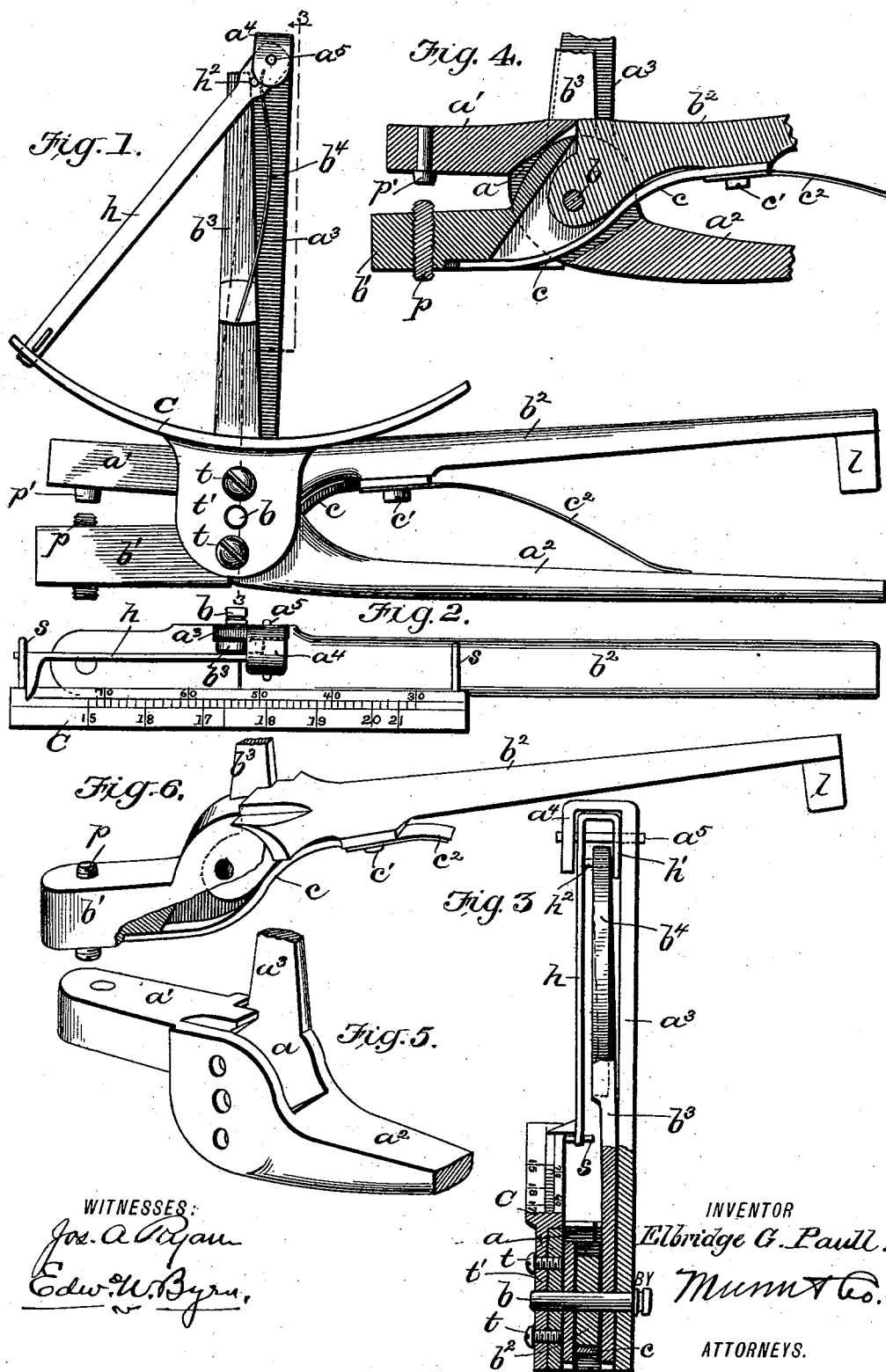


(No Model.)

E. G. PAULL.
SHEET METAL GAGE.

No. 558,417.

Patented Apr. 14, 1896.



UNITED STATES PATENT OFFICE.

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SHEET-METAL GAGE.

SPECIFICATION forming part of Letters Patent No. 558,417, dated April 14, 1896.

Application filed January 10, 1896. Serial No. 575,007. (No model.)

To all whom it may concern:

Be it known that I, ELBRIDGE GERRY PAULL, of Fairhaven, in the county of Bristol and State of Massachusetts, have invented a new and useful Improvement in Sheet-Metal Gages, of which the following is a specification.

The object of my invention is to provide a simple, accurate, and convenient gage for indicating the thickness of sheet metal.

Tacks and nails are now largely used by machinery, and the use of them by machinery requires exactness and uniformity in their size and shape. To secure this exactness and uniformity, the sheets of metal from which they are made must be of exact gage. It becomes necessary, therefore, to select the sheets of metal from which they are to be made by carefully gaging them according to their thickness. This has required a gage that would not only indicate the exact thickness of the sheets of metal to be used, but would enable the work to be done easily and quickly as well as accurately.

My invention consists in the construction and arrangement of a gage fulfilling these objects, and also generally applicable to gaging the thickness of all sorts of sheets, which will be hereinafter more fully described with reference to the drawings, in which—

Figure 1 is a side view; Fig. 2, a top plan view; Fig. 3, a transverse section through line 3 3 of Fig. 1; Fig. 4, a vertical longitudinal section through the jaws and central axis; Fig. 5, a perspective view of the main frame as formed with a jaw, lever-handle, and upright; and Fig. 6, a similar view of the compound lever and its attached parts.

In the drawings, Fig. 5 represents the main frame of the gage. This is constructed with a central housing *a*, from the upper front end of which projects a jaw *a'*, and from the rear and lower side of which projects a lever-handle *a''*, and from the upper side of which there rises a standard or upright *a'''*. All these parts are preferably formed of one piece of metal, as shown in Fig. 5.

Between the side walls of the housing *a* there is arranged a compound lever, (see Fig. 6,) composed of a jaw *b'* and a lever-handle *b''*. The jaw *b'* corresponds to the jaw *a'* above it,

and is formed with a tappet-arm *b'''*, extending upwardly beside the upright *a'''* of the main frame. This jaw *b'* and tappet-arm *b'''* are rigidly connected together, and are together articulated upon an axial pin *b*, passing through the hub of jaw *b'* and also through the side walls of the central housing *a* of the main frame. The lever-handle *b''* is also articulated upon the same axial pin *b* within the housing and beside the rear end of the jaw *b'*. This lever-handle *b''* is intended to operate the jaw *b'*, but instead of being rigidly connected to it has a yielding or flexible connection with it through a curved spring *c*, which is screwed to the handle *b''* at *c'* and, extending down beneath and past the axial pin *b*, rests in a recess in jaw *b'* and bears upwardly against the same, so that when the lever-handle *b''* is depressed it has the effect of raising jaw *b'* about the axial pin *b*, just the same as if it were one with it, except that instead of transmitting an equal, rigid, and positive movement it can transmit to the jaw *b'* no greater pressure than the elasticity of the spring *c* will permit.

To throw the two levers *a''* and *b''* apart, another spring *c''* is employed, which is conveniently connected to the lever-handle *b''*.

In the two jaws *a'* and *b'* there are arranged contact projections *p p'*, which press upon the opposite sides of the sheet metal in gaging its thickness. One of these projections, *p*, is made in the form of a screw-pin, whose threads mesh with corresponding threads in the jaw and permit this bearing to be raised to compensate for wear and adjust it in proper relation to the bearing above.

At the upper end of the standard *a'''* there is formed a hooked end *a''''*, within which, upon a pin *a'''''*, is pivoted a pendent index-hand *h*, whose upper end is bent over at *h'*, where it is jointed upon the pin *a'''''* to give a long bearing at the axis of the hand and give it stiffness as against lateral play, and for the purpose also of securing a short cross-pin *h''*, against which the tappet-arm *b'''* bears to deflect it. This tappet-arm *b'''* of the compound lever bears on one side of this pin *h''*, and a spring *b''''*, borne by the arm, bears on the other side of this pin.

C is a graduated bar curved to a circum-

ference described by the index-hand h as a radius and having stop-pins s at its opposite ends to limit the throw of said index-hand. This bar C is graduated and marked
 5 in thousandths of an inch, and also in numbers indicating the standard gage, and it is detachably fastened about its middle to the housing of the main frame by screws tt , passing through its plate t' .

10 In the operation of this device the handles $a^2 p^2$ are compressed, so as to bring the jaws $a' b'$ together upon the opposite sides of the sheet of metal being tested, and the movement of jaw b' and its rigidly-attached tappet-arm b^3 causes the upper end of said arm
 15 to bear against the cross-pin h^2 of the index-hand h and deflect it across the graduated bar to a point on the markings which indicates the exact gage of the sheet. By the
 20 relative leverage of tappet-arm b^3 on the index-hand it will be seen that a very slight movement or adjustment between the jaws is greatly amplified and spread out in graduations upon the scale, so as to render slight
 25 variations of thickness in the sheets being tested clearly apparent.

Another feature of importance is to be found in the flexible compound lever. It will be easily seen that if both jaws were rigid with
 30 their handles a different degree of pressure on the handles might for the same thickness of metal show a different gage, for an excessive pressure would bury the contact-points of the jaw slightly in the metal and indicate
 35 a thin sheet, while a very light pressure would indicate a somewhat thicker gage for the same sheet. To obviate this, the compound lever and spring c is provided, so that variations in the hand-pressure on the levers
 40 makes no appreciable difference in the bite or pinch of the jaws, since the latter is rendered practically uniform by the interposi-

tion of the spring, so that the jaws only bite with a pressure transmitted through this spring, which is substantially uniform even 45 if the pressure on the handles varies.

To limit the approach of the outer ends of the lever-handles, a stop-lug l is formed on or attached to the inner face of one of these handles, which lug in closing strikes the other 50 handle and prevents an excessive pressure from being transmitted even through the spring.

Having thus described my invention, what I claim as new, and desire to secure by Letters 55 Patent, is—

1. A gage for indicating the thickness of material in sheets, consisting of two pivoted jaws, and two lever-handles, one handle being rigid with its jaw, and the other handle 60 having an elastic and yielding connection with its jaw, a graduated scale-plate, an index-hand moving over the same, and a leverage-amplifying connection between the jaws and the index-hand substantially as shown and 65 described.

2. A gage for indicating the thickness of material in sheets, consisting of a rigid or main-frame part comprising a jaw, an upright and a lever-handle, a compound lever 70 consisting of a jaw with tappet-arm, and a handle flexibly connected together by a spring, and pivoted within the rigid or main-frame part, an index-hand pivoted at its upper end to the upright of the main frame and acted 75 upon by the tappet-arm, a circular graduated scale, and a spring for throwing the lever-handles apart substantially as and for the purpose described.

ELBRIDGE GERRY PAULL.

Witnesses:

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 NORMAN M. PAULL.