Sept. 22, 1931. J. H. JACOBS 1,824,153

HEIGHT GAUGE

Filed Dec. 23, 1929

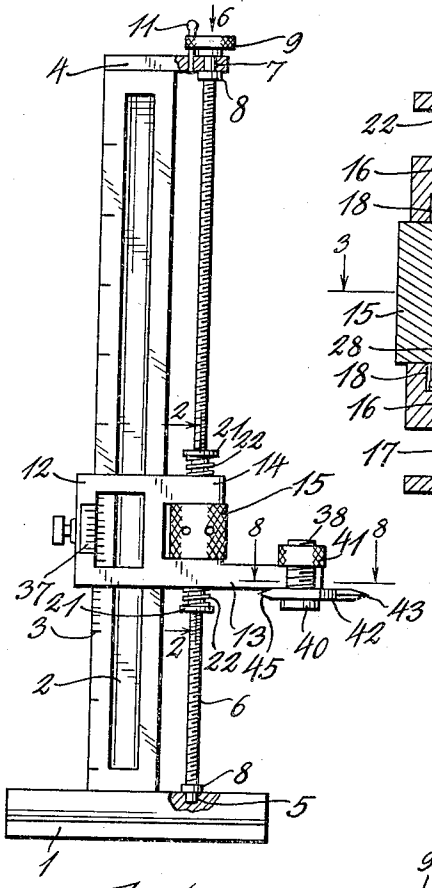


Fig. 1.

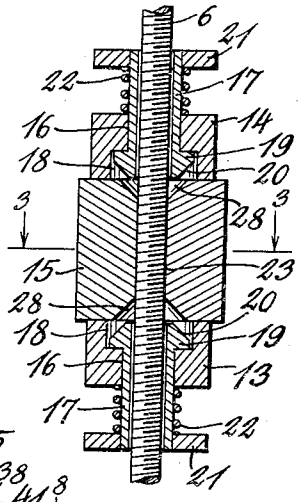


Fig. 2.

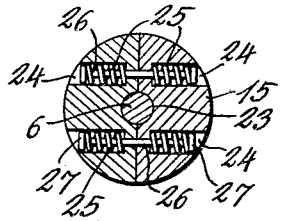


Fig. 3.

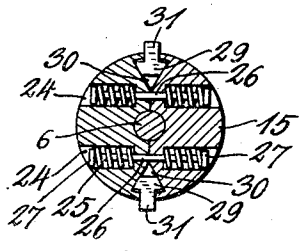


Fig. 4.



Fig. 6.

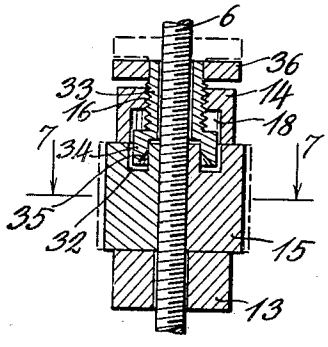


Fig. 5.

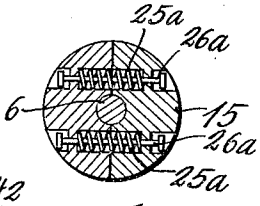


Fig. 7.

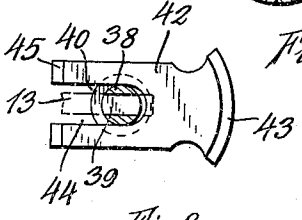


Fig. 8.

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Patented Sept. 22, 1931 1,824,153

UNITED STATES PATENT OFFICE

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HEIGHT GAUGE

Application filed December 23, 1929. Serial No. 416,073.

This invention relates to improvements in height gauges of the type employed for laying out work in machine shops.

It is an object of this invention to produce a height gauge of such construction that it can be very quickly adjusted to approximately the desired height and which can then be moved by means of a micrometer screw adjustment to the exact position desired, the gauge being provided with a vernier for obtaining the exact reading.

The above and other objects that may appear as the description proceeds are attained by means of a construction which, briefly described, is as follows:

The gauge is provided with a base to one side of which is secured a blade. This blade has one edge calibrated or graduated. A jaw is slidably connected with the blade and provided with a set screw by means of which it can be clamped in adjusted position. A projection extends laterally from the upper end of the blade and a screw has one end journaled in a bearing in the base and the other in the lateral projection. The jaw has an opening through which the screw extends. The jaw is also provided with a notch or opening in which is located a nut that has a threaded engagement with the screw, and when this nut is rotated relative to the screw the jaw will be moved longitudinally with respect to the blade. The nut is made in two or more parts and is held in engagement with the screw by means of springs or other suitable means and means is provided for opening the nut so as to move the parts thereof out of engagement with the screw, whereby the jaw can be moved longitudinally so as to effect a rough adjustment.

Having thus briefly described the invention, the same will now be described in detail, and for this purpose reference will be had to the accompanying drawings in which the preferred embodiment of the invention has been illustrated, and in which:

Fig. 1 is a side elevation of my improved height gauge, parts being broken away to better disclose the construction;

Fig. 2 is a section taken on line 2—2, Fig. 1, and shows one means for opening or releasing the split nut;

Fig. 3 is a section taken on line 3—3, Fig. 2, and shows the spring means for holding the parts of the nut in operative position;

Fig. 4 is a section similar to that shown in Fig. 3 and illustrates a modified means for releasing the nut;

Fig. 5 is a modification showing another means for moving the nut into and out of operative position;

Fig. 6 is a view looking in direction of arrow 6 in Fig. 1;

Fig. 7 is a section taken on line 7—7, Fig. 5; and

Fig. 8 is a section taken on line 8—8, Fig. 1.

In the drawings reference numeral 1 represents the base of the gauge and 2 the blade. The lower end of this blade is secured to the base in any suitable manner and is provided on one side with graduations 3. These graduations may be in inches and decimals of inches, or it may be graduated in the metric system, as may be desired. Secured to the upper end of the scale is a member 4 that extends laterally from the scale and which will be referred to hereinafter as the laterally extending member. The base is provided with an opening 5 which serves as a bearing for the lower end of screw 6. The laterally projecting member is also provided with an opening 7 in which the upper end of the screw is journaled. Screw 6 is provided with collars 8 at its upper and lower end and these collars prevent longitudinal movement of the screw. A knurled head 9 is secured to the upper end of screw 6 and constitutes the means by which the screw may be rotated. Head 9 is provided with a plurality of openings 10 for the reception of a latching pin 11, which serves to hold the head and the screw against rotary movement. Pin 11 extends into an opening in the laterally projecting member in the manner shown in Fig. 1.

Slidably connected with the scale is a jaw, which has been designated in its entirety by reference numeral 12. This jaw has a projecting arm 13 which extends outwardly at the bottom of the jaw and a shorter arm 14 at the top of the jaw. The space between

these two arms forms a notch within which is located a split nut 15. The arms 13 and 14 are each provided with an opening 16 in which is located wedge members or expanders 17. The lower ends of openings 16 are enlarged so as to form recesses 18 in which is located the heads 19 of the expanders. The outer ends of heads 19 are conical as indicated by reference numerals 20. Each of the expanders has an outwardly extending flange 21 that can be engaged by the fingers for moving them inwardly against the force exerted by springs 22. The nut 15 is made in two parts in the manner shown in Fig. 3, and is provided with a central opening 23 that is threaded so as to cooperate with the threads on screw 6. Each of the two parts of the nut are provided with an opening 24 on each side of a diametrical plane that extends perpendicular to the adjacent surfaces of the nut. These holes or openings extend in the direction of chords and each hole is formed from two portions of different diameters in the manner shown in Figs. 3 and 4. In each hole is located a spring 25 and a pin 26 extends through the two aligned springs in each pair of openings. These pins are provided with heads 27 and hold the springs under compression, thereby producing a force tending to close the nut and hold it in engagement with the threads on the screw 6. The ends of the nut are provided with chamfered openings 28 as shown in Fig. 2. When the expanders 17 are moved inwardly the conical surfaces 20 will engage the corresponding conical surfaces 28 and move the two parts of the nut outwardly to such an extent that the nut will be released from the screw. After the nut has been moved to inoperative position, the jaw can be moved longitudinally so as to effect a rapid adjustment of the jaw to approximately the position desired. When this rough adjustment has been made, the expanding means is released, so that the nut will cooperate with the threads of the screw, after which the fine adjustments are made by means of the nut. After the jaw has been properly adjusted, it may be clamped in adjusted position, by means of a set screw.

The means for controlling the split nut and which has just been described is merely illustrative of means for this purpose and can be replaced by other equivalent means, and as an example of such I have shown in Fig. 4 a modified construction in which the expanding members 17 have been replaced by means of radial wedges 29 that cooperate with the inclined walls of the wedge-shaped openings 30. These wedges have portions 31 that extend outwardly beyond the outer surface of the nut and when pressure is exerted on parts 31, the two parts of the nut are moved outwardly in a manner quite apparent from the drawings.

In Fig. 7 I have shown another construction which can be substituted for the one shown in Fig. 2. In this modified form of nut, the springs 25*a* are under compression and the pins 26*a* merely serve to hold the parts from becoming separated. In Fig. 5 I have shown a longitudinal section of the nut which is shown in transverse section in Fig. 7 and from Fig. 5 it will be seen that one end of the nut is provided with an annular recess 32, extending inwardly from one end thereof. The opening 16 in arm 14 is threaded and instead of the expander 17 shown in Fig. 2, a contracting device is employed. This contracting device has a central tubular portion 33 whose outer surface is threaded for engagement with the threaded opening 16. The lower end is provided with a downwardly extending cylindrical flange 34 whose inner lower edge is chamfered as indicated by numeral 35. The upper end of tubular member 33 has secured to it a ring 36 which forms a knurled flange by means of which the contracting member can be rotated. Since springs 25 are under compression they tend to move the two parts of the nut into inoperative position with respect to the screw. The inside diameter of the cylindrical flange 14, above the chamfered surface 35, is of the same diameter as the inner surface of recess 32 and therefore when the parts are in the position shown in Fig. 5, the nut will be held in operative position, but if member 33 is rotated so as to move upwardly to the dotted line position, the two parts of the nut will be released and will move outwardly to dotted line position through the action of the springs. It will be seen that with the construction shown in Figs. 5 and 7, the nut is held in operative position by positive means, whereas, in the embodiment shown in Figs. 2 and 4, the nut is held in operative position by the action of springs and it is therefore possible that the parts of the nut will move away from each other due to the fact that the threads are of the triangular type and a possible error may thus be introduced although it is highly improbable that any errors would result from this construction as the nut is requirely to exert very little force and is merely used to position the jaw.

In this construction the graduations on the blade have been shown located on the side opposite from that of arm 13 and the vernier 37 is also located on this side. By so locating the vernier, it is possible to bring the screw 6 closer to the edge of the blade than if the vernier were located on the other side.

For the purpose of securing a marker or scriber to the outer end of arm 13, I have provided a screw 38 which has an axial diametrical slot 39 of sufficient size to receive the outer end of arm 13. This screw is provided at its lower end with an outwardly ex-

tending flange 40 and has a nut 41 that cooperates with the screw. In Fig. 8 I have shown a marker 42, which is well adapted for use with this type of gauge and which consists of a steel plate having one end rounded and ground to a sharp edge as indicated by reference numeral 43 and provided at its other end with a notch or opening 44 that is adapted to receive the clamping screw 38. The other end of this marker is also provided with a sharp edge as indicated by reference numeral 45. Although this particular marker has been found to be very satisfactory it can be replaced by any other suitable marker as this is immaterial so far as my invention is concerned.

From the above description it will be apparent that I have produced a height gauge of such construction that the jaw can be readily adjusted longitudinally of the blade with a very small expenditure of time, and therefore adjustments can be more quickly made than with the ordinary type. In addition to the saving of time that can be effected by means of this tool, it is also less liable to move accidentally than the ordinary tools of this type which depend entirely upon a set screw for holding them in adjusted position. In my construction the screw is always connected with the nut 15 except during the times when the jaw is moved and therefore there is no danger of accidental movement. The set screw shown in Fig. 1 is not absolutely necessary with my construction, but is provided as it is sometimes convenient to lock the jaw as rigidly as possible to the blade. The jaw can be moved either by rotating 15 or by rotating the screw and when the latter is to be rotated, the pin 11 is removed and the screw is rotated by applying the fingers to the knurled head 9 and holding nut 15 against rotation.

Having described the invention what is claimed as new is:

1. A height gauge comprising, in combination, a base, a blade having one end secured to the base, the other end of the blade having a lateral projection, a screw having one end journaled in the base and the other end journaled in the lateral projection, means for holding the screw against longitudinal movement, a jaw slidably connected with the blade, the jaw having an opening for the screw, a split nut rotatably connected with the jaw and with the screw, means for normally holding the nut in engagement with the screw, and means for spreading the nut so as to release it from engagement with the screw whereby the jaw can be moved in the direction of the length of the screw.

2. A height gauge comprising, in combination, a base, a blade having one end secured to the base, the other end of the blade having a lateral projection, a screw having one end journaled in a bearing in the base and the other end journaled in a bearing in the lateral projection, means for holding the screw against movement in the direction of its axis, a jaw slidably connected with the blade, the jaw having an opening through which the screw extends, the jaw having also an opening for the reception of a nut, a split nut in the opening and mounted for rotation therein, resilient means for holding the nut normally in operative engagement with the screw, and means for spreading the nut so as to release it from the screw whereby the jaw can be moved along the screw.

3. A height gauge comprising, in combination, a base, a blade having one end secured to the base, the other end of the blade having a lateral projection, a screw having one end journaled in the base and the other end journaled in the lateral projection, means for holding the screw against movement in the direction of its length, means secured to one end of the screw for rotating it about its axis, a jaw member slidably connected with the blade and movable along the latter, the jaw having an opening through which the screw extends and another opening for the reception of a nut, a split nut located in the last named opening and operatively mounted for rotation therein, the nut being associated with the screw whereby when the nut and the screw are rotated relative to each other the jaw will be moved along the blade, and means for releasing the nut from the screw whereby the jaw can be moved along the blade so as to effect a rough adjustment.

In testimony whereof I affix my signature.

JOSEPH H. JACOBS.