

Dec. 22, 1936.

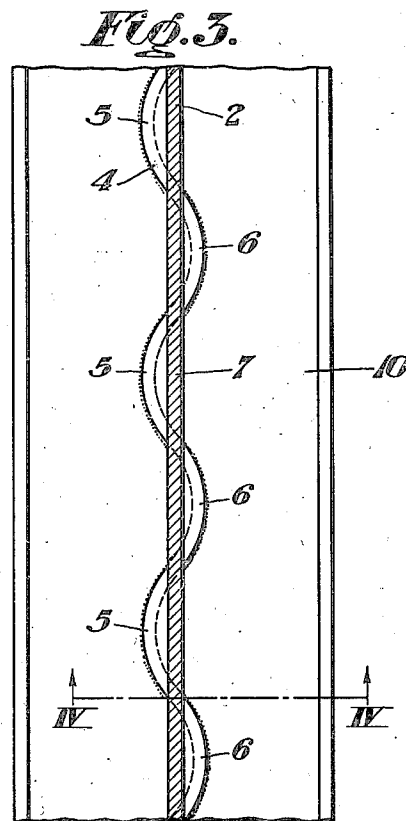
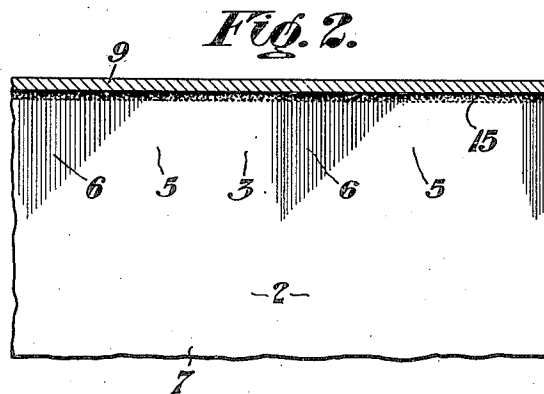
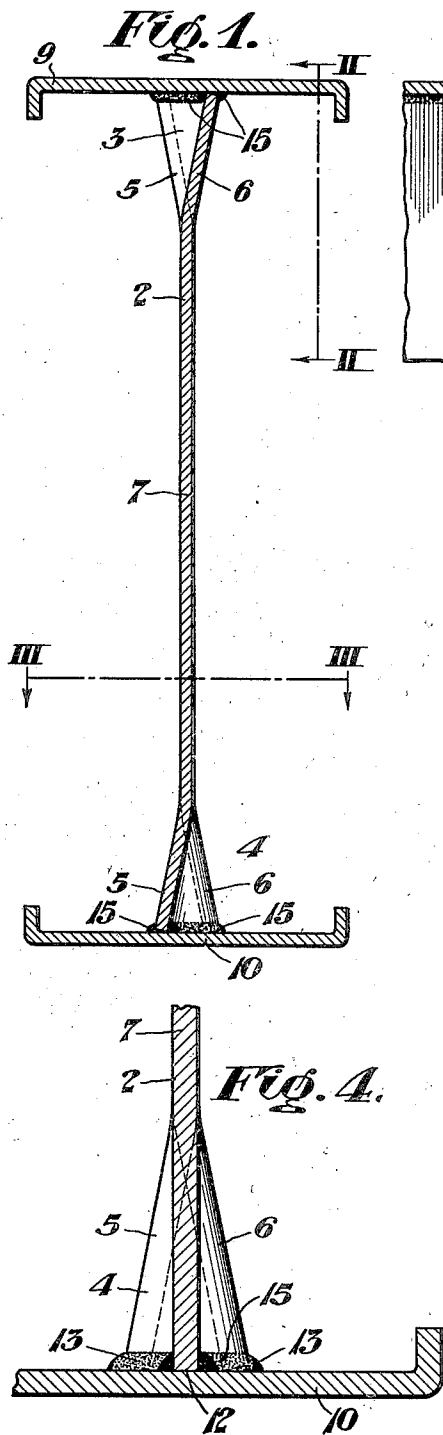
G. G. GREULICH

2,065,493

STRUCTURAL MEMBER

Filed Sept. 27, 1934

2 Sheets-Sheet 1



Inventor:
GERALD G. GREULICH,
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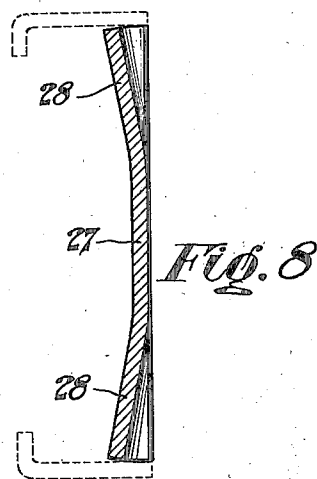
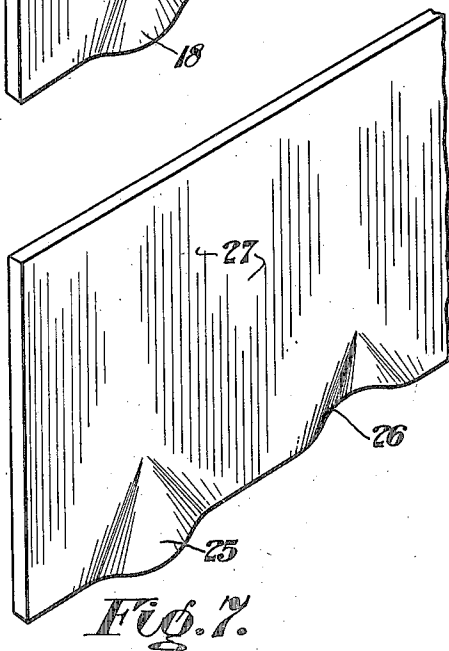
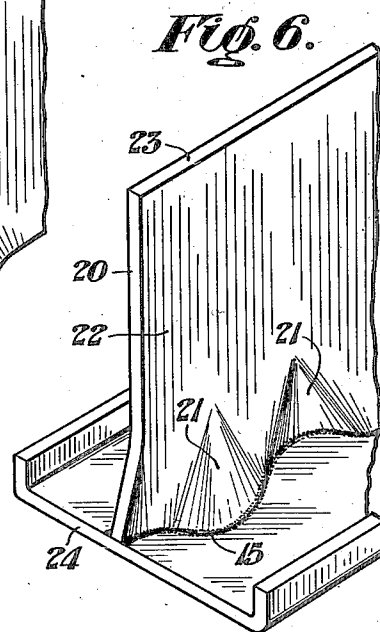
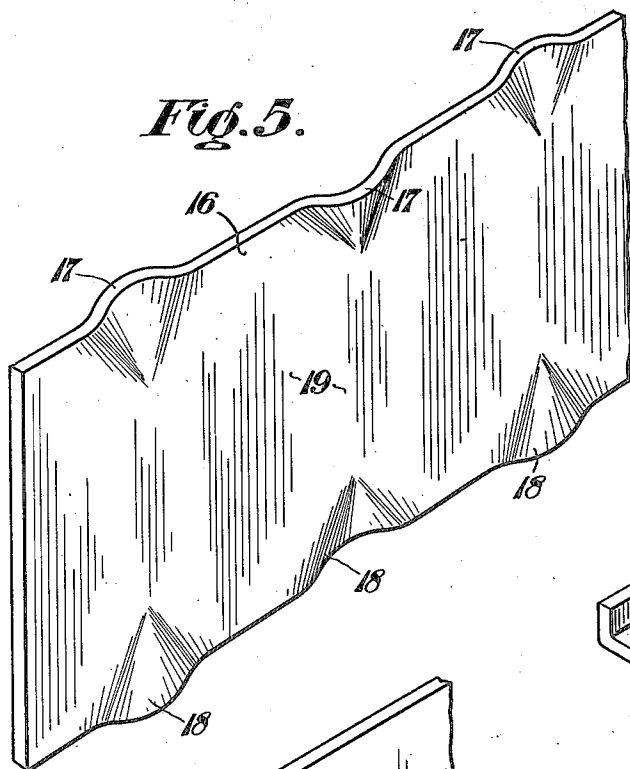
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STRUCTURAL MEMBER

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,065,493

STRUCTURAL MEMBER

Gerald G. Greulich, Mount Lebanon, Pa.

Application September 27, 1934, Serial No. 745,797

3 Claims. (Cl. 189—37)

This invention relates to structural members.

In the manufacture of structural members there has been considerable activity in developing sections which may be fabricated from coiled strip. Among the many advantages of structural members of this type is that they are extremely light in weight, and may be inexpensively fabricated in shops many miles distant from the mill which produced the coiled strip, thus effecting a substantial saving in cost of transportation.

There are, however, a number of disadvantages which attend the use of these lightweight structural members. Some sections will not stand up at the points where their component elements are welded. Other sections have very little resistance against the relative rotation of their flanges with respect to their webs, due to the lack of a fillet. In assembling all types of these structural members, the flanges were sometimes practically severed when the component elements were pressed together during the welding operation. This last condition results in a weakened flange that is practically certain to strip off under a load.

One of the objects of the present invention is to provide a novel structural member which may be easily and cheaply fabricated in the manner described and one which will at the same time possess a resistance to stresses heretofore unobtainable.

Another object is the provision of a novel structural member which has a greatly reduced unsupported height of web.

A further object is to provide a novel structural member composed of strip material which may be readily coiled, uncoiled and fabricated in part by welding of a nature such as will impart a greatly increased rigidity of construction.

These and further objects will be apparent after referring to the drawings, in which:

Figure 1 is a sectional elevation of the structural member fabricated in accordance with the teaching of the invention.

Figure 2 is a fragmentary view on the line II—II of Figure 1.

Figure 3 is a fragmentary sectional view on the line III—III of Figure 1.

Figure 4 is a fragmentary sectional view on the line IV—IV of Figure 3.

Figure 5 is a perspective of a detail.

Figure 6 is a perspective of a modified form of the invention.

Figure 7 is a perspective of a detail of the modification of Figure 6.

Figure 8 is a sectional view of another modification.

Referring more particularly to the drawings, the numeral 2 designates a metallic strip of suitable gage and dimensions and from which the web of the novel structural member is to be fabricated.

According to the preferred embodiment of the invention the strip 2 is crimped on both of its edges, as at 3 and 4. The crimped portions 3 and 4 of the strip 2 extend alternately from both sides thereof, as at 5 and 6. The crimps per se do not extend the full width of the strip 2 and accordingly leave a mid-portion 7 which lies in a single plane.

A pair of flanges 9 and 10 are disposed at right angles to the strip 2 with their mid-portions in contact with the crimped portions 3 and 4 and welded thereto in any suitable manner. One method of accomplishing this is between a plurality of electrode rolls (not shown) which firmly press the flanges 9 and 10 against the crimped portions. Due to the fact that the crimped portions define radii with respect to the center-line of the web, or strip 2, their fusion into the flanges 9 and 10 will be deepest therebelow, and shallowest remotely therefrom, as indicated at 12 and 13.

The structural member of H-section thus obtained is characterized by greatly increased strength, due to the fact that the crimped portions 3 and 4 of the web 2 distribute imposed stresses. In addition the line of weld, as shown at 15, is curved and, therefore, not as susceptible to failure as if it were straight. The mid-portion 7 of the web 2 lying in a single plane affords a flat surface for conventional attachments.

Referring to Figure 5 of the drawings, a modified form of the invention contemplates intermittent crimping of a strip 16 as shown at 17 and 18. These intermittent crimped portions 17 and 18 do not extend the full width of the strip 16 and leave a mid-portion 19 which lies in a single plane, as in the first embodiment.

In Figure 6, another modification provides for the crimping of only one edge of a strip 20, as shown at 21, leaving a mid-portion 22 and opposite edge 23 which lie in a single plane. In using this form of web, or strip 20, a flange 24 is attached to only the crimped portion 21, in the manner previously recited. As shown in Figure 7, a web or strip 15 may be intermittently crimped, as shown at 25 and 26, in lieu of the continuously crimped strip 20.

Referring to Figure 8, a further embodiment contemplates a strip 27 which has both of its

edges crimped, as at 28 and 29, but from only one side thereof.

While I have shown and described several specific embodiments of my invention, it will be understood that I do not wish to be limited exactly thereto, since various modifications may be made without departing from the scope of my invention, as defined in the following claims.

I claim:

10 1. A building structure comprising a web and a flange joined to and extending from at least one of its edges, said flange presenting an entirely flat surface to said web, said web having its mid-portion substantially flat and being crimped on its edge from which said flange extends, the joint between the crimped edge of said web and the flat surface of said flange being continuous.

2. A building structure comprising a web and a flange joined to and extending from at least one

of its edges, said flange presenting an entirely flat surface to said web, said web having its mid-portion substantially flat and being intermittently crimped on its edge from which said flange extends, the joint between the intermittently crimped edge of said web and the flat surface of said flange being continuous.

3. A building structure comprising a web and a flange joined to and extending from at least one of its edges, said flange presenting an entirely flat surface to said web, said web having its mid-portion substantially flat and being crimped on its edge from which said flange extends, the crimps extending alternately from both of the sides of said web, the joint between the crimped edge of said web and the flat surface of said flange being continuous.

GERALD G. GREULICH.