

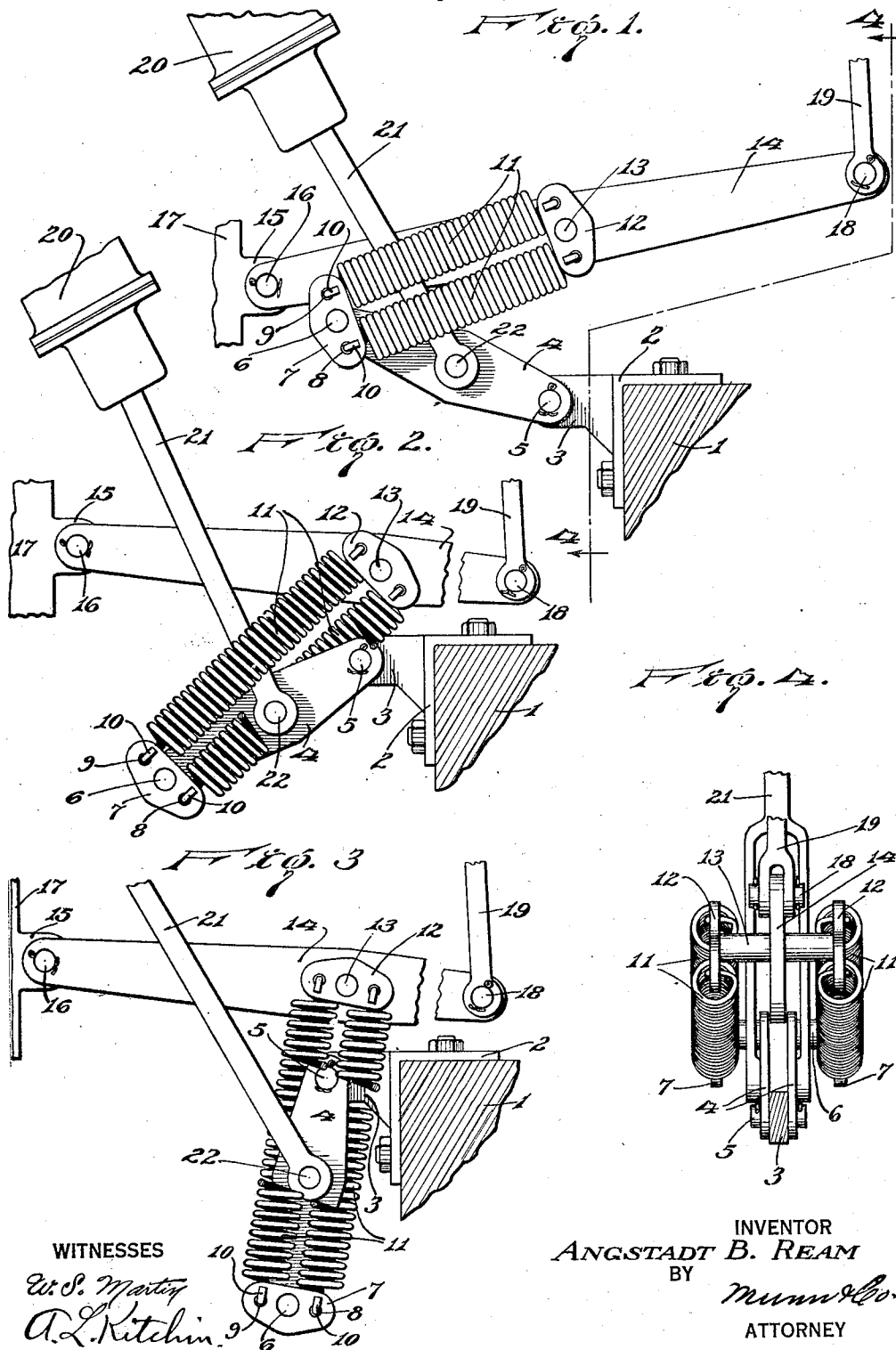
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AIR BRAKE LEVER MECHANISM

Filed April 3, 1928



UNITED STATES PATENT OFFICE.

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AIR-BRAKE LEVER MECHANISM.

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This invention relates to lever mechanisms for air brakes used on railway cars, automobiles and other vehicles, the object being to provide a construction wherein a maximum leverage is secured with a minimum use of air.

Another object of the invention is to provide a lever mechanism for brakes wherein a cushioned effect is given the braking action.

A still further object, more specifically, is to provide a lever mechanism for brakes wherein small bore air cylinders may be used with either the same or a longer stroke.

In the accompanying drawings,—

Figure 1 is a fragmentary top plan view of a brake mechanism disclosing an embodiment of the invention, the same being shown in connection with part of a railway car;

Figure 2 is a view similar to Figure 1, but showing the parts in a partly operated or partly braking position;

Figure 3 is a view similar to Figure 2, but showing the parts moved to their extreme braking position;

Figure 4 is a fragmentary sectional view through Figure 1 approximately on the line 4—4.

Referring to the accompanying drawing by numerals, 1 indicates a stationary part of a railway car and 2 a bracket bolted or otherwise secured thereto. This bracket is provided with an extending ear 3 which is straddled by the double plate lever 4, said lever being pivotally connected thereto by a pin 5. The double plate lever 4 at the opposite end to the pin 5 carries a pin or bar 6 on which are mounted two plates 7, each plate having apertures 8 and 9 accommodating respective ends 10 of the respective springs 11. The opposite ends of the springs 11 are interlocked with plates 12 pivotally mounted on a pin or bar 13 extending preferably through the main brake lever 14. This brake lever is pivotally mounted on the ear 15 by pin 16. Ear 15 is connected with a plate 17 bolted or otherwise secured to some stationary part of the car 1. The outer or free end of the lever 14 is provided with a pin 18 which pivotally connects link 19 with lever 14. Link 19 is the usual brake link connected directly with the brake levers. Heretofore the air operated piston rod was connected directly to lever 14 for causing a proper pull on the link 19. In the present construction, however, the air brake cylinder 20 operates the usual piston rod 21 which is pivotally connected to

the lever 14 centrally thereof by a pin 22. If desired, pin 22 could be arranged not only at a central point between pins 5 and 6, but could be arranged near either pin at the side. As shown in the drawing, pin 22 is slightly nearer pin 5 than pin 6, whereby a greater throw is given. As illustrated in Figure 4, two sets of springs 11 are presented. This is not always necessary but is preferable as it balances the various parts and produces even strain when the parts are functioning. When the brake is being applied and the piston rod 20 is functioning, it will swing lever 4 in the position shown in Figure 2 and finally to the position shown in Figure 3, which is the extreme operated position. As the lever 4 swings in this manner tension is applied to the various springs 11 and they transmit the pulling action to the lever 14 through pin 13 so that the link 19 is operated in the usual manner, except that the springs give a cushioned effect. This action also produces an increased leverage action by reason of the arrangement and respective location of the various pivot pins and the distance moved by piston rod 21. By the use of springs 11 not only is the link 19 pulled in a comparatively resilient manner, but is released in the same manner so that the brakes are not only applied in a more or less yielding way but are released in the same manner. This will prevent jerks and jars either in applying or releasing the brake, while at the same time presenting a structure which produces the desired braking action with a minimum amount of air. Where the device is used on automobiles or other similar vehicles, the cylinder 20 could be used or eliminated. If the cylinder 20 is eliminated, the piston rod 20 would be provided with a foot pedal so that this rod could be actuated by the foot and the power transmitted through the levers, as just described.

What I claim is:—

1. An air brake lever mechanism, including a main brake lever, means for pivotally mounting one end of said lever, a spring structure pivotally connected with said lever intermediate the ends, a multiplying lever pivotally connected with said spring structure at the end opposite to that connected with the main lever, means for pivotally connecting said multiplying lever at one end to a stationary object, and a power thrust rod pivotally connected with said power multiplying lever intermediate the ends of said

lever whereby, when said thrust rod is moved longitudinally, all of said levers will be swung and power will be transmitted to said main brake lever for swinging the same into
5 braking position.

2. An air brake lever mechanism, including a main brake lever having a fixed pivot point at one end, a swinging link mechanism pivotally connected to said main brake lever between the ends thereof, a multiplying lever
10 having one end moving around a fixed pivot and the other end pivotally connected to the opposite end of said swinging link mechanism, and a power-supplying member pivotally connected to said multiplying lever between the ends thereof.

3. An air brake lever mechanism, including a pivotally mounted main lever, a pivotally mounted auxiliary lever, power means
20 acting on said auxiliary lever between the ends thereof for swinging the same, and a connecting resilient link mechanism connecting the free end of said auxiliary lever with the main brake lever between the ends of
25 the main brake lever.

4. An air brake lever mechanism, including a pair of oppositely swinging levers, a spring-connecting link for said levers, and power means for actuating one of said levers.

5. An air brake lever mechanism, including a main brake lever, an auxiliary brake lever, a spring structure connected with the free end of the auxiliary brake lever and substantially the center of the main brake lever, and power means acting on said auxiliary
35 brake lever intermediate the ends for swinging the same in one direction.

6. An air brake lever mechanism, including a main brake lever, a plurality of springs pivotally connected with said main brake
40 lever between the ends thereof, an auxiliary brake lever having one end pivotally connected to the opposite ends of said springs, means for pivotally mounting one end of said auxiliary lever so that it will swing around
45 a fixed point, and power means pivotally connected with said auxiliary lever, said connection being between the ends thereof, whereby as the auxiliary lever is swung on its fixed pivot said spring will be brought
50 under tension and the tension will be transmitted resiliently to said main brake lever for moving the main brake lever to a braking position.

Signed at Elizabethtown, in the county of Lancaster and State of Pennsylvania, this
55 29th day of March, A. D. 1928.

ANGSTADT B. REAM.