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Patented Mar. 4, 1902.

E. L. RANSOME.
REINFORCED CONCRETE CONSTRUCTION.

(Application filed July 13, 1901.)

(No Model.)

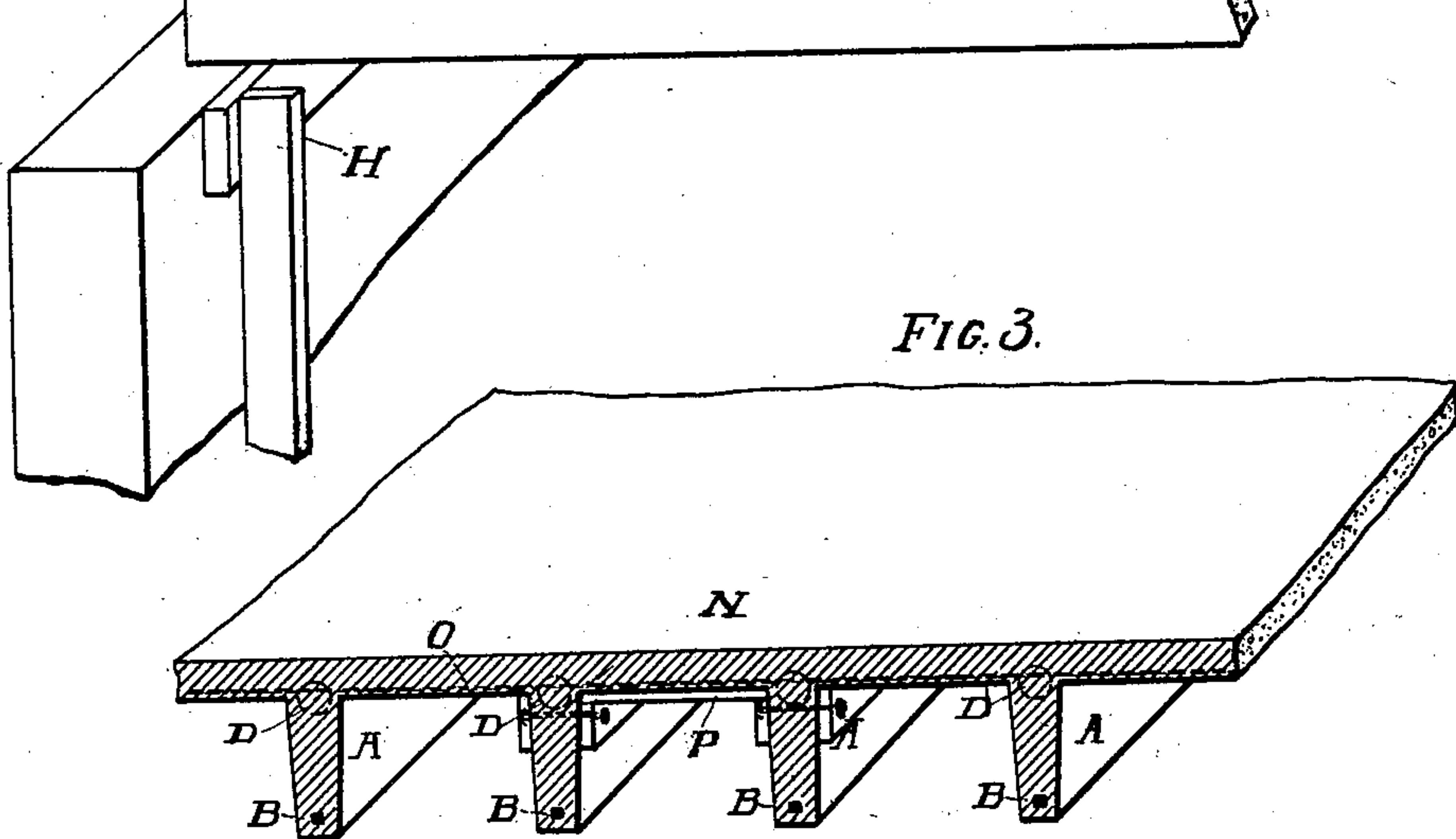
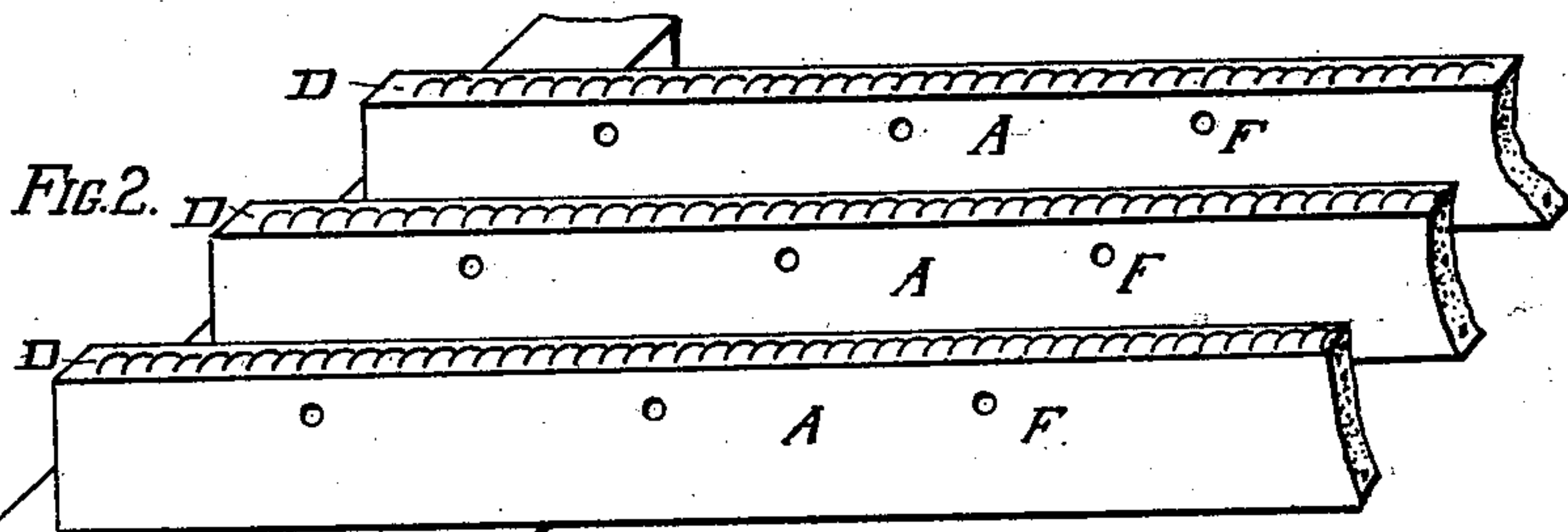
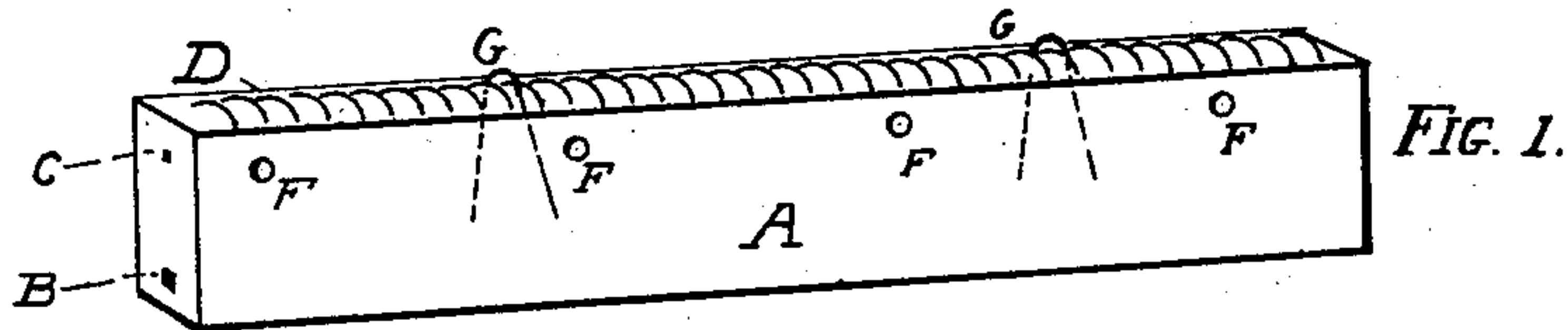


FIG. 5.

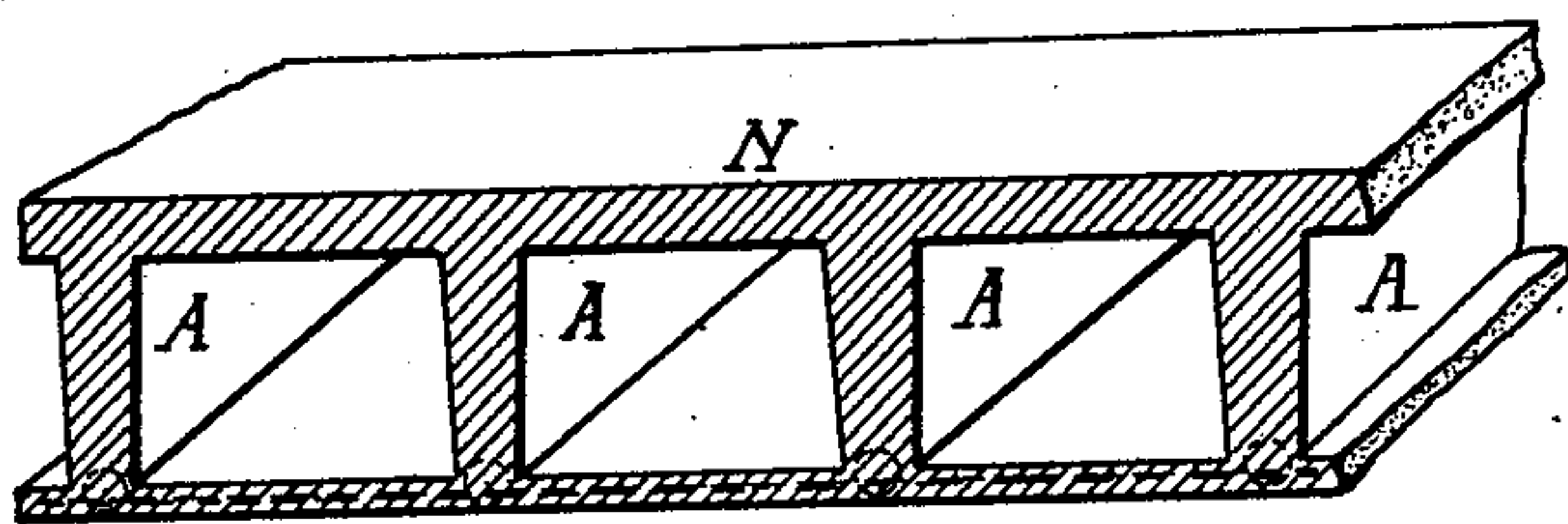


FIG. 6.

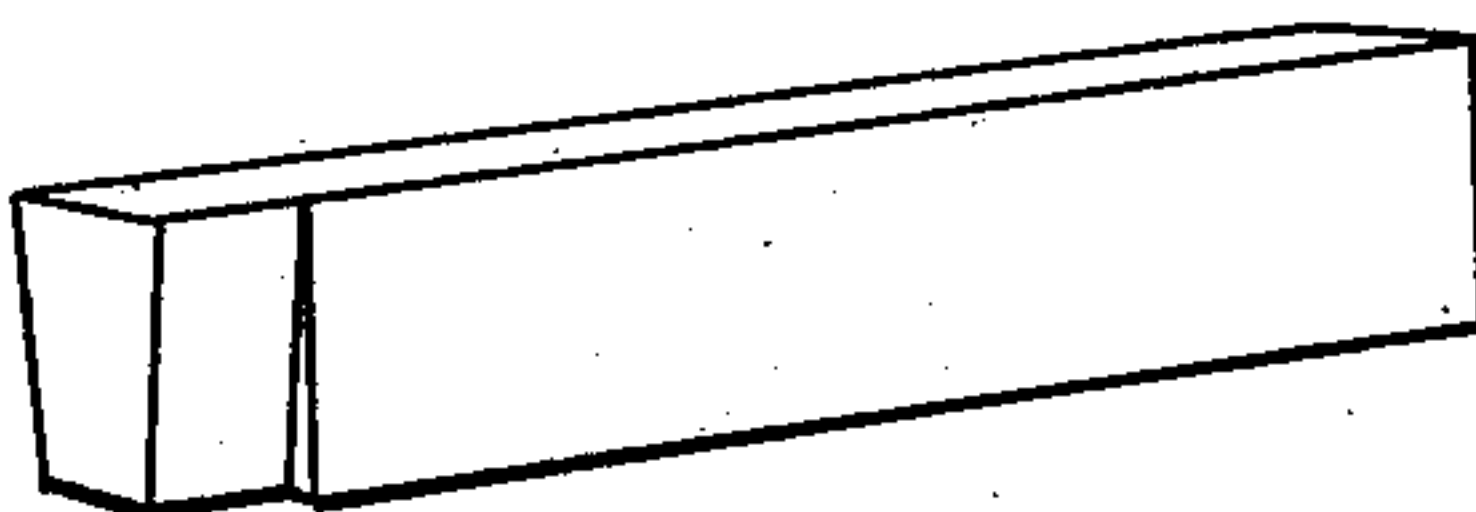
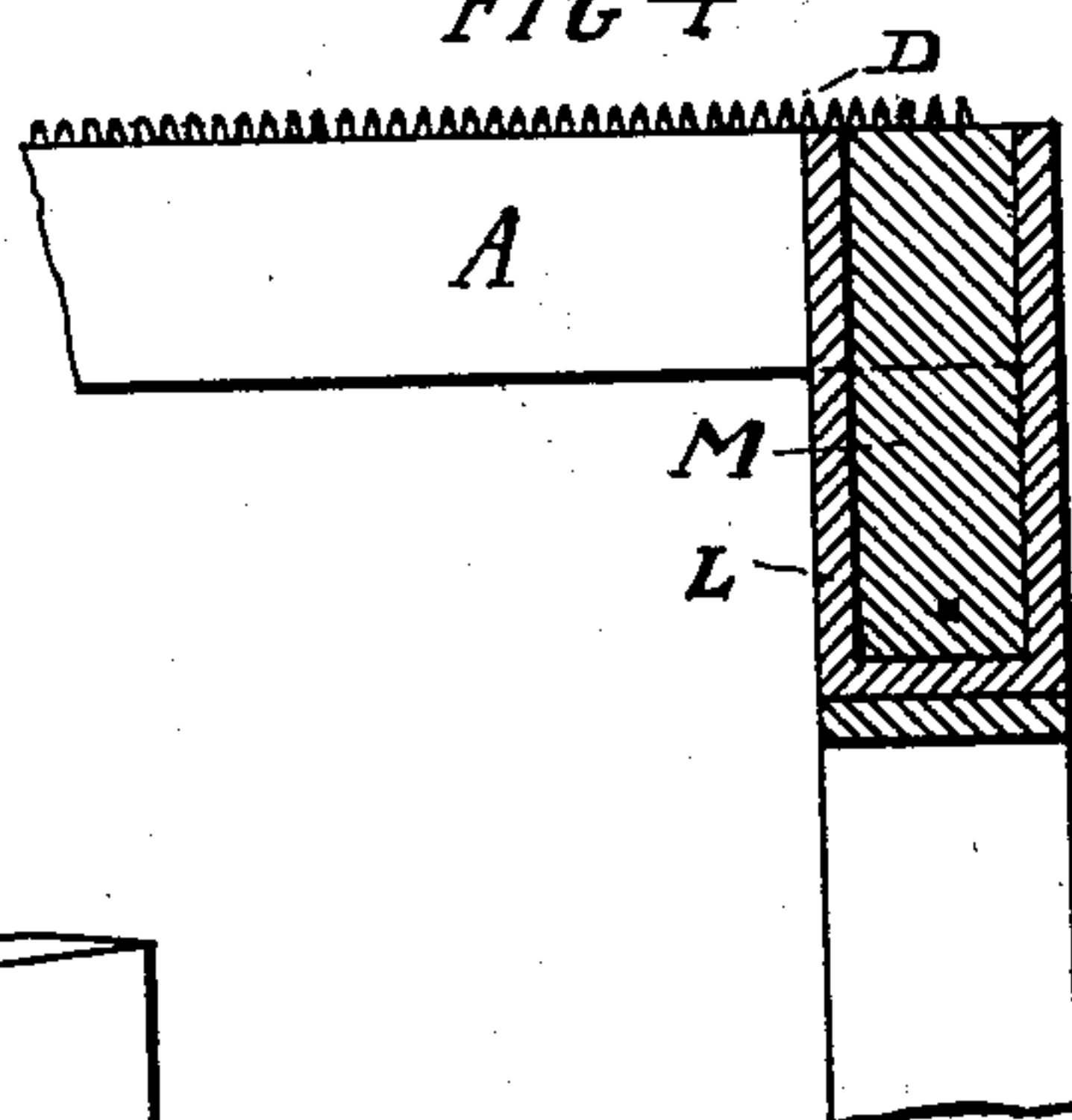


FIG. 4.



WITNESSES:

George T. Allen
John Ellender.

INVENTOR

E. L. Ransome

UNITED STATES PATENT OFFICE.

ERNEST L. RANSOME, OF NEW YORK, N. Y.

REINFORCED CONCRETE CONSTRUCTION.

SPECIFICATION forming part of Letters Patent No. 694,577, dated March 4, 1902.

Application filed July 13, 1901. Serial No. 68,255. (No model.)

To all whom it may concern:

Be it known that I, ERNEST LESLIE RANSOME, a citizen of the United States, residing in the city of New York, State of New York, have invented an Improvement in Reinforced Concrete Constructions; and I hereby declare the following to be a clear, full, and exact description of the same.

My invention relates to hollow reinforced concrete floors. The distinguishing feature of such floors is the embedment in the concrete of iron tension members in one or both of the main chords of the structure in such a manner that the iron acts as an integral part of the floor and furnishes the chief tensional strength, while the concrete furnishes the chief compressive strength of the structure.

My invention consists of an improved method of making such floors.

Hitherto it has been customary to make the structural parts of such floors in one of the three following ways: first, entirely monolithically and *in situ*; second, entirely *in situ*, but not always monolithically; third, in complete sections, embracing the main chords of the beam, which sections after hardening are set in place. By my improved method I first make the webs or beams of the floor containing the main tensional chords, and do not place them until after they have hardened sufficiently to be handled and to carry their own weight. After placing them the upper chord is then built *in situ* and integrally bonded to the webs. When a ceiling is required, it is in like manner or in any convenient way known to the art attached to the lower part of the web.

The accompanying drawings illustrate my invention.

Figure 1 is a view of a web with the main tension-bar B embedded therein. C is an auxiliary bar, and D represents a coil-joint. Fig. 2 illustrates the webs placed on a wall or other support. Fig. 3 is a section showing the floor with a panel P of the false work for the top of the floor yet in place. Fig. 4 is a cross-section through the girder, showing a beam. Fig. 5 shows the ceiling. Fig. 6 shows a detail of beam.

My process is as follows: I first mold the webs A of the floor in any convenient place after any of the well-known ways of molding

concrete. In the concrete of these webs I embed the main tension-bars B, and by preference for the safer handling of the webs and sometimes also for the ultimate strength of the structure I embed the bars C in the webs near to the top thereof. I also embed in the concrete of the web the coil-joint D or any other suitable connection for the purpose of connecting the upper member of the floor to the webs. Any other strengthening-pieces, in addition to the aforesaid bars, that any of the various systems of reinforced concrete may need in the web are placed therein at the time of making. Holes F are molded in the concrete at convenient places for the purpose of attaching false work, and lifting-irons G are also, by preference, molded into the webs for the purpose of handling the same. After these webs have set and hardened sufficiently they are removed from their molds and in due time placed in their permanent site. These webs may be bedded directly upon the wall, girder, or other support, provided it is of sufficient strength and stability; but in some cases of concrete construction it is best to stop the wall a little below the level of the under side of the webs and to place the webs upon false work, as at H, and in the case of a concrete girder it is best to place the beams upon the false work and then build the girder, as at Fig. 4, where L is the mold and M the girder. After placing the webs the wall is then built up higher, inclosing the ends of the webs. The top of the floor N can be filled in when the wall reaches that level or afterward, as may be convenient. This top is built *in situ* and is most thoroughly bonded to the web by means of the coil D or other connection. In the body of the concrete top may be embedded any and all of the metal bars or like substances needed or that are generally used in reinforced concrete in this part of the floor, and a part of my invention is to pass this iron where practicable through one or more of the loops of the coil, as at O.

When a flat ceiling is required with the floor, it may be attached thereto by any of the ordinary ways; but by preference, where great resistance to fire is required, I erect false work under the site thereof and build the ceiling by placing concrete thereon of the required height or thickness, and I connect

this concrete with the webs in the same manner as the top is connected by coil or other connection, and iron bars or wire mesh may be embedded in this ceiling and connected to the coil-joint in any way desirable. Fig. 5 illustrates this ceiling.

By preference I bevel the sides of the beams at the ends for the purpose of securing a better bearing upon the wall, as shown in Fig. 6.
10 Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The method of building a reinforced concrete floor which consists in setting webs of
15 hardened reinforced concrete in position, spanning the spaces between them with false work, and molding upon the webs and the false work the top compressive member of the floor

and integrally uniting it to the floor substantially as described. 20

2. The method of building a reinforced concrete floor which consists in setting webs of hardened reinforced concrete in position, placing false work beneath them, forming a ceiling upon the false work and connecting it to the webs, afterward spanning the spaces between the webs, near to the top thereof with false work, and molding upon the webs and false work the top compressive member of the floor and integrally uniting it to the webs substantially as described. 25 30

ERNEST L. RANSOME.

Witnesses:

JOHN ELLENDT,
GEORGE T. ALLEN.