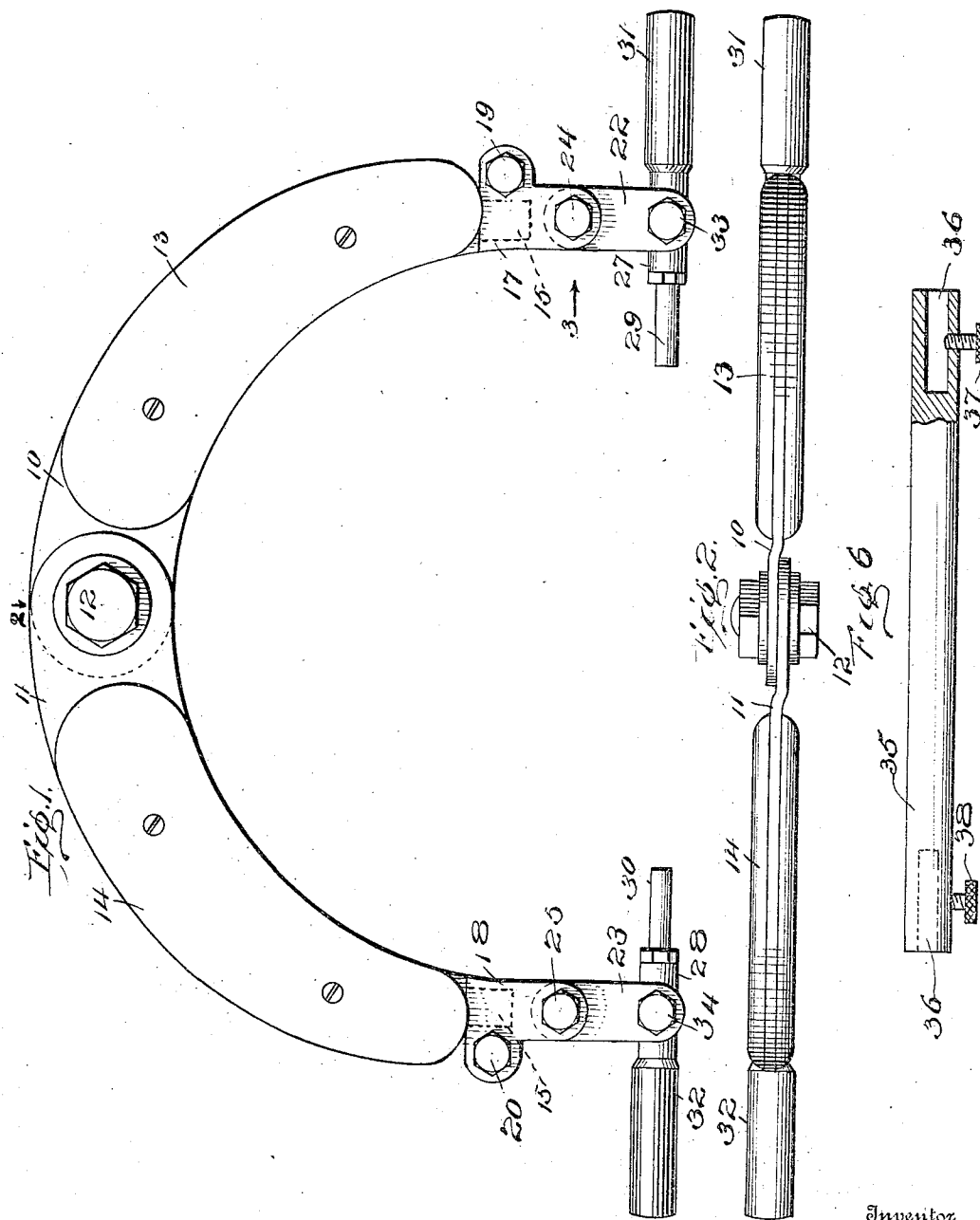


No. 862,765.

PATENTED AUG. 6, 1907.

C. R. SHAFFER.
MICROMETER GAGE.
APPLICATION FILED SEPT. 1, 1906.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2

Fig. 3.

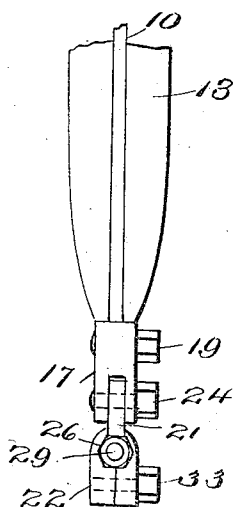


Fig. 4.

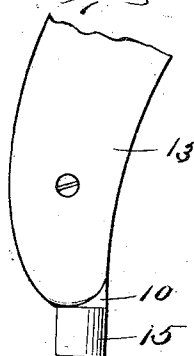


Fig. 5.

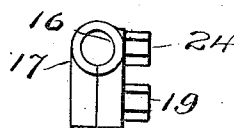


Fig. 7.

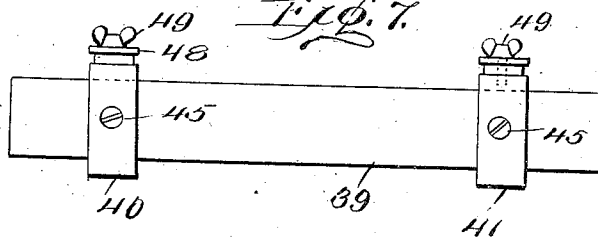
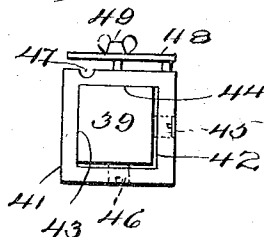


Fig. 8.



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UNITED STATES PATENT OFFICE.

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MICROMETER-GAGE.

No. 862,765.

Specification of Letters Patent.

Patented Aug. 6, 1907.

Application filed September 1, 1906. Serial No. 332,987.

To all whom it may concern:

Be it known that I, CHARLES R. SHAFFER, a citizen of the United States, residing at Allentown, in the county of Lehigh and State of Pennsylvania, have invented certain new and useful Improvements in Micrometer-Gages; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

10 This invention relates to micrometer gages and has for an object to provide a gage of the class embodying improved means for adjusting to a large variety of sizes of work.

A further object of the invention is to provide in a micrometer gage a pivoted frame provided with spaced extremities accommodating the gage points, and provided with a joint intermediate the extremities, whereby the interval between the extremities may be varied.

20 A further object of the invention is to provide in a micrometer gage a frame having extremities capable of being adjusted relative to each other and with jointed extremities carrying gage points and arranged to position the gage points in perfect alinement.

25 With these and other objects in view, the invention comprises certain novel constructions, combinations and arrangements of parts as will be hereinafter fully described and claimed.

In the drawings:—Figure 1 is a view in side elevation of the improved micrometer gage. Fig. 2 is a view of the gage in edge elevation as seen along arrow 2 of Fig. 1. Fig. 3 is a detail edge elevation seen along arrow 3 of Fig. 1. Fig. 4 is a view in side elevation of the extremity of one of the curved plates, together with its strengthening strip. Fig. 5 is a plan view of the socket member for receiving the end of the plate as shown in Fig. 4. Fig. 6 is a view in side elevation of one form of spacing bar for positioning the gage points. Fig. 7 is a view in side elevation of a different form of spacing bar. Fig. 8 is a view in end elevation of one of the movable parts upon the spacing bar shown in Fig. 7.

Like characters of reference designate corresponding parts throughout the several views.

35 The micrometer gage forming the subject-matter of this application comprises a frame composed of section 10 and 11 pivoted together by means of a clamping bolt 12, and whereby the sections normally form substantially a crescent. The sections are preferably composed of metallic plates curved to conform to the curvature of the frame and strengthened and rigidity added by means of wooden or other similar strips 13 and 14 rigidly secured upon opposite sides of and embracing the metallic strips.

55 The extremities of the plates 10 and 11 are provided with lugs, as 15, preferably cylindrical in form, which

are inserted within the sockets 16 formed in the blocks 17 and 18. The blocks 17 and 18 are formed open and are clamped upon the studs 15 as by the bolts 19 and 20.

The blocks 17 and 18 at their lower ends are formed 60 bifurcated as shown in Fig. 3 and therein is inserted the tongues 21 of blocks 22 and 23 clamped respectively by bolts 24 and 25 extending through the spaced ends of the blocks 17 and 18 and through the tongues 21.

The blocks 22 and 23 are likewise bifurcated at their 65 ends to form sockets 26 through and within which are inserted and clamped the barrels 27 and 28, forming sleeves for the gage pins 29 and 30. The gage pins 29 and 30 are provided with knurled heads or shanks 31 and 32 and are operated in substantially the usual manner, the barrels 27 and 28 being clamped to retain the gage pins in operative position by means of screws 33 and 34.

For association with the frame above described a bar 35 is provided having sockets 36 formed in opposite 75 ends and positioned to embrace respectively the gage pins 29 and 30. Thumb screws 37 and 38 are inserted through the sides of the bar 35 and extended into the sockets 36 to engage and clamp the gage pins 29 and 30. A plurality of bars 35 are provided varying only in 80 length and by the use of which the gage frame is adjusted to the approximate position necessary to accommodate the work required.

Instead of using the bar 35 and its associated parts the bar 39 is provided preferably rectangular in cross 85 section upon which is slidably mounted a pair of blocks, as 40 and 41. The blocks 40 and 41 are similar and each comprise a block provided with an opening 42 corresponding to the bar 39 in cross section and having sides 43 and 44 arranged at right angles and to bear upon 90 sides of the bar 39 disposed perpendicularly to each other. The sides of the block opposite the sides 43 and 44 are provided respectively with adjusting screws 45 and 46, whereby the sides 43 and 44 are held accurately in engagement with the approximate sides of the 95 bar 39.

Upon the upper side the blocks 40 and 41 are provided with grooves or notches 47 proportioned to receive and accommodate the gage pins 29 and 30 and with pieces 48 arranged to be clamped down upon the 100 said gage pins by means of a clamping screw 49.

The blocks 40 and 41 are set to approximately correspond to the interval between the gage pins 29 and 30, and the gage pins then inserted within the grooves 47 and clamped by the screw 49 in the manner described 105 for inserting and clamping in the bar 35.

The clamping screws 12, 24, 25, 33 and 34 are loosened and the frame opened or closed upon the pivot point 12 to adjust the gage pins as may be required. The gage points are then inserted in the sockets 36 of the bar 35 110 or the grooves 47 of the adjustable device which correspond with or has been set approximately to the ampli-

tude required and are clamped therein by means of the clamping screws 38 and 37 or the clamping screws 49. The sockets 36 being in exact alinement, as is the case with the grooves 47, the gage pins are held rigidly in alinement and with approximately the necessary interval therebetween. The clamping screws 12, 24 and 25 are then tightened to render the frame rigid whereupon the gage pins are removed from the adjusting bar by turning the knurled heads 31 and 32, to withdraw the pins therefrom. The gage pins are then adjusted in the usual manner of adjusting micrometer gage points and clamped by the screws 33 and 34.

The screws 19 and 20 may be loosened in cases where the gage pins 29 and 30 are somewhat out of alinement, but in a horizontal plane and when perfectly and truly alined, by means of the spacing bars the screws 19 and 20 may be tightened upon the studs 15 whereby the blocks 17 and 18 are rendered rigid with the plates 10 and 11.

20 What I claim is:—

1. In a micrometer gage, a frame, alined gage pins carried by the frame, means permitting a variation of the amplitude between the ends of the frame, and means to maintain the pins in axial alinement during such change of amplitude.

2. In a micrometer gage, a curved frame embodying spaced extremities, a pivot joint disposed intermediate the extremities of the frame, means for clamping the joint, blocks pivoted to the extremities of the frame, gage pins carried by and adjustable within the blocks, means for clamping the blocks rigidly with the frame, and means for clamping the gage pins rigidly within the blocks. 30

3. In a micrometer gage, a curved frame embodying spaced extremities, means permitting the variation of the interval between the extremities, blocks pivoted to the extremities of the frame, gage pins carried by the blocks, means for holding the gage pins in alinement during the adjustment of the frame, and means for clamping the gage pins rigid with the frame. 35

4. In a micrometer gage, a curved frame provided with spaced extremities, a clamping pivot joint disposed intermediate the extremities of the frame, blocks pivoted to the extremities of the frame, gage pins disposed and adjustable within the blocks, means for retaining the gage pins in alinement during the adjustment of the frame, means for clamping the blocks rigid relative to the frame, and means for clamping the gage pins rigidly within the blocks. 40 45

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES R. SHAFER.

Witnesses:

HARRY G. STILES,
DAVID KEUM.