar is independent of any particular bond and claims none. In building floors of this character and of the variety known as "beam floors" as shown by Fig. 7 which variety is fully illustrated and described in the various pamphlets issued by the Ransome & Smith Co. of Chicago and San Francisco and of which thousands of copies are spread throughout the States, it is a great advantage in point of economy to have the bar as narrow as possible so as to permit a correspondingly narrow beam. I therefore in some cases roll, forge, cast or otherwise shape these improved bars in such a manner as to have them approximate to an oval or rectangular shape instead of a round or square shape in cross section in and about the center where they are of greatest width and from there this flattening is preferably continued out toward the ends until it reaches them or is lost or dies away by reason of the continually diminishing size of the bar thus making the bar of uniform width for a part or the whole of its length.

For the purpose of this invention I regard brick work, masonry, glass, asphalt, or other substances corresponding in character thereto as the equivalent of concrete, and for the bars any of the useful metals or other material having the necessary tensile or compressive strength may be employed.

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

1. In concrete construction a monolithically embedded tension bar of maximum size

about its center and gradually diminishing toward its ends, substantially as described.

2. In concrete construction a monolithically embedded compression bar of maximum size about its center and gradually diminishing toward its ends, substantially as described.

3. In concrete construction a monolithically embedded tension bar having parallel sides of maximum size about its center, and gradually diminishing toward its ends, substantially as described.

4. In concrete construction a monolithically embedded compression bar having parallel sides of maximum size about its center,

and gradually diminishing toward its ends, substantially as described.

5. In concrete construction a compound strengthening bar of maximum size about its center, and stepping smaller to its ends, substantially as described.

6. In concrete construction a compound strengthening bar, having parallel sides, of maximum size about its center, and stepping smaller to its ends, substantially as described.

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Witnesses:

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