No. 751,866. PATENTED FEB. 9, 1904.

J. W. MELVIN.

GAGE.

APPLICATION FILED DEC. 1, 1903.

NO MODEL.

Fig. 1.

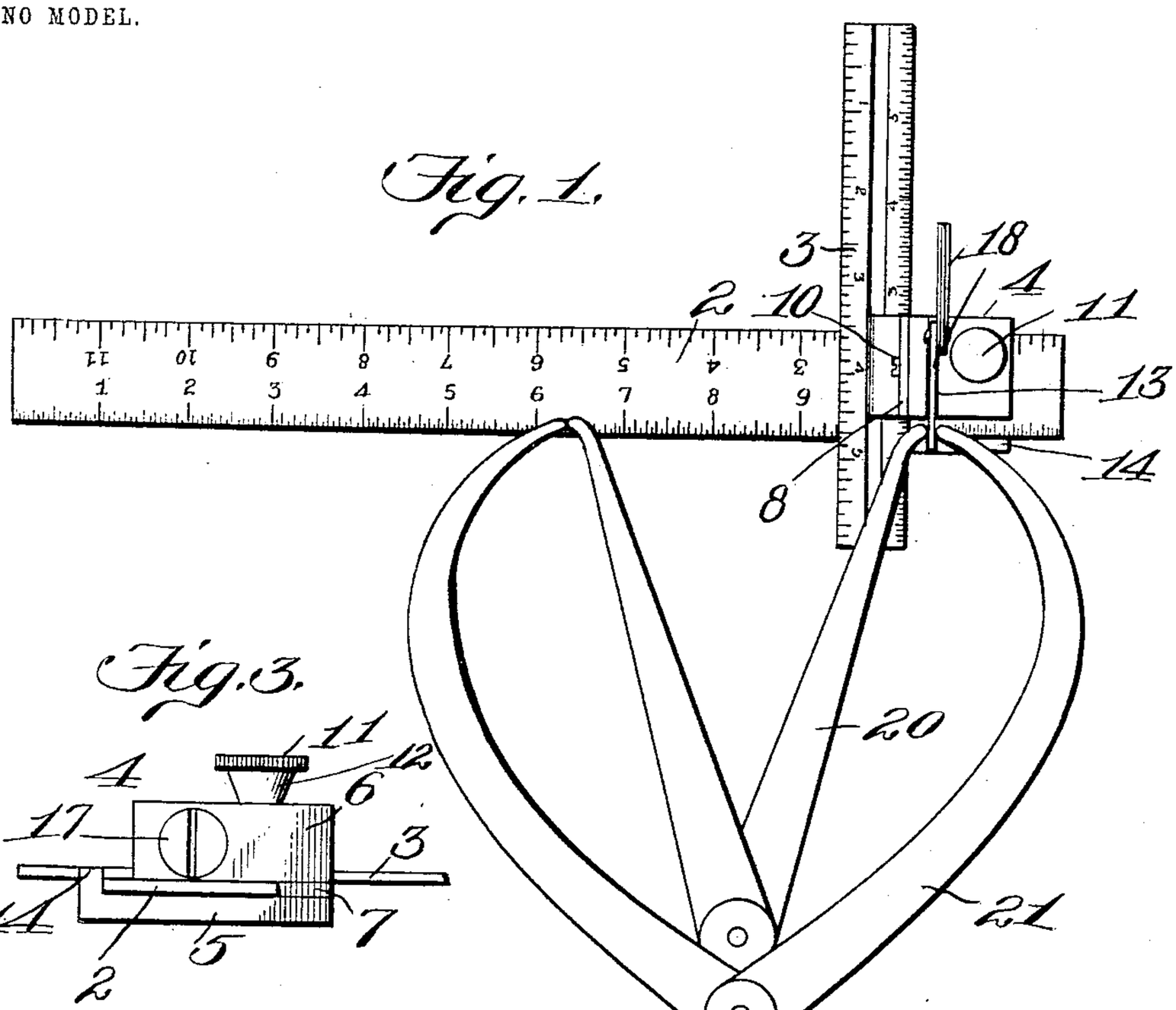


Fig. 3.

Fig. 2.

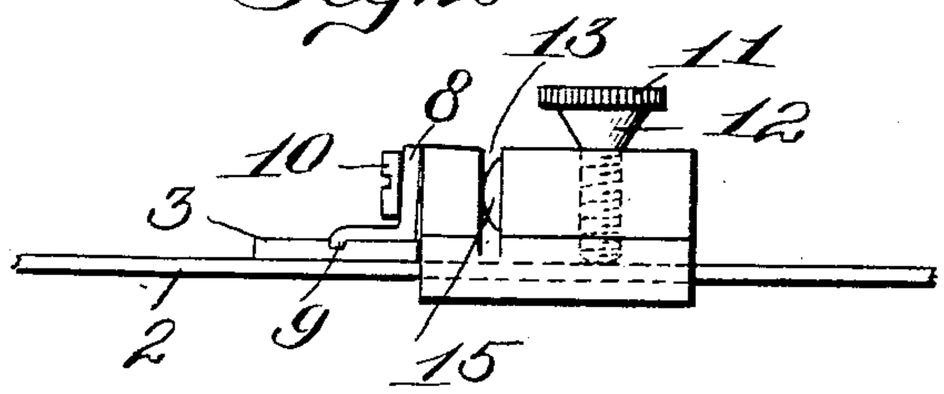


Fig. 4.

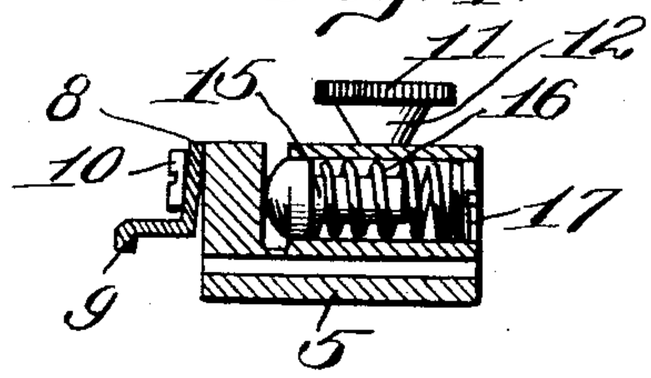


Fig. 5

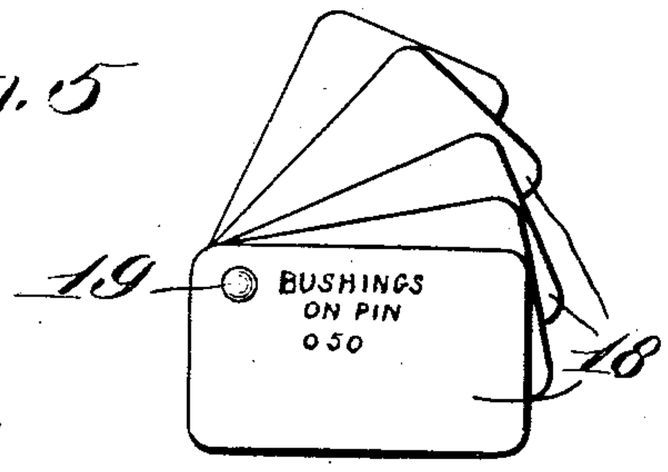
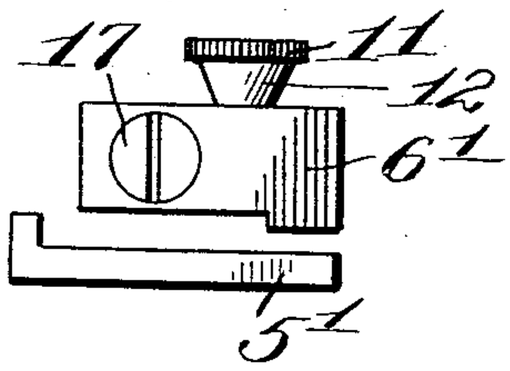


Fig. 6



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No. 751,866. Patented February 9, 1904.

UNITED STATES PATENT OFFICE.

JOSIAH W. MELVIN, OF HOUSTON, TEXAS.

GAGE.

SPECIFICATION forming part of Letters Patent No. 751,866, dated February 9, 1904.

Application filed December 1, 1903. Serial No. 183,366. (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.

The device is in the nature of a compound implement, it involving a thickness-gage and also a square. It is effective in its several uses, simple of construction, and easy of manipulation.

The invention is clearly shown in one convenient embodiment thereof in the accompanying drawings, constituting a part of this specification, and in which—

Figure 1 is a plan view of a gage embodying the improvements and showing the manner of using the same. Figs. 2 and 3 are respectively front and side elevations of the same. Fig. 4 is a longitudinal sectional elevation. Fig. 5 is a detail view of a series of thickness-plates used in connection with the thickness-gage. Fig. 6 is a detail elevation showing a slightly-modified form of block.

Like characters refer to like parts in the several figures.

The gage includes in its organization two blades, as 2 and 3, respectively, the blade 2, which may be the main one, consisting in the present instance of a twelve-inch rule, while the blade 3, which constitutes the auxiliary one, consists of a six-inch rule, the two parts being situated in practice at right angles to each other and being slidingly and adjustably connected to a gage-block, as will hereinafter appear, the three parts constituting collectively a square which may be used either as a T-square or try-square, and can be efficiently employed in places where squares of the ordinary kind cannot be used.

The two blades or rules 2 and 3 are adjustably connected by a block designated in a general way by 4 and including a base-piece 5 and an upper piece 6. The two parts 5 and 6 are shown as separated a distance sufficient to freely receive the rule 2 by a liner 7. The said base-piece, upper piece, and liner may be riveted or in some cases the three parts may be integral.

The cross or auxiliary blade 3 is supported upon the main blade or rule 2, the two parts being maintained at right angles by an angular plate 8, the horizontal portion of which has a depending lip or bead 9, fitted in a longitudinal groove in the cross-blade 3. The vertical portion of the angular plate receives a set-screw 10, which is tapped into one of the outer faces of the upper portion of the block 4, so as to secure said plate in place. The lip 9 of said plate frictionally engages the inner wall of the groove or channel in the cross-blade 3, whereby the latter can be readily adjusted transversely of the main blade 2. It will be seen on reference to Fig. 2 that the lower portion of the clamp-plate 8 does not abut against the block 4, but is separated therefrom by an angular space, so as to assure the requisite frictional engagement between the plate 8 and blade 3, which frictional engagement may be quickly regulated by the screw 10.

A binding-screw 11 is tapped into the upper side of the block 4, its lower end being adapted to engage the upper face of the main blade 2 in order to hold the block 4 in the desired position with respect to the rule or blade 2. By loosening the binding-screw 11 the said block may be freely slid along the rule 2, and when in the requisite position said screw 11 will be tightened up. The binding-screw 11 below the head thereof has a tapered shoulder 12, which projects above the upper face of the block 4, so that in case the implement should fall upon the ground the shock will be received by the thickened shoulder 12, so as not to bend the screw 11.

The block 4 has a transverse slot 13 to receive a thickness-plate, which slot, it will be observed, extends through the upper portion 6 of the block and also through an upturned flange 14 at the forward side of the base piece or plate 5, which base-piece, it will be perceived, is wider than the upper portion 6 of the block. The upper surface of the flange

14 is in a plane above the corresponding surface of the main blade 2 and is intended to receive the legs of calipers employed in one use of the implement. In other words, said caliper-legs are held above the surface of the blade 2, so that they cannot get under a thickness-plate bottomed in the transverse slot 13.

A thickness-plate is adapted to be bottomed in the slot 13 and to be pressed against one wall of said slot—in the present case the wall at the left—by a spring-actuated pin, as 15, inclosed in a suitable bore in the upper portion 6 of the block. The actuating-spring for the pin is denoted by 16, and it surrounds the same, bears against a shoulder at the forward end of the pin to normally maintain the latter in its working position, and bears at its rear end against the screw 17, closing the rear of the bore in which said spring-actuated pin is situated. When a thickness-plate is introduced into the slot 13, said plate will engage the free end of the pin 15 and force the pin to one side, so that the plate can be bottomed in the slot. When the plate is bottomed, the spring 16 effectually presses the thickness-plate against the non-bored wall of the slot.

In practice the thickness-plates, as 18, are connected in groups—say by a pivot 19—and in this way the plates are readily kept assembled, so that any one of them can be easily reached at any time. Each plate has prominently on one face markings indicating its use and its thickness.

The device hereinbefore described can be employed in many different ways, several of which I have specified. I will describe now more at length the manner of using the device when applying a wheel to its axle. In this case a thickness-plate 18 of the requisite thickness is initially inserted into the slot 13, in which position it is securely held by the spring-actuated pin 15. The user then takes a pair of inside calipers, as 20, and with them measures accurately the inside diameter of an axle-hole. One leg of said inside calipers—say the leg to the right—is then placed against what is shown in Fig. 1 as the inside face of the thickness-plate 18, said right leg abutting against the upper portion of the block 4. What is shown as the left leg of the inside calipers will be sustained upon the upper surface of the main blade or twelve-inch rule 2. A pair of outside calipers, as 21, is then brought into requisition, and the right leg thereof is placed against the outer face of the thickness-plate 18, while the left leg is vibrated up and down until its terminal portion engages the corresponding portion of the left leg of the inside calipers. It will be understood that a leg of each calipers abuts against opposite faces of the thickness-plate, the latter determining the excess of diameter of the axle with respect to its hole in accordance with the particular fit to be made, whether the fit be a force, drive, running, or other fit. After the adjustment of the outside calipers they may be used for measuring the diameter of the axle, shaft, arbor, or other part to be fitted into the hole of a wheel, disk, or equivalent. I have shown in Fig. 5 a number of the thickness-plates assembled together. They may be made of any desirable thicknesses, running from four-thousandths up to twenty-five-thousandths of an inch. In practice I intend to furnish with the tool a table giving the number of thousandths to use in making a particular fit.

By virtue of my improvements I am enabled to rapidly and accurately secure the diameters of axles, shafts, or the like to be fitted to their wheels, and in a very much more expeditious manner than is possible with certain existing methods.

The two rules or blades are marked with inch-marks and fractional subdivisions, and as each is slidably connected with the block 4 they may be employed to advantage in making various kinds of measurements, and as said rules are removably connected with the block they may be detached therefrom and used independently of each other.

It will be remembered that I have heretofore described the block 4 as consisting of three pieces and have suggested as a modification that the block can be made integral. In Fig. 6 I show a further modification, wherein the block is made of two parts, it consisting of a base-piece 5′ and an upper section 6′, chamfered or grooved on their adjacent faces to present upright and depending flanges, respectively, so that when the two parts are connected together there will be between them a slot to slidingly receive the main blade.

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, and a pair of blades adjustably and slidably connected with the block and located at right angles to each other, the block having a thickness-plate-receiving slot, and means for pressing the thickness-plate against one of the walls of the slot.

2. In a device of the class described, a blade, a block slidingly connected with the blade, having a slot to receive a thickness-plate, and means for pressing said thickness-plate against one of the walls of the slot, a binding-screw tapped into the block and arranged to engage said blade, a second blade extending across the first blade and having a groove in its upper side, and an angular plate connected by a screw with the block and having a lip to enter the groove of the second blade.

3. In a device of the class described, a block having a slot to receive a thickness-plate, and means for forcing said thickness-plate against

one of the walls of the slot, a rule slidably connected with the block, a binding-screw tapped into the block to engage the rule and having an enlarged shoulder below its head, a second rule supported against the other rule and having a longitudinal groove, an angular plate, the horizontal portion of which is provided with a depending lip fitted into said groove, and a screw passing through the vertical portion of the plate and tapped into the block.

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

JOSIAH W. MELVIN.

Witnesses:
J. B. DEMOSS,
J. G. RICE.