

Aug. 25, 1959

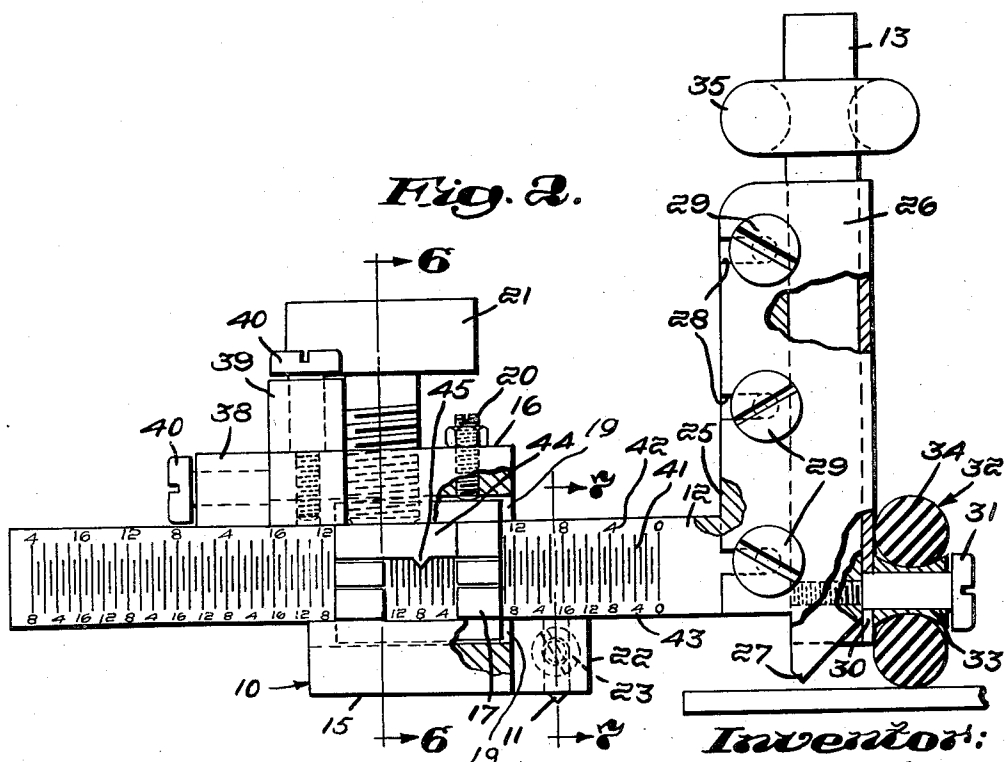
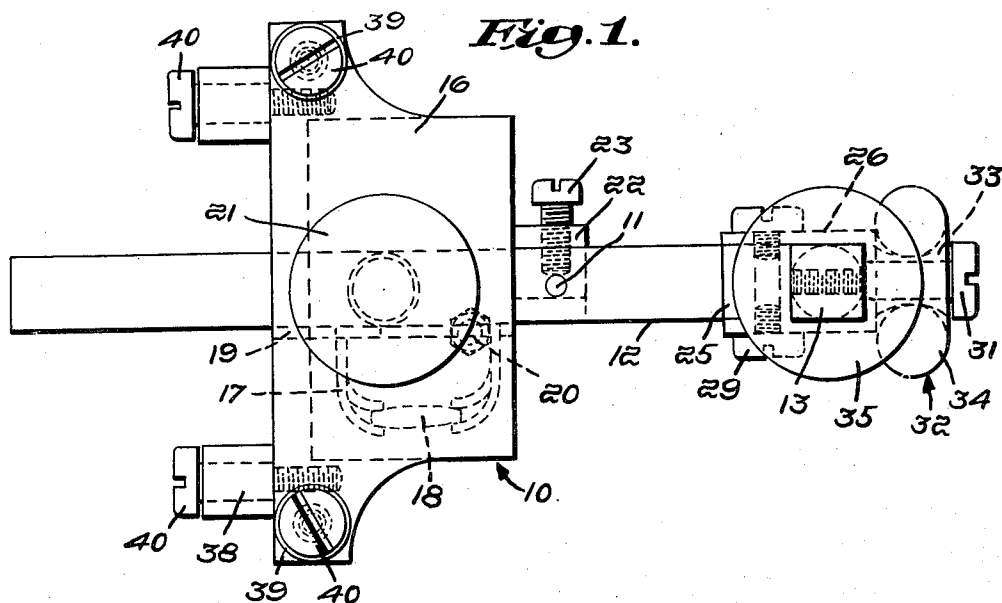
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2,900,726

DEVICES FOR USE IN MAKING PERMANENT LAYOUT IMPRESSIONS

Filed Feb. 27, 1953

3 Sheets-Sheet 1



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3 Sheets-Sheet 2

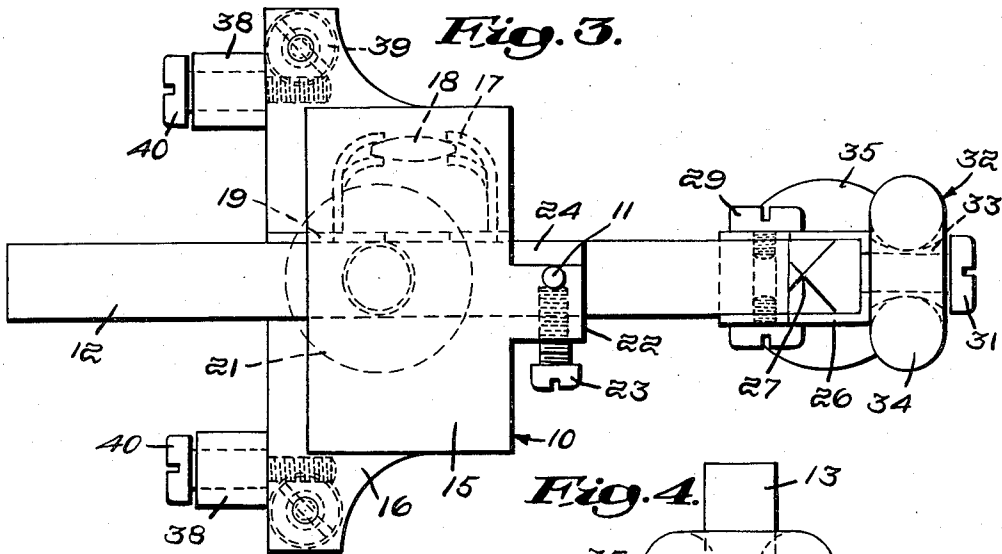


**Fig. 4.**

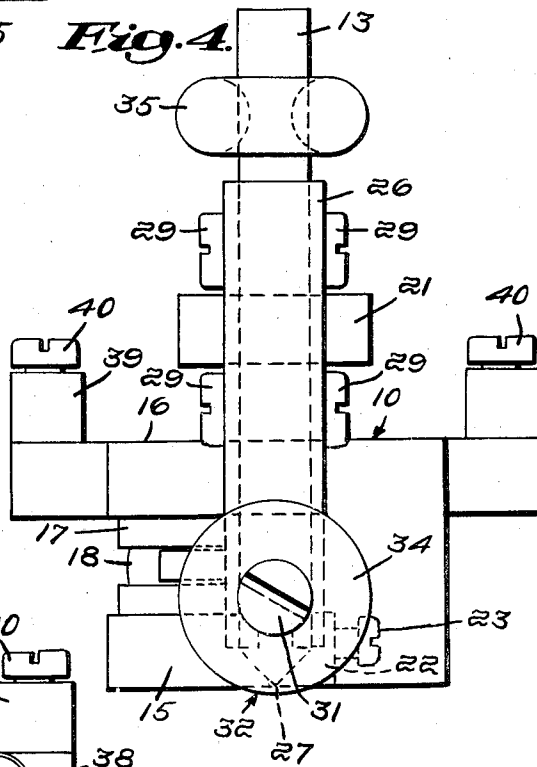
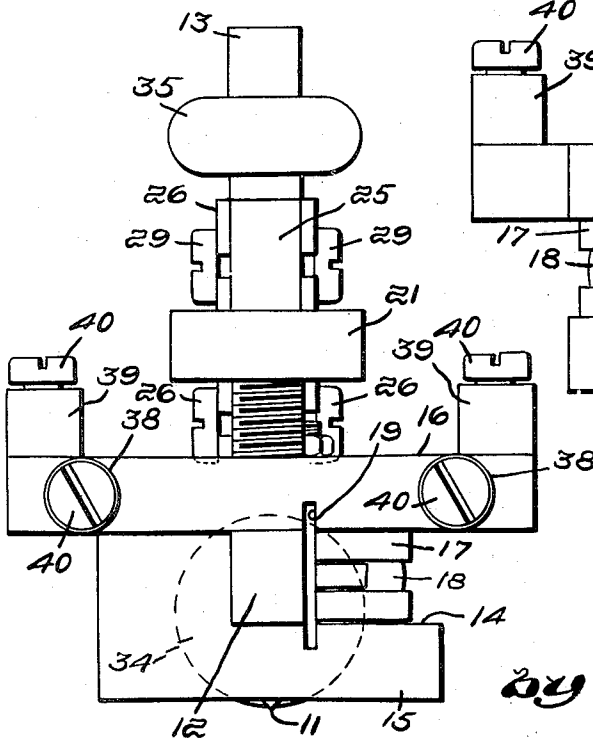


**Fig. 5.**



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**Fig. 9.**

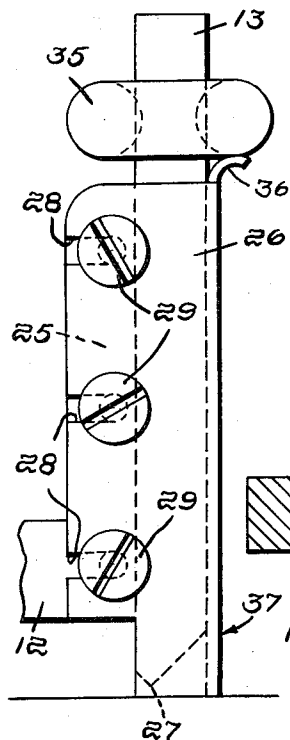


**Fig. 6.**

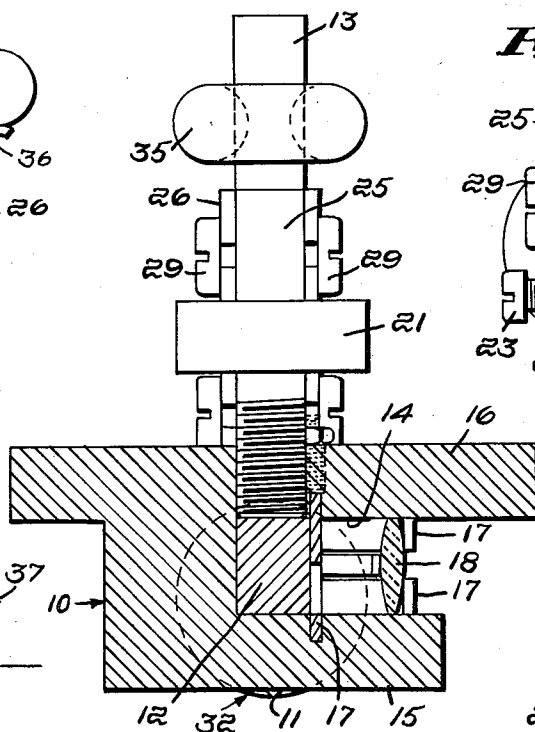


**Fig. 7.**

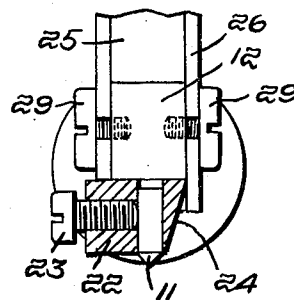
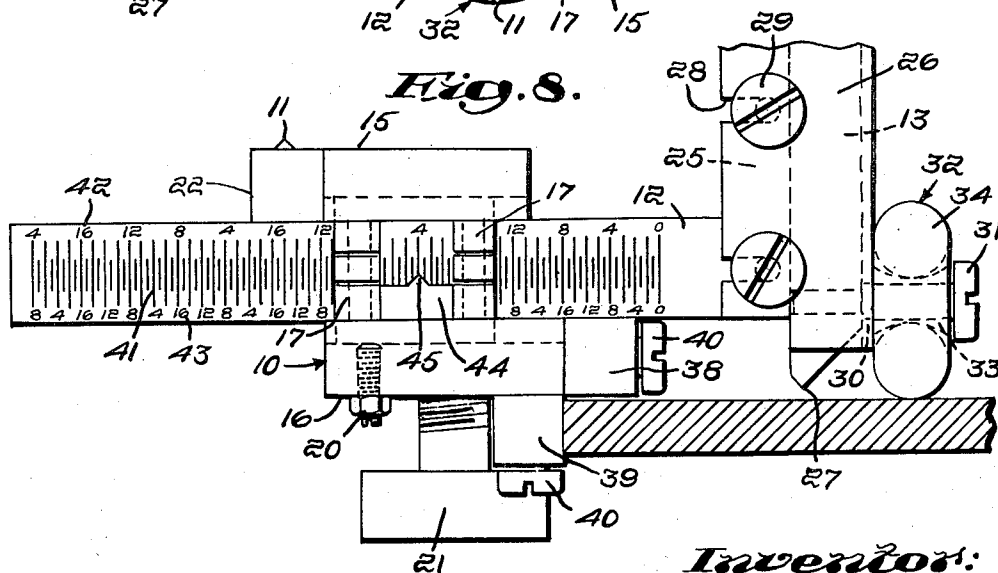


**Fig. 8.**



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## DEVICES FOR USE IN MAKING PERMANENT LAYOUT IMPRESSIONS

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9 Claims. (Cl. 33—42)

The present invention relates to devices for use in layout work, to designate, as by permanent impressions on the material, straight or curved lines, to be used as machining and fabricating guides.

While devices in accordance with the invention are adapted to a wide range of uses, it will be helpful to consider the specific problem of forming large and small holes in flat metal stock. Usually a center is established as by a center punch and, to avoid inaccuracies, it is a common practice to scratch the circle or otherwise outline it before the hole is formed. If any part of the established circle remains, there is visible proof that the hole is inaccurate.

One particular objective of the invention is, accordingly, to provide a device that enables clearly visible and lasting markings to be established quickly and easily by the workman through a wide range of measurements, that is adapted to withstand hard usage with minimum wear, and that enables a greater degree of accuracy to be easily maintained.

In accordance with the invention, a device gauged from a shoulder such as is defined by an indentation in the form of a point for use in marking arcuate lines consists of a center pin, a center punch, by which term is meant a tool for marking points or other symbols, and adjustable supporting structure for the pin and punch operable to effect their desired spacing and with the punch being movably supported by said structure. The supporting structure is engageable with the work in the zone of both the pin and the point of the punch thereby to be self supporting on the work and means are provided for yieldably holding the point of the center punch out of contact with the work, thereby ensuring maximum life for the point of the center punch and maximum ease of movement of the device.

In accordance with the invention, a device for use in marking lines gauged from such a shoulder as is presented by an edge of the work is generally similar but in place of the center point there is provided an edge engaging square whose sides are preferably established by work contacting rollers.

In its preferred embodiment, the device consists of a base which carries the center pin and a scale bar which supports the center punch. The base also includes a magnifying lens through which the indicia on the scale bar may be readily seen, thereby facilitating accurate spacing of the center punch relative to the pin.

In order that the device may have a wide range of usage, the base is detachable from the scale bar and provided with a gauging square which serves as an edge engaging guide when the base is inverted from its circle marking position and the device reassembled, thus to enable the base to be slid readily along the edge of the work and a series of permanent indicia to be quickly and easily established by means of the center punch.

In the accompanying drawings, there is shown an illustrative embodiment of the invention from which these

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and other of its objectives, novel features and advantages will be readily apparent.

In the drawings:

Fig. 1 is a top plan view of a marking device in accordance with the invention assembled for use in marking arcuate lines gauged from a point.

Fig. 2 is a side view thereof.

Fig. 3 is a bottom view of the device.

Figs. 4 and 5 are respectively right and left end views of the device as presented in the preceding views.

Fig. 6 is a section taken along the indicated lines 6—6 of Fig. 2.

Fig. 7 is a section taken along the indicated lines 7—7 of Fig. 2.

Fig. 8 is a fragmentary view of the device with its base reversed and inverted on the scale bar from its position shown in Fig. 2 as when the device is to be used in marking lines gauged from an edge, and

Fig. 9 is a fragmentary view of another embodiment of the invention.

In the embodiment of the invention shown in the drawings, the device is shown as comprising a base, generally indicated at 10, having a center pin 11, and an adjustable scale bar 12 provided at one end with a center punch 13.

The base 10 is provided with a longitudinally disposed slot 14 which extends from end to end and opens through one side thereof and establishes base parts, indicated at 15 and 16, respectively. The slot 14 is dimensioned to slidably receive the scale bar 12 which is laterally confined therein by the frame 17 for the lens 18, said frame being slidably entrant of grooves 19 and anchored in position by the set screw 20. A locking screw 21 is operative to interlock the base and scale bar against relative sliding movement therebetween once the device has been adjusted for any particular use. It will be noted that the device may be assembled with the base part 15 engageable with the work for use in punching circles and arcs or with the base part 16 as the lowermost part as when it is to be used for marking lines gauged from an edge.

The base part 15 is provided with a projection 22 at open end. The projection 22 is bored to receive the center pin 11 which is locked therein by the set screw 23 and is beveled as at 24 (see Fig. 7) to enable the pin 11 to be readily observed from one side when it is being located in a previously located punch mark.

In order to support the punch 13, for movement relative thereto, the scale bar 12 includes a part 25 disposed at right angles thereto to which a sleeve 26 of U-shaped section is attached to provide a vertically disposed center punch guideway, shown as of rectangular section, since the center punch 13 is preferably of that shape. The center punch 13 is shown as having its point 27 closely adjacent the edge thereof, that is disposed towards the base 10 thereby to enable it to be brought into close proximity to the center pin 11. The sleeve 26 is provided with slots 28 through which extend the attaching screws 29. Obviously, a different tool may be positioned in the slideway. For example, in some instances, it may be desired to scratch the gauged line as by means of a scratch awl.

At its lower end, the sleeve 26 has an open-ended slot 30, through which extends a screw 31 serving as an axle for the resilient wheel, generally indicated at 32, and shown as consisting of a concave sleeve 33 on which the rubber or like ring 34 is retained by its own elasticity. The axis of the wheel 32 is intersected by the axis of the pin 11 and the punch 13. The function of the wheel 32 is both to support the device adjacent the center punch approximately in the plane defined by the base 10 to ensure that the device can be easily moved during use and to provide a resilient cushion operative to return the cen-

ter punch to an elevated position in which its point is out of contact with the work. Adjacent its upper end, the center punch 13 is recessed to enable a similar ring 35 to be secured thereto. The ring 35 has the function of cooperating with the screw 31 in retaining the center punch in its slideway and of providing a cushion if the tool, with which the operator is striking the punch 13, misses its target.

As shown in Fig. 9, the wheel 32 may be omitted, and the sleeve 26 provided with a lip 36 engageable by the ring 35 to provide means to return the center punch to its elevated position. In this embodiment of the invention, the device is supported by the lower end of the sleeve 26 which is in the plane defined by the base 10. It will be noted that the lip 36 is located at the upper edge of the sleeve 26 and on the side thereof that is disposed away from the base 10. This arrangement has the advantage that also results from the location of the wheel 32, namely, that when the punch is struck, its lower end engages the inner surface of the sleeve 26 in the zone 37 (see Figs. 8 and 9), thus ensuring that the punch point 27 has a position enabling re-calibration to be effected as subsequently explained.

With the structure as thus far described and as assembled in Fig. 2, for example, arcuate markings may be effected by adjusting the base 10 relative to the scale bar 12 as required. Then, with the center pin seated in a previously established center indicating indentation and with the base 10 held and turned on that center by one hand of the workman, arcuately disposed punch marks are established by striking the punch 13 at intervals with a suitable tool held in the other hand.

In order that the device may also be used for gauging purposes, it will be noted that the end of the base part 16 that is opposite to the center pin 11 is wider than and projects beyond the corresponding edge of the base part 15 and it is provided with a work engaging square, shown as comprising a pair of rollers 38 disposed in a plane in parallel with the axis of the scale bar 12 and at right angles to the pair of rollers 39. Each roller is shown as supported by a screw 40. The rollers 38, when the base 10 is inverted for gauging purposes relative to an edge, occupy the plane defined by the bottom surface of the base part 15 when the device is assembled for use in establishing arcuate markings.

Attention is now directed to the fact that the bar 12 is provided with a series of graduations 41 readable with reference to the series of figures 42 which is the scale used in marking lines gauged from an edge and represents actual measurements, or the series of figures 43 which is the diameter scale (see Figs. 2 and 8). The lens holder or frame 17 includes a shield 44 provided with a center point 45 and blocks one of the series of figures depending upon the relation of the base 10 to the scale bar 12.

Before using the device for either gauging or circle punching, the lens holder 17 is first slid along its grooves 19 until the point 45 is equi-distant from the axis of the center pin 11 and the apex of the angle defined by the work engaging planes of the rollers 38 and 39. It will also be noted that said apex and the center point 11 are spaced equidistant from the axis of the bar 12. Should wear occur between the center punch 13 and its sleeve 26, or in rollers 38 or screws 39, the device may be re-calibrated by locking the center point 45 at any arbitrarily selected scale reading, and while exerting pressure from below on the wheel 32, re-locating the sleeve 26 on the scale bar extension or part 25, permitted by the slotted interconnection therebetween, thus re-positioning the center punch 13 to correspond to that scale reading.

When the device is to be used for marking arcuate lines gauged from a point, the locking screw 21 is loosened to permit relative movement between the base 10 and the scale bar 12 until the pointer 45, as viewed through the lens 18, is in line with that mark on the series of figures 43 that represents the diameter of the circle to be

outlined by punched markings. The screw 21 is then tightened and the center pin 11 seated in the previously located indentation with the circle markings then being made as has been described.

When the device is to be used in marking lines gauged from an edge, the base 10 is inverted and reversed on the scale bar 12, as shown in Fig. 8, with the result that the series of figures 42 is now visible through the lens 18. This scale indicates the actual distance between the punch point 11 and the intersection of the planes of engagement of the rollers 38 and 39. When thus positioned, the device is rolled along the work and guided by the edge thereof by grasping the base 10 with one hand and striking the center punch 13 with a tool held in the other hand.

It will be apparent that the construction of the devices enables the center pin 11 or the intersection of the rollers 38 and 39 to be positioned in close proximity to the point 27 of the center punch 13. In practise, the minimum distance therebetween may be  $\frac{3}{16}$  of an inch, for example, and hence the gauging scale 42 will read 3 and the scale 43 will read 6 when the device is set for minimum gauging.

Devices in accordance with the invention are well adapted to meet all requirements since they enable straight or curved lines to be accurately delineated by permanent marks with maximum ease and convenience. As the devices are safeguarded against the shock of the tool blows on their center punches by slidable or resilient attachment thereto, and as they are self supporting and in stable equilibrium on the surface of the work with the points of the center punches yieldably held out of contact therewith, they are adapted to withstand usage that would otherwise destroy their accuracy.

While the construction of the devices ensures their accuracy, the use of magnification in scale readings enables that accuracy to be realized under production conditions within acceptable tolerances.

What I therefore claim and desire to secure by Letters Patent is:

1. A device for use in marking lines by indentations in flat surfaced work that are gauged with respect to a shoulder, said device comprising a work engaging base of substantial area including a shoulder engaging element, a scale unit adjustably connected to said base and including an upright, a sleeve secured to said upright to define a vertical guideway, an indenting element slidable in said guideway for movement into and out of marking contact with the work, and a work engaging and resiliently yieldable wheel carried by said indenting element with its axis approximately at right angles to that of said indenting element, the resiliency of said wheel yieldably maintaining said indenting element out of engagement with the work.

2. In a device for use in marking lines by indentations in flat surfaced work that are gauged with respect to a shoulder, a base including a shoulder engaging element, a scale unit adjustably connected to said base, and including an upright, a sleeve, means securing said sleeve to said upright to define a vertical guideway of rectangular cross section and being adjustable to enable the cross sectional area thereof to be varied, an indenting element of rectangular cross section carried by said unit for movement into and out of marking contact with the work and including a work engaging point located adjacent that part of the guideway that is nearest the base.

3. A device for use in marking lines by indentations in flat surfaced work that are gauged with respect to a locating shoulder, such as an edge of the work, said device comprising a base including an edge engaging square, anti-friction means carried by each face of said square, a scale unit adjustably connected to said base, an indenting element, and a support for said unit including first means defining a vertical slideway for said element and second means engageable with the work adjacent said indenting element, one of said means in-

cluding a resilient member connected to said element yieldably maintaining it out of contact with the work, said engaging means and one side of said square being approximately in the same plane.

4. A device for use in marking lines by indentations in flat surfaced work that are gauged with respect to a locating shoulder, such as an edge of the work, said device comprising a base including an edge engaging square, comprising first and second sets of rollers disposed at right angles to each other, a scale unit adjustably connected to said base, an indenting element, and a support for said unit including first means defining a vertical slideway for said element and rotatable means engageable with the work adjacent said indenting element, said rotatable means being resilient including a connection with said element yieldably maintaining it out of contact with the work, said rotatable means and one set of rollers being approximately in the same plane supporting said scale unit out of contact with the work, the distance between the rollers of each set being substantially greater than the corresponding dimension of said rotatable means.

5. In a device for use in marking a line by indentations in flat surfaced work that are gauged with respect to an existing shoulder, such as an existing indentation and an edge of the work, a base having a slot extending from end to end thereof and opening through one of its sides, a bar slidable in said slot and having a series of measuring indicia visible through said side, means carried by said base to lock said bar thereto, and a lens unit carried by said base to hold said bar against escape through said side and through which said indicia is visible.

6. In a device for use in marking a line by indentations in flat surfaced work that are gauged with respect to an existing shoulder, such as an existing indentation and an edge of the work, a base having a passageway extending from end to end thereof, a bar slidable in said passageway and provided with a series of measuring indicia, means carried by said base to lock said bar thereto, said base including a first shoulder engaging element in the form of a center pin for entry into said existing indentation, a pointer with reference to which said indicia is readable, and a second shoulder engaging element in the form of an edge engaging square including portions disposed in parallel with the axis of said bar and portions at right angles thereto, the apex of said square portions and the point of said center pin being equally spaced from but on opposite sides of the axis of said bar and equally spaced from but on opposite sides of said pointer, thereby to enable said base to be assembled on said bar with either element in shoulder engaging position in the same relation to said pointer.

7. In a device for use in marking a line by indentations in flat surfaced work that are gauged with respect to an existing shoulder such as an existing indentation and an edge of the work, a base having a slot extending from end to end thereof, a bar slidable in said slot and provided with a series of measuring indicia, and first and second scales for use in reading said indicia, one disposed along each edge of said bar, means carried by said base to lock said bar thereto, said base including a first shoulder engaging element in the form of a center pin, a pointer with reference to which said indicia is readable, and a second shoulder engaging element in the form of an edge engaging square including portions disposed in parallel with the axis of said bar and portions at right angles thereto, the apex of said square portions and the point of said center pin being equally spaced from but on oppo-

site sides of the axis of said bar and equally spaced from but on opposite sides of said pointer to enable said base to be assembled on said bar with either element in shoulder engaging position in the same relation to said pointer, and means associated with said pointer to block out the scale of the inoperatively disposed element.

8. A device for use in marking a line by indentations in flat surfaced work that are gauged with respect to an existing shoulder such as an existing indentation and an edge of the work, a base having a slot extending from end to end thereof, a bar slidable in said slot and provided with a series of measuring indicia, means carried by said base to lock said bar thereto, said base including a first shoulder engaging element in the form of a center pin, a pointer with reference to which said indicia is readable, and a second shoulder engaging element in the form of an edge engaging square including portions disposed in parallel with the axis of said bar and portions at right angles thereto, the apex of said square portions and the point of center pin being equally spaced from but on opposite sides of the axis of said bar and equally spaced from but on opposite sides of said pointer to enable said base to be assembled on said bar with either element in shoulder engaging position in the same relation to said pointer, a surface indenting element, and supporting structure connecting said element to said bar for movement into and out of engagement with the surface of the work and including a work engaging support, each of said shoulder engaging elements being approximately in the same plane as said support when operatively positioned.

9. In a device for use in marking a line by indentations in flat surfaced work that are gauged with respect to an existing shoulder, such as an existing indentation and an edge of the work, a base having a slot extending from end to end thereof and opening through one of its sides, a bar slidable in said slot and having a series of measuring indicia visible through said side, means carried by said base to lock said bar thereto, and a lens unit slidably carried by said base to hold said bar against escape through said side and through which said indicia is visible, a center pointer associated with said lens unit with reference to which said indicia is readable, and means carried by said base to lock said unit thereto.

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