W. J. SLOAN.

REINFORCED CONCRETE CONSTRUCTION.

APPLICATION FILED APR. 12, 1911.

1,052,696.

Patented Feb. 11, 1913.

3 SHEETS—SHEET 1.

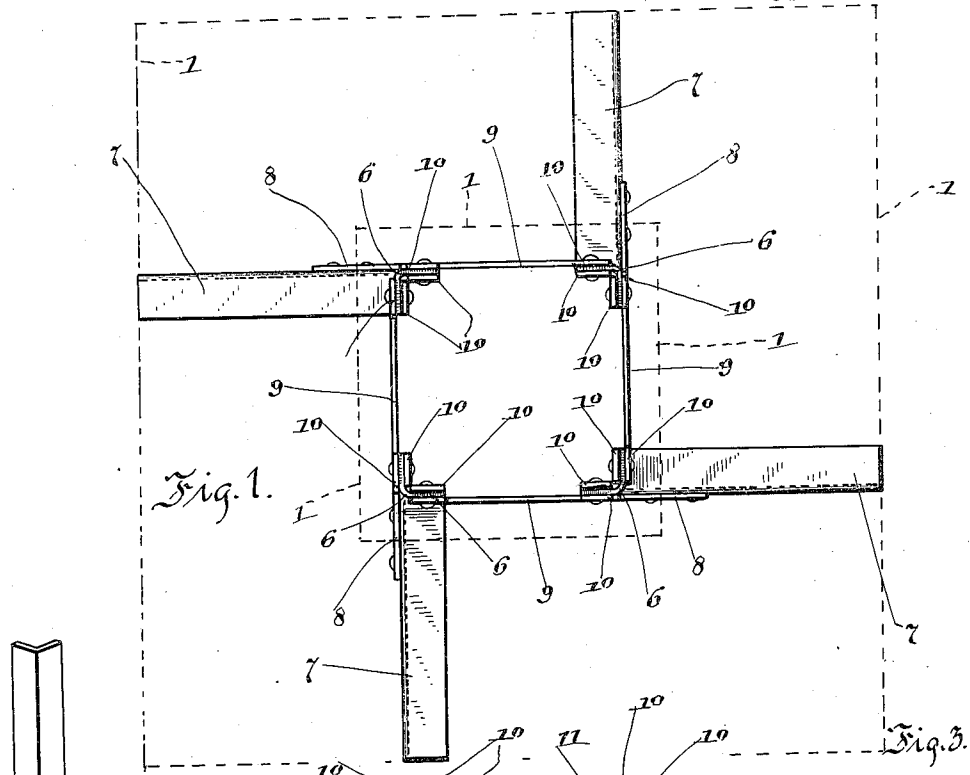

Fig. 1.

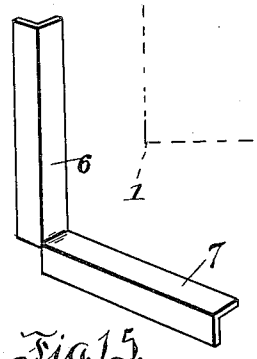

Fig. 1.5.

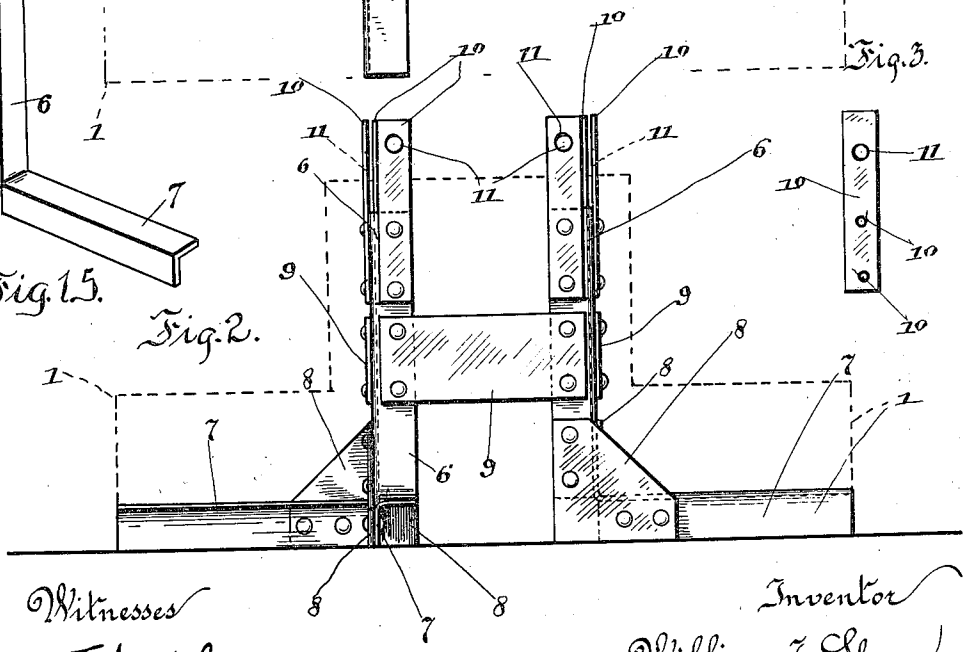

Fig. 2.

Fig. 3.

Witnesses

W. L. Smith

B. G. Richards

Inventor

William J. Sloan,

by Joshua R. H. Potts

his Attorney

W. J. SLOAN.

REINFORCED CONCRETE CONSTRUCTION.

APPLICATION FILED APR. 12, 1911.

1,052,696.

Patented Feb. 11, 1913.

3 SHEETS—SHEET 2.

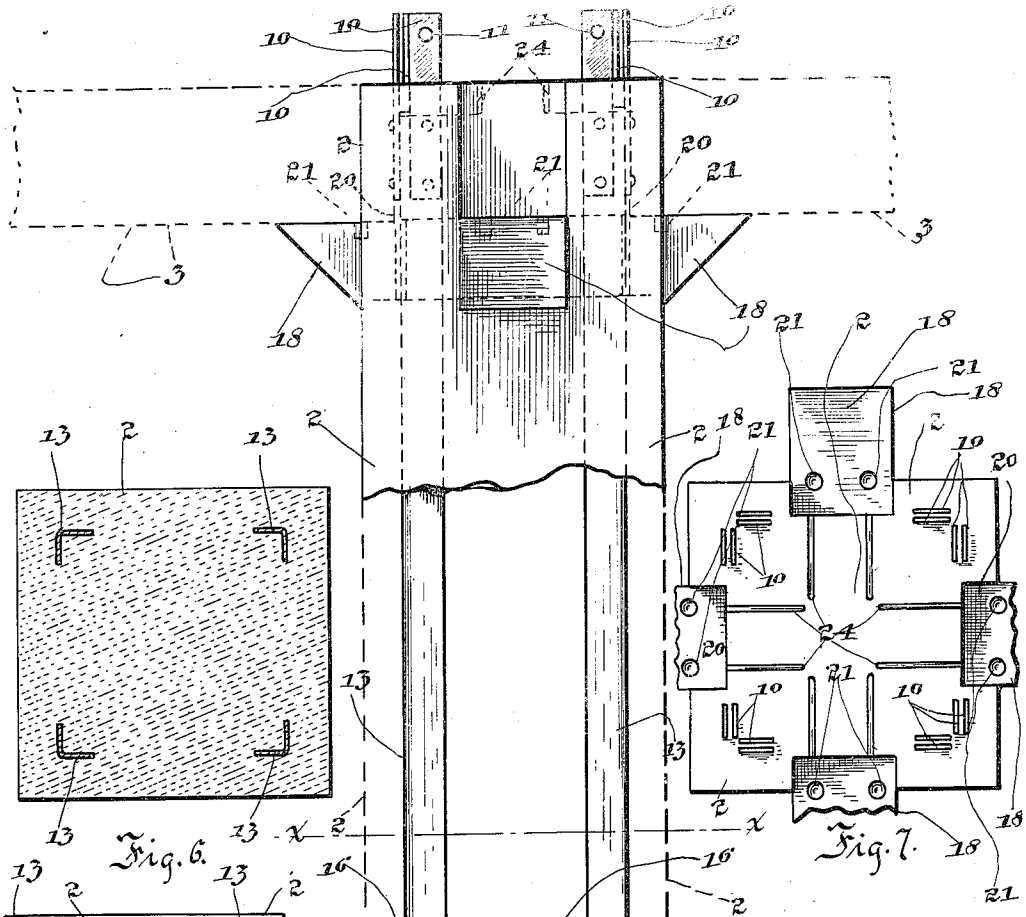

Fig. 5.

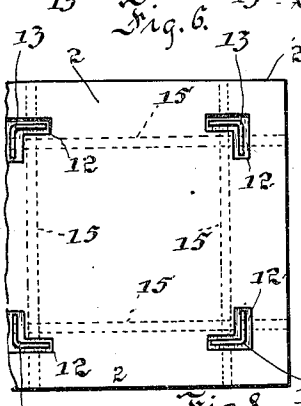

Fig. 6.

Fig. 7.

Fig. 8.

Witnesses

W. C. Smith

B. G. Richards

Inventor

William J. Sloan

by Joshua R. H. Potts

his Attorney.

W. J. SLOAN.

REINFORCED CONCRETE CONSTRUCTION.

APPLICATION FILED APR. 12, 1911.

1,052,696.

Patented Feb. 11, 1913.

3 SHEETS—SHEET 3.

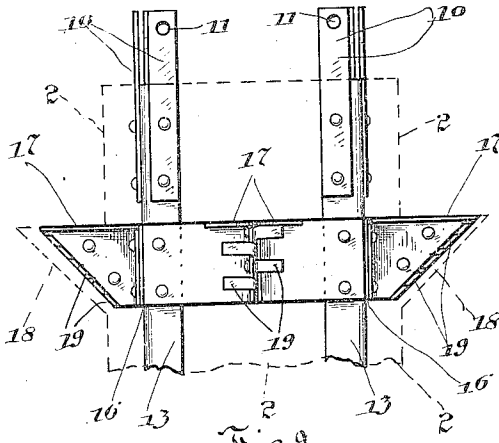

Fig. 9.

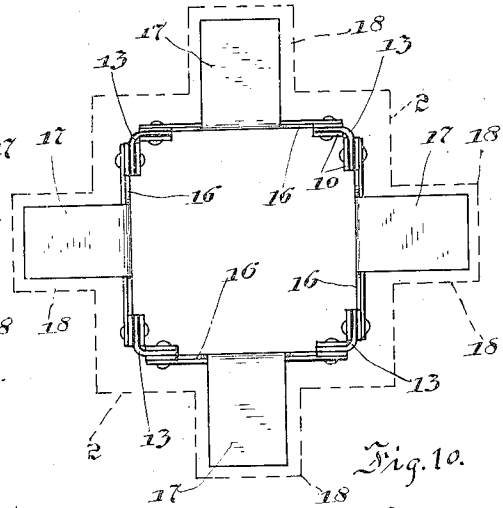

Fig. 10.

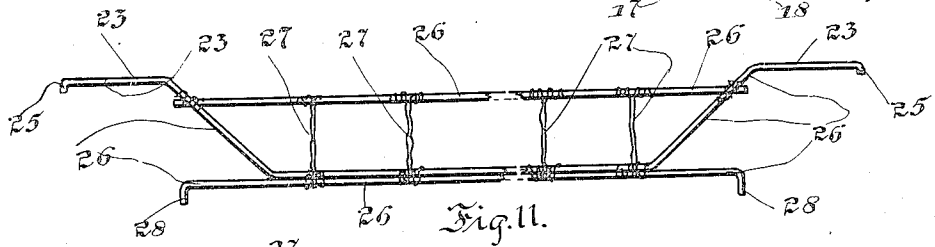

Fig. 11.

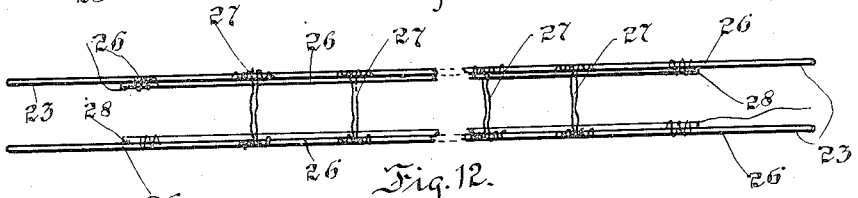

Fig. 12.

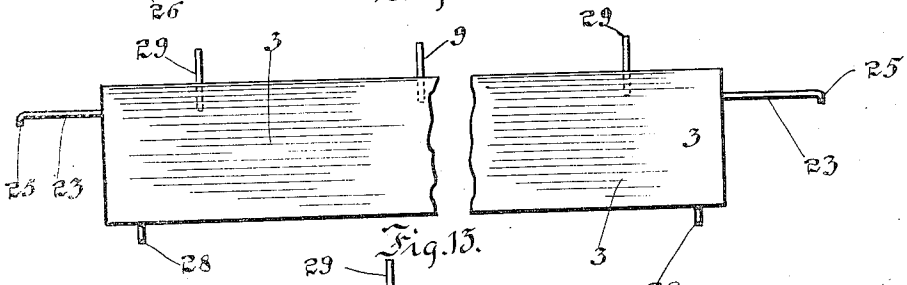

Fig. 13.

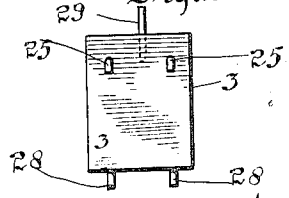

Fig. 14.

Witnesses

W. E. Smith

B. G. Richards

Inventor

William J. Sloan

by Joshua R. H. Potts

his Attorney.

UNITED STATES PATENT OFFICE.

WILLIAM J. SLOAN, OF CHICAGO, ILLINOIS.

REINFORCED CONCRETE CONSTRUCTION.

1,052,696. Specification of Letters Patent. Patented Feb. 11, 1913.

Application filed April 12, 1911. Serial No. 620,537.

To all whom it may concern:

Be it known that I, WILLIAM J. SLOAN, a citizen of the United States, and a resident of the city of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Reinforced Concrete Construction, of which the following is a specification.

My invention relates to improvements in reinforced concrete construction especially adapted for buildings, the object of the invention being to provide means for constructing a reinforced concrete building without the labor and expense involved in erecting temporary frame-work and in tearing down the same after the concrete has set therein.

The invention consists in the novel construction and arrangement of parts all as will be fully described and more particularly pointed out in the appended claims.

The invention will be more readily understood by reference to the accompanying drawings forming a part of this specification, and in which,

Figure 1 is a top plan view of a column base, Fig. 2 is a side elevation of said base, Fig. 3 is a detail side elevation showing a joint plate employed in the invention, Fig. 4 is a sectional elevation of a portion of a column base, Fig. 5 is a view of a post or column partly indicated by dotted lines and taken partly in section and partly in elevation, Fig. 6 is a transverse section taken on line x—x of Fig. 5, Fig. 7 is a top plan view of the column shown in Fig. 5, Fig. 8 is a bottom plan view of said column, Figs. 9 and 10 are respectively a side elevation and top plan view of the uppermost end of a metallic reinforcement of said column, Figs. 11 and 12 are respectfully a side elevation and top plan view of a metallic girder reinforcement, Figs. 13 and 14 are respectively a side elevation and end elevation of a girder, Fig. 15 a perspective view of the angle iron employed in the construction.

The preferred form of construction of my invention as illustrated in the accompanying drawings comprises primarily a column base 1 which may rest upon any suitable foundation, not shown, a column 2 supported by said column base, a girder 3 supported by said column, a floor joist 4, and floor slabs 5 supported by said girder, there being the usual number of these parts all of which are formed of reinforced concrete prior to erection. Thus the parts of a concrete building are manufactured in shops or other suitable places and fitted and numbered preparatory to erection on the site of the building in a manner similar to the production of structural steel work. Provisions are made as will be described hereinafter, for rigidly securing and cementing the concrete parts together when assembled, so that the building when finished will be substantially a one-piece structure of reinforced concrete. It is understood that the columns 2 may be modified from the construction shown to render the same suitable for all parts of a building, the column shown being an interior column and provided with means for the reception of girders 3 on each side thereof. It is obvious that corner posts or columns connect with girders at only two sides thereof, and that side columns connect with girders at three sides.

After the parts of the structure are assembled, a floor finish of concrete of a suitable consistency may be applied to floor slabs, as shown, or a tile floor embedded in concrete may be used. A wood floor may be laid if desired, after securing wood floor strips in the concrete in a manner as will be readily understood by those skilled in the art.

Each column base 1 comprises a metallic angle-iron frame reinforcement having four vertical members 6 and radiating horizontal members 7, the latter members forming an efficient brace for the columns 2 to be erected on said base 1. Each of the members 7 is formed integrally with the corresponding member 6, one leg of the angle-iron being split on a horizontal line from the edge to the vertex line thereof and the other leg bent at a right angle at the split as shown in Fig. 15. Each column 2 is of a length corresponding with a height of a story of the building, there being as many columns as there are stories in the building, and each succeeding column being secured to the preceding column in the same manner as the first column is secured to the column base 1 to be presently described.

Each column base 1 comprises substantially triangular stiffening plates 8 and which facilitate a rigid connection between the vertical members 6 and the horizontal members 7, there being tie-plates 9 which are arranged as shown and riveted to the

vertical members 6, thus securing them rigidly together. Joint-plates 10 are riveted to the angle-iron vertical members 6 and provided with perforations 11, said joint-plates extending above the concrete portion of the column base 1 as clearly indicated in Fig. 2. The lower end of each column 2 is provided with recesses 12 molded therein, as illustrated in Figs. 5 and 8, said recesses being designed for the reception of the joint-plates 10. The lower ends of the angle-iron frame reinforcement 13 of the columns 2 are provided with perforations 12 adapted to register with the perforations 11 of the members 6, there being elongated perforations 15 molded in the concrete of the columns 2 which form extensions of the perforations 14.

In order to erect a column 2 a layer of soft concrete or grout 15′ is first applied to the top of the column base 1, or a preceding column, and the column placed in position. Temporary pins, not shown, are passed through the perforations 11 and 14 to hold the column in position until the grout 15′ has set. Joint-plates 10 are secured to the top of each column, as illustrated in the several figures, ready to receive the succeeding column.

The reinforcing frame 13 of each column 2 is provided with tie-plates 16 the uppermost thereof being formed integral with bracket like reinforcing members 17 which are provided in the brackets 18 as clearly illustrated in Figs. 9 and 10. Each bracket reinforcing member 17 is provided with a central bracket member 17′ riveted thereto and having a plurality of concrete retaining teeth 19, these teeth serving as an efficient binder for the concrete as will be readily understood. The top of each column 2 is provided with a series of recesses 20, the bottom surfaces of which are arranged on the same level as the brackets 18, and there being small recesses 21 formed in the bottom surfaces of the recesses 20. Girders 23 are supported by the brackets 18 and recesses 20 as indicated by dotted lines in Fig. 5, said girders having rods 23 projecting from the ends thereof, which are adapted to seat in elongated recesses 24 formed in the top of each column 2 for rendering the connection of said girders with the column secure. Each rod 23 is provided with a small hook 25 at the extremity thereof, as shown in Fig. 11, said hook serving to render the connection of the girder 20 with the column 2 doubly secure, it being understood that grout 15′ when applied to the top of the column will securely hold the rods 23 in position. Each girder 3 is provided with a reinforcing frame-work 26 the rods of which are secured together by means of tie-wires 27, a part of the rods of the frame work terminating in the rods 23 as clearly shown in Figs. 11 and 12. A part of the rods of the frame-work 26 terminate in downward projections 28 which are adapted to register with and seat in the small perforations 21 as shown in Fig. 7. The upper surface of each girder 3 is provided with a series of vertically disposed pins 29, which are adapted to facilitate the positioning of floor slabs as will be seen later in the description.

A concrete structure as set forth is economical to produce in that the parts thereof are made in shops especially equipped for their manufacture. Moreover, a concrete building of this order may be erected at any time of the year regardless of weather conditions, extreme cold not affecting the erection of a building constructed in the manner described so much as when concrete is poured into molds on the site of the building.

While I have illustrated and described the preferred construction for carrying my invention into effect this is capable of variation and modification without departing from the spirit of the invention. I, therefore, do not wish to be limited to the exact details of construction as set forth, but desire to avail myself of such variations and modifications as come within the scope of the appended claims.

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

1. A concrete column base provided with reinforcements comprising four vertical angle irons spaced apart and secured together by tie plates to form corners of a rectangle, one leg of each of said angle irons being split on a horizontal line from the edge to the vertex line thereof and the other leg bent to horizontal position at the split to form a radiating member, substantially as described.

2. A concrete column base provided with reinforcements comprising four vertical angle irons spaced apart and secured together by tie plates in rectangular form, one leg of each of said angle irons being split on a horizontal line from the edge to the vertex line thereof and the other leg bent to horizontal position at the split to form a radiating member, and stiffening plates riveted to said vertical and horizontal angle irons, substantially as described.

3. A concrete column base provided with reinforcements comprising four vertical angle irons spaced apart and secured together by bracing members to form a substantially rectangular column, one leg of each of said angle irons being split on a horizontal line from the edge to the vertex line thereof and the other leg bent to horizontal position at the split to form a radiating member; and joint plates riveted to each

side of each of the legs of said vertical angle irons and projecting from said base, substantially as described.

4. A concrete column base provided with reinforcements comprising four vertical angle irons spaced apart and secured together in rectangular form by tie plates, one leg of each of said angle irons being split on a horizontal line from the edge to the vertex line thereof and the other leg bent to horizontal position at the split to form a radiating member; joint plates riveted to each side of each of the legs of said vertical angle irons and projecting from said base; and stiffening plates riveted to said vertical and horizontal angle irons, substantially as described.

5. A concrete column base provided with reinforcements comprising four vertical angle irons spaced apart and secured together in rectangular form by tie plates, one leg of each of said angle irons being split on a horizontal line from the edge to the vertex line thereof and the other leg bent to horizontal position at the split to form a radiating member; joint plates riveted to each side of each of the legs of said vertical angle irons and projecting from said base; and a concrete column provided with reinforcements comprising four vertical angle irons spaced apart and secured together by tie plates in rectangular form to fit between said joint plates, the lower end of said column being recessed for this purpose, substantially as described.

6. A concrete column base provided with reinforcements comprising four vertical angle irons spaced apart and secured together in rectangular form, one leg of each of said angle irons being split on a horizontal line from the edge to the vertex line thereof and the other leg bent to horizontal position at the split to form a radiating member; stiffening plates riveted to said vertical and horizontal angle irons; joint plates riveted to each of the legs of said vertical angle irons and projecting vertically therefrom; and a concrete column provided with reinforcements comprising four vertical angle irons spaced apart and secured together in rectangular form by tie plates to fit between said joint plates, the lower end of said column being recessed for this purpose, substantially as described.

7. A concrete column base provided with reinforcements comprising four vertical angle irons spaced apart and secured together in rectangular form by tie plates, one leg of each of said angle irons being split on a horizontal line from the edge to the vertex line thereof and the other leg bent to horizontal position at the split; joint plates riveted to each of the legs of said vertical angle irons and projecting vertically therefrom; a concrete column provided with reinforcements comprising four vertical angle irons spaced apart and secured together in rectangular form by tie plates and adapted to fit between said joint plates, the lower end of said column being recessed for this purpose; a tie plate secured to two of said vertical angle irons, said tie plate being provided with an integral outwardly extending supporting plate; and a central bracket member connecting said supporting and tie plates, the outer edge of said bracket member being provided with oppositely disposed concrete engaging teeth, substantially as described.

8. A concrete column base provided with reinforcements comprising four vertical angle irons spaced apart and secured together in rectangular form, one leg of each of said angle irons being split on a horizontal line from the edge to the vertex line thereof and the other leg bent to horizontal position at the split; stiffening plates riveted to said vertical and horizontal angle irons; joint plates riveted to each of the legs of said vertical angle irons and projecting therefrom; a concrete column provided with reinforcements comprising four vertical angle irons spaced apart and secured together in rectangular form by tie plates and adapted to fit between said joint plates, the lower end of said column being recessed for this purpose; a tie plate secured to two of said vertical angle irons, said tie plate being provided with an integral outwardly extending supporting plate and a central bracket member connecting said supporting and tie plates, the outer edge of said bracket member being provided with oppositely disposed concrete engaging teeth, substantially as described.

9. A concrete column comprising four vertical angle irons spaced apart and secured together in rectangular form; a tie plate secured to two of said vertical angle irons, said tie plate being provided with an integral outwardly extending supporting plate; and a central bracket member connecting said supporting and tie plates, the outer edge of said bracket member being provided with oppositely disposed concrete engaging teeth, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM J. SLOAN.

Witnesses:
HELEN F. LILLIS,
JOSHUA R. POTTS.