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3,231,228

HEIGHT GAUGE CONSTRUCTION

Filed Aug. 2, 1963

FIG. 1

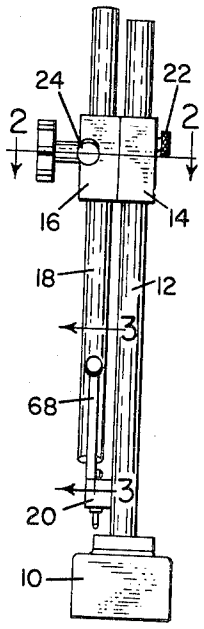


FIG. 2

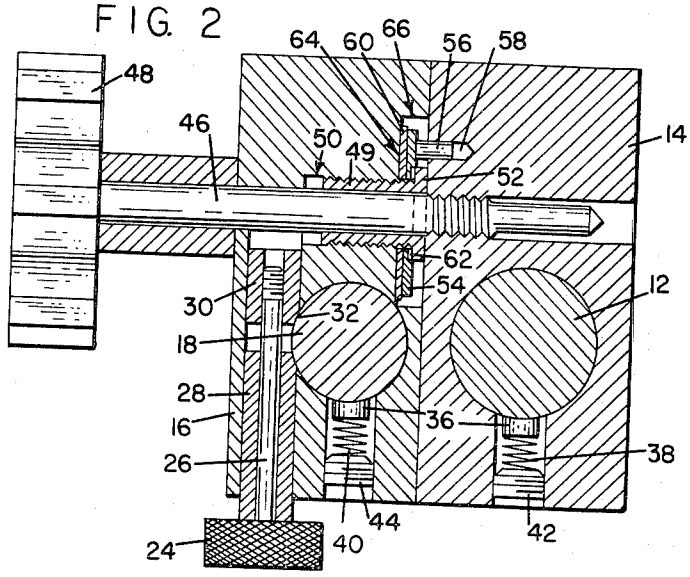


FIG. 3

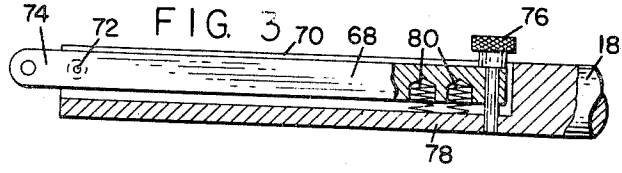


FIG. 5

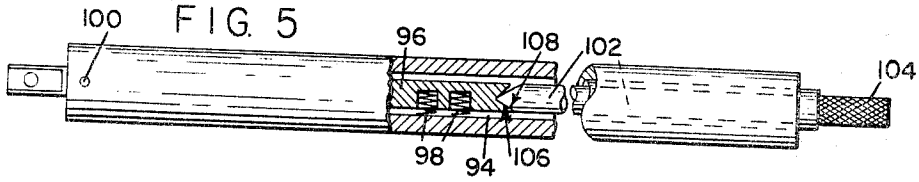
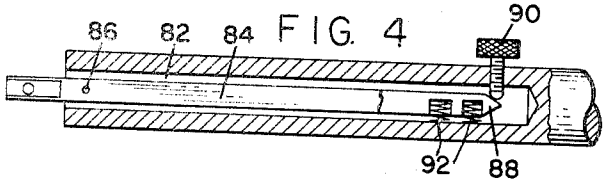


FIG. 4



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HEIGHT GAUGE CONSTRUCTION

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This invention relates to a new and improved height gauge construction including a standard having a holding device rotatable and slidable relative to the standard, and an arm slidable in the holding device, the latter comprising a pair of relatively pivotable blocks one of which slides on the standard and the other of which slidably supports the arm, the invention comprising means providing for a frictional braking effect between the two blocks so that when a clamping means for the two blocks is backed off or loosened, the arm will not thereupon immediately rotate, heavy end down, damaging the stylus or other measuring device thereon, but on the other hand will not rotate at all except under manual pressure or will only slowly rotate, allowing for a refastening or reclamping action with respect to said two blocks. The friction brake means in effect maintains the blocks generally in their original position but allow turning thereof, one with respect to the other.

Other objects of the invention include the provision of frictional brakes with respect to both of the standard and the arm preventing sudden dropping of the two blocks on the standard or sudden dropping of the rod with respect to its block.

Other objects of the invention include the provision of a new and improved means for slightly tiltably adjusting the measuring stylus or other measuring implement on the arm, provided in a simple construction which is easily removed, reset and also easily assembled originally.

Other objects and advantages of the invention will appear hereinafter.

Reference is to be had to the accompanying drawings, in which

FIG. 1 is a view in elevation of a height gauge to which the present invention is applied;

FIG. 2 is an enlarged section on line 2—2 of FIG. 1;

FIG. 3 is an enlarged sectional view along line 3—3 of FIG. 1;

FIG. 4 is a view similar to FIG. 3 showing a modification, and

FIG. 5 is a view similar to FIG. 3 showing another modification thereof.

Referring now to FIG. 1 there is shown a base 10 having an upright standard 12 thereon. Slidable on the standard 12 is a block 14 and pivotally associated with the block 14 there is another block 16 having a bore through it for slidably maintaining or holding an arm 18 with respect thereto. One end of the arm 18 holds a gauging element 20 of any known description.

The block 14 is clamped with respect to standard 12 by means of a thumbscrew 22 which clamps the block 14 to the standard as will be hereinafter described. Block 16 is provided with a thumbscrew 24 which clamps the arm 18 to block 16. These clamping means are alike and the one operated by the thumbscrew 24 is illustrated in FIG. 2, the clamp operated by the thumbscrew 22 being of similar construction. This construction includes the screw 26, turned by the thumbpiece 24 in a sleeve 28 in the block 16; and the screw 26 is threaded into another sleeve 30 impinging on the arm 18 at 32 and conforming in general in shape thereto if desired.

Both the standard 12 and arm 18 has applied thereto a friction device in the form of a nylon or Teflon plug 36 shaped to the surface of the respective standard or arm and having backup springs as at 38, 40 with screws 42, 44 holding the same in position with adjustable force so

that when either the clamp at 22 or 24 is suddenly loosened, neither the arm 18 will drop suddenly nor will the blocks 14, 16 suddenly drop down the upright 12. When these abrupt motions occur, the engaging stylus on the member 20 will be damaged and these are extremely delicate members so that any shock to them is usually disruptive but the brake arrangement illustrated herein prevents such accidents.

The block 16 is mounted to swivel with respect to block 14 in order to angularly adjust arm 18 on a horizontal axis. As shown in FIG. 2 this comprises in general a clamping screw generally indicated at 46 operated by a hand wheel 48 and serving to draw the blocks relatively together. Means is provided for preventing a quick turn between the two blocks when this clamping arrangement is released and this comprises a hollow sleeve 49 screw-threaded on its exterior and meshing with threads in a recess 50 in block 16. The sleeve 49 has a head 52 which impinges on a metal disc or washer 54 having a pin 56 secured fixedly thereto and arranged in an opening 58 in block 14 so that the disc 54 cannot rotate relative to block 14 but it can rotate relative to block 16. Under the disc 54 is a disc of friction material as at 60 and under the head 52 of the sleeve 49 there is a spring washer 62 of conventional design. This spring washer is wavy in outline and is generally annular as well known in the art.

It will be seen that the sleeve 49 can be tightened with respect to disc 54 to apply an increasing amount of spring pressure thereto urging it against the friction material 60. The friction washer 60 is flatly held between the washer or disc 54 and the circular bottom wall 64 of a recess 66 in which disc 54 and 60 are held. The effect of this is that the disc 54 imparts a frictional bearing contact with respect to the bottom wall 60 of the recess 66 and the block 16, and this prevents any rapid rotation of block 16 when the clamp screw 46 is suddenly released. The arm 18 cannot suddenly pivot downwardly, i.e., in one direction or another, damaging the stylus. The degree of friction can be adjusted by the rotation of the sleeve 49 in the appropriate direction.

The arm 18 as shown in FIG. 1 is provided with a slot in which is located an elongated supporting member 68 for the measuring device 20 and referring to FIG. 3 the construction thereof is shown therein, the slot being indicated by the reference character 70. The rod 68 is pivotally mounted on a pin 72 so that its free end at 74 can be adjusted slightly to vary the position of the member 20, and this is accomplished by a threaded pin or the like 76 threaded into the bottom portion at 78 of the arm 18 below the slot 70 and passing through the rod 68.

A pair of springs 80 urge the rod 68 in a counterclockwise direction as shown in FIG. 3 but are limited by the position of the head of the screw 76.

A modification of this construction is shown in FIG. 4 wherein there is no slot 70 but rather an elongated free-ended bore 82 in the arm. The bar 84 carrying the measuring device is pivoted at 86 as before but in this case it has a beveled inner end 88 which is engaged by the inner end of the screwthreaded member 90. The springs at 92 are like those at 80 and the operation is similar except that the inner end of the screwthreaded fastener 90 bears directly on the slanted surface 88 rather than passing through an aperture in the end of the rod 68 as in FIG. 3.

In FIG. 5 there is shown a further modification where the bore extends end-to-end through the arm, this bore being indicated by the reference numeral 94. The carrier bar 96 is substantially the same as in FIG. 4, the springs 98 are the equivalent of the springs 80, and bar 96 is pivoted at 100 as previously. In this case there is a threaded

bar **102** in bore **94**, and this bar can be operated externally by a thumbpiece **104** at the far end of the arm. It has a beveled end at **106** to impinge on the slanted end surface **108** of bar **96**, and acts to tilt the bar **94** as before.

Having thus described my invention and the advantages thereof, I do not wish to be limited to the details herein disclosed, otherwise than as set forth in the claims, but what I claim is:

1. A height gauge which includes a standard, a block slidable along the standard, a second block rotatable with respect to the first block, an arm slidable in the second block and a measuring device on the arm, together with means clamping the first block to the standard, means clamping the second block to the first block, and means clamping the arm to the second block, and

means comprising a friction brake between the two blocks, said friction brake preventing accidental rotation between said two blocks when the means clamping the blocks together is released, said friction braking means comprising an element on one block and adjacent the other block, said element being movable with relation to its block but being non-rotatably mounted thereon, a friction disc, said friction disc being mounted on the other of said blocks and engaged by said element, and means applying pressure to said element causing it to bear with yieldable force against said friction disc, the latter engaging a surface on the said other block.

2. The height gauge of claim **1** including an externally threaded sleeve in said second block, the second block having a threaded recess receiving the sleeve, said sleeve including a head for exerting an adjustable amount of pressure on said element to vary the frictional pressure thereof with respect to said friction disc.

3. The height gauge of claim **1** including an externally threaded sleeve in said second block, the second block having a threaded recess receiving the sleeve, said sleeve including a head for exerting an adjustable amount of pressure on said element to vary the frictional pressure thereof with respect to said friction disc, and a spring washer located between the head of said sleeve and said first-named disc.

4. The height gauge of claim **1** including an externally threaded thimble in said second block, the second block having a threaded recess receiving the thimble, said thimble including a head for exerting an adjustable amount of pressure on said element to vary the frictional pressure thereof with respect to said friction disc, the clamping means between the two blocks including a threaded member extending through the thimble and threadedly engaged with one block while passing through the other block, and having a handle for turning the same to clamp and release said blocks.

5. A height gauge construction embodying a standard and an arm mounted thereon, and means on said arm for mounting a measuring instrument, said means comprising an elongated bar, a recess in the arm receiving said bar, means pivoting said bar adjacent the end of the arm, the major portion of the length of said bar being located in said recess and a relatively short portion thereof extending from the end of the arm for supporting the measuring instrument, and means for pivotally moving said bar with relation to said arm.

6. The height gauge recited in claim **5** wherein said means comprises a threaded member located in said arm and engaging said bar to move it in one direction, and means yieldingly urging the bar in the opposite direction.

7. The height gauge recited in claim **5** wherein said means comprises a threaded member located in said arm and engaging said bar to move it in one direction, and means yieldingly urging the bar in the opposite direction, said screw-threaded means being threaded into the arm and passing through the bar.

8. The height gauge recited in claim **5** wherein said means comprises a threaded member located in said arm and engaging said bar to move it in one direction, and means yieldingly urging the bar in the opposite direction, said screw-threaded means having a free end engaging the inner end of said bar, the inner end of said bar being beveled.

9. The height gauge recited in claim **5** wherein said means comprises a threaded member located in said arm and engaging said bar to move it in one direction, and means yieldingly urging the bar in the opposite direction, said threaded member being arranged in a longitudinal bore in said arm and having a beveled inner end engaging the inner end of said bar, the inner end of said bar having a complementary bevel engaged by the beveled inner end of the threaded member to move said bar pivotally against the action of said springs.

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