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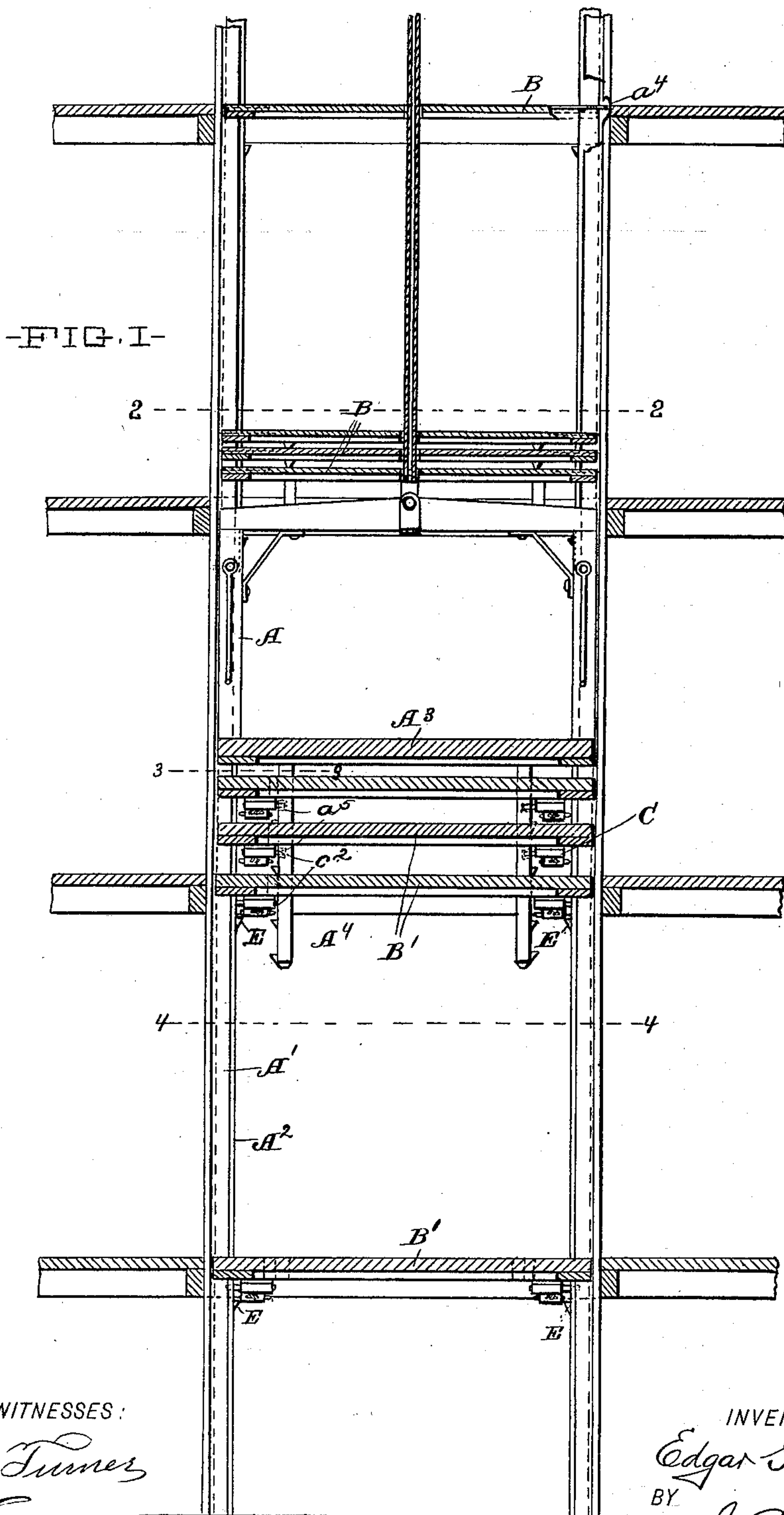
Patented May 2, 1899.

E. STODDARD.
ELEVATOR ATTACHMENT.

(Application filed Jan. 24, 1898.)

(No Model.)

3 Sheets—Sheet 1.



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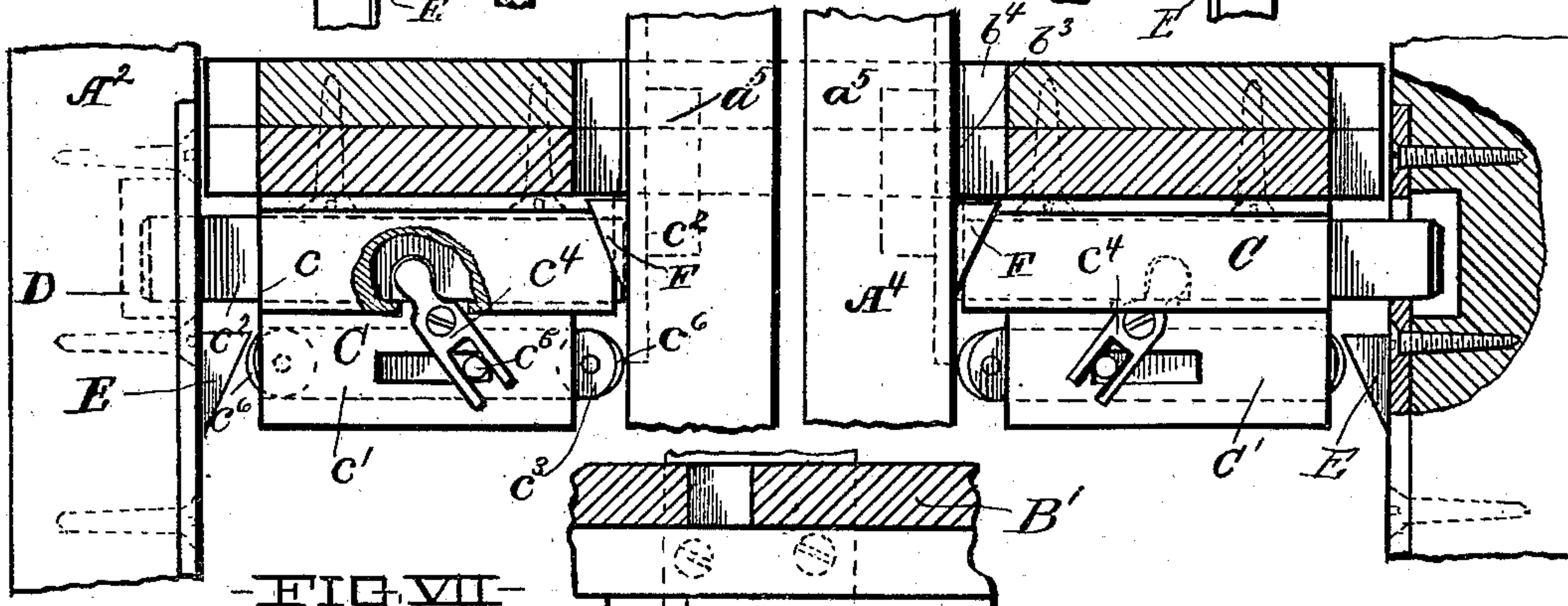
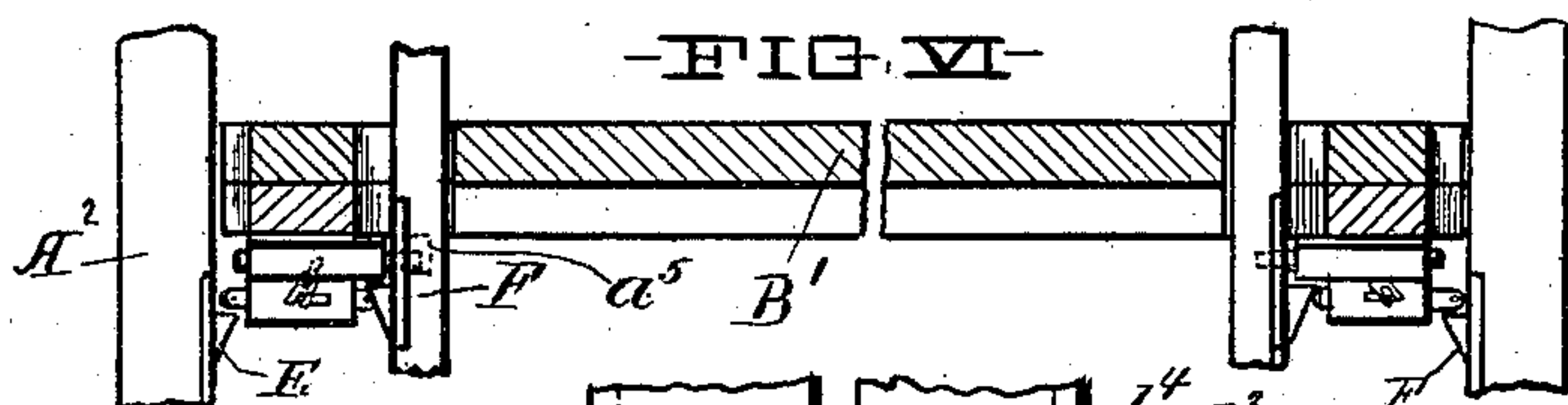
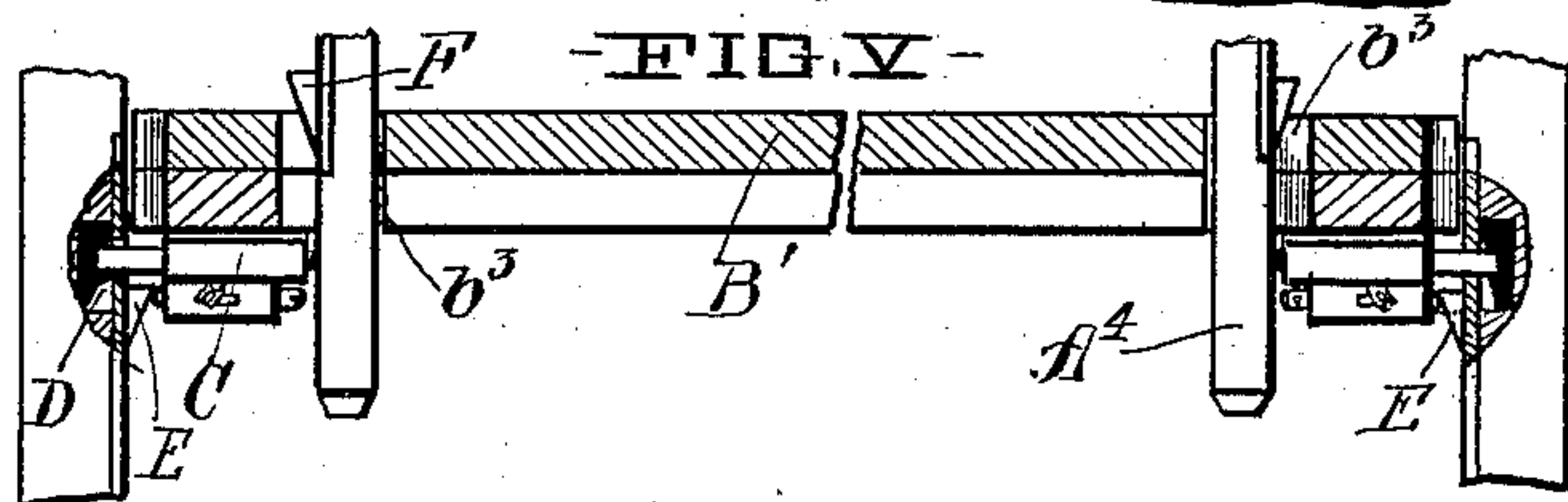
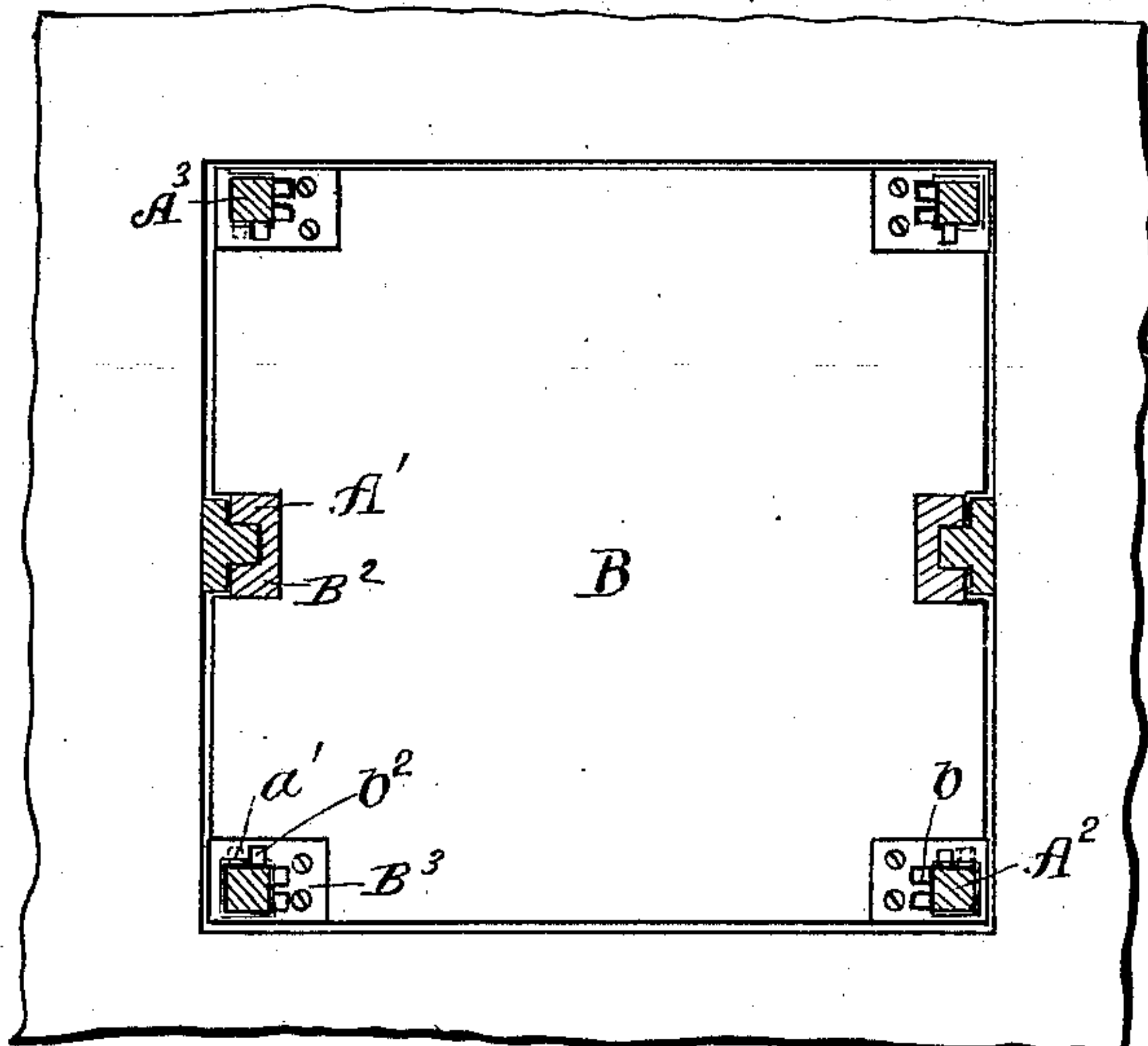
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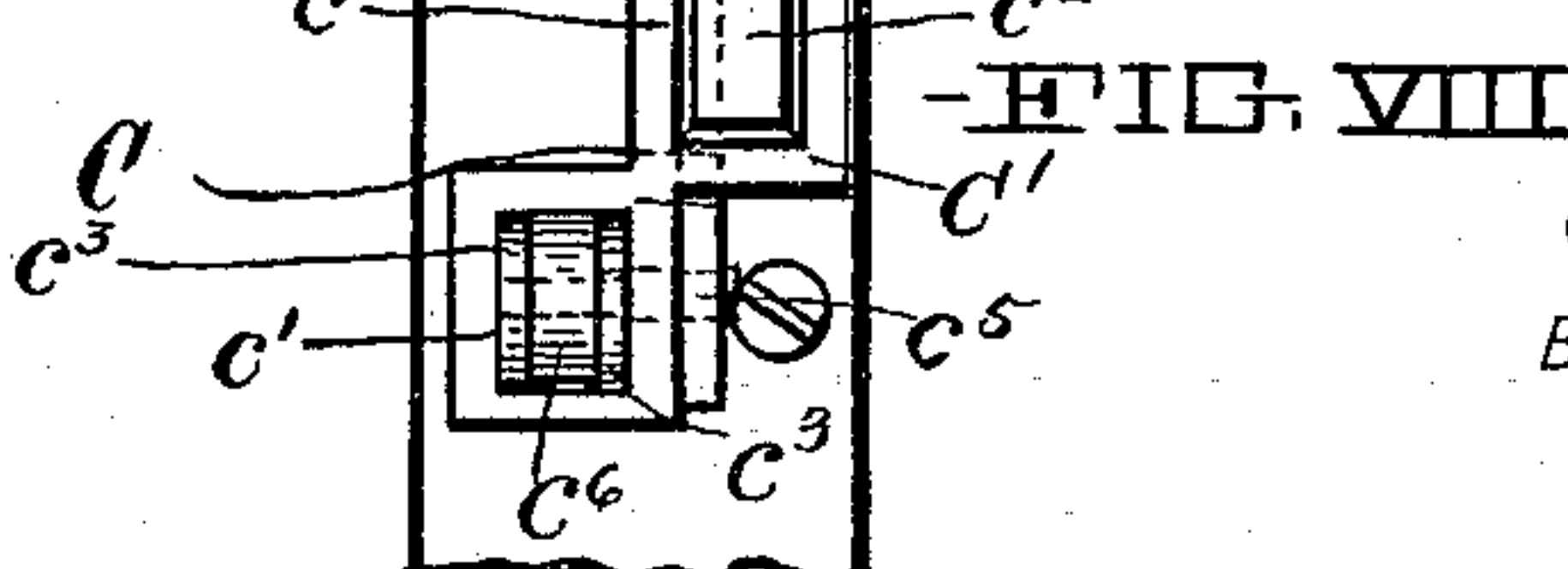
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-FIG. II-



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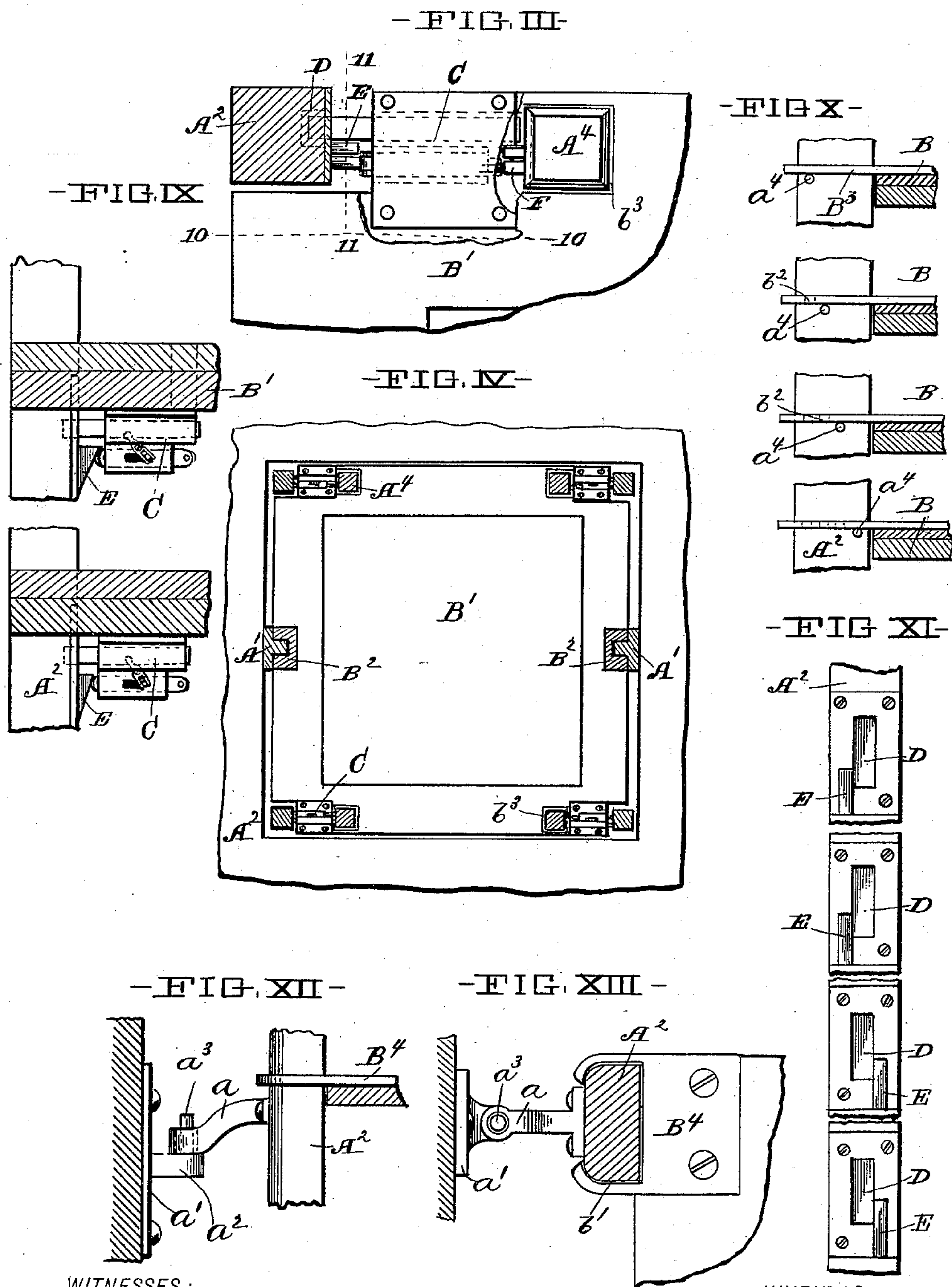
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3 Sheets—Sheet 3.



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UNITED STATES PATENT OFFICE.

EDGAR STODDARD, OF CLEVELAND, OHIO, ASSIGNOR TO THE VAN DORN
IRON WORKS COMPANY, OF SAME PLACE.

ELEVATOR ATTACHMENT.

SPECIFICATION forming part of Letters Patent No. 624,260, dated May 2, 1899.

Application filed January 24, 1898. Serial No. 667,697. (No model.)

To all whom it may concern:

Be it known that I, EDGAR STODDARD, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Elevator Attachments, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

The annexed drawings and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting but one of various mechanical forms in which the principle of the invention may be used.

In the said annexed drawings, Figure I represents a vertical cross-sectional view of an elevator-shaft, showing therein an elevator and attachments embodying my improvement. Fig. II represents a horizontal cross-sectional view of the shaft, taken upon the line 2 2 in Fig. I. Fig. III represents a partial and broken horizontal cross-sectional view of the shaft, taken upon the line 3 3 in Fig. I and looking downwardly. Fig. IV represents a horizontal cross-sectional view of the shaft, taken upon the line 4 4 and looking upwardly. Fig. V represents an enlarged vertical cross-sectional view of a hatch-cover, showing the means which engage with the guide-posts and support the said cover in the elevator-hatch. Fig. VI represents a similar view of the said cover, showing the said engaging means in a second position. Fig. VII represents an enlarged broken sectional view of said cover, showing the said engaging and supporting means in side elevation thereon. Fig. VIII represents an end elevation of said means, looking toward the side of the shaft. Figs. IX, X, XI, and XII represent detailed views, and Fig. XIII represents a detailed view of a modified form of guide-plate.

My improved elevator attachment consists of an elevator-car A, provided at the top with and having secured to the bottom, respectively, two sets of hatch-covers B and B' and means, hereinafter fully described, for remov-

ing said covers from and leaving them on the passage of said car at their respective hatches.

Each of the upper hatch-covers B is of such form as to properly fit into the elevator-shaft, and they have for their object the prevention of accidents and drafts in the said shaft. Each cover is provided at the middle of two opposite sides with a shoe B², which slides upon the elevator-guides A'. In each corner of each cover is an opening b, formed by a guide-plate B³, which surrounds and slides upon a vertical cover guide-post A², of which, as is shown, there are four, each secured at the top and bottom of the elevator-shaft.

In Figs. XII and XIII, I have shown a modified form of guide-plate B⁴. One portion of the plate is cut away, whereby one edge of the opening b' is left open and free. This permits of the use of lateral braces a for bracing the posts against the side of the elevator-shaft, the said open edge permitting the passage of the plates on the passage of the covers while they are in the act of being transported by the car. These braces a are constructed as shown in Fig. XII. A bracket a' is secured to the side of the shaft and is provided with a lug a², which seats one end of the brace a. The said end is provided with a bore, which fits over a stud-bolt a³, having a diameter smaller than that of the bore, whereby the said end of the brace is permitted to have a limited amount of play. The above arrangement permits the guide-posts to remain slightly flexible, whereby the covers, through the medium of their contact at the guide-plates, are capable of drawing the posts into proper position in case the alinement thereof has been disturbed by any variation or change in the building due to settling or other extraneous causes. The liability of binding upon the posts is thus greatly reduced.

Disposed vertically at intervals along each post A² are pins or lugs a⁴, Fig. X, which project therefrom and of which there are four in each horizontal plane containing one of said pins, one pin on each post. Each such set of four pins is adapted to support one of the hatch-covers at the level of the floor of

its respective hatch, the guide-plates resting upon said pins. The pins on each post are located in different vertical planes, Fig. X, and each opening b is provided with a number of slots b^2 , as many in number as there are pins on the same post above the pin upon which the corner of the cover is resting when the latter is secured in its respective hatch. The said slots are located in the same vertical lines which contain the pins above them, so that the latter are permitted to pass through the former on the passage of the covers upwardly or downwardly. It is thus seen that the hatch-covers are gathered up and are deposited on the top of the elevator-car during its upward movement, and on the downward movement each cover is deposited at and supported in its respective hatch at each floor of the building in which the elevator is used.

Projecting from the lower floor A^3 of the elevator-car are four carrying-posts A^4 . Each of the lower hatch-covers B' is provided with four openings b^3 , Fig. IV, which receive the said posts. The latter are made of a length sufficient to project through and carry all of the said lower covers at one time. Secured near each corner and upon the lower surface of each of the lower covers are supporting-latches C , which are adapted to support the covers in their respective hatches and are also adapted to secure the covers to the carrying-posts A^4 . Each of these four latches is composed of a casing C' , Fig. VII, having two channels c and c' . In the channel c is a bolt c^2 , adapted to slide horizontally therein. In the channel c' is located a reciprocating engaging rod c^3 . A lever c^4 at one end engages the bolt and by means of a fork engages pin c^5 on the engaging rod, suitable slots being provided, one for the entrance of the said lever into the channel c and one for the projection of the pin c^5 on the engaging rod. The above arrangement is such that when the engaging rod is reciprocated in one direction the bolt is reciprocated in the opposite direction. Located on each guide-post, Fig. XI, at points near each hatch and opposite each bolt c^2 when the cover is at a level with its appropriate floor are four recesses D , which receive the outer ends of the four bolts c^2 , in which the latter rest and support their cover at a level with the floor in its respective hatch. Each end of each engaging rod is provided with a roller c^6 . Located in the path of the outer roller of each of said rods in the vicinity of the lower part of each recess D is an inclined lug E , adapted to engage the outer end of the engaging rod on the upward movement of the car, said lugs being secured to the side of the elevator-shaft. The said lug is so located as to engage said roller and reciprocate said rod toward the middle of the shaft, thus reciprocating the bolt in the opposite direction and causing its outer end to enter its respective recess D in the contiguous guide-

post, thus causing the engagement of the cover with the four posts, whereby the said cover is supported in the hatch, Figs. V and IX. The said two channels c and c' , as shown in Fig. VIII, are located in different vertical lines, whereby the lugs E may not interfere with the passage of the projecting bolts c^2 .

To avoid the necessity of unduly widening the guide-posts to provide room for the location of the lugs in different vertical lines, the lugs may be in the same vertical line at their outer ends, as shown in Fig. IX, but of different lengths, causing their inner or contact ends to lie in different vertical lines, the latch devices being correspondingly arranged nearer to or farther from the edges of the cover.

Located one above the other on each carrying-post and in different vertical lines are as many inclined lugs F as there are covers to be secured to the carrying-posts. In case of the employment of a large number of lugs the same plan of arrangement is observed as in the case of lugs E —that is, two lugs projecting in different degrees are located in the same vertical line. Four lugs, one on each post, are located in the same horizontal plane, so that they may simultaneously engage the inner ends of the four engaging rods c^3 , which project into the respective paths of said lugs, as shown in Figs. III and VI, such projection having been caused by the reciprocation of said rods due to the engagement by lugs E in the upward movement of the car. Recesses a^5 , Fig. VII, are formed one above the other as many in number as there are lugs F , one recess being formed immediately above each of the said lugs. Each recess is located opposite the inner end of a bolt when the cover is level with its appropriate floor and is adapted to receive the end of one of the bolts c^2 when reciprocated by the contact of the corresponding lug F with the engaging rod of said bolt in a manner similar to that which takes place when the said bolts engage the recesses D in the sides of the guide-posts. Recesses b^4 , Fig. VII, are cut in the edges of the opening b^3 to permit the passage of the lugs F through said opening. These recesses are located in different vertical lines in order to be placed in the paths of said lugs F , the latter, as before noted, being similarly located as a result of the difference of location of the engaging rods.

Fig. I shows three lower covers secured to the car and in a position in which they are being carried by the carrying-posts and one lower cover in position covering its respective hatch. Assuming that the motion of the elevator is upward, the lowest cover secured to the car is hence about to be deposited in the next hatch immediately above. The position of each latch on said cover—that is, the position of the bolt and its corresponding engaging rods—is that shown in Fig. VI. When the

floor of the elevator reaches a position in its upward movement such that one set of the lugs E (shown in Fig. I) engage with the end of their corresponding engaging rods, the positions of the bolts are shifted into the position shown in Fig. V—that is, the cover is released from engagement with the car, and its securing means or the means which have secured it to the car are actuated by the releasing-lugs to release the cover from the car and are caused to engage with the recesses in the guide-posts, whereby the cover is supported in its required position in the hatch. The same operation is repeated in the case of each cover, the positions of the releasing-lugs being such as to cause each cover to be secured in its respective hatch successively and beginning with the lowermost cover. Assuming that the motion of the elevator shown in Fig. I is downward, the next cover to be released is the one on the next floor immediately below—that is, the lowest cover B' therein shown. The relative position of the bolts and engaging rods of each latch on said cover when the latter is supported in its hatch in the manner just described is that shown in Fig. V. On the further downward movement of the elevator, Fig. I, the carrying-posts A⁴ enter their respective openings in the said cover B², whereupon the next set of lugs F engage the ends of the engaging levers of the latches on the said cover and reciprocate the bolts out of engagement with the recesses and cause the release of the covers from the guide-posts, the said bolts being simultaneously reciprocated into the recesses provided in the said carrying-posts, whereby the cover is again secured to the car.

The necessity for allowing a certain amount of flexibility to exist in the guide-posts may from the above described arrangement of lugs and engaging parts now be clearly seen, inasmuch as accurate registering of such parts is required in order to insure the proper engagement and operation both of the different lugs and the engaging rods and also of the guide-post recesses and their corresponding bolts. The openings for the guide-posts have a fixed position upon the covers, and consequently bear a fixed position relatively to the securing-latches. That part of the guide-posts passing through said openings, and hence the lugs about to engage, therefore bear a rigidly-fixed position relatively to the latches, and hence to the ends of the engaging rods, such fixity being limited only by the amount of play of the posts in the openings. The same is also true of the relationship between the bolts and corresponding recesses in the carrying-posts.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the

means covered by any one of the following claims be employed.

I therefore particularly point out and distinctly claim as my invention—

1. In an elevator, the combination with vertical guide-posts provided with means for supporting movable hatch-covers, of means for yieldingly securing said guide-posts within the elevator-shaft.

2. In an elevator, the combination with a car, of posts depending from the bottom of the car, and provided with projections arranged in different vertical lines, guide-posts also provided with projections the inner ends of which are arranged in different vertical lines, a series of hatch-covers, and means carried by said covers and adapted to be operated by said projections to secure the covers either to the depending-posts or the guide-posts.

3. In an elevator, the combination with the car having depending posts provided with projections and recesses arranged in sets corresponding to the number of floors or hatchways in a building, each set being in a different vertical line from the other sets, corner guide-posts also provided with sets of projections and recesses; hatch-covers, and catch devices carried thereby, said catch devices being so arranged that they will be operated to disengage each cover from the depending posts when the cover is opposite the hatch it is to close, and on a reverse movement of the car will disengage the cover from the corner guide-posts.

4. In an elevator, the combination with the car, of depending posts provided with lugs and recesses arranged in sets, and out of vertical alinement, corner guide-posts also provided with lugs and recesses arranged in sets, one set for each floor of the building, a hatch-cover for each floor, each of said covers carrying catch mechanism comprising tripping devices adapted to contact with the lugs on the posts, and bolts operated by said tripping devices.

5. In an elevator, the combination with a car, of posts depending from the bottom thereof, corner guide-posts, said posts having lugs and recesses arranged in sets substantially as described, a series of hatch-covers provided with openings through which the depending posts are adapted to extend, and catch mechanism located at each corner of each cover, and comprising a sliding contact-bar and a bolt connected thereto, said bar and bolt being in different planes.

Signed by me this 13th day of January, 1898.

EDGAR STODDARD.

Attest:

D. T. DAVIES,
N. E. MERKEL.