Oct. 13, 1925. 1,556,584

L. N. BREEDEN

AUTOMATIC WEDGE

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Fig. 1.

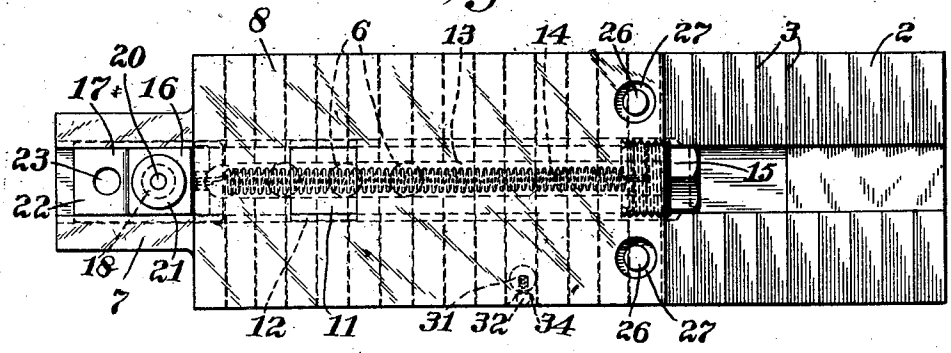

Fig. 2.

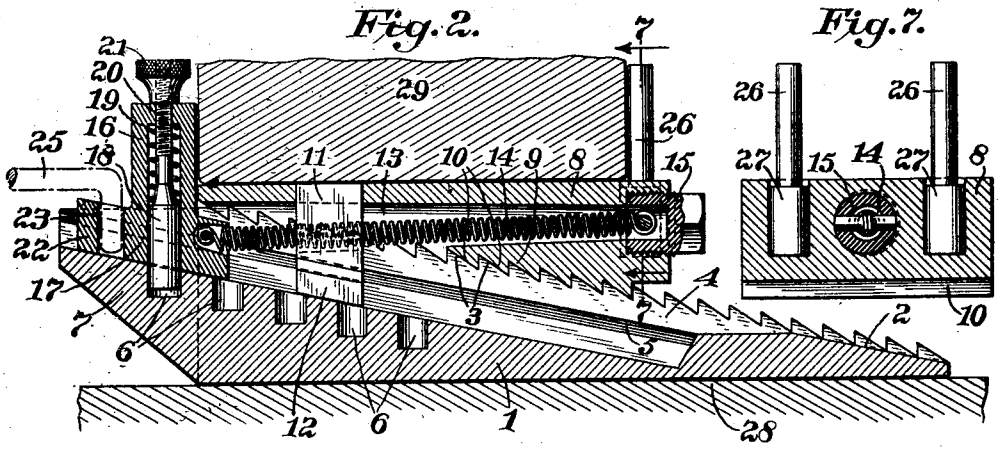

Fig. 7.

Fig. 3.

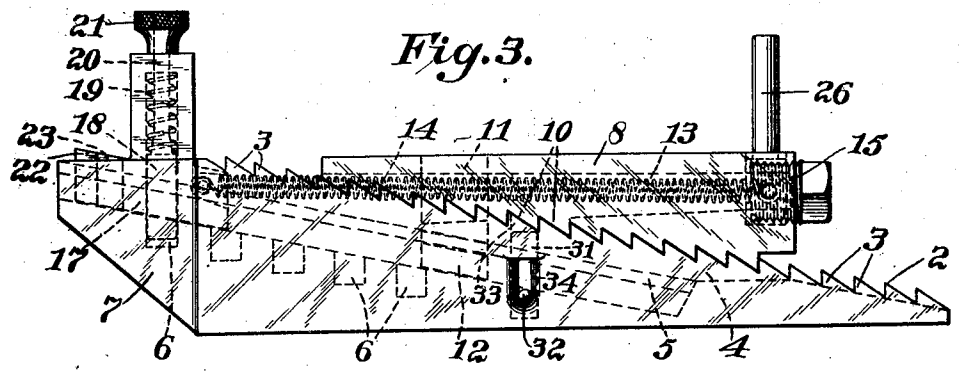

Fig. 8.

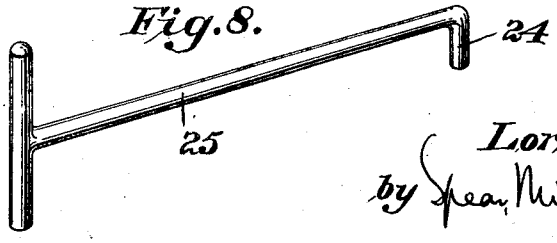

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Fig.9.

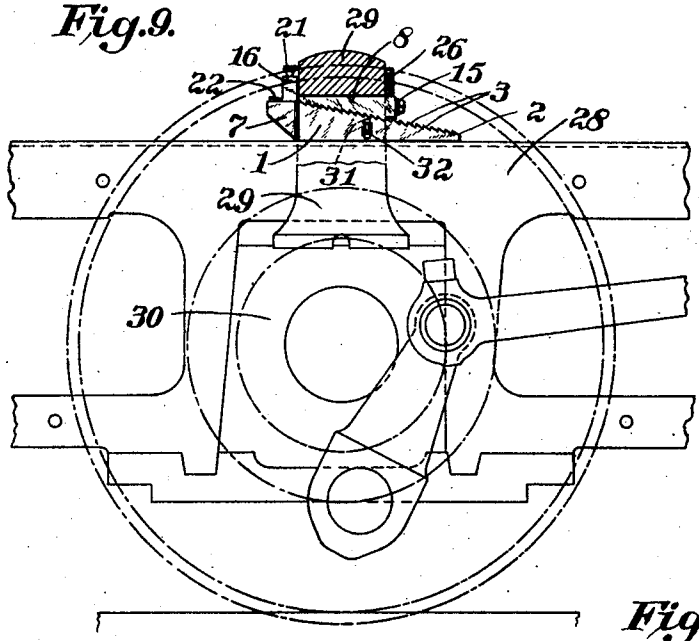


Fig.4.

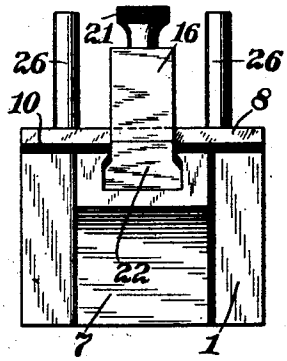


Fig.5.

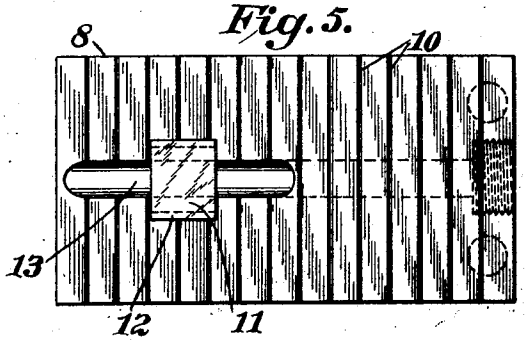
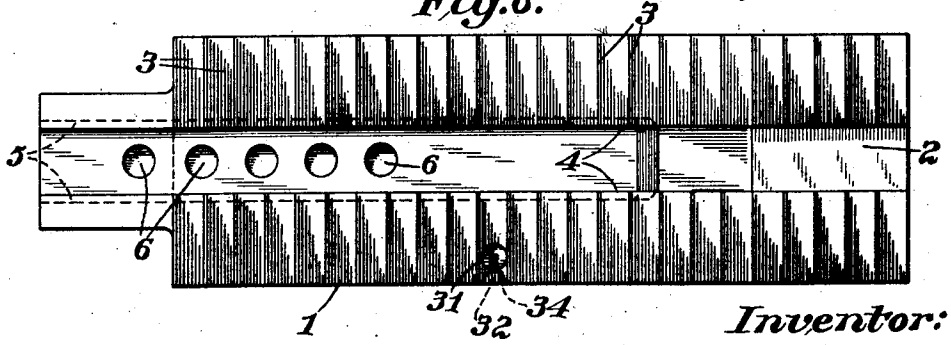


Fig.6.



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UNITED STATES PATENT OFFICE.

LORENZA N. BREEDEN, OF MONTGOMERY, WEST VIRGINIA.

AUTOMATIC WEDGE.

Application filed February 17, 1925. Serial No. 9,866.

To all whom it may concern:

Be it known that I, LORENZA N. BREEDEN, a citizen of the United States, and a resident of Montgomery, in the county of Fayette and State of West Virginia, have invented certain new and useful Improvements in Automatic Wedges, of which the following is a specification.

My present invention relates to an automatic or self-acting wedge or other device which is adapted to be used with a locomotive to relieve the weight from a driving box or journal in case the latter becomes overheated.

The principal object of the invention is the provision of complementary means which will automatically move in relation to each other so as to increase their combined thickness or depth.

The particular application of the device may be illustrated by referring to a locomotive driving box which occasionally becomes overheated. Upon observing this, the engineer would place the device of this invention upon the frame of the locomotive immediately over the hot-box and between the top of the frame and the bottom of the saddle, the legs of the saddle resting upon the box itself and the top portion thereof supporting the spring. Having placed the device in this position, the proper tension of the spring having been determined and set, the locomotive may then be moved, and as the weight of the engine is lifted from the box temporarily, by lateral side sway or passing over elevations in the track or around curves, and as the space between the bottom of the saddle and the top of the frame increases, the device will automatically increase its depth or thickness to correspond, and with each step up of the device the hot-box is relieved of a proportion of the weight of the locomotive. This action continues automatically until the entire weight is lifted from the hot-box and further overheating is prevented, so that the difficulty may be remedied as soon as the shop or station is reached.

Other objects and advantages will develop as the specification proceeds.

To this end my invention includes complementary wedge elements, each being provided with a serrated or toothed surface adapted to engage and cooperate with a similar surface on the opposite element. The lower wedge element is provided with a longitudinal groove within which rides a spring adjusting post dove-tailed therein. The spring element is attached at one end to the spring adjusting post and passes through a longitudinal aperture in the upper wedge element and is secured in any desired manner to the rear end thereof. The spring adjusting post is provided with an axial latch which is adapted to engage apertures or sockets in the lower wedge element so that the spring may be adjusted to any desired tension. Also depending from the upper wedge element is a guiding tongue which is adapted to also enter the dove-tailed slot in the lower element to prevent accidental displacement of the two wedge elements.

It will be found desirable in some instances to provide a safety latch in the lower element which comprises a post movable in an aperture outwardly beyond the upper surface of the lower wedge element to engage the lesser end of the upper wedge element. The function of this part will be more fully described hereinafter. On the upper surface of the upper wedge element I provide two apertures within which are adapted to be socketed self-locking posts which project upwardly beyond the upper surface of the upper wedge element and are adapted to engage either the back or front of the saddle, depending upon which side is more accessible to locate the device.

The invention further consists in the particular construction, combination and arrangement of parts herein shown and described.

I have illustrated in the accompanying drawings the most preferred form of which I am now aware, although obviously I do not wish to be limited or restricted thereto, as this form is merely shown diagrammatically and to illustrate the principle involved.

In these drawings:—

Figure 1 is a plan view of one embodiment of my invention.

Fig. 2 is a side sectional elevation.

Fig. 3 is a side elevation.

Fig. 4 is an end view.

Fig. 5 is a bottom plan view of the upper wedge portion.

Fig. 6 is a plan view of the lower wedge portion.

Fig. 7 is a sectional elevation along line 7—7 of Fig. 2.

Fig. 8 is a detail of the spring setting handle.

Fig. 9 is a diagrammatic view showing the device in operative position.

Referring now with particularity to the embodiment illustrated, I have illustrated at 1 the lower wedge element having an inclined face 2 provided with serrations or teeth 3.

Arranged longitudinally of the part 1 and cutting into its upper inclined face 2 I provide a groove or slot 4 provided with a dove-tailed bottom portion 5. The groove or slot 4 need not extend the entire length of the inclined face 2 of the part 1, but in case it does not, it may be found necessary to cut away a portion of said face in order to allow the tension spring, more fully described hereinafter, to clear the same.

The bottom of the groove 4 is provided with a series of sockets 6 which are adapted to receive the end of the spring adjusting latch, of which more later.

I have found it desirable to add an extension 7 to the lower wedge 1 which may contain one or more of the sockets 6.

The upper wedge element is illustrated at 8 and is provided with a lower inclined face 9, also provided with teeth or serrations 10 arranged in a manner similar to but opposite from the teeth 6 in the part 1, so that the said teeth on each element may positively engage each other and prevent relative movement in one direction of the parts 1 and 8.

A guiding tongue 11 secured to the upper wedge 8 and depending from the lower face thereof is provided and in the preferred form has an enlarged lower end, as shown at 12, which is adapted to slide within the groove 4, the part 12 being contained within the dove-tailed portion 5 of the slot 4. In this way it will be readily apparent that the two wedges 1 and 8 may not become accidentally displaced one from the other, but in all their relative movement will be guided by the tongue 11 and kept in longitudinal alignment thereby.

A longitudinal aperture 13 is located in the upper wedge 8 and is adapted to receive the tension spring 14 made fast at the rear end of the upper wedge 8 as by means of the threaded plug 15. The other end of the tension spring is secured in any suitable manner to the combined stop and adjusting post 16, which is also provided with an enlarged lower end 17 which rides in the dove-tail 5 of the slot or groove 4.

The post 16 is provided with an axial latch as at 18, the lower end of which is adapted to engage any one of the desired sockets 6. The latch 18 is forced into the socket 6 by means of a coil spring surrounding the upper portion of the latch 18, the top of the spring engaging the top of an axial aperture in the post 16. The extreme upper end of the latch 18 extends through the top of the post 16 and is preferably screw threaded as at 20, to which is threaded a cap or adjusting nut 21 to positively compress the spring 19 when it is desired to lift the latch from any of the sockets 6 within which it is seated.

The post 16 is provided with a heel 22 within which an aperture 23 is located, which may be engaged by the hooked end 24 of a tool 25 to facilitate pulling back the post 16 when it is desired to expand or put tension on the tension spring 14.

It will be noticed that at all times the upper face of the upper wedge and the lower face of the lower wedge are horizontal and parallel, regardless of the relative movement between their engaging serrated faces. It will also be noted that the tendency of the upper wedge 8 is to move up or toward the combined stop and adjusting post 16 in relation to the lower wedge element 1. Owing, however, to the fact that the stop and safety posts 26 socketed in the top of the upper wedge element 8 abut either the front or rear face of the saddle, as the case may be, movement of the upper wedge element is prevented and therefore the lower wedge element 1 moves beneath the upper element, so that the combined thickness or depth of the two elements is increased with each movement thereof.

It will be noted that that portion of the stop and safety posts 26 which is socketed in the top of the upper wedge element 8 is of a larger diameter than the remainder thereof, so that a shoulder 27 is formed thereon, which is substantially flush with the upper and horizontal face of the wedge element 8. Being of this construction, it will be noticed that when the device is in operative position the saddle of the locomotive abuts the upper portion of the post 26 and overlies the shoulder 27 thereon, so that in this position the post 26 cannot be removed from the wedge element 8, and due to the fact that the tension of the spring 14 tends to pull the upper wedge element 8 toward the saddle, the parts are effectively maintained in this position without danger of displacement.

In Fig. 9 I have illustrated the device in operative position, in which I have shown the engine frame at 28, straddling which is the saddle 29, the legs of which rest upon the driving box 30. It is customary in locomotive structures to allow a space to exist between the top of the frame 28 and the bottom of the arch of the saddle 29. It will be noted from this figure that it is my intention to mount the device of this invention in this space, so that the stop and safety posts 26 abut the front or rear of the saddle 29, as circumstances will dictate.

The operation of the device is as follows: The upper wedge element 8 having been

moved relatively to the lower wedge element 1 so that the combined thickness of the two members is at its minimum, and the combined stop and adjusting post 16 having been locked by the latch entering one of the sockets 6, the device is then placed in the position shown in Fig. 9 with the upper face of the stop and safety post 26 abutting the saddle 29. If, in this position, the combined height of the wedge elements 1 and 8 is less than the distance between the engine frame and the under part of the saddle, the tension spring 14 will automatically move the two wedge elements relative to each other until the thickness of the wedge equals the space. It will now be noted that as the engine is driven over the track, due to the unevenness of the road, or due to the inclination of the track on curves and the ordinary and normal side sway of the locomotive, that the weight of the engine on the box will be momentarily relieved and the space between the saddle and engine frame will momentarily enlarge. As soon as this happens, the tension spring 14 will be allowed to act and the combined thickness of the two wedge elements will automatically increase to keep pace with the increased space between the engine frame and the saddle. As this increases the weight of the engine is gradually taken from the box 30 so that any further overheating thereof is prevented.

In some locomotives it will not be found possible to have ready access to the saddle over the driving box, because of interfering parts, and because of this interference the tool 25 cannot be used to advantage. In such circumstances I have found it desirable to supply means so that the device may be set under tension before being placed in position and then be placed where desired and automatically released.

A satisfactory form of instrumentality to accomplish the above purpose may consist of a latch 31 having a projection or handle thereon, as indicated at 32, the latch itself working in an aperture 33, the handle 32 extending through the wall of the lower wedge element 1, as indicated by the slot 34. By lifting the latch 31 by means of the handle 32, the upper end of the latch may be made to project above the serrated surface 2 of the lower wedge element. In this position it will be apparent that it may be made to engage the lesser end of the upper wedge element 8 and the spring 14 will be held under tension while relative movement between the parts 1 and 8 will be prevented. In this position the set device may be placed in the desired location. Due to the fact that the latch 31 is but loosely socketed in the aperture 33, it is but necessary to release the tension between the latch and the end of the upper wedge 8, as by means of a slight pull on the lower wedge element 1 in a direction away from the stop and safety posts 26, and the latch 31 will drop down in its aperture out of the path of the upper wedge and the spring 14 will be allowed to operate in the ordinary manner and as above described.

I claim:

1. A device of the character described including complementary wedge elements having toothed engaging surfaces, a spring fixed in one of the wedge elements, the other end of said spring being secured to an adjustable post, said post being slidable in the other wedge element.

2. A device of the character described including complementary wedge elements having toothed engaging surfaces, a spring fixed to one wedge element, the other end of the spring being fixed to an adjustable post carried by the other wedge element, and a movable latch carried by the post and adapted to engage sockets in the second named wedge element.

3. A device of the character described including complementary wedge elements having toothed engaging surfaces, a spring carried in a longitudinal aperture in one wedge element and fixed to said element, the other end of the spring engaging an adjustable post slidable in a longitudinal slot in the other wedge element, and a latch to fix said post in said slot.

4. A device of the character described including complementary wedge elements having toothed engaging surfaces, one of the wedge elements carrying a depending tongue dove-tailed into a similarly shaped longitudinal groove in the other wedge element, a spring fixedly secured to one wedge element, the other end of the spring being fixed to an adjustable post, the lower end of the post being dove-tailed into the longitudinal slot in the second named wedge element and a latch carried by said post to fix the post to the second mentioned wedge element.

5. A device of the character described including complementary wedge elements having toothed engaging surfaces, a spring fixed to one wedge element, the other end of the spring being secured to a post adjustably carried by the second mentioned wedge element, and a latch carried by the second mentioned wedge element to prevent movement between the complementary wedge elements under tension of the spring.

In testimony whereof, I affix my signature.

LORENZA N. BREEDEN.