A. W. MITCHELL.

SNAP GAGE.

APPLICATION FILED NOV. 2, 1918.

1,314,888. Patented Sept. 2, 1919.

Fig. 2.

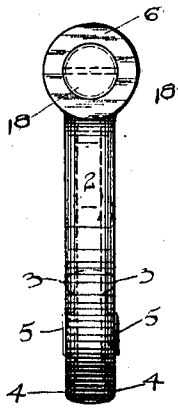


Fig. 1.

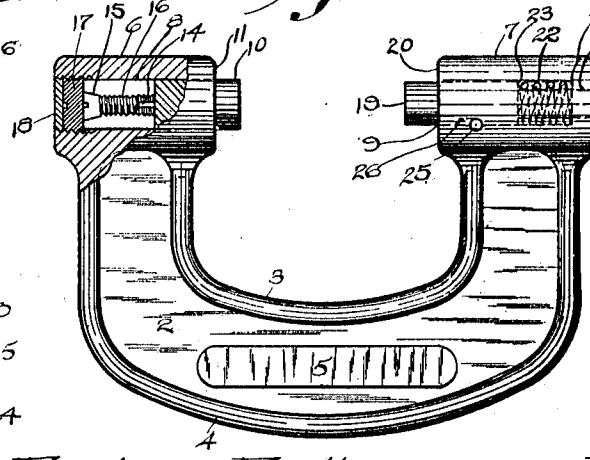


Fig. 3.

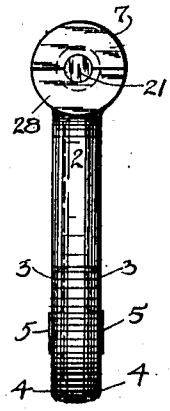


Fig. 5.

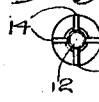


Fig. 4.

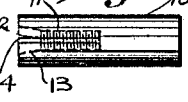


Fig. 11.

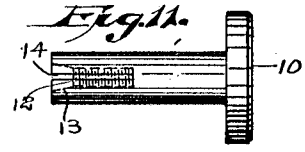


Fig. 12.

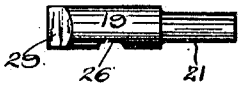


Fig. 6.

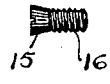


Fig. 7.



Fig. 8.

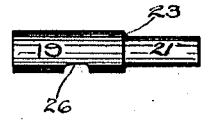


Fig. 9.

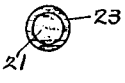


Fig. 10.

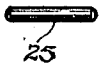


Fig. 15.

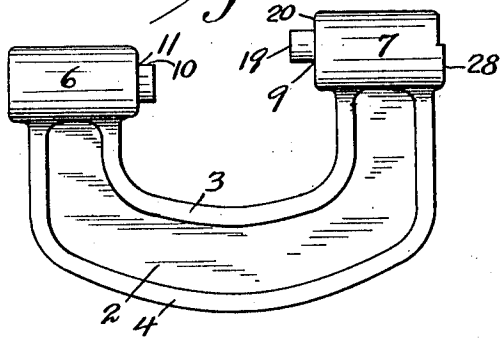


Fig. 13.

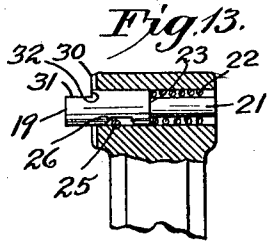
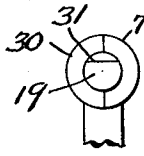


Fig. 14.



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by Seymour & Earle
Atty

UNITED STATES PATENT OFFICE.

ALBERT W. MITCHELL, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO WINCHESTER REPEATING ARMS CO., OF NEW HAVEN, CONNECTICUT, A CORPORATION.

SNAP-GAGE.

1,314,888. Specification of Letters Patent. Patented Sept. 2, 1919.

Application filed November 2, 1918. Serial No. 260,788.

To all whom it may concern:

Be it known that I, ALBERT W. MITCHELL, a citizen of the United States, residing at New Haven, in the county of New Haven and State of Connecticut, have invented a new and useful Improvement in Snap-Gages; and I do hereby declare the following, when taken in connection with the accompanying drawings and the characters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this application, and represent, in—

Figure 1 a view partly in elevation, and partly in section, of a snap gage embodying my invention.

Fig. 2 a view thereof in left hand end elevation.

Fig. 3 a corresponding view in right hand end elevation.

Fig. 4 a detached plan view of the adjustable measuring-plug.

Fig. 5 an end view thereof.

Fig. 6 a detached view of the jam screw of the said plug.

Fig. 7 a corresponding view of the adjusting screw itself.

Fig. 8 a corresponding view of the yielding measuring-plug.

Fig. 9 an end view thereof.

Fig. 10 a corresponding view of the stop-pin of the yielding plug.

Fig. 11 a detached plan view of a modified form of adjustable plug.

Fig. 12 a corresponding view of a modified form of yielding plug.

Fig. 13 is a broken view in vertical longitudinal section of the head and yielding measuring-plug of one of the modified forms which my invention may assume, the said head and plug being constructed in this instance to locate the tolerance-step at the inner instead of at the outer end of the head.

Fig. 14 is a corresponding view thereof in inside elevation; and

Fig. 15 is a view in elevation of one of the modified forms which the frame of the gage may assume.

My invention relates to an improved measuring gage of the type commonly known as a "snap gage", the object being to produce a convenient and reliable gage constructed with particular reference to safety in use, in so much as it may be applied without danger to a rotating piece, to being sealed so that it cannot be tampered with by the workman after being adjusted, to providing for the exterior indication of the measurement, and to preventing the springing of the frame by forcing the gage on the work.

With these ends in view, my invention consists in a snap gage having certain details of construction and combinations of parts as will be hereinafter described and pointed out in the claims.

In carrying out my invention as herein shown, I employ a substantially U-shaped frame 2 having stiffening ribs 3, 4 and 5, and terminating at its ends in opposed alined cylindrical heads 6 and 7 having alined cylindrical plug-holes 8 and 9. The said hole 8 receives a normally fixed, but adjustable, measuring-plug 10 the inner end of which projects beyond the inner face 11 of the head 6, and the outer end of which has an axial screw-hole 12 countersunk as at 13. The outer end of the said plug is also formed with four radially arranged slots 14 to permit it to be expanded by the tapering head 15 of the jam screw 16 by which the plug is firmly fixed in place after it has been adjusted by means of a short adjusting-screw 17 for which the outer end of the hole 8 is threaded. After the screw 17 has been adjusted, it may be, and by preference is, sealed in place by a sealing wax seal 18, thus providing against any tampering with the gage by a workman after it has been set.

The plug-hole 9 in the head 7 receives a yielding measuring-plug 19 the inner end of which projects beyond the inner face 20 of the head 7, and the outer end of which has bearing in the reduced outer end 21 of the hole 9. A helical spring 22 encircling the stem 21 is interposed between the shoulder 23 of the plug and a shoulder 24 formed at the outer end of the main portion of the

hole 9. A stop-pin 25 passing transversely through the frame 2 enters a cut 26 in the plug 19, this cut being adapted in width to permit the required longitudinal play of the plug. The outer face 27 of the head 7 is provided with a tolerance step 28 the depth of which is precisely predetermined to express the tolerance of the gage.

In using my improved gage, the plug 8 is set, as required, by means of the adjusting-screw 17 which is then removed for access to the jam-screw 16 which is now turned to spread the outer end of the plug and so firmly clamp it in position. The adjusting-screw is now returned to its place and preferably sealed therein by means of a seal of sealing wax, thus preventing access to the adjusting-screw except as the wax is broken. After the plug has been set as described, the device is ready for use. If when the gage is pressed against the work, the yielding plug 19 is pushed outward against the tension of the spring 22 so that its reduced stem 21 projects beyond the tolerance step 28, then the object being gaged is rejected as exceeding the maximum allowable demensions. If, on the other hand, the outer end of the stem 20 falls within the plane of the inner end of the step, then the object being gaged is rejected as being below the minimum allowable dimensions.

It will be seen from the foregoing, that my improved snap gage utilizes but one pair of measuring-plugs for measuring maximum and minimum dimensions; whereas, formerly, two pairs of plugs or their equivalents have been used. On account of the yielding character of one of the plugs of my improved gage, the same may be applied with perfect safety to a moving object without danger of having the gage jammed and wrenched out of the hand of the user. Also on account of the yielding character of one of the plugs, there is no strain thrown on the frame of the gage tending to spread it and thus destroy the integrity of the gage as a measuring instrument. By utilizing the inner end of one plug for gaging and the outer end for measuring, I secure superior convenience, the measurement being determined either visually or tactually.

My improved snap gage, of course, is not limited to the use of plugs whose inner or gaging ends are like those of the plugs 10 and 19. On the contrary, the gaging ends of the plugs will be shaped in accordance with the character of the work to be gaged; for instance, Fig. 11 shows a plug 10 having its inner or gaging end formed with a relatively large disk for use in gaging spherical objects, while the yielding-plug 19 of Fig. 12 has its gaging end chisel-shaped as at 29 to adapt it to enter a narrow slot. These figures will sufficiently serve to illustrate two of the manifold forms which the gaging ends of the plugs may assume. If desired, the tolerance-step may be formed as at 30 upon the inner face of the head 7 mounting the yielding plug 19 the inner end of which is reduced by cutting its upper face away as at 31, so as to form at its inner end a shoulder 32 which coöperates with the step 30 in using the gage.

In case it is desired to use the gage for measuring irregular shapes, the heads 6 and 7 will be suitably opposed, as shown in Fig. 15, rather than alined, as shown in Fig. 1, the construction and operation of the gage remaining otherwise unchanged.

I claim:—

1. In a snap gage, the combination with a substantially U-shaped frame provided with two opposed heads having plug-holes, of a normally fixed adjustable measuring-plug mounted in one of the said heads, and a yielding measuring-plug mounted in the other the head receiving the said yielding plug being formed at one end with a tolerance-step.

2. In a snap gage, the combination with a substantially U-shaped frame provided with two opposed heads having plug-holes, of a normally fixed adjustable measuring-plug mounted in one of the said heads, and a yielding measuring-plug mounted in the other, one end of the yielding-plug being used by direct contact with the work for gaging and its opposite end being used for measuring.

3. In a snap gage, the combination with a substantially U-shaped frame provided with two opposed heads having plug-holes, of a normally fixed adjustable measuring-plug mounted in one of the said heads, and a yielding measuring-plug mounted in the other, the inner end of the yielding-plug being used by direct contact with the work for gaging and its outer end being used for measuring.

4. In a snap gage, the combination with a substantially U-shaped frame provided with two opposed heads having plug-holes, of a normally fixed adjustable measuring-plug mounted in one of the said heads, and a yielding measuring-plug mounted in the other, the outer face of the head mounting the said yielding-plug being formed with a tolerance-step.

5. In a snap gage, the combination with a substantially U-shaped frame provided with two opposed heads having plug-holes, of a normally fixed adjustable measuring-plug mounted in one of the said heads and having its outer end formed with a countersunk

screw-hole and slotted, a jam-screw located in the said screw-hole, an adjusting-screw for engaging with the outer end of the said jam-screw, a seal for the said adjusting-screw, and a measuring-plug located in the plug-hole of the other head.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses.

ALBERT W. MITCHELL.

Witnesses:
ERIK PALMER,
GEORGE D. SEYMOUR.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."