

No. 864,813.

PATENTED SEPT. 3, 1907.

G. TROTTER.
DUMPING CAGE FOR MINE CARS.

APPLICATION FILED NOV. 7, 1905.

4 SHEETS—SHEET 1.

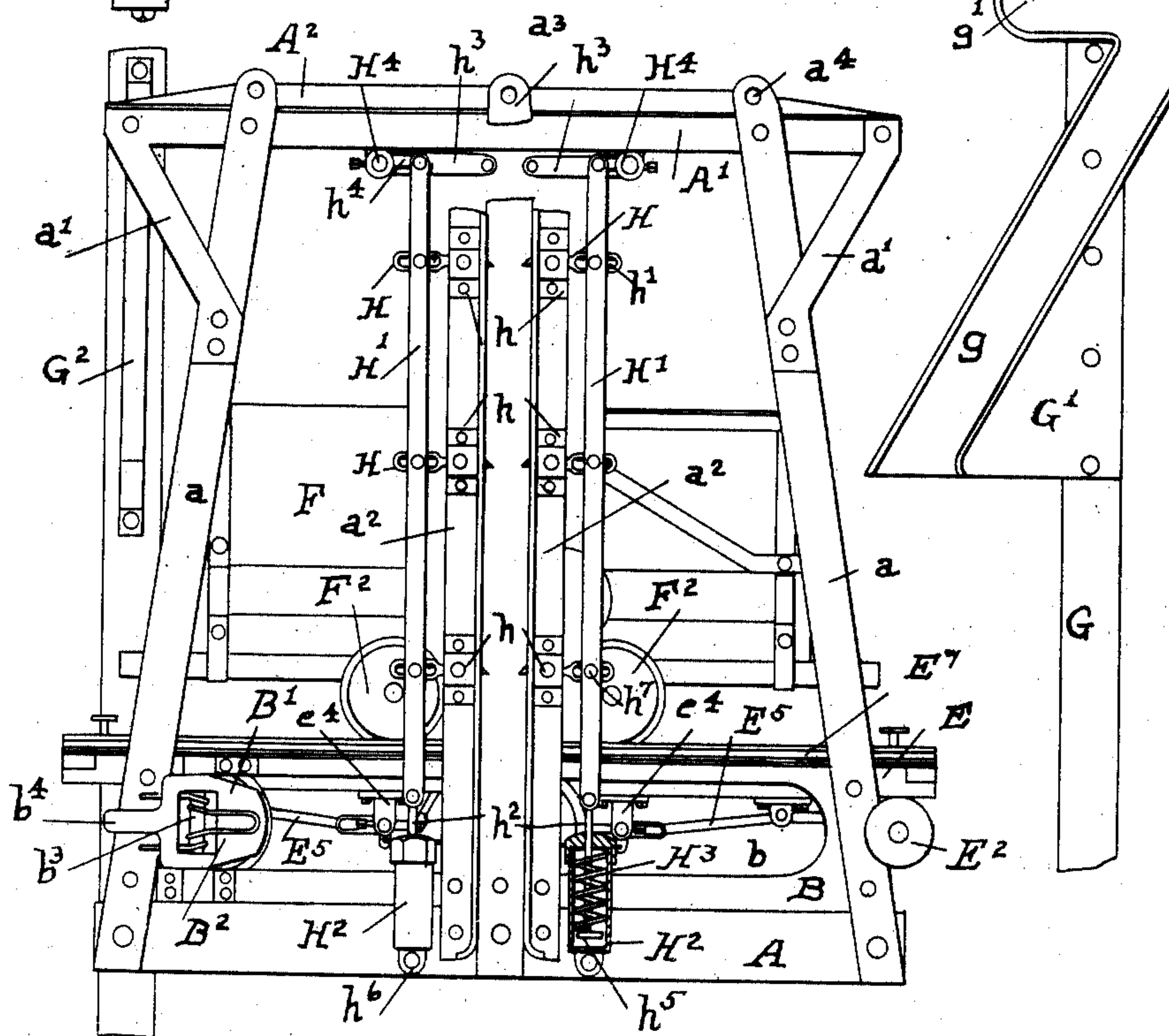
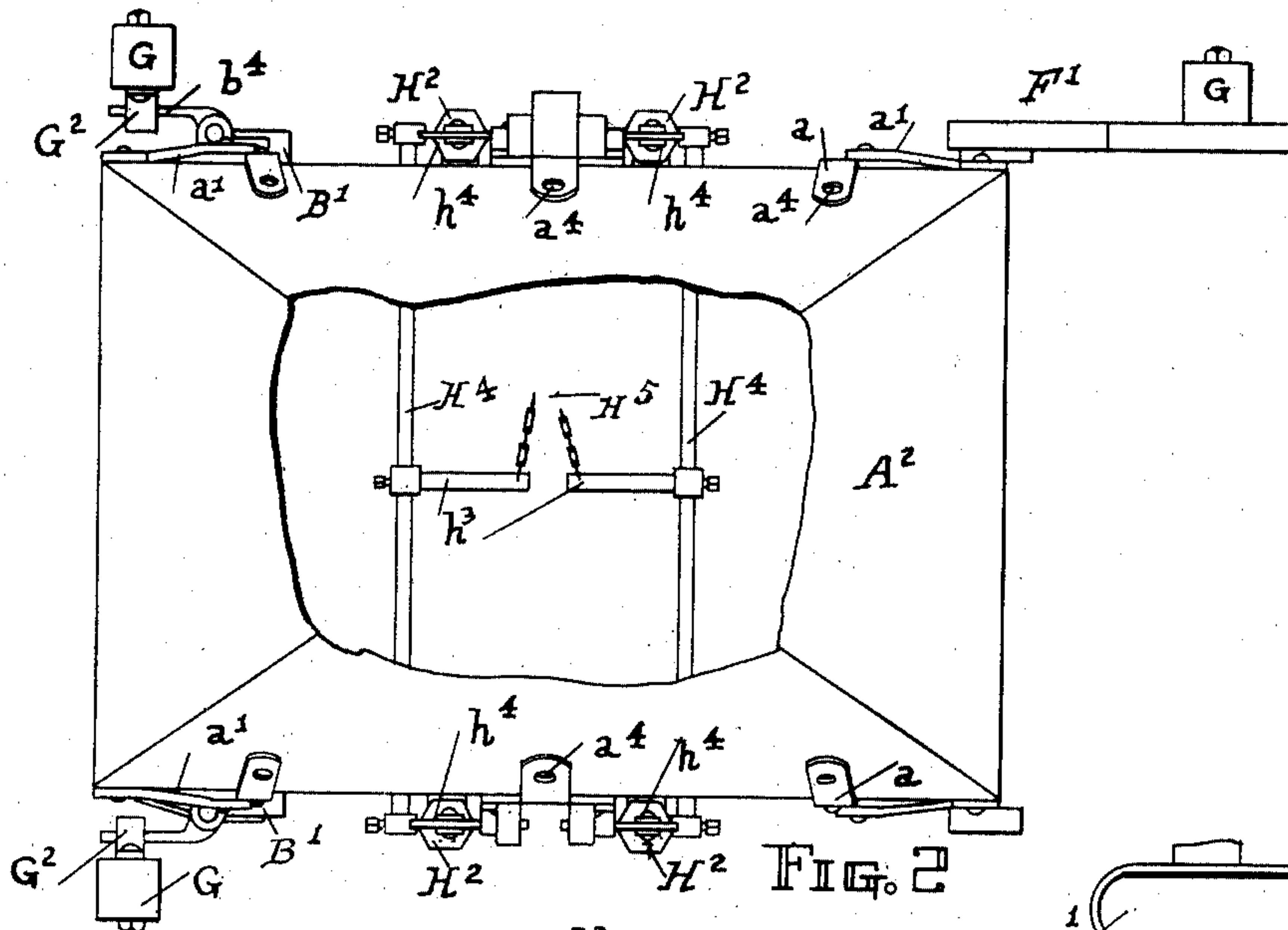


FIG. 1

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4 SHEETS—SHEET 2.

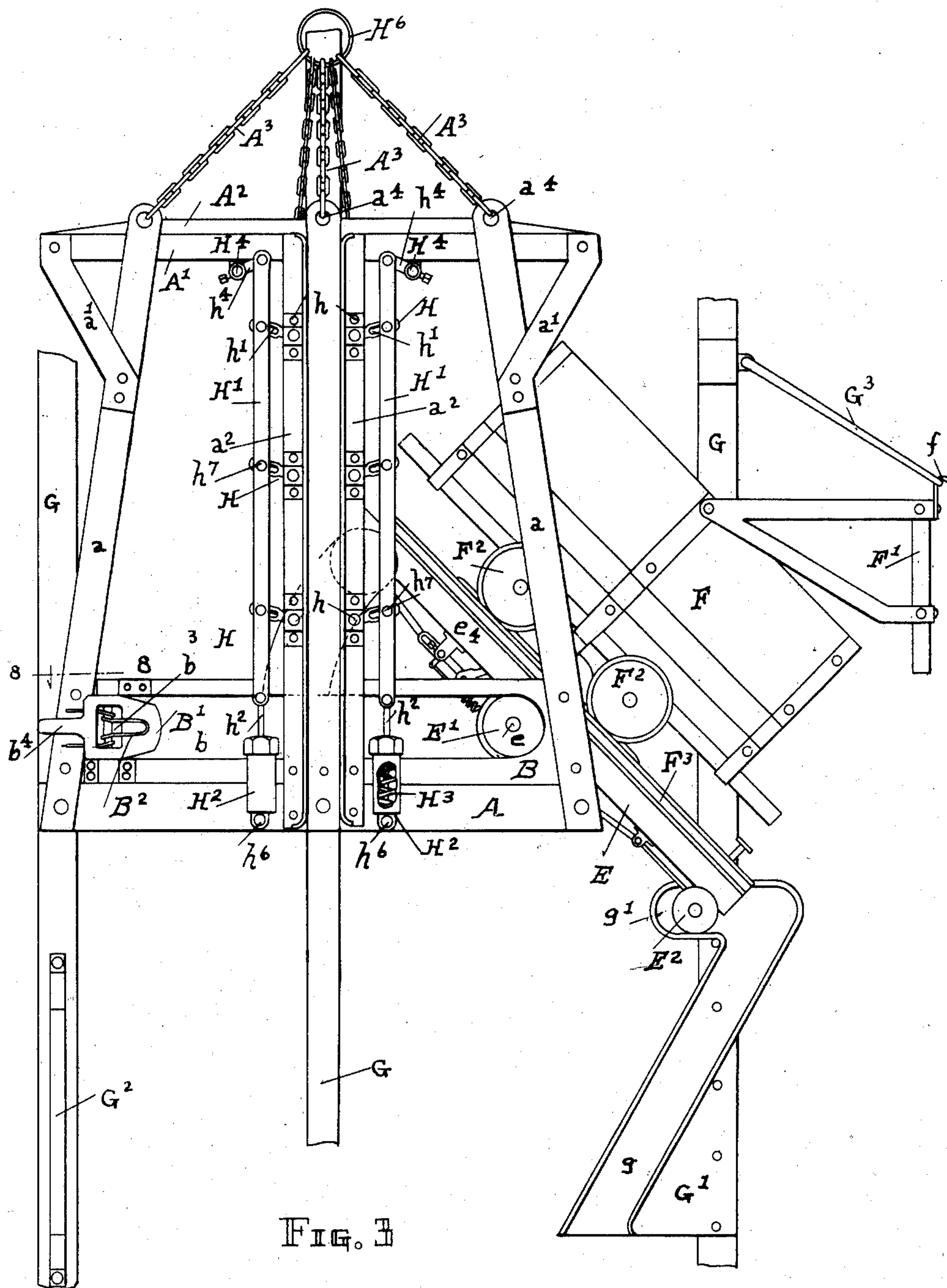


FIG. 3

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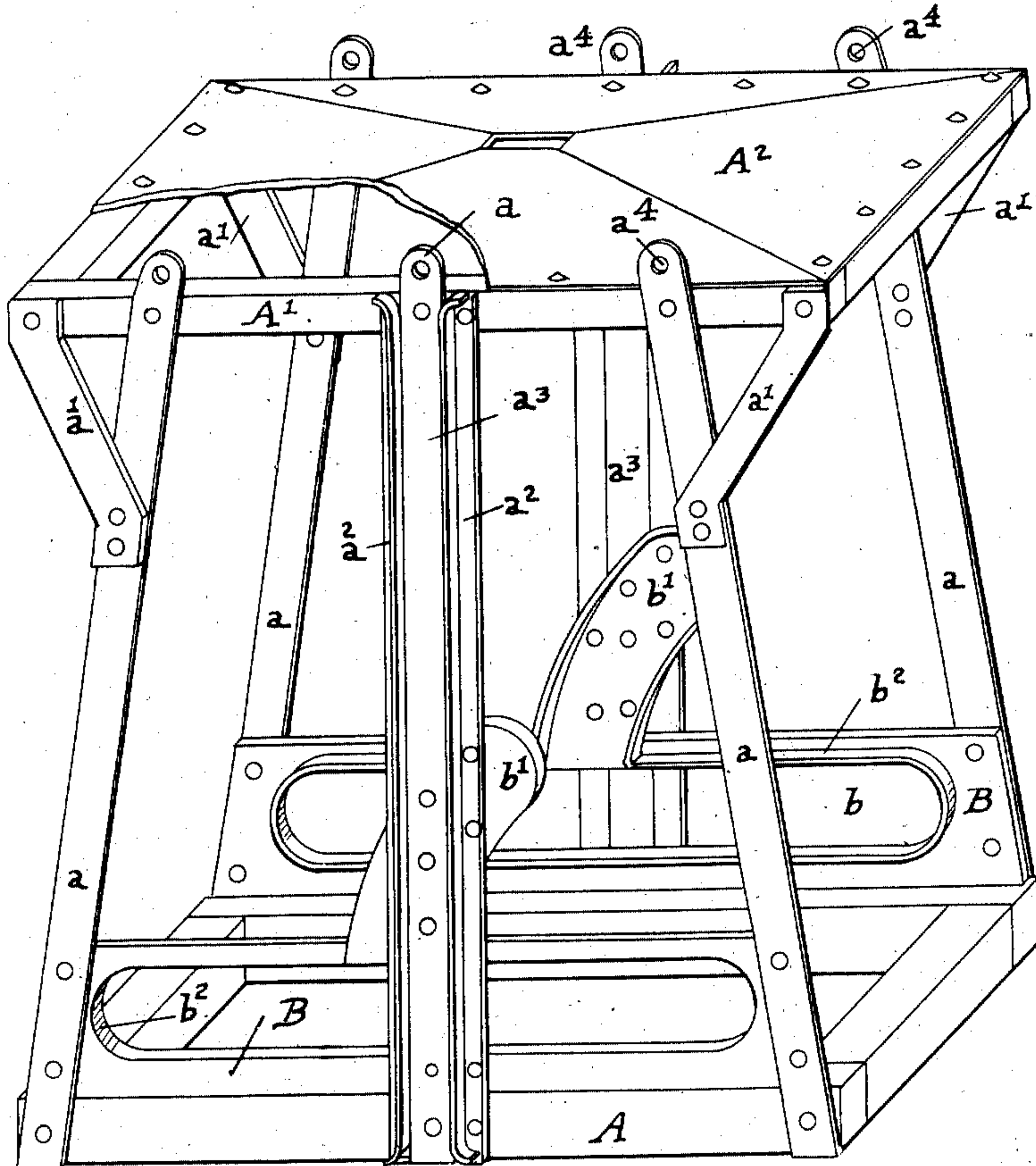
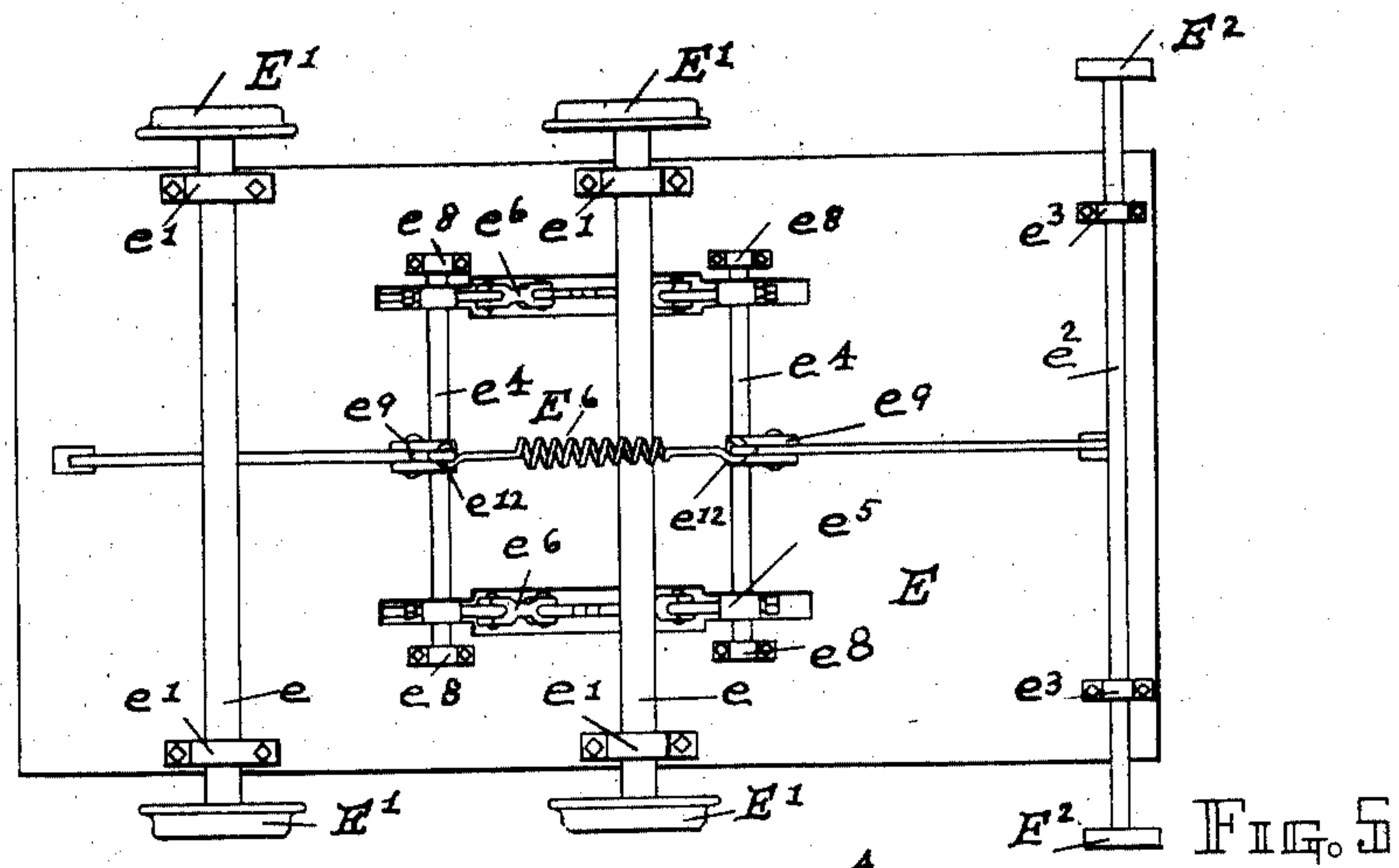
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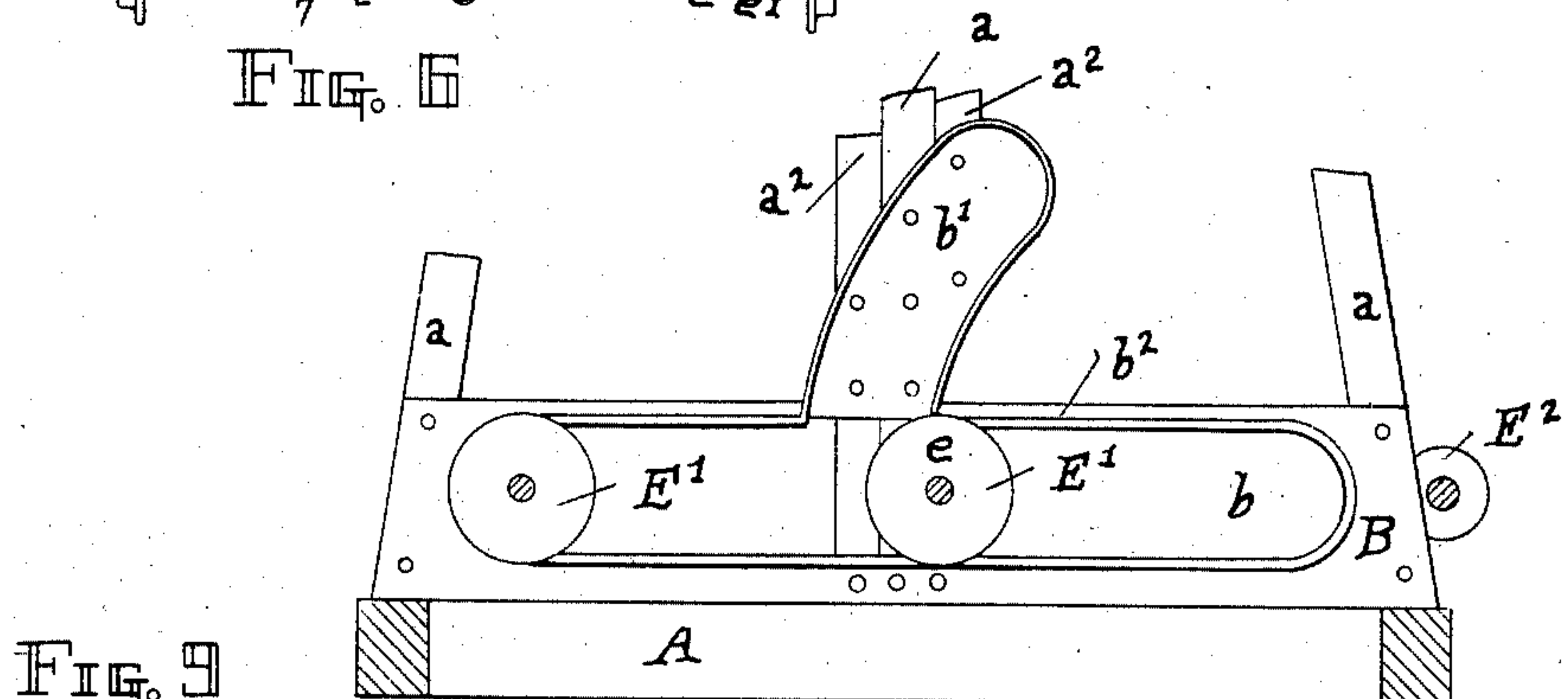
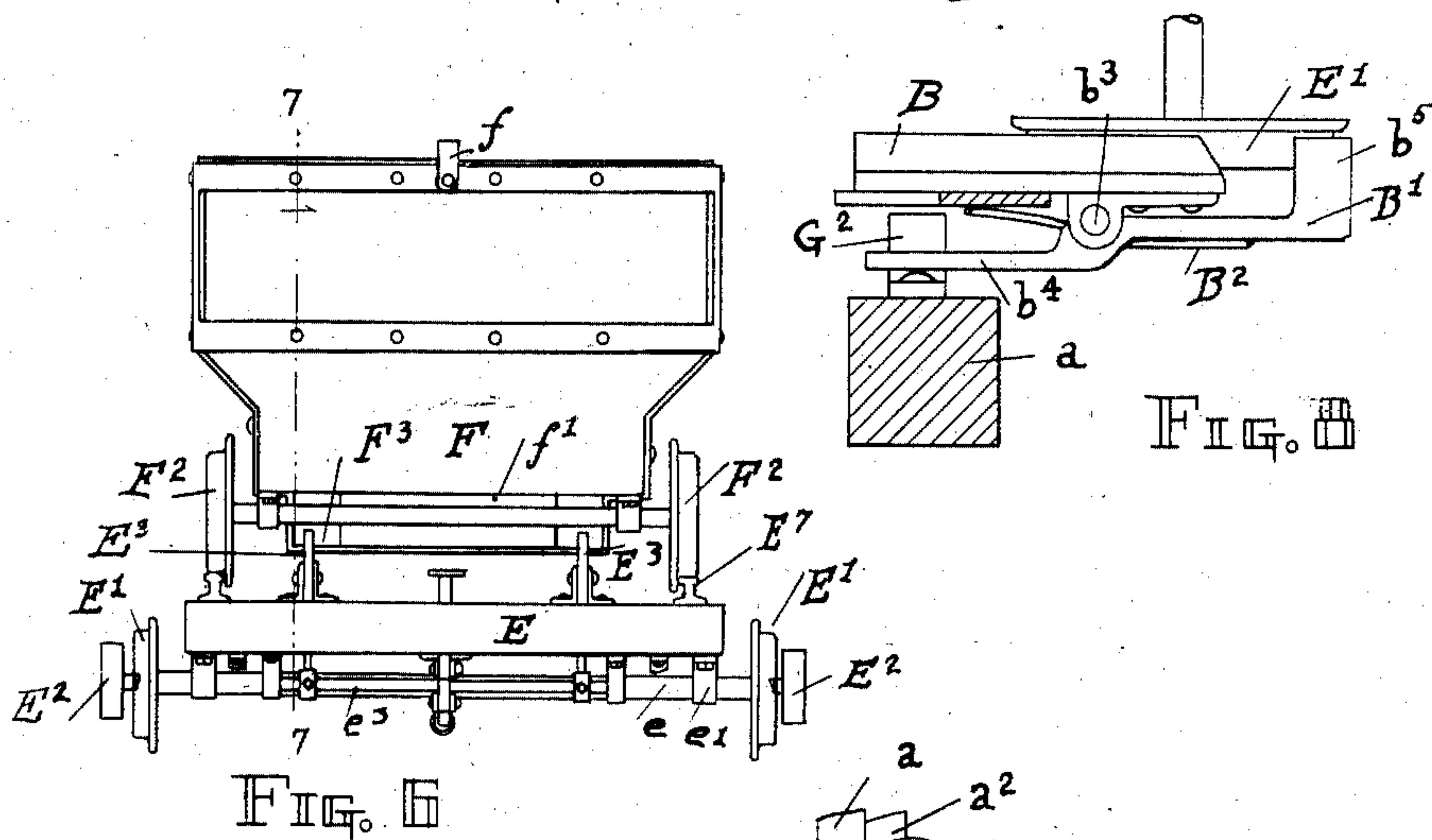
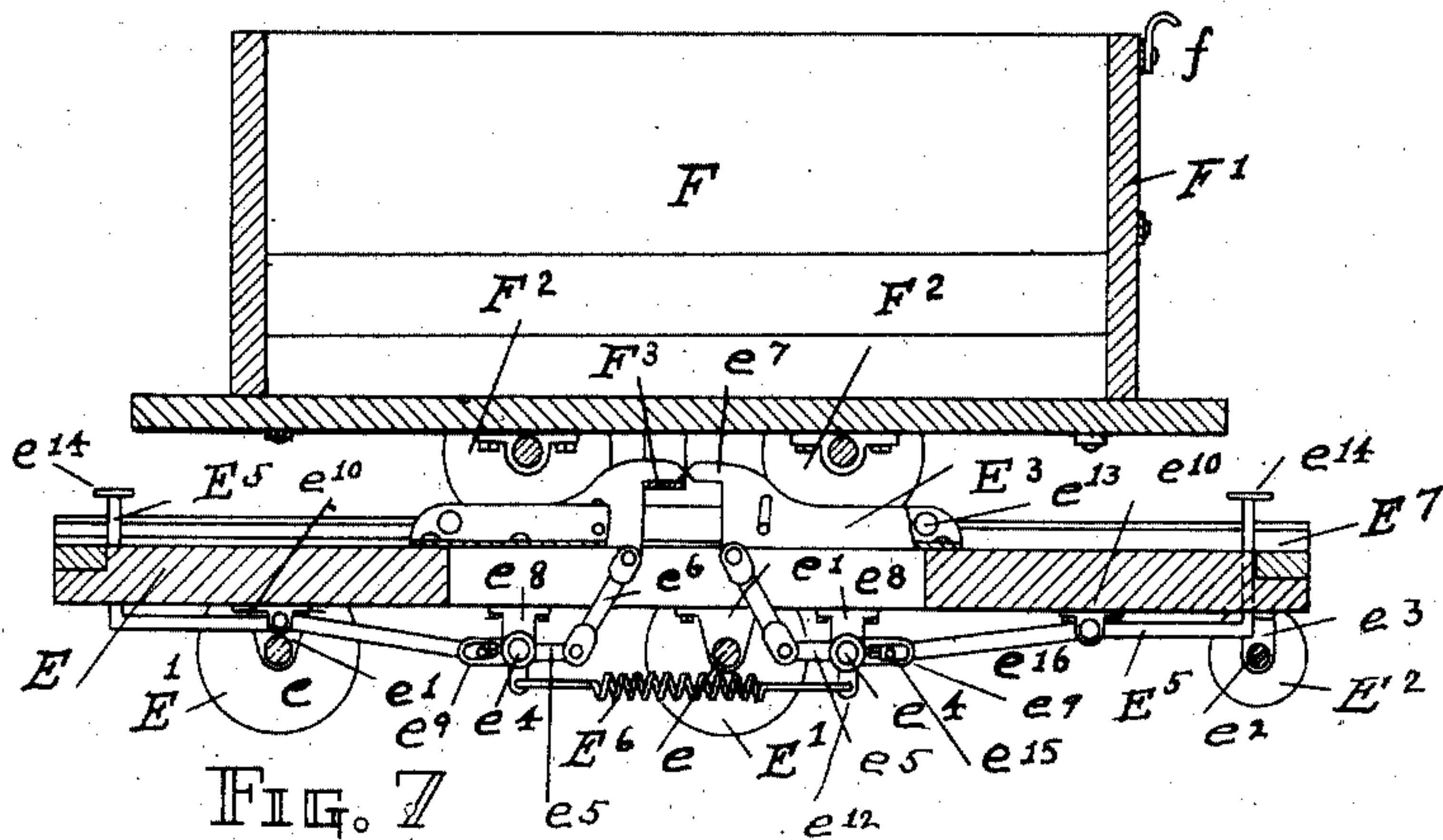
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4 SHEETS—SHEET 4.



WITNESSES-
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UNITED STATES PATENT OFFICE.

GEORGE TROTTER, OF RIVERTON, ILLINOIS.

DUMPING-CAGE FOR MINE-CARS.

No. 864,813.

Specification of Letters Patent.

Patented Sept. 3, 1907.

Application filed November 7, 1905. Serial No. 286,293.

To all whom it may concern:

Be it known that I, GEORGE TROTTER, a citizen of the United States, residing at Riverton, in the county of Sangamon and State of Illinois, have invented certain new and useful Improvements in Dumping-Cages for Mine-Cars, of which the following is such a full, clear, and exact description as will enable others skilled in the art to which it appertains to make and use my said invention.

10 The purposes of my invention are to provide a dumping cage for mine cars embodying a strong and rigid frame; long guides to prevent swinging of the frame; a number of simultaneously operating clamps acting on both sides of the guide rails; clamp-operating
15 springs housed to exclude dirt and prevent injury to the springs; locks preventing untimely tilting of the platform; automatically operating locks for holding the car on the platform and arranged to permit the car to be run on the platform from either end; releasing devices operative from either end of the platform
20 to release the locks holding the car on the platform; and means for tilting the platform to dump the contents of the car.

With these ends in view my invention consists in
25 the novel features of construction and combinations of parts shown in the annexed drawings to which reference is hereby made and hereinafter particularly described and finally recited in the claims.

Referring to the drawings,—Figure 1 is a side elevation of the machine showing the dumping platform in a horizontal position; Fig. 2 is a top plan, the roof being shown as broken away to expose the underlying parts; Fig. 3 is a side elevation of the machine, the dumping platform being in position to dump the
30 contents of the car; Fig. 4 is an isometric projection of the frame work of the cage; Fig. 5 is a bottom plan of the platform, looking upward; Fig. 6 is an end elevation of the dumping platform with the mine car in position thereon; Fig. 7 is a vertical section on the line 7.7 of Fig. 6; Fig. 8 is an enlarged partial transverse section on the line 8.8 of Fig. 3; and Fig. 9 is a partial transverse section through the frame of the cage and shows the track for the tilting platform.

Similar reference letters designate like parts in the
45 several views.

The cage comprises a rectangular lower frame A, preferably of wood; a rectangular upper frame A¹, preferably of iron; corner pieces *a*, central uprights *a*³ and flanged guide plates *a*², all secured to the frames
50 A, and A¹; braces *a*¹, connecting the parts *a* with the frame A¹ and a roof A², preferably of boiler plate. At the upper end of the parts *a* and *a*³ are eyes *a*⁴, to receive chains A³.

Horizontal plates B are firmly secured on the main
55 frame parallel to each other. Each of the plates B has a longitudinal opening *b* in which the wheels E¹

travel; an upwardly extending member *b*¹ curved in the arc of a circle; and a flange *b*² extending around the opening and around the upwardly curved part of the plate.

Locking-plates B¹ oscillate on pins *b*³ secured on the plates B. The plates B¹ have flanges *b*⁵ (see Fig. 8) which extend across the tread of the wheels E¹ and projecting fingers *b*⁴ which engage with the cams G² to operate the locking-plates as hereinafter explained. 60
Springs B² normally act to hold the members *b*⁵ of the locking-plates across the tread of the wheels and the cams act to move the members *b*⁵ away from the wheels so that the wheels may pass the locking-plates. 65

When the platform E is in a horizontal position on
70 the cage the wheels E¹ are situated behind the flanges of the locking-plates B¹ and they hold the wheels so that the platform cannot be tilted until the locking-plates are released. The locking-plates can only be released a little before the cage reaches the position
75 for dumping the contents of the car, as shown in Fig. 3.

On the underside of the platform E, (see Figs. 5 and 7) which may be of any approved construction there are parallel shafts *e*, turning in bearings *e*¹. Wheels E¹ are secured on the shafts *e*. The wheels E¹ fit in
80 the openings *b* of the plates B and travel on the flanges *b*². Wheels E² are secured on a shaft *e*² which turns in bearings *e*³. The wheels E² run in the ways *g* of plates G¹ secured on the stationary corner posts G. Shafts *e*⁴ oscillate in bearings *e*⁸. Arms *e*⁵ and *e*⁹ are
85 secured on the shafts *e*⁴. Downwardly extending fingers *e*¹² on the shafts *e*⁴ are connected by a spring E⁶ which serves to normally hold the parts in the position shown in Fig. 7. Latch plates E³ oscillate on pivots *e*¹³ and have projecting fingers *e*⁷. Links *e*⁶ connect the arms *e*⁵ with the latch plates E³. Levers E⁵ having pedals *e*¹⁴ oscillate on suitable fulcrums *e*¹⁰ and have pins *e*¹⁵ working in slots *e*¹⁶ in the arms *e*⁹. Downward pressure on the pedals *e*¹⁴ causes downward turning of the fingers *e*⁷ on the plates E³, through
90 the instrumentality of the arms *e*⁹ and the links *e*⁶. On top of the platform E are rails E⁷ on which the car runs. 95

The car F and the wheels F² are of the usual construction. On the car door F¹ is a stationary hook *f* which
100 engages with a bail G³ connected with the top works G and when the platform E is tilted downward, the hook hanging on the bail serves to raise the door in a manner which is well known and is clearly shown in Fig. 3.

Centrally transverse to the underside of the car is
105 a metal loop F³ which extends downwardly and rides on the the curved upper edges of the latch plates E³. The loop F³ is strengthened by an intermediate block *f*¹.

When the car is pushed on to the platform from the right hand end the loop *f*³ rides on top of the right hand
110 latch E³ and depresses that latch until the loop *f*³ passes the finger *e*⁷ of the same latch. The downward

movement of the latch E^3 puts strain on the spring E^6 through the instrumentality of the links e^6 , the arms e^5 and e^{12} and the shaft e^4 and as soon as the loop passes off of the right hand finger e^7 and under the corresponding
 5 finger of the left hand latch, the spring E^6 acts to raise the right hand latch to the position shown in Fig. 7. In like manner the left hand latches E^3 will be operated when the car is run on to the platform from the left hand end.

10 To remove the car from the right hand end of the platform, the operator will press downward the right hand pedal e^{14} thereby moving the lever E^5 to cause the depression of the right hand latch E^3 and permit the loop F^3 to pass over the finger e^7 of the depressed latch and
 15 upon removal of the car, the latch will return to its original position in readiness for the placing of the next car. To remove the car from the left hand end of the platform, the left hand pedal e^{14} will be depressed to cause corresponding depression of the left hand latch E^3 .

20 Dogs H oscillate on blocks h secured on the guide plates a^2 and have slots h^1 . The inner ends of the dogs are normally free from the vertical guides G which guide the movement of the cage and in emergency the inner ends of the dogs press against the sides of the
 25 guides to prevent descent of the cage.

Springs H^3 are housed in cylinders H^2 which oscillate on pivots h^6 on the frame A . The cylinders H^2 preferably contain oil for lubrication and to prevent rusting of the parts.

30 Shafts H^4 oscillate in suitable bearings on the underside of the frame A^1 . Arms h^3 and h^4 are secured on the shafts H^4 . Vertical bars H^1 are connected with the dogs H by pins h^7 fitting in the slots h^1 . Pistons h^5 working in the cylinders H^2 are connected with the bars H^1 by
 35 rods h^2 . The upper ends of the rods H^1 are pivotally connected with the arms h^4 . Chains H^5 connect the inner ends of the arms h^3 with the saddle H^6 in such manner that when the hoisting cable pulls on the saddle to lift the cage, the arms h^3 will be pulled upward and
 40 thereby turn the shafts H^4 to raise the arms h^4 and through the instrumentality of the bars H^1 raise the outer ends of the dogs H so as to compress the springs H^3 and hold the points of the dogs away from the guide rails which guide the movement of the cage. Upon the
 45 slacking or breaking of the cable the springs H^3 instantaneously act to pull downward the bars H^1 and cause the points of the dogs to engage with the guide rails on both sides of both rails and thereby prevent the falling of the cage. Pulling upward on the chains H^5 releases
 50 the dogs so that the cage may move upward.

The channel plates G^1 are secured on the corner posts of the top works at the height at which it is desired to dump the contents of the cars. Cams G^2 are secured to the posts G in such position that the members b^4 of the
 55 locking-plates B^1 will engage with the cams G^2 just before the wheels E^2 enter the ways g and will release the locking-plates B^1 so that the wheels E^2 traveling upward in the channels g will pull on the platform and cause it to travel to the right with the wheels E^1 running
 60 on the flanges b^2 until the left hand wheels reach the channels b^1 , whereupon the platform turning on the right hand axis e will tilt downward and the left hand wheels E^1 will run upward in the ways b^1 and additional upward movement of the cage will cause the
 65 wheels E^2 to travel to the left in the ways g^1 at the up-

per end of the channel plates G^1 and the platform will then be supported on the right hand wheels E^1 at the right hand ends of the plates B and by the wheels E^2 lying in the way g^1 . During the lowering of the cage this operation is reversed; the left hand wheels E^1 70 travel downward through the ways b^1 and then travel to the left on the flanges b^2 ; the locking-plates B^1 being turned away from the wheels when the members b^4 ride on the cams G^2 , the left hand wheels pass behind the locking-plates; and upon the members b^4 leaving the
 75 cams G^2 , the flanges b^5 of the locking-plates extend across the tread of the wheels and lock the platform so that it can be tilted only after the locking-plates have been released as already described.

This construction and arrangement of the mechanism 80 is a perfect safe-guard against premature tilting of the platform and consequent dumping of the contents of the car.

Having fully described my invention what I claim as new and desire to secure by Letters Patent is: 85

1. The combination of stationary channel plates having upwardly inclined ways adapted to accommodate wheels traveling in said ways, and horizontal ways communicating with said inclined ways and adapted to support wheels running within said inclined ways, a vertically movable cage, a track on said cage, a platform traveling on said track and adapted to tilt at the limit of its forward movement, wheels connected with said platform and adapted to travel in the inclined ways of said channel plates and adapted to support the front end of the tilted platform when said wheels are in the horizontal ways of said channel plates, means for connecting the car with said platform, platform-locking devices adapted to lock said platform in horizontal position, and means for releasing the platform locking devices immediately before the wheels on the front end of the platform enter the inclined ways of said channel plates and again automatically locking the platform immediately after the withdrawal of said last named wheels from the inclined ways in said channel plates. 90 95 100 105

2. The combination of a cage: parallel plates secured on the sides of said cage and having longitudinal openings adapted to accommodate wheels, upwardly extending ways adapted to limit the tilting of the platform and to accommodate said wheels during the tilting of said platform; wheels adapted to run within the longitudinal openings and upwardly extending ways of said plates; a platform supported upon said wheels; means for tilting said platform; and means for locking the wheels to prevent premature tilting of the platform. 110 115

3. The combination of a cage, parallel guide bars, secured on said cage, a series of dogs mounted on said guide bars, bars connecting said dogs, oscillative shafts transverse to said cage, arms secured on said shafts and connected with a hoisting cable, arms secured on said shafts and connected with the bars operating the dogs and springs compressed by upward pulling on the cable and reacting to engage the points of the dogs with the guide rails guiding the movement of the cage. 120 125

3. The combination of a cage, parallel guide bars secured on said cage and having openings and ways for the travel of wheels, oscillative latches mounted on said plates and having projecting flanges extending across the tread of the wheels used on the plates and also having projecting fingers, and stationary cams acting on the fingers of said latches to turn the latches so as to move the flanges of the latches away from the treads of the wheels. 130

5. The combination of a platform, oscillative plates mounted on said platform, levers mounted on said platform and provided with pedals, and means connecting said levers with said oscillative plates in such manner that depressing of the pedals will produce corresponding depression of the free ends of the plates. 135

6. The combination of a platform, oscillative levers mounted on the platform and having pedals and projecting 140

pins, shafts oscillative in bearings on said platform, arms secured to said shafts and having slots in which the pins on said levers travel, inwardly extending arms secured on said shafts, oscillative plates mounted on the platform and
5 having inclined upper edges and inwardly projecting fingers, links connecting said inwardly extending arms with said oscillative plates, downwardly extending arms secured on said shafts and springs connecting said arms and acting to support said oscillative plates in their raised
10 position.
7. The combination of a platform, oscillative levers mounted on the platform and having pedals and projecting pins, shafts oscillative in bearings on said platform, arms secured to said shafts and having slots in which the
15 pins on said levers travel, inwardly extending arms secured on said shafts, oscillative plates mounted on the platform and having inclined upper edges adapted to be engaged by a looped-bar to depress said oscillative plates and inwardly projecting fingers adapted to extend across a looped bar
20 on the under side of the car, links connecting said inwardly

extending arms with said oscillative plates, downwardly extending arms secured on said shafts, springs connecting said arms and acting to hold said oscillative plates in their raised position, rails on said platform, a car traveling on said rails and a looped bar secured centrally on said
25 car and adapted to ride on the upper edges of the oscillative plates and fitting under the fingers of said oscillative plates.

8. The combination of a cage, parallel channel plates secured on said cage and having openings and ways adapted
30 to accommodate wheels traveling therein, and a platform having wheels adapted to travel in the openings and ways of said plates.

In witness whereof I have hereunto subscribed my name, in the presence of two witnesses at Riverton, Illinois, this
35 10th day of October, 1905.

GEORGE TROTTER.

Witnesses:

S. J. RUNKLES,

R. O. RIDDLE.

It is hereby certified that in Letters Patent No. 864,813, granted September 3, 1907, upon the application of George Trotter, of Riverton, Illinois, for an improvement in "Dumping-Cages for Mine-Cars," errors appear in the printed specification requiring correction, as follows: On page 1, lines 110 and 111, the reference letters "f³" should read *F³*, and on page 2, the number and words "3. The combination of a cage, parallel guide bars se-," comprising line 125, should be stricken out and the following inserted instead, 4. *The combination of a cage, plates secured on said*; and that the said Letters Patent should be read with these corrections therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 15th day of October, A. D., 1907.

[SEAL.]

EDWARD B. MOORE,

Commissioner of Patents.