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J. MASONE

SURFACE GAUGE

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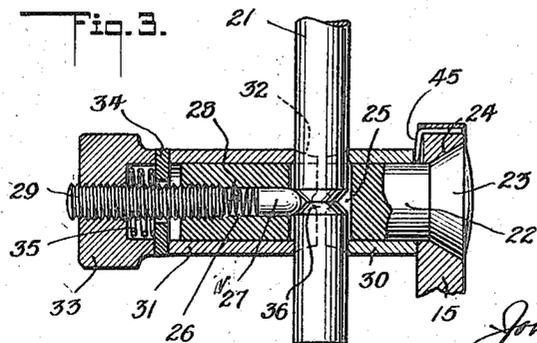
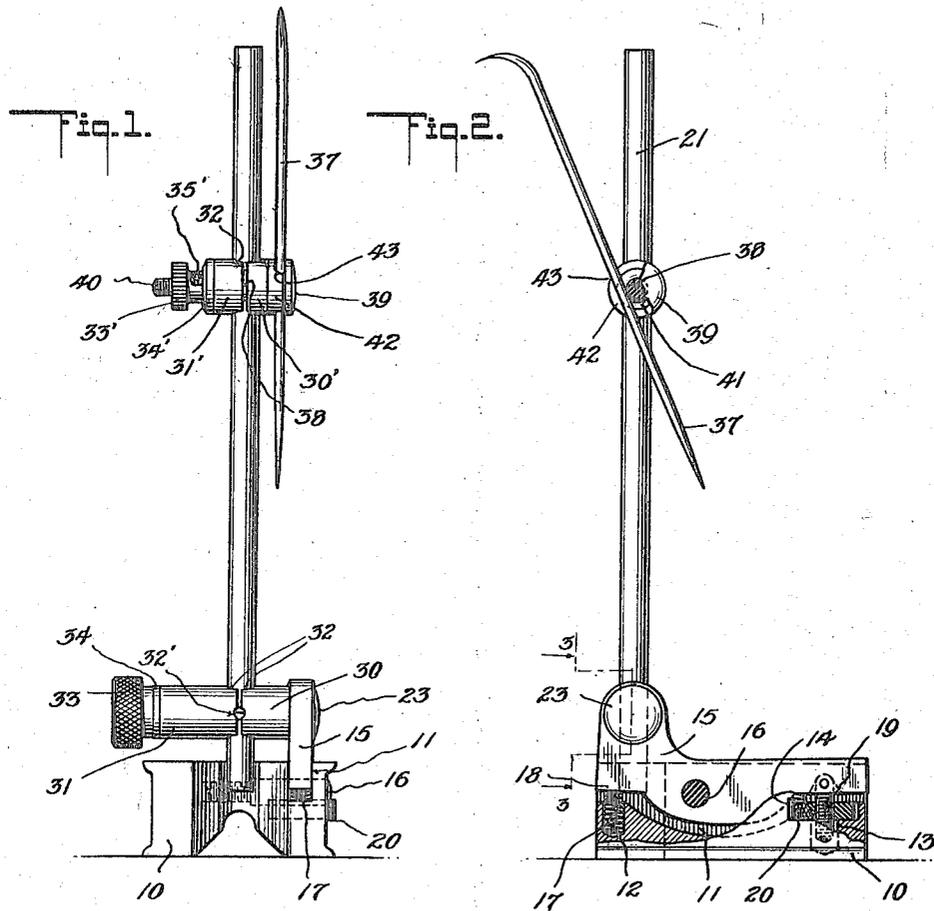
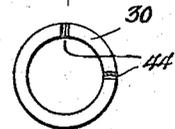


Fig. 4.



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SURFACE GAUGE.

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To all whom it may concern:

Be it known that I, JOHN MASONE, a citizen of the United States, residing at New York city, borough of the Bronx, in the county of Bronx and State of New York, have invented certain new and useful Improvements in Surface Gauges, of which the following is a specification.

This invention relates to instruments of precision and has particular reference to instruments commonly used by machinists and known as surface gauges.

Among the objects of the invention is to provide a surface gauge adapted especially for use and manipulation by one hand only, it being the usual practice to require both hands for the manipulation and adjustment of such instruments.

A further object of the invention is to provide a peculiar and novel clamping means for the adjustable parts of the instrument.

With the foregoing and other objects in view the invention consists in the arrangement and combination of parts hereinafter described and claimed, and while the invention is not restricted to the exact details of construction disclosed or suggested herein, still for the purpose of illustrating a practical embodiment thereof reference is had to the accompanying drawings, in which like reference characters designate the same parts in the several views, and in which—

Figure 1 is a front elevation, showing a preferred embodiment of my improvement.

Fig. 2 is a side elevation of the same, parts being in section.

Fig. 3 is an enlarged section detail on the line 3—3 of Fig. 2.

Fig. 4 is an end elevation of one of the gripping sleeves.

Referring now more specifically to the drawings, I show my improvement as comprising a base 10, the bottom of which is adapted as is usual in instruments of this class to slide or be moved about upon any level or flat surface in the taking of readings or calculations. This base is provided along one side with a longitudinal groove 11 extending from one end to the other parallel to and close to one side and extending from the top of the base toward its bottom. Near the front end of the base a pit 12 is formed, and likewise near the rear end below the groove 11 is another pit or counter bore 13. Extending inward and horizontally from the side of the base just referred to, and

intersecting the lower rear portion of the groove 11, is a chamber 14 opening at the side.

15 indicates a rocker in the nature of a bell crank lever fitted and adjustable within the groove 11 and mounted primarily upon a pivot 16 extending horizontally across the grooved portion of the base. A coil spring 17 is fitted in the pit 12 and bears upward against the front end portion of the rocker at 18, the tendency of the spring being to tilt the rocker upward in front and downward at the rear. A screw 19 is pivotally or otherwise hung below the rear end of the rocker and projects downward into the pit 13. A thumb nut 20 has threaded engagement with the screw 19. This nut lies within the chamber 14 but projects outward sufficiently far beyond the adjacent side face of the base to be easily turned by the operator's thumb while he grasps with the fingers of the same hand the base for determining the position of the entire instrument upon the flat surface. The spring 17 tending to swing the rocker as described around its pivot 16 tends to hold the bottom face of the nut against the bottom wall of the chamber 14. In other words, there is always sufficient friction between the nut and the structure of the base beneath it to prevent accidental rotation of the nut, but the nut is always easily turned by the operator's thumb.

21 indicates a pedestal in the nature of a straight arm or bar of metal, preferably of round structure, and adjustably attached to the rocker by suitable clamping means. This means, as shown in Fig. 3 in detail, comprises a cylindrical pin 22 having a head 23 fitted in a counter sunk hole 24 in the upper portion or arm of the rocker and extending thence horizontally across or above the front end of the base. The pedestal is extended loosely through a hole 25 formed through the pin, and the end of the pin remote from the head 23 is bored centrally at 26 in which is fitted a round pointed dog 27 urged toward the pedestal 21 by means of a spring 28 fitted in the bore 26 between the dog and a center screw 29 tapped with a tight thread in the outer end of the bore 26.

Surrounding the pin 22 on opposite sides of the pedestal are two sleeve members 30 and 31 constituting jaws and having cooperating or mating notches 32 for direct engagement with the pedestal. The depth of these notches is slightly less than the

radius of the pedestal, and hence when the sleeves or jaws are urged toward each other they grip the opposite sides of the pedestal independently of the wall of the hole 25 in the pin. The sleeve 30 abuts at its end remote from the pedestal against the inner side wall of the rocker, and the remote end of the jaw 31, which extends beyond the end of the pin 22, is adapted to be engaged by a thumb nut 33, either directly or by a washer 34 interposed between the sleeve 31 and said nut. The washer 34 which is preferably used surrounds loosely the center screw 29, and between said washer and the nut 33 is interposed a relatively strong coil spring 35, the function of which is to constitute a temporary holder for the clamping members in holding the pedestal in preliminary adjustment either longitudinally or circumferentially. It will be understood that the pin 22, being carried directly by the rocker, may be regarded as a fixture with respect to the rocker, and so the jaw sleeve 30 likewise is substantially fixed in position longitudinally of the pin, but of course both sleeves are free to rotate with the pin around the axis of the latter when the pedestal is being tilted forward or rearward. The nut 33 may always be gripped at the side of the base. An easy rotation of the nut 33 in conjunction with the force of the springs 28 and 35 will make a tight grip between the pedestal and the rocker. The description thus far contemplates that the pedestal 21 is smooth and cylindrical throughout, but I find it advantageous to provide adjacent to the lower end of the pedestal a circumferential V-groove 36 into which the rounded point of the dog 27 will snap when the pedestal is adjusted to the right height. The action of the dog and its spring is to so co-operate with this groove as to hold the pedestal at the elevation indicated, but the pedestal may be rotated around its axis freely while being so held vertically, so far as the dog is concerned.

The sleeves 30 and 31 are provided with auxiliary notches 32' at 90° from the centers of the first mentioned notches 32 which may be employed for the gripping of a needle or other similar object when the pedestal 21 is removed.

37 indicates a needle or pointer of any suitable or approved construction, the same being shown as having a straight point at one end and a bent point at the other as is well understood in the art.

The means to secure the needle adjustably to the pedestal includes a clamp of somewhat the same character as described in detail above, the same including a pin 38 having a head 39 at one end and a reduced threaded shank 40 at its other end. The body of this pin 38 is provided with a large hole corresponding to the hole 25 and through which

the pedestal projects loosely. On opposite sides of the pedestal and rotatably surrounding the pin are two jaw sleeves 30' and 31' having notches 32 of the same character as described above for direct gripping of the pedestal. A nut 33' co-operates with the threaded shank 40 for causing the gripping of the jaws upon the pedestal, preferably through a washer 34' bearing against the outer end of the sleeve 31'. A spring 35' is preferably employed between the nut and the washer for temporary holding purposes as already described in connection with the lower clamp.

Adjacent to the head 39, the pin 38 is provided with an annular groove 41, and surrounding this portion of the pin is a collar 42 having a pair of notches or holes 43 tangential to the bottom of the groove and along which the needle 37 is fitted. When the nut 33' is loose enough the needle 37 obviously may be swung around the axis of the pin so as to lie in any tangential position along said groove 41, primarily for the vertical adjustment of either point of the needle which may be active at any time. The collar 42 abuts against the sleeve 30', and when the nut 33' is tightened this tightening reacts along the pin between the head 39, the needle, and the sleeve 31' to grip both the needle and the pedestal. When the approximate adjustment of the needle point is effected through the action just described, or in connection with the vertical adjustment of the pedestal, or the vertical adjustment of the upper clamp along the pedestal, the preliminary or approximate adjustment of the needle point will be determined by the tightening of both of the nuts 33 and 33'. Following this preliminary or approximate adjustment, the final delicate adjustment of the needle point will be effected by the manipulation of the entire instrument over the surface and the operation of the operator's thumb on the nut 20 in the rocking or tilting of the member 15, which having relatively short arms will effect a ready and yet delicate adjustment of the needle point, the other hand of the operator being free to manipulate other devices.

The sleeve 30 is provided preferably at one end adjacent to the rocker with one or more V-grooves 44 but indicated in Fig. 4 as arranged at 90° apart, one being at the top when the pedestal is vertical. These grooves are adapted for co-operation with a spring 45 secured to the top portion of the member 15. When the pedestal is moved to the upright position, the spring snapping into the adjacent groove 44 will hold the parts preliminarily in such position, or if the pedestal is swung forward to the horizontal the other groove or notch 44 will receive the spring for holding the pedestal in such position. It will of course be under-

stood that the force of the spring will only be sufficient to hold the weight of the parts in either position and that the pin may be rotated nevertheless when desired, and of course when the nut 33 is tightened the parts will be locked in any desired position irrespective of the notches 44.

I claim:

1. In a surface gauge, the combination with a pedestal and a base, of means to secure the pedestal adjustably to the base, said means including a pin having a transverse hole through which the pedestal projects loosely and a bore at an angle with said hole and communicating therewith, a dog slidable within said bore and adapted to bear moderately upon said pedestal, means fitted within said bore adapted to cause the dog to bear upon the pedestal, and means co-operating with said fitted means to clamp rigidly the pedestal and pin together.

2. In a surface gauge, the combination with a pedestal, a needle secured to the pedestal, and a base, of means to secure the pedestal adjustably to the base, said means including a pin having a transverse hole through which the pedestal projects loosely, a pair of clamping jaws on the pin at opposite sides of the pedestal, and means for adjusting said jaws.

3. In a surface gauge, the combination with a pedestal, a needle secured to the pedestal, and a base, of a pin on the base having a transverse hole through which the pedestal projects loosely, such pedestal having an annular groove therein, a spring pressed dog in the pin engaging in the grooved portion of the pedestal, and clamping sleeves on the pin at opposite sides of the pedestal.

4. In a surface gauge, the combination with a pedestal, a needle secured to the pedestal, and a base, of a pin on the base having a transverse hole through which the pedestal projects loosely, such pedestal having an annular groove therein, a spring pressed dog in the pin engaging in the grooved portion of the pedestal, clamping sleeves on the pin at opposite sides of the pedestal, a screw in the pin bearing against the spring-pressed dog, and a nut on the screw exerting pressure on the clamping sleeves.

5. In a surface gauge, the combination of a pedestal, a needle secured to the pedestal, a base, and means to secure the pedestal adjustably to the base, said means including a pin having a transverse hole through which the pedestal projects loosely, a pair of jaw sleeves surrounding the pin adjacent to said hole and having notches for direct reception of the pedestal, and a thumb nut rotatable around the axis of the pin and acting

through the pin to cause the reaction of the sleeves toward each other.

6. Mechanism as set forth in claim 5 in which the pin and other clamping means co-operating therewith are normally frictionally held but rotatable around the axis of the pin for completing an adjustment of the pedestal.

7. Mechanism as set forth in claim 5 including a groove circumferentially around the pedestal and an automatic spring operated dog within the pin co-operating with the groove to hold the pedestal from endwise movement preliminary to the tightening of the clamp means.

8. In a surface gauge, the combination with a pedestal and means for approximating the vertical adjustment and support of the pedestal, of a needle, and means to secure the needle adjustably to the pedestal, said adjustment means including a pin through which the pedestal projects loosely, a pair of gripping sleeves surrounding the pin and having pedestal-engagement notches on opposite sides of the pedestal, said pin having a head at one end and a threaded extension on the other end, and means at the threaded end extension for causing reaction between the head of the pin and said gripping sleeves.

9. A device as set forth in claim 8 in which the pin is provided adjacent to its head with a circumferential groove along which the needle is adapted to project tangentially in any direction, and a collar surrounding the pin adjacent to the groove and having notches along which the needle projects, said collar reacting with one of the gripping sleeves for tightening the parts.

10. In a surface gauge, the combination of a base having a slot extending along one side and downward from the top thereof, a rocker pivoted in said slot, a needle, a pedestal supporting the needle, means to attach the pedestal to the rocker, and means acting between the base and the rocker for tilting the rocker around its pivot, said means including a screw extending downward from the rocker and a nut below the rocker and accessible at said side of the base for the operator's thumb of the same hand that holds and manipulates the base.

11. Mechanism as set forth in claim 10 in which the means acting between the base and the rocker for tilting the rocker includes a spring acting upon the rocker on the side of the pivot remote from the nut and serving to tend to tilt the rocker in one direction and to provide a frictional grip between the nut and the base to prevent accidental rotation of the nut.

In testimony whereof I affix my signature.

JOHN MASONE.