June 6, 1950 L. R. WILLIAMSON 2,510,768

GAUGE MECHANISM FOR PRESS BRAKES

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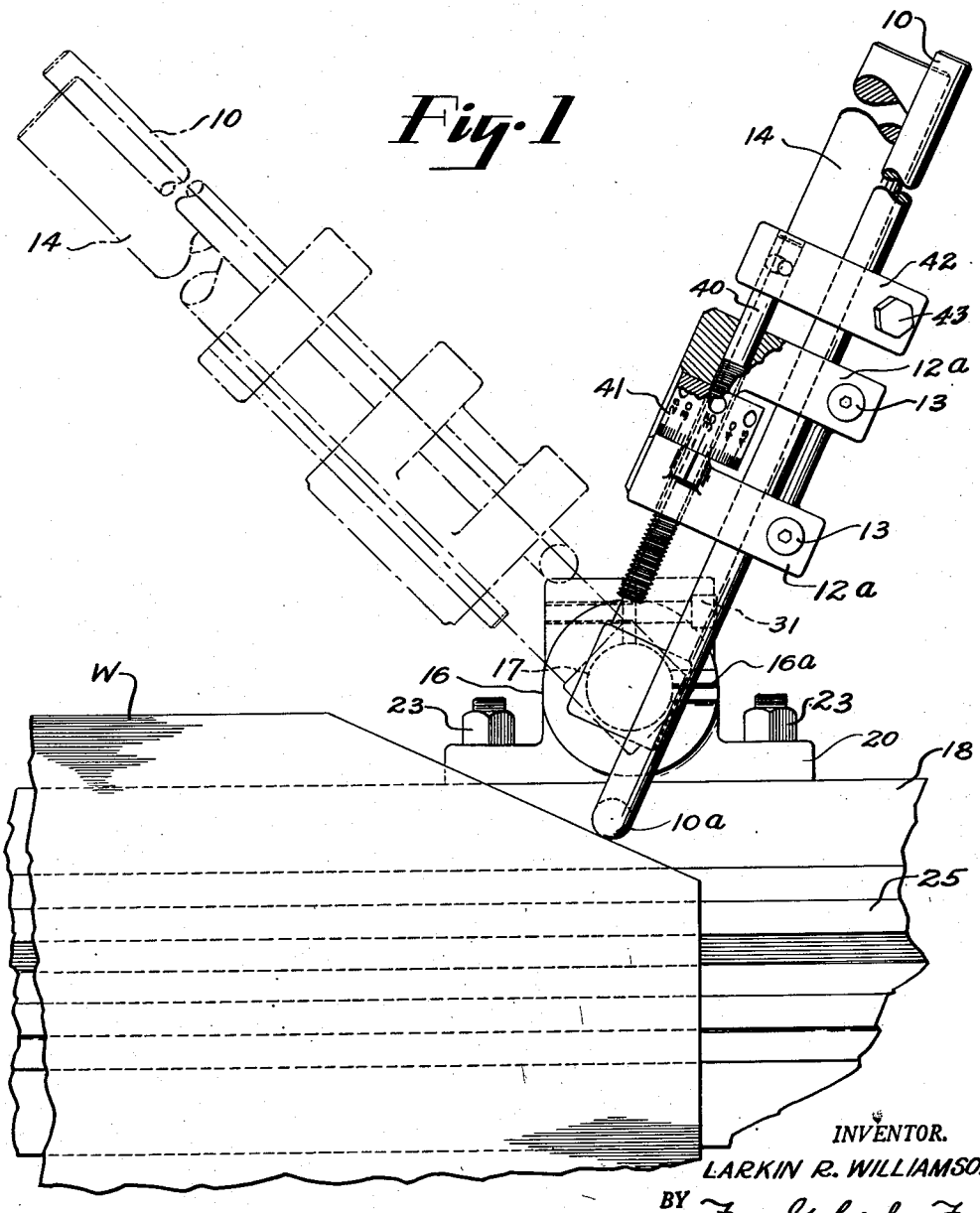
Fig. 1



INVENTOR.
LARKIN R. WILLIAMSON
BY Fay, Golrick & Fay
ATTORNEYS

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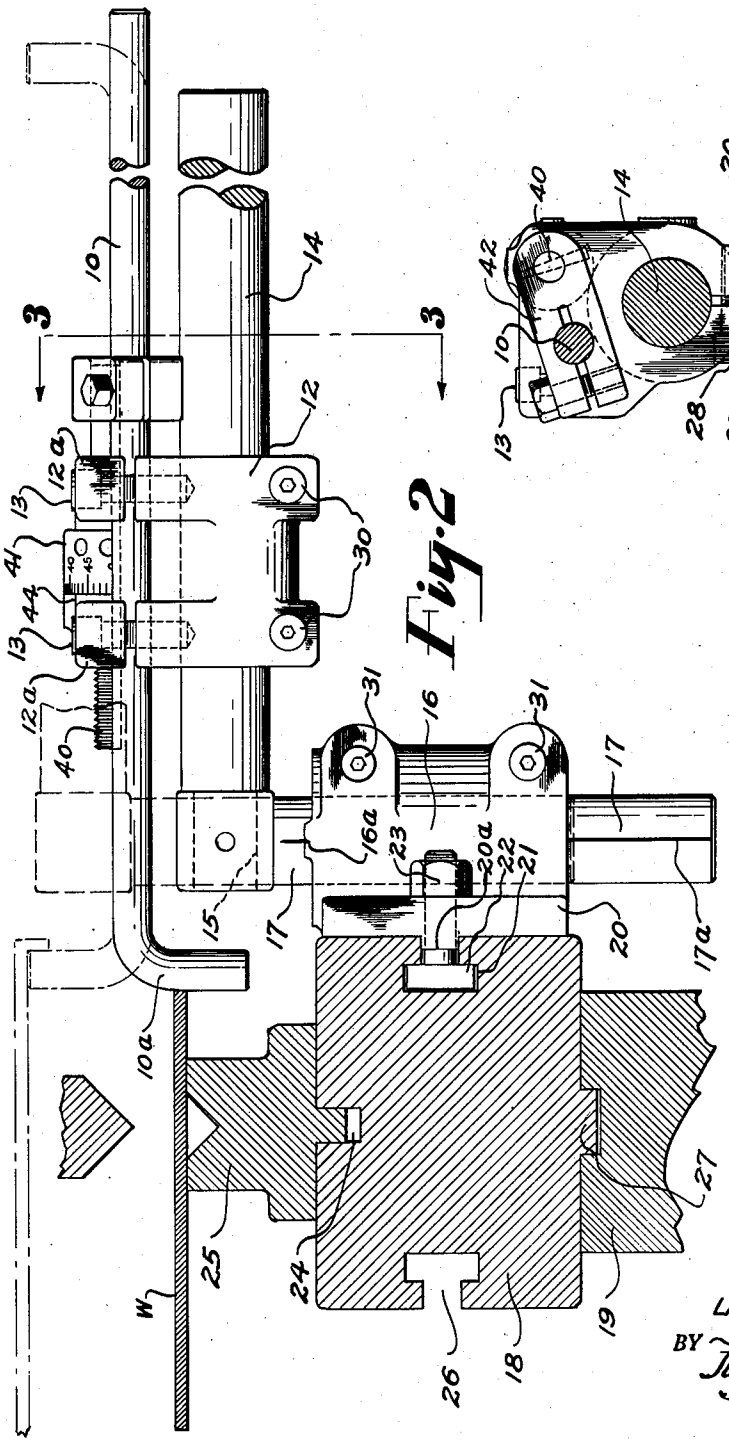

Fig. 2

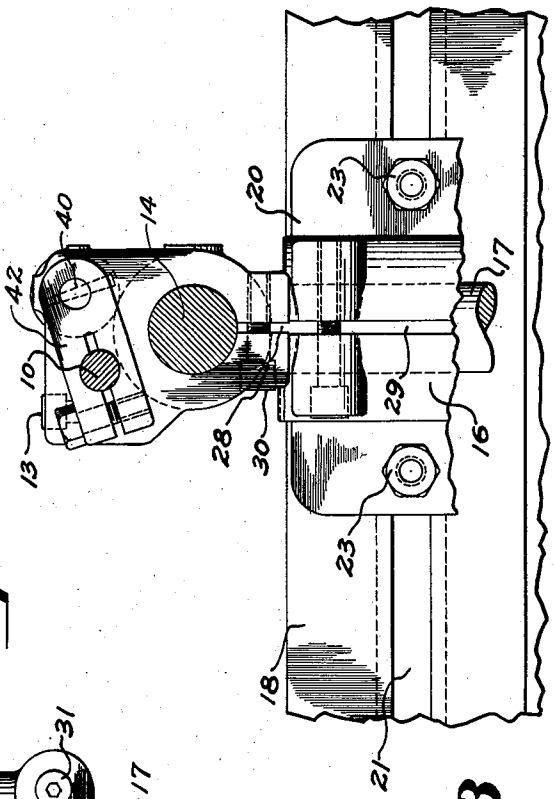

Fig. 3

INVENTOR.
LARKIN R. WILLIAMSON
BY Fay, Goldrick & Fay
ATTORNEYS

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GAUGE MECHANISM FOR PRESS BRAKES

Larkin R. Williamson, Montclair, N. J.

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6 Claims. (Cl. 153—21)

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This invention is directed to gauge mechanisms for sheet metal working presses and more particularly to gauge mechanisms for press brakes and the general object thereof is the provision of a gauge mechanism which is simple in arrangement, precise in construction, and adaptable to external, internal and edge gauging of practically any form or shape of sheet metal work piece being produced by the use of a press brake.

More specifically, an object is to provide an improved press brake gauging mechanism of such character that one or more of the gauging mechanisms can be adjustably attached to the press anvil or to the press brake bed structure by a channel, a rail or equivalent guideway connection so that the gauging unit or units may be shifted to any locus along the beam width of the press bed and slide in accordance with the length of the work being done and to a desired locus or loci of gauging contact with the work.

A still further object of the present invention is the provision of a press brake gauging mechanism wherein the gauge arm or stop is adjustable toward and away from the press anvil, while also being adjustable about a vertical and about a horizontal axis.

Other objects and advantages of the invention will be apparent from the following detailed description of preferred forms of embodiment of the invention, reference being made to the accompanying drawings wherein—

Fig. 1 is a plan view of a portion of the anvil die and bed structure with one of the gauging units associated therewith;

Fig. 2 is a side elevation of one of my gauging units and illustrating the association thereof with a cross-section of the bed, anvil die and slide die and a positioned plain work piece; and

Fig. 3 is a cross-sectional view of the gauge mounting taken substantially along the line 3—3 of Fig. 2.

Referring to the drawings, I show the gauging arm or element 10 adjustably supported by a bearing block 12. The bearing block 12 is adjustably supported on a radius bar 14. The radius bar 14 is pivotally supported on a slide bracket 16 slidably connected to the rear face of the press anvil 18, the anvil being secured to the bed 19 of the press brake.

The radius bar 14, in the present embodiment has the forward end thereof reduced in size to firmly fit into a bore 15 formed in the upper end of a pivot post 17 which is adjustably supported by the slide bracket 16.

The slide bracket 16 comprises a casting having a base portion 20 provided with a key or tongue formation 20a of a width to accurately but slidably fit in the slot formation in and extending the length of the rear face of the anvil 18. Bolts 22, with the heads thereof disposed in the T slot 21, extend through the base formation 20 of bracket 16 and nuts 23 thereon serve to clamp the bracket to the rear face of the anvil. It is understood that all of the anvil grooves and ribs and faces are machined to be parallel to each other, i. e., die groove 24 for bending die 25; front groove 26 and bottom aligning rib 27; gauge bracket groove 21 and the rear face of the anvil.

The block 12 and the hub portion of bracket 16 are split, as shown at 28 and 29, respectively. Clamping bolts 30 serve to clamp the split portion of the block 12 to the radius arm 14 and clamping bolts 31 serve to clamp the hub portion of bracket 16 to the pivot post 17. The radius arm 14 can be swung to any desired angular position, as indicated in Figure 1 and in any desired plane within the vertical limits of the pivot post 17 and secured in such desired position by clamping screws 31. The post 17 may be provided with a marker or line 17a angularly displaced 90° from the center line of the radius arm 14 and a corresponding line or marker 16a on the top end of bracket 16 will indicate to the press operator the adjustment for locating the radius arm 14 in a position normal to the plane of the rear face of the anvil 18.

The block 12 is formed to have two split bearing portions 12a suitably bored to receive and support the gauge rod 10. Clamping screws 13 serve to contract the split bearing portions 12a and thus secure the gauge rod 10 in any adjusted position.

The block 12 serves also as a support for a micrometer adjusting means for close longitudinal setting of the gauge arm 10. This means may comprise a micrometer screw rod 40 extending through a suitable bore formed in the portions 12a of the block 12 at one side of the gauge rod 10. A micrometer barrel 41 engages the screw rod 40 and is disposed between the block portions 12a. Attached to the rear end of the screw rod 40 is a split cross-arm 42 which braces the gauge rod 10 and which may be held in clamped relation thereto by a bolt 43. A marker 44 is formed on one of the portions 12a of the block 12 adjacent the graduations of the micrometer barrel 41 to indicate a zero or initial position.

Thus, an approximate setting of the gauge rod may be effected and thereafter a quick and

accurate adjustment effected without the necessity of spoiling several work blanks on arriving at the proper setting.

It will be noted that in the arrangement of the elements as described, the gauge arm is provided with a right-angle offset end portion 10*a* of sufficient length to afford a gauging line or edge against which the work blank W may be brought into firm abutment. The gauge rod may be turned to dispose the offset portion to any desired position, or the rod may be reversed in the block 12, as indicated by the dot and dash lines in Figure 2; the disposition of all of the elements being such as to be disposed below the work sheet when any adjustments (wide sheets) are being effected.

Any number of gauging units may be used on the press, depending upon the character of the work being performed. The arrangement of the universal adjustability of the gauge rod is such that the same may be used for internal or external gauging of partly formed work pieces as well as flat sheet stock. Several units of different settings may be used when progressive work is being performed, such as two, three and four-stage bending or forming steps in different sets of dies arranged side by side along the anvil. In fact the utility of the gauging units is limited only by the extent of versatility of the operator or set-up man and the gauges may be used along the front of the anvil as well as the back thereof when desired.

I claim:

1. In a gauge for press brakes, a bracket structure adapted to be attached to a slotted vertical face of a press brake anvil or bed for longitudinal adjustment along such face, a vertically extending pivot post adjustably attached to the bracket, a radius arm fixed to the post, an adjustable block on the radius arm and a gauging arm carried by the block and mounted for longitudinal and turnable adjustment on the block.

2. In a gauge for press brakes, a gauge mechanism including a support adapted to be attached to a slotted vertical face of a press brake anvil or bed for longitudinal adjustment of the gauge mechanism along such face, a vertically extending pivot post adjustably attached to the support, a radius arm carried by the post, an adjustable block on the radius arm and a gauging arm carried by the block and mounted for longitudinal and turnable adjustment on the block.

3. In a gauge for press brakes, a gauge mechanism including a bracket support adapted to be attached to a slotted vertical face of a press brake anvil or bed for longitudinal adjustment along such face, a pivot post adjustably attached to the bracket support, a radius arm carried by the post, adjustable supporting means on the radius arm, and a gauging arm carried by said means on the radius arm and mounted for longitudinal and turnable adjustment.

4. In a gauge for press brakes, a bracket structure adapted to be attached to a slotted vertical face of a press brake anvil or bed for longitudinal adjustment along such face, a vertically extending pivot post adjustably attached to the bracket there being indicator marks on the post and bracket, a radius arm fixed to the post and said marks serving to facilitate setting of the arm in a position normal to the plane of said vertical face of the press, an adjustable block on the radius arm and a gauging arm carried by the block and mounted for longitudinal and turnable adjustment on the radius arm.

5. In a gauge for press brakes, a gauge mechanism including a support adapted to be attached to a slotted vertical face of a press brake anvil or bed for longitudinal adjustment of the gauge mechanism along such face, a vertically extending pivot post adjustably attached to the support, a radius arm carried by the post, an adjustable block on the radius arm, a gauging arm carried by the block and mounted for longitudinal and turnable adjustment on the block, and micrometer means carried by the block and attached to the gauging arm for effecting fine adjustments of the gauging arm along the radius arm.

6. In a gauge for press brakes, a bracket structure adapted to be attached to a slotted vertical face of a press brake anvil or bed for longitudinal adjustment along such face, a vertically extending pivot post adjustably attached to the bracket, a radius arm fixed to the post, an adjustable block on the radius arm and a gauging arm carried by the block and mounted for longitudinal and turnable adjustment on the block, said gauging arm having a right-angle gauging section.

LARKIN R. WILLIAMSON.

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