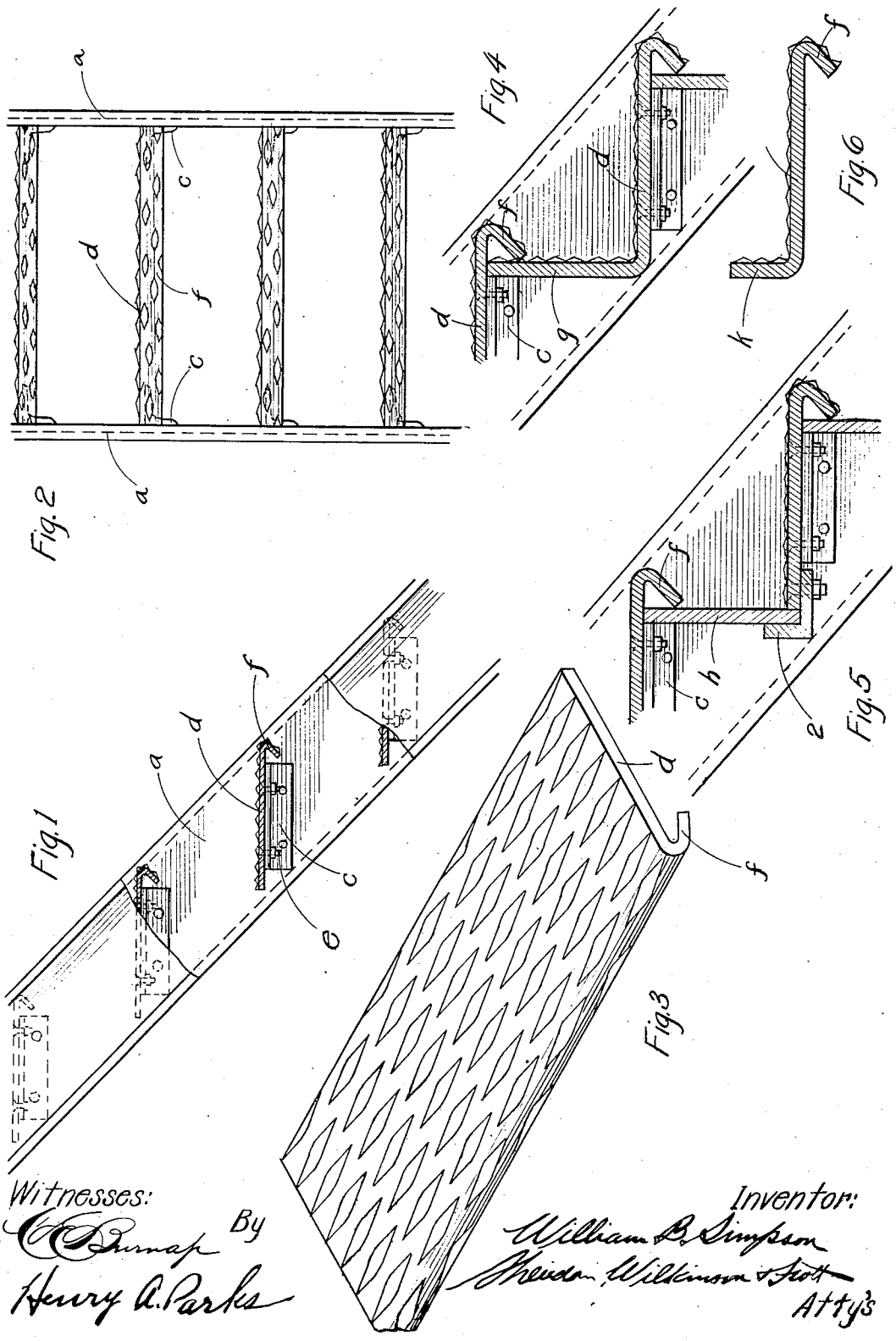
W. B. SIMPSON.

STAIRWAY STRUCTURE.

APPLICATION FILED JULY 26, 1909.

954,893. Patented Apr. 12, 1910.



Witnesses:
C. Burnap
Henry A. Parks

By
Inventor:
William B. Simpson
Sheridan, Wilkinson & Scott
Atty's

UNITED STATES PATENT OFFICE.

WILLIAM B. SIMPSON, OF CHICAGO, ILLINOIS.

STAIRWAY STRUCTURE.

954,893. Specification of Letters Patent. Patented Apr. 12, 1910.

Application filed July 26, 1909. Serial No. 509,578.

To all whom it may concern:

Be it known that I, WILLIAM B. SIMPSON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Stairway Structures, of which the following is a specification.

The object of my invention is to provide an efficient stairway structure simple and cheap in construction, these advantages being secured by the use of pressed steel, preferably what is commonly known as diamond pressed steel. The diamond surface is advantageous in that it is easily formed and affords a firm foothold. Although stairway structures of various forms have been designed and built heretofore, the general use of cast iron for this purpose has rendered the construction more or less cumbersome and expensive, in many instances necessitating the use of many parts, including cross members between the stringers for the purpose of supporting the treads. In my improved structure the treads themselves constitute their own support, and together with the stringers, form the structural framework of the stairway. By constructing the treads of pressed steel and forming them with integral nosings, and in some instances also with integral risers a structure of great strength is secured.

In the drawings—Figure 1 is a side elevation partially broken away of a stairway embodying my invention, the stairway illustrated being built without risers. Fig. 2 is a front elevation of the structure shown in Fig. 1. Fig. 3 is a perspective view of one of the treads forming part of the stairway shown in Fig. 1. Fig. 4 is a fragmentary view showing a stairway having an integral tread, nosing and riser, the stringer nearest the observer being removed. Fig. 5 is a fragmentary view of a stairway similar to that shown in Fig. 4, but having a separate riser. Fig. 6 is a detail end view of a tread having an integral nosing and an integral partial riser, this form being capable of substitution for the other forms illustrated when a partial riser is desired.

It will be obvious from the drawings that in all the forms illustrated the treads are self-supporting and are formed at their forward edges with integral strengthening flanges in the form of the usual nosings. In addition to these features Fig. 4 shows an integral riser also formed with the tread; Fig. 5 shows a separate riser secured to the tread; and Fig. 6 shows a partial riser formed integral with the tread. In all the forms however, there is present the common feature of a stairway structure having its supporting framework composed of side stringers and treads, the latter being formed of pressed steel and formed at their forward edges with strengthening flanges or nosings.

Referring to the forms illustrated in Figs. 1, 2 and 3, the side support of the stairway consists of stringers *a* consisting preferably of channel irons with their flanges directed outwardly. Secured to the stringers by means of rivets or bolts are angle iron horses *c* having their upper flanges directed inwardly to form a support for the treads. The ends of the treads *d* rest upon the angle iron horses and are secured thereto preferably by means of carriage bolts *e*. At their forward edges the treads *d* are bent downwardly and rearwardly to form the nosings or stiffening flanges *f*. A stairway so constructed has no risers, but like the other forms illustrated, which are provided with risers, comprises in its structural framing merely the stringers and treads secured thereto, no additional cross members or other strengthening devices being used. As illustrated the treads are preferably formed of diamond pressed steel for the purpose of affording a secure foothold.

In Fig. 4 I have illustrated a stairway similar to that shown in the other figures, but having treads *g* formed integral with the risers *d* and extending upward therefrom into contact with the under surface of the treads above. The upper part of the riser *g* is received between the angle iron horses *c* and the nosing *f* of the step above. By this means the riser *g* is firmly held against displacement.

In Fig. 5 I have shown a stairway structure in which the riser *h* is formed from a separate piece of metal, thus rendering it possible to use sheet steel or any material available. In this way the amount of pressed steel used is reduced, thus securing economy, and no sacrifice of strength is involved as the support of the structure is provided for by the stringers and treads. The separate riser *h* shown in Fig. 5 may be secured to the tread below by means of an angle *i* bolted to the tread and having its rear upwardly extended flange spaced therefrom sufficiently to provide a space for the

lower edge of the riser *h* between said flange and the rear edge of the tread. The upper portion of the riser *h* may, as illustrated in the construction of Fig. 4, be received between the angle iron horses *c* and nosing *f* of the step above.

In Fig. 6 I have shown a tread *d* formed with an integral nosing *f* and partial riser *k*. This tread with its nosing and riser may be used in connection with the stringers illustrated in the other views, thus providing a stairway with a partial riser.

From the foregoing it will be apparent that by utilizing the superior qualities of pressed steel I have been enabled to produce a stairway structure of great simplicity, while at the same time rendering its construction cheap and of great strength. The entire stairway is formed of few parts, all of the similar parts being identical in design and easy to assemble.

While I have illustrated several specific embodiments of my invention it will be apparent that the principle involved may be applied without adhering to the specific details illustrated.

I claim:

In a stairway structure, a series of elements each comprising an integral tread, nosing and riser, the nosing of each element overlying the upper part of the riser of the next element below, stringers, horses secured to said stringers and to said treads, the upper part of each riser being received between the nosing of the element above and the ends of the horses secured to said element.

In testimony whereof, I have subscribed my name.

WILLIAM B. SIMPSON.

Witnesses:

C. M. CHAMBERLIN,

J. G. SCHRAMM.