

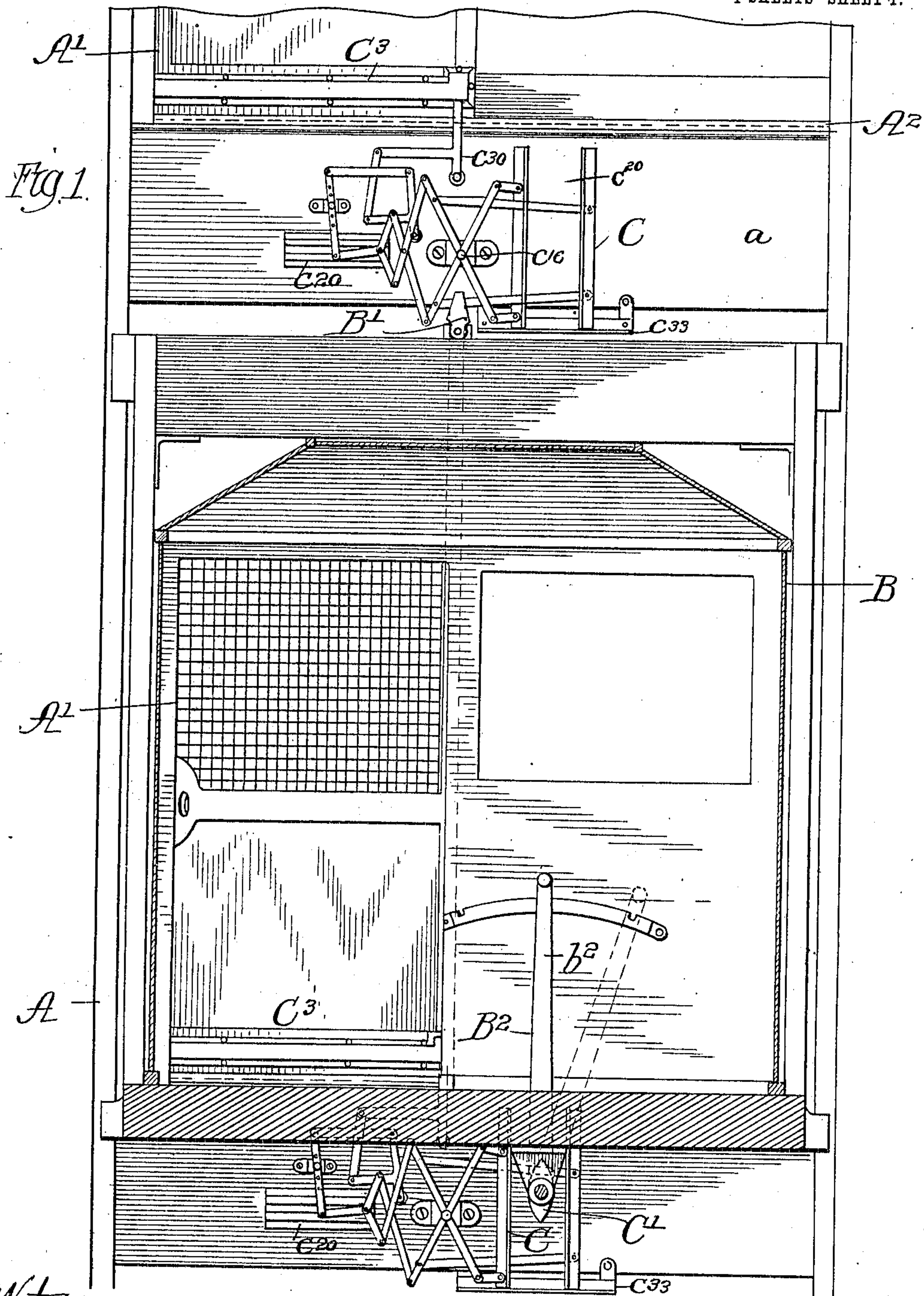
No. 843,301.

PATENTED FEB. 5, 1907.

H. C. SAGEHORN.  
ELEVATOR.

APPLICATION FILED MAY 18, 1906.

4 SHEETS—SHEET 1.



Witnesses:  
H. Barnett  
J. H. Landes

Inventor:  
Herman C. Sagehorn  
by Seymour Smith, Seymour Smith, Leo & Wiles,  
his Attys

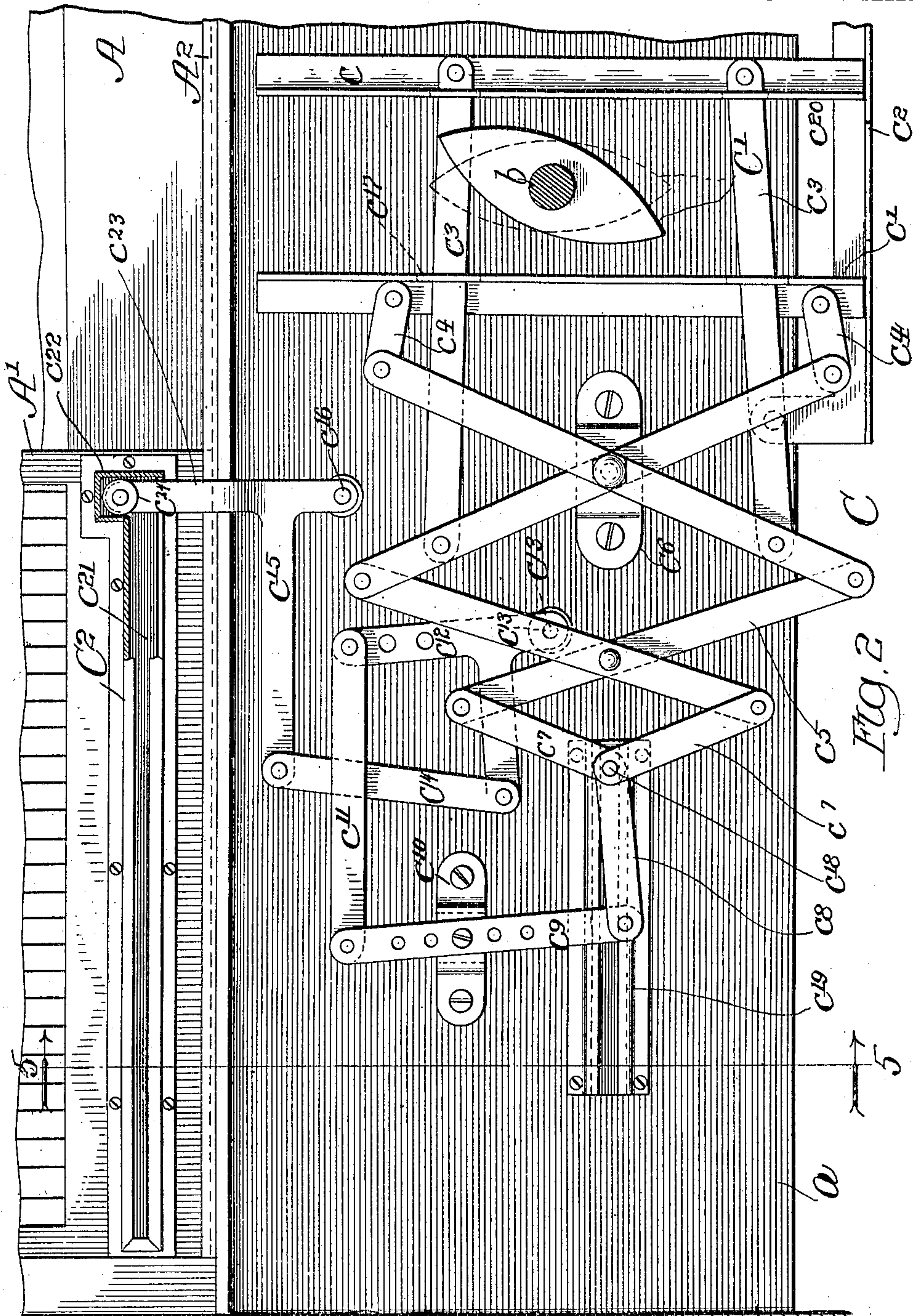
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4 SHEETS—SHEET 2.



Witnesses:  
H. Barrett  
J. H. Landes

Inventor:  
Herman C. Sagehorn  
by *[Signature]*, *[Signature]*, Lee & Wiley,  
his Attys



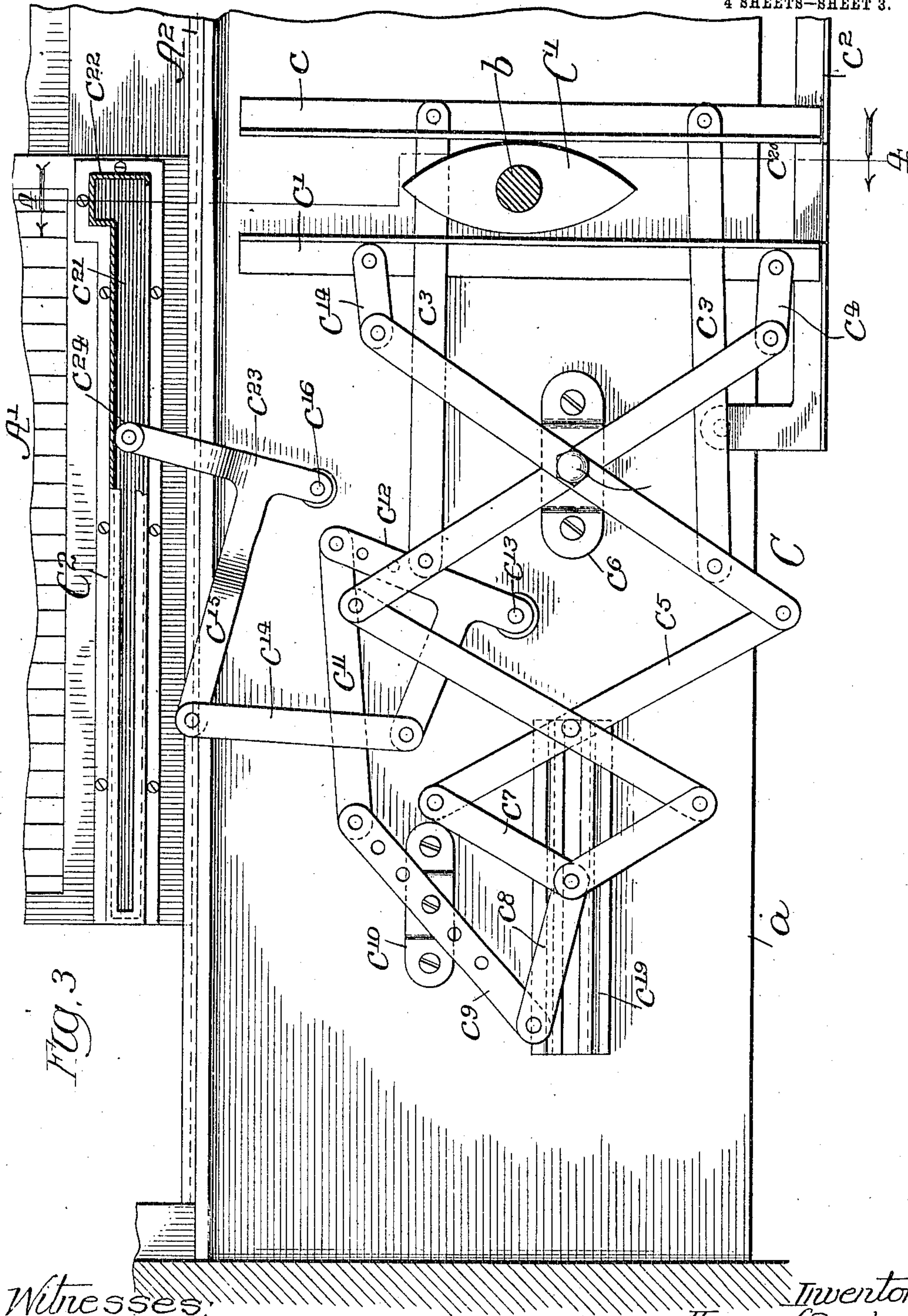
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4 SHEETS—SHEET 3.



Witnesses:  
H. C. Bennett  
J. H. Kander

Inventor  
Herman C. Sagehorn  
by *[Signature]* *[Signature]* *[Signature]*  
Attys

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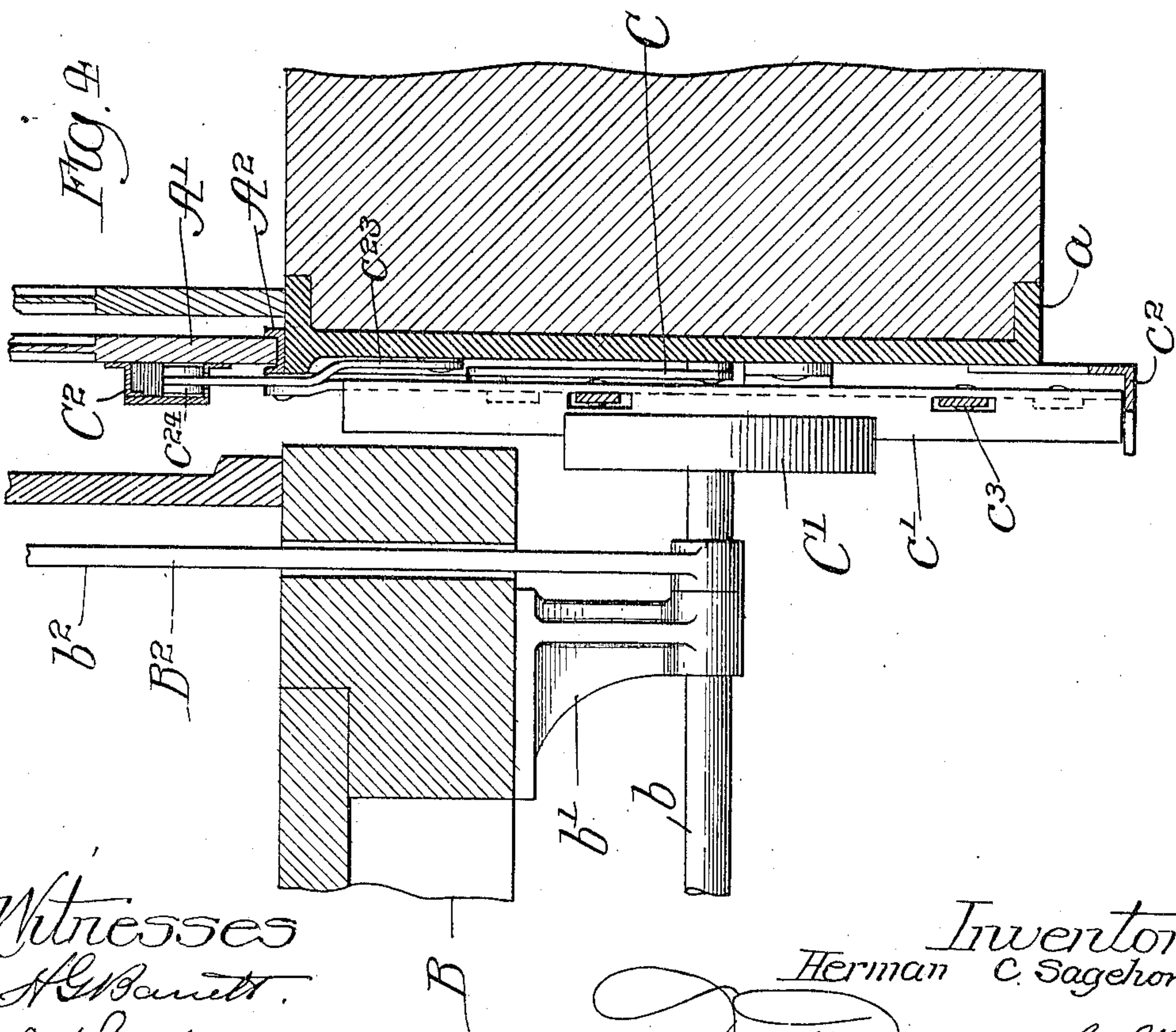
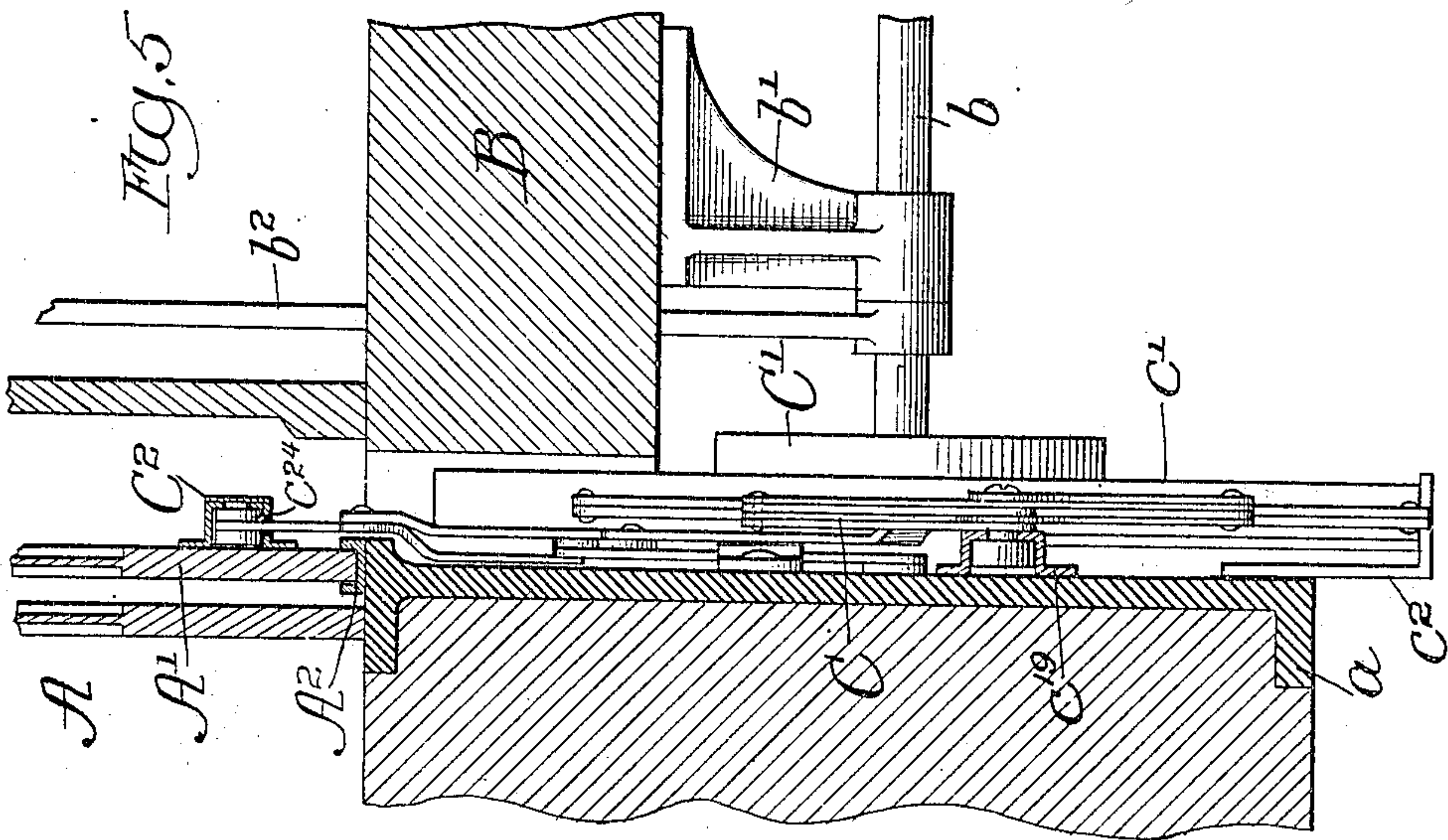
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4 SHEETS—SHEET 4.



Witnesses  
H. Barnett.  
J. Landes,

Inventor:  
Herman C. Sagehorn.  
by Symfott, Symfott, & Miller,  
his Attys



# UNITED STATES PATENT OFFICE.

HERMAN C. SAGEHORN, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO  
FRED G. ROEMPLER, OF CHICAGO, ILLINOIS.

## ELEVATOR.

No. 843,301.

Specification of Letter's Patent.

Patented Feb. 5, 1907.

Application filed May 18, 1906. Serial No. 317,504

*To all whom it may concern:*

Be it known that I, HERMAN C. SAGEHORN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Elevators, of which the following is a specification.

My invention relates particularly to passenger and freight elevators; and my primary object is to provide, in connection with the controlling mechanism of elevators and the doors of the elevator-shaft, means for locking the controlling mechanism against actuation when an elevator-door is thrown open and maintaining the controlling mechanism in such condition until the door is fully closed, thus preventing careless starting of the elevator and obviating the danger attendant thereon.

The invention is illustrated in one embodiment in the accompanying drawings and generically and specifically claimed in the present application with reference to said embodiment, and it is shown in another embodiment and specifically claimed with relation thereto in my application, Serial No. 317,505, of even date herewith.

In the accompanying drawings, Figure 1 illustrates a broken sectional view of an elevator-shaft and elevator-cage equipped with my improvements; Fig. 2, an enlarged broken sectional view showing the equipment with which the elevator-shaft is provided immediately beneath the floor-line at each story of the building and the connection therewith of the door of the elevator-shaft; Fig. 3, a similar view showing the door in a partially-open condition; Fig. 4, a broken section taken as indicated at line 4 of Fig. 3 and showing the relation of the controlling mechanism of the elevator to the mechanism connected with the elevator-shaft, and Fig. 5 a section taken as indicated at line 5 of Fig. 2.

In the preferred construction, A represents an elevator-shaft provided with doors A', whose bases move on tracks or guides A<sup>2</sup> and B, an elevator-cage suspended by a member B' in the usual manner and equipped with controlling mechanism B<sup>2</sup> of the usual construction.

The elevator-shaft A may be of any usual construction. At each floor is a horizontal beam a, to which is attached a door-actuated

locking device C, adapted to coact with a head C', connected with a rock-shaft b, forming a portion of the controlling mechanism B<sup>2</sup> of the elevator.

The controlling mechanism of the elevator may be of any approved form. In the illustration given it comprises the rock-shaft b, journaled in hangers b' beneath the floor of the cage B, and a controlling-lever b<sup>2</sup>, working in a slot with which the floor of the cage is provided. The mechanism C preferably comprises a pair of vertical angle-bars c c'; a horizontal guide member c<sup>2</sup>, upon which the members c c' are supported at their lower ends; a pair of links c<sup>3</sup>, serving to actuate the bar c; a pair of links c<sup>4</sup>, serving to actuate the bar c'; a series of lazy-tong levers c<sup>5</sup>, connected with the links c<sup>3</sup> c<sup>4</sup>, the lazy-tong levers being pivotally supported on a member c<sup>6</sup>, connected with the beam a; a pair of links c<sup>7</sup>, connecting the lazy-tong levers with a link c<sup>8</sup>, joined to a lever c<sup>9</sup>, supported on a bracket c<sup>10</sup>, carried by the beam a; a link c<sup>11</sup>, connecting the upper end of the link c<sup>9</sup> with a bell-crank lever c<sup>12</sup>, joined by a pivot c<sup>13</sup> to the beam a; and a link c<sup>14</sup>, connecting one arm of the lever c<sup>12</sup> with the horizontal arm of a bell-crank lever c<sup>15</sup>, which is joined by a pivot c<sup>16</sup> to the beam a. The links c<sup>3</sup> pass through guide-slots c<sup>17</sup>, with which the vertical bar c' is provided. The link c<sup>8</sup> is joined to the links c<sup>7</sup> by pivot c<sup>18</sup>, which has connection with a horizontal guide c<sup>19</sup>, carried by the beam a. The levers c<sup>9</sup> c<sup>12</sup> are provided with a series of perforations enabling adjustment to be made to vary the distance of movement of the locking-bars c c'. It will be understood that the mechanism C is duplicated at each floor-line.

A vertical channel c<sup>20</sup>, open at its ends, is provided between the locking-bars c c', and the head C', carried by the rock-shaft b of the controlling mechanism, projects far enough in front of the front plane of the elevator-cage to enter said channel. The head C' is elongated in a vertical direction, as shown, and is adapted to be clamped between the bars c c' when an elevator-door is thrown open, it being understood that the head C' occupies a vertical position when the lever b<sup>2</sup> of the controlling mechanism is in the neutral vertical position shown in Fig. 1.

The base of each door A' is equipped on its inner surface with a cam C<sup>2</sup>, having a hori-



zontal slot  $c^{21}$  extending substantially across the door and an offset channel  $c^{22}$  at the rear end of the slot  $c^{21}$ . The lever  $c^{15}$  has a vertical arm  $c^{23}$  equipped with a roller  $c^{24}$ , which works in the slot  $c^{21}$ , and the offset channel  $c^{22}$ .

It will now be understood that when the elevator-cage is brought to the proper position with reference to the door of the elevator-shaft the head  $C'$  on the rock-shaft  $b$  enters the channel  $c^{20}$  between the clamping-bars  $c$   $c'$ , and when the controlling-lever is thrown from the operative position to the neutral position, thereby to turn the head  $C'$  from the position of the full lines to the position of dotted lines shown in Fig. 2, the door may be thrown open, thereby causing the lever  $c^{15}$  to be actuated, and, through the medium of the connecting levers and links, the clamping-bars  $c$   $c'$  to be moved to clamp the head  $C'$ , as indicated in Fig. 3. This action occurs upon the first movement of the door in the opening operation, and during the further opening movement of the door the roller  $c^{24}$  moves within the horizontal slot  $c^{21}$ , maintaining the locked condition of the controller-shaft. It will now be obvious that before the controller-shaft can be turned to set the cage in motion it will be necessary to completely close the door of the elevator-shaft, in the completion of which movement the roller  $c^{24}$  of the lever  $c^{15}$  enters the offset  $c^{22}$  of the cam-slot and effects the unlocking of the controller-shaft. It may be added that the operation of the elevator-cage is controlled through the medium of a suitable controlling-lever, such as  $b^2$ , regardless of whether the cage is operated by electricity, hydraulic power, or steam-power. Ordinarily the application of power is controlled through the medium of the rock-shaft  $b$ , which projects at right angles to the front side of the elevator-car. Inasmuch as mechanism is provided at each floor to coöperate with the shaft of the controller, it is evident that security is afforded by means of my device at all of the doors of the elevator-shaft.

The foregoing detailed description has been given for clearness of understanding only, and no undue limitation is to be understood therefrom.

What I regard as new, and desire to secure by Letters Patent, is—

1. The combination with an elevator-shaft, its door, an elevator-cage and its controlling mechanism, of a locking member connected with said controlling mechanism and carried by said cage, a locking member carried by said shaft into whose plane the

locking member connected with the controlling mechanism is adapted to be brought, and a cam connected with the base of the door and serving to actuate said second-named locking member, said cam comprising a horizontal portion extending substantially across the base of the door and an offset portion adapted to effect an unlocking movement upon the complete closure of the door.

2. The combination with an elevator-shaft, its door, an elevator-cage and the controlling mechanism therefor, of a locking member connected with said controlling mechanism, a pair of vertically-disposed locking members connected with the elevator-shaft near the base of the door, a lever connected with the second-named locking members adapted to actuate the same, and a cam connected with the base of the door and serving to actuate said lever.

3. The combination with an elevator-shaft, its door, an elevator-cage and controlling mechanism for the cage having a rocking shaft equipped with a locking member, of a horizontally-slidable locking member connected with the elevator-shaft, and means connected with the elevator-door serving to actuate said second-named locking member during the opening and closing movement of the door.

4. The combination with an elevator-shaft, its door, an elevator-cage and controlling mechanism therefor, of a locking member connected with said controlling mechanism, a horizontally-shiftable locking member connected with the elevator-shaft, a cam connected with the base of the elevator-door, a lever connected with said cam and with the elevator-shaft, and link-and-lever connections between said lever and said horizontally-shiftable locking member.

5. The combination with an elevator-shaft, its door, an elevator-cage and the controlling mechanism therefor, of a locking member for said controlling mechanism moving with the elevator-cage, a shiftable locking member coacting with said first-named locking member and connected with the elevator-shaft, a lever pivotally connected with the elevator-shaft and serving to actuate said second-named locking member, and a cam connected with the base of the door and having a horizontal portion extending substantially across the base of the door and an offset portion near the edge of the door.

HERMAN C. SAGEHORN.

Witnesses:

L. HEISLAR,  
J. H. LANDES.