(No Model.)

2 Sheets—Sheet 1.

S. A. MUSTAIN.

MEANS FOR TRANSPORTATION.

No. 567,861. Patented Sept. 15, 1896.

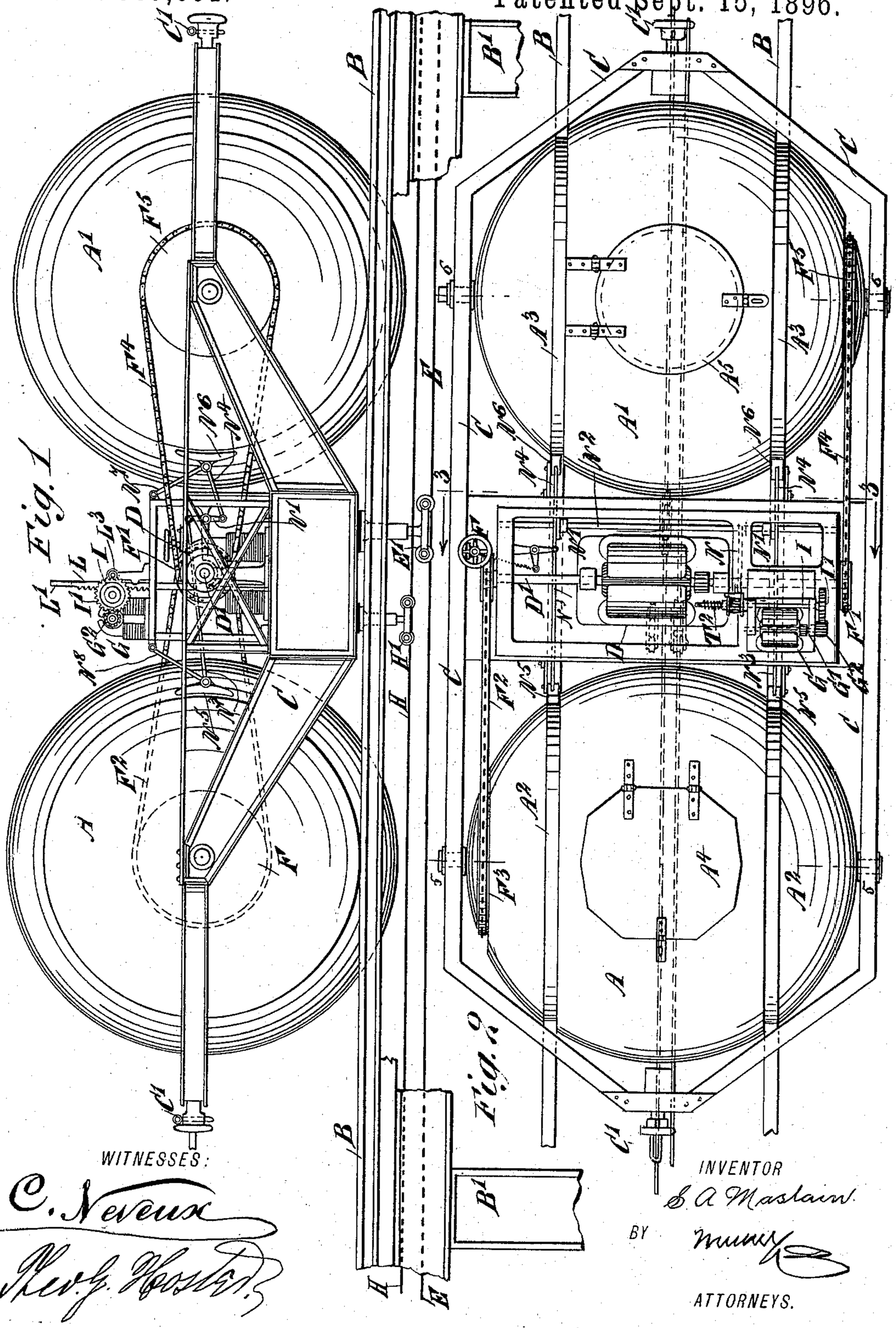

Fig. 1

Fig. 2

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 1

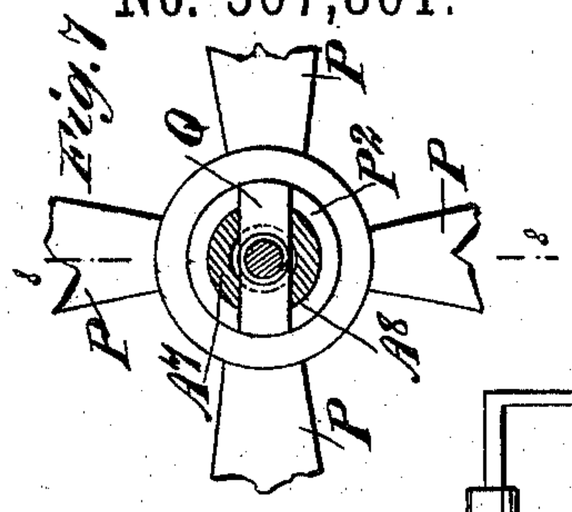


Fig. 3

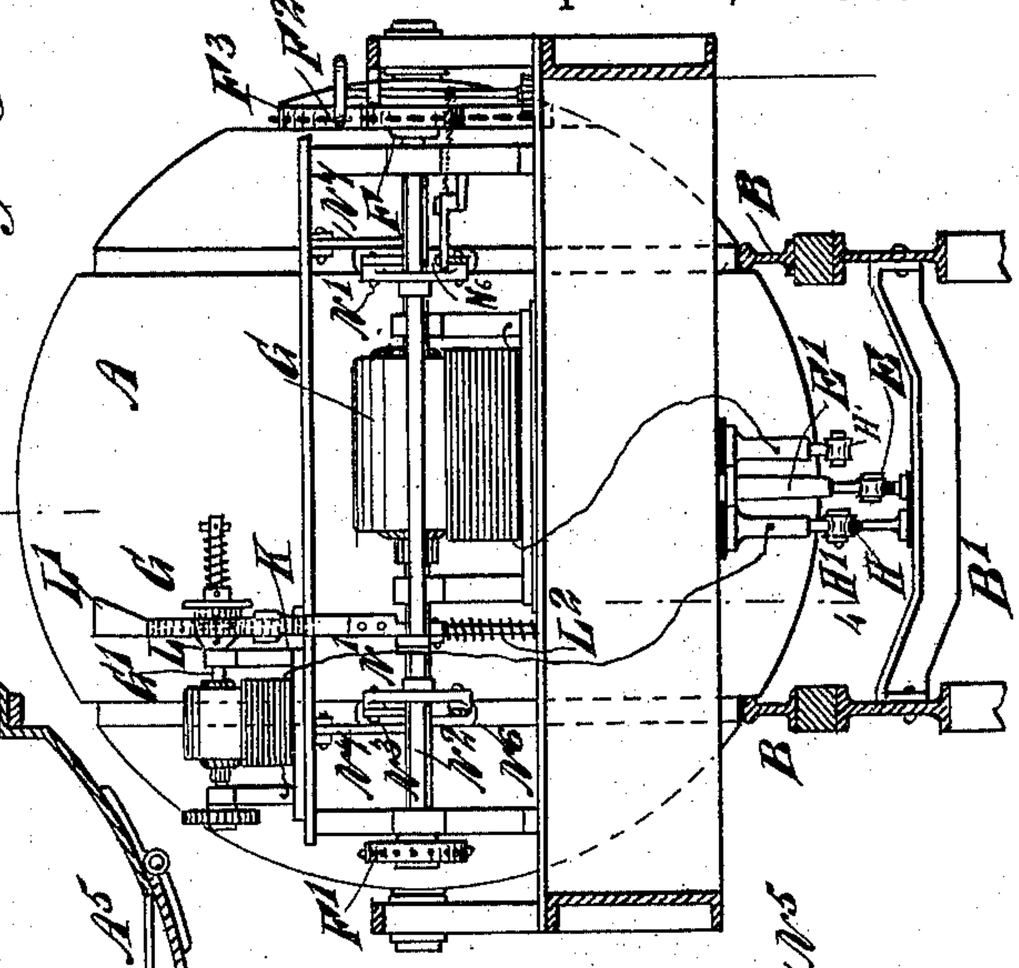


Fig. 6

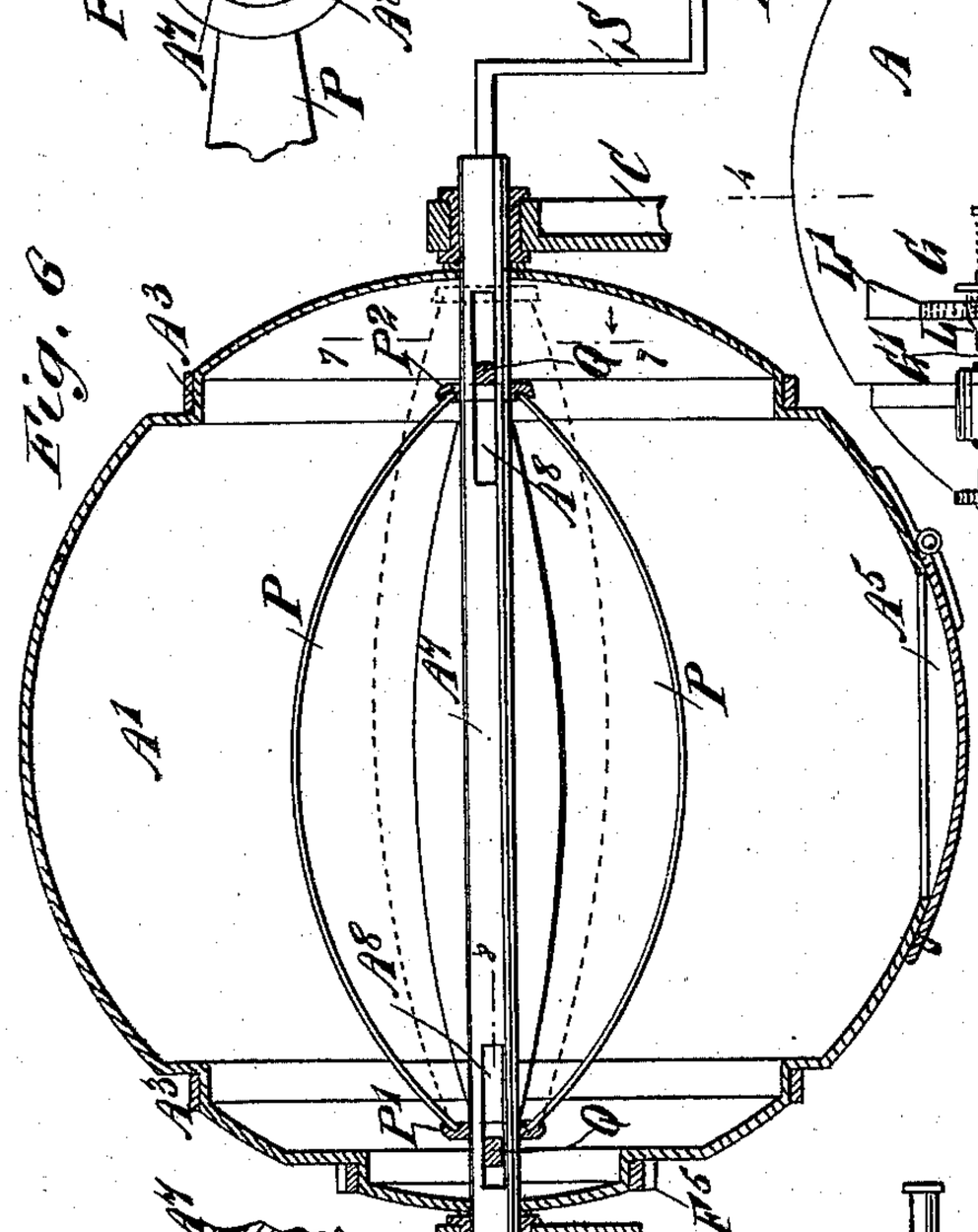


Fig. 4

Fig. 8

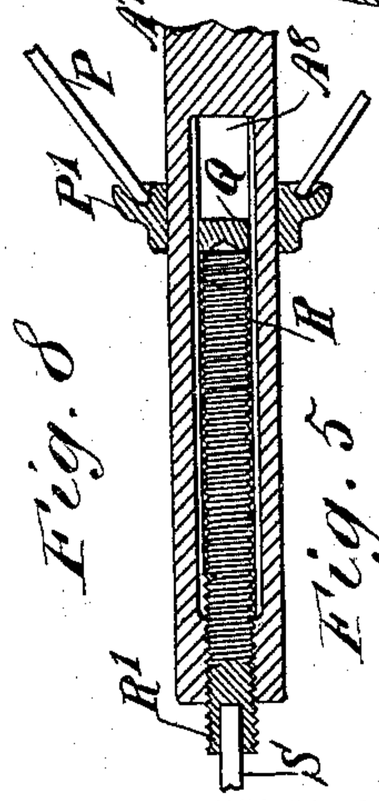


Fig. 5

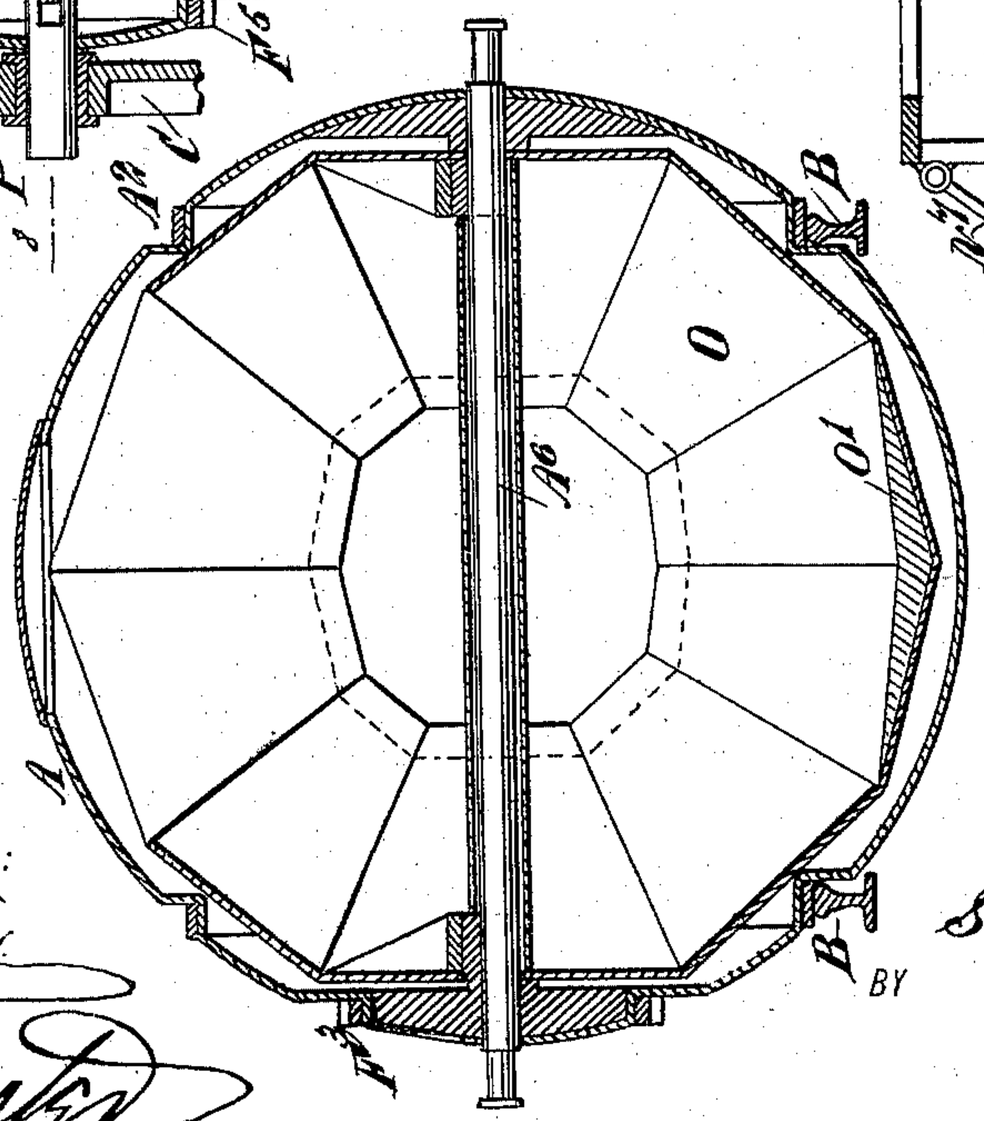
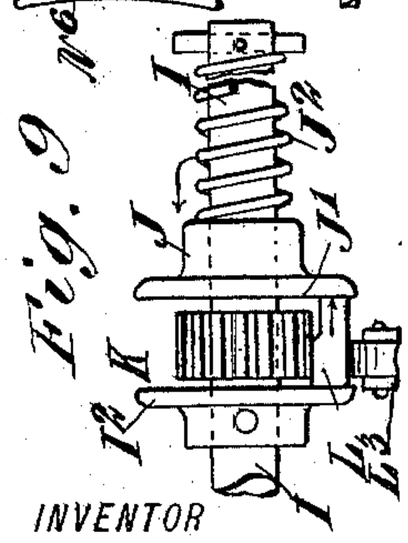


Fig. 9



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UNITED STATES PATENT OFFICE.

SHADRACH A. MUSTAIN, OF RINCON, TERRITORY OF NEW MEXICO.

MEANS FOR TRANSPORTATION.

SPECIFICATION forming part of Letters Patent No. 567,861, dated September 15, 1896.

Application filed February 26, 1896. Serial No. 580,783. (No model.)

To all whom it may concern:

Be it known that I, SHADRACH ALVIN MUSTAIN, of Rincon, in the county of Donna Ana and Territory of New Mexico, have invented a new and Improved Means of Transportation, of which the following is a full, clear, and exact description.

The object of the invention is to provide certain new and useful means for transporting mail and express matter, grain, fruit, and other merchandise from one place to another at a very high rate of speed and at a comparatively low cost for the service.

The invention consists principally of a car-body made in the form of globes or spheres adapted to travel on a track.

The invention also consists of certain parts and details and combinations of the same, as will be fully described hereinafter, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the improvement. Fig. 2 is a plan view of the same. Fig. 3 is a transverse section of the same on the line 3 3 of Fig. 2. Fig. 4 is an enlarged sectional side elevation of the brake mechanism, the section being taken on the line 4 4 of Fig. 3. Fig. 5 is an enlarged cross-section of one of the globe-wheels, the section being taken on the line 5 5 of Fig. 2. Fig. 6 is a similar view of the other globe-wheel, the section being taken on the line 6 6 of Fig. 2. Fig. 7 is an enlarged sectional side elevation of part of the same on the line 7 7 of Fig. 6. Fig. 8 is an enlarged longitudinal section of the axle on the lines 8 8 of Figs. 6 and 7, and Fig. 9 is an enlarged side elevation of the trip mechanism on the brake-motor.

The improved device is provided with two or more globes A A′, made hollow, so as to form receptacles for the matter to be transported from one place to another, said globes being provided with external wheel-surfaces or treads A^2 and A^3, adapted to travel on track-rails B, preferably supported on an elevated structure B′, extending from one place to another. The globes A A′ have their axles journaled in a suitable frame C, provided at its ends with coupling devices C′ for connecting a series of such transportation devices with each other to form a train, if desired.

In order to impart motion to the globes A A′, so as to propel the device over the track-rails B from one place to another, I prefer to make use of an electric motor D, deriving its supply of electricity from a trolley-wire E, supported on the elevated structure B′ and connected with a suitable source of electrical supply. The trolley-wire E is engaged by trolley wheels or brushes E′, supported from the frame C and connected with the motor D in the usual manner, so as to rotate the shaft D′ of said motor.

The shaft D′ extends transversely and is provided at its ends with track-wheels F and F′, of which the track-wheel F is connected by a sprocket-chain F^2 with a sprocket-wheel F^3, secured or formed on the globe A, as is plainly illustrated in the drawings. The other sprocket-wheel, F′, is connected by a sprocket-chain F^4 with a sprocket-wheel F^5 on the other globe A′, so that when the motor D is in motion and the shaft D′ is revolved then said sprocket wheels and chains impart a rotary motion to the globes A A′, so that the latter travel forward on the track-rails B.

In order to stop the machine at a station, I provide a suitable brake mechanism actuated from a small motor G, supported on the frame C and adapted to be driven from two brake trolley-wires H, strung on the elevated structure B′ and engaged by two trolley-wheels H′, connected with said motor G. It is desirable to have two brake trolley-wires H and two trolley-wheels H′ for the same to insure a contact between the said wheels and wires should a car be turned around, it being understood that the said wires are located on opposite sides of the wire E, and the two wheels H′ are located on opposite sides of the wheels E′, as will be readily understood by reference to Fig. 3. Each brake trolley-wire H extends a suitable distance from the station at which the machine is to be stopped, and the operator in charge of the station, by controlling a suitable switch, can let the current of electricity pass from the trolley-wire E to the brake trolley-wire H, so that the small motor G is set in motion. By this arrangement the brakes are actuated a suitable distance from the station, so that when the

machine finally arrives at the station it is sufficiently braked to come to a stop.

In order to actuate the brakes automatically from the motor G, I provide the main shaft G′ of said motor with a pinion G^2 in mesh with a gear-wheel I′, secured on a transversely-extending shaft I, mounted to turn in suitable bearings on the frame for the motor G. On this shaft I is mounted to turn and fitted to slide longitudinally a trip-wheel J, provided with clutch-teeth J′, adapted to engage similar clutch-teeth formed on one face of a pinion K, mounted to turn loosely on the shaft I and adapted to abut against a collar I^2, rigidly fastened to the shaft I, as plainly illustrated in Fig. 9. A spring J^2, coiled on the shaft I, presses on the trip-wheel J to engage the pinion K to rotate the latter as soon as the motor G is set in motion by the electric current from the brake trolley-wire H. The pinion K is in mesh with a rack L, extending vertically and provided on its upper end with a wedge L′, adapted to pass between the collar I^2 and the trip-wheel J, so as to press the latter away from the collar I^2 to disengage pinion K from the trip-wheel J.

The lower end of the rack L is pressed on by a spring L^2, so as to hold the rack L normally in an uppermost position—that is, during the time the brakes are released said spring L^2 is pressed on the downward movement of the rack L whenever the motor G is started and the shaft I is rotated, as above explained. The lower end of the rack L is pivotally connected with an arm N, keyed on a shaft N^2, extending transversely and mounted to turn in suitable bearings in the framework supporting the motor G. (See Fig. 4.)

On the shaft N^2 are secured two sets of double arms N′, arranged in alinement with the treads A^2 and A^3 of the globes A and A′, and said double arms are pivotally connected by links N^3 and N^4 with brake-shoes N^5 and N^6, respectively, adapted to engage the treads A^2 and A^3 of the globes A and A′, respectively. The links N^7 and N^8 guide the movement of the brake-shoes N^5 and N^6 to and from the treads A^2 and A^3, as will be readily understood by reference to Figs. 1, 2, and 4. A friction-collar L^3, journaled in a suitable bearing, presses against the back of the rack L, so as to hold the latter in mesh with the pinion K, as indicated in Fig. 9.

Now it will be seen that when the motor G is actuated and a rotary motion is given to the shaft I, as previously explained, then the spring J^2 by holding the trip-wheel J hard against the pinion K causes a rotary motion of the said pinion, whereby the rack L is moved downward and the lever N is swung in a downward direction to cause the links N^3 and N^4 to move outward in opposite directions, so as to bring the brake-shoes N^5 and N^6 in frictional contact with the treads A^2 and A^3. The globes A and A′ are thus braked, and when the shoes N^5 and N^6 are applied then the upper wedge-shaped end L′ of the rack L moves between the collar I^2 and trip-wheel J, so as to force the same apart and move the teeth J′ and K′ out of engagement. As soon as this takes place the spring L^2 causes a return motion of the rack L in an upward direction to release the brake-shoes N^5 and N^6, it being understood that the pinion K is free to rotate in the opposite direction on account of being loose on the shaft I, and the pressure of the spring J^2 is overcome by the wedge L′. As the rack L moves into an uppermost position then the stress of the spring J^2 again forces the trip-wheel J in contact with the pinion K, so that the rack L is again moved downward and the brakes are again applied. The above-described operation is again repeated, that is, the brake-shoes N^5 and N^6 are intermittently applied and released until the machine comes to a stop.

The globes A and A′ are provided with suitable doors A^4 and A^5, respectively, for filling the globes with the material to be transported from one place to another and removed from the globes when the machine arrives at its destination. The material to be transported may be packed into the globes so as to turn with the latter; but for breakable merchandise I prefer to provide the globe A with a receptacle O, preferably made in basket form and hung loosely on the axle A^6 of the globe A. (See Fig. 5.) The bottom of the receptacle O is preferably weighted, as at O′, so as to prevent the basket from revolving with the globe A. The material to be transported is placed in the basket, and when the machine is in motion the globes turn without, however, revolving said basket and its contents.

If the matter to be transported is to revolve with the globe, then I prefer the arrangement shown in Fig. 6, in which the globe A′ is provided with a packing device for firmly packing the matter in place in the globe. This packing device is provided with a number of spring-plates P, secured at their ends on collars P′ P^2, fitted to slide loosely on the axle A^7 for the globe A′. The outer faces of the collars P′ P^2 abut against bars Q, fitted to slide in longitudinal slots A^8, formed in the axle A^7, said bars being adapted to be moved inward by screw-rods R, screwing in the outer threaded ends of the axle A^7, as will be readily understood by reference to Figs. 6, 7, and 8. A crank-arm S is adapted to engage a socket R′ in the outer end of each screw-rod R to enable the operator to turn the latter inward or outward and move the corresponding bar Q correspondingly, so as to curve the spring-plate P outward against the material packed in the globe A′ and securely hold the material in place.

When the device arrives at its destination, then the screw-rods R, by the application of the detachable crank-arm S, are turned outward to permit the spring-plates P to assume their normal position and to release the material packed into the globe A′, so as to per-

mit of convenient removal of the material through the door A^5.

It will be seen that by the arrangement described cars of an ordinary railway can be hauled over this road, as the gage is the same as that of an ordinary or standard railway.

It will further be seen that merchandise, mail and express matter, grain, fruits, and the like can be conveniently transported from one place to another within a very short time, as the apparatus can be propelled at a very high rate of speed.

The arrangement plainly shows that in the transportation of grain neither the suspended device nor the packing device, as shown in receptacle O, globe A, and in Fig. 6, respectively, will be needed, the nature of grain in bulk admitting it to be placed loosely in the globe in its simplest form.

It will be seen that while globes A and A′ are specifically receptacles for the material transported, they are also, and in a broader sense, wheels for the support of the frame C.

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

1. A device of the class described, comprising a frame, globes mounted to turn in said frame and forming receptacles for the matter to be transported, said globes being provided with treads adapted to travel on track-rails, means for rotating said globes, an automatic brake mechanism for said globes, to brake the latter and stop the device at a station, said brake mechanism comprising an electric motor, two brake trolley-spools, for supplying said motor with electricity, brake-shoes adapted to be actuated from said motor, and an intermediate connection between said brake-shoes and said motor, for applying said brakes intermittently, substantially as shown and described.

2. A globe for transporting matter, provided with a packing device comprising a spring-plate, collars carrying the ends of said plate, bars fitted to slide and engaging said collars, and means for moving said bars, substantially as shown and described.

3. A device of the class described, provided with a brake mechanism comprising a driven shaft, a spring-pressed trip-wheel held to slide on and to turn with said shaft, a gear-wheel mounted loosely on said shaft and adapted to engage by said friction-trip, and a spring-pressed rack in mesh with said gear-wheel and connected with the brake mechanism proper, said rack being provided with a wedge adapted to pass between a fixed collar on said shaft and said clutch-wheel, substantially as shown and described.

4. In a vehicle, the combination with a frame, of carrying-wheels, a motor geared with and driving the carrying-wheels, a second motor carried by the frame, brake mechanism, and gearing connecting the brake mechanism and the second motor, such gearing being capable of alternately applying and releasing the brakes, substantially as described.

5. In a vehicle, the combination of a frame, carrying-wheels for the frame, a brake, a motor carried by the frame, and gearing connecting the brake and the motor, the gearing being capable of alternately applying and releasing the brakes, substantially as described.

6. In a vehicle, the combination of a frame, carrying-wheels for the frame, a motor carried by the frame, brakes also carried by the frame, a shaft geared with the motor, a clutch-controlled gear on the shaft, and a rack connected with the brakes and with the gear, the rack being capable of actuating the clutch of the gear substantially as described.

7. In a vehicle, the combination with a frame and carrying-wheels therefor, of a brake-shoe, a shaft, a clutch-controlled gear on the shaft and a rack capable of actuating the clutch, the rack being connected with the brake-shoe and with the gear, substantially as described.

8. The combination of a shaft, a gear carried by the shaft, means for fixing the gear to the shaft, a brake-shoe, and a connection between the brake-shoe and the gear, such connection being capable of controlling the means for fixing the gear to the shaft, substantially as described.

9. The combination of a shaft, a gear, a clutch capable of fixing the gear to the shaft, a brake-shoe, and a rack, the rack being in connection with the brake-shoe and gear and capable of controlling the clutch, substantially as described.

10. The combination of a shaft, a collar fixed thereon, a gear loose on the shaft, a spring-pressed clutch member carried by the shaft and capable of locking the gear thereto, and a rack engaged with the gear and having a projection capable of engaging the clutch to press the same out of engagement with the gear, substantially as described.

11. The combination of a shaft, a clutch-controlled gear carried thereon, a rack meshing with the gear and capable of controlling the clutch thereof, a rock-shaft with which the rack has crank connection, a brake-shoe, a link pivotally connected to the brake-shoe and to a support, and a link connected with the brake-shoe and with the rock-shaft, substantially as described.

12. In a vehicle, the combination with a frame and carrying-wheels therefor, of a motor supported by the frame, a shaft driven by the motor, a clutch-controlled gear on the shaft, a rack meshing with the gear and capable of actuating the clutch thereof, and a brake-shoe having connection with the rack, substantially as described.

13. The combination of a shaft, a clutch-controlled gear carried thereby, a rack meshing with the shaft and having a wedge at one end, and a brake-shoe actuated by the rack, the rack being capable of engaging the clutch of the gear with the wedge of the rack, substantially as described.

14. In a vehicle, the combination with the frame and the carrying-wheels thereof, of a motor supported by the frame, a shaft geared with the motor, a clutch-controlled gear on the shaft, a rack meshing with the gear and capable of actuating the clutch thereof, a rock-shaft, an arm fixed to the rock-shaft and in connection with the rack, two brake-shoes, a link pivotally connected to each brake-shoe and to the frame, and a second link pivotally connected to each brake-shoe, the second links being each in connection with the rock-shaft, substantially as described.

15. In a vehicle, the combination of a hollow receptacle, a shaft passing through the receptacle, a spring-arm in connection with the shaft, and means for bowing said arm by which it is made capable of holding material snugly within the receptacle, substantially as described.

16. The combination of a hollow receptacle, a spring-arm within the receptacle, and means for bowing said arm whereby the arm is made capable of engaging material and snugly holding it within the receptacle, substantially as described.

17. The combination of a hollow receptacle, a spring-arm mounted within the receptacle, and means for controlling the tension of said arm, the arm being capable of holding material snugly within the receptacle, substantially as described.

18. The combination of a hollow receptacle, a shaft passing through the receptacle, a spring-arm having one end in sliding connection with the shaft, and a screw carried by the shaft and in connection with the end thereof which slides on the shaft, substantially as described.

19. The combination of a hollow receptacle, a shaft carried in the receptacle, a spring-arm having one end slidably connected with the shaft, and a screw engaging said sliding end and capable of bowing the rod within the receptacle, substantially as described.

20. The combination of a hollow receptacle, a shaft passing through the receptacle, the shaft having its ends longitudinally bored and having slots respectively communicating with the bores, a spring-arm, a collar connected to each end of the arm, the collars sliding on the shaft adjacent to the slots, a bar passed through each slot and respectively engaging the collars, and a screw operating in each longitudinal bore and engaging the bar, substantially as described.

21. The combination with a frame, of a hollow receptacle revolubly mounted thereon, a shaft passing through the receptacle, the shaft having its ends longitudinally bored and having slots communicating with each bore, a plurality of spring-arms within the receptacle, a collar connected to each end of the arms, the collars respectively sliding on the shaft at points adjacent to the slots, a bar passing through each slot and respectively engaging the collars, and a screw operating in each bore and respectively engaging the bars, substantially as described.

22. A vehicle, having a frame and carrying-wheels therefor, a motor supported by the frame and geared with the carrying-wheels, a second motor also supported by the frame and independently operative of the first motor, a rotary shaft with which the second motor is geared, and a brake operated from the rotary shaft, substantially as described.

23. The combination of a hollow receptacle, a part within the receptacle and capable of expanding to clamp the material against the inner sides of the receptacle, and means for operating said part, substantially as described.

24. The combination with a vehicle, of a hollow receptacle revolubly mounted thereon, and operative means within the receptacle, such means being capable of snugly clamping material against the interior sides of the receptacle, substantially as described.

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