

No. 810,448.

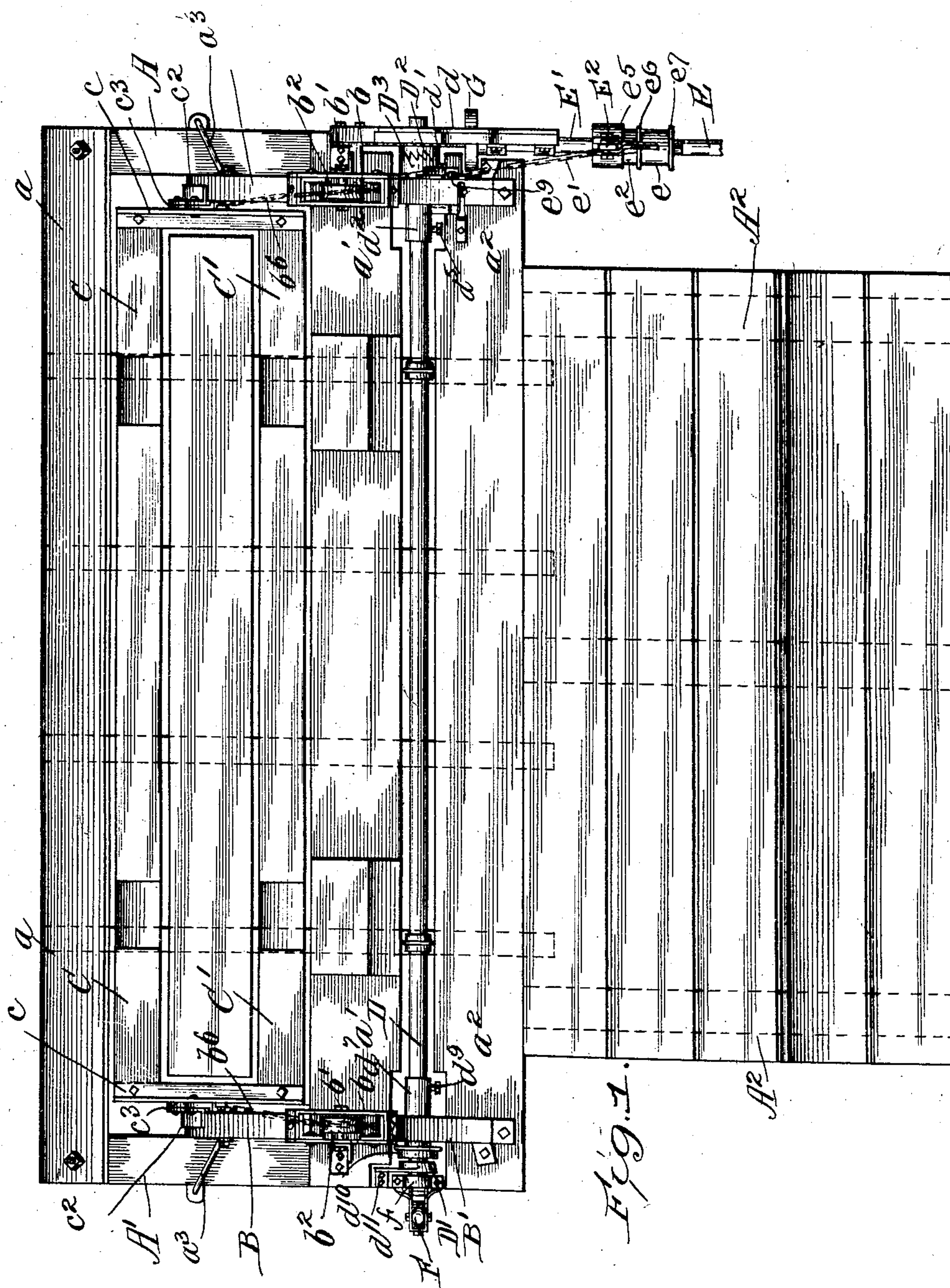
PATENTED JAN. 23, 1906.

G. WENZELMANN & E. H. OVERHOLT.

ELEVATOR OR JACK.

APPLICATION FILED SEPT. 23, 1903.

4 SHEETS—SHEET 1.



Witnesses:

Ray White.

Harry R. White.

Inventors,

Gustav Venzelmann

Eduard H. Overholt

By *Edvard H. Overholt,*  
*Charles W. Hill, Atty.*

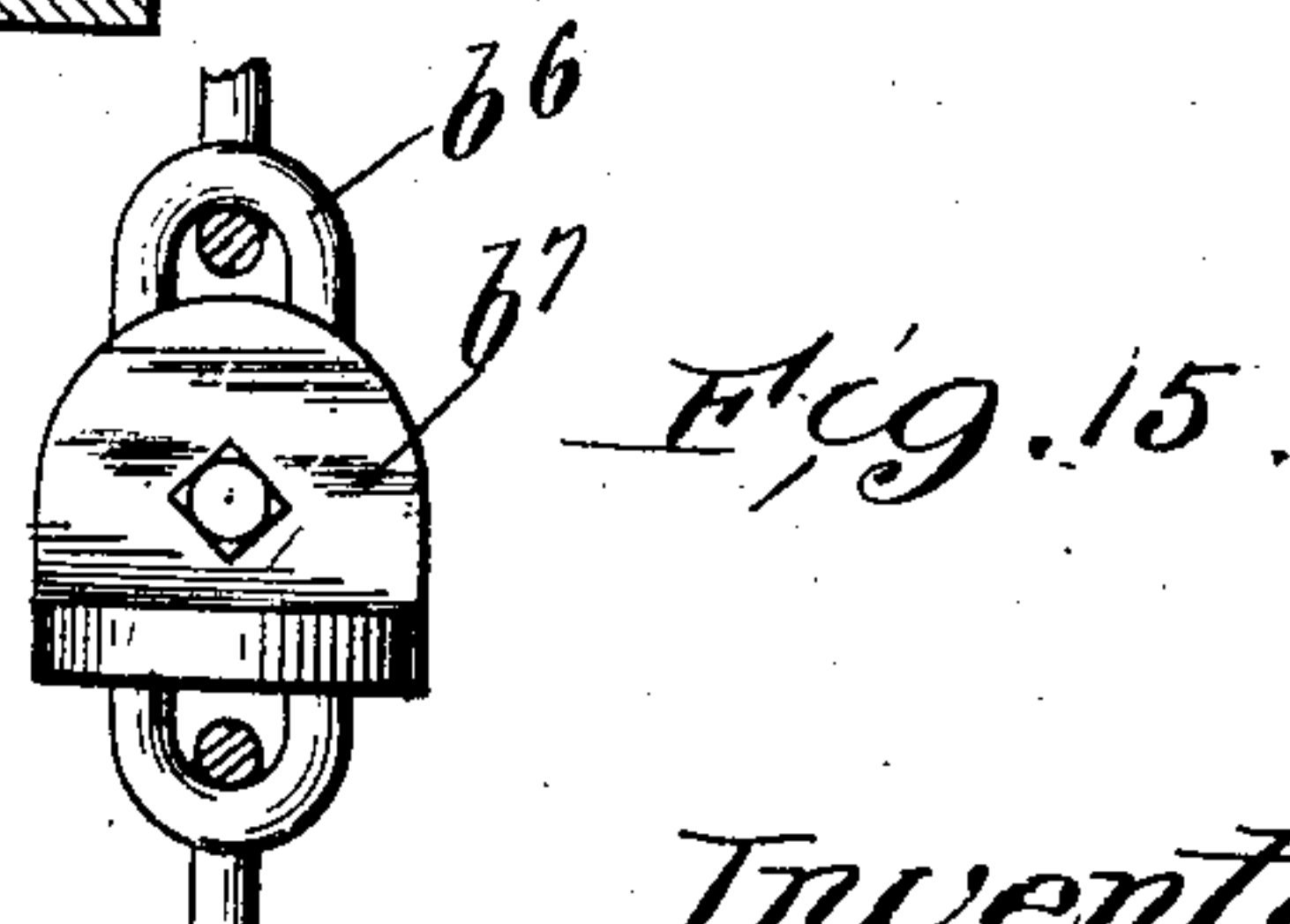
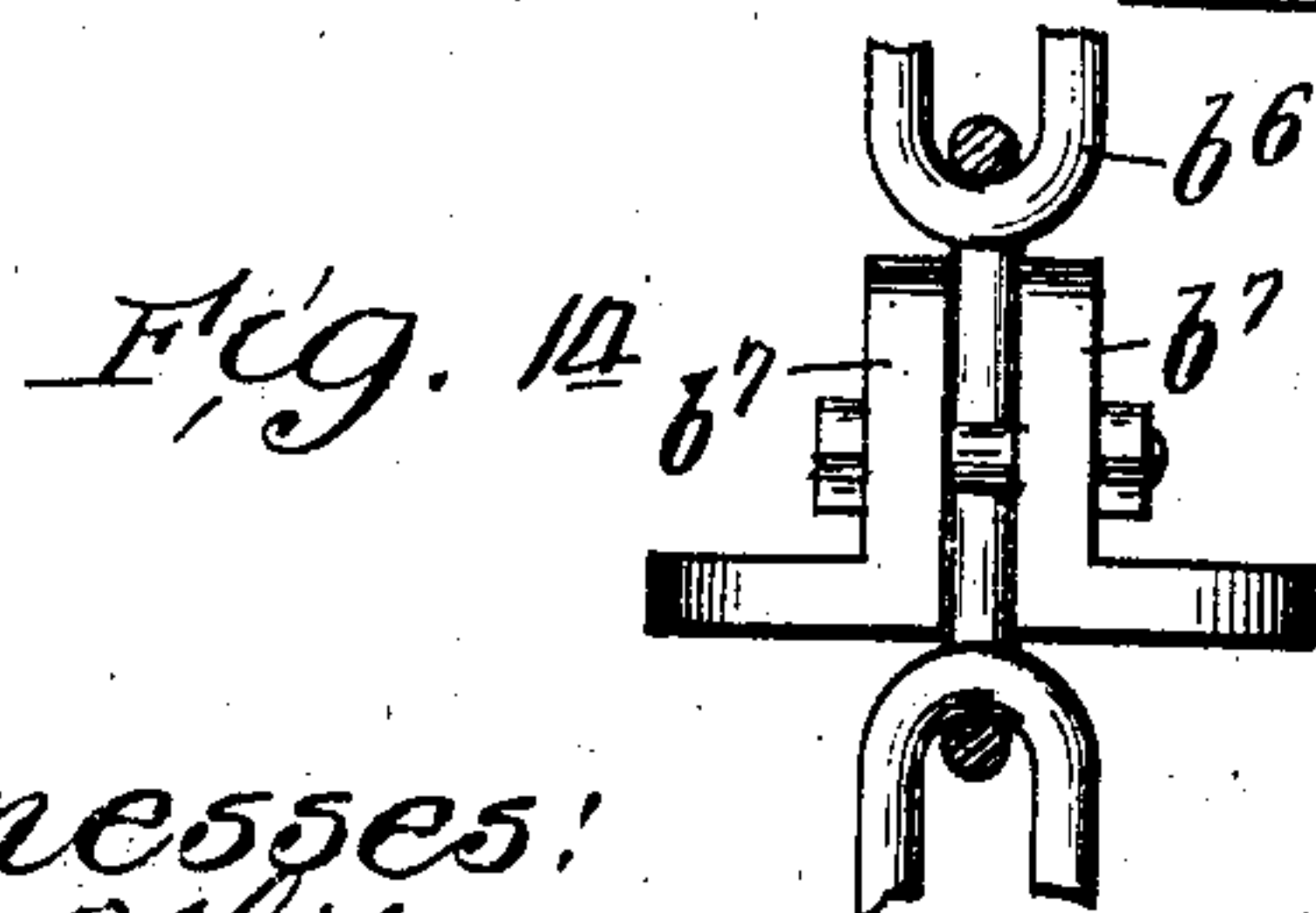
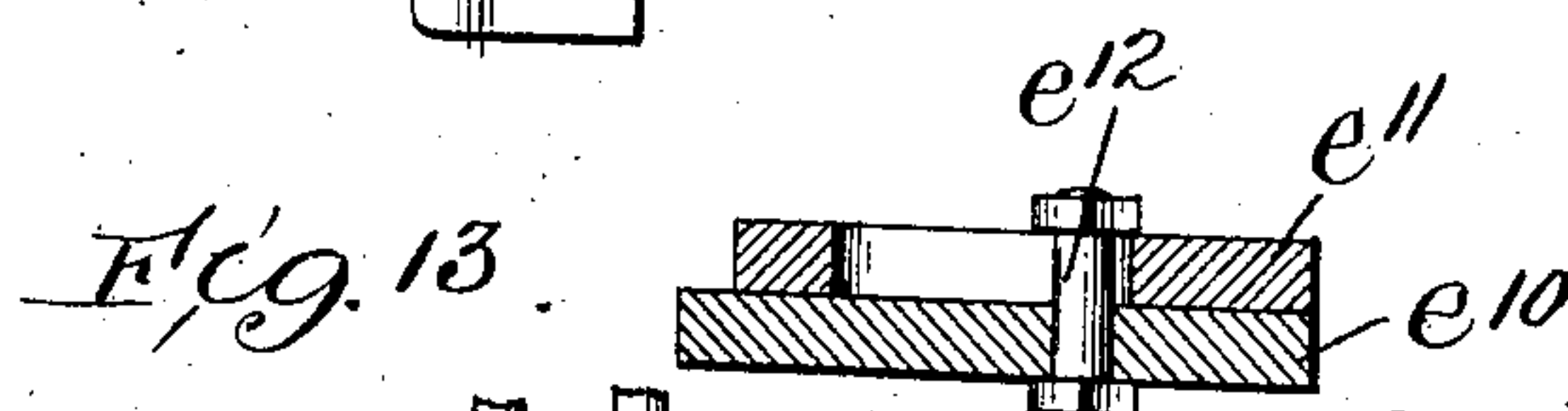
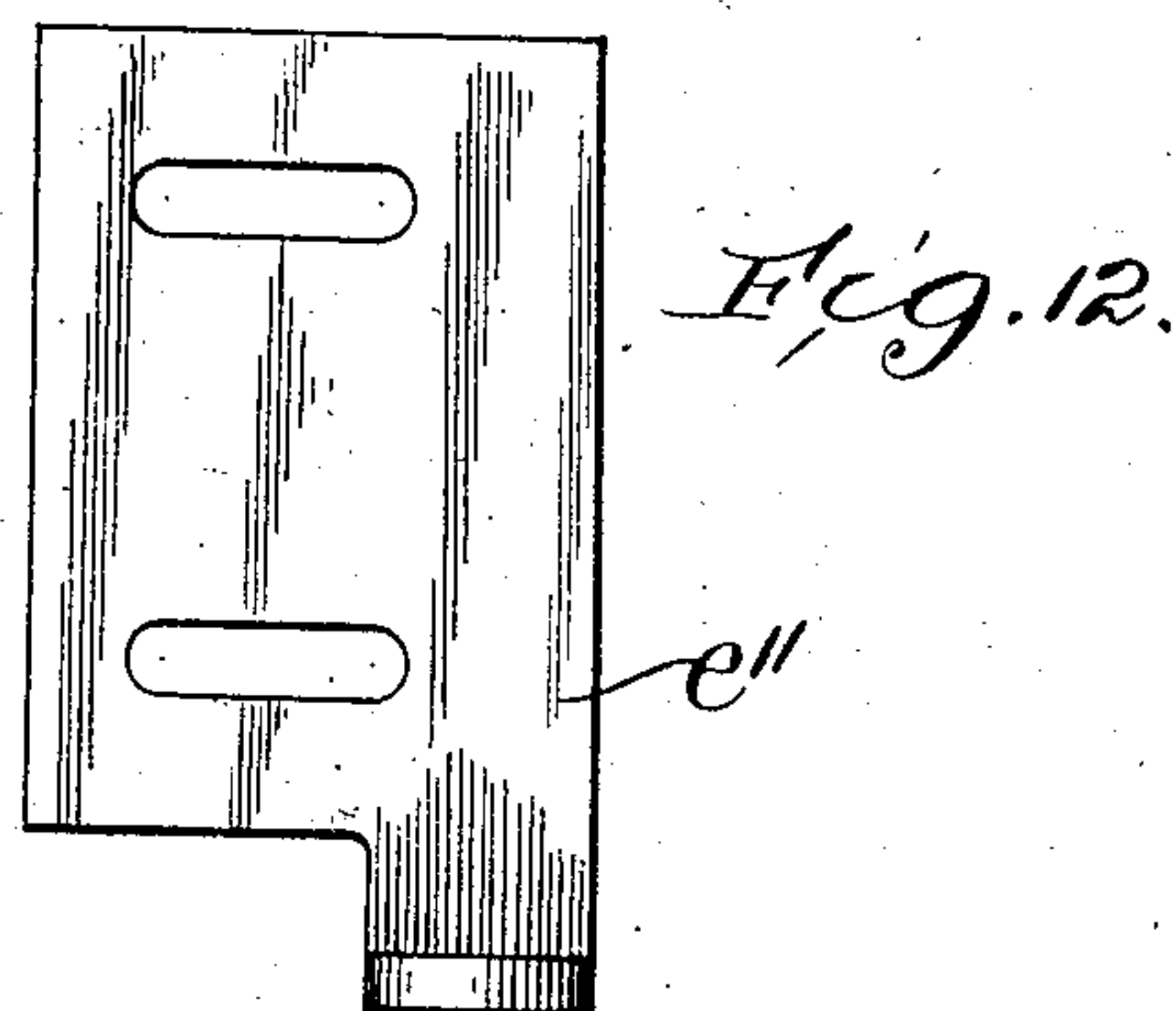
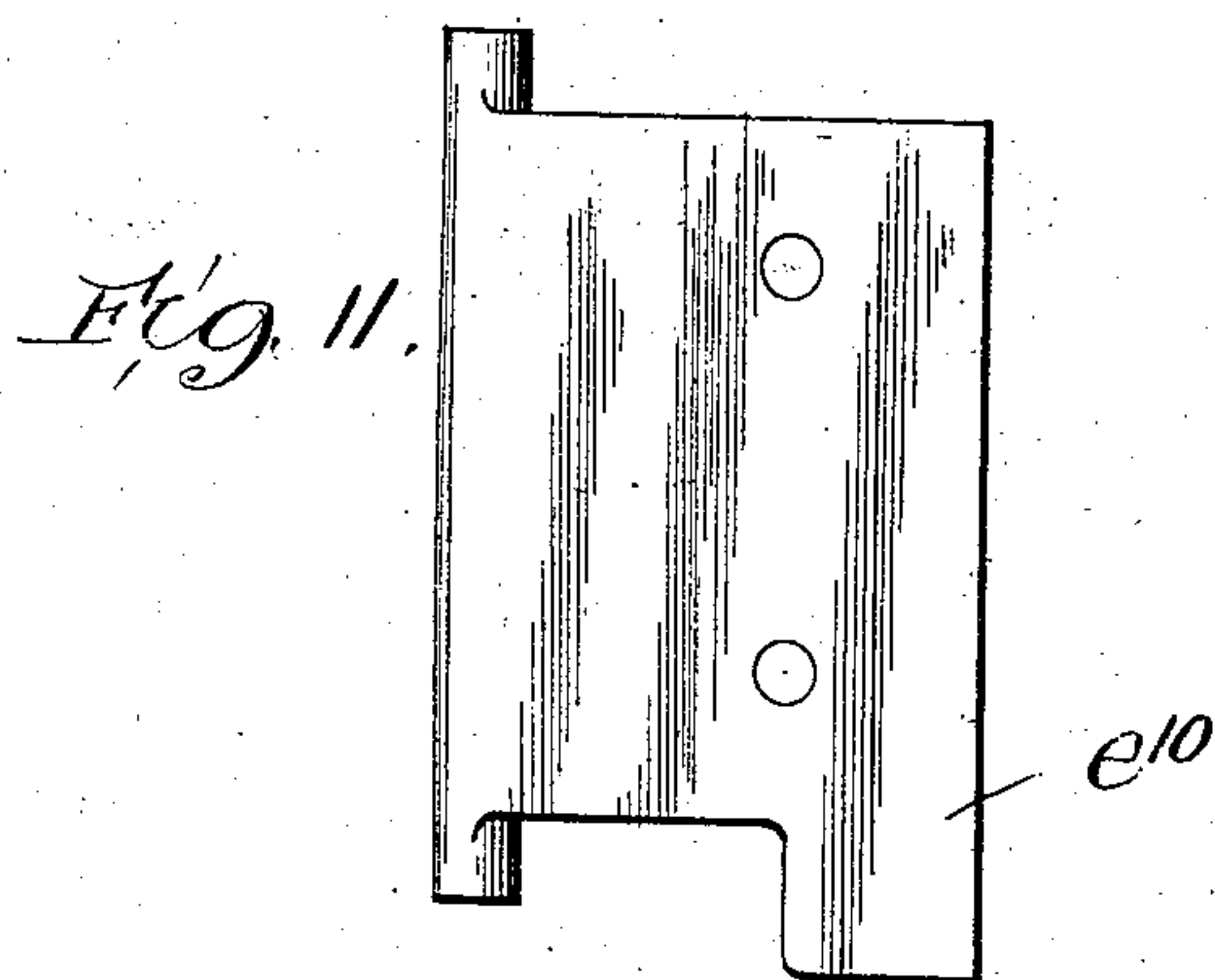
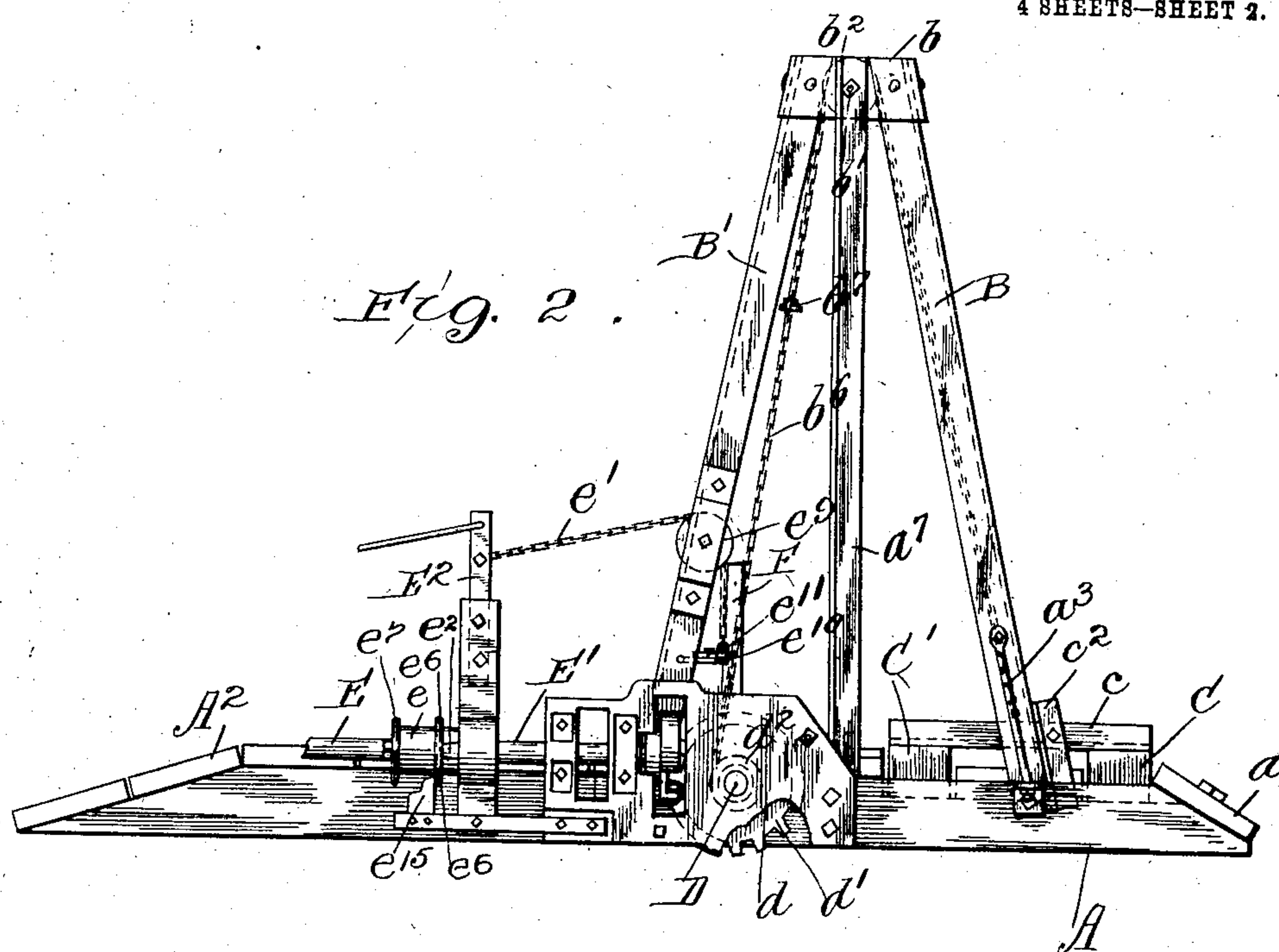
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4 SHEETS—SHEET 2.



Witnesses:  
Ray White.  
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4 SHEETS—SHEET 3.

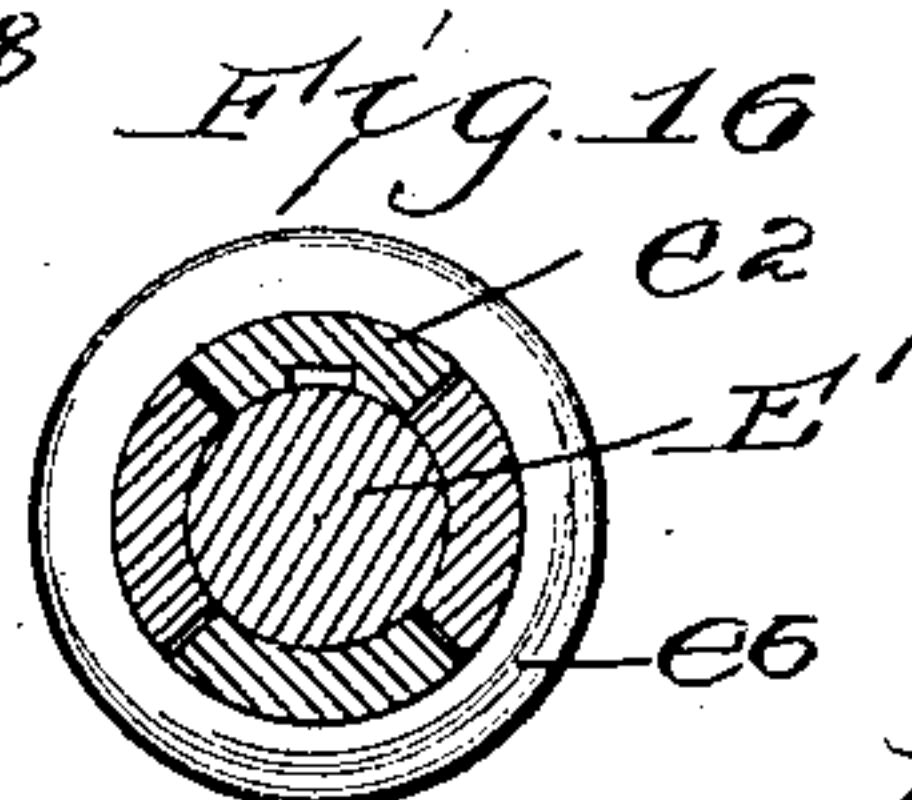
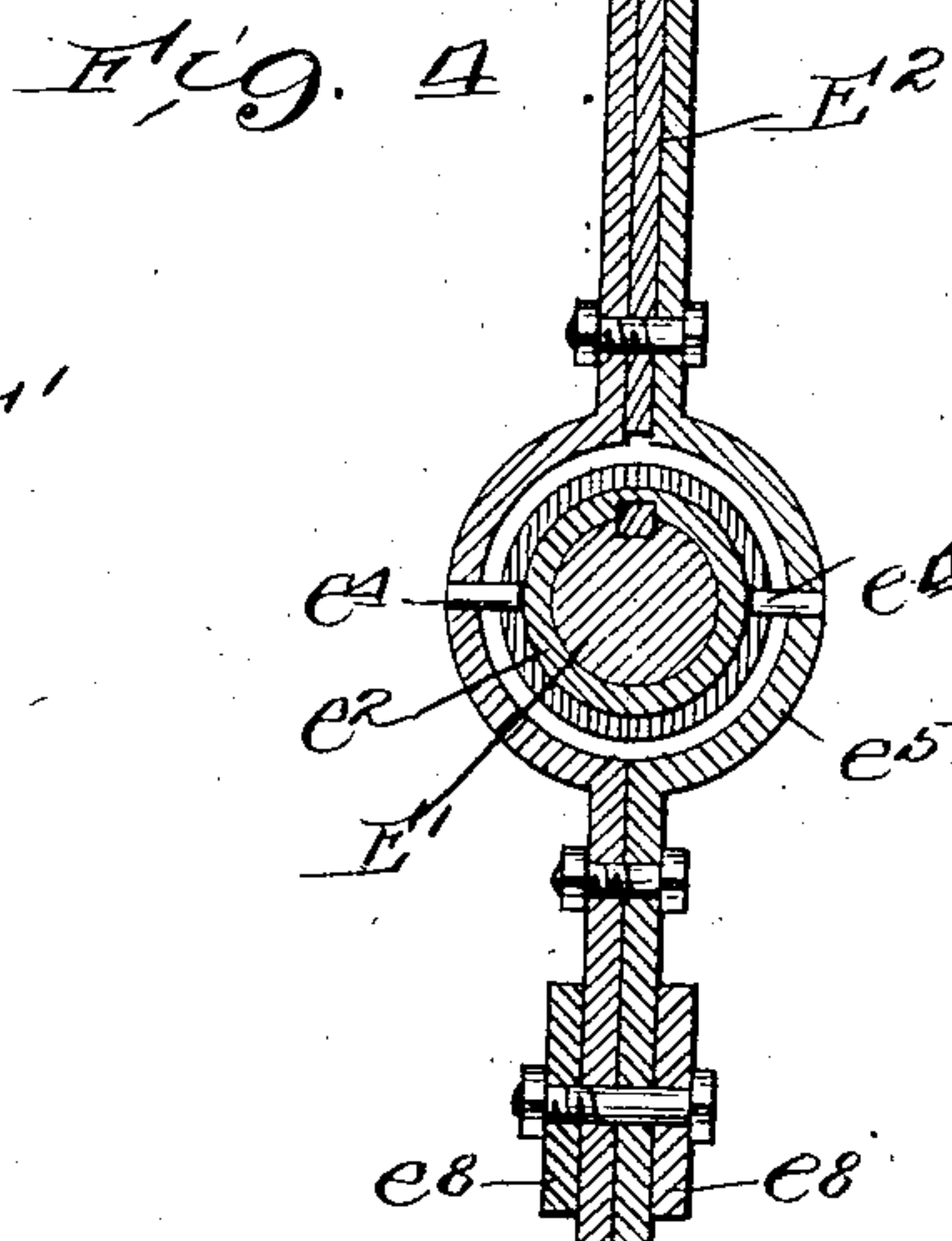
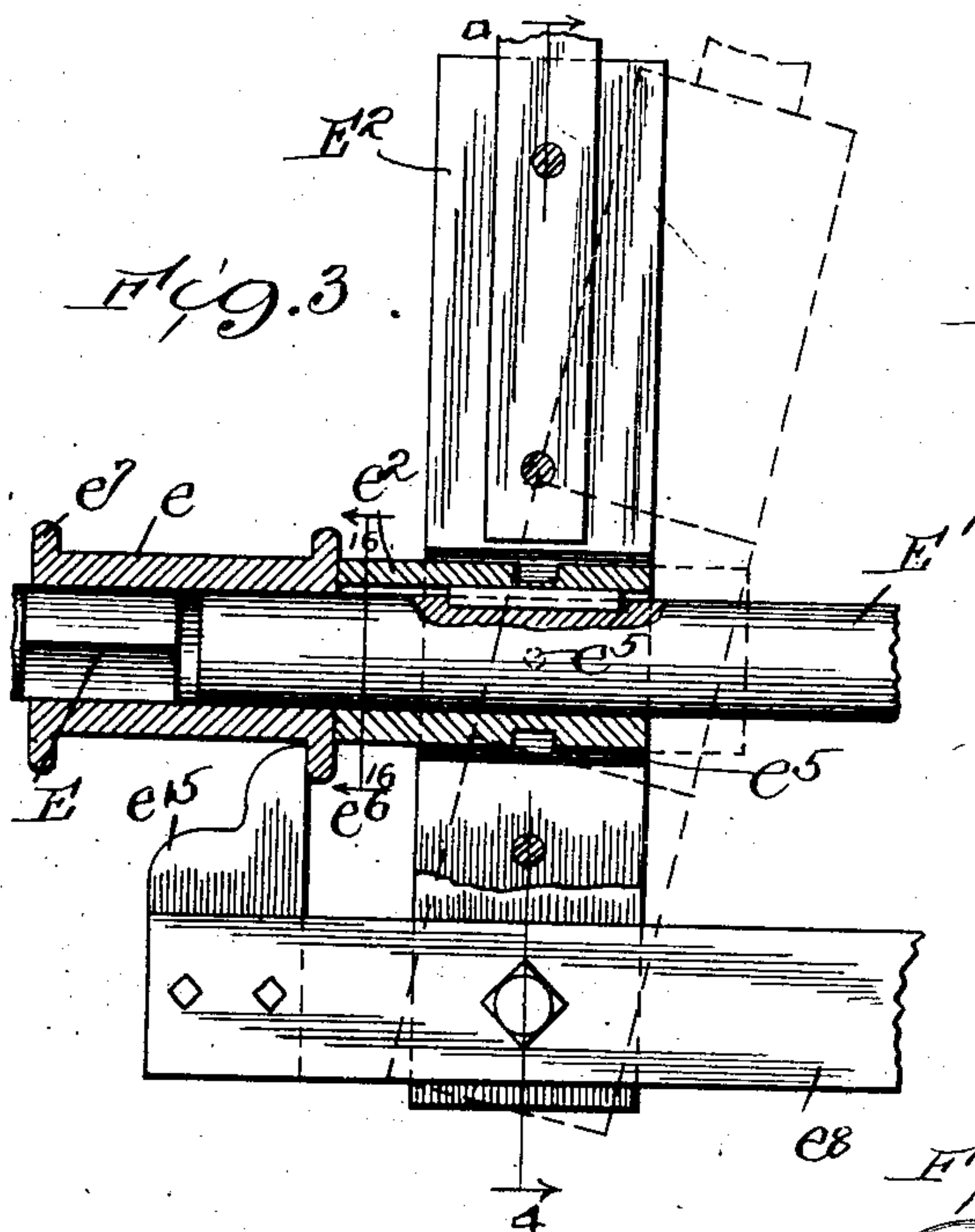


Fig. 9.

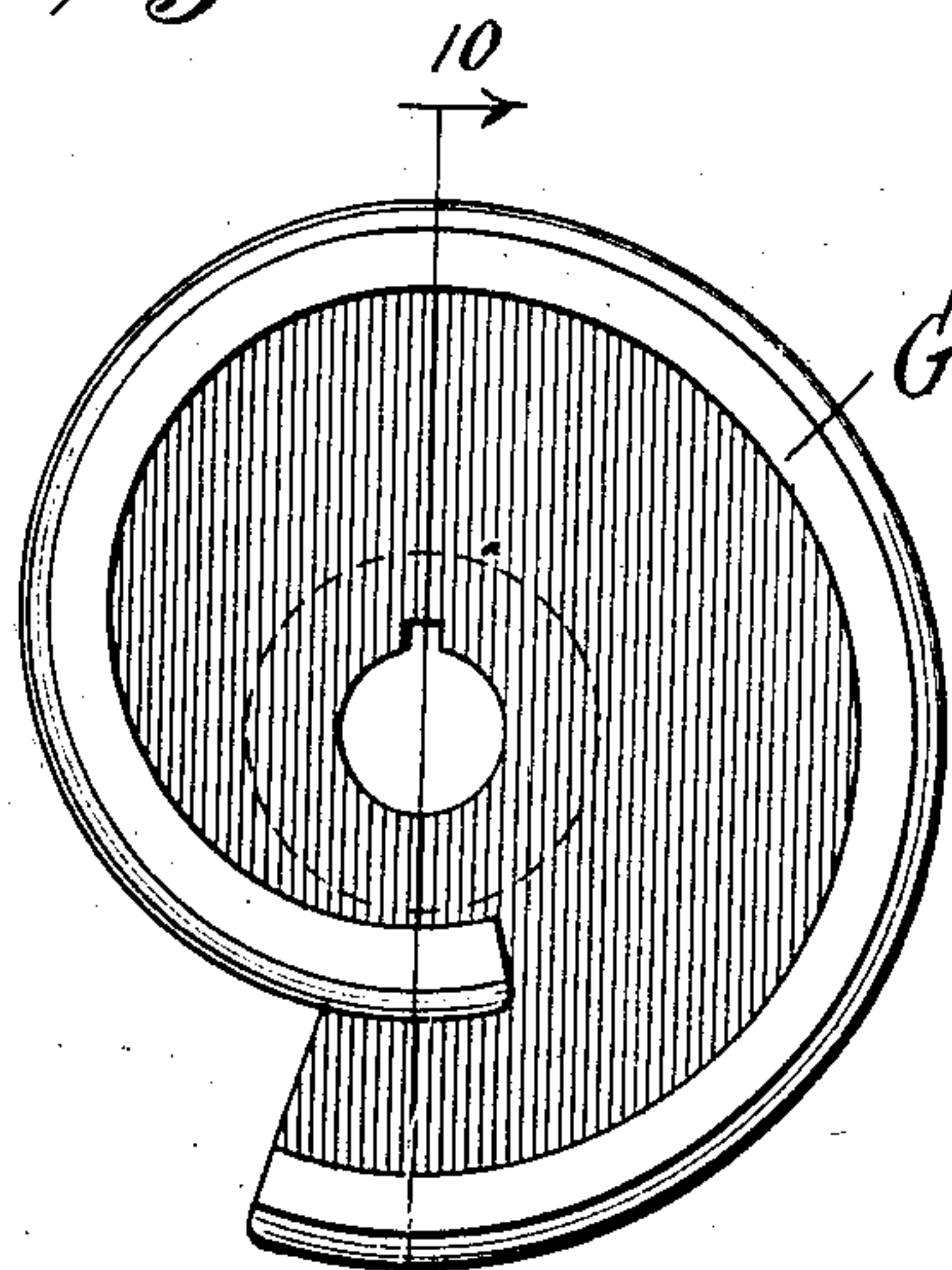
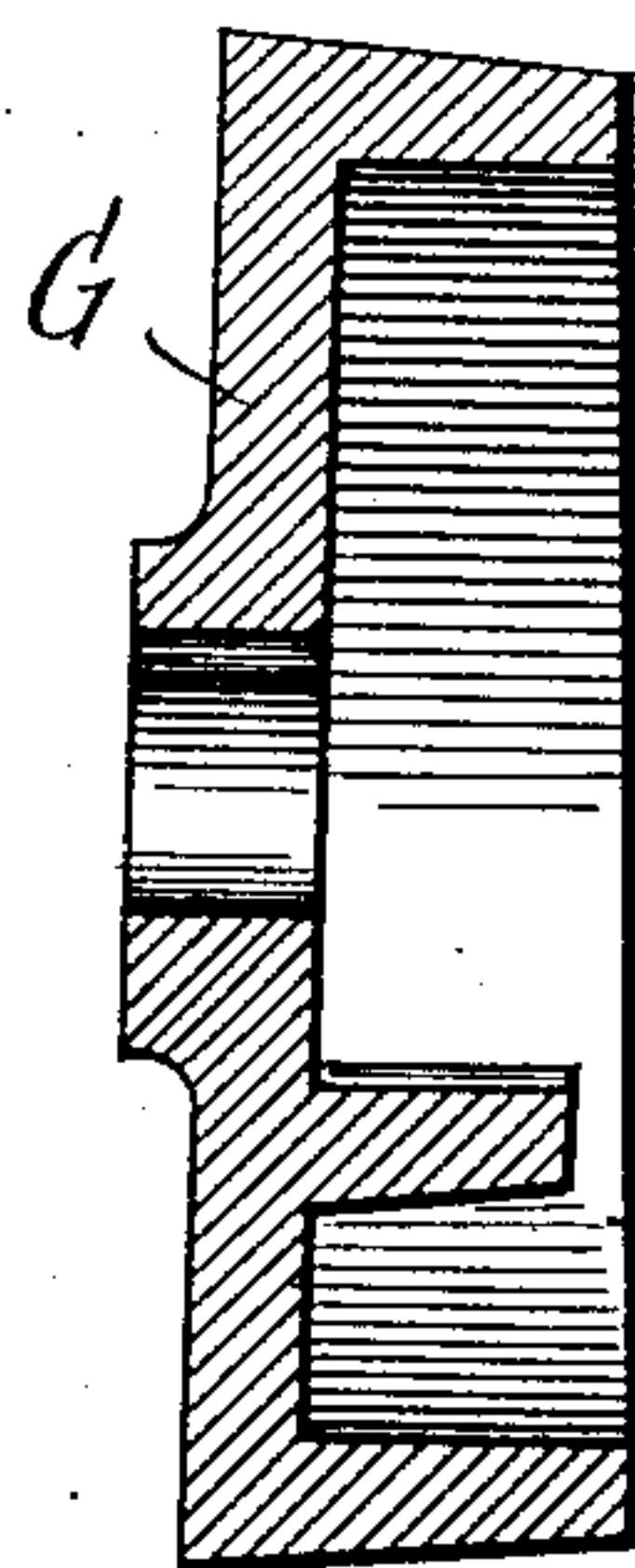


Fig. 10.



Witnesses:  $\frac{10}{10}$   
Ray White.  
Harry R. White.

Inventors  
Gustav Wenzelmann  
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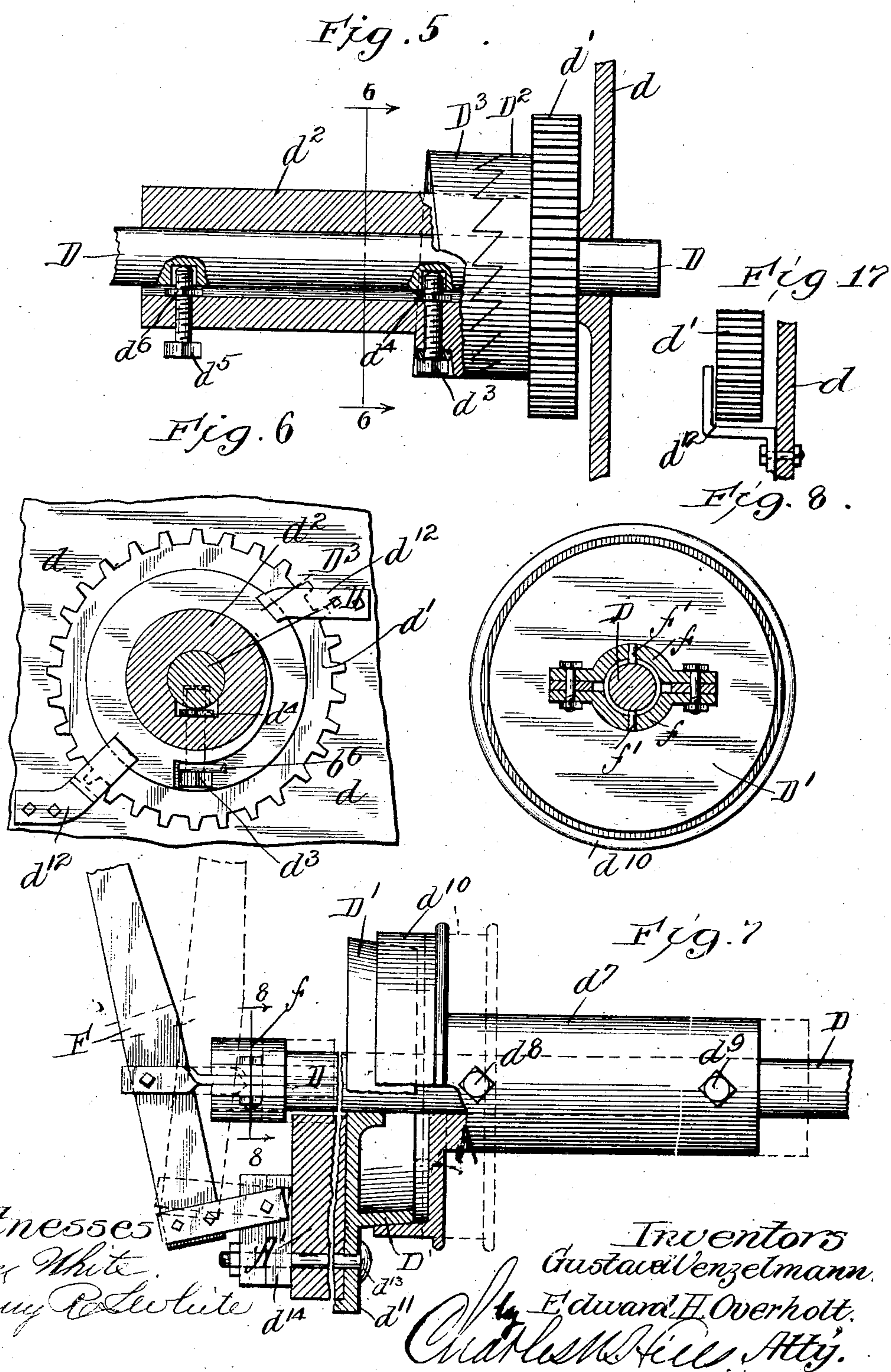
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APPLICATION FILED SEPT. 23, 1903.

4 SHEETS—SHEET 4.





# UNITED STATES PATENT OFFICE.

GUSTAVE WENZELMANN AND EDWARD H. OVERHOLT, OF STREATOR, ILLINOIS, ASSIGNORS TO THE WENZELMANN MANUFACTURING COMPANY, OF STREATOR, ILLINOIS, A CORPORATION OF ILLINOIS.

## ELEVATOR OR JACK.

No. 810,448.

Specification of Letters Patent.

Patented Jan. 23, 1906.

Application filed September 23, 1903. Serial No. 174,269.

*To all whom it may concern:*

Be it known that we, GUSTAVE WENZELMANN and EDWARD H. OVERHOLT, citizens of the United States, and residents of Streator, Lasalle county, Illinois, have invented certain new and useful Improvements in Elevators or Jacks; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates more particularly to a wagon elevator or jack adapted to elevate the front end of a loaded wagon or the like to deliver the contents from the rear end thereof into a receiving-hopper for the purpose of unloading the wagon. Heretofore jacks or elevators for the purpose described have frequently operated by a screw-feed or the like and have therefore been slow in operation in elevating the load and of course equally slow in lowering the unloaded wagon. Furthermore, it has been an objection to many of the devices of the kind that in elevating the front end of the wagon the carriage rises vertically of necessity, drawing the wagon somewhat forwardly.

The object of this invention is to provide a cheap, strong, simple, and durable jack not readily gotten out of order and so constructed as to elevate the load quickly and to even more quickly return the wagon to a horizontal position. It is also an object of the invention to so construct the jack that the carriage on which the front wheels of the wagon rest moves slightly rearwardly as well as upwardly in elevating, so that the front wheels of the wagon in the upward movement describe an arch with the rear axle as a center.

The invention consists in the matters hereinafter described, and more fully pointed out and defined in the appended claims.

In the drawings, Figure 1 is a top plan view of a device embodying our invention. Fig. 2 is a side elevation thereof. Fig. 3 is an enlarged longitudinal vertical section of the tumbling-rod and main-shaft coupling and means operating the same. Fig. 4 is a section taken on line 4 4 of Fig. 3. Fig. 5 is a fragmentary detail, partly in elevation and partly in section, of one end of the winch-shaft and the drum thereon. Fig. 6 is a sec-

tion taken on line 6 6 of Fig. 5. Fig. 7 is a side elevation of the other end of the winch-shaft, showing the other drum and also the friction-brake and the actuating-lever. Fig. 8 is a section taken on line 8 8 of Fig. 7. Fig. 9 is an enlarged face view of the snail-gear which communicates power from the main shaft to the hoisting-shaft. Fig. 10 is a section taken on line 10 10 of Fig. 9. Fig. 11 is an enlarged detail of the trigger-plate. Fig. 12 is a similar plan view of the adjustable extension secured thereon. Fig. 13 is a section taken transversely through the trigger-plate and extension. Fig. 14 is an enlarged side elevation of the hoisting-chain with the adjustable stop thereon. Fig. 15 is a similar view taken at a right angle with that shown in Fig. 14. Fig. 16 is a section taken on line 16 16 of Fig. 3. Fig. 17 is a fragmentary detail of the gear and one of the brackets bearing against the same.

As shown in said drawings, said jack or elevator comprises a strong rectangular frame comprising sills A and A', disposed laterally of the driveway, and to the front ends of which is rigidly bolted a plank a, which affords an inclined driveway from the deck. Planks a' a<sup>2</sup> are bolted at the rear ends of the sills and afford a strong deck for supporting the front end of the wagon, and joists or supports (shown in dotted lines in Fig. 1) are secured beneath said deck. At the rear of said deck is provided an inclined driveway, (indicated as a whole by A<sup>2</sup>,) which leads upwardly to the decking of the frame and admits of driving the front wheels of a wagon thereon.

Rigidly bolted to each of the sills A and A' and braced by rods a<sup>3</sup> and angle-bars a<sup>7</sup> thereto are A-frames, of angle-iron, comprising the upwardly-directed converging side members B and B', which are rigidly secured together at the top by means of a housing or band b, of metal, bent around said angle-iron uprights and rigidly bolted thereto, as shown in Figs. 1 and 2. Journaled in the top of said A-frame upon a bolt b', passing through the sides of said band or housing b, is the sheave b<sup>2</sup>.

Supported normally on the joists or transverse members of the deck is a carriage comprising parallel front and rear members C and C', connected at their ends by angle-bars c, rigidly bolted thereto. Guides, conveniently formed of angle-bars, (indicated by c<sup>2</sup> c<sup>3</sup>,) are



provided at each end of said carriage and rigidly bolted to the angle-bars *c* at an inclination to correspond with the inclination of the sides of the A-frame, so that as the carriage is elevated it is guided thereby obliquely upward and rearwardly.

Hoisting-chains are connected at one end to each end of the carriage at the middle of the transverse angle-bars *c* of the carriage and extend upwardly over the sheaves *b*<sup>2</sup> to winches carried on each end of a winch-shaft D. Said winch-shaft is journaled on said sills and, if preferred, on one or more of the transverse joists or supporting members by means admitting longitudinal movement of said shaft. The drive end of said shaft extends through a frame-plate *d*, rigidly bolted to said sill A, between which and said frame-plate a gear-wheel *d'*, whereby power is communicated to said shaft, is rotatively secured on said shaft and is held from sliding with the shaft by the brackets *d*<sup>12</sup>, which are bolted to the frame-plate *d* and engage over the gear *d'*, as shown in Figs. 6 and 17. The inner hub end D<sup>2</sup> of said gear-wheel is shaped to form a clutch member. The drum *d*<sup>2</sup> is rigidly secured on said shaft D and at its end D<sup>3</sup> adjacent the hub end D<sup>2</sup> of said gear-wheel is shaped complementary and adapted to engage therewith, as shown in Fig. 5. Said end D<sup>3</sup> of said drum is of larger diameter than the drum proper, and the face thereof adjacent the drum is shaped to conform with the thread of the chain around the drum and acts to guide a chain or the like thereon. Said drum may be secured in any desired manner on the shaft. As shown, however, a bolt *d*<sup>3</sup> extends therethrough and into the shaft, which is seated to receive the end thereof, and said bolt is held in position by means of a nut *d*<sup>4</sup>, positioned between the shaft and the drum. The end of the hoisting-chain is secured on said bolt *d*<sup>3</sup>. As shown, a corresponding bolt *d*<sup>5</sup> is secured near the inner end of the drum and likewise at its inner end seated in the shaft and held in position by a nut *d*<sup>6</sup>. The outer end of said bolt extends outwardly from the drum and acts to guide the chain thereon. At the other end of said winch-shaft is provided a drum *d*<sup>7</sup>, corresponding with that driven by the gear *d'* and similarly secured upon the shaft by means of bolts *d*<sup>8</sup> *d*<sup>9</sup>. Said drum *d*<sup>7</sup> is provided at its outer end with an integral concave friction-disk *d*<sup>10</sup>, which affords a conical inner bearing-surface and adapted for engagement with the male conical friction member D', through which said winch-shaft passes, as shown in Figs. 1 and 7, and which is non-rotatively secured upon the sill A' by means of a bracket *d*<sup>11</sup>, which extends down on the inner side of said sill and is rigidly secured thereto by a bolt *d*<sup>13</sup>. A block *d*<sup>14</sup> is also engaged on the outer side of the sill by said bolt and a lever F, fulcrumed thereon at its lower end, and is connected with

the end of the shaft D, as shown in Figs. 1 and 8, by means of a sleeve *f*, which fits upon the end of said shaft and in which said shaft rotates and which is held from movement longitudinally of the shaft by pins *f'*, rigidly secured in said sleeve and which project into a peripheral groove in the end of said shaft, so that when said lever is moved inwardly toward the platform or deck the clutch at the power end of the shaft engages, communicating the rotation of said gear *d'* thereto and elevating the carriage. Outward movement of the lever draws the clutch out of engagement and permits the shaft to reverse under the weight of the carriage and load thereon, the friction-brake heretofore described serving to control said downward movement. The gear *d'* on the end of said shaft may obviously be actuated in a variety of ways. As shown, however, a snail-gear G is rigidly secured on the inner end of a main driving-shaft E', which, as shown, is journaled in the frame-plate *d* at a right angle with the winch-shaft D. Said main shaft E' extends rearwardly and is connected with a tumbling-rod or other driving-shaft E by means of a coupling *e*, provided with an angular axial aperture at one end to receive said tumbling-rod and at the other end provided with a cylindrical aperture to receive the main shaft E' and shaped to afford a clutch member adapted for engagement with the complementary end of a sleeve *e*<sup>2</sup>, feathered on said shaft E' and which is provided with a central circumferential groove, as shown in Figs. 3 and 4, in which engage pins *e*<sup>4</sup>, rigidly secured in a yoke *e*<sup>5</sup>, near the middle of the adjusting-lever E<sup>2</sup>. Said lever, as shown, is pivoted on the sill member A, and when swung toward the A frame acts to disconnect said clutch members at the coupling and when swung oppositely therefrom throw the same into engagement. As shown, said coupling is cylindrical and provided with peripheral end flanges *e*<sup>6</sup> *e*<sup>7</sup>, and a bar *e*<sup>8</sup> is rigidly secured on said sill and at its end is provided with an upwardly-extending stop *e*<sup>15</sup>, which engages between said flanges and receives the thrust of the lever when said clutch engages. Means are provided for actuating said lever automatically, comprising a chain *e*<sup>1</sup>, connected therewith, which leads therefrom over a sheave *e*<sup>9</sup>, pivoted on the leg B' of the A frame and the end of which extends downwardly from said sheave and is connected with a trigger-plate *e*<sup>10</sup>, which is also pivoted on said leg of the frame and is directed inwardly toward the path of the chain *b*<sup>6</sup>, which, as shown in Figs. 2, 14, and 15, is provided with angular brackets *b*<sup>7</sup>, bolted through one of the links thereof, and which project outwardly into position to engage said trigger-plate, thereby tripping the lever E<sup>2</sup> and disconnecting the coupling, thereby stopping the upward elevation of the carriage.



To enable said trigger to be adjusted with respect to the chain  $b^8$ , an extension-plate  $e^{11}$ , provided with transversely-slotted apertures, is secured thereon as shown in Fig. 13, by means of bolts  $e^{12}$ , passing through said slots and through the trigger-plate, thus affording a desired range of adjustment for the width of said trigger-plate.

The operation is as follows: The loaded wagon having been driven upon the deck, with the front wheels thereof supported on the carriage, the side members of which are notched, as shown in Figs. 1 and 2, to receive the same, the lever  $E^2$  is shifted to draw the coupling-clutch into engagement, starting the rotation of the gear-wheel  $d'$ . If, now, the lever  $F$  be moved to the position shown in dotted lines in Fig. 7, the clutch on the winch-shaft is thrown into engagement, causing the shaft  $D$  to rotate and winding the chains up on the respective drums and elevating the front end of the wagon, which, as shown, moves rearwardly as well as upwardly sufficiently to avoid drawing the rear wheels or rear end of the wagon forwardly. The elevation of the front end of the wagon may of course be stopped at any desired point in the elevation by shifting the lever  $E^2$ , when the load will be supported in an elevated position on the snail-gear. If, however, no attention be paid to the elevating mechanism, the bracket  $b^7$  on the chain  $b^6$  comes in contact with the trigger-plate  $e^{10}$ , drawing the same downwardly, shifting the lever  $E^2$  and releasing the driving-coupling, thereby shutting off the power. Ordinarily by the time the front end of the wagon has reached this height the load will have been delivered therefrom. If not, however, the carriage and wagon end are supported in an elevated position on the snail-gear, as before described, and when the wagon is completely unloaded the carriage and the front end thereof are lowered by gravity to the deck at any desired speed, the rate of the speed being controlled by shifting the lever  $F$  and regulating the descent by the pressure upon the friction-brakes.

Obviously, while we have described our device as constructed mainly of structural iron or metal, any suitable material may be employed and many details of construction may be varied without departing from the principles of this invention.

We claim as our invention—

1. A device of the class described comprising a deck, oppositely-disposed sills supporting the same, a carriage positioned on the deck and normally flush with the top thereof, upwardly-extending ways on said sills at each end of the carriage, sheaves thereon, guides on the carriage positively engaging the ways, a longitudinally-slidable winch-shaft journaled on the sills and extending parallel with the carriage, a drum at each end

thereof, chains connecting the ends of the carriage and said drums and leading over said sheaves on the ways, power-operated means adapted to rotate the winch-shaft and means operated by longitudinal movement of said winch-shaft acting to permit said carriage to descend by gravity.

2. In a device of the class described a carriage, a longitudinally-slidable winch-shaft journaled parallel therewith, a rotative gear at one end thereof, a positively-driven snail-gear engaging the same, a drum on each end of said winch-shaft, a clutch adapted to engage said gear at one end of said shaft, a friction-brake on said shaft positioned to engage when said clutch is released and means for shifting said shaft longitudinally.

3. The combination with a deck or platform, of a longitudinally-slidable winch-shaft journaled thereon, a power-shaft at an angle with the winch-shaft, an intermeshing gear and snail-gear on said shafts respectively, a drum on said winch-shaft, a clutch affording connection between said drum and gear, a friction-brake on said winch-shaft positioned to engage when the clutch is released, and a lever engaged on the winch-shaft and acting to shift the shaft longitudinally.

4. A hoisting device comprising a supporting-frame, a longitudinally-slidable winch-shaft journaled thereon, a gear-wheel thereon, a driving-shaft at an angle with the winch-shaft, a snail-gear on the driving-shaft intermeshing with said gear and acting to elevate and support the load.

5. In a hoisting device a frame, a longitudinally-slidable winch-shaft journaled thereon, a gear revoluble on the winch-shaft, a clutch adapted to engage the gear and operated by longitudinal movement of the winch-shaft, a power-shaft arranged at an angle with the winch-shaft, a spiral or snail gear thereon in positive engagement with said gear on the winch-shaft, sheaves located above the winch-shaft, flexible connections extending from said winch-shaft over said sheaves, a friction-brake on the winch-shaft positioned to engage when the clutch is out of engagement whereby a weight suspended on said sheaves may be elevated and supported on said winch-shaft and gears and means acting to shift said shaft longitudinally disconnecting said clutch and supporting the weight on said friction-brakes.

6. A hoisting device embracing a driving-shaft, a snail-gear thereon, a rotatable and longitudinally-slidable winch-shaft, a revoluble gear thereon intermeshing with said snail-gear, a drum rigidly secured on said winch-shaft a clutch comprising complementary ends on said drum and the gear-hub, a friction-brake positioned to be out of engagement when the clutch is connected and in engagement when the clutch is out of engagement, sheaves positioned above the winch-



shaft, chains connected with the drum and extending over the sheaves, an upwardly and rearwardly movable carriage connected with said chains and adapted to be hoisted there-  
 5 by, means acting to shift said winch-shaft longitudinally, a coupling on the main driving-shaft and automatically-operated means for disconnecting said coupling at a predetermined point in the elevation of the carriage.

10 7. In a device of the class described a rotative, longitudinally-slidable winch-shaft, a drum on each end thereof, bolts extending through said drums and into the shaft and nuts engaged on said bolts between said drum  
 15 and the shaft, and a hoisting-chain engaged on one of said bolts on each drum, a clutch operated by longitudinal movement of the shaft and adapted to connect, and to disconnect the driving means therefrom and a friction-brake comprising interfitting parts  
 20 adapted for engagement when the clutch is out of engagement.

8. In a machine of the class described, a frame, a longitudinally-slidable winch-shaft  
 25 journaled thereon, a lever fulcrumed on the frame and positively engaging the winch-shaft, a drum on each end of the winch-shaft, bolts extending through said drums and into the shaft, a nut on each bolt between the  
 30 drum and shaft, a hoisting-chain connected with each drum by means of one of said bolts, driving means for said shaft, a clutch formed by interfitting parts of the driving means and one of said drums, a friction-brake comprising  
 35 a part carried on the other drum and a part rigid on said frame whereby shifting said shaft in one direction actuates the winch and in the other direction engages the friction-brake.

40 9. In a machine of the class described a winch-shaft, one or more drums thereon, a revoluble gear adjacent one of said drums, said drum and the gear-hub together affording a clutch, a driving-shaft, a snail-gear on  
 45 said driving-shaft positioned to mesh with the gear on the winch-shaft and means affording longitudinal movement of the winch-shaft acting to disconnect said clutch.

10. In a machine of the class described a  
 50 winch-shaft, one or more drums thereon, a revoluble gear adjacent one of said drums, said drum and the gear-hub together affording a clutch, a driving-shaft, a snail-gear on said driving-shaft positioned to mesh with  
 55 the gear on the winch-shaft and means affording longitudinal movement of the winch-shaft acting to disconnect said clutch, and a friction-brake comprising a cup-shaped friction-disk adapted to receive a conical friction-  
 60 disk, one of said disks being secured upon the frame and the other rigidly secured to said shaft and positioned to engage when the shaft is shifted to disconnect the clutch.

11. In a hoisting-machine the combination  
 65 with a winch-shaft and a drum thereon,

of a gear on said winch-shaft, a driving-shaft, a snail-gear on the driving-shaft acting to engage said gear and adapted to operate the winch, said snail-gear acting to support the load at any desired point during the hoisting operation.

12. In a hoisting device a revoluble longitudinally-slidable winch-shaft, driving means thereon, a clutch controlling said driving means, a friction-brake comprising male and female friction members one of which is rigidly secured on the frame and the other of which is secured on said shaft and a lever pivoted on the frame and positively engaging said shaft and acting to shift the same longitudinally.

13. In a device of the class described the combination with a platform, of an A-frame positioned at each end thereof, a carriage positioned between the A-frames the ends thereof engaging one leg of each A-frame, and acting to direct the carriage rearwardly and upwardly, a winch-shaft, a sheave at the top of each A-frame, a chain connecting said winch and carriage over said sheave, a main driving-shaft, a coupling in said main driving-shaft, a lever positioned adjacent one of the A-frames and acting to shift the coupling at a predetermined point in the movement of the carriage and coacting friction members on said winch-shaft and frame adapted to control the lowering of the carriage.

14. In a wagon-dump, the combination with standards and an elevating-frame located therebetween, means for raising and lowering the elevating-frame, connected mechanism acting automatically and independent of said elevating-frame for interrupting the upward movement of said elevating-frame.

15. In a hoisting device the combination with standards and an elevating-frame located therebetween, means for raising and lowering the elevating-frame, a trip mechanism and means acting independent of the elevating-frame to engage said trip mechanism and automatically interrupt the upward movement of said elevating-frame.

16. In a hoisting device the combination with standards, of an elevating-frame located therebetween, an adjustable trip mechanism carried on said standards, and means acting independently of said elevating-frame to engage said trip mechanism and automatically interrupt the upward movement of said frame.

17. In a hoisting device the combination with standards provided with sheaves in the tops thereof, of a carriage thereon, a winch-shaft, a plurality of drums thereon, means for driving said winch-shaft, cables connected with said carriage and passing over said sheaves into engagement with said drums, an adjustable trip mechanism on said standards, connected with the driving means and



means carried on one of said cables acting to automatically operate said trip mechanism and interrupt the upward movement of the carriage.

5 18. In a hoisting device the combination with standards of a carriage adapted to travel thereon, means for operating said carriage, an adjustable trip mechanism carried on said standards and connected with the operating  
10 means, and adjustable means acting independently of the carriage to automatically interrupt the upward travel of said carriage.

15 19. In a hoisting device the combination with standards, of a carriage adapted to travel thereon, a hoisting-cable for said carriage, means for operating said cable, a trip mechanism on one of said standards comprising a sheave journaled on said standard, a chain trained over said sheave and connected at  
20 one end with the operating means, a plate engaged on the other end and pivoted on said standard and an adjustable bracket on said cable adapted to engage said plate and throw

the operating means out of operative engagement.

25 20. In a hoisting device the combination with standards, of an elevating-platform, a winch-shaft, drums thereon, cables connecting said platform with said drums, driving means for said winch-shaft, a sheave jour- 30  
naled on said standards, a chain connected at one end with said driving means and trained over said sheave, an adjustable trigger-plate on the other end of said chain and a bracket  
35 adjustably engaged on one of said cables adapted to engage said trigger-plate and disconnect the driving means.

In testimony whereof we have hereunto subscribed our names in the presence of two subscribing witnesses.

GUSTAVE WENZELMANN.  
EDWARD H. OVERHOLT.

Witnesses:

N. M. WHITING,  
E. R. ZANGLEIN.