

Feb. 16, 1937.

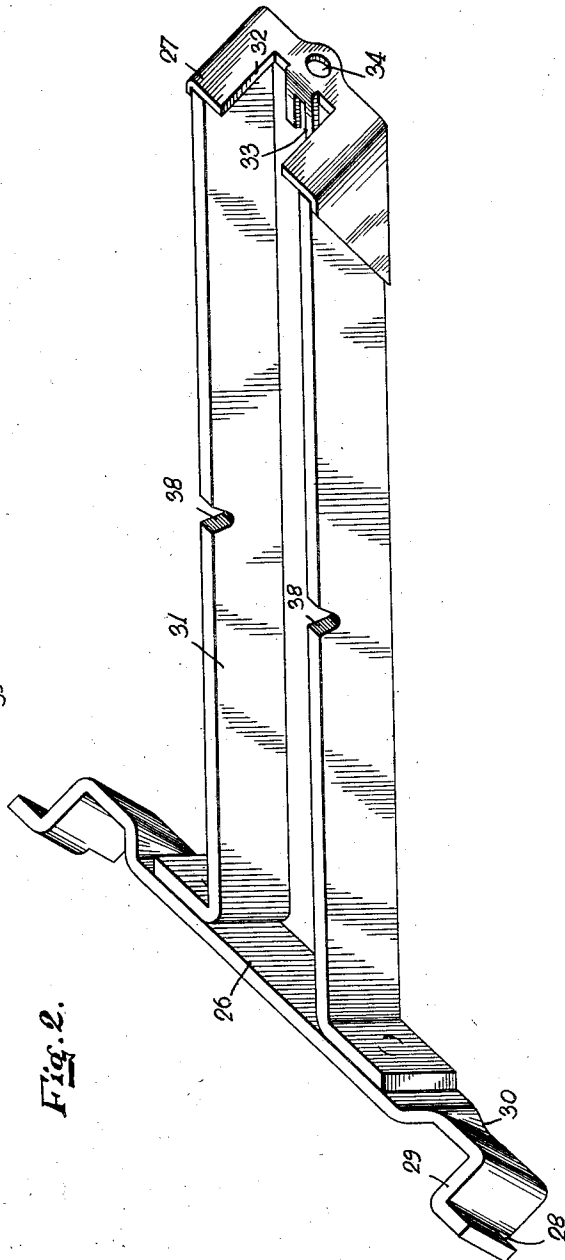
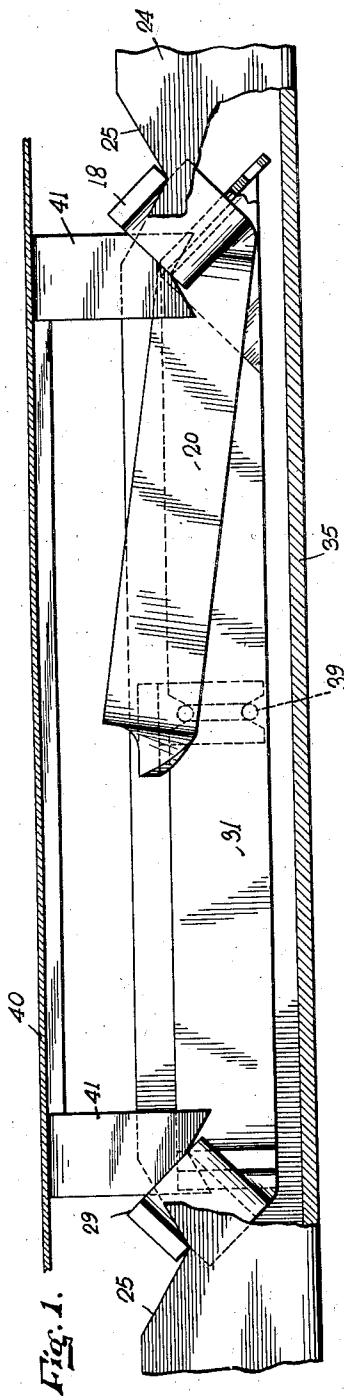
H. ESCHENBACHER ET AL

2,070,786

SCALE BEAM STRUCTURE

Filed Nov. 17, 1934

3 Sheets-Sheet 1



INVENTORS.
HERMANN ESCHENBACHER AND
PAUL J. KIRCHER,
BY *Suell & Kane.*
ATTORNEYS.

Feb. 16, 1937.

H. ESCHENBACHER ET AL

2,070,786

SCALE BEAM STRUCTURE

Filed Nov. 17, 1934

3 Sheets-Sheet 2

Fig. 4.

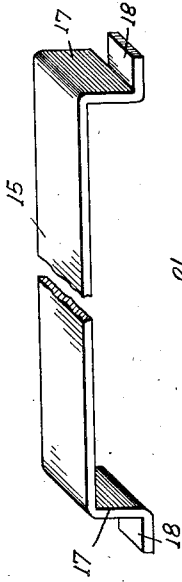


Fig. 6.

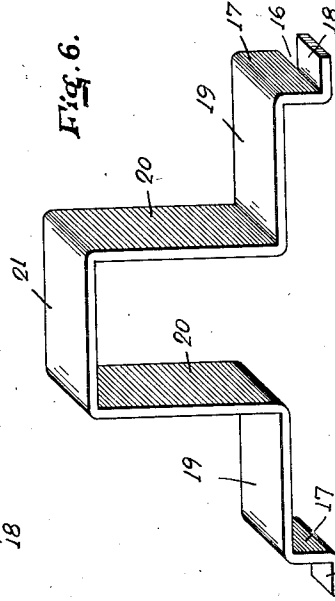


Fig. 3.



Fig. 5.

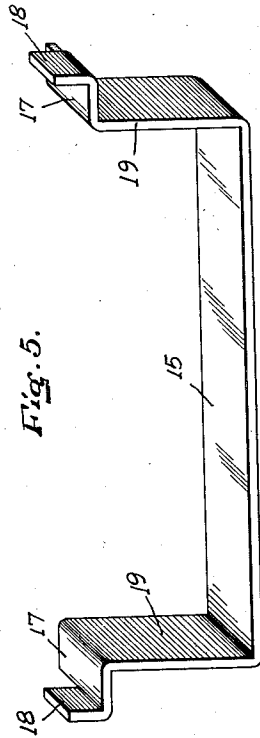
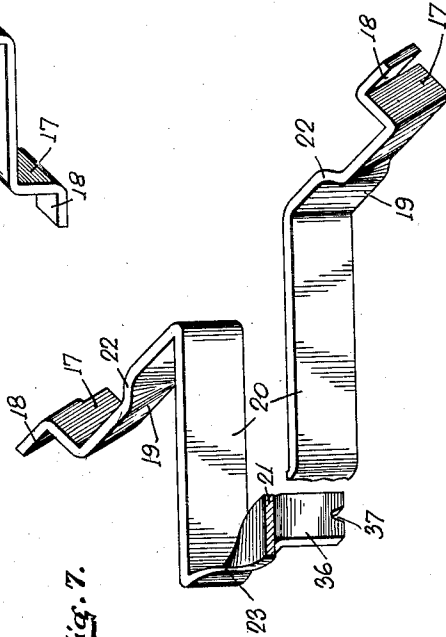


Fig. 7.



INVENTORS.
HERMANN ESCHENBACHER AND
PAUL J. KIRCHER,
BY *Quell & Kane*,
ATTORNEYS.

Feb. 16, 1937.

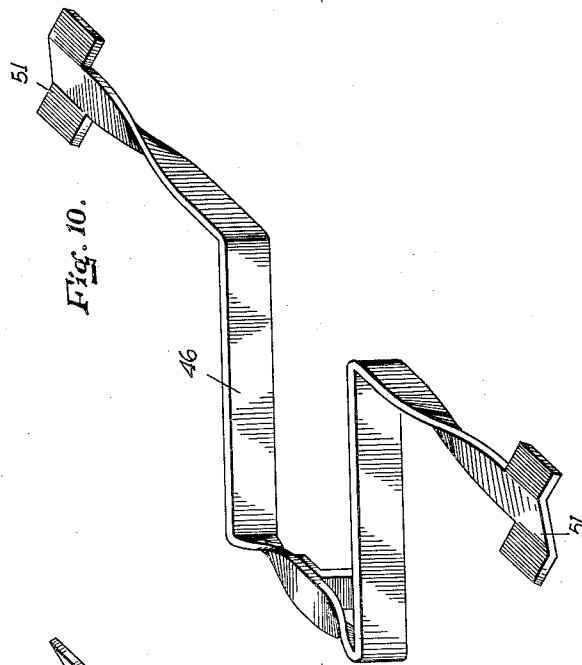
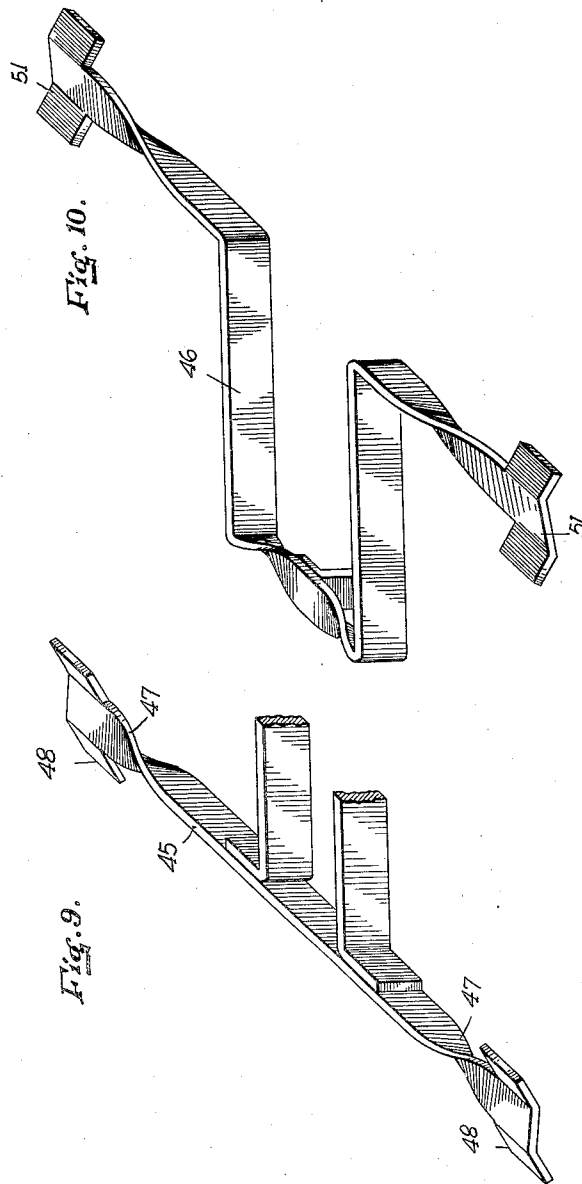
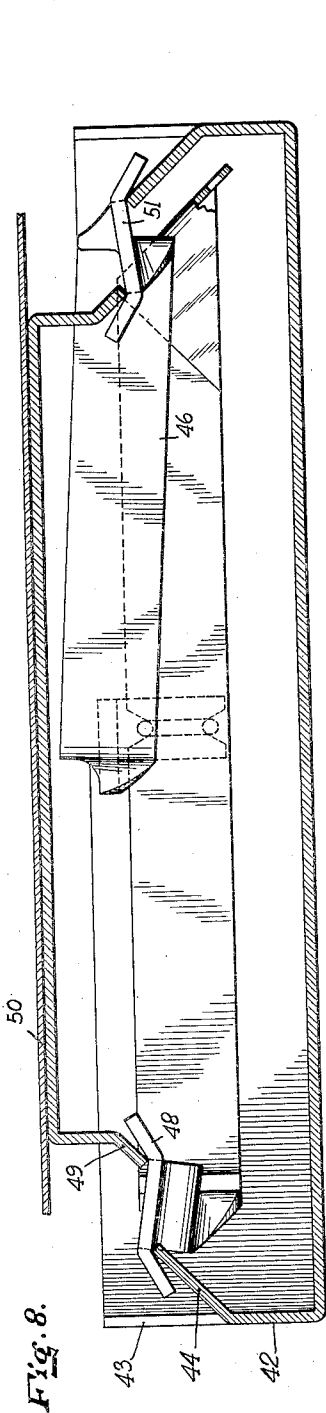
H. ESCHENBACHER ET AL

2,070,786

SCALE BEAM STRUCTURE

Filed Nov. 17, 1934

3 Sheets-Sheet 3



INVENTORS.
HERMANN ESCHENBACHER AND
BY PAUL J. KIRCHER,
Suell & Kane.
ATTORNEYS.

UNITED STATES PATENT OFFICE

2,070,786

SCALE BEAM STRUCTURE

Hermann Eschenbacher, Ridgewood, and Paul J. Kircher, Brooklyn, N. Y., assignors to The Jacobs Bros. Co., Inc., Brooklyn, N. Y., a corporation of New York

Application November 17, 1934, Serial No. 753,428

4 Claims. (Cl. 265-71)

This invention relates to an improvement in scales, and in its more specific aspect aims to provide a functionally and structurally improved weighing apparatus.

It is a well appreciated fact that one of the major items of expense in connection with the manufacture of scales and similar apparatus resides in the fact that such mechanisms involve relatively movable parts which are interconnected by pivots, including, usually, bearing elements and knife edge members. These members and elements have usually been associated with the scale parts by securing them—in a number of suitable manners—against movement with respect to the parts which support them or which they are to support. Not alone is major expense involved in providing these members and elements, but further material expense is involved in properly mounting them against normal movement with respect to the beams or other scale parts with which they are to be associated.

By means of the present invention there is provided a structure which may be economically and rapidly fashioned, and which structure will involve, as a part of its body, any desired number of portions which, in subsequent assembly of the apparatus, will cooperate with other parts to furnish points of pivotal mounting.

With these and other objects in mind, reference is had to the attached sheets of drawings illustrating practical embodiments of the invention, and in which:

Fig. 1 is a sectional side view of a portion of a scale structure and embodying the teachings of the present invention;

Fig. 2 is a perspective view of a beam including such teachings;

Fig. 3 shows a second beam in its initial condition and as provided in accordance with the teachings of the method embraced within this invention;

Fig. 4 is a perspective view showing a subsequent step in the manufacture of the beam;

Fig. 5 is a similar view and showing a further stage in the forming of the beam;

Fig. 6 is another perspective view showing a step in the manufacture following completion of the step illustrated in Fig. 5;

Fig. 7 is a perspective view of a completed beam constructed in accordance with the method herein taught;

Fig. 8 is a view similar to Fig. 1 but showing a slightly different form of structure than is included in the preceding view;

Fig. 9 is a fragmentary perspective view of one of the beams which is included in the form of apparatus shown in Fig. 8; and

Fig. 10 is a perspective view of a second beam included in such latter form of apparatus.

As afore brought out, it is a primary object of the present invention to furnish a structure whereby scales of various types may be functionally and structurally improved, and whereby, moreover, the manufacture of such scales may be materially cheapened without this however in any way detracting from the efficient functioning of the completed apparatus. At this time it is to be additionally understood that except wherein hereinafter specifically limited in the claims, the invention is not to be restricted solely for use in connection with scales, in that the teachings thereof may be advantageously followed in most cases where two elements are to have rocking connection.

Thus, referring primarily to Figs. 3 to 7, inclusive, it will be observed that the numeral 15 indicates a strap preferably formed of steel and which has its side edges extending substantially at right angles to its base. This strap or element is cut to suitable length and the ends thereof are notched as at 16 for purposes hereinafter brought out. As shown in Fig. 4, the strap is bent adjacent each end to provide portions 17 which extend downwardly, and portions 18 (defining the notches 16) extending outwardly. Thereafter the body 13 is again bent at points short of the portions 17 to provide—as illustrated—inwardly extending parts 19, and the strap is now again bent at points short of the portions 19 so that upwardly extending portions 20 and a base portion 21 are furnished.

The beam is now subjected to a final bending along zones 22 of portions 19 as indicated in Fig. 7. It is also subjected to a final bending as indicated at 23 through portions 21. The first named bends may include twists such that the portions 19 beyond the zones 22 and the portions 17 and 18 are in each instance displaced throughout substantially forty-five degrees. The line of bending 23 throughout the base portion 21 is, however—and according to the present embodiment—such that the parts of the base portion between the points 23 are displaced at an angle of ninety degrees. All of these twisting and bending operations are preferably performed without utilizing heat. After the parts are subjected to the operation resulting in the form illustrated in Fig. 7, the beam may be conveniently sized and squeezed so that absolute uni-

formity is secured. Obviously all the twisting and bends may be achieved by the use of special or standard machinery as may be desired, and at this time it is to be understood that while the edges of the strap extend preferably at ninety degrees with respect to the side faces thereof, and while the twisting along the zones 22 are preferably through forty-five degrees, that these factors might be varied in certain respects if this seems wise in any given installation or series of installations.

A beam of this type is used, for example, in a structure of the nature of Fig. 1, in which the numeral 24 indicates a base comprising upwardly extending side wall portions which may be formed with notches in their upper edges as at 25. This beam may conveniently cooperate with a beam of the type shown in Fig. 2, and which is formed by a method similar to that heretofore described. This beam may simply include end portions 26 and 27, the first of which is notched adjacent its outer ends at 28 and extends thence inwardly as at 29, such inward extending portions merging into the central part of the body through twisted portions 30. These twisted portions or zones, in each instance, again preferably extend at an angle of forty-five degrees with respect to the central body portion, it being thus obvious, as shown in Fig. 2, that the ends of the members 26 are angularly displaced to this extent. The end portion 27 may again include a strap of steel or other suitable material, and may, as shown, instead of being integral with the beam legs 31, be secured thereto in any desired manner, as for example by spot welding. A similar method of coupling these legs to the end portion 26 may be followed. Regardless of whether the end portion 27 is or is not integral with the legs, it may include any suitable configuration or parts which allow of a proper coupling of the scale mechanism (not shown) with the beam structure. Thus, the center of this end portion may be notched as at 32, a sufficient portion of metal being left to provide an inwardly extending forked portion 33 as well as an opening 34 to which the ends of movement resisting elements, such as a spring and a rack bar, respectively, may be secured.

The side flanges of the base may, if desired, be integral with the base plate 35, but with beam portions provided in the manner afore described, one form of scale may readily be furnished by simply providing a beam member of the nature shown at 26 to 34 inclusive, and causing those outwardly extending parts which define the cut-out portions 28 to lie within the crotch of notches 25 formed in the upwardly extending flange portions. By spot welding or otherwise, there is secured to the central or base portion 21 of the beam 15 to 23 inclusive a loop supporting member which may, for example, take the form of an L-shaped bracket 36 which is notched as at 37. The legs 31 of the second beam are also notched or grooved as at 38 and a loop 39 of any desired character, such as stiff wire, may have its ends lying within the notches 28 with its central portion within the notch 37 to thus couple the beams. The beam as shown in Fig. 7 is, of course, disposed in the manner shown in Fig. 1 with the end portions 18 thereof lying within the crotch of the notches 25. A platform, such as 40, may be supported upon this structure by having affixed to the under side of such platform a suitable number of legs in the form of straps 41 having their lower edges

notched, and one pair of these legs will, for example, bear against the upper edges of the end portion 26 between the extended portions 29 thereof and the zones 30, while the other pair of such legs will bear against the upper edges of the portions 19 at points between the portions 17 and the zone of bending 22.

It is apparent that care must be utilized to have the notches 25 with their edge portions diverging throughout an angle of greater value than the angularity of the edge portions of the beam elements with respect to their side faces. Otherwise no rocking of the parts with respect to each other could occur. Obviously, however, with the platform mounted on the beam elements and the latter supported by the side walls of the base, if a movement resisting element is coupled to the free end of the beam as illustrated in Fig. 2, a weight imposed upon the platform 40 will cause the latter to be depressed and in turn resulting in the beams, as shown in Figs. 7 and 2, being rocked with respect to each other and with respect to the base as well as the platform, thus causing a registering mechanism (not shown) to be actuated.

The present invention is not necessarily limited to a mere twisting of the bodies of the beams to provide pivot members. The teachings of the same might readily be followed in connection with the supporting member or base; this having been illustrated, as in Fig. 8. In this view the numeral 42 indicates the side walls of the base, which are notched as at 43 to provide portions 44 which extend inwardly at an angle of approximately forty-five degrees. Beam structures indicated, respectively, at 45 and 46 in Figs. 9 and 10, are furnished somewhat along the lines of the structures heretofore described, but, as illustrated, the inner end portion of the structure 45 has its outer ends twisted as at 47, to lie at an angle of approximately one hundred degrees with respect to the legs of the beam. These end portions have extensions 48 which are preferably integral therewith and are bent to extend angularly with respect to the main surfaces of the end portions. In this manner notches are furnished which will accommodate, respectively, the inwardly extending portions 43 and the angularly extending legs 49 of the platform 50, thus providing a structure such that rocking movement of the beams with respect to each other and with respect to the platform and base may follow. In this connection, it will be understood that, as shown in Fig. 10, the beam structure 46 is treated as at 51 similarly to the treatment identified under the numerals 47 and 48. In all other respects a scale of the same type as shown in Fig. 1 has been illustrated.

From the foregoing, it will be appreciated that, among others, the several objects of the invention as specifically afore noted, are achieved. It will be appreciated that numerous changes in construction and rearrangement of the parts might be resorted to without in any case departing from the spirit of the invention as defined by the appended claims.

Having thus described the invention, what is claimed is:

1. A scale including a beam structure, a strap having edge portions extending angularly with respect to its side faces, such strap being bent to provide leg and fulcrum portions for such beam, such fulcrum portions including both parts for mounting a structure to be supported

as well as parts for mounting the beam, such strap being twisted at points short of such fulcrum portion whereby the surfaces of the latter at their point of juncture furnish substantially knife-edge portions, and a base having notched portions to accommodate certain of such fulcrum portions.

2. A scale including a beam structure, a strap having edge portions extending angularly with respect to its side faces, such strap being bent to provide leg and fulcrum portions for such beam, such fulcrum portions including both parts for mounting a structure to be supported as well as parts for mounting the beam, such strap being twisted at points short of such fulcrum portion whereby the surfaces of the latter at their point of juncture furnish substantially knife-edge portions, a base having notched portions to accommodate certain of such fulcrum portions, and a platform, including legs, bearing against other of such fulcrum portions.

3. As an article of manufacture, a beam structure including a strap having edge portions extending angularly with respect to its side

faces, such strap being bent to provide leg and fulcrum portions for such beam, and such strap being twisted at points short of such fulcrum portions whereby the surfaces of the latter at their point of juncture furnish substantially knife-edge portions

4. A scale including, in combination, a base, portions forming a part of such base and extending inwardly with respect to the same at an angle of substantially forty-five degrees, such portions having side and edge surfaces extending at substantially ninety degrees with respect to each other, a beam, a platform, legs extending from such platform and bent to project at angles of substantially forty-five degrees with respect to such platform, such legs also including edge and side surfaces lying at substantially ninety degrees with respect to each other, and portions forming a part of such beam and bent to provide notched surfaces to accommodate such angularly extending portions and to be rockingly supported with respect to the same.

HERMANN ESCHENBACHER.

PAUL J. KIRCHER.