

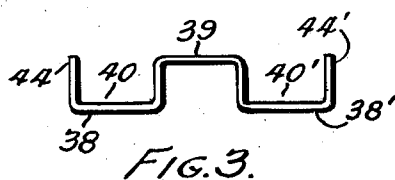
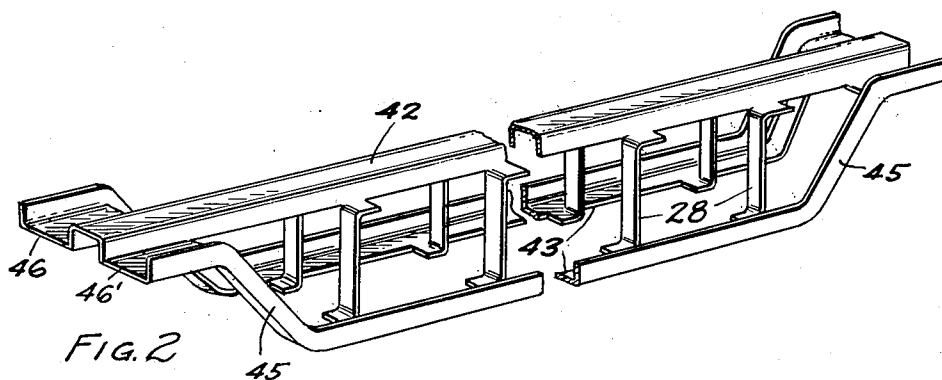
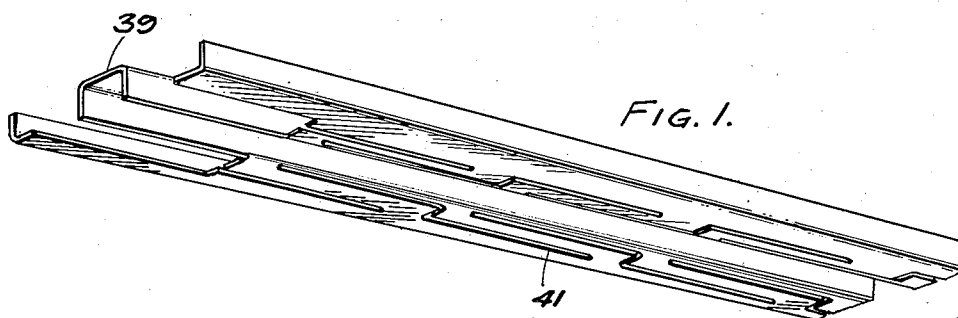
June 21, 1949.

J. C. TIMM

2,473,976

METALLIC STRUCTURAL ELEMENT

Filed Jan. 19, 1944



INVENTOR.
JOHN C. TIMM
BY
Whittemore, Hulbert & Belknap
ATTORNEYS.

UNITED STATES PATENT OFFICE

2,473,976

METALLIC STRUCTURAL ELEMENT

John C. Timm, Girard, Ohio

Application January 19, 1944, Serial No. 518,902

1 Claim. (Cl. 189—37)

1

The present invention relates to metal structural elements and more particularly to expanded structural shapes adapted to be employed as beams, girders, struts, and the like. The elements may be used in the construction of buildings, ships, airplanes, reinforced concrete, and in analogous structures.

The principal object of the invention is to cut and expand the webs of rolled shapes such as channels, and other similar shapes to form, from a single integral length of metal, beams or girders, these elements for the most part being made without riveting, welding, or otherwise fastening parts thereof, resulting in a saving of metal while at the same time producing strong structural elements.

The invention will be more fully understood from the following description of certain forms thereof, reference being had to the accompanying drawings, in which:

Figs. 1 and 2 are fragmentary perspectives and Fig. 3 an end view of a double channel member before and after expansion.

Referring to Figs. 1, 2 and 3, it will be seen that the structural member comprises a centrally disposed inverted channel portion 39 to the lower edges of which are integrally connected angle portions 38, 38', having inwardly directed horizontal flanges 40, 40', and vertical flanges 44, 44'. The horizontal flanges of the angle portions are slit at 41 to form Z-shaped cuts. When so slit and then expanded, as illustrated in Fig. 2, the portion 39 forms an upper chord 42 to which the lower chords 43 are connected by ties 28. It will be noted that the intermediate portions of the side angles are spaced vertically from the upper chord to form lower chords and that the end portions of the side angles are inclined upwardly to form diagonals 45 and horizontal terminal portions 46, 46', the horizontal flanges of which are connected with the chord 42 at the lower edges of the latter.

A preferred embodiment of the invention has been illustrated and described, but it will be noted that in this form the Z-slits are made in the web of a rolled shape and that one portion of the web is so displaced with respect to the remainder of the web that the relatively displaced portions lie in spaced parallel planes. It is also to be noted that in the illustrated form of the invention that the ties connecting the relatively spaced portions of the webs are integral therewith. It may further be observed that in the embodiment illustrated there are flanged por-

2

tions normal and connected to the displaced portions of the webs. Hence, it will be seen that structural elements, employing a minimum of metal but possessing great strength, may be produced from a single length of a rolled shape, the metal being so cut and expanded that the elements are integrally formed without resorting to extra connecting means.

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

A sheet metal beam element comprising a channel portion having downwardly turned flanges extending from end to end of the beam, a pair of portions, angle shaped in cross-section, said portions being transversely spaced outwardly and on opposite sides of said channel portion, each of said spaced portions comprising in cross-section an outwardly positioned vertical flange and an inwardly directed horizontal flange, the medial portion of each of said inwardly directed flanges being parallel to but spaced from said channel portion, and a plurality of vertical web elements integrally connected to said channel portion and to said medial portions, the terminal ends of said inwardly directed flanges lying in the same plane as the edges of said channel portion and integrally connected thereto, each of said angle shaped portions having a diagonally positioned part at each end of said medial portion connecting said medial portion to the terminal ends of that angle-shaped portion.

JOHN C. TIMM.

REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
799,653	Kahn	Sept. 19, 1905
843,726	White	Feb. 12, 1907
1,090,843	Golding	Mar. 24, 1914
1,287,507	Stroebe	Dec. 10, 1918
1,669,095	Macomber	May 8, 1928
1,733,778	Connell	Oct. 29, 1929
2,172,806	Probeck	Sept. 12, 1939
2,185,384	Rafter	Jan. 2, 1940
2,191,788	Collins	Feb. 27, 1940
2,233,719	Vanderveld	Mar. 4, 1941

FOREIGN PATENTS

Number	Country	Date
56,075	Switzerland	Feb. 14, 1912
138,420	Great Britain	Feb. 12, 1920