No. 745,877. PATENTED DEC. 1, 1903.

J. W. MELVIN.

GAGE.

APPLICATION FILED JUNE 16, 1903.

NO MODEL.

Fig. 1

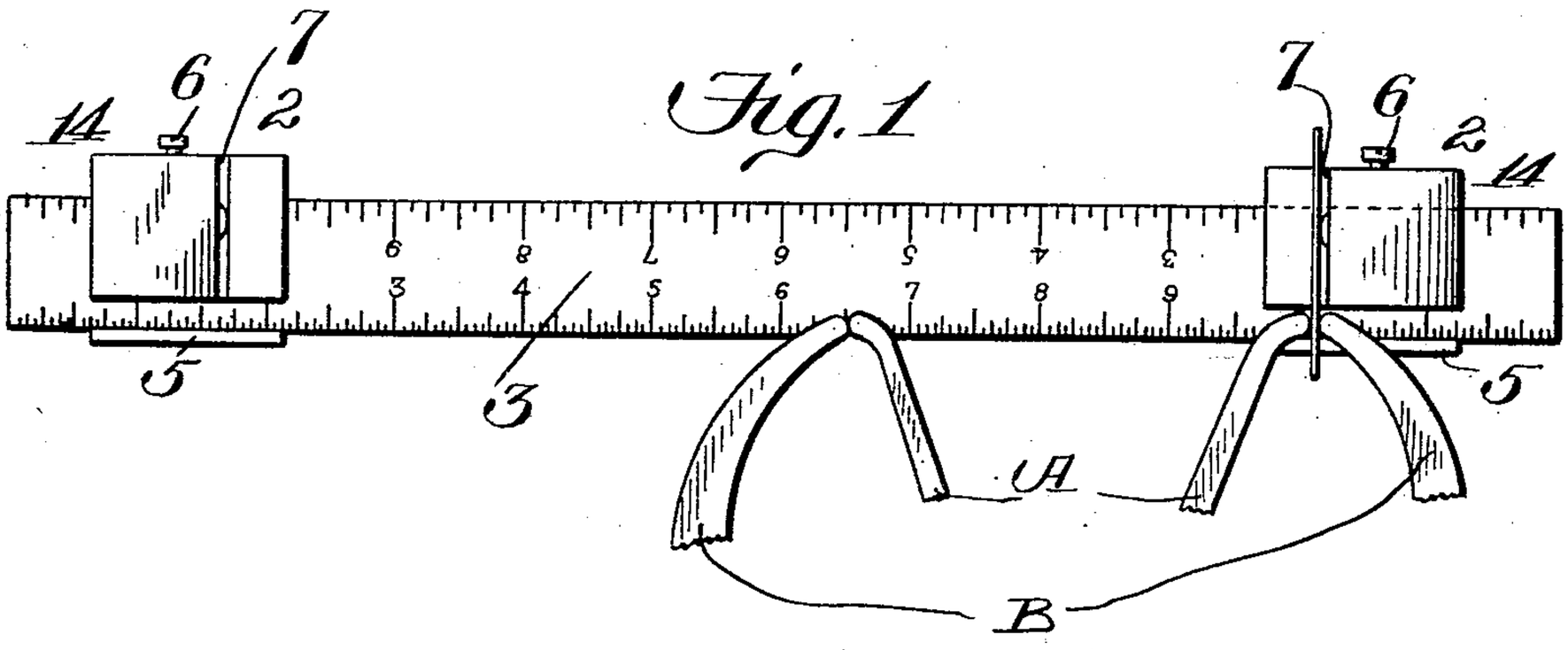

Fig. 2.

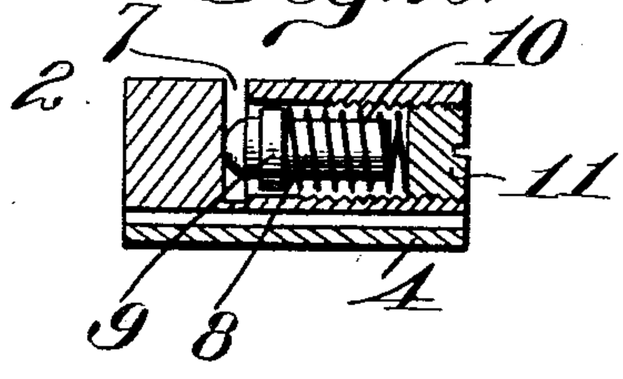

Fig. 3.

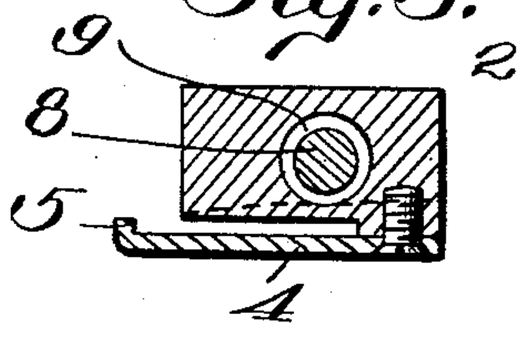

Fig. 4.

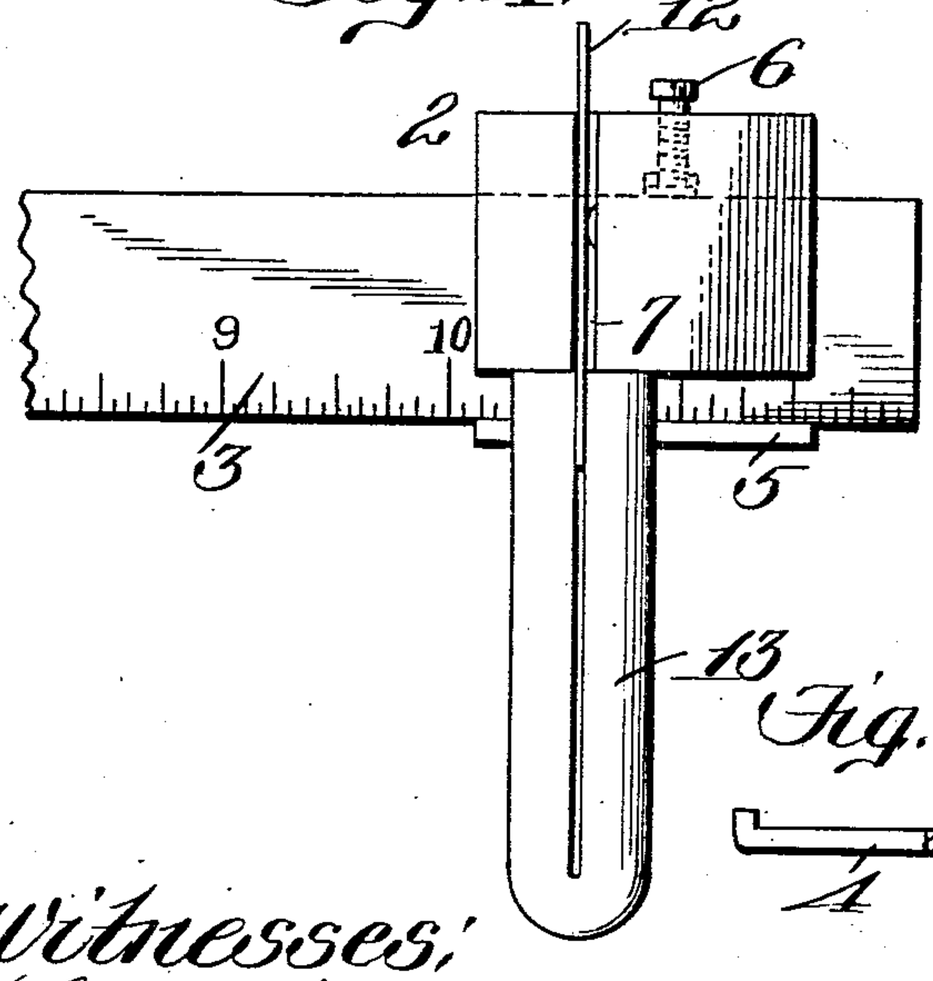

Fig. 5.

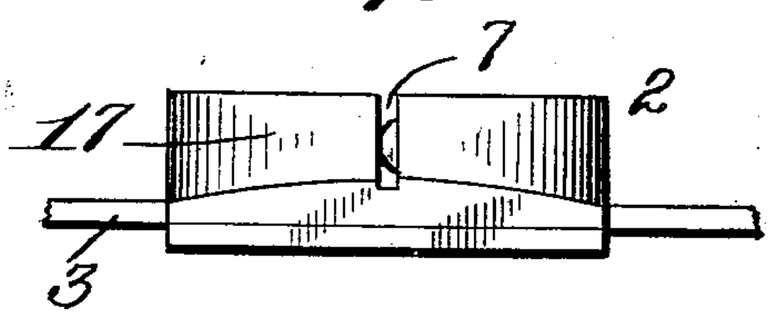

Fig. 6.

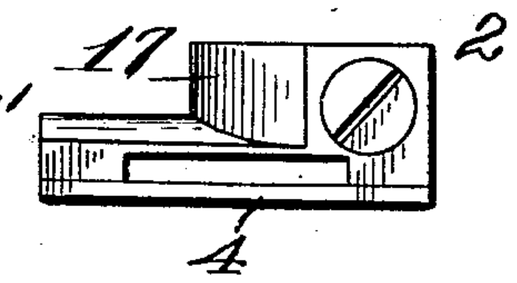

Fig. 7.

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By
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No. 745,877. Patented December 1, 1903.

UNITED STATES PATENT OFFICE.

JOSIAH W. MELVIN, OF HOUSTON, TEXAS.

GAGE.

SPECIFICATION forming part of Letters Patent No. 745,877, dated December 1, 1903.

Application filed June 16, 1903. Serial No. 161,725. (No model.)

To all whom it may concern:

Be it known that I, JOSIAH W. MELVIN, a citizen of the United States, residing at Houston, in the county of Harris and State of Texas, have invented new and useful Improvements in Gages, of which the following is a specification.

This invention relates to gages; and the object of the invention is to provide a simple and effective article of this character which may be employed with facility for various purposes, it having been found in practice a useful adjunct in fitting locomotive driving-wheels to their axles, and bushings, brasses, crank-pins, and the like to their wheels or other parts. It may be used also as a depth or thickness gage, as will hereinafter more fully appear.

The invention is shown in certain simple adaptations in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a plan view of a gage including my invention, showing the manner of using same. Figs. 2 and 3 are longitudinal and transverse sectional elevations of a block constituting part of the gage. Fig. 4 is a plan view of the device illustrated in Fig. 1, showing a fork connected with a thickness-plate for elevating the calipers above the face of the body which carries said blocks. Figs. 5 and 6 are respectively front and end views of a modified form of the device. Fig. 7 is an elevation showing a further modification of the device.

Like characters refer to like parts in the several figures.

The device includes in its structure a body, as 2, adapted to removably receive a thickness-plate, as will hereinafter appear. This body is generally made in the form of a block of a suitable metal and is supported by a carrier. The carrier may be of any desired kind. It is represented as consisting of a rule 3, which may be of any convenient length—for example, twelve or eighteen inches—the rule, as will hereinafter appear, being used in conjunction with the block for determining the depths of holes or thicknesses of hubs or the like. The block 2 is slidable upon the rule, it being rabbeted upon what might be considered its rear face to receive the rule for the major part of the depth of the latter. The block, therefore, does not wholly cover the rule, so that a portion of the face of the latter is exposed, for a purpose that will hereinafter appear. In other words, the body or block 2 extends short of what might be considered the lower edge of the carrier or rule 3.

To the upper rear side of the body or block 2 is attached a plate 4, which constitutes, in effect, a part thereof, screws being provided to unite the two parts. This plate extends across the rear face of the rule and has along its lower edge the shoulder 5, overlying the corresponding edge of the rule, the front faces of the two parts being flush. The upper edge of the rule 3 bears against the upper wall of the rabbet in which said rule fits, while the lower edge of the latter bears against the shoulder 5, by reason of which the rule and block are slidingly connected. If necessary, a screw 6 can be tapped into the body or block 2 to act against the upper edge of the rule in order to more firmly hold the block in a desired position. To prevent the inner end of the screw 6 from marring the rule, it engages a disk or washer. The head of the screw 6 is milled to facilitate its operation.

The body or block 2 has a slot 7 extending transversely of the rule to receive a thickness-plate, as will hereinafter appear, means in the present case, operative independently of the walls of the slot, being provided to hold the thickness-plate in said slot. The function of the thickness-plate will hereinafter appear. To prevent the slot from unnecessarily weakening the plate, it may be made shallower at one point than at another, as shown by dotted lines in Fig. 3. Any desirable means may be provided for holding the thickness-plate in the slot. For this purpose I have represented a spring-actuated pin 8 seated in a bore which opens at one end into the slot, the opposite end of the bore opening into what is shown in Fig. 1 as the right end of said block. This pin is slightly beveled at its inner end and has in proximity to the bevel a shoulder 9, to be engaged by one end of a coiled push-spring 10, the opposite end of said spring bearing against the screw 11, fitted into the outer end of said bore. The spring of course thrusts the beveled end

of the pin across the slot 7. When a thickness-plate is introduced into said slot and when it strikes the beveled end of the pin, the latter will be moved into the bore, permitting the thickness-plate to be bottomed in the slot 7, and the instant that the leading edge of the thickness-plate passes by the pin the spring, acting against the latter, will press the pin against the thickness-plate to force the same solidly against the non-bored wall of the slot. Of course other means may be provided for automatically securing the thickness-plate in place; but I do not deem it necessary to mention the same, as they are obvious. The spring-actuated pin, however, is preferred, in that it is automatic in its action.

In applying axles, bushings, and the like to wheels or other objects it is the custom to fit one of the parts relatively to the other, and great accuracy has to be observed in making these fits, this being especially the case in mounting locomotive drive-wheels on their axles. This particular use of the device I will hereinafter describe in detail, it being needless to set forth other similar ways of using the implement.

In applying locomotive driving-wheels to their axles the former are driven by high hydraulic pressure upon the axles. The diameters of the axles should be slightly greater than those of the axle-holes, and the purpose of the thickness-plate hereinbefore mentioned is to accurately indicate the variation, which has heretofore been secured by the aid of skilled mechanics. By the use of my gage, however, mechanics of only ordinary skill can accurately obtain the desired variation, in diameter between the axles and axle-holes. A thickness of ordinary tin, Russia iron, or other sheet metal may be employed in connection with the gage, assuming, of course, that its thickness is sufficient to show the proper pressure.

The manner of operating the device in applying a locomotive driving-wheel to its axle is as follows: First a thickness-plate, as 12, of the desired thickness is inserted into the slot 7 until it bottoms in the same, in which position it is held by the spring-actuated pin 8. The user then takes a pair of inside calipers, as A, and measures the diameter of an axle-hole, after which he places one leg of said calipers against one face of the thickness-plate. A pair of outside calipers, as B, is then brought into use and one leg thereof placed in proximity to the opposite face of said thickness-plate, with the end of the free leg thereof in engagement with the corresponding end of the free leg of the inside calipers. The leg of the outside calipers B adjacent the thickness-plate is then manipulated to carry the end thereof against said thickness-plate, the legs at opposite sides of the said plate being separated by and abutting solidly against said plate, which of course determines the excess of diameter of the axle with respect to its hole. When this operation is concluded, the calipers A and B are removed and the outer ones may be employed for turning the axle to the diameter represented by the distance between the legs of the set outer calipers. It will be remembered that the lower end of the block 2 has been described as extending short of the corresponding edge of the rule 3, so that in case a mechanic should desire to lay his calipers upon the rule during their adjustment he can do so.

The thickness-plate 12 of course extends across the exposed portion of the rule. In some cases to prevent the legs or branches of the calipers from getting under the thickness-plate I may connect a fork 13 with the lower projecting portion of the thickness-plate. The branches of this fork, which is usually made so as to have a slight spring, are adapted to tightly grip or straddle said projecting portion of the plate, and the calipers may be placed against the upper face of the fork, so that in this case said branches cannot possibly engage under the plate.

If necessary, prior to dressing the axle, I may insert the rule 3 into the hub of the wheel to secure the depth of the hole, moving the block along the rule to indicate such depth. When the depth is ascertained, the measurement taken indicates the length of the axle that is to be dressed.

Ordinarily I apply two of the blocks 2 to a rule, as indicated by Fig. 1, and as the latter is graduated the article may be very well used for determining thicknesses of collars, hubs, and other articles, or outside calipers may be placed against the outsides of the blocks or inside calipers against the insides of said blocks to indicate in inches and fractions of inches the lengths or depths of parts. It will be obvious that the article may be used in many other ways which I deem it unnecessary to specify.

The block 2 may be made of any suitable metal. For example, the block may be made of brass, as it will not scratch the rule, which is made of steel. The blocks have their opposite ends squared, so that when the device is used for taking measurements such squared faces can be placed accurately against an object.

In Figs. 5 and 6 I have shown a modification of the device. In this modification the block 2 has in its rear face a mortise to receive the rule 3, by reason of which the block extends entirely across the front face of the rule. A plate 4 extends across the rear of the rule and is fastened at its upper and lower ends by screws to the block, whereby the block and rule are slidingly connected. The block 2 has upon its upper forward side the shoulder 17 and is also slotted, as at 7, to receive the thickness-plate, the slot of course extending through the shouldered portion of the block. In the modified form of block there is no necessity for employing a fork 13, for the rea-

son that the slot 7 receives the plate 4 below the upper face of the block. By this construction the legs of the calipers cannot engage under the thickness-plate. The spring-actuated pin 8 for holding the thickness-plate in place in the modified form is exactly the same as that hereinbefore described. The under side of the shoulder 17 and the upper side of the main portion of the block 2 are formed upon arcs, so that the legs of the calipers can be freely vibrated back and forth without possibility of carrying their working ends out of contact, which would be the case were such surfaces made flat.

In Fig. 7 I have shown a further and very slight modification of the device illustrated in Figs. 1, 2, and 3, inclusive. In Fig. 7 the upper end of the plate 4 has a relatively deep shoulder 4′, which is connected to the back of the block 2 by means of screws, as in the form of device illustrated by said Figs. 1 to 3. This modified construction last mentioned is adapted to receive rules of unusual thicknesses.

The device may be further modified within the scope of the accompanying claims.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a device of the class described, a block having a shoulder upon its upper side and a slot extending through the main portion of the block and the shoulder, the upper face of said main portion and the under face of the shoulder being rounded, and means independent of the walls of the slot for pressing a thickness-plate against one of the walls of said slot.

2. In a device of the class described, a block channeled on one face and having a slot transverse to the channel, a plate fastened to the channeled side of the block and extending across the channel, a pin, the block being bored to receive the pin, and the bore opening at its inner end into said slot, the inner end of the pin being beveled and having a shoulder adjacent to said beveled portion, a spring in the bore surrounding the pin and bearing at one end against said shoulder, and a screw in the outer end of the bore against which the outer end of said spring bears.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JOSIAH W. MELVIN.

Witnesses:
THEO WERNER,
D. L. LAIRD.