

Where drying has led to a vertical split in a baluster this can be repaired by applying wood glue to the split and binding the two halves together with tape while drying takes place. Any excess glue should then be sanded off and the wood refinished. A horizontal break will need to be repaired by the insertion of a dowel to ensure structural strength is maintained. Where drying has led to a small split in a tread or riser this should not need any attention but should the split become larger and spread this will require the split element to be repaired as above or replaced.

Treads inevitably become worn over time and badly worn treads will need to be replaced as these can become a safety hazard. Where this is necessary it is best to consult an experienced tradesperson as replacing treads is a difficult operation to perform. Where a tread has to be replaced it is important to specify the style and the wood being used so it will match the originals as closely as possible.

If impact damage has only brought about a small scratch or gouge to the wood filler or a small wood indent can be used to affect a repair. If more serious damage occurs that affects the structural stability of the staircase then the damaged elements will need to be replaced and an experienced tradesperson consulted. Again, wood which will match the original as closely as possible should be used when carrying out any repair or replacement elements are being made.

Balustrades

Excepting those staircases which are enclosed on either side by walls, staircases will incorporate a balustrade. These are most likely to be constructed from either timber or metal and can raise a variety of repair and

maintenance issues. They are fixed to a newel post at the top and bottom of the staircase to provide extra strength.

As balustrades are made of several elements, all of which can become loose through repeated use. Particularly vulnerable parts are the finials on top of newel posts which are often constructed separately from the main body of the post and become loose through people swinging on them as they reach the bottom of the stair. The balusters can also work loose over time, particularly if they are only secured using a nailed butt joint. Loose parts should be refixed using the original method as soon as any looseness is detected. This will ensure the important safety function which balustrades provide is maintained and prevent further damage to adjacent parts. Where severe damage has occurred it may be necessary to replace some elements. These can be manufactured by a skilled joiner to be replicas of the existing balustrade. By having a replacement piece made which matches the original this will ensure the visual integrity of the staircase is maintained.



Wooden Balustrade



Balustrade of metal with wooden bannister

Contacts and Further Reading

Jackson A, Hay D, Period House ISBN: 0007192754

Glasgow West Conservation Trust, Historic Woodwork

Historic Scotland Technical Conservation Group

0131 668 8668

hs.technicalconservationgroup@scotland.gsi.gov.uk

Historic Scotland Investments and Projects Team:

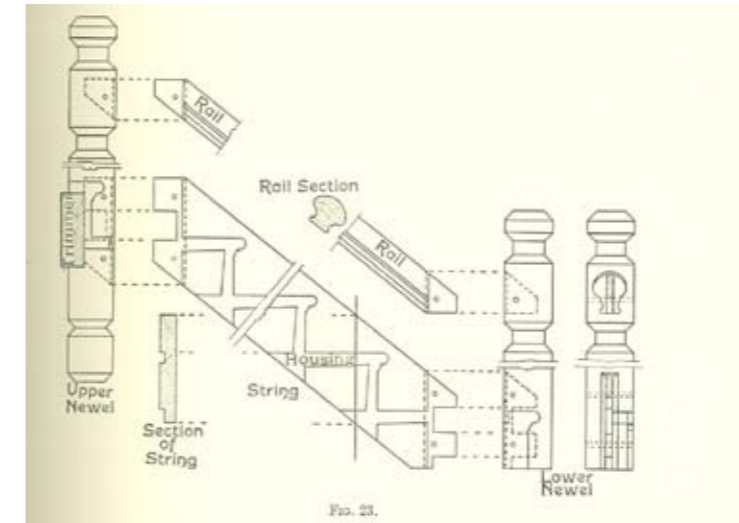
0131 668 8801

hs.grants@scotland.gsi.gov.uk

Historic Scotland Inspectorate:

hs.inspectorate@scotland.gsi.gov.uk

0131 668 8716



HISTORIC SCOTLAND

Principal author: Moses Jenkins

Published by Technical Conservation Group, March 2010

Historic Scotland, Longmore House, Salisbury Place, Edinburgh EH91SH

Tel: 0131 668 8638 Fax: 0131 668 8620

www.historic-scotland.gov.uk email: hs.technicalconservationgroup@scotland.gsi.gov.uk

While every care has been taken in the preparation of this leaflet, Historic Scotland specifically exclude any liability for errors, omissions or otherwise arising from its contents and readers must satisfy themselves as to the principles and practices described.

INFORM

INFORMATION FOR TRADITIONAL BUILDING OWNERS

Timber Staircases

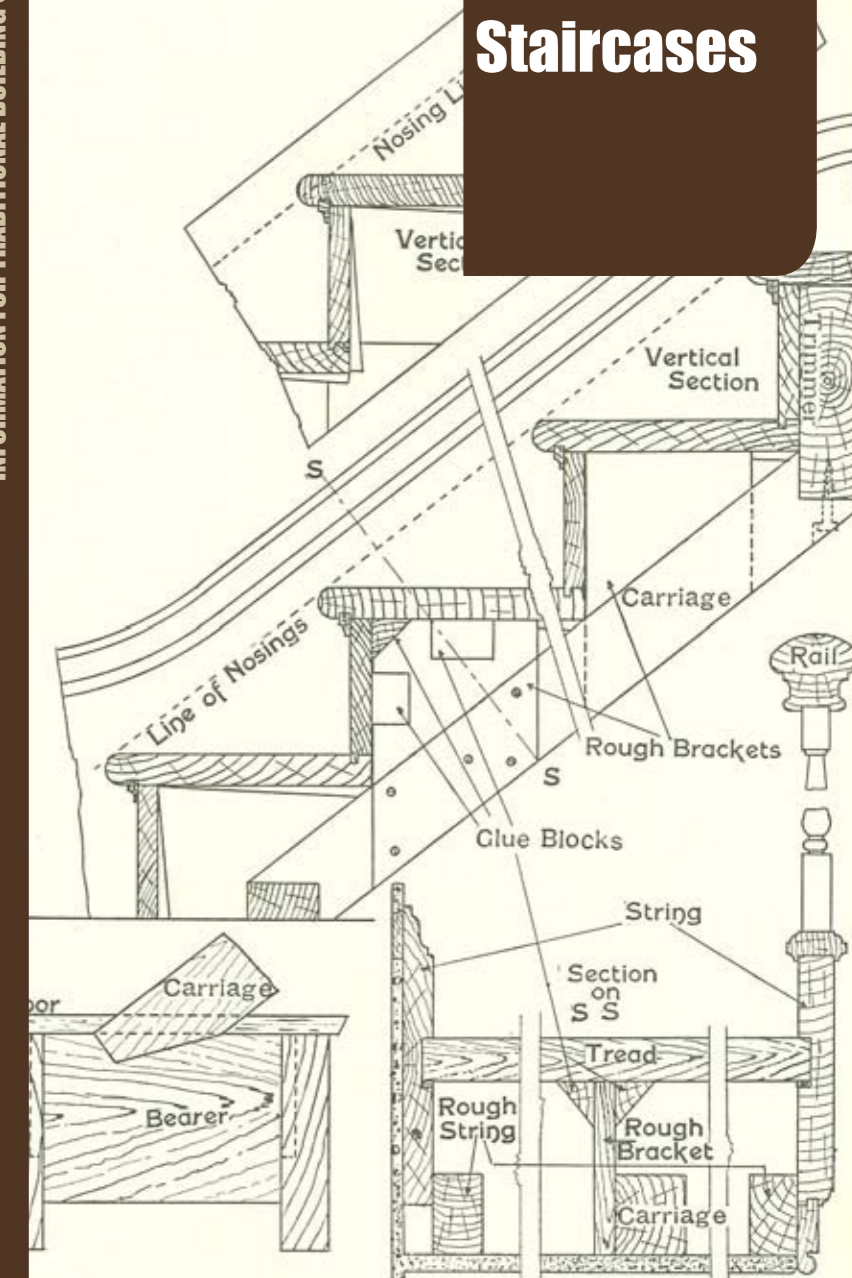


FIG. 31.

FIG. 27.
FIG. 29.

FIG. 30.

The House 05/10 Produced from sustainable material



Introduction

Where access is required to the upper storeys of a building there will be a staircase of some description. In the majority of traditionally constructed buildings the staircase is constructed of timber. Staircases can be complex elements of a building, being made up of a number of parts and raising a number of repair and maintenance issues. This INFORM seeks to explain to building owners the construction of timber staircases, and the issues associated with their repair and maintenance.

The construction of a timber staircase

A correct understanding of how the various elements which make up a timber stair fit together is vital to carrying out proper repairs and maintenance. These parts are:

- Tread: The part of a stair on which the foot is placed
- Riser: The upright element between the treads
- Stringer: The structural side timbers into which the treads and risers are held securely in place
- Baluster: The posts on the exposed side of a staircase for safety
- Banister: The handrail which runs down and is securely fixed to the top of the baluster
- Newel Posts: The posts at the bottom and top of the banister or where a staircase changes direction
- Nosing: The part of the tread which protrudes over the edge of the riser

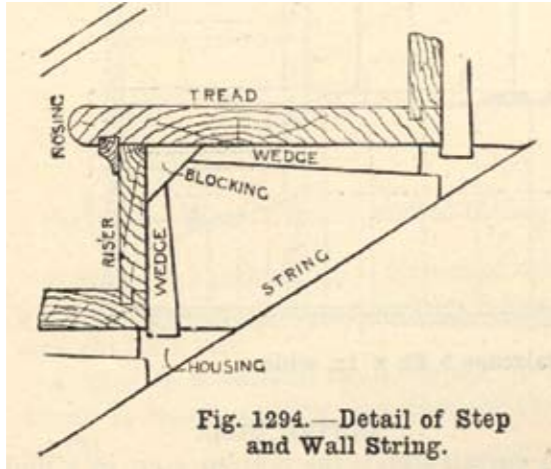


Diagram showing the way a timber staircase fits together

Some of the parts of a timber staircase

Treads and risers are held in place in horizontal and vertical grooves cut into the stringer and then strengthened by the insertion of glued wooden wedges where they meet. The risers are set between consecutive treads and are usually fitted to the treads in a grooved joint, strengthened by small wooden wedges glued to both on the underside. The tread projects slightly over the top of the riser, this is known as the nosing. The stringer which is set against the wall is known as the inner or wall string and that which runs up the outside and holds the baluster, as the outer string. If a stair is over a meter wide it will sometimes have a centre string for support, otherwise triangular blocks of wood are glued and occasionally screwed to the riser and the tread to provide extra stability.

Newel posts located at the top and bottom of a flight of stairs or at right angled changes in direction, perform the function of transferring the weight of the stair to the floors and provide secure support for the balustrades. When made from a solid piece of timber they are usually fixed to the floor by nailing them to floor boards. Occasionally they are made up as a hollow box and secured to the floors with threaded metal rods.

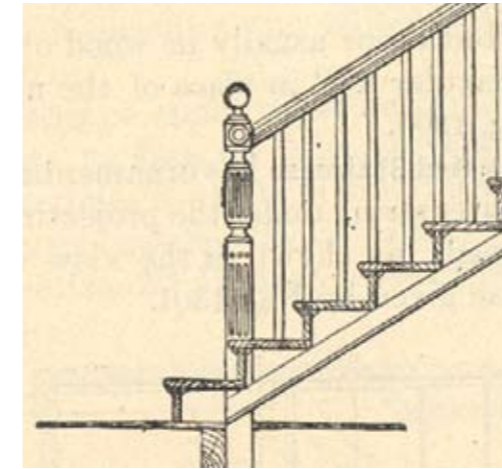


Diagram showing how a Newel post fixes into a floor

Except where staircases are enclosed on either side by walls it will incorporate a balustrade. A balustrade is made up of vertical posts (the balusters) with a handrail fixed on top (the banister). Baluster posts are housed into the underside of the banister and the top edge of the outer string for strength. In a few cases they can be merely butt jointed and nailed to the stringer although this does not provide such a secure fit and is not standard practice. The banister is then in turn fixed to the newel post.

Repair and maintenance of a wooden staircase

Repairing creaking stairs

One of the first signs of defects arising in timber staircases is creaking. This is caused by different timber elements rubbing against each other. Minor creaking is to be expected in timber staircases given they are likely to have been in use for some considerable time. Should creaking become more pronounced repairs may well need to be made to the staircase.

The most likely cause of creaking stairs is the small wooden wedges which hold the treads and risers in place working loose. If these have become loose they should be carefully removed using a chisel ensuring that the surrounding timber is not damaged. It may be possible to reuse these wedges but if they are severely damaged new ones should be cut from suitable wood to the same dimensions as the original. When the wedges are ready to be refitted they should be firmly knocked into place with a hammer in their original position between the stringers and treads and risers. A small amount of suitable wood glue may be used to help keep these in place.

The triangular blocks which hold the treads to the risers can also become loose. If possible the original should be reused although again if this has become damaged a new block can be fashioned to the same dimensions. When refitting such blocks it is important to fit them slightly off where the original was placed so that new screw holes can be located. It is also important to ensure a suitable length of screw is used so as to provide a secure fit but without protruding from the front face of the tread or riser. Before securing any element using screws drill pilot holes in the wood to prevent splitting.

Where possible repairs should be carried out from underneath the staircase. If this is not possible then work will need to be carried out from above. This may involve removing some of the treads and risers or simply drilling and screwing from the front of the tread into the riser below. This technique should only be employed where the surface of the treads is covered. Where a polished decorative hardwood makes up the tread the insertion of screws should be avoided and a small amount of wood glue used to secure loose elements.



Re-fixed blocks holding tread and risers securely in place

Timber decay

In common with all timber elements in a building, staircases can suffer from decay caused by either rot or insect attack when conditions are both warm and damp. For either of these decay mechanisms to take hold moisture must be present in the wood. This can come from a number of sources but the most common to affect timber staircases is damp. Damp can particularly affect the string course which is adjacent to a masonry wall as dampness can travel from the wall into the wood. In order to avoid dampness entering timber staircases it is important to ensure that adequate ventilation is provided for the areas underneath stairs and that walls which abut

on staircases are likewise kept dry and well maintained.

Replacing damaged elements

A number of other factors can lead to elements within a wooden staircase needing to be replaced. These include:

- Drying causing splits to occur in wood
- Wear, given the heavy traffic experienced by a wooden staircase the wood will inevitably suffer from some wear.
- Impact damage, this can be caused by a variety of hazards such as moving furniture or decorative work