No. 811,129. PATENTED JAN. 30, 1906.

C. R. CLAGHORN.

CAR DUMP.

APPLICATION FILED MAY 22, 1903.

4 SHEETS—SHEET 1.

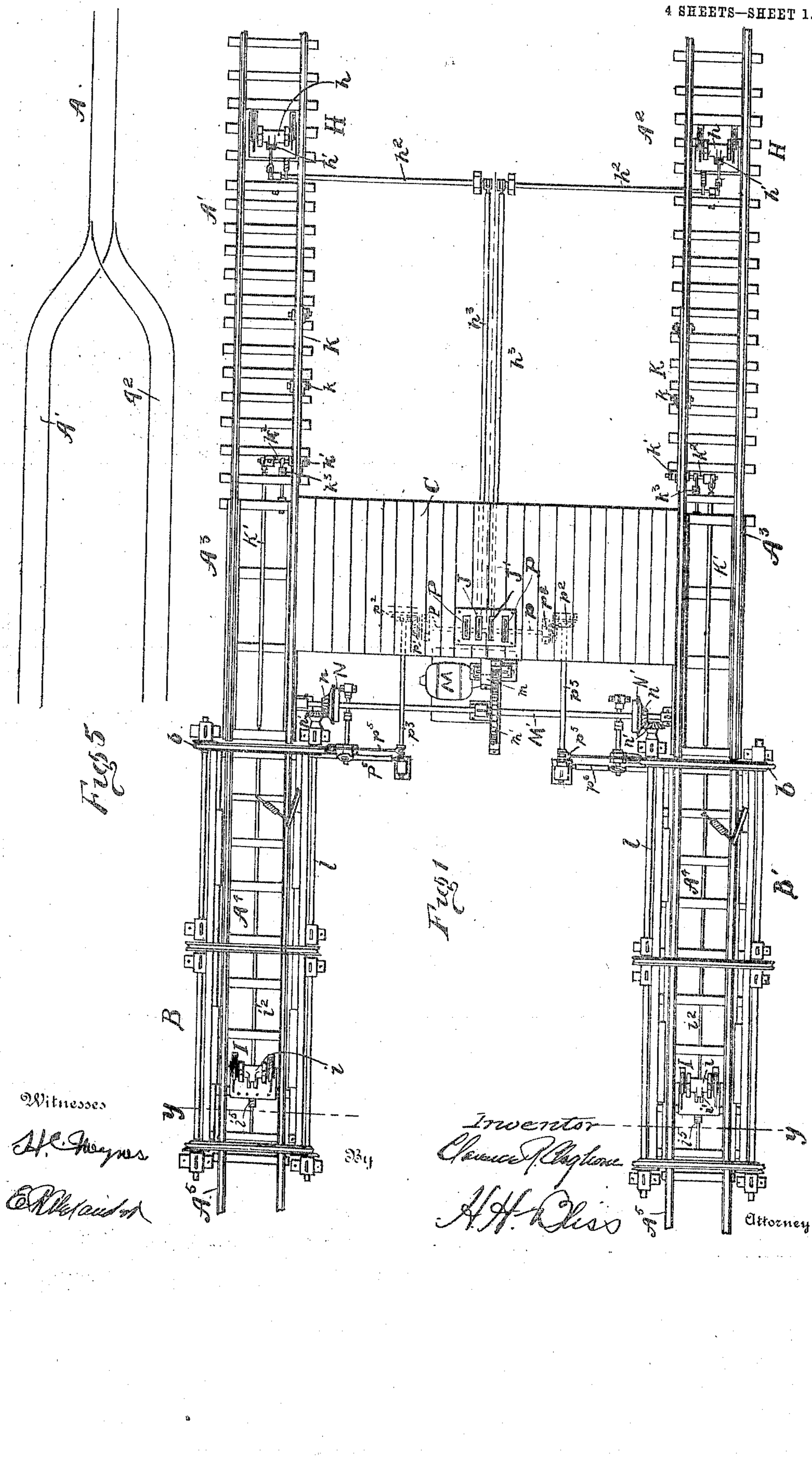


Fig. 5

Fig. 1

Witnesses

H. C. Haynes

E. Alexander

Inventor

Claude R. Claghorn

H. H. Ellis

Attorney

No. 811,129. PATENTED JAN. 30, 1906.

C. R. CLAGHORN.

CAR DUMP.

APPLICATION FILED MAY 22, 1903.

4 SHEETS—SHEET 2.

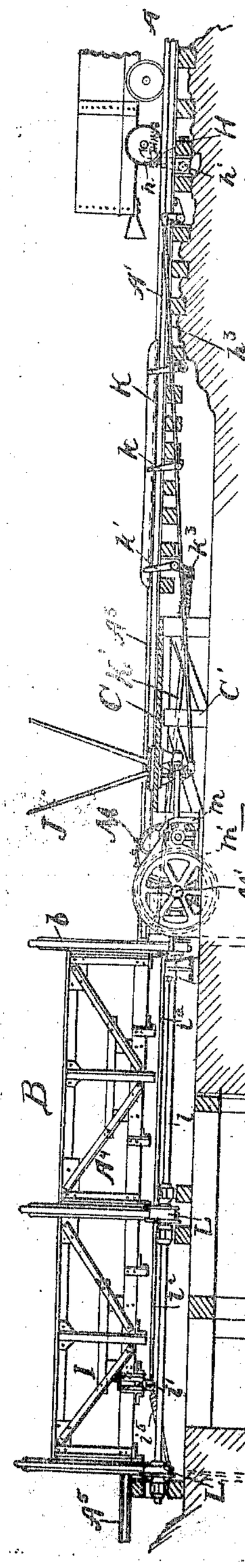


Fig. 2.

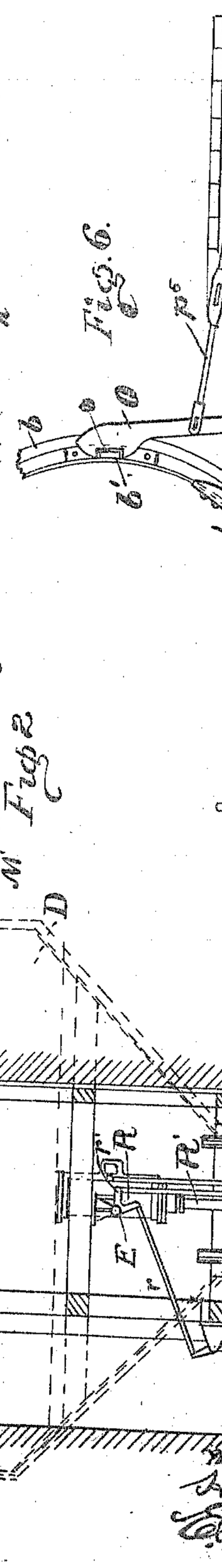


Fig. 6.

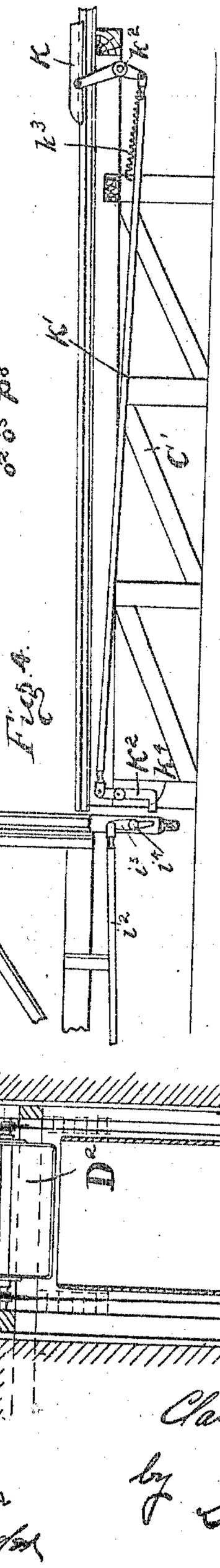
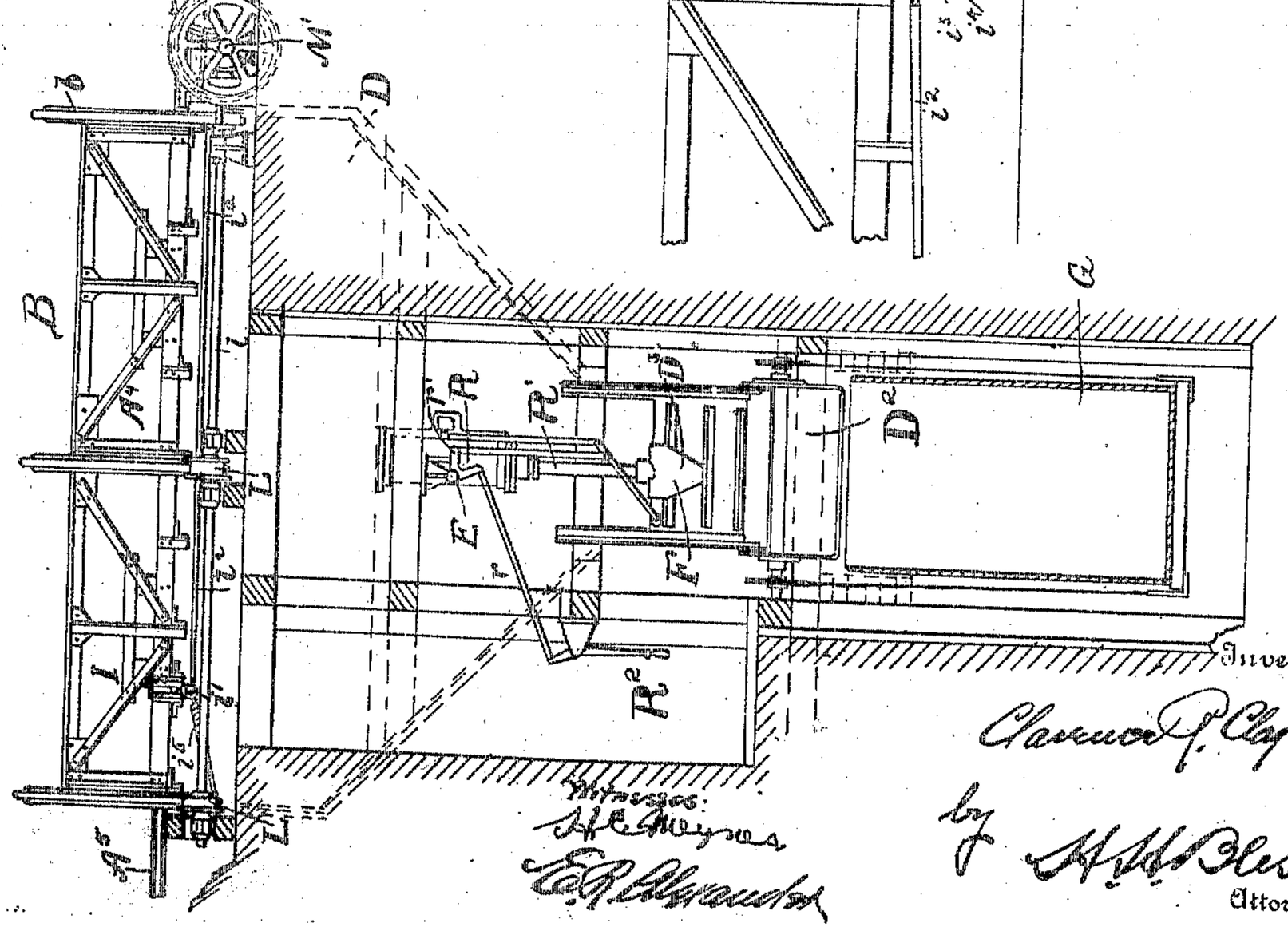


Fig. 4.



Witnesses:
H. E. Mayes
E. P. Alexander

Inventor
Charles R. Claghorn
by H. H. Bliss
Attorney

No. 811,129. PATENTED JAN. 30, 1906.

C. R. CLAGHORN.

CAR DUMP.

APPLICATION FILED MAY 22, 1903.

4 SHEETS—SHEET 3.

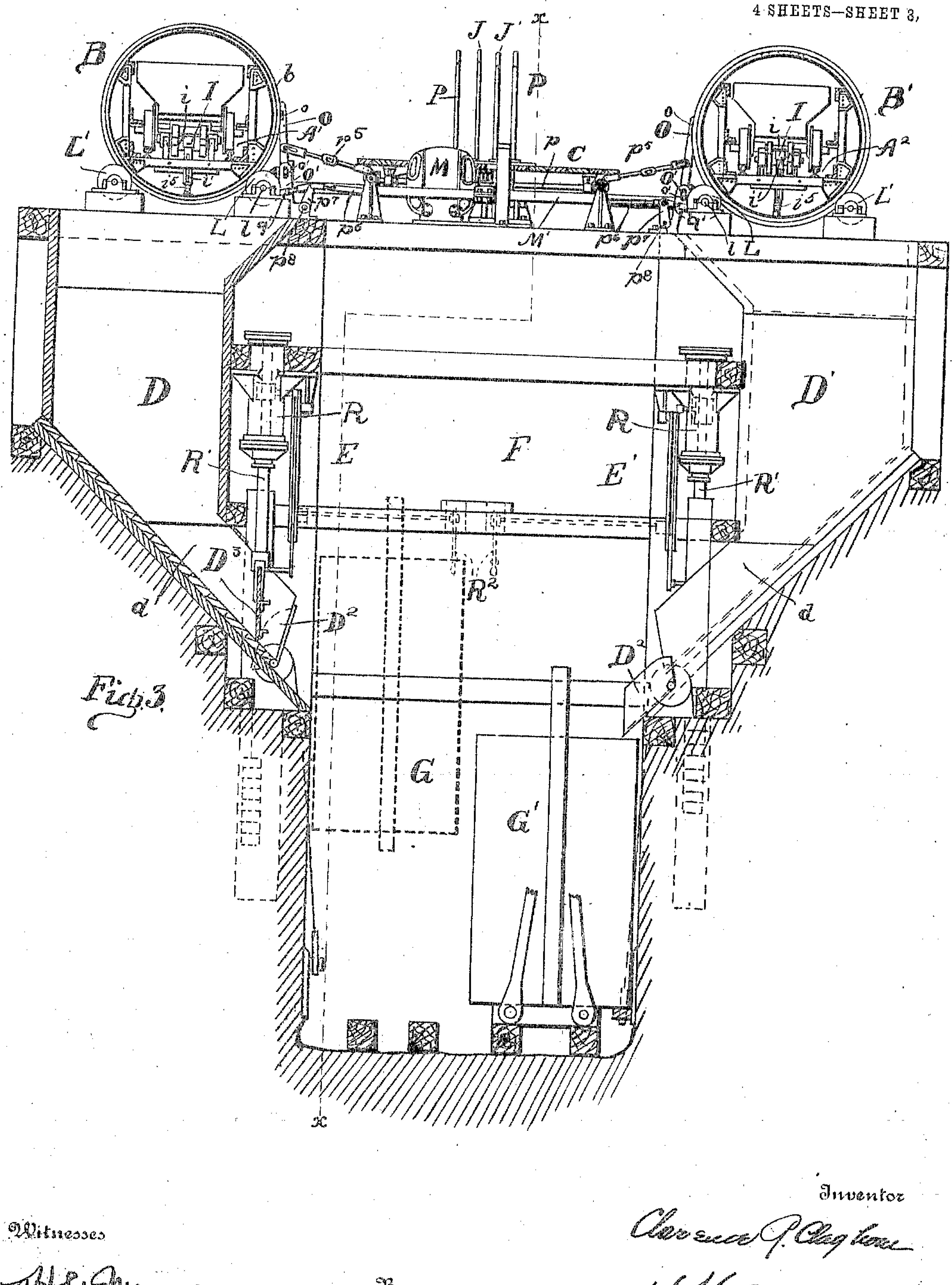


Fig. 3.

Witnesses

By

Inventor

Attorney

No. 811,129. PATENTED JAN. 30, 1906.

C. R. CLAGHORN.

CAR DUMP.

APPLICATION FILED MAY 22, 1903.

4 SHEETS—SHEET 4.

Fig. 7.

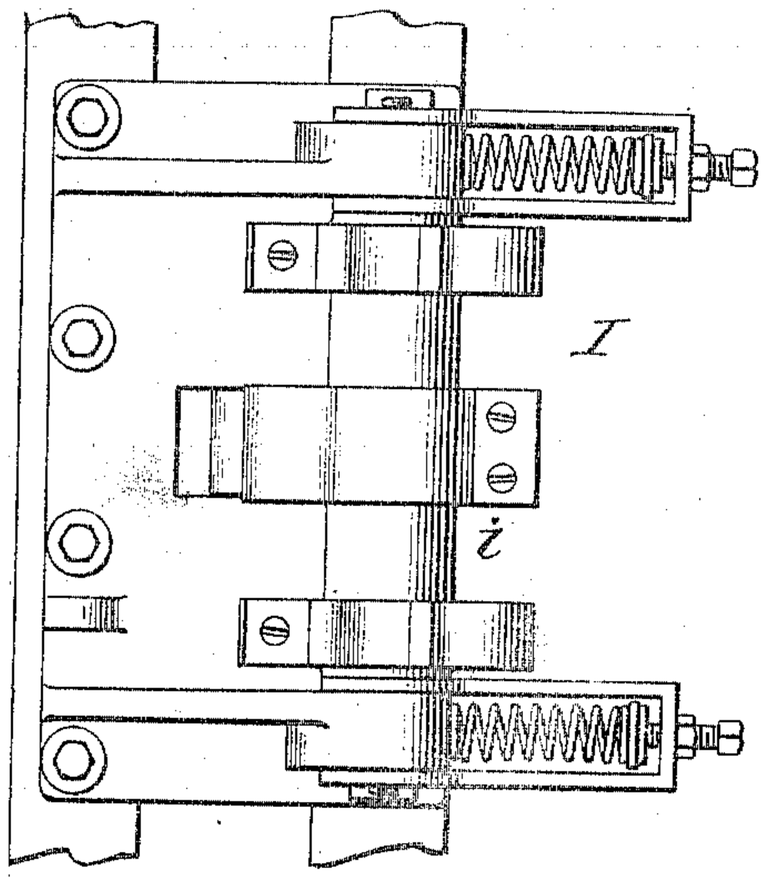


Fig. 6ª

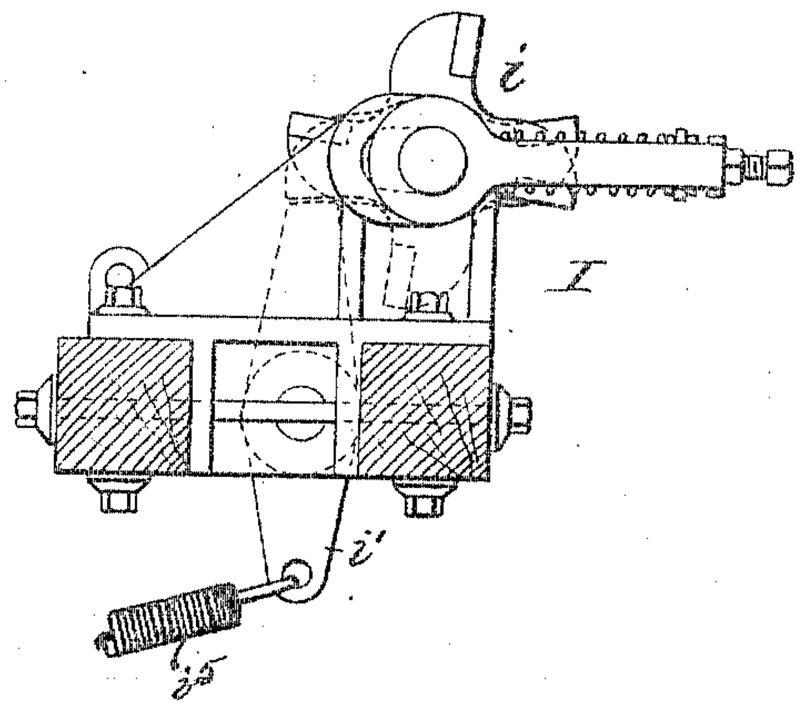
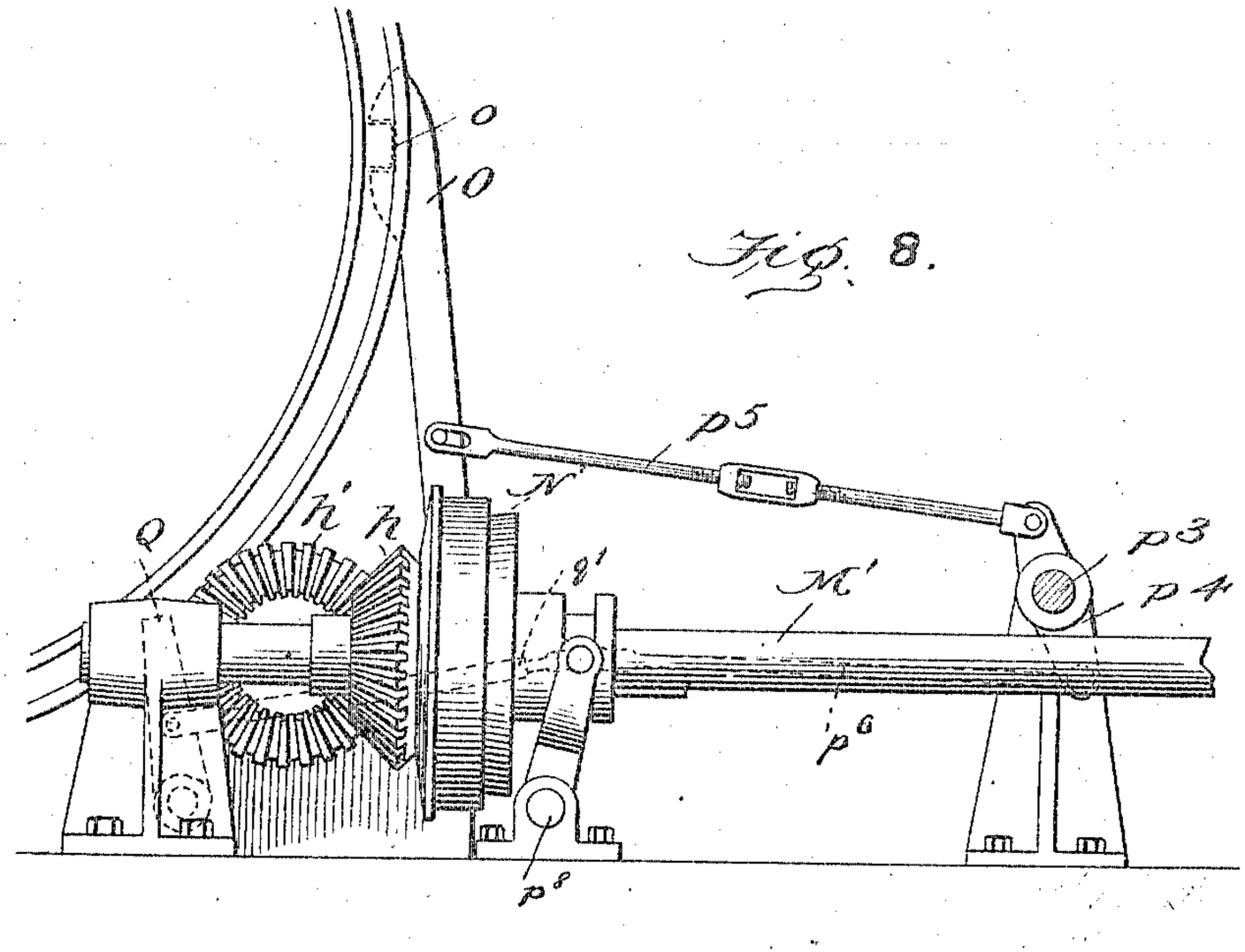


Fig. 8.



Witnesses

Edwin L. Bradford

P. H. Burch

Inventor

Clarence R. Claghorn

By H. H. Bliss

Attorney

UNITED STATES PATENT OFFICE.

CLARENCE R. CLAGHORN, OF WEHRUM, PENNSYLVANIA.

CAR-DUMP.

No. 811,129. Specification of Letters Patent. Patented Jan. 30, 1906.

Application filed May 22, 1903. Serial No. 158,381.

To all whom it may concern:

Be it known that I, CLARENCE R. CLAGHORN, a citizen of the United States, residing at Wehrum, in the county of Indiana and State of Pennsylvania, have invented certain new and useful Improvements in Car-Dumps, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to an improved mechanism for handling cars which are to be emptied of their loads, it pertaining more particularly to tippling apparatus of the class of those used in connection with coal-mining.

Figure 1 is a plan view of a mechanism embodying my improvements. Fig. 2 is a view, partly in side elevation and partly in section, of the same, taken on the line *x x* of Fig. 3. Fig. 3 is a cross-section on the line *y y*, Fig. 1. Fig. 4 is a view, partly in elevation and partly in section, showing the tripping devices for releasing the cars from the rotary cage or dumper. Fig. 5 is a plan view of a diagrammatic nature, illustrating the relations of the different parts of the track system. Fig. 6 is a detail of the locking mechanism for the rotary tipplers. Fig. 6ª is a side elevation of one of the car-stop mechanisms. Fig. 7 is a plan view of the same. Fig. 8 is a view showing the clutch and beveled gear, together with parts connected therewith.

In the drawings, the track over which the cars initially approach the tippling mechanism is indicated by A. It can communicate with each of two branch tracks at A′ A². The loaded cars are brought out from the place of mining in trains or "trips." These trips are shunted alternately to the branch or tippling tracks A′ A².

One of the purposes of the invention is to so construct an apparatus that a single operator can accomplish a much greater amount of work in tippling coal than has been heretofore possible, and, as will be below set forth, the parts of the system as an entirety are so constructed and related to each other that an operator standing at a central point is enabled to control the cars very rapidly as they advance to be tippled and can properly effect the tippling of two sets of cars, thus insuring that a large output shall result.

Each of the branch or tipple tracks A′ A² has a stationary part, as at A³, and then a rotary section A⁴ in the tipple proper, and then another stationary section A⁵ beyond the dumping mechanism. Upon this latter the empty cars are received, and by it they are taken to a return switch-track which can be of ordinary arrangement.

The track proper is supported upon a framework, such as shown at C′, and at C there is between the two mechanisms a platform or stand for the operator, with the various levers so disposed in relation thereto that he can control the whole apparatus.

Each of the rotary dumpers or tipplers is as a whole indicated by B B′. Below them, respectively, are hoppers D D′, wherein the coal is received and from which it is delivered in charges by the valve devices and control mechanisms at E E′. Between the hoppers there is a pit or well at F, and buckets G G′ are arranged to descend into and be raised from this well. They receive charges of coal from the hoppers D D′ and then carry them to the elevated point where the coal is to be dumped. I have selected for illustration apparatus such as is designed to be placed at the bottom of a coal-mine shaft. The coal is elevated therefrom to the surface of the ground, possibly hundreds of feet above, the buckets G G′ being supported upon ropes or chains which extend to lifting mechanism at the surface.

The loaded cars of each train or trip are all arrested at a proper point on the track A′ or that at A² by a stopping and releasing mechanism, (indicated as a whole by H.) This automatically arrests the first car of the series and is adapted to thereafter release the cars one at a time or in pairs or three at a time, as may be desired. In the present instance the tippling or dumping mechanism at B is intended for receiving and emptying two cars at a time. Consequently the stopping and controlling mechanism at H is so constructed as to permit two loaded cars to pass it and then to stop the third and those behind it. Upon the next release it again permits two to pass, and so on. The details of this mechanism need not here be described in full, as it is substantially similar to the one which is set forth in Letters Patent of the United States No. 736,691, granted to me August 18, 1903, and to which reference can be made for full understanding. It comprises a rotary stop device *h*, which is arrested by a lock at *h′*, the latter being adapted to be released when the operator desires. Such release is effected by

rocking a shaft h^2, which is connected by a crank and link h^3 to the lever J at the place where the operator stands on the platform.

When the operator gives a quick motion in the proper direction to the lever, the lock h' is tripped, the stop h yields to the cars, two of them are counted off and allowed to pass. At the same time it is to be noted that on each of the tipples or dumping mechanisms B B' there is a stopping mechanism at I for arresting the two cars of each pair that are received upon it. This stop mechanism is substantially similar to that at H and to that set forth in the aforesaid patent. It is necessary to open or release this stopping device at I and have the cars on the dumper started before the following two cars reach the rotary part. This I accomplish by utilizing the weight of the loaded cars of the incoming pair as they move toward the dumper after passing the stop at H.

K is a trip-bar arranged adjacent to one of the track-rails, it being supported by links k k', to which it is pivoted, these in turn being pivoted at their lower ends. The hinge device for the link k' is a rock-shaft k^2, which extends inward to about the center vertical longitudinal plane of the track, where it is provided with a crank which is pivoted to a draw-rod K'. A spring k^3 acts normally to pull upon the rock-shaft and the links k' in such way as to hold the trip-bar K up. As a car approaches the tipple its wheels impinge upon the trip-bar K, press it forward and downward, and in doing so exert draft upon the rod K'. This is at its front end pivoted to a lever K^2, the lower end of which has a pushing-finger k^4, adapted to bear against the lower end of the lever i^3, pivoted at i^4 to the rotary dump. The lever i^3 is connected to a link of draw-rod i^5, which extends forward to the arm i', which locks and releases the rotary element i of the car-stop at I on the tippler. It will be seen then that as incoming loaded cars pass the tripper at K they cause it to impart motion through the links or rods K' and i^2 and to release the stop at I, whereupon the two cars on the tippler that were the last emptied are allowed to move forward off from the tippler. Immediately after the second car leaves the tippler the stop at I is reset automatically, a spring i^6 tending normally to hold the arm i' in position to engage with and lock the rotary element i, and this arrests the cars of the incoming loaded pair, and they are held upon the dumper until they have been emptied.

The dumpers or tipplers are constructed approximately in accordance with the illustration and description presented in my Letters Patent of the United States No. 736,690, granted August 18, 1903, being built up of circular rings connected by framework of angle-irons, sills, girths, &c. as suitable. Each is supported by having its rings mounted upon idler rollers or wheels L' and power wheels L. One of the rings, that at b, is utilized for stopping and holding the dumper at the proper point. When the holder is released, the power applied to the shaft l of the wheels L will be imparted to the dumper or tippler through the rings, and it will be caused to revolve, inverting the car during its revolution and again bringing it to its proper upright position. The power is transmitted from an engine or motor at M, which by a pinion at m is geared to the master-wheel m' on the shaft M'. At the ends of this shaft M' are friction-clutches N N', one interposed between the power mechanism and the tippler B and the other between the same and the tippler B'.

n is a beveled gear-wheel on the shaft adapted to be moved therewith when the clutch elements are in engagement and then imparts power to the shaft l through the beveled gear n'.

The rotary dumping cage or tippler is locked against rotation by a lock-bar O, having a recess o, by which it engages with a lug or projection b' on the ring b. This lock-bar O is pivoted at o' in a standard or upright O'. It is released from the tippler by the lever P at the operator's station which rocks the shaft p, turning the beveled gearing at p' p^2, the latter being connected to the shaft p^3, which has a lever p^4, one end of which is by link p^5 connected to the lock-bar O. This lever p^4 is also connected to the clutch-actuating devices, there being at p^8 a link connected to the crank p^7 of the rock-shaft p^8, which moves the shifting-lever that causes the engagement or disengagement of the clutch.

The parts just referred to are so related that when the operator moves the lever P in the proper direction he rocks the lever p^4 and first causes a disengagement of the lock-bar O and after the disengagement thereof causes the clutch members to come together, whereupon power from the continuously-rotating shaft M' is immediately transmitted to the dumper, and it is carried through a revolution. The clutching should occur just after the release of the lock-bar O. The opposite movement of these parts is effected automatically by means of the trip-lever Q, mounted at q and connected by a pitman q' with the link p^6 or the crank-arm p^7. The movements of the lever Q and the lock-arm O are in opposite directions, and therefore when the arm O is drawn out from the tippler the lever Q is moved inward in relation to it. When in its innermost position, its end is in the path of a cam Q', attached to the tippler or cage, and this cam just before the tippler finishes its revolution strikes the trip-lever Q and pushes it outward, and this results in turning the shaft p^3 in the direction opposite to that last described.

The pivot o' of the lock-bar O can rise and

fall in the standard O′, the latter having slots at o^2 to permit such movement. The pivot passes through the eye of a spring-rod O^2, against the lower end of which bears a spring O^3. The spring and its rod O^3 normally hold the pivot o' in its lower position, and when in this position the lock-arm O holds the dumper correctly normally; but if at any time there should be upward strain exerted upon the lock-arm breakage or severe stress is avoided, as the spring O^3 will permit a sufficient yielding to overcome the severity of any shock. The lock-arm O while adapted to move up and down within the standard O′ is preferably held against lateral movement relative thereto, and the arm is of sufficient length and elasticity to insure that when it is momentarily moved outward away from the ring *b* adjacent to it by the projection *b′* thereon it will at once spring back into position so as to effect an engagement between the walls of the said lug and the walls of the recess *o* in the lock-bar.

As aforesaid, the coal that is dumped from the tipples B B′ is received in the hoppers D D′. At the lower end of each of these there is a chute *d* inclined inward toward the well or pit F. At the bottom of each chute there is a hinged spout-like device D^2, which can serve as an extension for the chute when it is turned down and also serve to cut off the flow of material when it is turned up.

D^3 is a cut-off plate. It is connected to the lower end of a piston-rod R′, the piston of which is arranged in the cylinder R. The piston in the cylinder is operated by compressed air, the entrance and exhaust of which is controlled by proper valves, which in turn are opened and closed by means of the lever R^2, connected by the link *r* to the bell-lever *r′*, which in turn is suitably connected to the valve.

The buckets G G′ are adapted to be lowered into the lower part of the pit or well, so as to bring their top edges respectively below the chutes *d d*. When a bucket is in position, the operator opens the cut-off D^2 by moving its cylinder-valve properly, and at the same time lets down the spout extension, whereupon the coal from the hopper descends and the bucket is filled. As soon as filled the operator reverses the valve mechanism, and the cut-off plate D^3 is forcibly pushed across the path of the coal and the descent of that above is arrested.

A single operator controls both of the hoppers and bucket-loaders, his station being such that both of the levers R^2 are accessible to him. In fact, the entire apparatus is under the control of two men, and when the parts are constructed and arranged in the way described the output of coal is greatly increased in proportion to the labor employed.

What I claim is—

1. In a mechanism for guiding and tippling coal-cars, the combination of a main railway-track extending from the region of mining and loading the coal to points near the tipple, two branch tracks each adapted to communicate with the main track to receive therefrom and retain a train or "trip" of loaded cars, two tippling mechanisms each on the line of one of the said branch tracks, a stop mechanism on each track that leads to a tipple for stopping the train or "trip" of cars, a car-stop on each tipple to prevent longitudinal advance of the cars, a power mechanism for rotating each of the tipples, a manually-actuated mechanism for controlling each of the said car-stops on the track that leads to the tipple, and a manually-actuated mechanism for controlling the tipple-rotating power devices, both sets of manually-actuated mechanisms being located substantially as described, whereby they are instantly accessible to a single operator while in one position, as set forth.

2. In a mechanism for guiding and tippling coal-cars, the combination of a main track extending from the region of mining and loading the coal to points near the tipple, two branch tracks adapted to communicate with the main track, two laterally-rotary tipplers, one on the line of each branch car-track, a car-stop on each branch track adapted to be manually opened and to be automatically reset, a car-stop on each tipple adapted to be automatically opened by advancing cars and to be automatically reset, a lock for each tipple to prevent its rotating, power devices for rotating each tipple, and two sets of manually-actuated devices for releasing the car-stops on the branch tracks, for releasing the tipple-locks and for connecting the power devices to the tipples, each set of manually-actuated devices being arranged substantially as set forth, whereby they are accessible to a single operator, as described.

3. In a mechanism for guiding and tippling coal-cars, the combination of a main track extending from the region of mining and loading coal to points near the tippling mechanism, two branch tracks adapted to communicate with the main track, two laterally-rotating tipples, one in the line of each branch track, a car-stop on each branch track for arresting the train or "trip" of cars thereon, and adapted to be automatically reset after being opened, means on each tipple for stopping the longitudinal motion of the cars thereon, power devices for rotating each tipple, two sets of manually-actuated devices for controlling the car-stops on the stationary tracks and the tipple-rotating mechanism, both of said sets being situated relatively close together for the purposes described, a fixed hopper or receptacle below

each tipple for receiving the coal therefrom, and a supplemental pit or chamber into which the coal can be passed at will from each of the said hoppers, substantially as set forth.

4. In a mechanism for guiding and tippling coal-cars, the combination of a main track extending from the region of mining and loading the coal to points near the tippling mechanism, two branch tracks adapted to communicate with the main track, two laterally-rotating tipplers, one in the line of each branch track, a car-stop on the stationary part of each branch track, a car-stop on and rotating with each rotary tippler, power mechanism for rotating the tipplers, two sets of manually-actuated devices for controlling the stationary car-stops, and the mechanism for rotating the tipplers arranged substantially as set forth, whereby they are accessible to a single operator, and means actuated by advancing cars for releasing the rotary car-stops on the tipplers, substantially as set forth.

5. In a mechanism for tippling cars, the combination of the initial track-section, the track-section which finally receives the cars after emptying, the laterally-rotary tippler mechanism between the said two car-sections, the stop for arresting the cars from longitudinal motion while on the tippler, the stop on the initial track-section adjacent to the tippler for arresting the cars from longitudinal motion, means for operating said last-described stop, and means actuated by the cars on the initial stationary section for releasing said stop on the tippler, substantially as set forth.

6. In a mechanism for tippling coal-cars, the combination with the laterally-rotary tippler, and the initial track-section for delivering loaded cars thereto, of the car-stop on the laterally-rotary tippler, the lock for said stop, and the tripping mechanism adjacent to the initial stationary track and adapted to be actuated by the cars for releasing the stop on the tippler to permit the passage therefrom of the cars, substantially as described.

7. In a mechanism for tippling cars, the combination of the laterally-rotating tippler, the inital stationary track-section delivering cars thereto, the stop for arresting the cars arranged on said track-section adjacent to the said tippler, means for operating said stop, the stop for arresting the cars while on the tippler, and the two-part mechanism for releasing the stop, one of the parts thereof being mounted on the tippler, and the other being mounted independently of the tippler, and means actuated by the advancing cars for imparting movement to the last said part of the stop-releasing mechanism, substantially as described.

8. In a mechanism for tippling cars, the combination with a laterally-rotating tippler, of the lock-bar for holding the tippler in normal position, and adapted to yield to permit the tippler to move beyond and then return to its normal position, substantially as set forth.

9. In a mechanism for tippling cars, the combination with a laterally-rotating tippler, of the lock-bar adapted to engage with the tippler, and to swing toward and from its axis, and to yield relatively to the rotary movement of the tippler, substantially as set forth.

10. In a mechanism for tippling cars, the combination with a laterally-rotating tippler, and the longitudinally and laterally movable lock-bar to hold the tippler in normal position, of means for actuating the bar to release the tippler, and a tripping mechanism adapted to be actuated by the tippler for moving the lock-bar toward the tippler and into its active position, substantially as set forth.

11. In a mechanism for tippling cars, the combination of the laterally-rotating tippler, the power devices for imparting power to the tippler, the clutch for engaging and disengaging the power devices, the lock for positively holding the tippler against rotation, the lever or actuating device for opening the lock and engaging the clutch members, the said parts being arranged substantially as set forth, to have the lock first opened and the clutch subsequently engaged during one continuous movement in one direction of the actuating-lever, and means actuated by the said rotating tippler for simultaneously releasing said clutch and throwing said lock-bar into operative position substantially as set forth.

12. In a mechanism for guiding and tippling coal-cars, the combination of a main railway-track, a plurality of branch tracks each adapted to communicate with the main track, a plurality of tippling mechanisms each on a line of one of said branch tracks, a car-stop on each tipple to prevent the longitudinal advance of the cars thereon, a power mechanism for rotating each of the tipplers, and manually-actuated mechanisms for controlling the tipple-rotating power devices arranged to be instantly accessible to a single operator while in one position.

13. In a mechanism for guiding and tippling coal-cars, the combination of a main railway-track, a plurality of branch tracks each adapted to communicate with the main track, a plurality of tippling mechanisms each on a line of one of said branch tracks, a car-stop on each tipple to prevent the longitudinal advance of the cars thereon, a power mechanism for rotating each of the tipplers automatic means for actuating said car-stops on the tipples, and manually-actuated mechanisms for controlling the tipple-rotating power devices arranged to be instantly accessible to a single operator while in one position.

14. In a mechanism for tippling cars, the

combination with a laterally-rotating tippler, of spring-controlled means for holding the tippler yieldingly in car-receiving position.

15. In a mechanism for tippling cars, the combination with the laterally-rotating tippler, of means for limiting the rotation of the tippler to one complete revolution, said means including a spring-controlled lock-bar for holding said tippler yieldingly in car-receiving position.

16. In a mechanism for tippling cars, the combination with the laterally-rotating tippler, of the lock-bar for holding the tippler in car-receiving position and the spring for holding the lock-bar yieldingly in normal position.

17. In a mechanism for tippling cars, the combination with the laterally-rotating tippler, of the lock-bar for holding the tippler in normal position, the spring for holding the lock-bar in normal position and for permitting it to yield longitudinally, and means for disengaging the lock-bar from the tippler.

18. In a mechanism for tippling cars, the combination with a laterally-rotating tippler, of the lock-bar adapted to engage with the tippler, and to hold it yieldingly in car-receiving position the train of manually-operated devices for disengaging the lock-bar from the tippler, and the train of automatically-operated devices actuated by said tippler and adapted to return the lock-bar to its normal position.

19. In a mechanism for tippling cars, the combination with a laterally-rotating tippler, of the train of power devices for actuating said tippler having in said train a clutch, the lock-bar adapted to engage with the tippler and to hold it yieldingly in car-receiving position, the operating-handle, the draft-transmitting devices connecting said handle with said lock-bar and with the movable element of said clutch and adapted to release the lock-bar and to cause the engagement of the clutch element when it is moved in one direction, and means actuated by the tippler for returning the said lock-bar to its normal position and for disengaging the clutch element.

In testimony whereof I affix my signature in presence of two witnesses.

CLARENCE R. CLAGHORN.

Witnesses:
A. D. HOKE,
R. H. ORRISON.