

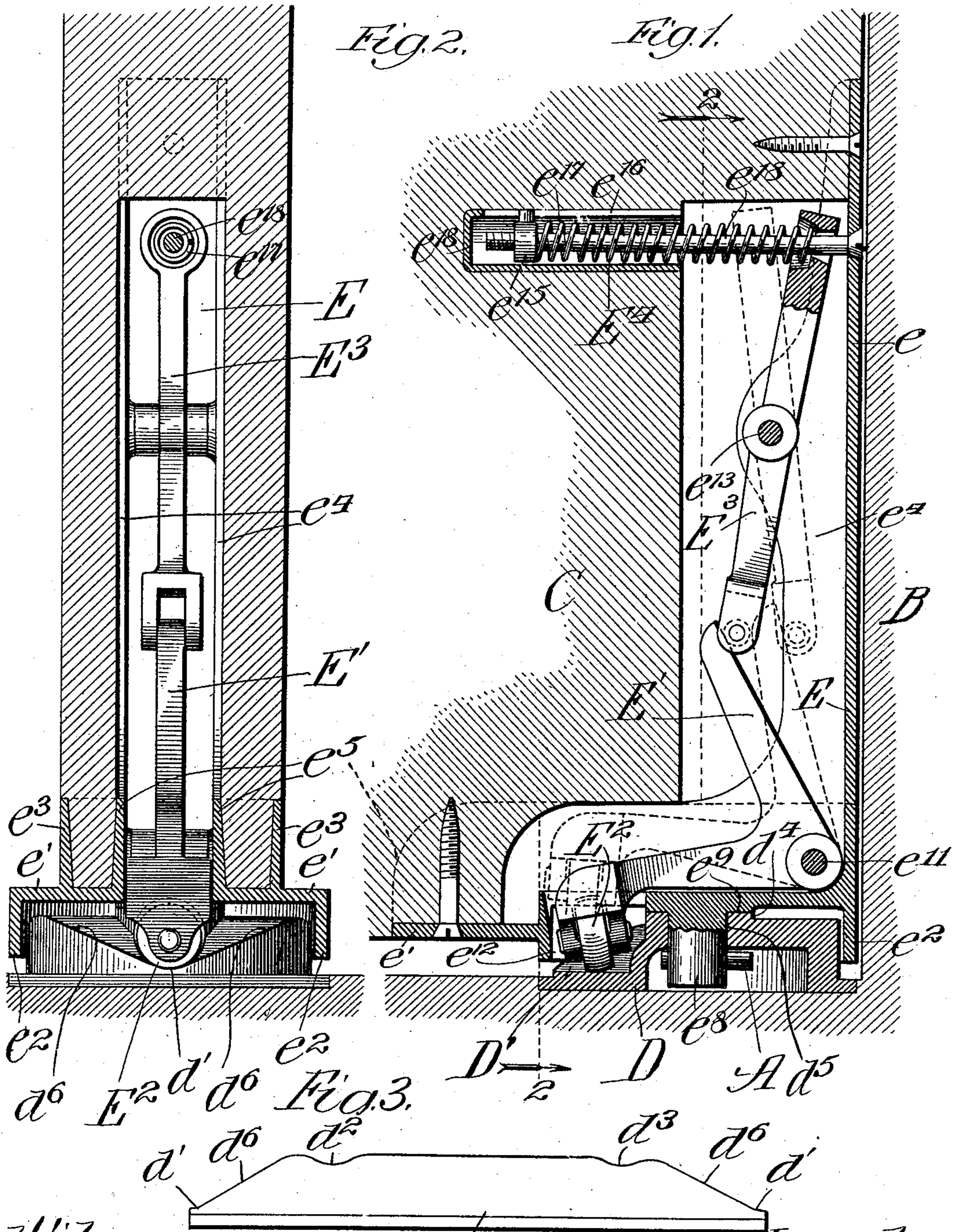
J. E. AHLVIN.

HINGE.

APPLICATION FILED MAR. 19, 1904.

NO MODEL.

2 SHEETS—SHEET 1.



Witnesses:  
*Ed. Gaylord,*  
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No. 772,119.

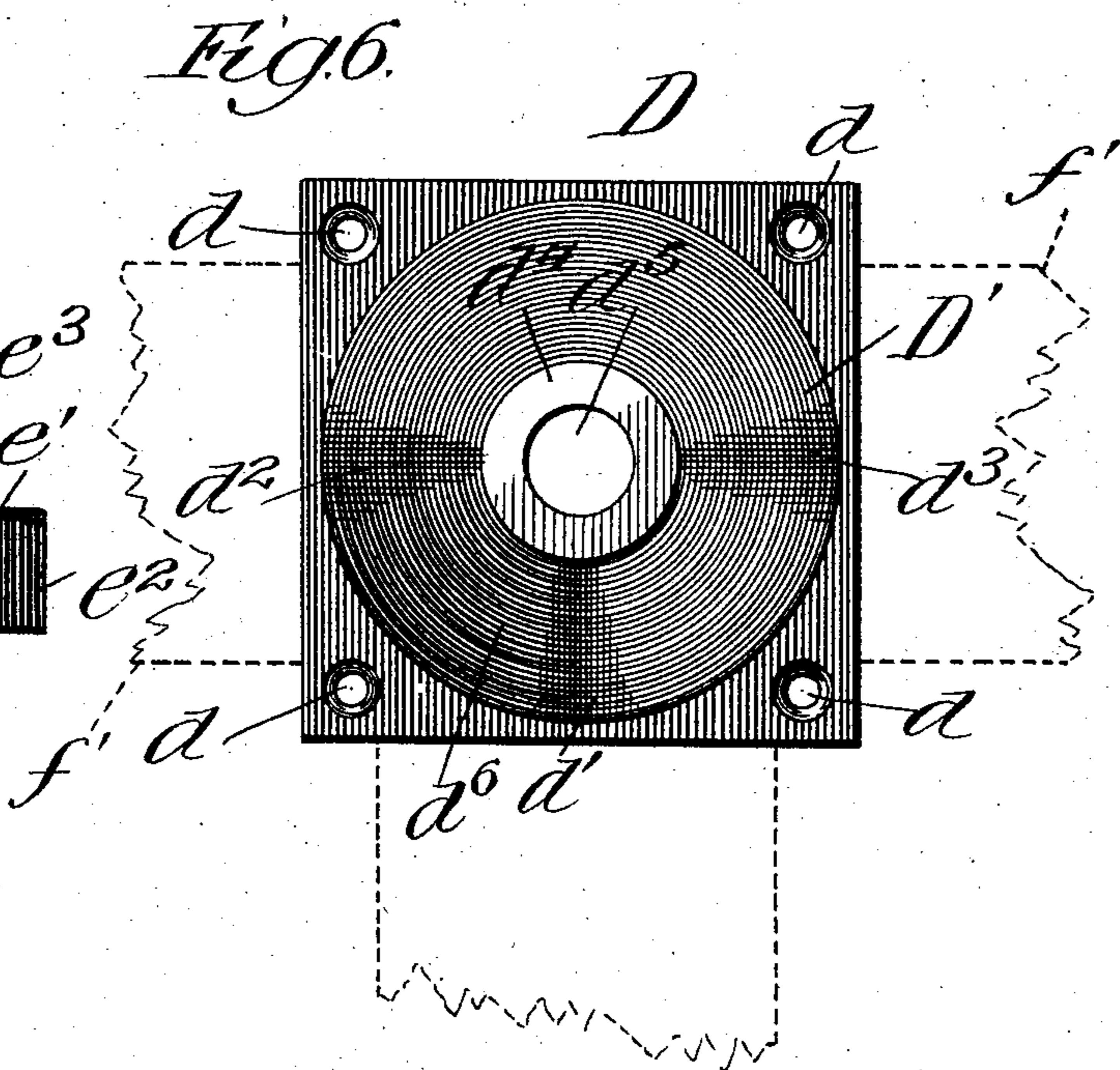
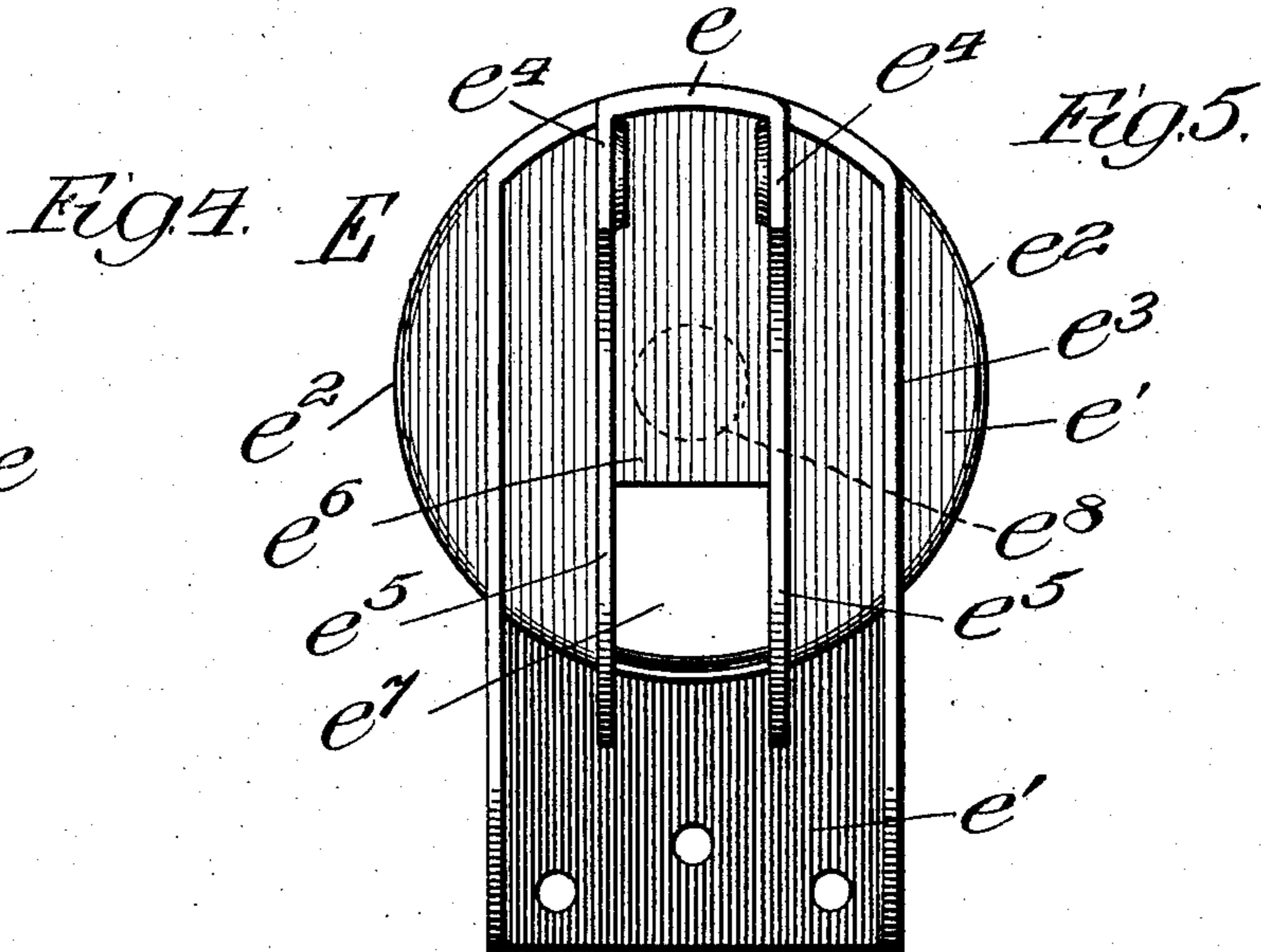
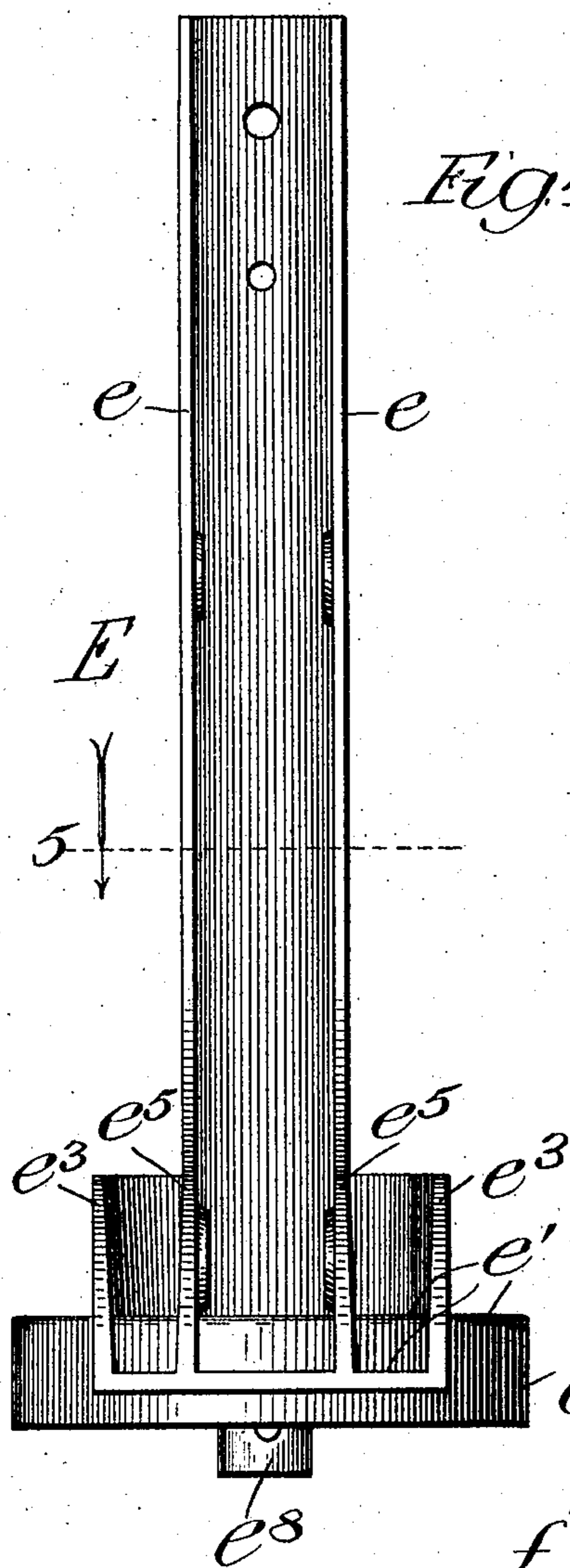
PATENTED OCT. 11, 1904.

J. E. AHLVIN.  
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NO MODEL.

2 SHEETS—SHEET 2.



Witnesses:  
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Inventor:  
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# UNITED STATES PATENT OFFICE.

JOHN E. AHLVIN, OF JOLIET, ILLINOIS.

## HINGE.

SPECIFICATION forming part of Letters Patent No. 772,119, dated October 11, 1904.

Application filed March 19, 1904. Serial No. 199,005. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN E. AHLVIN, a citizen of the United States, residing at Joliet, in the county of Will and State of Illinois, have  
5 invented a new and useful Improvement in Hinges, of which the following is a specification.

My invention relates particularly to doors capable of swinging in two directions, such  
10 as butlers' pantry-doors; and my primary object is to provide improved means whereby the door may be maintained in either of three positions.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a broken vertical sectional view illustrating the manner of hanging a door equipped with my improvement; Fig. 2, a section taken as indicated at line 2 of Fig. 1;  
20 Fig. 3, a view in the nature of a development of a cam employed, which cam coöperates with a yielding-held roller to maintain the door in the closed position or in either of the two open positions; Fig. 4, an inner or front  
25 view of an improved heel-plate for the door; Fig. 5, a plan section taken as indicated at line 5 of Fig. 4, and Fig. 6 a plan view of a floor-plate equipped with a cam.

In the construction illustrated, A represents  
30 the floor; B, the jamb of the door-frame adjacent to the pivotal edge of the door; C, the swinging door; D, a floor-plate equipped with a cam D'; E, a heel-plate for the door; E', a bell-crank lever journaled therein and  
35 equipped with a roller E<sup>2</sup>, engaging the cam D'; E<sup>3</sup>, a lever acting upon the free arm of the bell-crank lever E', and E<sup>4</sup> a tension device for the lever E<sup>3</sup>.

The plate D is rectangular in shape and  
40 provided at its four corners with screw perforations  $\bar{d}$ . Upon the upper surface of the plate is the cam D', which is of circular contour and provided at its front portion with a depression  $\bar{d}'$ , corresponding with the closed  
45 position of the door, and provided at its diametrically-opposed side portions with depressions  $\bar{d}^2$   $\bar{d}^3$ , corresponding with the two open positions of the door. At the central portion of the cam is a boss  $\bar{d}^4$  and a perforation  $\bar{d}^5$ .  
50 As appears from Figs. 2 and 3, the front depression  $\bar{d}'$  has a long gently-declining surface

$\bar{d}^6$ , up one or the other of which the roller E<sup>2</sup> mounts when the door is swung open, depending upon which way the door is swung.

The heel-plate E comprises a vertical plate 55 or member  $e$  and a bottom plate  $e'$ , on the under surface of which bottom plate is a barrel  $e^2$ , fitting loosely over the circular cam D'. The plate  $e'$  is provided on its upper surface with flanges  $e^3$ , which constitute metal bind- 60 ings for the adjacent portion of the door. The vertical member  $e$  has at its lower edges forwardly or inwardly turned flanges or ribs  $e^4$ , from the lower ends of which extend forwardly flanges  $e^5$ , affording between them a 65 chamber  $e^6$ , which receives the bell-crank lever E'. The plate  $e'$  is provided between the flanges  $e^5$  with a perforation  $e^7$ , through which the cam-roller works. The front end (toward the free vertical edge of the door) of the plate 70  $e'$  is pressed below the main portion of the plate, as appears from Figs. 1 and 4. At the center of the barrel  $e^2$  is a downwardly-projecting pivot  $e^8$ , which extends through the perforation  $\bar{d}^5$  of the floor-plate, and at the 75 upper end of said pivot is a boss  $e^9$ , which bears upon the boss  $\bar{e}^4$  of the floor-plate. The heel-plate is secured to the floor-plate after insertion of the pivot  $e^8$  by means of a cotter- 80 pin  $e^{10}$ .

The bell-crank lever E' is supported at the junction of its arms on a transverse pivot  $e^{11}$ . The forwardly-projecting arm of said lever has a downturned bifurcated extremity in which is journaled a roller E<sup>2</sup> on a pivot  $e^{12}$ , 85 extending perpendicularly to the pivot  $e^{11}$ . The lever E<sup>3</sup> is supported centrally on a pivot  $e^{13}$ , supported by the flanges  $e^4$  of the vertical member of the heel-plate.

The tension device E<sup>4</sup> comprises a barrel  $e^{14}$ , 90 a nut  $e^{15}$ , having a projection moving in a slot  $e^{16}$  in said barrel, a spring  $e^{17}$ , and a threaded rod  $e^{18}$ , accessible for purposes of adjustment through perforations in the upper end of the lever E<sup>3</sup> and the upper end of the member  $e$  95 of the heel-plate.

It will be understood that in applying my improvements to a door the rear or lower edges of the door are properly mortised to receive the heel-plate and to accommodate the 100 levers.

In operation the door swings upon the pivot

$e^8$ , and a suitable pivot at the top of the door, (not shown,) and as the door swings the roller  $E^2$  rides upon the cam  $D'$ . It will be understood, therefore, that when the door is in either of the extreme open positions, as indicated by the dotted lines at  $f$  and  $f'$  of Fig. 6, the door will remain open, and when the door is open less than the full distance the tendency is for the roller to seek the bottom of the depression  $d'$ , thereby bringing the door to the central or closed position. As appears from Fig. 2, the front end of the forwardly-projecting arm of the bell-crank lever  $E'$  has a head which works snugly between the flanges  $e^5$  of the bottom member of the heel-plate, so that no flexing strain is put upon the pivot  $e^{11}$  of said lever.

While an exceedingly valuable feature of my invention is that providing for maintaining the door in either of its open positions, it will be understood that the construction is a very valuable one, even though the feature just mentioned should be omitted, as might be done by omitting the depressions  $d^2$   $d^3$  of the cam and lengthening the inclined surface  $d^6$  of the cam, so that the door would always tend to seek the closed position. Moreover, while I have illustrated a tension device which may be readily adjusted and which is admirably adapted to its purpose, still it will be understood that any suitable tensioning device may be substituted therefor. For instance, the form of the lever  $E'$  may be changed, and a leaf-spring bearing upon said lever may be provided in connection with any suitable means for adjusting the tension of said spring.

Changes in details of construction within the spirit of my invention may readily be made. Hence no undue limitation should be understood from the foregoing detailed description.

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

1. The combination with a door of a cam provided at its front portion with a depression, and a yieldingly-held lever equipped with cam-engaging means and supported on a transverse pivot near the rear edge of the door, for the purpose set forth.

2. The combination of a floor-plate equipped on its upper surface with a cam, a heel-plate supported thereon provided with a barrel encircling said cam, pivotal connection between the floor-plate and heel-plate located centrally with relation to said barrel, and yielding cam-engaging means connected with said heel-plate and engaging said cam within said barrel, for the purpose set forth.

3. The combination of a floor-plate equipped with a cam and provided with a pivotal perforation located centrally with relation to said cam, a heel-plate equipped with a pivot entering said perforation, and a yieldingly-held lever equipped with cam-engaging means, for the purpose set forth.

4. The combination of a floor-plate equipped with a cam and with a perforation located centrally with relation to said cam, a heel-plate equipped with a pivot entering said perforation, and a yieldingly-held lever pivoted on said heel-plate and equipped with a roller engaging said cam.

5. The combination with a door of a stationary cam, a lever-support connected with said door by a transverse pivot, a roller journaled in said lever on a pivot perpendicular to said first-named pivot, and means for yieldingly holding said roller against said cam, for the purpose set forth.

6. The combination with a swinging door of a stationary cam, a lever located in a mortise in said door and supported on a transverse pivot, a roller connected with said lever by a pivot perpendicular to said first-named pivot, and a spring serving yieldingly to hold said lever, for the purpose set forth.

7. The combination with a swinging door of a stationary cam, a bell-crank lever pivotally connected with the door and equipped with cam-engaging means, and a spring-held lever engaging said bell-crank lever.

8. The combination with a swinging door of a stationary cam, a lever equipped with cam-engaging means, and adjustable tension means for said lever, for the purpose set forth.

9. The combination of a floor-plate equipped with a cam and with a perforation located centrally with relation to said cam, said cam having front and lateral depressions, and a pivoted spring-held lever equipped with cam-engaging means, for the purpose set forth.

10. The combination of a floor-plate equipped with a cam, a heel-plate having a vertical securing member and a bottom securing member, pivotal connections between said bottom securing member and said floor-plate, and a spring-held lever equipped with cam-engaging means, for the purpose set forth.

11. The combination with a swinging door of a stationary cam, a heel-plate pivotally connected therewith, a bell-crank lever equipped with cam-engaging means and supported on said heel-plate, a lever pivoted to said heel-plate and having one end engaging said bell-crank lever, and a tension device connected with the upper end of said second-named lever and accessible from the rear edge of the door, for the purpose set forth.

12. The combination of a floor-plate equipped with a cam, a heel-plate pivotally connected with said floor-plate and provided with a guide, and a pivoted lever connected with said heel-plate and equipped with cam-engaging means, and having adjacent to said cam-engaging means a bearing in said guide, for the purpose set forth.

JOHN E. AHLVIN.

In presence of—

WALTER N. WINBERG,  
W. B. DAVIES.