A. A. CLEMENT.

REINFORCEMENT FOR CONCRETE COLUMNS.

APPLICATION FILED NOV. 9, 1907.

904,841.

Patented Nov. 24, 1908.

2 SHEETS—SHEET 1.

Fig. 1.

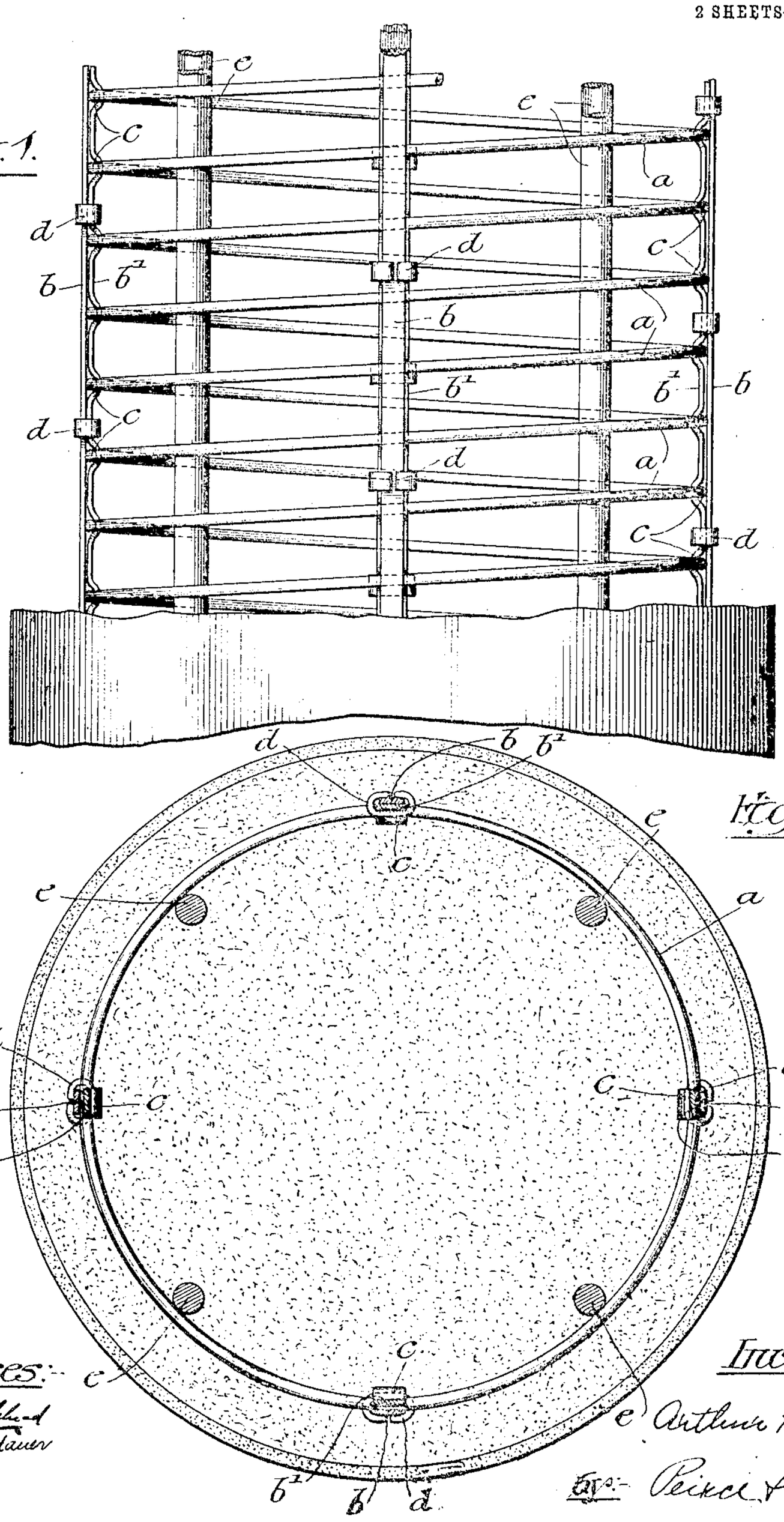

Fig. 2.

Witnesses:-

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2 SHEETS—SHEET 2.

Fig. 3.

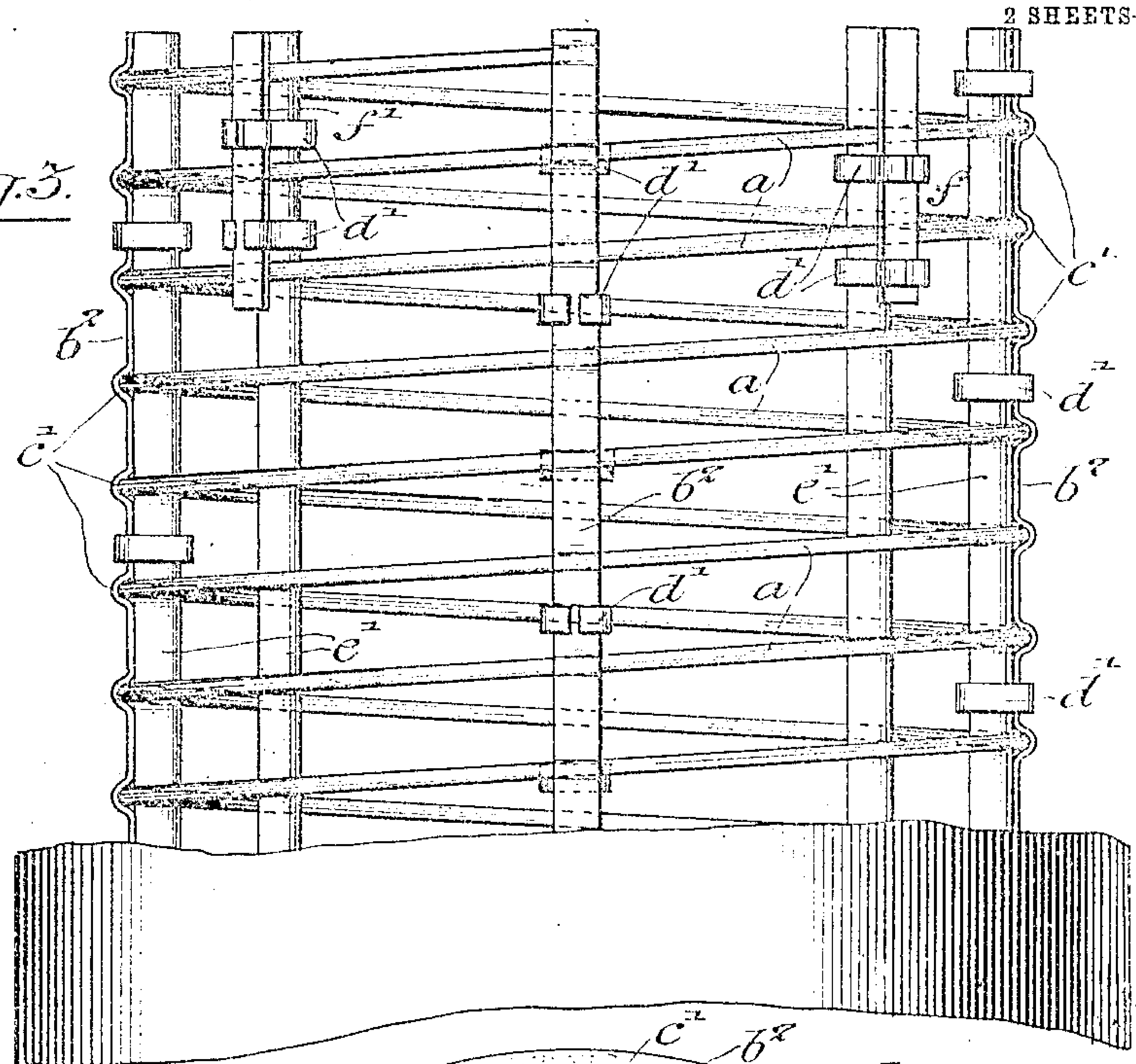
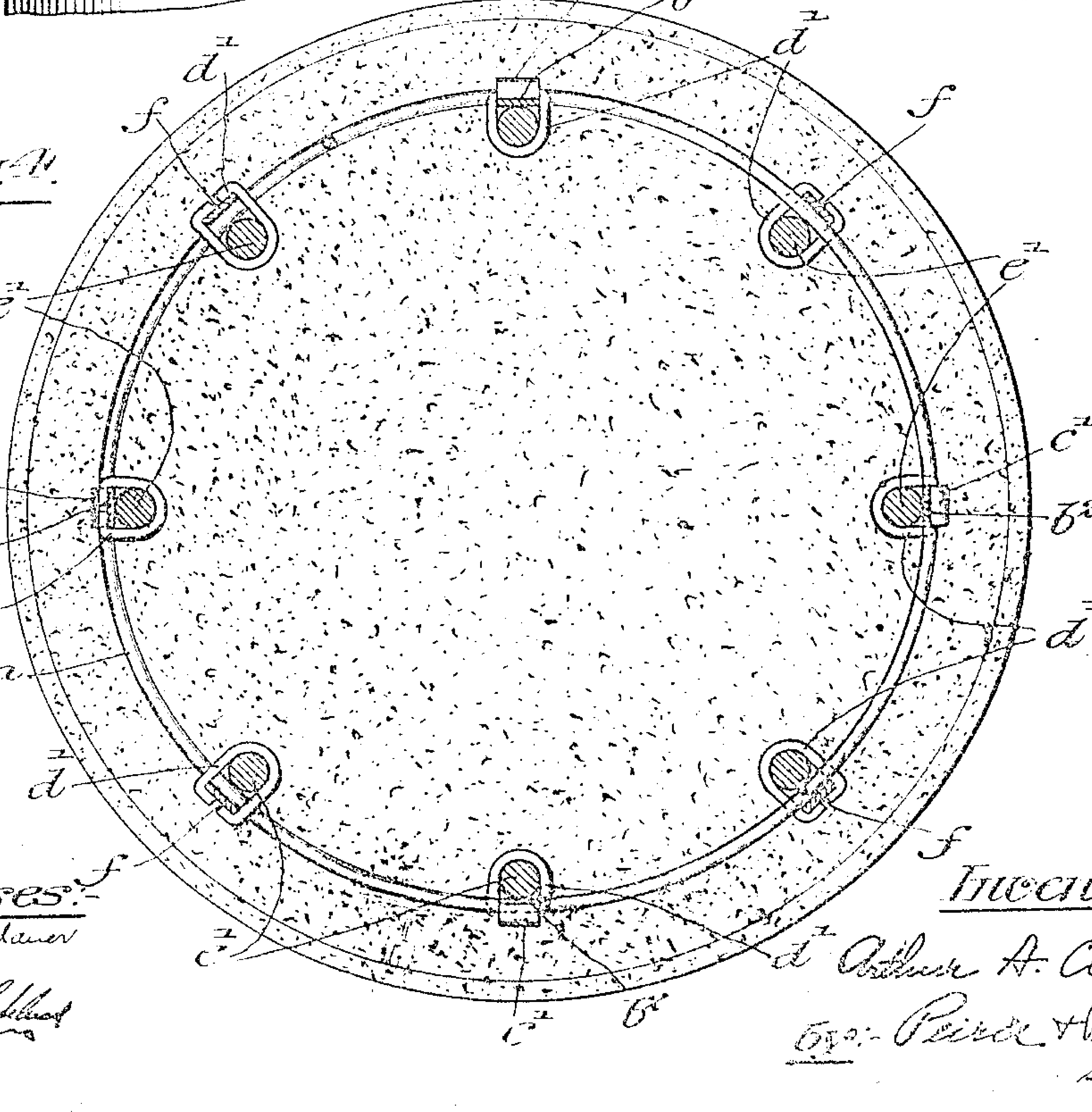


Fig. 4.



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UNITED STATES PATENT OFFICE.

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REINFORCEMENT FOR CONCRETE COLUMNS.

No. 904,841. Specification of Letters Patent. Patented Nov. 24, 1908.

Application filed November 9, 1907. Serial No. 401,376.

To all whom it may concern:

Be it known that I, ARTHUR A. CLEMENT, a citizen of the United States, and a resident of Chicago, county of Cook and State of Illinois, have invented certain new and useful Improvements in Reinforcements for Concrete Columns, of which the following is the specification.

The invention relates to metal reinforcements for concrete columns and seeks to provide an inexpensive and efficient construction for this purpose comprising a spiral wire forming a series of substantially horizontal coils or loops which are arranged near the periphery of the column, together with means for securely holding the coils or loops in proper spaced relation during the construction of the column.

The invention consists in the features of construction and arrangements of parts hereinafter set forth, illustrated in the accompanying drawings and more particularly set forth in the appended claims.

In the drawings Figure 1 is a view in elevation of the improved reinforcement. Fig. 2 is a cross section of the parts shown in Fig. 1. Fig. 3 is a view in elevation of a modified form of the invention. Fig. 4 is a cross section of parts shown in Fig. 3.

It is usual to reinforce concrete columns with horizontal loops or bands arranged near the periphery of the column to resist compression strains and with a series of upright stay bars for resisting bent strains. The present invention provides an inexpensive arrangement of such a reinforcement and in which the parts are securely held in proper position during the construction of the column.

The horizontal bands or coils *a* are formed of a continuous spiral or helically coiled wire. These loops are arranged closely adjacent each other and are slightly smaller in diameter than the column for which they are to be used. A column circular in section is shown in the drawings and the loops or coils are of the same shape and are of such size that they will lie, when embedded in the finished column, closely adjacent its surface. It will be understood that the same reinforcement may however be effectively used for columns that are square in section.

It is necessary to hold the separate coils or loops *a* in proper spaced relation during the construction of the column and for this purpose a series of upright spacing bars are employed. In the form shown in Figs. 1 and 2, a series of upright bars *b b'* are employed. These bars are arranged in pairs and the bars of each pair are arranged in engagement with the coils *a* and on opposite sides thereof. The bars *b b'* are preferably formed of flat strips arranged with their side faces against the coils *a* and one of the bars of each pair (the inner bar *b'* in the form shown) is provided with a series of transverse seats *c* for engaging and securely holding the coils *a* in proper spaced relation during the construction of the column. These seats are preferably formed by transversely crimping the flat bar or strip *b'* at proper intervals. The bars or strips of each pair are secured together preferably by means of clamp loops *d* which are bent around the bars *b b'* and which are arranged at intervals throughout the height of the column between the coils *a*. These clamp loops are preferably at first of U-form and are placed around the bars *b b'* and their ends are hammered down into the form shown in the drawings to securely bind the bars together.

The reinforcement is inexpensive to manufacture and the flat spacing bars provided with transverse seats or crimped portions will rigidly hold the coils *a* at uniform distance apart during the construction of the column so that the latter will be uniformly reinforced at all points.

In the form shown in Figs. 1 and 2, upright strengthening stay bars *e* are arranged within the coils *a* and in engagement therewith. These stay bars resist any bending strain placed upon the column. In the form shown in Figs. 4 and 5, the stay bars are rigidly secured to the coils so that they are held in place thereby during the construction of the column. Moreover, in this form, the space bars for holding the coils at proper distance apart are secured to the stay bars. In this form, the flat space bars b^2 having the transversely crimped portions or seats *c'* are arranged against the outer side of the coils *a* and, as shown, are arranged opposite some of the stay bars *e'*, and are secured thereto at intervals by the clamp loops *d'*. The other stay bars *e'* are secured to the reinforcement by flat strips *f* which are arranged against the outer sides of some of the

coils and are secured to the stay bars by clamp loops d'. It is only necessary to place the short strips f at the upper and lower ends of the reinforcements. In this form, the horizontal reinforcing coils and the vertical stay bars are rigidly connected and securely held in proper relation during the construction of the column.

It is obvious that changes may be made in the details set forth without departure from the essentials of the invention.

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

1. A reinforcement for concrete columns comprising a spiral wire forming a series of substantially horizontal coils, a series of upright bars arranged in pairs, the bars of each pair being arranged on opposite sides of and in engagement with said coils, one of the bars of each pair having transverse seats for engaging and holding the coils in proper spaced relation, and securing clamp loops for the bars of each pair bent around the same and arranged at intervals throughout the height of the reinforcement, substantially as described.

2. A reinforcement for concrete columns comprising a spiral wire forming a series of substantially horizontal coils, a series of upright bars arranged in pairs, the bars of each pair being arranged on opposite sides of and in engagement with said coils, one of said bars being in the form of a flat strip with transversely crimped portions for engaging and holding the coils in proper spaced relation and means for securing the bars of each pair together at intervals, substantially as described.

3. A reinforcement for concrete columns comprising a spiral wire forming a series of substantially horizontal coils, a series of upright bars arranged in pairs, the bars of each pair being arranged on opposite sides of and in engagement with said coils, one of said bars being formed of a flat strip having transversely crimped portions for engaging and holding the coils in proper spaced relation, and clamp loops for connecting the bars of each pair bent around the same and arranged at intervals throughout the height of the reinforcement between said coils, substantially as described.

4. A reinforcement for concrete columns, comprising a spiral wire forming a series of substantially horizontal coils, a series of vertical stay bars arranged within and in engagement with said coils, and a series of space bars arranged against the outer side of said coils opposite some of said stay bars, said space bars having transverse seats for engaging and holding said coils in proper spaced relation and clamp loops for securing said space bars and stay bars bent around the same and arranged at intervals throughout the height of the reinforcement, substantially as described.

5. A reinforcement for concrete columns comprising a spiral wire forming a series of substantially horizontal coils, a series of vertical stay bars arranged within and in engagement with said coils, and a series of space bars arranged against the outer side of said coils opposite some of said stay bars, said space bars being formed of flat strips and having transversely crimped portions for engaging and holding said coils in proper spaced relation and means for securing said space bars at intervals to said stay bars, substantially as described.

6. A reinforcement for concrete columns comprising a spiral wire forming a series of substantially horizontal coils, a series of vertical stay bars arranged within and in engagement with said coils, and a series of space bars arranged against the outer side of said coils opposite some of said stay bars, said space bars being formed of flat strips and having transversely crimped portions for engaging and holding said coils in proper spaced relation and clamp loops for connecting said space bars and stay bars bent around the same and arranged at intervals throughout the height of the reinforcement between said coils, substantially as described.

7. A reinforcement for concrete columns comprising a spiral wire forming a series of substantially horizontal coils, a series of stay bars arranged within and in engagement with said coils, short strips arranged against the outer side of said coils opposite some of said stay bars, spacing bars arranged against the outer side of said coils opposite other of said stay bars and having transverse seats for engaging and holding said coils in proper spaced relation, and means for securing said strips and space bars to said stay bars, substantially as described.

8. A reinforcement for concrete columns comprising a spiral wire forming a series of substantially horizontal coils, a series of stay bars arranged within and in engagement with said coils, short strips arranged against the outer side of said coils opposite some of said stay bars, spacing bars arranged against the outer side of said coils opposite other of said stay bars and having transverse seats for engaging and holding said coils in proper spaced relation, and clamp loops for securing said strips and space bars to said stay bars bent around the same and arranged at intervals throughout the height of the reinforcement, substantially as described.

9. A reinforcement for concrete columns comprising a spiral wire forming a series of substantially horizontal coils, a series of stay bars arranged within and in engagement with said coils, short flat strips arranged against the outer side of said coils opposite

some of said stay bars, spacing bars arranged against the outer side of said coils opposite other of said stay bars and formed of flat strips having transversely crimped portions for engaging and holding said coils in proper spaced relation, and clamp loops for securing said short strips and space bars to said stay bars bent around the same and arranged at intervals throughout the height of the reinforcement between said coils, substantially as described.

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