(No Model.) 3 Sheets—Sheet 1.

J. N. SCARBOROUGH.

DEVICE FOR COUPLING AND UNCOUPLING CARS.

No. 412,124. Patented Oct. 1, 1889.

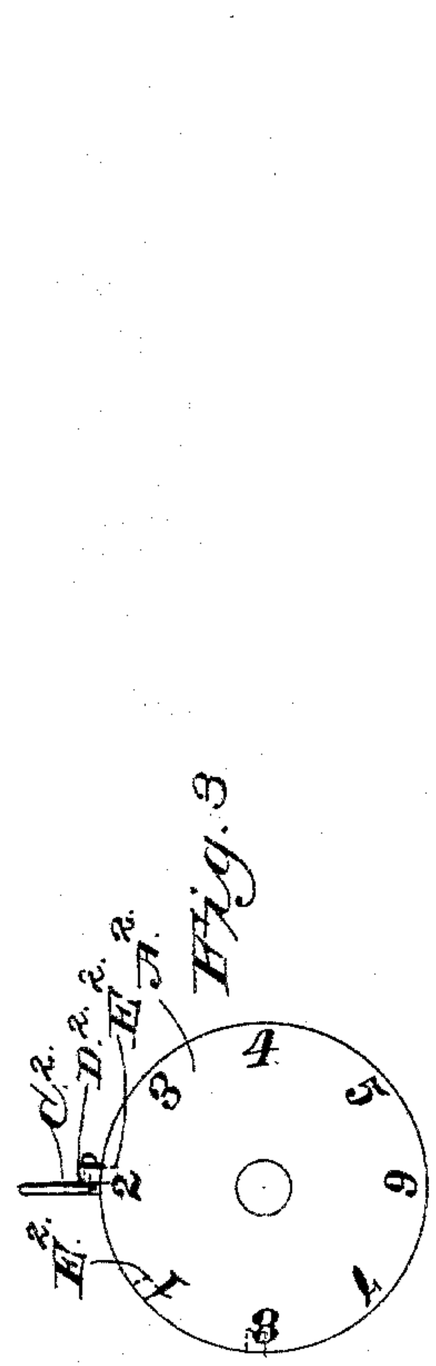

Fig. 3

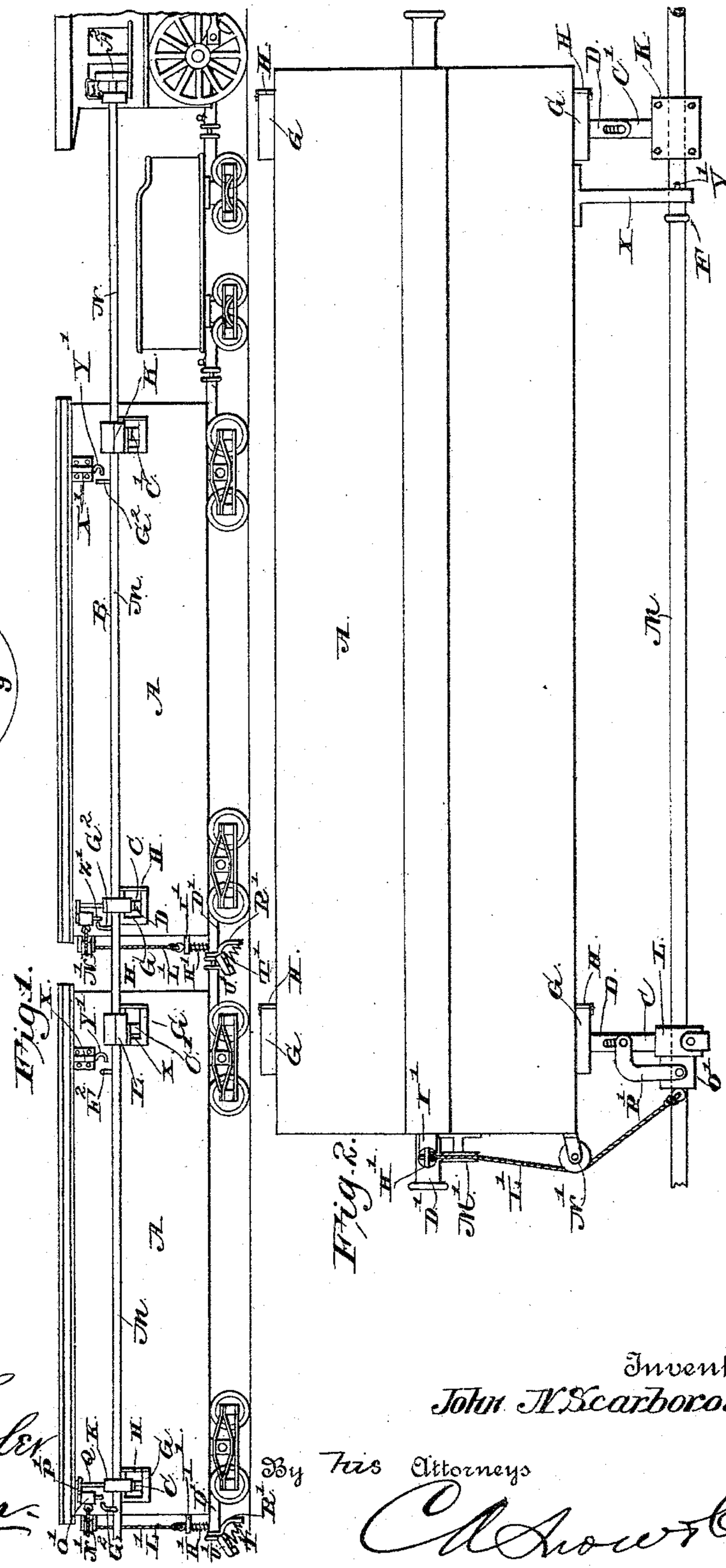

Fig. 1.

Fig. 2.

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(No Model.) 3 Sheets—Sheet 2.

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Fig. 4.

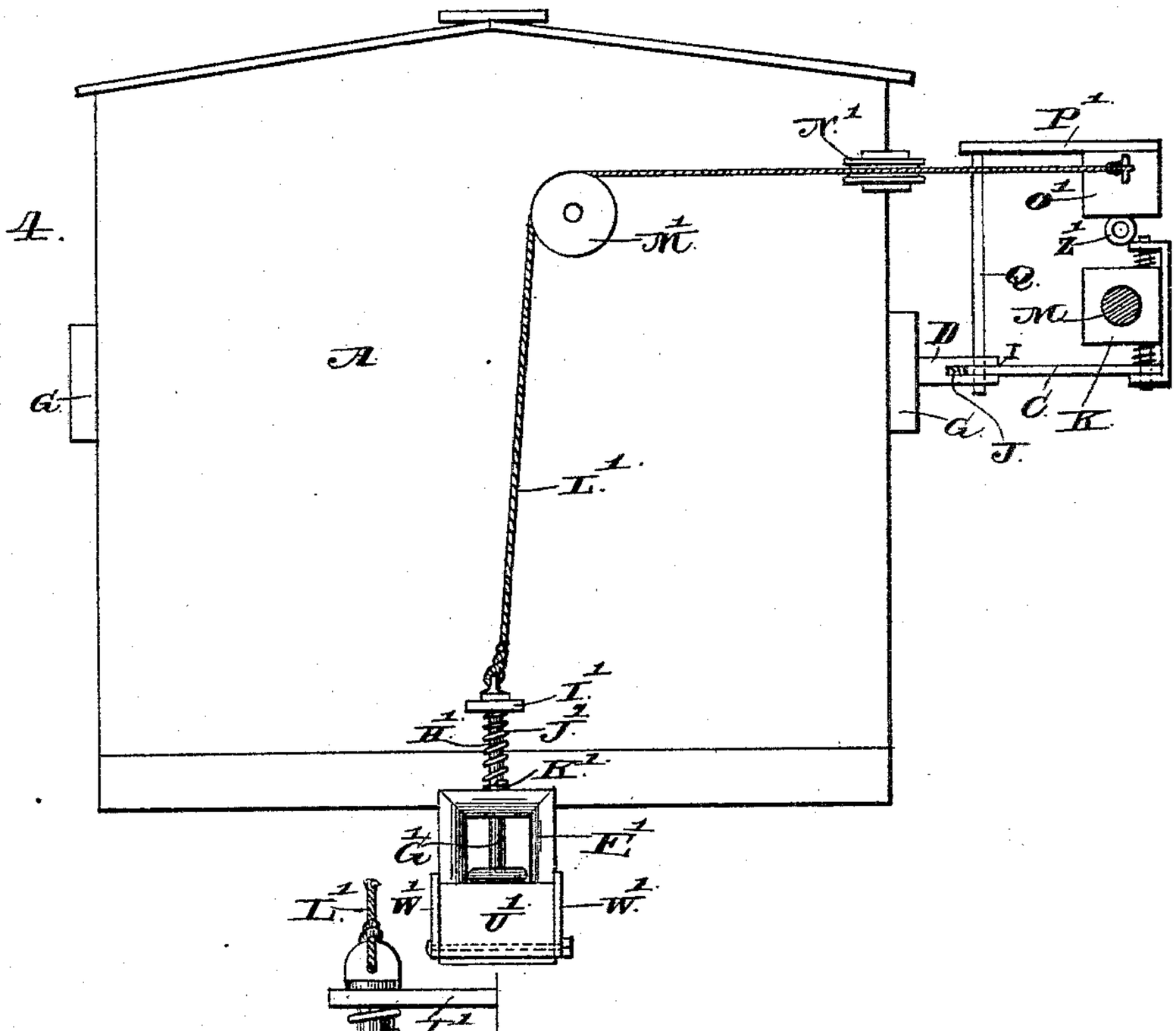


Fig. 5

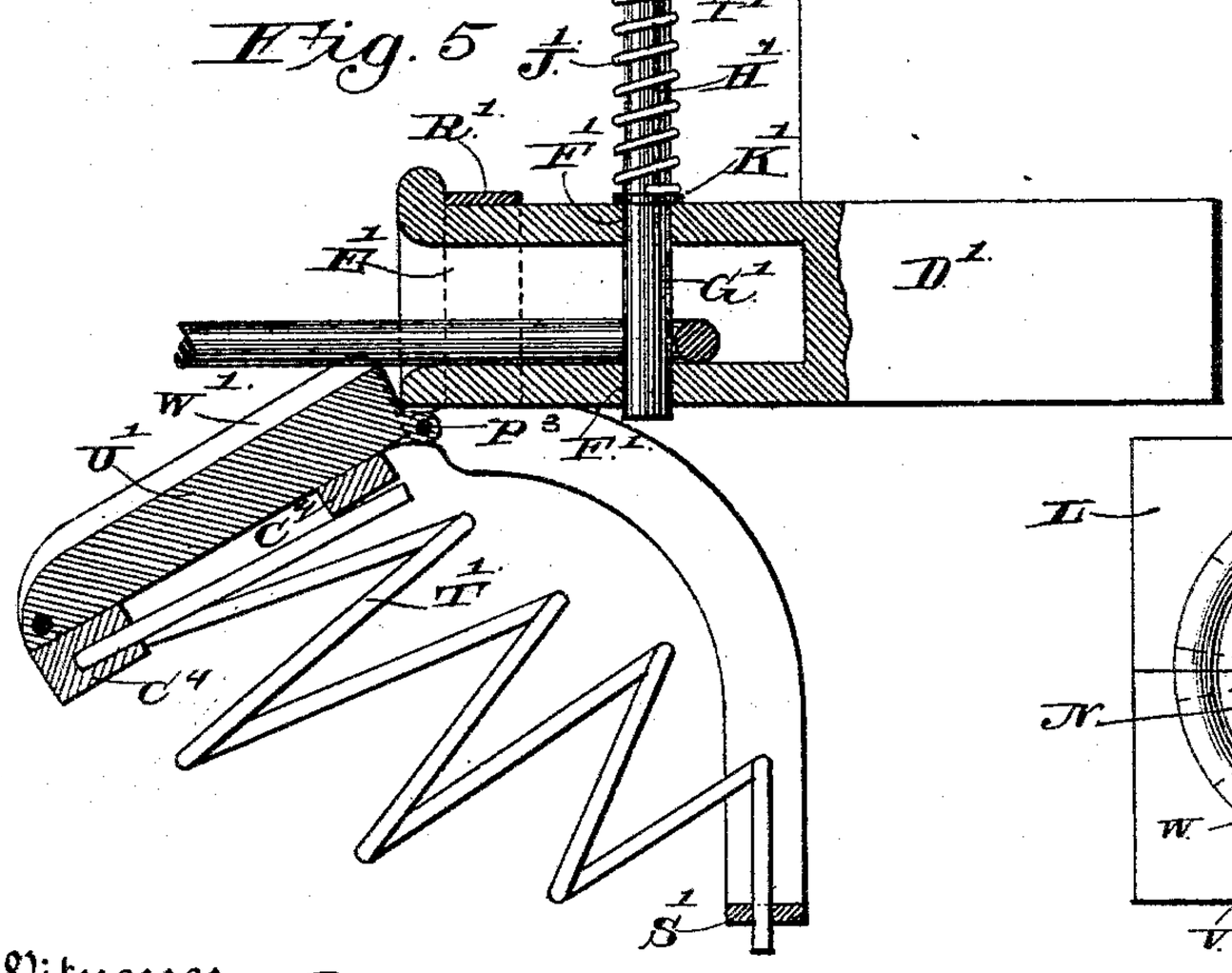
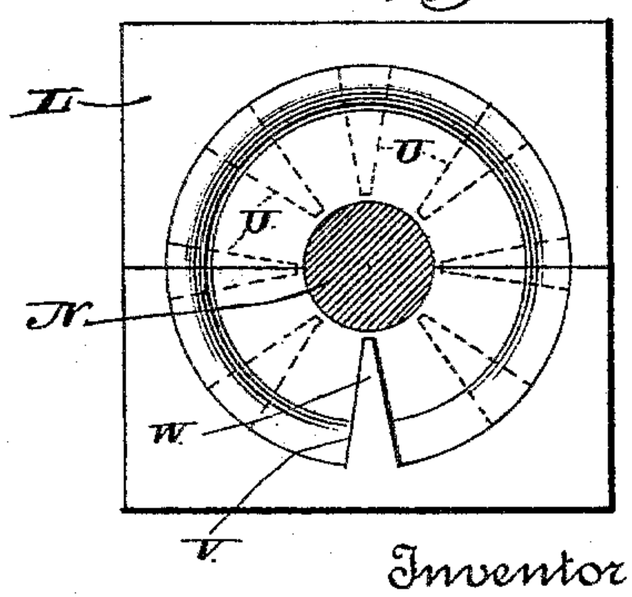


Fig. 6



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J. N. SCARBOROUGH.

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Fig. 7.

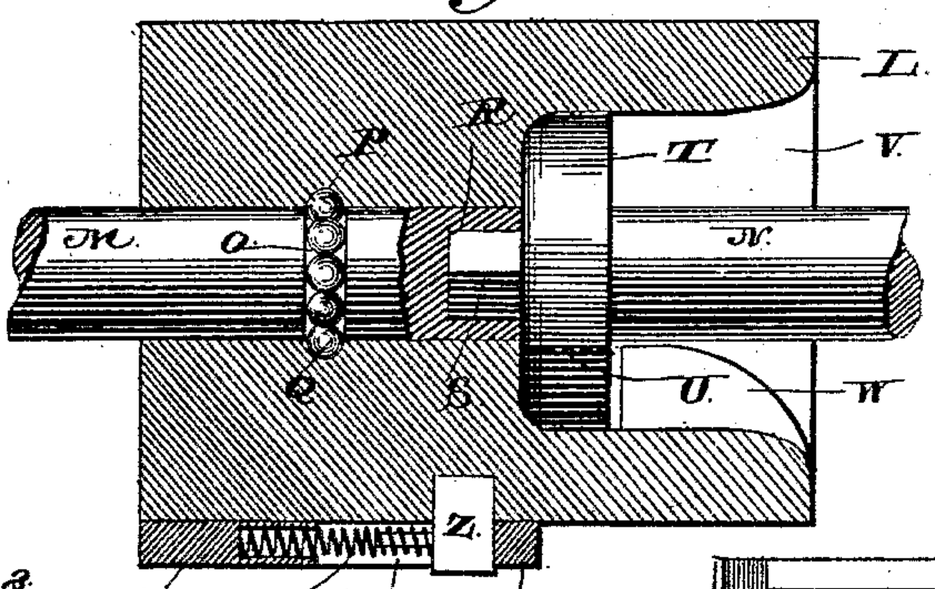


Fig. 8.

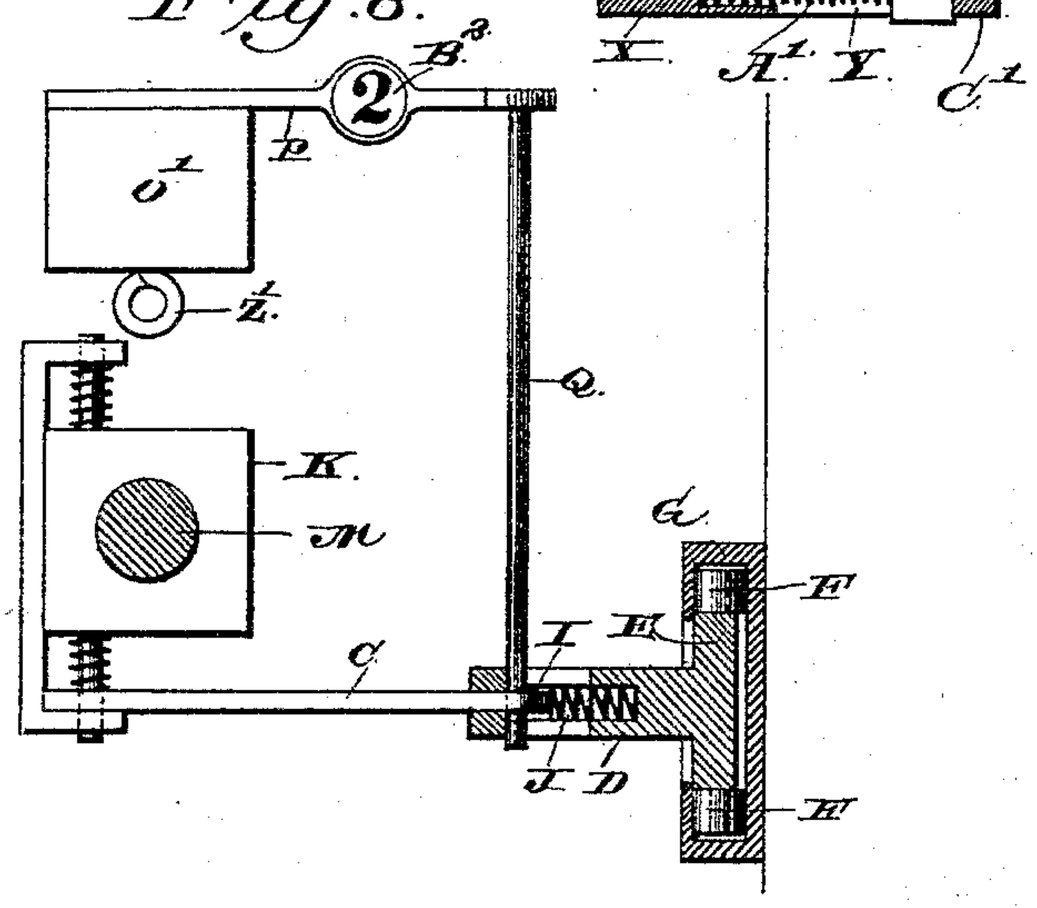


Fig. 9

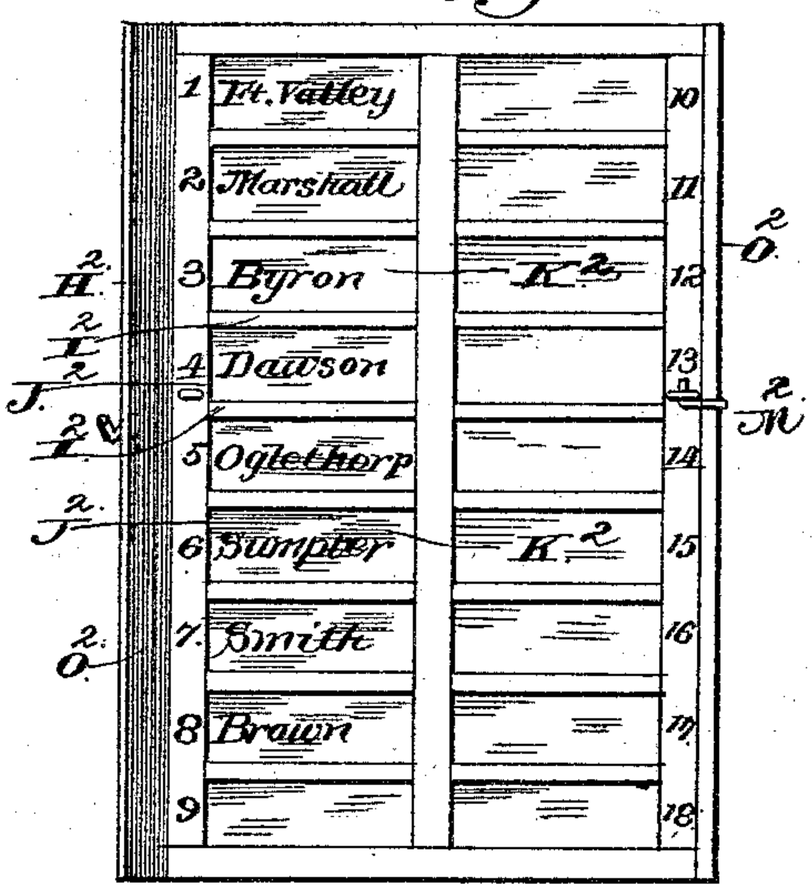
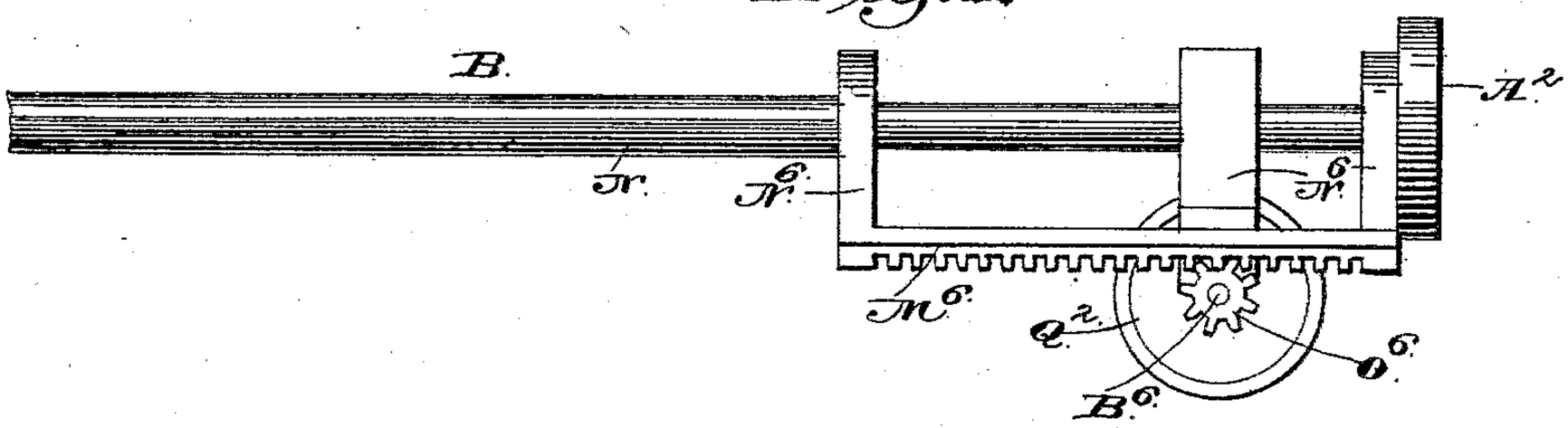


Fig. 10



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UNITED STATES PATENT OFFICE.

JOHN N. SCARBOROUGH, OF AMERICUS, GEORGIA.

DEVICE FOR COUPLING AND UNCOUPLING CARS.

SPECIFICATION forming part of Letters Patent No. 412,124, dated October 1, 1889.

Application filed February 13, 1889. Serial No. 299,723. (No model.)

To all whom it may concern:

Be it known that I, JOHN N. SCARBOROUGH, a citizen of the United States, residing at Americus, in the county of Sumter and State of Georgia, have invented a new and useful Improvement in Devices for Coupling and Uncoupling Cars, of which the following is a specification.

This invention relates to an improved device or contrivance for coupling and uncoupling cars, and it has for its object to so construct the same that the operation of uncoupling and cutting out any one of the cars of a train may be performed by the engineer without the assistance of brakemen or others who by the customary method of uncoupling are compelled to go in between the cars and thereby expose themselves to the risk of mutilation.

The invention consists in the improved construction, arrangement, and combination of parts, which will be hereinafter fully described, and particularly pointed out in the claims.

In the drawings, Figure 1 is a side view of a portion of a train of cars equipped with my invention. Fig. 2 is a top view of one of the cars having the invention applied thereto. Fig. 3 is a detail view of the disk or indicator. Fig. 4 is an end view of one of the cars. Fig. 5 is a vertical longitudinal sectional view of the coupling. Fig. 6 is a front view of the shaft-coupling box or block. Fig. 7 is a longitudinal vertical sectional view of the latter. Fig. 8 is a vertical sectional view taken on the line *x x* of Fig. 1. Fig. 9 is a detail view of the car-register. Fig. 10 is a detail view of a slight modification.

The same letters refer to the same parts in all the figures.

Each of the cars A in the train to which my invention is applied is provided with a longitudinally-sliding shaft B, which is attached to the side of the car in any suitable and convenient position by means of the arms or brackets C C, the inner ends of which are mounted pivotally in the sockets D D. The latter are provided at their inner ends with the base-flanges E, which may be provided with friction-rollers F, and which are fitted so as to have a longitudinally-sliding motion in suitable flanged casings or boxes G, secured to the side of the car, and which are provided at one of their ends with hinged or removable covers H, in order to enable the parts to be conveniently put together or taken apart, when occasion requires.

The arms or brackets C C are provided at their inner ends with slots I, in which are fitted springs J, bearing against the pivoting-pins, so as to enable the said arms or brackets to play freely upon their respective pivots. Suitable springs may also be arranged in the casings or boxes G to bear against the sides of the sockets D, in order to retain the latter in their proper positions.

The arms or brackets C C′ are provided at their outer ends with blocks or boxes, designated, respectively, by K and L. The boxes K have bearings for the shaft B, which is at the point of its bearing slightly reduced, so as to be retained securely in its box or bearing. At the box L the shaft B is divided, so as to form two separate sections M and N, as will be clearly seen in Fig. 7 of the drawings. The rear section M of the shaft is provided with an annular groove O, registering with the corresponding annular groove P, formed in the box-casing L. In this groove are placed the series of friction-rollers Q, which serve the double purpose of retaining the shaft-section M securely in its box or bearing and enabling it to revolve freely therein. The front end of the shaft-section M is provided with a square or polygonal recess R, to receive a correspondingly-shaped nipple or extension S upon the rear end of the shaft-section N. The said shaft-section N is also provided with an annular disk or flange T, the periphery of which has a notch U. The box-casing L is provided at its front end with a flaring or bell-shaped mouth or opening V, adapted to receive the flange T upon the shaft-section N. Suitably arranged in the said mouth or opening is a longitudinally-tapering rib W, with which the notch U in the flange T may be made to register, thus enabling the said flange to enter the mouth or recess D. When the flange T reaches the bottom of the recess V, the shaft-section N may be partly turned, thus bringing the rib W and notch U out of alignment

and preventing the withdrawal of the said shaft-section N, which is thereby coupled with the section M.

The outer ends of the arms C′, upon which the box-casings L are mounted, are bent so as to form longitudinal brackets X, having slots Y, to receive lugs or studs Z, extending downwardly from the boxes L, which latter are thus permitted to play longitudinally with relation to the said arms or brackets. Springs A′ are to be interposed in the slots Y, between the studs Z and the ends of the arms C′.

The box-casings L may be and are preferably each constructed in two parts or sections in order to enable them to be conveniently adjusted upon the shaft-section M.

The car-coupling which is preferably used in connection with my invention comprises the draw-head D′, which is arranged in the usual manner at the end of the car. The draw-head is provided with the mouth E′, and with the vertical openings F′, in which is arranged the vertically-sliding pin G′, which has an upward extension H′, sliding in a suitable guide-arm or bracket I′. A spring J′ is coiled around the extension H′ of the coupling-pin and bears against the under side of the bracket I′, and against a shoulder K′ formed upon the coupling-pin, which latter, by the action of the said spring, is forced automatically in a downward direction and retained safely in position when the cars are coupled. To the upper end of the extension of the coupling-pin is attached one end of an operating-cord L′, which passes over a vertical guide-pulley M′, arranged at the end of the car, thence over a horizontal guide-pulley N′, arranged at the side of the car, and to a block O′, to which it is attached. The block O′ is attached to the under side of the outer end of an L-shaped lever P′, the inner end of which is mounted upon the pivoting pin or bolt Q′, by means of which the arm or bracket C is connected with the socket D, and which pin or bolt is extended upwardly for the purpose of such attachment. It will be seen that by swinging the outer end of the lever P′ in a forward direction the coupling-pin will be raised or lifted and the uncoupling effected.

R′ designates a clip or saddle, which straddles the draw-head D′, upon which it is secured detachably by means of a transverse pin P^3, passing through the sides of the clip below the mouth of the draw-head, as shown. The lower end of said clip is provided with lugs or ears S′ for the attachment of one end of a coiled spring T′, the opposite end of which bears against and serves to support an inclined plate or guide U′, which is hinged by means of pin P^3 to the forward extension of the clip or saddle R′, whereby the said guide-plate is brought into alignment with the lower edge of the mouth of the draw-head. The guide-plate U′ is wider at its outer end, and it is provided at its sides with flanges W′, which are pivoted to the front end of the said guide-plate, connected by cross-pieces C^4 under the same, and supported in a raised position by means of the spring T′. This guide-plate serves to guide the link of the next adjoining car into position in the draw-head when the coupling is to be effected, and inasmuch as it is only to be used upon one of the adjacent draw-heads at the same time the said guide-plate with its attachments is made detachable and interchangeable from one car or draw-head to another, as has been above described.

X′ is an arm or bracket, extending laterally from the side of the car in rear of the block or box L, and provided at its outer end with a downwardly-extending rearwardly-facing hook Y′. Each of the blocks O′ is also provided with a downwardly-extending eye Z′. The hook Y′ and the eye Z′ are to engage, respectively, an eye and a hook extending radially from the shaft B, as will be presently more fully described.

The front end of the shaft B extends forwardly to the locomotive, as shown in Fig. 1 of the drawings, in such a manner as to be within convenient reach of the engineer. At its front end the shaft is provided with a disk A^2, by means of which it may be manipulated by the engineer. Said disk also forms an indicator, by means of which the shaft B may be turned to the proper position for uncoupling any one of the cars of the train. This is effected in the following manner: The face of the disk is provided with numbers, from 1 upward, corresponding with the numbers of the cars in the train, each of which has its number conspicuously displayed, as will be seen at B^2 in Fig. 8 of the drawings. A pointer or indicator C^2 is suitably arranged in a fixed position with relation to the revolving shaft, and to the said indicator may be connected a pivoted pawl D^2, adapted to engage notches E^2 in the periphery of disk A^2, corresponding with the numbers thereon. It should be noted that the ring or flange W in the mouth V of the shaft-coupling box L on each car must be located in precisely the same position, so that the said ribs throughout the entire train shall be in alignment with each other. The notches U in the flanges T of the shaft-sections N, on the contrary, are so disposed as to register with the numbers upon the indicator-disk A^2. In other words, when the said disk is turned so as to bring a certain number to register with the pointer C^2 the shaft-section N, entering the coupling-box L of the car bearing a corresponding number, will be turned to such a position as to cause its notch U to register with the rib W, thus enabling said shaft-section to be withdrawn from its coupling-box, while the shaft remains unbroken through the remainder of the length of the train. The disk having been turned to a proper position, it is pulled in a forward direction, thus withdrawing the

shaft-section N of the car, to be uncoupled from the coupling-box L. The shaft-sections M and N are provided, respectively, with an eye F^2 and a hook G^2, which, when the said shaft-sections are turned into position for uncoupling, extend directly upward, so as to engage, respectively, the hook Y′ and the eye Z′ described above. The hook Y′ intersects the shaft-section N, and prevents it, together with the coupling-box, from being drawn forward beyond a certain point, thus permitting the shaft-section N to be readily disengaged from the coupling-box. At the same time the hook G^2 engages the eye Z′ upon the under side of the block O′, which latter, as has been stated, is mounted at the outer end of lever T′. When said block is drawn forwardly, it carries with it the operating-cord A′, whereby the coupling-pin is raised against the tension of the spring J′, and the uncoupling is effected. In order to couple the cars, the operation will be simply reversed.

H^2 designates a car-register consisting of a suitable casing arranged in the engineer's cab, and which is provided with a series of shelves I^2 to form compartments J^2, adapted to hold the cards K^2, bearing the names of the way-stations where cars are to be cut out of the train and the numbers of the cars to be left at such stations. The case H^2 is provided at its sides with doors O^2, having suitable fastenings M^2, through which access may be had to the interior of the case, thus enabling the engineer, when a car is being switched off, to remove or reverse the corresponding car, and thus assisting him in properly controlling and operating the uncoupling device.

In Fig. 10 of the drawings I have illustrated a modification of my invention, which consists in providing the front end of the shaft B with a rack-bar M^6, suitably connected thereto by means of brackets N^6, and engaging a pinion O^6, mounted upon a transverse shaft B^6, which is journaled in suitable bearings, and is provided at its inner end with a hand-wheel Q^2, which may be conveniently reached and operated by the engineer. It is obvious that the shaft B will be arranged to revolve in the brackets N^6, while the latter are so arranged as to be prevented from having any longitudinal movement in the pintle D of the shaft.

The operation and advantages of this invention will be readily understood from the foregoing description taken in connection with the drawings hereto annexed.

By means of this device any one of the cars of a train may be readily disconnected or uncoupled and switched off and the remainder of the cars be connected as before. In the drawings hereto annexed the indicating-disk A^2 has been shown to be provided only with eight numbers corresponding with as many cars; but it is obvious that this number may be readily increased as long as the corresponding arrangement of the notches U in the flanges of the shaft-sections N is correctly adhered to, as well as the arrangement of the radially-extending hooks and eyes G^2 and F^2 upon the shaft-sections N and M.

It will be noticed that while the engineer is enabled by my invention to control and perform the coupling and uncoupling of the cars such coupling and uncoupling may also be performed, when desired, by simply manipulating the operating-cord L′ by hand and without necessity of going in between the cars.

The link-guide U′ herein described is automatic in its action and will guide the link of the opposing draw-head into the draw-head to which it is attached with certainty when the cars come together. The saddle or clip to which the guide-plate and supporting-spring are attached may be readily removed, by simply removing the pin or bolt P^3, and attaching it to another draw-head. The coupling-pin, being held down by the action of the spring J′, will be held safely to its seat under all circumstances, no matter to what jolting and unevenness of motion the cars may be subjected. It will also be particularly noticed that the spring-bearings for the bracket-sockets and for the boxes or hangers by which the longitudinal shaft is attached to the cars allow an opportunity for the several parts to play or work freely without becoming disconnected, thereby avoiding all danger of injury to the working parts of the invention by the swaying and undulating motion of the cars while in transit.

The construction is comparatively simple, and the coupling and uncoupling of the cars of the entire train are under the perfect control and supervision of the engineer who may attend thereto without leaving his cab.

It is obvious that many details of the construction of this device may be altered or modified without interfering with the successful operation, and I reserve the right to make such alterations and modifications as may be deemed expedient without departing from the spirit of my invention.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. In a device for coupling and uncoupling cars, the combination of a longitudinal shaft attached to a car in such a manner as to be capable of longitudinal movement, a hook extending radially from said shaft, a horizontally-arranged arm or lever having a block provided with a downwardly-extending eye adapted to engage the said hook, and a rope passing over suitable guide-pulleys and connecting the said block with the coupling-pin, substantially as herein described.

2. The combination of the longitudinal shaft, the boxes or bearings mounted upon the outer ends of the arms or brackets in such a manner as to be capable of longitudinal movement, and the sockets connected pivotally with the inner ends of the arms or brackets and having flanges whereby they

are mounted in and enabled to slide longitudinally in suitable casings attached to the side of the car, substantially as set forth.

3. The combination of the sockets D D, having slots I, the arms C C, mounted pivotally in said slots, and the springs J, arranged in said slots and bearing againt the pivot-pins, substantially as set forth.

4. The combination of the arm or bracket C, arranged as herein described, the pin or bolt Q, the lever P′, and the block O′, connected with the coupling-pin by means of a rope passing over suitable guide-pulleys, substantially as herein set forth.

5. The combination of the shaft-section N, mounted to revolve in the coupling-box L, and having a polygonal recess at its front end, with the shaft-section N, adapted to be mounted detachably in the said coupling-box, and provided with a nipple or extension adapted to enter the said recess in the section N, substantially as set forth.

6. The combination of the coupling-box L, having the flaring mouth V, provided with the tapering rib or flange W, with the shaft-section M, mounted to revolve in said coupling-box, and the shaft-section N, having the flange T, provided with notch U, substantially as set forth.

7. The combination of the coupling-box L, having flaring mouth B, provided with rib or flange W, the shaft-section M, mounted to revolve in said shaft-coupling box and having recess R, and the shaft-section N, having notched flanges T and nipple or extension S, substantially as set forth.

8. In a device for coupling and uncoupling cars, the combination, with suitable supports or bearings, of a longitudinally movable and revoluble shaft extending through the entire length of the train and composed of sections connected to the individual cars thereof, and suitable means for connecting or coupling together the said shaft-sections and for uncoupling or disconnecting them at any particular time when it is desired to break the train, substantially as herein described.

9. In a device for coupling and uncoupling cars, a longitudinal shaft extending through the entire length of the train and composed of longitudinally-movable sections attached to the individual cars, in combination with the shaft-couplings, constructed substantially as described, and so arranged as to admit of the shaft being disconnected only at one particular point at a given time, substantially as set forth.

10. In a device for coupling and uncoupling cars, the combination of the longitudinally-movable shaft, the herein-described couplings for connecting the sections of the same, and an indicator-disk at the front end of said shaft accessible to the engineer and having numbered notches that correspond with and may be brought into alignment with the shaft-couplings of any correspondingly-numbered car, substantially as herein described.

11. The hooks and eyes G^2 F^2, extending radially from the shaft-sections M and N, and registering with the notches U, formed in the flanges T upon the shaft-sections N, substantially as and for the purpose set forth.

12. The combination of the shaft B, the brackets N^6, journaled upon the said shaft and having their rack-bar M^6, the transverse shaft B^6, having pinion O^6, and the hand-wheel Q^2, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

JOHN N. SCARBOROUGH.

Witnesses:
JOHN H. SIGGERS,
R. J. MARSHALL.