

No. 865,145.

S. B. ZIMMER.

PATENTED SEPT. 3, 1907.

REINFORCED CONCRETE CONSTRUCTION.

APPLICATION FILED OCT. 13, 1906.

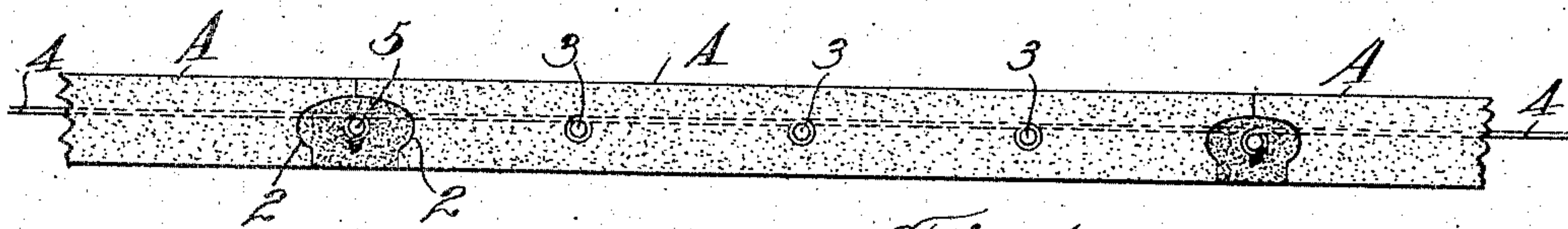


Fig. 1

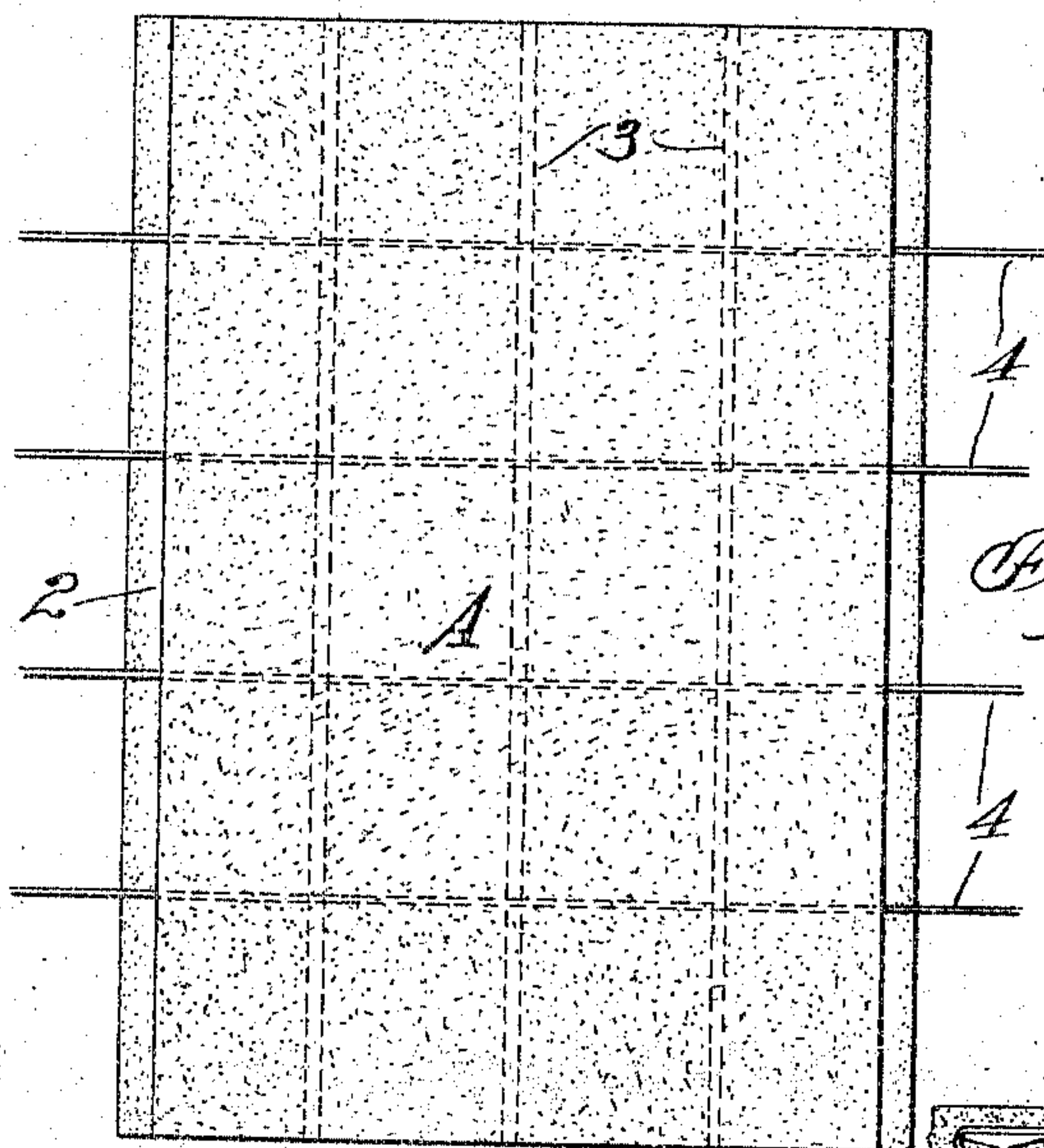


Fig. 2.

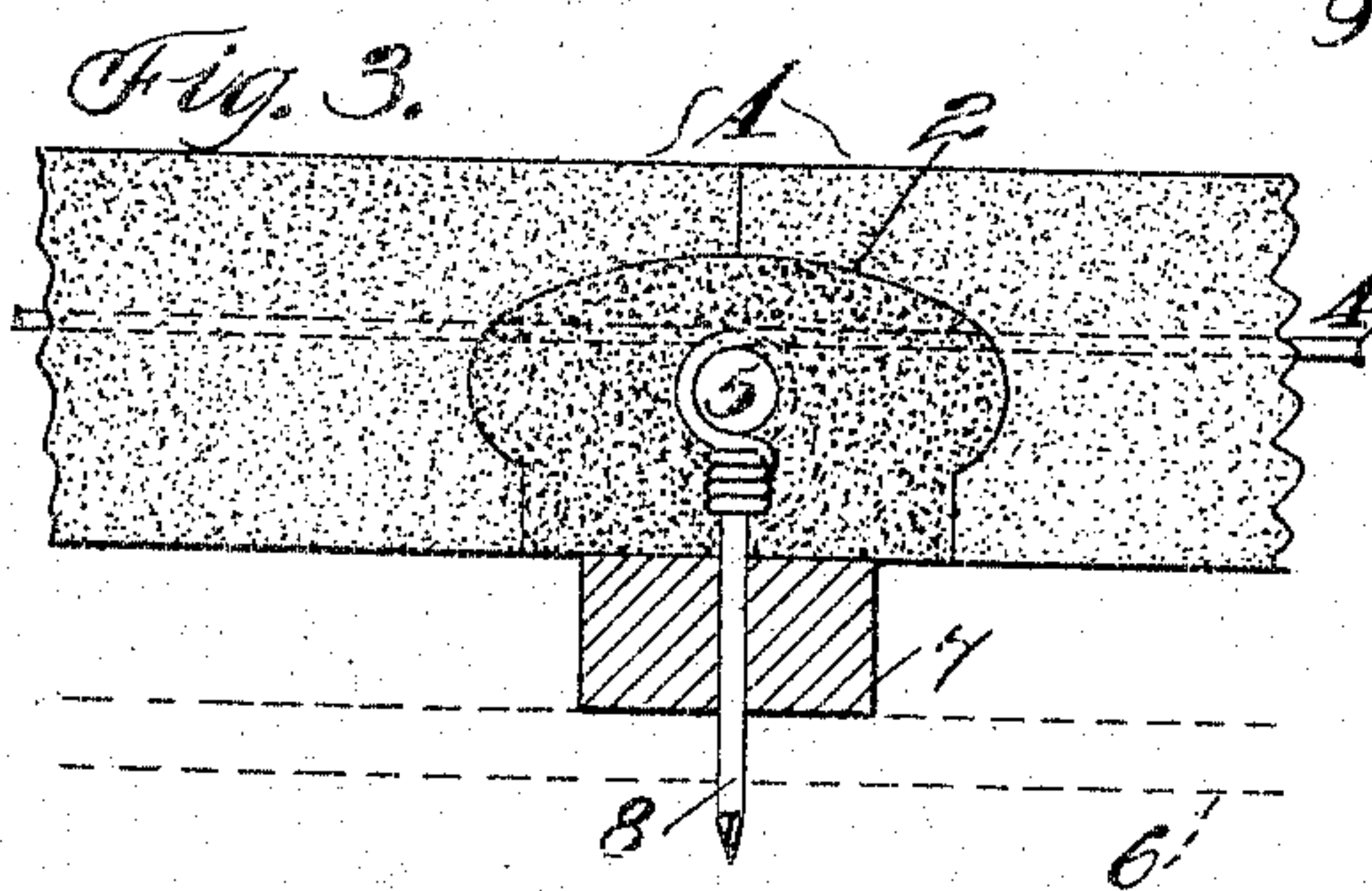


Fig. 3.

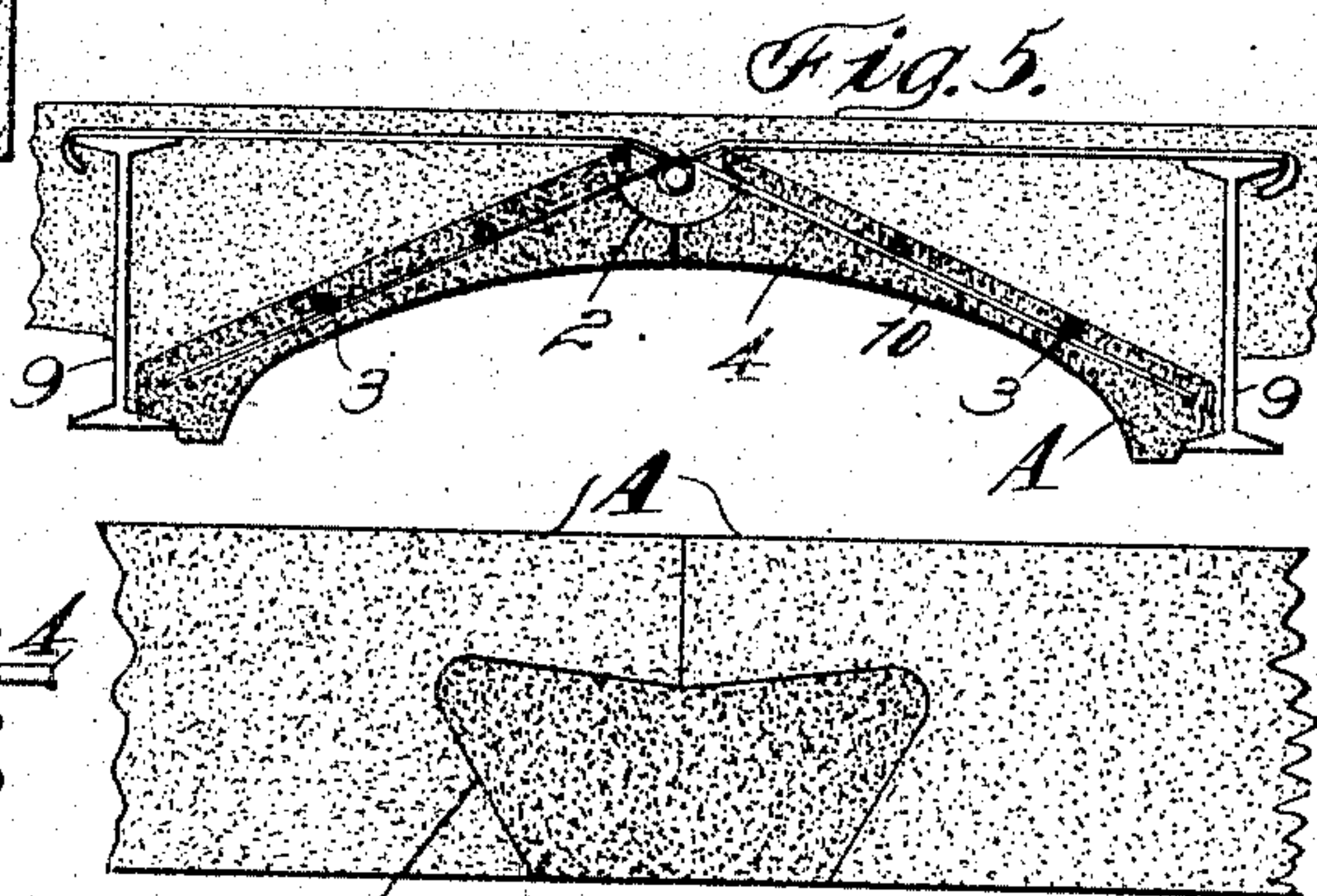


Fig. 5.

Fig. 4.

WITNESSES:

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# UNITED STATES PATENT OFFICE.

SAMUEL B. ZIMMER, OF OAKLAND, CALIFORNIA.

## REINFORCED CONCRETE CONSTRUCTION.

No. 865,145.

Specification of Letters Patent.

Patented Sept. 3, 1907.

Application filed October 13, 1906. Serial No. 338,703.

To all whom it may concern:

Be it known that I, SAMUEL B. ZIMMER, a citizen of the United States, residing at Oakland, in the county of Alameda and State of California, have invented new and useful Improvements in Reinforced Concrete Construction, of which the following is a specification.

My invention relates to improvements in building and wall construction.

It consists in the combination and arrangement of parts, and in details of construction which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is a view of a horizontal section of the wall. Fig. 2 is a front view of a slab. Figs. 3 and 4 are enlarged views of the joint. Fig. 5 illustrates an application of the device.

It is the object of my invention to provide an economical method for rapidly constructing walls of concrete and securing said walls in position.

In the ordinary construction of concrete walls, molds are built of boards upon each side, and the walls made by filling in concrete between these boards, and allowing it to set, after which the boards are removed. Walls are also built of bricks or blocks of concrete laid one upon the other.

In this invention, the wall is composed of a series of slabs A, which may be formed at any point as in a manufacturing yard, where these slabs may be readily and conveniently made in large sizes, and afterwards conveyed to the point of use. These slabs may be made of any desirable length, such as the height between the floor and ceiling, and may have any desired width and thickness. Thus the slabs may be made of a width equal to the ordinary distance between the studs. These slabs are formed with grooves or channels 2 made on the vertical edges, and so constructed that when the slabs have been set up in line with the edges abutting, the portion occupied by the channels will register with each other. These channels may be made curved or angular, and when put together the interior portion is of larger diameter in the direction of the length of the wall than the point where they open outward at one side of the slabs.

In the formation of the slabs, rods 3 are inserted extending vertically, and wires 4 are coiled around these rods at certain distances apart; these wires extending transversely from edge to edge of the slabs and having the ends projecting into the channels 2 to such a length that they may be twisted and secured around vertical rods or bars 5 which are set up in these channels when the wall is being constructed. In building a wall a series of these slabs are set up in the line of the wall, the openings or channels 2 at the edge of each slab registering as shown in horizontal section. Concrete or any

opening, filling the space vertically from top to bottom, and by reason of the enlarged interior portion it forms when set, a lock and binder which unites the slabs into a continuous solid wall.

The rods 5 are held in position so that they will not be displaced by the filling in of the binder, and before this filling is placed in the channels, the projecting ends of the wires 4 are coiled around the rods 5 and twisted together so that the whole structure is firmly locked by the wires independent of the binding material. When this latter is added it will be seen that the structure is homogeneous, and a practically integral wall is formed.

The slabs may be much more rapidly set in position than if the wall is to be laid up of separate bricks, and it is also easier of construction than if built in the usual manner of building concrete walls.

In order to apply the finishing plaster or other surface 6, I have shown furring strips 7 of suitable thickness. When the channels 2 are filled with the cement, wire nails or other devices 8 are embedded in the filling material, projecting out through the openings of the channels. When the filling material has properly set, the furring strips 7 are secured by driving them upon the points of the projecting nails 8, and the ends of these nails may be afterwards bent down and clenched so as to lock the furring strips firmly in place. Any suitable lathing such as wire, expanded metal or wood, may be attached to these furring strips, and the plaster surface 6 is then applied in the usual manner. The thickness of the furring strips is such that a space will be left between the main wall and the plastered surface, and this space may either be filled with a deafening material, or it may be left open so that a circulation of air can take place; the air space serving a similar purpose of preventing the transmission of sounds, and it also allows the walls to be kept dry by reason of the air circulation. It will be understood that floors may be laid with these slabs extending between and supported upon girders as at 9, and the slabs may be arched as shown at 10, and the channels or spaces 2 will be located at the top and meeting edges of the slabs. The wires 4 and the rods 3 may be inserted in the same manner in these slabs, and in some forms of construction the rods or wires 4 extend out through the channels in either direction, and may be bent around or secured to the upper members of the girders 9. The ends of the transverse wires projecting into the channels between the slabs, are also twisted around the heads of the nails 8, so as to lock them in place, and prevent their being loosened or withdrawn by any twisting or wrenching that may occur.

It will be understood that any desirable form of grooves or recesses may be made in the contiguous edges of the slabs so that when such slabs are set up and



the channels filled with a binding cement, the whole will be interlocked into an integral structure, either with or without reinforcement.

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

1. Walls or floors constructed of integral slabs having vertical and transverse reinforcing rods and wires, channels made at the edges of the slabs having rods extending lengthwise thereof, around which the transverse wires are wound and secured, nails arranged at right angles to the rods and about which the said transverse wires are wound or twisted, and a filling of binding material inclosing the rods in the channels and the wound portion of the nails and locking the slabs together.
2. In a wall, floor and like construction, a series of integral slabs having grooves or channels made at their meeting edges, rods extending lengthwise within said channels, wires and rods molded into the concrete slabs when they are constructed said wires having their ends projecting so as to enter the channels between the slabs, and being wound around the rods to secure the slabs together, nails arranged at right angles to the rods and having heads proximate thereto and about which the transverse wires are also wound or twisted, and a filling of concrete or binding material within which the rods in the channels and the headed ends of the nails and projecting ends of the wires are embedded.
3. In a wall, floor and like construction, integral slabs of concrete having rods and wires embedded transversely within them, said slabs having grooves or channels at their meeting edges, rods extending longitudinally of said channels, around which rods the projecting ends of the

wires are coiled and secured, a filling of concrete or binding material within the channels, nails embedded in the concrete, said nails having headed ends proximate to the rods and about which the ends of the wires are wound or twisted, said nails having their points projecting outwardly, and furring strips secured upon the projecting points of said nails.

4. In a wall, floor and like construction, integral slabs of concrete having rods and wires embedded transversely within the material during the formation of the slab, grooves or channels at the edges, means for securing the projecting ends of the wires to bind the slabs together, a filling of concrete binding material, nails embedded in said filling, said nails having headed ends proximate to the rods and about which heads the transverse wires are wound or twisted, said nails projecting outwardly having furring strips secured to the projecting ends of the nails, lathing supported upon said furring strips forming an open space between the slabs and the lathing, and a finished covering of plaster secured to the wall.

5. In a wall, floor and like structure, integral concrete slabs having longitudinally registering grooves or recesses between their meeting edges, rods extending through the slabs parallel with the recesses, a filling of concrete in said recesses, nails having their heads embedded in the said cement filling, transverse wires embedded in the slabs with their ends projecting into the recesses, and wound or twisted about the rods and the nail heads.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

SAMUEL B. ZIMMER.

Witnesses:

S. H. NOURSE,

FREDERICK E. MAYNARD.