

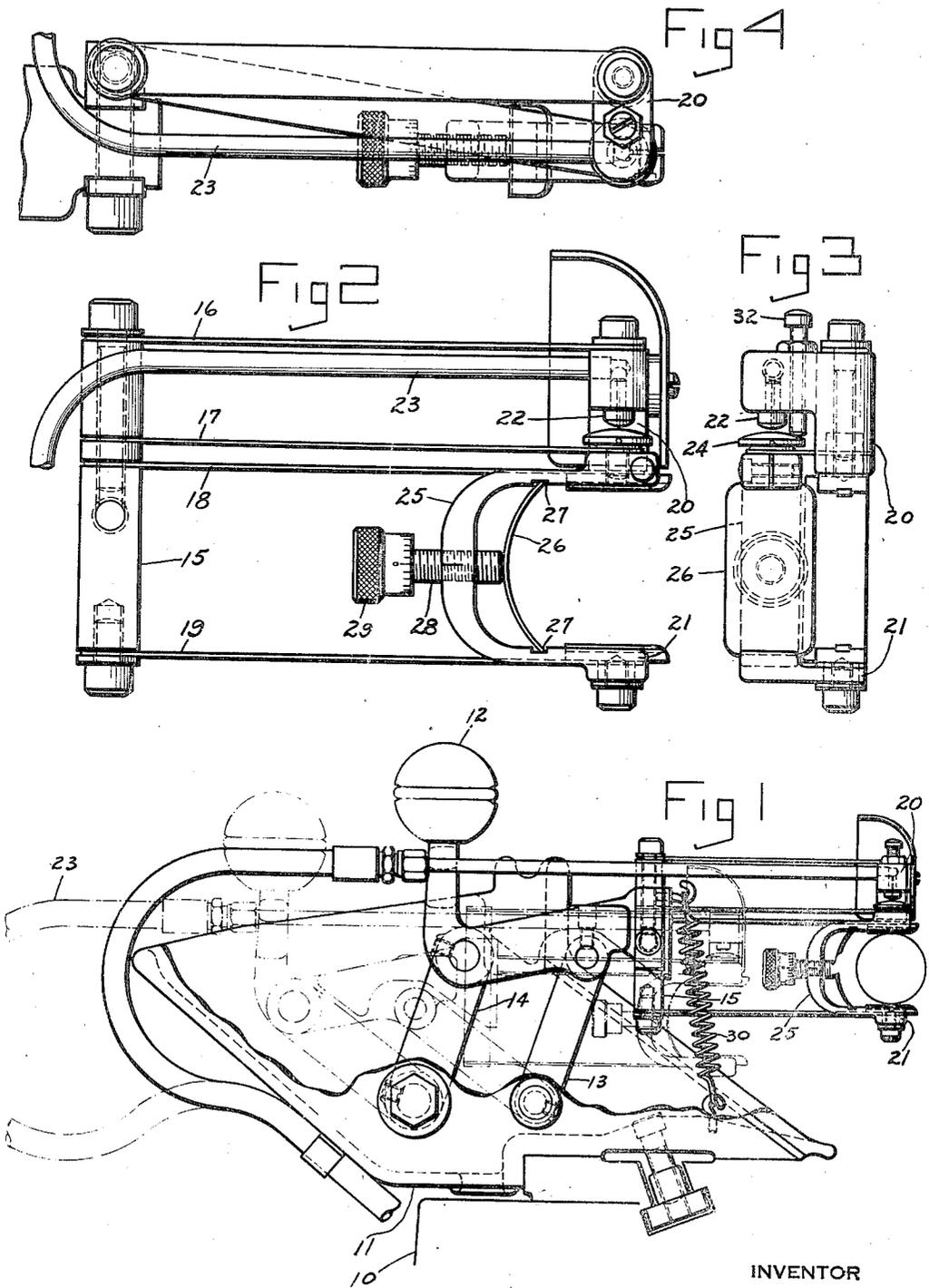
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H. E. BALSIGER

2,184,090

SIZING DEVICE

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# UNITED STATES PATENT OFFICE

2,184,090

## SIZING DEVICE

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3 Claims. (Cl. 33—148)

My invention relates to a sizing device of the type which utilizes a stream of fluid directed against a work piece or against an element in contact with the work piece, particularly that portion of the device that engages the piece to be measured and which is known as the caliper.

It is an object of my invention to provide a caliper which may be used on work pieces having splines, keyways, or other types of interrupted surfaces.

It is a further object of my invention to provide a caliper which is light in weight and easy to manipulate.

A further object of my invention is to provide resilient supporting members for the relatively movable parts of said calipers, such supporting members being flexible in one direction and rigid in all other directions.

It is a further object of my invention to urge the work engaging members toward the work piece independently of one another.

It is a further object of my invention to utilize the relative movement of the work engaging members to control a machining operation.

Figure 1 is an end elevation showing the mechanism for moving the caliper into and out of operative position.

Figure 2 is an end elevation of the caliper.

Figure 3 is a rear view of the caliper.

Figure 4 is a plan view of the caliper.

My invention is designed for use with a sizing device of the type disclosed in my Patent 2,023,777 granted December 10, 1935. Reference to this patent will disclose the application of my device to a machine tool. The present invention is an improvement over the work engaging element of the above mentioned patent.

Numeral 19 indicates a base portion, 11 a housing or frame secured to said base portion. An L shaped handle 12 is pivotally mounted in said housing thru a pair of parallel links 13 and 14. Handle 12 and all associated parts are yieldably held in extreme forward or rearward positions by a spring 39, one end of which is secured to said handle and the other end of which is secured in the housing 11. Said extreme positions may be determined by suitably located stops not shown. On one end of said handle is rigidly secured a vertical member 15, to which are attached, at spaced intervals, four resilient strips 16, 17, 18, and 19. Strips 16 and 18 support an upper work engaging member 20. Strips 17 and 19 support a lower work engaging member 21. Each work engaging member is supported and urged toward the work independently of the

other. Each of said work engaging members is a hardened insert having a straight surface long enough to bridge the open portion of the work piece. Strip 17, forming the upper support for the lower work engaging member is attached to member 15 at a point above that at which the strip 18 is attached. Strip 18 is the lower support for the upper work engaging member. When all the strips are in normal position; that is, parallel to each other, the work engaging elements are at the limit of their movement toward the surface of the work. When the caliper is applied to a rough work piece, the normal relation between the supports and strips is disturbed, but there is a tendency to return to normal position which keeps the work engaging elements in contact with the work.

Said upper work engaging member has an offset portion in which is inserted a nozzle 22. Said nozzle is connected to a supply of fluid under constant pressure thru line 23. Said lower work engaging member also has an offset portion in the same direction upon which is mounted a U shaped bracket 25, the open end toward the work. The purpose of the U shaped bracket is to transfer the movement of the lower work engaging member around the work piece to the member 24 adjacent the nozzle 22. A member 24 having a convex surface is mounted in the top of said bracket and serves to vary the flow of fluid from nozzle 22 in response to the relative movement of the work engaging member. The position of member 24 relative to the nozzle 22 may be adjusted by expanding or contracting member 25. An adjusting screw 32 determines the limit of approach between member 24 and the nozzle 22. The edges of a resilient disc 26 are inserted in notches 27 in the back of member 25. In the normal position of said disc, which is that shown in Figure 2, there is exerted against the sides of member 25 only sufficient force to maintain contact therewith. An adjusting screw 28 mounted in the closed end of member 25, and having a graduated head 29, serves to flex the disc 26 for expanding the sides of member 25. Said member is sufficiently resilient to return to normal position when withdrawal of screw 28 permits disc 26 to return to its original state.

The operation of my device will be apparent from the foregoing description.

Various changes may be made in my device without departing from the spirit of the invention. Therefore, I do not wish to limit myself to what is shown and described in the specification, but only as indicated in the following claims.

I claim:

- 5 1. In a device of the kind described a pair of work engaging elements, means for supporting said elements in work engaging relation comprising a series of flexible resilient strips normally in parallel relation, the outside strips each being attached to one of the work engaging elements, the inside strips being mounted so that adjacent inside and outside strips support different work engaging elements.
- 10 2. In a sizing device caliper, a pair of work engaging elements having opposed parallel work contacting surfaces, means for maintaining the work contacting surfaces of each of said work engaging members in parallel relation during a grinding operation and for urging them independently into contact with a work piece, the point of contact between the work surface and the work engaging element lying in a vertical plane passing thru the axis of the work, including
- 20 two or more spaced resilient strips connecting

each work engaging member and said support member, said point of contact remaining in said plane regardless of slight movements of said work engaging members in a horizontal direction as said work piece approaches finished size.

5 3. In a sizing device caliper, a pair of work engaging elements, resilient supporting elements mounted at spaced intervals for supporting each of said work engaging elements independently of the other and by their resilience urging said work engaging elements into work engaging relation, a part of an indicator carried by one of said elements, a C shaped member carried by the other of said elements for transmitting the movement of said element around the work to a point adjacent said indicator part and precision means for adjusting the opening of said member to accommodate work of different sizes.

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