Jan. 6, 1953 R. C. MACOMBER 2,624,430

FABRICATED JOIST

Filed June 18, 1949 2 SHEETS—SHEET 1

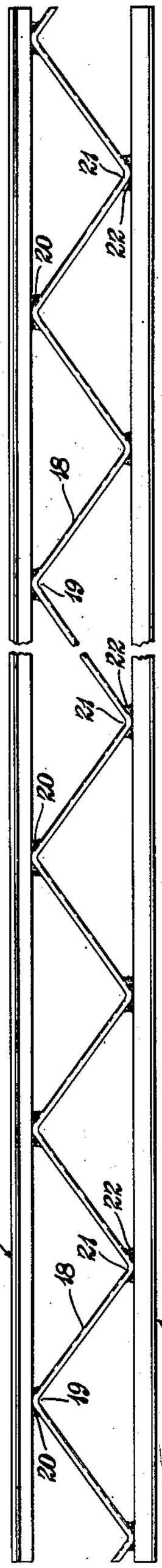

Fig. 1

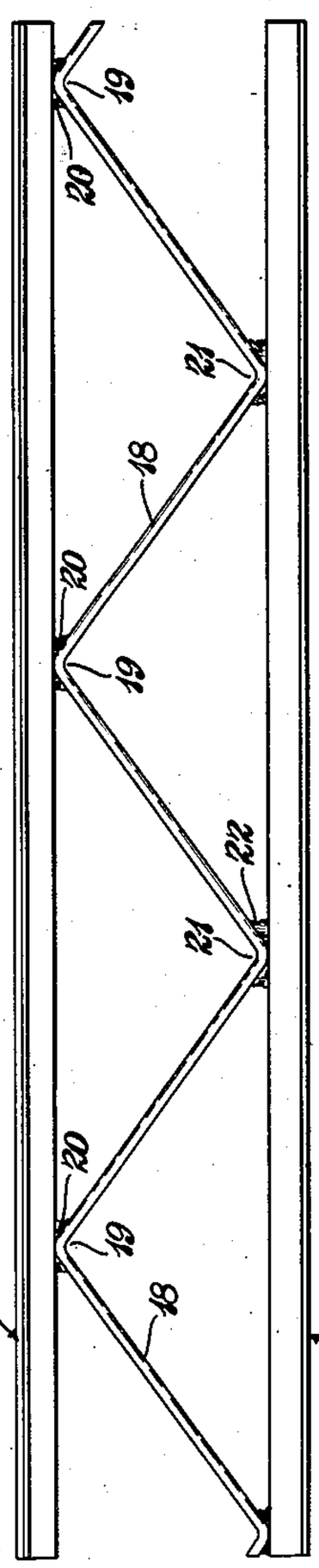

Fig. 2

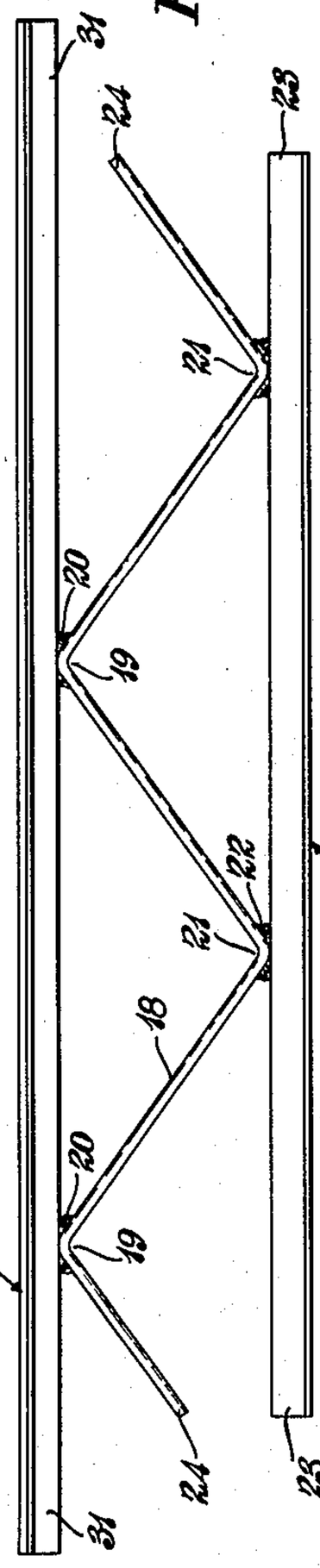

Fig. 3

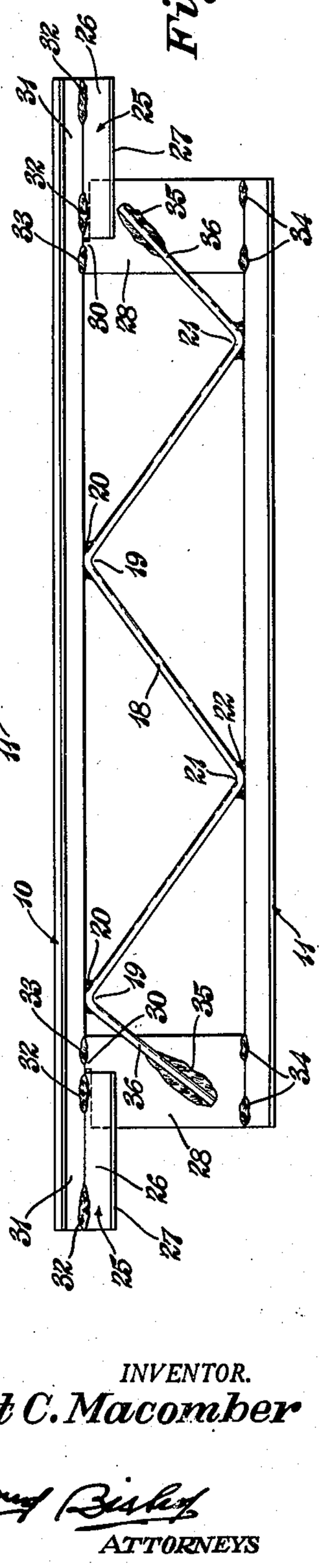

Fig. 4

INVENTOR.
Robert C. Macomber
BY
Frease and Bishop
ATTORNEYS

Jan. 6, 1953

R. C. MACOMBER

2,624,430

FABRICATED JOIST

Filed June 18, 1949

2 SHEETS—SHEET 2

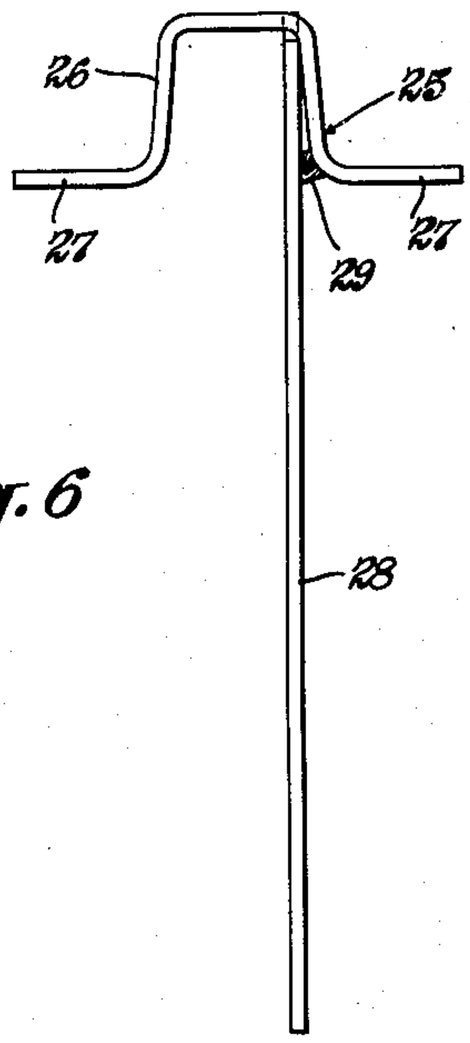

Fig. 6

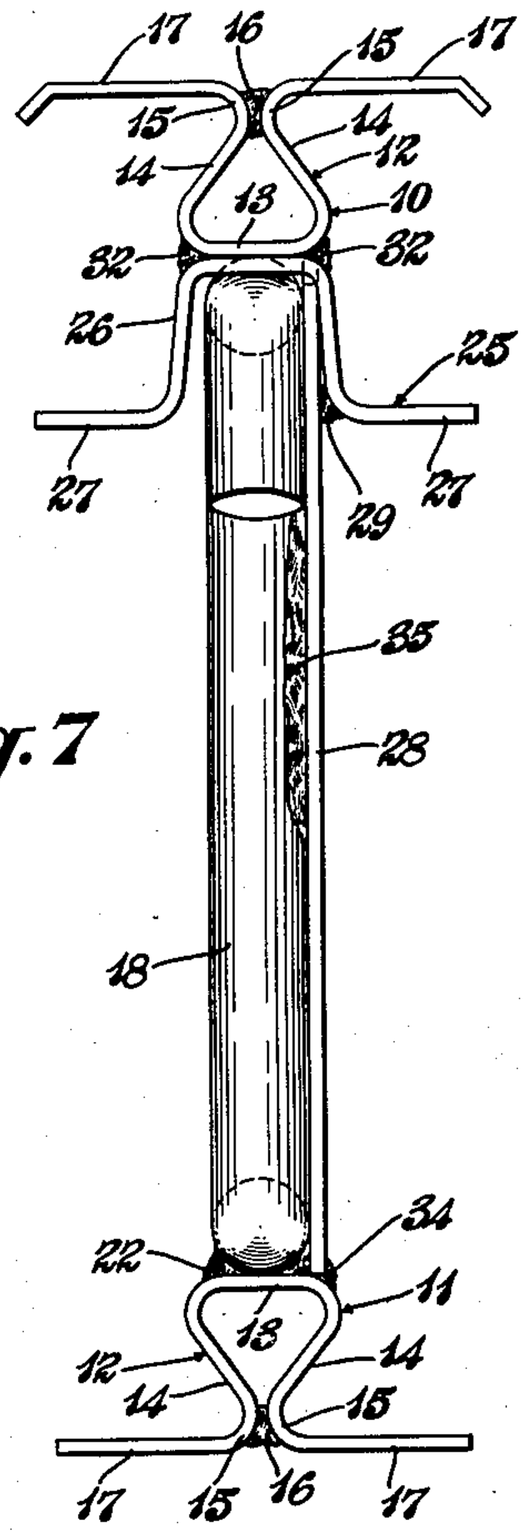

Fig. 7

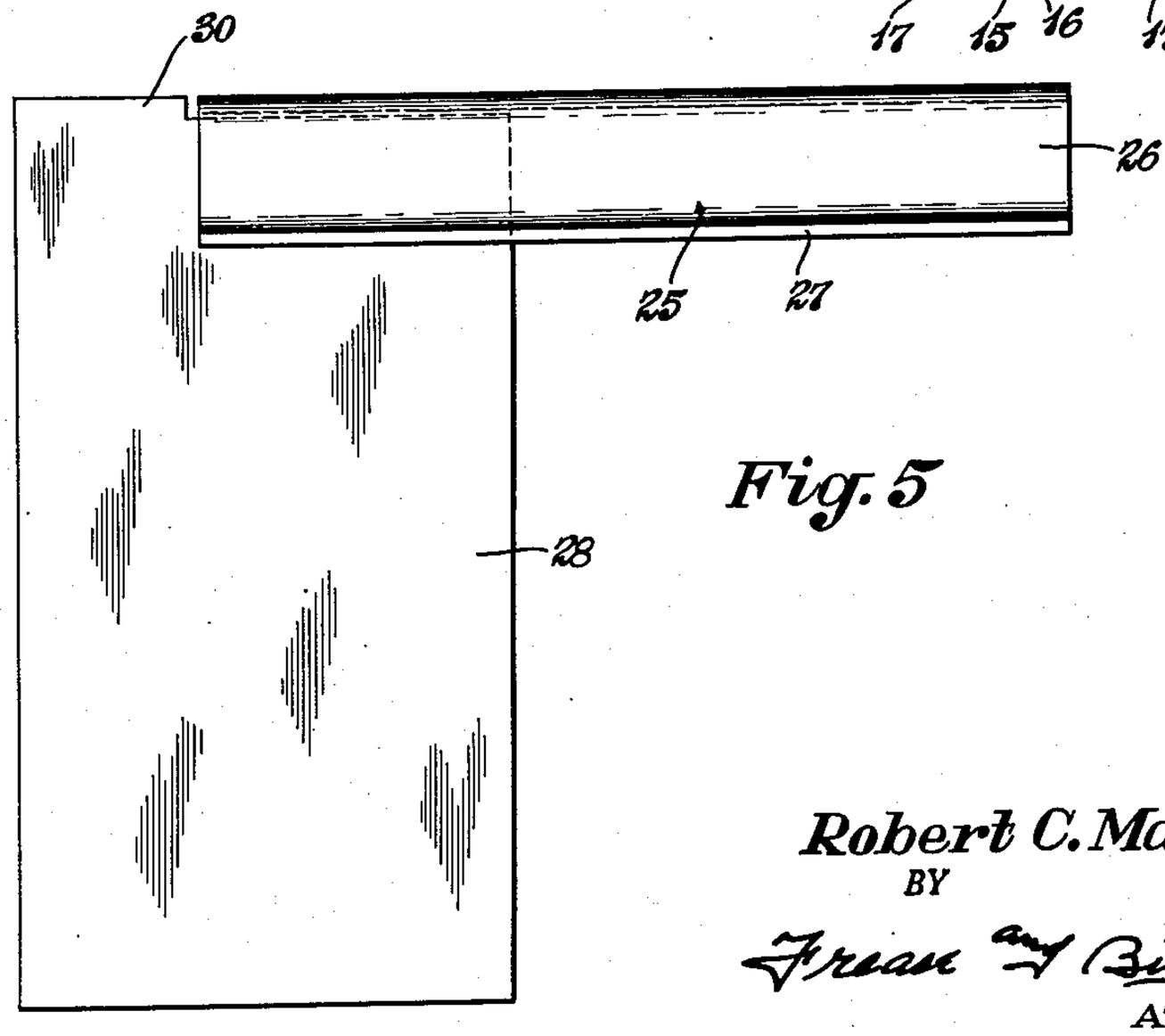

Fig. 5

INVENTOR.
Robert C. Macomber
BY
Fraser and Bishop
ATTORNEYS

Patented Jan. 6, 1953 2,624,430

UNITED STATES PATENT OFFICE

2,624,430

FABRICATED JOIST

Robert C. Macomber, Canton, Ohio, assignor to Macomber Incorporated, Canton, Ohio, a corporation of Ohio

Application June 18, 1949, Serial No. 99,976

2 Claims. (Cl. 189—37)

1

The invention relates to fabricated steel joists of the type known as warehouse joists, as disclosed in my pending application, Ser. No. 76,505, filed February 15, 1949, and more particularly to an underslung bearing end for joists of this type.

Joists of this type are produced by providing a trussed structure of indefinite length for storage in warehouses at principal centers, for later fabrication into joists of desired length. Each of these trussed structures comprises top and bottom chords of any desired cross-sectional shape connected in parallel spaced relation by a reversely bent web bar.

Fabricated joists of any desired length may be produced by cutting these trussed structures into required lengths and attaching bearing ends thereto.

The present invention relates to a novel type of bearing end adapted for use in producing joists of this character, and it is an object of the invention to provide a simple, efficient and easily attached bearing end by means of which suitable lengths of these trussed structures or fabricated interior portions may be quickly and easily converted into fabricated joists of desired size.

Another object is to provide an underslung bearing end by means of which suitable lengths of these trussed structures or interior portions may be converted into underslung joists of desired size.

A further object is to provide such an underslung bearing end comprising a bearing plate, of inverted channel shape with out-turned lateral flanges, for connection to the under side of the end portion of the top chord, and a vertical plate, having its upper end connected within the inverted channel, for connection to the adjacent end portion of the bottom chord and to the adjacent end of the web bar.

A still further object is the provision of an underslung bearing end for producing joists of this character by cutting off the ends of the lower chord at points spaced inwardly from the ends of the upper chord and connecting the improved bearing end to the end portions of the upper and lower chords.

The above and other objects, apparent from the drawings and following description, may be attained by the construction, arrangement, combinations and parts which comprise the present invention, a preferred embodiment of which, illustrative of the best mode in which applicant has contemplated applying the principle, being set forth in detail in the following description and illustrated in the accompanying drawings, in which:

Figure 1 is a side elevation of a trussed product, or fabricated interior portion, of indefinite length, constructed for the manufacture of fabricated joists by cutting into required lengths and attaching the improved underslung bearing ends thereto;

2

Fig. 2 a side elevation of a length cut from said trussed product for production of a fabricated joist;

Fig. 3 a side elevation of the article shown in Fig. 2, after the ends of the lower chord and web bar have been cut back to provide for attachment of the improved bearing ends;

Fig. 4 a side elevation of a completed underslung joist, showing the improved bearing ends attached to opposite ends of a length of the trussed structure;

Fig. 5 an enlarged, detached side elevation of the underslung bearing end to which the invention pertains;

Fig. 6 an enlarged end elevation of the underslung bearing end; and

Fig. 7 an enlarged end elevation of the fabricated joist shown in Fig. 4.

Referring now more particularly to the construction illustrated in the drawings, in which similar numerals refer to similar parts throughout, in Fig. 1 is shown a trussed product of considerable length from which fabricated joists may be produced by cutting into required lengths and attaching the improved underslung bearing ends.

These trussed products are made in long lengths, each being of sufficient length to form several fabricated joists when cut to proper size. Preferably these trussed products or fabricated interior portions, are limited in length only by the requirements for transportation and storage.

Each of these trussed products comprises the top and bottom chords, indicated generally at 10 and 11 respectively, which may be of any suitable cross-sectional shape, preferably of substantially V-section form as disclosed in Macomber Patent No. 2,457,250 of December 28, 1948, as shown in Fig. 7 of the accompanying drawings.

As shown in said figure this V-section structural member is formed of a strip of metal, the central portion of which is formed to substantially a V or triangle, as indicated at 12, comprising the flat, horizontal wall 13, forming the bottom of the top chord or the top of the bottom chord, as the case may be, and the converging flat side walls 14 having the spaced, oppositely curved, rounded bends 15 at the apex of the V, or triangle, to form a nailing groove 16, the edge portions of the strip being oppositely bent outwardly from the groove providing the oppositely disposed, lateral, flat flanges 17.

Although this V-section structural member is preferred for use as top and bottom chords, any suitable and well known cross sectional shape of structural member may be used for these chords, such as T irons, angle irons, round bars or the like.

The top and bottom chords, 10 and 11 respec-

tively, are connected in spaced, parallel relation by the reversely bent web rod, or bar, 18, formed into a successive series of oppositely disposed V's, the upper angles 19 of which are connected to the top chord 10, as by welding indicated at 20, and the lower angles 21 of which are similarly connected to the lower chord 11, as by welding indicated at 22.

The top and bottom chords, 10 and 11 respectively, of this trussed product are of equal length, as shown in Fig. 1, and the trussed product thus produced is of indefinite length, preferably the maximum length which may be conveniently handled for transportation and storage.

When it is desired to form fabricated joists from the trussed product above described, and illustrated in Fig. 1, a piece is cut therefrom of the length necessary for the particular joist to be made, as indicated in Fig. 2.

For the purpose of attaching the improved bearing ends to which the invention pertains, it is necessary that the bottom chord 11 be of less length than the top chord 10, and for this purpose the ends of the bottom chord 11 are cut away, as indicated at 23 in Fig. 3, to predetermined points, spaced inwardly from the adjacent ends of the top chord 11, and the opposite ends of the web bar 18 are similarly cut away, as indicated at 24 in Fig. 3.

In order to form an underslung joist, as shown in Fig. 4, from the partly completed article shown in Fig. 3, end bearing attachments, such as shown in detail in Figs. 5, 6 and 7 are attached to opposite ends of the same.

Each of these end bearings attachments includes a bearing plate, indicated generally at 25, which may be rolled or otherwise formed from a strip or sheet of metal of desired gauge and weight, and comprises the central, inverted channel portion 26 and the outturned horizontal flanges 27 for bearing upon the walls or other supports upon which the joist is to be mounted.

An elongated, flat, vertical plate 28 has a portion of its upper end connected to the inside of the channel portion 26 of the bearing plate, at one end thereof as by welding, as indicated at 29, within one side of the channel, as best shown in Figs. 5 and 6.

Beyond the point where the plate 28 is located within the channel, the upper edge of the plate is provided with an extension 30 which is substantially in alignment with the top of the channel 26. One of these bearing end attachments is connected to each end of the joist in the manner shown in Figs. 4 and 7.

The channel portions 26 of the bearing end attachments are welded to the under sides of the outwardly extending end portions 31 of the top chord 10, as indicated at 32, and the upward extensions 30 upon the plates 28 are welded to the under side of the top chord, as indicated at 33.

The outer edge of each plate 28 is flush with the adjacent outer end of the bottom chord 11, and the lower end of each plate 28 is welded to the upper side of the bottom chord, as indicated at 34.

Opposite ends of the web bar 18 are welded to the inner sides of the corresponding plates 28, as indicated at 35, and if necessary, depending upon the points at which the web bar are cut off, the ends thereof may be bent to the proper position for welding to the plates 28, as indicated at 36 in Fig. 4.

With this construction fabricated joists of any required size may be easily and quickly manufactured from the trussed product or fabricated interior portion shown in Fig. 1, producing a practical and efficient underslung joist adapted to be supported upon the channel bearing plates 25.

I claim:

1. A fabricated joist comprising spaced, parallel upper and lower chords, the ends of the upper chord extending beyond the ends of the lower chord, a reversely bent web bar connected to both chords, inverted channel shape bearing plates connected to the extending ends of the upper chord, and vertical plates connected at their upper ends within said inverted channel shape bearing plates and welded to one inner side wall of the inner ends of the bearing plates and connected at their lower ends to the outer ends of the lower chord at the same side thereof that said vertical plates are connected to the bearing plates, each end of the web bar being disposed at a suitable angle so as to overlie the adjacent vertical plate so that an extension thereof will pass along said vertical plate to one of the chords of the joist, and means rigidly connecting said ends of the web bar to the inner sides of the vertical plates.

2. A fabricated joist comprising spaced, parallel upper and lower chords, the ends of the upper chord extending beyond the ends of the lower chord, a reversely bent web bar connected to both chords, a bearing end comprising an inverted channel shape bearing plate having oppositely disposed horizontal bearing flanges at its lower edge, and a flat, elongated, vertical plate having a portion of its upper end located within said inverted channel shape bearing plate and welded to one inner side wall thereof, the remainder of the upper end of said vertical plate, beyond the end of the channel shape bearing plate, comprising an upward extension flush with the top of the bearing plate, the top of the bearing plate and top edge of said upward extension of the vertical plate being welded to the underside of an end portion of the upper chord, the lower end of the vertical plate being welded to the adjacent end of the lower chord at one side thereof, the adjacent end of the web bar being welded to one side of the vertical plate.

ROBERT C. MACOMBER.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,448,854	Martin	Mar. 20, 1923
1,565,879	White	Dec. 15, 1925
1,597,384	Moyer	Aug. 24, 1926
1,727,893	Moyer	Sept. 10, 1929
1,899,344	Macomber	Feb. 28, 1933
1,969,312	Macomber	Aug. 7, 1934
2,055,701	Palmer	Sept. 29, 1936
2,169,253	Kotrbaty	Aug. 15, 1939
2,457,250	Macomber	Dec. 28, 1948