W. H. SAUVAGE.

HAND BRAKE.

APPLICATION FILED AUG. 7, 1919.

1,343,005.

Patented June 8, 1920.

2 SHEETS—SHEET 1.

Fig. 1.

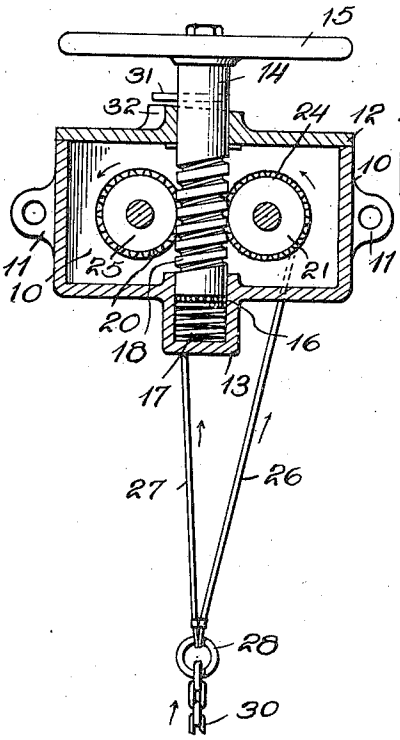


Fig. 3.

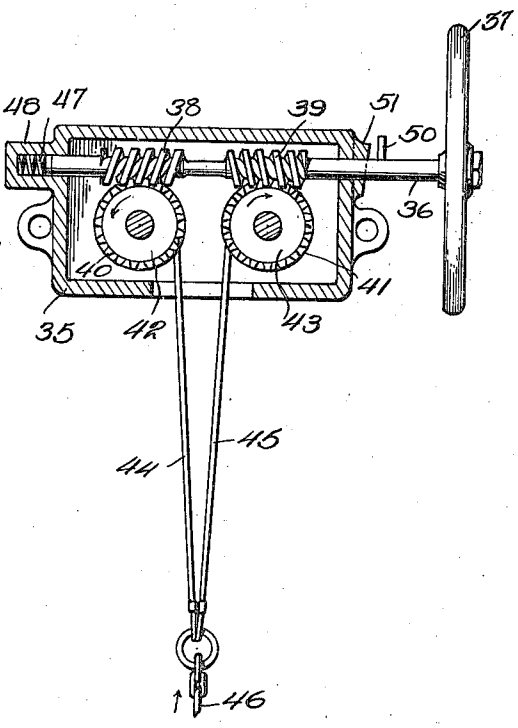


Fig. 2.

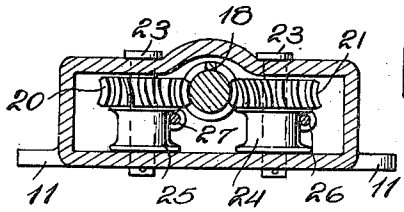
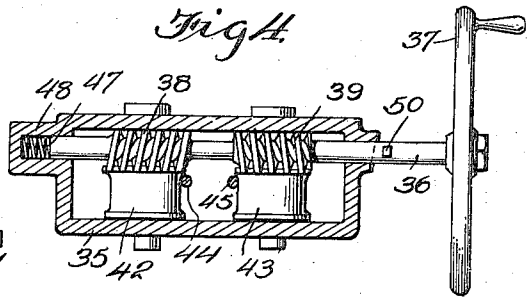


Fig. 4.



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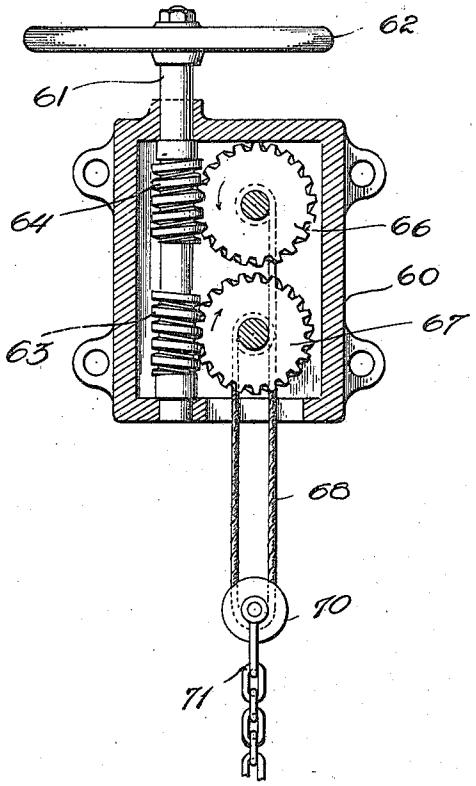
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2 SHEETS—SHEET 2.

Fig. 5.



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UNITED STATES PATENT OFFICE.

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HAND-BRAKE.

1,343,005. Specification of Letters Patent. Patented June 8, 1920.

Application filed August 7, 1919. Serial No. 315,905.

To all whom it may concern:

Be it known that I, WILLIAM H. SAUVAGE, a citizen of the United States, residing at Flushing, Long Island, in the county of Queens and State of New York, have invented certain new and useful Improvements in Hand-Brakes, of which the following is a specification.

This invention relates to improvements in hand brakes and more particularly to hand brakes particularly adapted for use on railway vehicles including both railway and street car vehicles of all types.

One of the objects of the present invention is to provide an improved hand brake for railway vehicles of simple and practical construction having relatively few parts which are not likely to get out of order, and which may be easily, inexpensively and compactly made and assembled.

A further object is to provide a hand brake mechanism of the above character adapted to give high power and quick action.

A further object is to provide a hand brake mechanism adapted to prevent overload upon the brake rigging.

Other objects will be in part obvious from the annexed drawings and in part indicated in connection therewith by the following analysis of this invention.

This invention accordingly consists in the features of construction, combination of parts and in the unique relations of the members and in the relative proportioning and disposition thereof, all as more completely outlined herein.

To enable others skilled in the art so fully to comprehend the underlying features thereof that they may embody the same by the numerous modifications in structure and relation contemplated by this invention, drawings depicting a preferred form have been annexed as a part of this disclosure, and in such drawings, like characters of reference denote corresponding parts throughout all the views, in which

Figure 1 is an elevational view partly in section showing such parts of the brake rigging as are necessary to fully understand one of the several modifications.

Fig. 2 is a horizontal cross sectional view of the part shown in Fig. 1.

Fig. 3 is a view similar to Fig. 1 showing a modification.

Fig. 4 is a view similar to Fig. 2 of the form shown in Fig. 3.

Fig. 5 is a view similar to Fig. 1 showing a further modification.

Referring now to the drawings in detail and more particularly to Fig. 1, 10 denotes a casing of the desired size and shape adapted to be secured to one of the walls of a car, for example, by fastening means passing through perforated lugs 11. A removable top cover 12 is preferably provided for ease and convenience of assembling. The lower part of the casing 10 is provided with a pocket or receptacle 13 adapted to support one end of a shaft 14 provided with a hand wheel or other turning mechanism 15. This shaft 14 is preferably supported on a ball bearing thrust plate 16 in turn supported by a spiral spring 17 within the pocket 13, the purpose of which will hereinafter more fully be described. The shaft 14 is provided with threads 18 adapted to mesh with gear pinions 20 and 21 mounted upon suitable studs 23 passing through the walls of the casing and shown more clearly in Fig. 2.

Adjacent these gears or pinions are two winding drums 24 and 25 over which power transmitting means such as chains 26 and 27 are adapted to pass. These chains are connected to an equalizing ring 28 which in turn is connected to a main chain 30 leading to the foundation brake rigging beneath the car. While the term "chain" is herein used, it is, of course, to be understood that any suitable form of power conveying means such as cable or rod may be substituted.

The drum 24 is preferably slightly larger in diameter than the drum 25, for instance, or may be 6″ and the other 6.2″ for the purpose of over-balancing the perfect equilibrium and forcing down the spring 17 thereby permitting a stop 31 on the shaft 14 to coact with a cam lug 32 on the cover 12 of the casing. This arrangement positively prevents overload being conveyed to the brake rigging. For instance, if the chains 26 and 27 each carry a predetermined spring load of 2500 and 2600 lbs. This will measure the pull exerted upon the chain 30 and any overload of this predetermined spring load amount will cause a further destruction of the equilibrium above referred to and allow the safety stop to go into operation and prevent further turning of the hand wheel 15.

In Fig. 3 there is shown a modification of this mechanism wherein the casing 35 is provided with a shaft 36 and a hand wheel 37 disposed in horizontal relation. The

shaft 36 is provided with right and left-hand threads 38 and 39 adapted to coact with gears 40 and 41 respectively, each of which is provided with a drum 42 and 43 upon which the chains 44 and 45 are adapted to be wound. The gear 41 is of slightly larger diameter than the gear 40 and after a predetermined period of winding the equilibrium exerted by the chains 44 and 45 upon the main chain 46 will be over-balanced to cause a relative lateral movement of the shaft 36 toward the left to compress a load spring 47 within the pocket 48, thus allowing the stops 50 and 51 to come into engagement and prevent overloading.

The modification shown in Fig. 5 includes a casing 60, a main shaft 61 and hand-wheel 62. The shaft 61 is provided with right and left hand threads 63 and 64 meshing with gears provided with drums 66 and 67. The opposite ends of the chain 68 are connected respectively with these drums while the intermediate portion passes over a sheave 70 connected to the main pull-chain 71. If desired, however, the sheave 71 could be in the form of an equalizing link as shown in Figs. 1 and 3, although as the drums 66 and 67 are in this modification of substantially the same diameter, an equalizing function would be unnecessary.

It is believed that the operation and method of use of devices of this character will be clear from the above description and a detailed statement thereof is doubtless unnecessary to those skilled in the art.

It will be obvious from the above that all of these several modifications comprise a simple, practical and compact hand brake mechanism adapted to easily and quickly apply the brakes with a maximum amount of power. The construction may be inexpensively manufactured and assembled and owing to the few number of parts is not likely to get out of order.

This type of brake is particularly safe and reliable inasmuch as it is free from long staffs which are likely to bend or ratchets which so frequently slip. Any desired braking power can be safely applied without the use of clubs as required in the lower power hand brakes now so generally in use. Inasmuch as the mechanism is entirely inclosed the weather conditions will have minimum effect thereon. In short, the invention is believed to accomplish, among others, all the objects and advantages herein set forth.

What I claim is:

1. In a hand brake mechanism, in combination, a threaded shaft, a plurality of pinions adapted to be engaged thereby, drums associated with said pinions and flexible means adapted to be wound upon said drums as the pinions are rotated.

2. In a hand brake mechanism, in combination, a threaded shaft, a plurality of pinions adapted to be engaged thereby, drums associated with said pinions, flexible means adapted to be wound upon said drums as the pinions are rotated, and means to prevent rotation of the shaft when overload is reached.

3. In a hand brake mechanism, in combination, a threaded shaft, a casing in which said shaft is mounted, a plurality of pinions in mesh with said shaft, a drum associated with each pinion and adapted to be rotated thereby, and flexible power transmitting means connected with said drums and adapted to be wound thereon as the brakes are applied.

4. In a hand brake mechanism, in combination, a threaded shaft, a casing in which said shaft is mounted, a plurality of pinions in mesh with said shaft, a drum associated with each pinion and adapted to be rotated thereby, flexible power transmitting means connected with said drums and adapted to be wound thereon as the brakes are applied, and a single chain connected with said power mechanism at one point and the foundation brake rigging at another.

5. In a hand brake mechanism, in combination, a casing, a shaft mounted therein for endwise movement, threads upon said shaft, pinions adapted to mesh with said threads, drums adapted to be rotated by said pinions, and flexible power transmission means adapted to be wound on said drums.

6. In a hand brake mechanism, in combination, a casing, a shaft mounted therein for endwise movement, threads upon said shaft, pinions adapted to mesh with said threads, drums adapted to be rotated by said pinions, and flexible power transmitting means adapted to be wound on said drums, one of said drums being of larger diameter than the other whereby when overload is reached equilibrium will be destroyed and said shaft will be moved endwise whereby further rotation thereof is prevented.

7. In a hand brake mechanism, in combination, a casing, a shaft yieldingly supported in said casing provided with locking means adapted to prevent rotation of the shaft when at one extreme of its endwise movement, a pair of drums upon which a flexible power transmitting means is adapted to be wound, and means for transmitting motion from said shaft to said drums on rotation of the shaft.

8. In a hand brake mechanism, in combination, a support, a shaft mounted thereon provided with means for rotating the same, threads upon said shaft, a pair of drums upon which flexible power transmitting means are adapted to be wound to apply the brakes, two pinions engaging said threads for transmitting motion from said shaft to said drums as the turning means is operated, and means for transmitting motion from said

flexible means to the foundation brake rigging.

9. In a hand brake mechanism, in combination, a support, a shaft mounted thereon provided with means for rotating the same, threads upon said shaft, a pair of drums upon which flexible power transmitting means are adapted to be wound to apply the brakes, means for transmitting motion from said shaft to said drums as the turning means is operated, and means for transmitting motion from said flexible means to the foundation brake rigging, said drums being of unequal diameter, and locking means adapted to prevent rotation of the shaft after said flexible means has been wound on said drums to a predetermined extent.

10. In a hand brake mechanism, in combination, a casing having a pocket, a spring mounted in said pocket, a shaft supported by said spring, means for turning said shaft, threads on said shaft, a plurality of drums upon which a flexible power transmitting means is adapted to be wound, and means for locking said shaft when the strain exerted on said drums exceeds a predetermined amount.

11. In a hand brake mechanism, in combination, a casing, a shaft supported in said casing provided with right and left hand threads, means for turning said shaft, a plurality of drums having pinions engaged by said threads, and flexible power transmitting means adapted to be wound on said drums.

12. In a hand brake mechanism, in combination, a casing, a shaft supported in said casing provided with right and left hand threads, means for turning said shaft, a plurality of drums having pinions engaged by said threads, flexible power transmitting means adapted to be wound on said drums, and means for locking said shaft when the strain exerted on said drums exceeds a predetermined amount, thereby to prevent a further operation of the brake.

In testimony whereof I affix my signature.

WILLIAM H. SAUVAGE.