No. 746,838. PATENTED DEC. 15, 1903.

A. C. HONE.

MECHANISM FOR COUPLING OR UNCOUPLING CARS OR LOCOMOTIVES.

APPLICATION FILED APR. 16, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

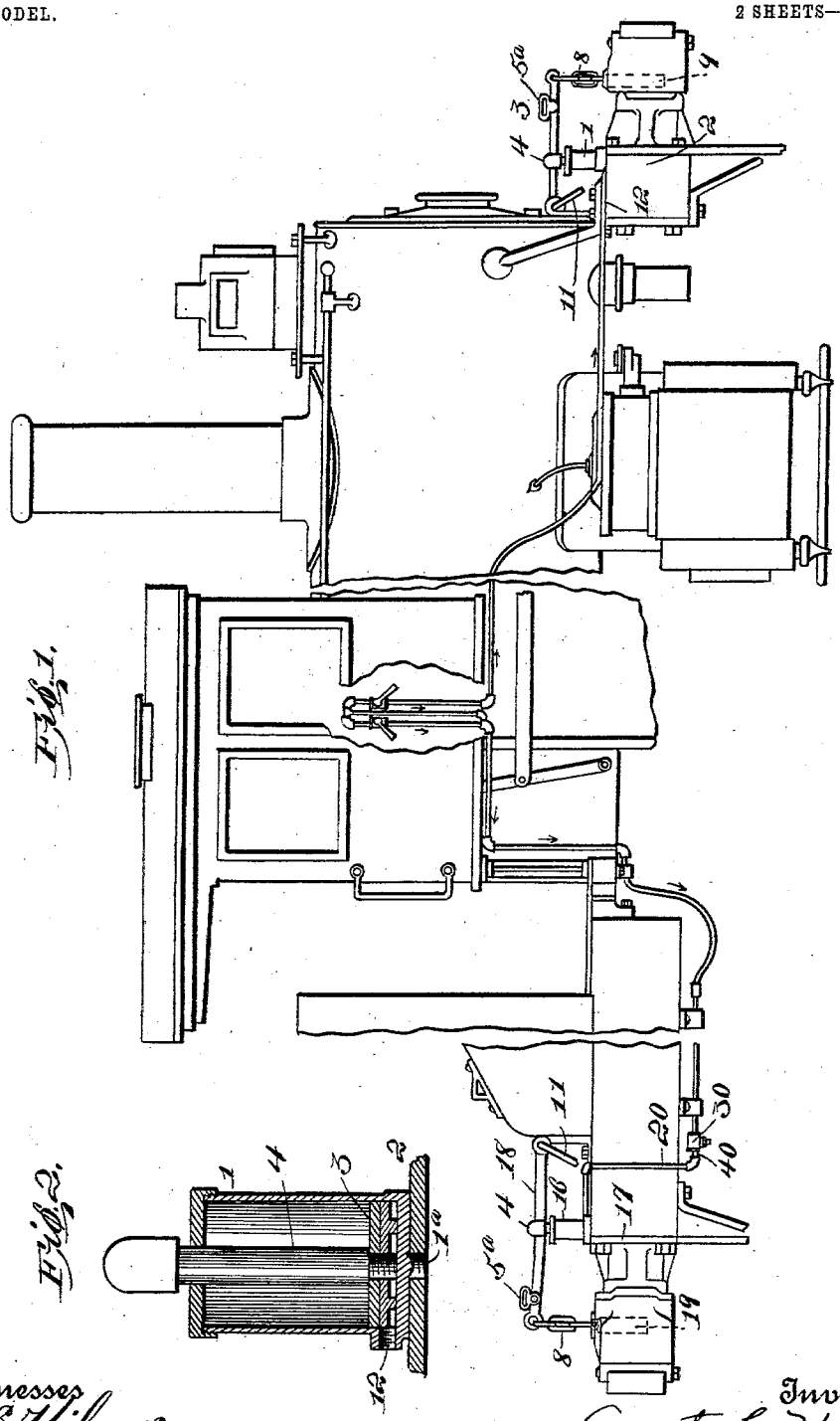


Fig. 1.

Fig. 2.

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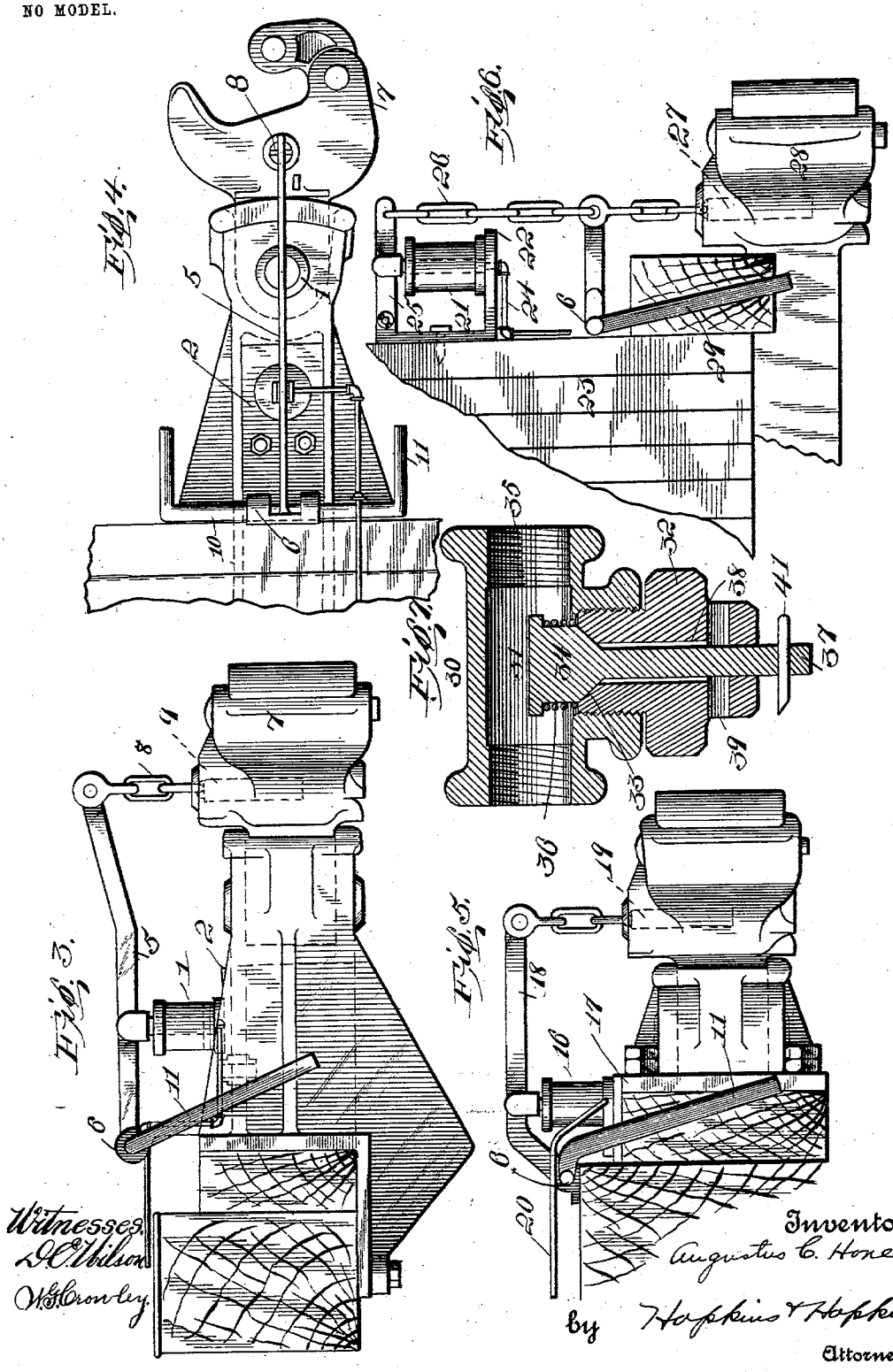
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UNITED STATES PATENT OFFICE.

AUGUSTUS C. HONE, OF LOUISVILLE, KENTUCKY.

MECHANISM FOR COUPLING OR UNCOUPLING CARS OR LOCOMOTIVES.

SPECIFICATION forming part of Letters Patent No. 746,838, dated December 15, 1903.

Application filed April 16, 1903. Serial No. 152,959. (No model.)

To all whom it may concern:

Be it known that I, AUGUSTUS C. HONE, a citizen of the United States, residing at Louisville, in the county of Jefferson and State of Kentucky, have invented certain new and useful Improvements in Mechanism for Coupling or Uncoupling Cars or Locomotives, of which the following is a specification.

This invention relates to improvements in mechanism for pneumatically coupling and uncoupling cars and locomotives; and it consists in a mechanism comprising a cylinder having a piston moving therein, means for applying air-pressure to the piston, and means for connecting the same with a coupler, whereby it may be unlocked or opened ready for coupling or uncoupling.

It also consists in certain other novel constructions, combinations, and arrangements of parts, as will be hereinafter fully described and claimed.

In the accompanying drawings, Figure 1 is a side elevation of a portion of a locomotive or its tender, showing my improved coupling mechanism applied thereto. Fig. 2 is an enlarged detail sectional view through a pressure-cylinder used in said apparatus. Fig. 3 represents a side elevation of an engine-pilot coupler provided with an operating mechanism constructed in accordance with my invention. Fig. 4 represents a top plan view of the same. Fig. 5 shows a similar mechanism applied to the tender of the engine. Fig. 6 represents a side elevation of my improved coupler-operating device applied to a box-car. Fig. 7 is a detail sectional view showing a drain-cock employed in the piping of the coupler-operating mechanism.

My invention is designed to place the coupling and uncoupling of a train with a locomotive under the control of the engineer, and, further, to place the coupling or uncoupling of different cars in a train under the control of train or brake men, either upon the tops of cars or at any point thereon, the construction being such that it is not necessary for them to go between the cars at all to operate the couplers. The invention is such, also, that greater power can be applied for operating the couplers than can ordinarily be applied by the strength of one man.

In carrying out the features of my invention I preferably mount upon a locomotive or car a cylinder, as 1. In applying the device to a locomotive this cylinder 1, which is preferably closed at the bottom and provided with a screw-threaded attaching projection 1^a, may be placed upon the coupler-support 2, attached to the pilot of the engine, the said projection 1^a being screwed into the threaded aperture of said support. The cylinder 1 is provided with a reciprocating piston, as 3, having a piston-rod 4 extending out through one end of the cylinder and engaging the lever 5. The upper end of the piston 3 is preferably bifurcated to receive the lever 5 and be in position to raise the same when power is applied to the cylinder.

The lever 5 is preferably fulcrumed, as at 6, to a standard secured to the coupler-support, while its other end extends across the end of the cylinder 1, resting in the bifurcated end of the piston 3 and forward to a point above the coupler 7. Its outer end may be connected, by means of a chain, as 8, one or more links, or other similar means, with the key 9 of the coupler. The bar or lever 5 is preferably the usual bar which is secured to the usual rotating rod or shaft 10, having side operating-handles 11 11, by which the coupler can be operated by hand. As seen in Fig. 1 of the drawings, the lever 5 may also be provided with a handle, as 5^a, by which it may be operated directly by hand, if desired. A pressure-pipe, as 12, enters the lower end of the cylinder 1, so as to admit pressure beneath the piston.

In applying the device to a tender it is arranged in practically the same manner as just described with respect to the pilot. In this instance, as illustrated in Figs. 1 and 5, a pressure-cylinder, as 16, is mounted upon the beam 17 on the end of the tender which carried the coupler, and the said cylinder has its piston connected with a lever 18, similar to the lever 5, used upon the pilot-coupling. The lever 18 is connected with the key 19 in the same manner as before described. The pressure-pipe 20 supplies air-pressure to the cylinder 16 for lifting the lever 18 and the key carried thereby. By equipping an engine with such a device upon its pilot-coupling and its tender-coupling the coupling and uncoupling of the locomotive with a train or

one or more cars at either end is entirely within the control of the engineer and can be operated instantly by him.

The pressure-pipes 12 and 20 extend to the cab of the locomotive and are preferably connected up, as by a pipe 2^a, with any suitable source of power, preferably a compressed-air tank placed beneath the locomotive or tender or in one of the cars of the train. Pressure may be maintained in this tank in the usual way, as in the case of the air-braking pipes. The pipes 12 and 20 are preferably provided with valves, as 12^b and 20^a, arranged within easy reach of the engineer of the locomotive, so that he can without changing his position open either coupler either for coupling or uncoupling the engine or tender to cars. When pressure is applied through either of the pipes, it will be exerted upon the piston in the operating-cylinder and force the piston upwardly and lift its lever, which in turn through the agency of the chain will raise the key of the coupler and permit the pivoted jaw 13 thereof to be swung outwardly either for freeing an adjacent coupler or for receiving another.

In applying a device of this character to the couplers of the different cars of a train the mechanism can be arranged to suit the construction of the car, being mounted in a manner similar to that described with respect to the locomotive-couplers, or, as seen in Fig. 6, the cylinder 21 may be mounted upon a bracket 22, secured to the end of a box-car 23, the pressure-pipe 24 entering the said cylinder 21 through the bottom thereof. The piston in the cylinder is connected with a comparatively short lever 25, fulcrumed to the said bracket at one end and connected, by means of a chain 26 at the other end, with the key of the coupler 28. In this instance the hand-operated lever mechanism 29 can be connected directly with the chain without other connection with the cylinder-piston. The valves admitting pressure to the cylinders in case of individual cars may be variously placed, for instance, upon box-cars. They may be arranged at the top of the cars, so that the brakemen or trainman need not descend between the cars to operate the couplers. When applied to flat-cars or coal-cars, they may be placed in any convenient position, and also in the case of passenger-cars they may be placed within easy reach of a person upon the platform of said cars or could be placed inside the cars, if desired. In order to keep the pressure-pipes clear of liquids, I employ a drain-cock 30, adapted to be arranged at one or more suitable points in said piping. As shown in Fig. 7, it comprises a T connection 31, into which is screwed a plug 32, having a valve-seat 33 at its inner end to receive a valve 34. The valve 34 is formed with a head-flange 35, between which and the end of the plug 32 is interposed a spring 36 for normally holding the valve open. The valve 34 has a stem 37, which passes through a bearing and passage formed in the plug 32. Outlet-passages 39 lead from the main passage 38. This simple device, arranged in a low place in the piping, as seen at 40 in Fig. 1, will close and be held closed when pressure is applied in the piping. When the pressure is relieved, however, the spring 36 will be free to act and will lift the valve from its seat, so that the pipes may be thoroughly drained. A key or cotter-pin, as 41, may be passed through the outer end of the valve-stem 37 to limit the inward movement of the valve. Among other advantages secured by this means of operating the couplers may be mentioned the capability of applying a much more powerful pressure to the coupling device than a man could apply in using the hand-operated mechanism. For this reason also it will not be necessary to "take slack" in uncoupling a car or a train, for sufficient power can be applied by my invention to lift the key of a coupler, even when the cars are pulling tautly upon each other. This alone saves a great deal of time and labor in the handling of cars, and especially when switching them in train-yards when making up new trains or getting out certain cars.

My device is exceedingly effective, saving time and labor, and also minimizing the risk attending the coupling and uncoupling of cars.

A large number of the automatic couplers in use have means for opening the pivoted jaw of a coupler as soon as the key is lifted; but where such devices are not employed the difficulty can be readily overcome by the judicious placing of a spring, so as to push the pivoted jaw open whenever the key is lifted.

Having thus described the invention, what is claimed as new, and desired to be secured by Letters Patent, is—

1. A mechanism for coupling or uncoupling cars or locomotives, comprising a cylinder mounted upon the pilot of an engine, a lever fulcrumed at one end to the car and passing across the end of the cylinder, a piston mounted therein, means connecting the other end of the lever with the key of the pilot-coupling, and means for applying pressure to the piston in the cylinder, whereby the key of the coupler may be withdrawn so as to open the jaw of the coupler either for uncoupling or receiving another coupler.

2. A mechanism for pneumatically coupling or uncoupling cars or locomotives, comprising a cylinder mounted upon the pilot of of an engine, a lever fulcrumed at one end upon the car and passing across the end of the cylinder, a reciprocating piston mounted therein, means for connecting the other end of the lever with the key of the pilot-coupling, a pipe leading from a source of pressure, and means within the reach of an engineer or trainman, whereby the pressure may be applied at will to operate the coupler, substantially as described.

3. A mechanism for pneumatically controlling car or locomotive couplings, comprising a cylinder mounted upon the pilot of an engine, a lever fulcrumed at one end to the car and passing across the end of the cylinder, a piston moving therein, means connecting the other end of the lever with the key of the pilot-coupling, the construction being such that when pressure is applied in the cylinder the lever will be lifted carrying the key of the coupler with it and releasing the pivoted jaw thereof, substantially as described.

4. A mechanism for pneumatically operating couplers, comprising a cylinder mounted upon the pilot of an engine, a lever fulcrumed thereon at one end and passing across the end of the cylinder, means connecting its other end with the key of the pilot-coupling, a piston in the said cylinder, a piston-rod connecting the same with the lever, a pipe entering the cylinder for admitting pressure to the same, the said pipe being provided with a controlling-valve within easy reach of the engineer, whereby he can control the pilot-coupler without leaving his usual position, substantially as described.

5. A mechanism for controlling the operation of couplers, comprising a cylinder mounted upon the tender of an engine, a reciprocating piston mounted therein, a piston-rod extending upwardly on the said piston, a lever pivoted upon the tender at one end, a chain connecting the other end thereof with the key of the tender-coupler, a pipe leading from a compressed-air tank and having a controlling-valve arranged within reach of the locomotive-engineer for admitting compressed air to the said cylinder, the construction being such that the engineer can open the coupler without leaving the engine when necessary to connect or disconnect the tender with one or more cars, substantially as described.

6. A mechanism for pneumatically operating the couplers of a locomotive, comprising cylinders arranged near the front and rear couplers thereof, pistons mounted in said cylinders, levers connecting the piston of the said cylinders with the keys of the couplers, pressure-pipes leading from each cylinder into the cab of the locomotive, valves in each of said pipes, whereby the engineer can control the action of the pressure-cylinder at will, and a pipe connecting the said coupler-pipes with a suitable source of pressure, substantially as described.

7. A mechanism for pneumatically coupling or uncoupling cars or locomotives, comprising a lever fulcrumed on the car at one end, and connected with a pin or key of the car-coupler at its other end, a cylinder located beneath said lever, a piston moving therein having a piston-rod, the said piston-rod engaging the under side of the lever so as to be capable of lifting the same, and means for introducing pressure to the cylinder, substantially as described.

8. A mechanism for pneumatically coupling or uncoupling cars or locomotives, comprising the ordinary hand-operated shaft arranged in suitable proximity to the car-coupler, a lever carried by said rock-shaft and secured at its outer end to the pin or key of the said coupler, a cylinder arranged beneath the lever at a point intermediate of its length, a piston moving in the said cylinder, a rod secured to the piston and projecting upwardly beneath the lever so that the said lever will rest upon the end of the said piston-rod, and means for introducing a suitable pressure into the said cylinder, for raising the lever and lifting the pin or key of the coupler, substantially as described.

9. A mechanism for pneumatically coupling or uncoupling cars or locomotives, comprising a lever having a pivotal bearing at one end upon the car, a chain for connecting the outer end of said lever with the key or pin of the coupler, a cylinder mounted on the car having a power-piston moving therein, a piston-rod connected with the piston and projecting from the end of the cylinder, the arrangement of the parts being such that the lever will be against the end of the piston-rod and will be actuated thereby when power is introduced into the said cylinder, substantially as described.

10. A mechanism for coupling and uncoupling cars, comprising a lever fulcrumed at one end and connected with the pin of the car-coupler at its other end, a power-piston arranged beneath the lever at any intermediate point along the same, a piston moving in the cylinder, a piston-rod carried thereby having a bifurcated head formed upon its outer end adapted to receive the lever, and means under the control of the engineer of the train for applying power to the cylinder, whereby the piston and piston-rod will be raised and the lever will be operated to lift the coupler-pin for uncoupling cars, substantially as described.

11. A mechanism for pneumatically coupling or uncoupling cars, comprising a pivoted lever, a chain connecting the free end of said lever with the pin of the coupler, a power-piston arranged in proper relation to the lever, so that its piston-rod will engage the lever, a piston and piston-rod moving in the cylinder, the inner end of the piston-rod being secured to two plates forming the said piston, spacing-lugs upon one of the plates for holding the piston a slight distance from the end of the cylinder so that pressure can always be introduced between the piston and cylinder-head, and means for introducing pressure into the said cylinder, substantially as described.

12. A mechanism for operating the couplers at each end of the locomotive, comprising levers fulcrumed upon the front of the locomotive and the rear of the locomotive-tender, means for connecting the said levers with the pins of the locomotive and tender

couplers, power-cylinders arranged beneath each of the said levers so that they will pass across the ends of the piston-rods of the said cylinder, means for introducing pressure to each of the said cylinders comprising piping leading to the cab of the locomotive, a supply-pipe connected with each of the coupler-pipes, and valves in each of the coupler-pipes, so arranged that the engineer may operate either coupler at will, substantially as described.

13. A mechanism for pneumatically coupling or uncoupling cars or locomotives, comprising a comparatively straight lever fulcrumed on the car at one end, and extending outwardly therefrom over the coupler of the car or locomotive to the key or pin of said coupler with which it is connected at its other end, a cylinder interposed between the said lever and the coupler, a piston moving therein having a piston-rod, the piston-rod engaging the under side of the lever at a point intermediate of its length so as to be capable of lifting the same and forcing it from the coupler with the said pin or key and means for introducing pressure to the cylinder, substantially as described.

14. A mechanism for pneumatically coupling or uncoupling cars or locomotives, comprising a hand-operated rock-shaft arranged across the end of the car so as to be operable from either side, a lever or arm carried by the said rock-shaft and extending at right angles therefrom, over the coupler of the car, the said lever being secured at its outer end to the pin or key of the said coupler, a cylinder arranged beneath the lever at a point intermediate its length, a piston moving in the said cylinder, a piston-rod secured to the piston and projecting upwardly beneath the lever so that the lever will rest upon the end of the piston-rod, and means for introducing a suitable pressure into the said cylinder, for raising the lever and lifting the pin or key of the coupler, substantially as described.

15. A mechanism for pneumatically coupling or uncoupling cars or locomotives, comprising a comparatively straight lever projecting at right angles from the car and over the coupler thereof, and having a pivotal bearing at one end upon the car, means for connecting the outer end of said lever with the key or pin of the coupler, a cylinder mounted on the car above the coupler and beneath the lever and having a power-piston moving therein, a piston-rod connected with the piston and projecting from the end of the cylinder, the arrangement of the parts being such that the lever will lie against the end of the piston-rod and will be forced thereby away from the coupler carrying the key or pin with it when power is introduced into the said cylinder, substantially as described.

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

AUGUSTUS C. HONE.

Witnesses:
A. SCOTT BULLITT,
ALICE M. MONROE.