K. W. COUSE.

KEYWAY LOCATOR.

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1,422,746.

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Fig. 1.

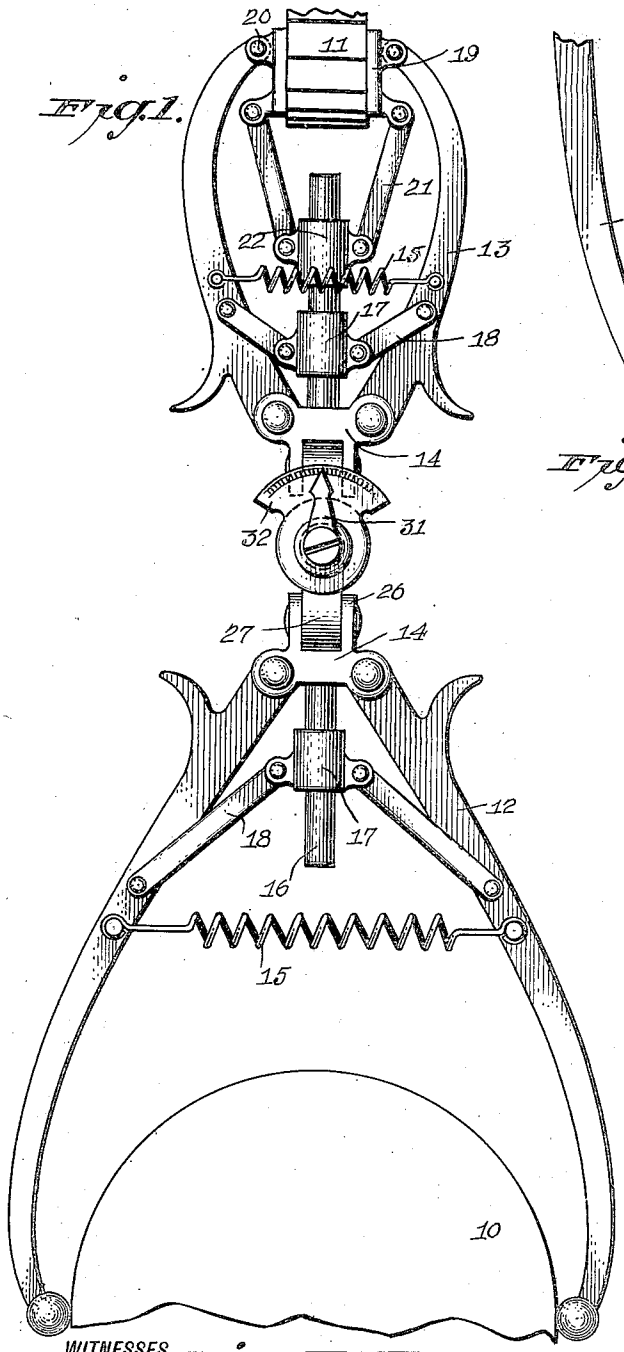


Fig. 3.

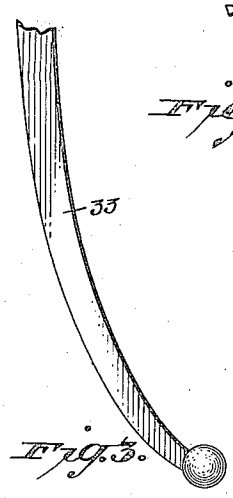


Fig. 2.

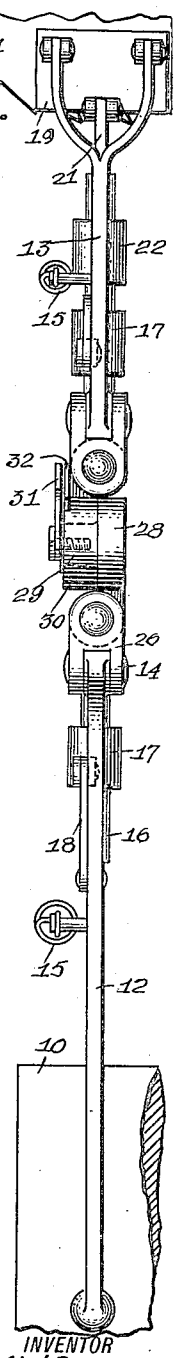


Fig. 4.

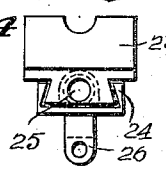
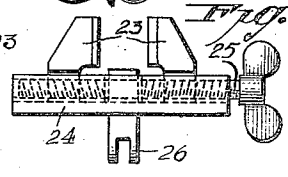


Fig. 5.



WITNESSES

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KEYWAY LOCATOR.

1,422,746. Specification of Letters Patent. Patented July 11, 1922.

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To all whom it may concern:

Be it known that I, KIBBEY W. COUSE, a citizen of the United States, and resident of the city of New York, borough of Manhattan, in the county of New York and State of New York, have invented a new and Improved Keyway Locator, of which the following is a full, clear, and exact description.

It is well appreciated that considerable difficulty has been experienced in providing what might be termed a centering device which would be capable of being utilized by any mechanic, and at the same time be simple in construction and inexpensive to manufacture.

By "centering device" I refer more particularly to that type of device which will enable the center of a movable object to be brought into a fixed plane. An example of a condition such as this is to be found where a shaft is clamped to the table of a milling machine, and in which the center of the shaft is to be brought into the center plane of a cutter of a milling machine, which cutter is in place upon the arbor of a machine.

It is well understood, that a "centering device" of any type must be provided with engaging members which contact with certain surfaces of the object to be measured, and in devices of this nature heretofore constructed it has been incumbent upon the operator to (assuming that the center of a shaft was to be determined) move these engaging elements into a position at which these elements would lie in a plane intersecting the center axis of the shaft.

Having these defects in mind, I have constructed a keyway locator by means of which two different elements may be centered so that work upon one may be performed by the other, and which device is capable of being used by an unskilled mechanic.

A further object of my invention is the construction of a device of this nature which shall be free from the defects hereinbefore enumerated in that the engaging elements of the same may be brought to connect with one of the elements centered, at any desired point.

A still further object of my invention is the provision of a keyway locator which shall be extremely simple in construction, and hence economical to manufacture.

Reference is had to the attached sheet of drawings as illustrating one practical embodiment of my invention, and in which—

Figure 1 is a front view of a keyway locator constructed in accordance with my invention and showing the same in operation.

Figure 2 is a side view of the device as illustrated in Figure 1.

Figure 3 illustrates a slightly modified form of engaging element, hereinafter more particularly described, and

Figures 4 and 5 illustrate side and front views respectively of a still further type of engaging element which may be used to advantage in certain instances.

I have shown my device, for purposes of illustration, as applied to that adaption described in the preamble, to wit, being used in connection with the centering of a shaft 10 with respect to a cutter 11.

Referring more particularly to Figures 1 and 2 it will be seen that my device includes a pair of calipers having their legs 12 and 13 respectively, pivotally secured together adjacent one of their ends by means of bridge pieces 14. Contracting springs 15 have their ends secured, one to each of the legs 12 and 13, of each caliper, whereby to cause the swinging of said legs towards one another.

It will be understood that the legs, or jaws of the calipers, would tend to become loose in constant use, at their points of pivotal connection to the bridge piece 14. This of course, is to be guarded against, as inaccuracy of measurement will result, and with this in view I conveniently provide shafts 16 which form a continuation of the bridge piece 14, and extend centrally therefrom in a plane intermediate the legs of the calipers, and in the direction of their outer ends.

A slidable collar 17 is mounted upon each of the shafts, and links 18 are conveniently utilized, which links extend between diametrically opposite points of the collar 17, and are pivotally attached adjacent their ends to each of these members respectively.

By this construction, it will be well understood that the collar 17 will slide upon a movement of the legs of the calipers being effected, and will serve to brace these members by virtue of the interposed links 18, in addition to the fact that this construction will serve to synchronize the motion of the legs of each caliper, in such a manner that

the ends of the same will at all times be equi-distant from a straight line forming a continuation of the shaft 16.

It is obvious that the caliper forming the uppermost portion of my improved centering device may be constructed similar to the lowermost caliper, but in many instances it is most desirable to provide a firm gripping jaw so that the entire device may be caused to firmly engage one of the objects to be centered with respect to each other.

With this in view, contact plates are pivotally secured as at 20 to the outer end of the legs 13, and to provide means whereby these plates will at all times be held parallel to each other, and to a plane forming a continuation of the shaft 16, links 21 have their ends pivotally secured adjacent the lowermost edges of each plate 19, and a second collar 22, slidably mounted upon the uppermost shaft 16.

In lieu of the plates 19 which depend upon their engagement with the cutter or other element 11 by means of the springs 15, a pair of positively engaging jaws 23 may be substituted, as illustrated in Figures 4 and 5. These jaws are mounted upon a bridge piece 24 corresponding to the bridge piece 14, and are positively moved by any suitable means, such as the screw threaded rod 25.

In either of the constructions illustrated, the bridge piece is conveniently provided with a pair of outwardly extending ears 26 between which is swingingly secured an extension 27 of a part of one of the members forming a swivel. This latter member conveniently includes a plate 28 formed with a stud 29 which projects through a collar 30, it being noted that an indicator of any desirable type 31, is conveniently affixed to the stud 29 in such a manner that it is adapted to overlie a scale 32 conveniently affixed to the collar.

Now in operation it will be appreciated that the engaging portion of the legs 13, and the upper caliper or other device utilized for this purpose, may be adjusted so as to engage the cutter 11 or other element.

It will be obvious that the shaft 16 will extend in a plane, which, if continued, would intersect the center of the engaged member. The same is true of the legs 12 of the lower caliper, it being noted that this will occur irrespective of any inclination of one caliper with respect to the second of the same, by virtue of the rocking movement applied by the connection existent between the ears 26 and the bridge 14, and extended portion 27 of the swivel member.

The degree of mis-alignment of the parts to be operated will be materially determined by the reading permitted through the scale and indicator. It will now be incumbent upon the operator to actuate the parts so that a zero reading may be effected, and upon this occurring a proper centering will have occurred.

It will also be obvious that in lieu of a caliper of the type illustrated in Figures 1 and 2, which are for outside work, that the legs of the caliper may be constructed as has been illustrated by the reference numeral 33 in Figure 3 for inside work, which will permit of this class of work.

It will thus be understood that I have constructed a caliper which shall be extremely simple in construction and operation so that the use of the same may be resorted to by any mechanic. Also by virtue of the construction adapted it will not be incumbent upon the operator to place the engaging portions of the caliper legs 12 in a plane intersecting the center axis of the shaft 10, as this caliper will at all times hold the shaft 16 on line with the center of the shaft.

Obviously numerous modifications of structure might readily be resorted to without in the least departing from the spirit of my invention, which I claim as—

1. A keyway locator, including a pair of calipers each comprising a pair of legs pivotally secured together adjacent one of their ends, means connecting and permitting a universal swinging of one of said calipers with respect to the second of the same.

2. A keyway locator including a pair of calipers each comprising a pair of legs pivotally secured together adjacent one of their ends, means connecting and permitting a universal swinging of one of said calipers with respect to the second of the same, and an indicating means attached to said connecting means, said indicating means being actuated when said calipers are moved in a plane in which the legs are both extended.

3. A keyway locator, including a pair of calipers each comprising a pair of legs, a bridge piece extending between said legs and being pivotally secured thereto and a shaft secured to each of said bridge pieces, said shafts being pivotally secured together at one end, a guiding and bracing means extending between each of said shafts and caliper legs, a collar suitably mounted upon each of said shafts, and links pivotally secured to said collar and caliper legs respectively.

4. A keyway locator including a pair of calipers rockingly secured together, and an indicating means arranged adjacent the point of connection of said calipers for indicating the relative position of said calipers with respect to each other.

5. A keyway locator including a pair of calipers each comprising a plurality of legs pivotally secured together, and connecting means interposed between said calipers, said connecting means permitting of a rocking movement of one of said calipers with re-

spect to the other, and indicating means associated with and forming a part of said connecting means for indicating the relative position of said calipers with respect to each other.

6. A keyway locator including a pair of calipers each comprising a pair of legs, and a bridge piece extending between and pivotally secured to the ends of each of said legs, and means associated with said bridge piece for providing a swivel connection between said calipers.

7. A keyway locator including a pair of calipers, each comprising a pair of legs, and a bridge piece extending between said legs and being pivotally secured thereto, a shaft secured to said bridge piece, and rockably secured together at one end thereof, said shaft extending between their respective caliper legs and guiding members slidably associated with said shaft and rockingly secured to said legs for pressing and actuating the same.

KIBBEY W. COUSE.