A. E. HANSON.

COMPRESSED AIR DOOR CLOSER.

APPLICATION FILED OCT. 5, 1908.

933,034.

Patented Aug. 31, 1909.

2 SHEETS—SHEET 1.

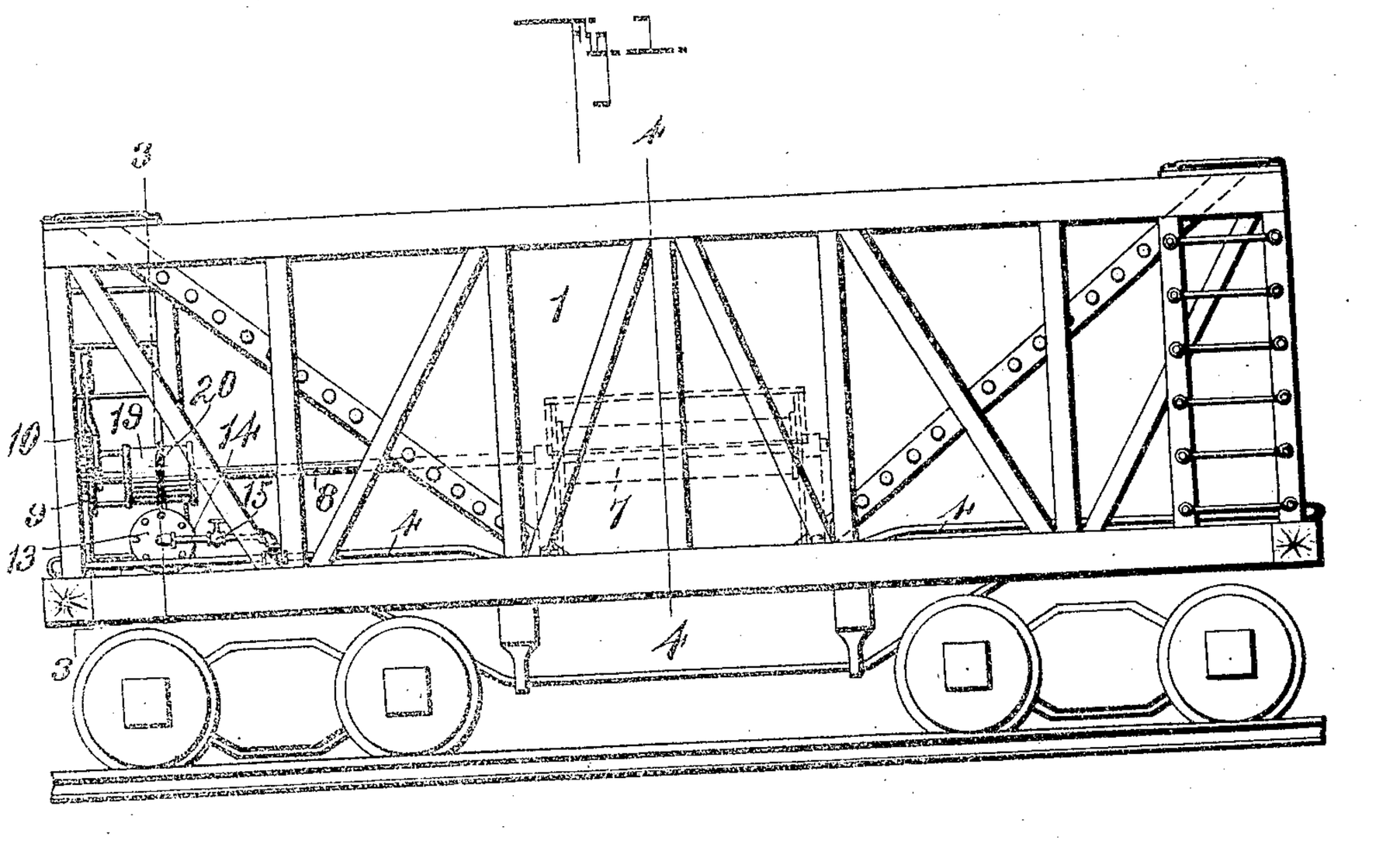

Fig. 2

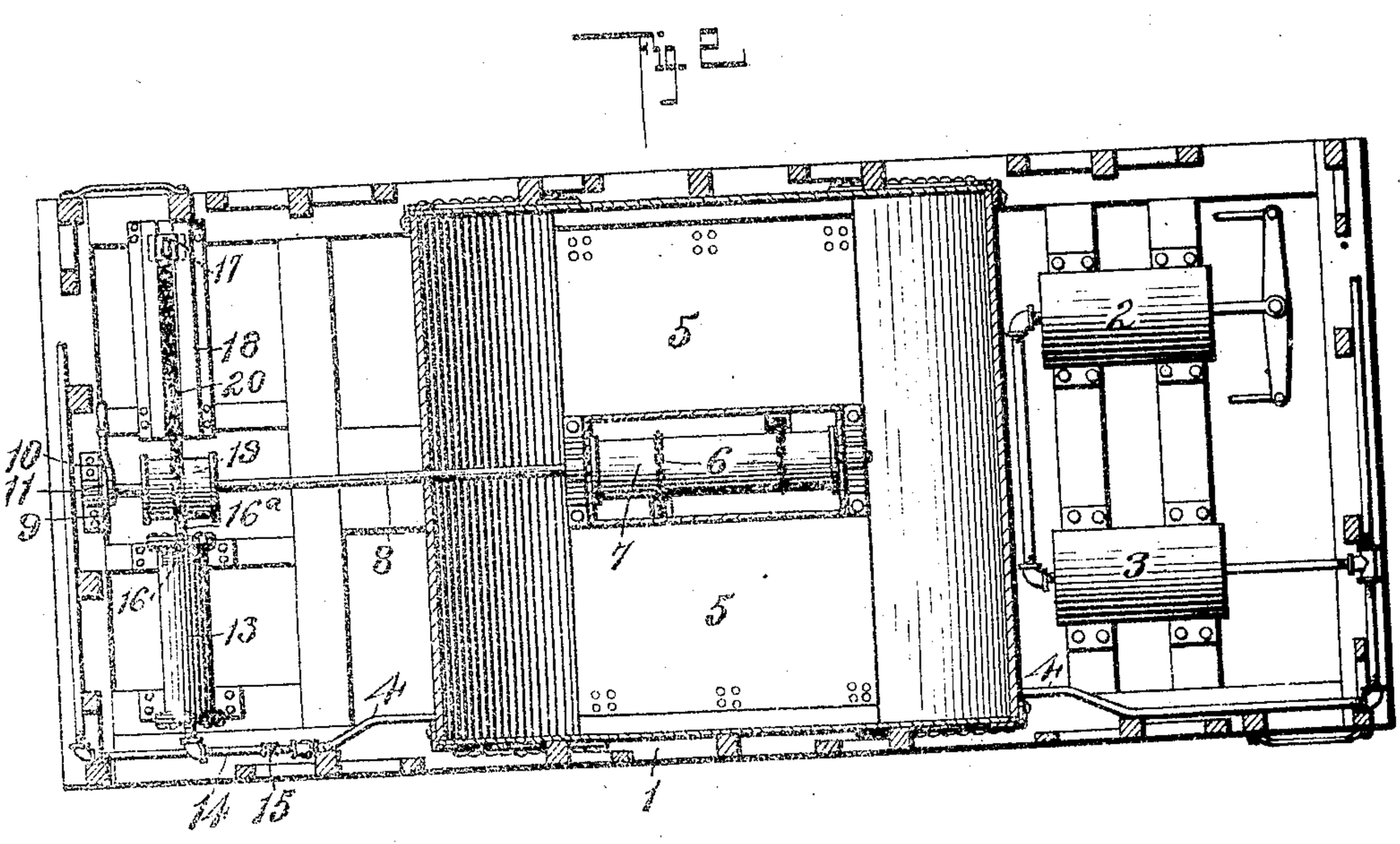

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Fig. 3.

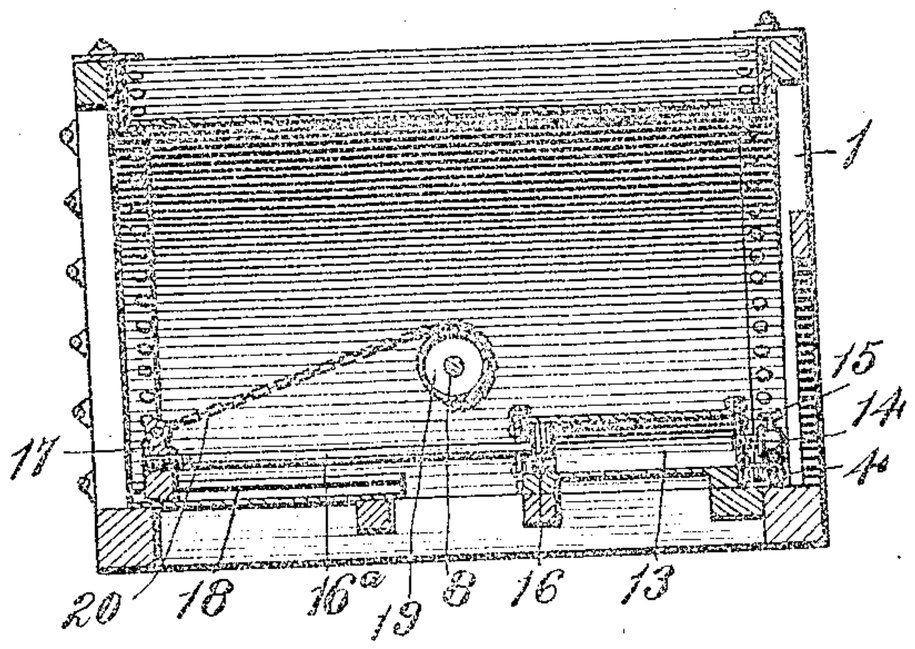



Fig. 4.

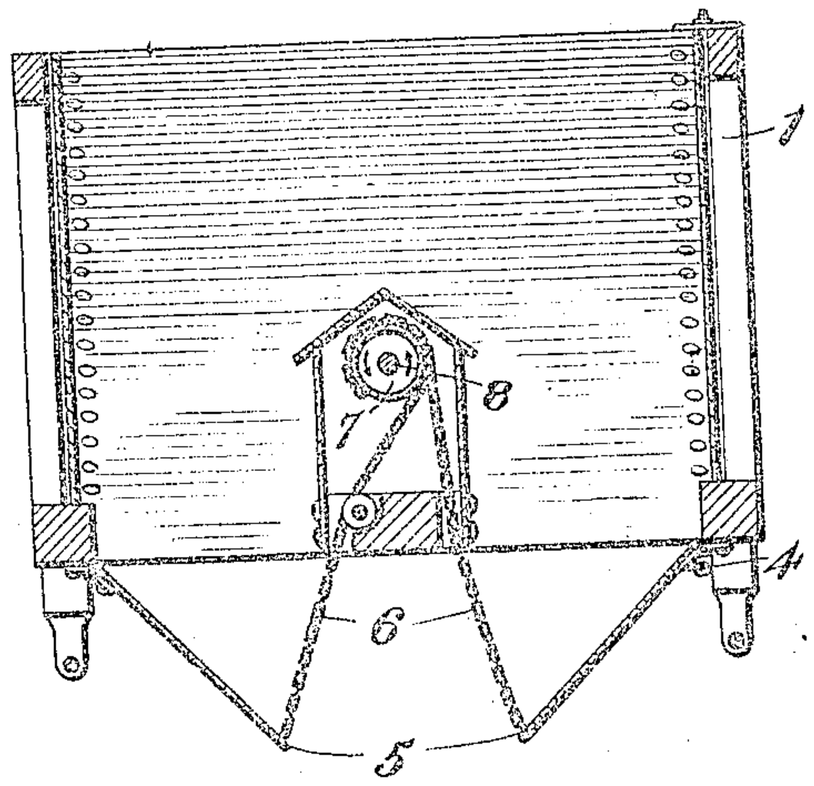
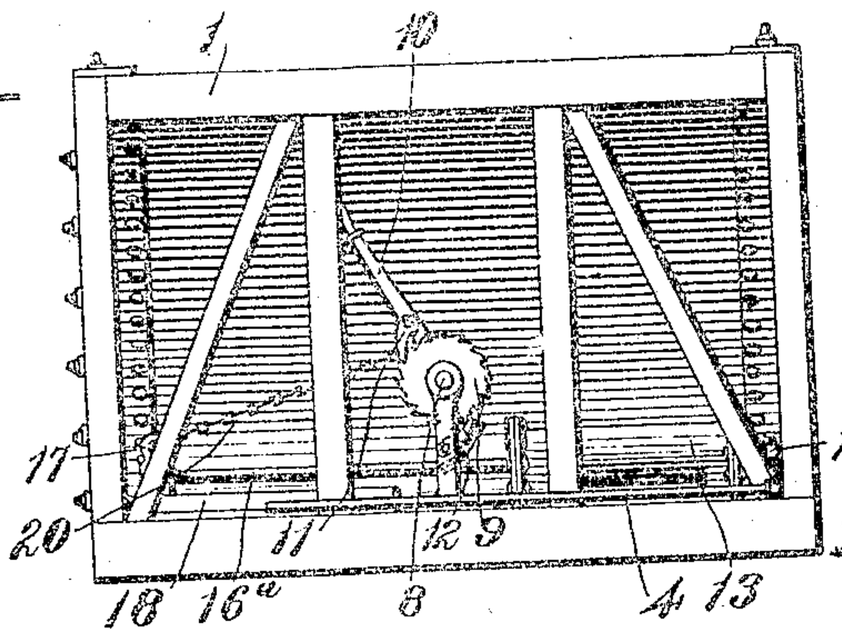



Fig. 5.

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# UNITED STATES PATENT OFFICE.

ALBERT E. HANSON, OF WAKEFIELD, MICHIGAN

## COMPRESSED-AIR DOOR-CLOSER.

933,034.

Specification of Letters Patent. Patented Aug. 31, 1909.

Application filed October 5, 1908. Serial No. 456,317.

*To all whom it may concern:*

Be it known that I, ALBERT E. HANSON, a citizen of the United States, residing at Wakefield, in the county of Gogebic and State of Michigan, have invented a new and useful Improvement in a Compressed-Air Door-Closer, of which the following is a specification.

This invention relates to a device for closing the downwardly swinging doors of ore, coal and gravel cars, by means of compressed air.

At present it is customary to close the doors of ore cars by means of a lever and ratchet, and owing to the weight of these doors it usually requires a strong able bodied man from ten to fifteen minutes to close the doors of a car, whereas by means of my device the doors can be closed in about a half minute, and the device can be installed upon old cars already in use by simply lifting the ratchet wheel now employed in order that a supplemental drum which forms a part of my attachment will clear a piston rod, also forming a part of my attachment, the said drum and piston rod being arranged at the end of the car opposite that now receiving the usual air brake cylinders, and therefore not interfering with the arrangement or operation of the air brake in any way.

The invention consists in the novel features of construction hereinafter described, pointed out in the claims, and shown in the accompanying drawings, in which:

Figure 1 is a side elevation of a car provided with my device. Fig. 2 is a plan view of the car bottom, the sides and a drum casing being in section. Fig. 3 is a section on the line 3—3 of Fig. 1, the car doors being closed. Fig. 4 is a section on the line 4—4 of Fig. 1, the car doors being opened. Fig. 5 is an end elevation of the car with my device applied thereto, showing the position of the parts when the doors are closed.

In these drawings, 1 represents an ore car of the usual construction and provided at one end with an air brake cylinder 2 and an air cylinder 3, and provided with the usual air pipe line 4. The bottom of this car is provided with the usual downwardly and inwardly swinging doors 5 which are connected by chains 6, to a rotatable drum 7 so that when the drum is rotated in one direction the chains are wound thereupon and the doors are lifted in a closed position. This drum is provided with a shaft 8 which projects outwardly at the end of the car opposite the air brake mechanism, and at its outer end is provided with a ratchet wheel 9. A lever 10 works upon this shaft and is provided with a pivoted pawl 11 which engages the ratchet teeth and when the lever is thrown in one direction the ratchet is rotated thus rotating the drum and winding the chains 6 thereupon. A holding pawl 12 also engages the ratchet and prevents reverse rotation of the same during the closing of the doors, when said doors are closed by means of the hand lever.

The parts above described are those now employed and by their means the doors are closed by operating the lever 10, the doors being open by weight of the material resting upon them when the pawls 11 and 12 are disengaged from the ratchet, thus unwinding the drum 7. In applying my device the shaft 8, drum 7 and the ratchet 9 are lifted sufficiently to permit the installing of my device. This consists of a cylinder 13 arranged at the ratchet end of the car and at right angles to the shaft 8. This cylinder is connected to the train pipe by an air pipe 14 in which is placed a hand operated valve 15. A piston 16, shown in dotted lines, works in the cylinder 13 and carries a piston rod 16ª which at its outer end carries a cross-head 17 sliding in a guide way 18 arranged in alinement with the cylinder 13 and upon the opposite side of the shaft 8. A drum 19 is fixed upon the shaft 8 and above the piston rod, the shaft having been raised so that the said drum 19 and a chain 20 secured to and winding upon the drum would clear the piston rod. The chain 20 is secured to the cross head 17. When the doors are open the piston is at the outer end of the cylinder 13 and the cross head adjacent the drum 19 with the chain 20 wound upon said drum. To close the doors it is only necessary to open the valve 15 thus admitting compressed air from the train pipe line into the cylinder 13 which forces the piston 16 forward toward the inner end of the cylinder moving the cross head 19 along the guide way to the opposite side of the car, and unwinding the chain 20 from the drum 19. This rotates the drum 19, shaft 8 and drum 7 and winds the chain 6 upon said drum 7 and closes the doors. It will also be understood that this

construction does not prevent the closing of the doors in the usual manner by hand in case compressed air is not available when the doors were to be closed. But usually the doors are closed when a car is to be moved and before moving, cars are coupled up with the air brake hose. Or if the car has not been standing too long there will be sufficient pressure in the air cylinder and train pipe to operate the door closing mechanism.

What I claim is:—

1. A device of the kind described comprising a rotatable shaft, means for locking said shaft against rotation, means carried by said shaft for lifting downwardly swinging doors in a closed position when the shaft is rotated in one direction, a cylinder arranged at right angles to the shaft, a piston in the cylinder, a piston rod extending beneath and at right angles to the shaft, a drum on said shaft above the piston rod, a chain winding and unwinding upon said drum, said chain being connected to the drum and to the piston rod, the chain unwinding upon outward movement of the piston rod, and means for admitting compressed air into said cylinder.

2. The combination with an ore car having downwardly swinging doors, of a shaft longitudinally carried by said car, a rotatable drum on said shaft, chains secured to said drum and to the doors, a pawl and ratchet movement mechanism upon the shaft, the pawls permitting free rotation of the shaft in a direction to close the doors, a cylinder means for admitting compressed air to said cylinder, a piston therein, a piston rod, a cross head carried by said piston rod, a drum fixed upon the shaft, and a chain connected to and winding upon said drum, said chain being also connected to the cross head, the said chain unwinding from and rotating the last mentioned drum in a direction to close the doors upon movement of the piston by air-pressure.

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