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STEAM GAGE HOLDER.

APPLICATION FILED JULY 10, 1911.

1,036,539.

Patented Aug. 27, 1912.

2 SHEETS—SHEET 1.

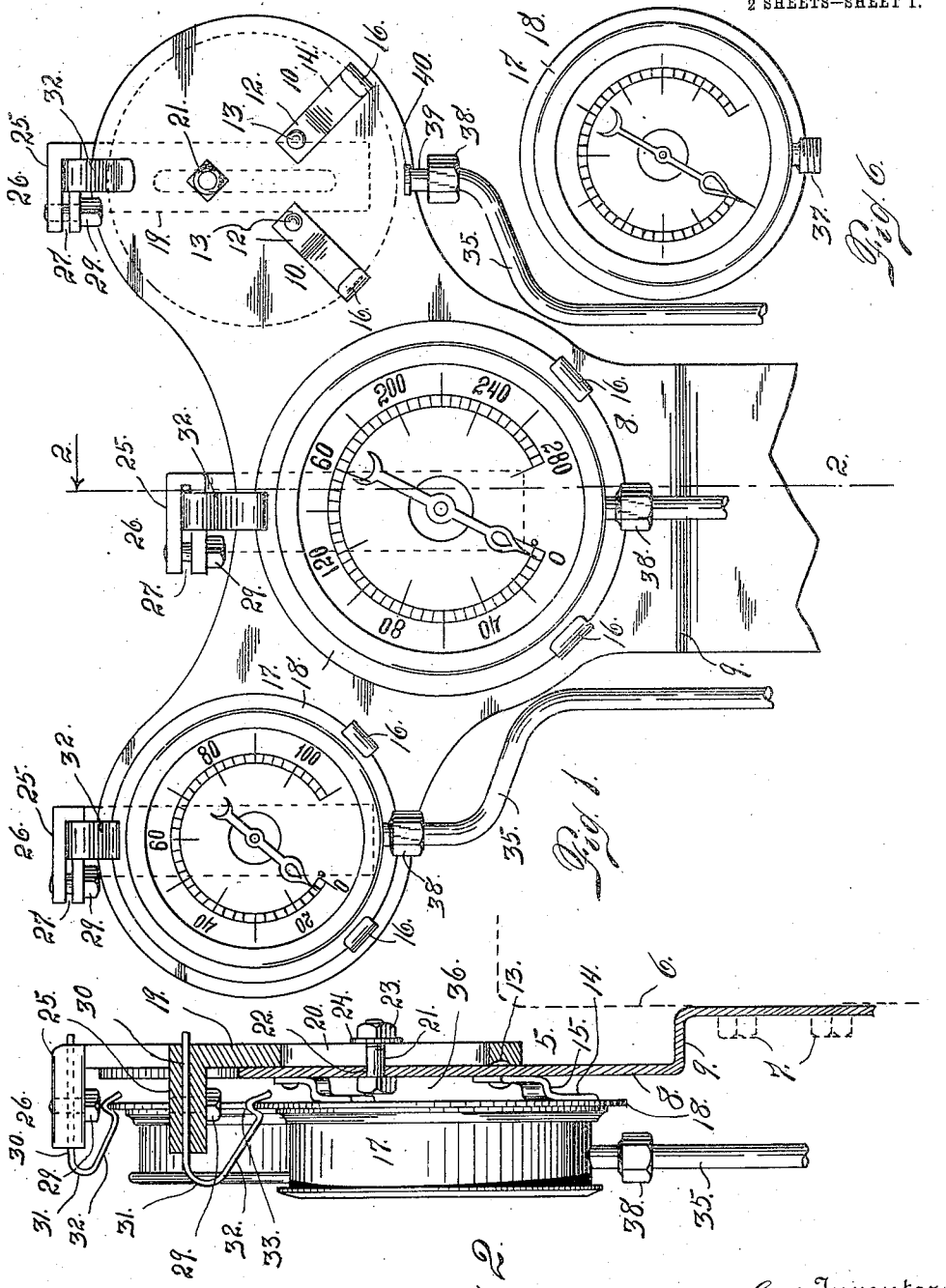

Fig. 1.

Witnesses

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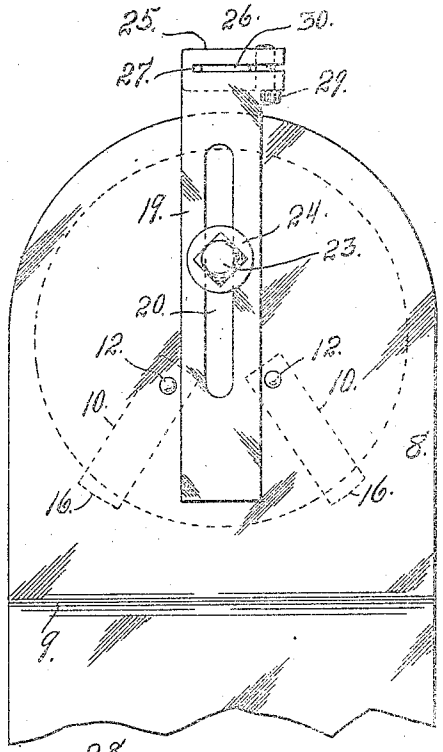

Fig. 3.

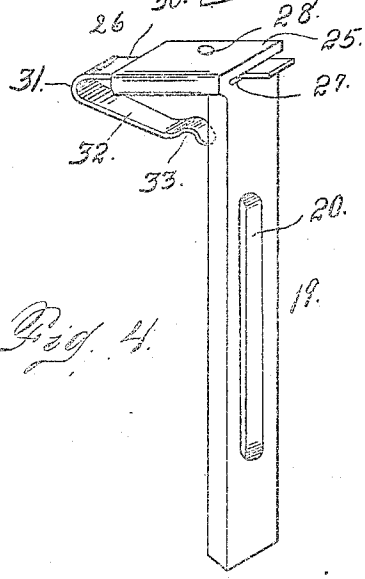

Fig. 4.

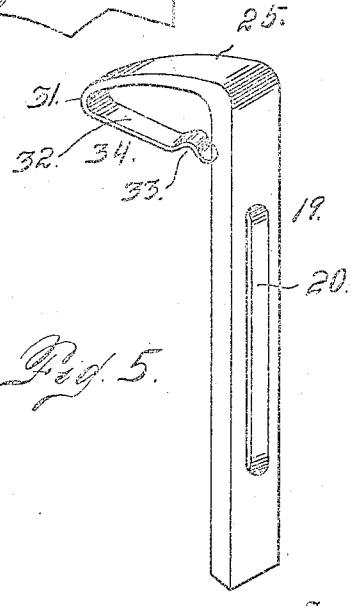

Fig. 5.

Witnesses

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UNITED STATES PATENT OFFICE.

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STEAM-GAGE HOLDER.

1,036,539. Specification of Letters Patent. Patented Aug. 27, 1912.

Application filed July 10, 1911. Serial No. 637,684.

To all whom it may concern:

Be it known that I, GEORGE E. BAILIE, a citizen of the United States, residing in the city and county of Denver and State of Colorado, have invented certain new and useful Improvements in Steam-Gage Holders; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in holders for fluid gages, being more especially intended for use in holding the gages on locomotives. It is evident, however, that my improved gage holder has important advantages over the devices heretofore used in all relations where gages of this character are required, whether in connection with stationary engines or boilers or locomotive engines. Heretofore, so far as I am aware, these gages have been secured in place by means of bolts alone, thus making the difficulty of removing and replacing them a very serious one, particularly in view of the fact that the plate or bracket to which they are secured becomes heated from the boiler. In fact, the difficulty of replacing the gage, according to the old plan, is so great that the workman will very often use only one or two bolts, thus leaving the gage insecurely supported, whereby it is allowed to vibrate or shake, and the delicate mechanism of the gage is liable to become seriously injured. Furthermore, under the old system, it is necessary to employ wood blocks in order to separate the gage from the boiler and allow a circulation of air in the rear of the gage to prevent injury to the latter from overheating, whereby the metal of the back part of the gage is caused to bend or buckle. The difficulty of adjusting these wood blocks, during the insertion of the bolts or screws under the old plan, renders the latter still more objectionable.

In my improved construction, practically all of the difficulty heretofore experienced in removing and replacing these gages is overcome, since the use of bolts or screws is entirely eliminated.

In my improved construction, I employ two small brackets or clips adapted to engage the rim of the gage on opposite sides of the center of its lower portion, while a spring is adapted to engage the central portion of the upper edge of the rim, the latter being pressed into position against the tension of the spring, which is so constructed as to lock the gage in place when the rim has been properly moved into position. Hence, in inserting or replacing the gage, it is only necessary to drop the lower part of the rim into engagement with the hook-shaped portions of the clips, and then press the top part of the rim of the gage against the spring of my improved holder. In this event, the spring will engage and lock the rim of the device against removal, except by design.

My improved holder secures the gage firmly in place and prevents any possible shaking or undue vibration.

Having briefly outlined my improved construction, I will proceed to describe the same in detail, reference being made to the accompanying drawing, in which is illustrated an embodiment thereof.

In this drawing: Figure 1 is a front view of my improved device illustrating a structure for holding three gages, one being the main steam gage connected with the boiler, the other the gage connected with the train-heating system, and the other the air gage, or the gage connected with the air for controlling the brakes. Fig. 2 is a vertical section, taken on the line 2—2 of Fig. 1, looking toward the left. Fig. 3 is a rear view of my improved gage holder, illustrating a construction for holding a single gage. Fig. 4 is a perspective view of one form of the yielding element of the holder. Fig. 5 is a similar view of another form of the device. Fig. 6 is a rear view of a gage, illustrating the threaded nipple adapted to coöperate with a coupling which connects the fluid pipe with the gage.

The same reference characters indicate the same parts in all the views.

Let the numeral 5 designate a bracket or plate, which is secured to the front end of the boiler 6 by means of bolts 7, the bracket projecting above the top of the boiler.

In this description, I will explain the construction for holding a single gage, since, where the device is employed for holding a plurality of gages, the mechanism is simply duplicated; hence, a description of the device for holding one gage is all that will be required.

Upon the upper part 8 of the plate, which

is offset from the boiler, as shown at 9, are secured two clips 10, having flat parts 12 riveted to the plate, as shown at 13; and parts 14, which are offset from the plate, as shown at 15, their outer extremities being hook-shaped, as shown at 16, to receive the rim 17 of the gage 18. These clips are two in number, and are located on opposite sides of the center of the lower portion of the area occupied by the gage; and they are inclined outwardly from their riveted ends, as best illustrated at the right of Fig. 1, where the gage is removed, its position being indicated by a dotted circle. Applied to the rear side of the plate 5 and occupying a vertical position, is a metal arm 19, which is centrally slotted, as shown at 20, to receive a fastening bolt 21, which passes through an aperture 22 formed in the plate and registering with the slot of the arm. This bolt is held in place by a nut 23, applied to the protruding threaded extremity of the bolt, a washer 24 being interposed between the nut and the arm. By virtue of this construction, the arm is vertically adjustable to accommodate itself to gages of varying diameters. The upper extremity of the arm is provided with a forwardly-projecting member 25, which, in the form of construction shown in Figs. 1, 2 and 4, is provided with a leaf-spring 26, which is detachably connected with the top of the arm, the latter having a slot 27 for the purpose.

As illustrated in the drawing, the member 25 is perforated, as shown at 28, to receive a clamping bolt 29, the parts of the member 25, above and below the slot, forming jaws which, by threading a bolt or screw thereinto, may be caused to clamp the spring in place, these jaws acting directly upon the horizontal member 30 of the spring. This spring is provided with a bend 31 at its forward extremity, from which the spring extends rearwardly and downwardly, forming a yielding member 32, whose rear extremity is bent upwardly, as shown at 33, to form a retaining recess for the rim 17 of the gage when the latter is in place.

In the form of construction shown in Fig. 5, the forwardly-extending member 25 of the arm 19 merges into a spring 34, the latter being formed integral with the top of the arm and extending rearwardly in the same manner as the part 32 of the other form of construction. The advantage of the detachable spring is that, whenever it becomes worn, it may be removed and replaced, while the arm 19 may be preserved, the expense of supplying a spring being very small. This feature is of some value, since the spring is the only part of the device that is subjected to any wear.

From the foregoing description, the manner of placing the gage in position on my improved holder will be readily understood. It is only necessary, in order to insert the gage, to first place the lower part of its rim in the hook ends 16 of the clips 10, after which the upper central part of the rim is pressed against the yielding member 32 of the spring 26 or 34, as the case may be, sufficient rearward pressure being employed to cause the spring to yield sufficiently to allow the rim of the gage to slip into the retaining extremity 33 of the spring.

In order to remove the gage from the holder, after the connection between the fluid supply pipe 35 and the gage has been broken, it is only necessary to use an instrument of any suitable character, as a screw-driver or a short bar of iron, one extremity of which may be made to engage the spring member 32, while the other bears upon the upper edge of the rim of the gage as a fulcrum. By downward pressure on the said instrument, beyond the rim of the gage, the spring member 32 will be forced upwardly sufficiently to release the gage, whose upper portion may then be moved forwardly beyond the retaining portion of the spring, after which the gage may be lifted from its engagement with the clips 10.

If it is desired to be particularly careful in the replacing of the gage for the purpose of preventing any possible injury to its delicate mechanism, due to the jar of forcing it into place against the tension of the spring, the part 32 of the latter may be raised before the gage is put in place in the same manner as it is raised for releasing purposes, as heretofore explained. By using this method, the gage is subjected to no possible jar or concussion. In my improved construction, the offset 15 of the clips 10 is sufficient to leave a space 36 for the circulation of air between the back of the gage and the part 8 of the bracket plate. The manner of connecting the gage with the fluid supply pipe 35 is the same as that heretofore employed. The lower part of the gage is provided with a sort of nipple 37, exteriorly threaded to receive a coupling sleeve 38, which is swiveled on the upper extremity 39 of the pipe 35, the upper end of the said pipe having a shoulder 40 adapted to fit closely against the threaded nipple 37 of the gage. When the gage is in place, the upper shouldered extremity 39 of the fluid pipe engages the lower extremity of the nipple 37, the opening of the pipe registering with an opening through the nipple which communicates with the interior of the gage. By threading the coupling sleeve upon the nipple, the fluid pipe is securely connected with the gage. Before detaching the gage for inspection, which is required at predetermined intervals, it is necessary to first unscrew the coupling sleeve from the nipple, in which event the said sleeve will occupy the position shown

at the right of Fig. 1. The gage may then be detached in the manner heretofore explained.

In the form of construction shown in Fig. 1, my improved device is arranged to accommodate three gages, the central one being the main steam gage, directly connected with the boiler; the one at the left a steam gage connected with the system for heating the train; while the one at the right is connected with the air for controlling the brakes.

It is evident that my improved construction is adapted for use with one or more gages, as may be desired. When more than one is required, it is simple duplication, the only other change being in the form or design of the bracket.

With reference to the advantages of my improved construction over the old form of device, where bolts and nuts are employed, I wish to state that the average time consumed by a workman in removing a gage that is secured in the usual manner, after the pressure connection has been broken, is three and one-half minutes; allowing the same time for replacing, making a total of seven minutes consumed in removing and replacing one gage, or fourteen minutes for a boiler equipped with two gages. This time is consumed in unfastening and fastening the gages, and without any reference to the time required in breaking and making the pressure connection between the fluid pipe 35 and the nipple of the gage. Where my improved construction is employed, one minute is ample time for removing and replacing two gages, after the pressure connection has been broken, showing a saving of thirteen minutes on one two-gage engine in favor of my improved device.

Another very important feature in favor of my improvement is that, where the latter is employed, the gage is always firmly and securely fastened to the gage stand or bracket; while, under the old practice, the majority of gages will be found hanging by two bolts or screws, and in many instances only one is employed, allowing the gage to shake and rattle from the movement of the engine over the rails, which is not conducive to the correct registration of pressure, and which is also liable to result in disruption of the delicate mechanism of the gage.

By virtue of the spring element of my improved fluid gage holder, provision is made for securing the gage tightly in place, and, at the same time, permitting the necessary expansion due to the heat of the metal, without injury to any parts of the mechanism. In other words, assuming that the gage is held tightly in place by the spring or yielding element of the structure, when the gage is cold the spring will readily yield in response to the expansion of the metal, as will be readily understood. For this reason, my improved construction has an additional advantage over constructions where the gage is bolted to the stationary bracket or plate.

Having thus described my invention, what I claim is:

1. A gage holder, comprising a support, an arm vertically adjustable on the support, its upper extremity projecting above and overhanging the gage, the said arm terminating in a downwardly-bent rearwardly-extending spring, terminating at its inner extremity in a recess adapted to act upon the rim of the gage, and means mounted on the support for acting on the rim of the gage below the spring, substantially as described.

2. A gage holder, comprising a support, an arm vertically adjustable on the support, its upper extremity being equipped with a forwardly-extending member provided with a depending retaining spring, and rigid clips acting upon the gage below the spring in supporting relation, substantially as described.

3. A gage holder, comprising a supporting plate, an arm connected with the plate and having a detachable spring clip mounted upon its upper extremity and projecting above the rim of the gage, and rigid clips secured to the bracket and forming a support for the gage below and on opposite sides of the spring clip, substantially as described.

4. A gage holder, comprising a supporting plate, an arm connected with the plate and having its upper extremity provided with a forwardly projecting slotted member, a spring clip detachably connected with the said member, and rigid clips secured to the bracket below and on opposite sides of the spring clip, for the purpose set forth.

5. A gage holder, comprising a supporting plate, an arm detachably connected with the plate, and having its upper extremity slotted and adapted to receive a spring clip, and rigid clips secured to the said plate below and on opposite sides of the spring clip, for the purpose set forth.

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

GEORGE E. BAILIE.

Witnesses:
A. J. O'Brien,
F. E. Bowen.