FIG. 3

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This application relates to metal stair units for use usually in multi-story construction. However, these stair units find substantial utility in any construction project where stairs are required.

In the past, it has been the usual construction practice to erect the walls of stair wells and install the landing platforms as the walls go up, then to install the runs of stairs after the stair well has been practically completed.

Such construction methods involve substantial expenditure of both time and money because of the necessity of erecting temporary scaffolding, safety rails, and ladders for the construction workers. More recently, there has been a trend in the construction field toward the use of pre-erected prefabricated stair units which are assembled in the metal fabrication shop and transported to the construction site as integral units. These units are constructed so as to be self-supporting and so as to permit the units to be successively stacked vertically. After the stair units are set in place, the stair wall wells are constructed around the units, and upon completion of the stair wall wells the stair structure is complete. One such unit of this latter type is shown in United States Patent No. 3,052,332, which shows stair units with upright support members at the corners of the landing platforms, which supports are generally built into the walls of the stair well and remain there after the completion of the stair well.

It has been found that the pre-erected prefabricated stair units currently in use, although offering several advantages, have several substantial disadvantages. In these units, as a general rule most of the metal bracing remains in the walls of the stair well, although the ultimate support for the runs of stairs and the landing platform is derived solely from the walls of the stair well. Because of the cost of the metal bracing, this constitutes a substantial and unnecessary waste. Furthermore, it has been found that prefabricated stair units of known types utilize far more bracing material than is actually necessary to support the stair units pending the completion of the stair well walls. Also, in the known pre-erected prefabricated stair units, most of the bracing is located at the outer extremities of the unit, allegedly to serve as masonry guides. However, it has been found that although such outer bracing may be desirable on some jobs and for some contractors, generally the masonry workers have found that this outer bracing unnecessarily interferes with the construction of the stair well walls, and thus this former structure has been found to be disadvantageous from this viewpoint. Finally, the known pre-erected prefabricated stair units are rather ungainly structures, and generally there is no arrangement to facilitate their accurate alignment during stacking. Usually these units are set in place vertically by a mobile crane, and the ultimate positioning of the individual units requires substantial lifting and shifting to get them exactly aligned. Generally, there is no structure to provide for positive and automatic alignment.

It is an object of this invention to provide integral stairway units which incorporate substantially all of the advantages of former stairway units, while doing away with most of their disadvantages.

It is a further object of this invention to provide integral stairway units wherein substantially all of the bracing can be salvaged and reused as desired. In many instances, the bracing of the instant stair units can be reused on subsequent stair units without any substantial modification.

It is still a further object of this invention to provide stair units which, because of their unique design, utilize far less bracing material than is used in units of known types.

It is still a further object of this invention to provide integral stackable stairway units wherein structure does not interfere with the masonry work involved in constructing the stair well walls.

It is yet a further object of this invention to provide stackable stairway units wherein structure is provided to ensure positive and practically automatic alignment of the successive stacked units.

It is another object of this invention to provide a new and improved stair unit wherein the main support members are incorporated in the vicinity of the center of the individual stair units, and auxiliary bracing branches out from the main support members generally in a "tree" arrangement.

Finally, it is an object of this invention to provide a new and improved stair unit wherein the main support members are incorporated internally between the inside straignters of adjacent runs of stairs, thus effecting all of the foregoing advantages and objects, and providing a further advantage whereby parts of the main support members may constitute the basic components of the navel posts for the railings.

Other objects and advantages will be pointed out in, or be apparent from, the specification and claims, as will obvious modifications of the single embodiment shown in the drawings.

In the drawings:

FIGURE 1 is a perspective view of a base stair unit according to the instant invention.

FIGURE 2 is a perspective view of an upper stair unit according to the instant invention.

FIGURE 3 is a side elevation view showing a base stair unit with an upper stair unit stacked on top.

FIGURE 4 is a plan view of the structure shown in FIGURE 3.

FIGURE 5 shows one embodiment of the structure used to ensure positive alignment of the successive stacked units, in this case by the use of dowels.

Referring to the drawings in detail, in FIG. 1 there is shown a base stair unit for the lower floor of a multi-story building. This unit comprises a first run of stairs 1, a first landing platform 3, a second run of stairs 7, and a second landing platform 9. The stair runners are of known types, and comprise generally two stringers joined by stair steps 2. These steps can be, and often are, of the type wherein concrete forms are provided by the individual steps 2 so that the finished steps will have a concrete surface. The landing platforms comprise, for instance, two channel members 4 and 5 and a platform member 6. The platform members 6 and 12 shown in the drawings are of the type wherein concrete or cement is applied to their surface in the same general manner as can be done for the stair steps 2. For instance, after the walls of the stair well have been completed, it is the usual practice to apply concrete to the surface of the landing platform 6. The second run of stairs 7 and the second landing platform 9 correspond substantially identically to the first run of stairs and the first landing platform, respectively, although they may differ depending upon the particular type of finished stair required by the architect or contractor.

The first run of stairs 1 is connected to the channel 5 of the landing platform 3 preferably by welding, and the second run of stairs 7 is connected to the channel 5 and to the channel 11 of landing platform 9 in substantially the
same manner. The main support members for the integral structures are shown at 13 and 14, and extend through the space provided by the channels 5 and 11 and the runs of stairs 1 and 7. This is shown most clearly in FIG. 4, where it will be seen that the adjacent runs of stairs are sufficiently spaced or cut out to provide room for the main support members 13 and 14. In the embodiment shown in the drawings, the main support members 13 and 14 comprise structural piping. However, it will be readily apparent that any material of sufficient strength and of a shape and size that will lend itself to this principle may be used. The main support members 13 and 14 are spaced apart by horizontal members 17 and 27, which are either tack welded or bolted at their ends to the main support members. Extending transversely from the bases of the main support members are angle members 15 and 19, which provide a base for maintaining the main support members vertically. Structural members 16 and 18 connect the respective ends of base members 15 and 19, and impart a measure of rigidity to the structure. Main support member 13 is braced vertically by members 20 and 23, and main support member 14 is braced vertically by member 28. The first run of stairs 1 is connected at its lower end to angle member 19, preferably by a tack weld.

The landing platforms are connected to the main support members 13 and 14 by tack welding or bolting channel members 5 and 11 thereto. Landing platform 3 is maintained in a horizontal position by bracing members 20 and 21, which are shown as extending from the ends of base angle member 15. However, it will be noted that these two bracing members can extend from any points on base angle member 15, or from the base of main support member 13. Landing platform 9 is maintained horizontally at one end by bracing member 24, and by member 25 which extends upwardly from member 24. In the disclosed embodiment member 24 is shown as extending upwardly from the outside stringer of the first run of stairs 1. However, it should be noted that member 24 may extend upwardly from base angle member 19 or from the lower portion of main support member 14, but preferably member 24 should be arranged so as not to obstruct the use of the first run of stairs when it may be used as a scaffold. In the embodiment shown in the drawings, it will be understood that the runs of stairs themselves act as braces for the landing platforms and provide rather substantial support therefor.

Extending from the upper end of the main support members 13 and 14 are dowel members 29 and 30, respectively. These dowel members are adapted to matingly engage with the main support members 13 and 14 of an upper stair unit, as shown in detail in FIG. 5. Although the dowels are shown in FIG. 5 as being bolted to the main support member 13, any convenient method of attachment may be used, such as welding. The dowel members are designed sufficiently long as to provide a substantial length of dowel in the main support members for the lower and upper stair units. Preferably the dowel members are tapered in their outer portions to facilitate their being guided into positive alignment. Dowels have been used in the embodiment disclosed in the drawings primarily because of their susceptibility of use with the structural piping of main support members 13 and 14. However, other analogous arrangements may be used for ensuring positive alignment of the lower and upper stair units.

From FIG. 2 of the drawings, it will be observed that the upper stair unit is substantially similar to the lower stair unit, but certain changes have been incorporated primarily for convenience and economy. For instance, the upper stair unit does not have any bracing members corresponding to members 16 and 18 of the lower unit. It should be noted that these members are not absolutely necessary in the lower unit, and it has been found that they are not at all necessary in the upper unit. Therefore, in the interest of economy they have been omitted from the upper unit. Also, in the upper stair unit the landing platform is braced by a horizontal member 31, which extends upwardly from the main support member 14, which as previously stated could also be done in the case of bracing member 26 in the lower stair unit. Members 24 and 25 in the upper stair unit correspond to members 24 and 25 in the lower unit, and could be modified as stated for those members in the lower stair unit. There is no member in the upper stair unit which corresponds to base angle member 19 in the lower unit, and accordingly bracing member 28 also is absent from the upper unit. Since base angle member 19 of the lower unit is absent from the upper unit, it is necessary to temporarily connect the inside stringer of the first run of stairs 1 to the base of the main support member 14.

The embodiments disclosed in the drawings are intended for use where only two stair units are involved. However, it will be understood that any reasonable number of units can be successively stacked one upon the other. In that case, the upper unit will be provided with a horizontal bracing member corresponding to member 19 of the lower unit, and also the dowels will be provided at the upper ends of main support members 13 and 14.

When the members are stacked, it will be observed that positive alignment is ensured by the dowels 29 and 30. The accuracy of alignment afforded by these dowels causes the lower end of the stair unit to be placed correctly in the stair unit above, in conjunction with the upper end of run of stairs 7. The walls of the stair well act as concrete forms for the other three edges. However, it should be noted that the top landing of the top run of stairs normally will have one portion of edge 11 which will not inherently have a concrete form surface. Thus it is desirable to add an additional member on the portion of edge 11 adjacent to run of stairs 7 to provide a vertical surface for retaining the freshly poured concrete. Such a member is shown at 33 in FIG. 2. This member can be a length of flat stock or channel. Alternatively, the landing platforms can be fabricated with a wood bracing mechanism on any or all of their edges to retain freshly poured concrete.

As shown most clearly in FIG. 4, the channel members on each of the landing platforms extend beyond the areas of the platforms themselves, and when the walls of the stair well have been constructed the extensions of these channels will be embedded in the walls to provide full support to the landing platforms and to the interconnecting runs of stairs.

In constructing the stair units of the instant invention, the runs of stairs and landing platforms are first fabricated according to specifications, and the runs of stairs and landing platforms for a single unit are then supported in a jig and combined as shown in FIG. 6. The main support members and the auxiliary bracing members are then bolted or tack welded to the stair elements while these elements are still in the jig. Once this has been completed, the integral unit is removed from the jig, and is ready for transportation to the construction site. Fabricated railings can be wired to the units at any convenient point. The individual units are generally lifted by mobile cranes and given a general shape by mobile cranes and given a general shape by mobile crane or other suitable means. Once the units reach the construction site, the lower unit is first set in place and plumbed so as to be perfectly vertical. Once this has been done, the successive
upper units can be successively stacked on the lower unit and on each other, and connected by welding the runs of said support members at their lower ends to the edges of the landing platforms 9 and 9'. The walls of the stair units can then be constructed at the contractor's convenience, using the stair units as scaffolding if desired, and embedding the channel extensions of the landing platform in the walls as the stair wall progresses. As soon as the stair wall reaches its upper limit of height defined by the landing platform, the auxiliary bracing for that landing platform can be removed either by removing the bolts or by cutting or breaking the tack welds. It is believed to be a more economical procedure, however, to wait until the stair wall has been substantially completed, and then to remove all of the auxiliary bracing as well as the main support members. These members can then be reused either without modification on identical stair units or with modification on similar stair units. The base members of the lower stair unit can either be left embedded in the concrete floor of the stair well or they can be removed before pouring the concrete floor. Either before or after the bracing members have been removed, stair rails of known types can be installed along the inner stringers of the runs of stairs. If desired, the main support members 13 and 14 can be cut off at predetermined points after the stair wall walls have been constructed, and these portions of the main support members can be capped so as to serve as newel posts for the stair railings. However, if this is done it is usually desirable to fabricate the main support members from structural material which is more attractive in appearance than the structural piping which is shown in the disclosed embodiments. For instance, three inch square tubing of the type frequently used for newel posts could be readily used, and permanently welded to the inside stringers of each successive run of stairs. Upon completion of the stair well these tubes could then be cut off at proper heights above the landings and at the bottom edges of the stringers directly above, cap the open ends as newel posts.

It will be seen that because the major weight of the stair units is borne by the main support members 13 and 14, the auxiliary bracing members can be fabricated from relatively light and inexpensive structural material, and when coupled with the reduced lengths of the bracing required, this results in a substantial savings in the over-all cost of the stair unit.

The embodiment disclosed in the drawings has been actually constructed, with the upper unit stacked on the lower unit as shown. It was found that the disclosed structure functions perfectly, and that the resulting assembly was surprisingly stable. In the actual construction of the device, two-inch inner diameter structural piping was used for the main support members 13 and 14, and piping of considerably smaller diameter was used for the remainder of the auxiliary bracing.

Although steel bar angles were used at certain points in the bracing structure, the device easily could be constructed using all piping, which is considerably cheaper than angles of corresponding sizes and strength. It will be recognized by those skilled in the art that the disclosed embodiment is susceptible of various modifications without departing from the teachings of the invention. For instance, the units could be constructed using only a single main support member of increased size. However, this would probably necessitate tack welding the inner stringers of the runs of stairs to the center main support member at their mid-points, and is believed that the resulting structure would not possess the stability of the disclosed embodiment. As mentioned previously in the specification, the various auxiliary bracing members all could extend either directly or indirectly from the main support members 13 and 14.

Stair units can be fabricated using stair runners and landing platforms of different designs than those shown in the drawings, and the teachings set forth herein would apply equally as well to those elements of different designs. The bracing members can be welded or bolted as desired, but it has been found to be more economical to use tack welds. These welds can then be cut or broken during the process of disassembly to permit salvaging substantially all of the bracing members if desired.

I wish it to be understood that the stair units disclosed in the drawings and described in the specification constitute only a preferred embodiment of my invention, and are not to be taken as limiting in any sense. Since the invention is susceptible of various modifications without departing from the teachings disclosed herein, I do not desire to be limited by the specific embodiments disclosed, but only by the subjoined claims.

Having thus set forth a full disclosure as required by the patent statutes, I claim:

1. A prefabricated self-supporting stair unit comprising: two upright support members; spacing members extending between said upright support members and connected to said support members to maintain said support members in a substantially parallel relationship; base members attached to said upright support members at the lower portions thereof to maintain said support members in a substantially vertical position; a first landing platform connected to a first one of said upright support members at an intermediate point thereof to be supported at least partially by said first upright support member; a second landing platform connected to the second of said upright support members at an upper point thereof to be supported at least partially by said second upright support member; a first run of stairs extending from one of said base members to an edge of said first landing platform and being connected to said first landing platform at said edge; said first run of stairs being wholly disposed on one side of both of said upright support members; a second run of stairs extending between said edge of said first platform and an edge of said second platform, said second run of stairs being connected to each of said platforms and being wholly disposed on the side of said upright support members opposite from said first run of stairs; said first and said second landing platforms having means extending beyond their respective areas and in a direction transverse to the plane of said upright support members for embedding in the walls of a stair well to support the platform after the walls are constructed; means extending downwardly from said first and said second platforms for cooperating with said support members in supporting said platforms in substantially horizontal positions pending the construction of stair wall wells, said last mentioned means being removable from the extreme outer edges of said landing platforms and extending in such directions as to be clear of vertical lines extending from the corners of said landing platforms.

2. A stair unit as recited in claim 1 further comprising means at the upper ends of said upright support members for receiving a second stair unit of the type substantially as set forth in claim 1.

3. A stair unit as set forth in claim 2 wherein said upright support members are hollow pipes, and said last mentioned means comprise dowel members extending from the centers of said upright support members.

4. An assembly of stacked prefabricated stairway units comprising: an upper stair unit; a lower stair unit; said lower stair unit comprising two upright support members; means supporting said upright support members vertically and in substantially parallel relationship to each other; a first landing platform detachably connected to a first one of said upright support members at an intermediate point of said first landing support member and substantially at the mid-point of one edge of said first landing platform to be supported at least partially by said first upright support member; a second landing platform detachably connected to the second of said upright support members at an upper point on said second upright support members.
support member and substantially at the mid-point of an edge of said second landing platform to be supported at least partially by said second support member; a first run of stairs connected at one of its ends to a portion of said edge of said first landing platform and at the other ends to said means for supporting said upright support members in vertical positions, said first run of stairs being located wholly on the side of said upright support members; a second run of stairs connected at one of its ends to another portion of said edge of said first landing platform and at the other of its ends to a portion of said edge of said second landing platform, said second run of stairs being located wholly on the side of said upright support members opposite from the side on which said first run of stairs is located; said first and second landing platforms having means extending beyond their respective platform areas for embedding in the walls of a stair well to support the platforms and stairs after the walls are constructed; detachable means for cooperating with said upright support members in supporting said first and second landing platforms horizontally until the walls of the stair well are constructed; means on the upper portion of said first stairway unit for permitting said second stairway unit to be guided into vertically stacked relationship with said first stair unit; said second stair unit comprising two upright support members disposed parallel to each other and in alignment with respective edge of said second landing platform and means for supporting said upright support members of said lower stair unit; a third landing platform disposed above said first landing platform and connected to a first one of said upright support members of said upper stair unit at an intermediate point thereon and substantially at the mid-point of an edge of said third landing platform; a fourth landing platform disposed above said second landing platform and connected to the second of said upright support members for said upper stair unit at the upper end thereof and substantially at the mid-point of an edge of said fourth landing platform; a third run of stairs connected at one of its ends to a portion of said edge of said second landing platform and at its other end to a portion of said edge of said third landing platform, said third run of stairs being located wholly on one side of said upright support members for said upper stair unit and disposed vertically above said first run of stairs; a fourth run of stairs connected at one of its ends to a portion of said edge of said third landing platform and at its other end to a portion of said edge of said fourth landing platform, said fourth run of stairs being located wholly on the side of said upright support members for said upper stair unit opposite from the side on which said third run of stairs is located and vertically disposed above said second run of stairs; said third and fourth landing platforms having means extending beyond their respective platform areas for embedding in the walls of a stair well to support the platforms and stairs after the walls are constructed; and detachable means for supporting said third and fourth landing platforms horizontally until the walls of the stair well are constructed.

5. An assembly as set forth in claim 4 wherein said upper stair unit further comprises means in the upper portion of said upper stair unit for permitting another upper stair unit to be guided into vertically stacked relationship with said lower and upper stair units.

6. An assembly as set forth in claim 4 wherein said means for supporting said landing platforms horizontally are displaced from the extreme outer edges of said landing platforms and extend in such directions as to be clear of vertical lines extending from the corners of said landing platform.

7. A prefabricated stairway assembly comprising: a lower stairway unit; an upper stairway unit; said lower stairway unit comprising two upright support members; means supporting said upright support members vertically and in fixed relationship to each other; a first horizontal landing platform connected at substantially the mid-point of one of its edges to an intermediate point of a first one of said upright support members to be at least partially supported thereby pending the construction of stair well walls; a second horizontal landing platform connected at substantially the mid-point of one of its edges to the upper end of the second one of said upright support members to be at least partially supported thereby pending the construction of stair well walls; a first run of stairs extending wholly on one side of said upright support members from the area of the lower end of said second upright support member to the edge of said first landing platform and being connected to said edge; a second run of stairs connected to and extending between the edge of said first stair unit and said first run of stairs; a third run of stairs comprising third and fourth runs of stairs and said second landing platform, but on the side of said upright support members opposite from the side on which said first run of stairs is located; means for cooperating with said upright support members in temporarily supporting said landing platforms in horizontal position; said upper stair unit comprising two upright support members vertically positioned and fixedly spaced to coincide with respective ones of said upright support members for said lower stair unit; said upper stair unit including a third run of stairs, a third landing platform, a fourth run of stairs, and a fourth landing platform corresponding respectively to said first run of stairs, said first landing platform, said second run of stairs, said second landing platform, and being correspondingly located and connected; means for connecting said upright support members of said upper stair unit to said upright support members of said lower stair unit in substantially vertical alignment; the lower end of said third run of stairs being located to mutually engage the edge of said second landing platform for attachment thereto on the portion of said edge removed from the portion to which said second run of stairs is connected; and means carried by each of said landing platforms extending beyond the respective platform areas for embedding in the walls of a stairwell during construction of the stair well walls so as to provide full support for said runs of stairs and said landing platforms.

8. A self-supporting stair unit comprising: a first run of stairs disposed at an angle to the horizontal; a first horizontal landing platform having a portion of one of its edges connected to the upper end of said first run of stairs; a second run of stairs disposed at an angle to the horizontal but substantially oppositely disposed from said first run of stairs; said second run of stairs being connected to a portion of said edge of said first landing platform disposed from the portion to which said first run of stairs is connected; a second horizontal landing platform; said second run of stairs being connected at its upper end to a portion of an edge of said second landing platform; means carried by each of said landing platforms extending beyond the respective platform areas for embedding in the walls of a stair well during construction of the stair well walls so as to provide full support for said runs of stairs and said landing platforms; support means for supporting said runs of stairs and said landing platforms as a rigid integral unit prior to the construction of the walls of the stair well; said support means comprising main support means extending vertically through the space defined by said edges of said first and second landing platforms and the adjacent sides of said first and second runs of stairs, and auxiliary support means cooperating with said main support means for supporting said main support means vertically and for every portion of said landing platforms horizontally; said support means being detachably connected to said runs of stairs and to said landing platforms for selective removal after the walls of the stair well have been constructed.

9. An assembly as set forth in claim 8, further comprising: a second stair unit vertically disposed above the first said stair unit; said second stair unit comprising third and fourth runs of stairs and third and fourth landing
platforms substantially corresponding respectively to said first and second runs of stairs and said first and second landing platforms as to positions and connections; main support means for said second stair unit disposed for vertical connection with said main support means for the first said stair unit; the lower end of said third run of stairs being positioned to engage matingly with said edge of said second landing platform adjacent to, but spaced from, the portion of said edge to which said second run of stairs is connected.

10. An assembly as set forth in claim 9 wherein the main support means of one of said stair units includes a dowel member extending from the end thereof, and the adjacent end of the main support means of the other stair unit includes a female portion for mating engagement with said dowel member.

11. A stair comprising: a first run of stairs; a first landing platform connected to the upper end of said first run of stairs; a second run of stairs connected at its lower end to said first landing platform; a second landing platform connected to the upper end of said second run of stairs; main support members extending upwardly through the space defined by the inside edges of said first and second runs of stairs and said first and second landing platforms for partially supporting said landing platforms and said runs of stairs pending the construction of stairwell walls, and so connected and positioned as to permit their use as newel posts for the runs of stairs; means extending from said landing platforms for embedding in the walls of a stairwell during construction of such walls so as to provide full support for said landing platforms and said runs of stairs after the walls are constructed; and auxiliary support means cooperating with said main support means to maintain said landing platforms horizontally and the entire unit vertically pending the construction of the stairwell walls.

12. A method of constructing a stairway in a building, the steps of: assembling a plurality of runs of stairs with main upright supports supporting the runs of stairs adjacent their end portions; erecting the walls of a stairwell around the assembly thus constructed so as to have the walls of the stairwell support the assembly, and attaching railings to extend between the main support members parallel to at least some of the runs of stairs, whereby the main support members function as newel posts for at least some of said runs of stairs.

13. In a method as recited in claim 12, further comprising cutting at least some of said main support members at newel post height after said stairwell walls have been constructed, and capping the cut ends of said main support members.

14. In a method of constructing a stairway in a building, the steps comprising: erecting a lower run of stairs disposed at an angle to the horizontal and an upper run of stairs disposed at an angle to the horizontal but substantially oppositely disposed from said lower run of stairs so that the lower edge of said upper run of stairs is adjacent to and substantially in line with the upper edge of said lower run of stairs; supporting said lower and upper runs of stairs at least in part by main support members extending upwardly between the runs of stairs adjacent their ends, erecting the walls of a stairwell around the assembly thus formed so as to support said runs of stairs completely by the walls of the stairwell; and extending a railing along at least one of said runs of stairs between said main support members either before or after the construction of said stairwell walls, whereby said main support members function as newel posts in addition to their function as temporary main supporting members.

15. In a method as recited in claim 14, further comprising the steps of severing and capping said main supporting members at newel post height for at least one of said runs of stairs after construction of said stairwell walls, and removing at least the portions of said main supporting members above said severed points.

16. A stair unit comprising: a first run of stairs disposed at an angle to the horizontal; a second run of stairs disposed at an angle to the horizontal but substantially oppositely disposed from said first run of stairs; main support members extending upwardly through the space defined by the inside edges of said first and second runs of stairs adjacent the ends thereof; means connecting said runs of stairs to said main support members to provide partial support to said runs of stairs pending the construction of the stairwell walls; means for embedding in the walls of a stairwell so as to provide full support for said runs of stairs after the walls are constructed; and auxiliary support means cooperating with said main support means to maintain the entire unit vertically pending the construction of the stairwell walls.

17. In a method of pre-erecting stairs, the steps comprising: erecting a lower run of stairs disposed at an angle to the horizontal and an upper run of stairs disposed at an angle to the horizontal but substantially oppositely disposed from said lower run of stairs so that the lower edge of said upper run of stairs is adjacent to and substantially in line with the upper edge of said lower run of stairs; supporting the upper end of said lower run of stairs at least in part by a main support member extending downwardly adjacent the upper end of the inner edge of the lower run of stairs from at least a distance above said upper end substantially equal to newel post height for said lower run of stairs to a supporting base; and supporting the upper end of said second run of stairs by a second main support member extending downwardly from the upper end of the inner stringer of said upper run of stairs at least to the lower end of the inner stringer of the lower run of stairs, whereby at least portions of said main support members can also function as newel posts for at least said lower run of stairs.

References Cited by the Examiner

UNITED STATES PATENTS

521,339 6/94 Fairchild 20—10 X
3,052,332 9/62 Mulitz 189—43
3,095,070 6/63 McDonald 182—178

FOREIGN PATENTS

950,321 10/56 Germany.

HARRISON R. MOSELEY, Primary Examiner.