



## *GENERAL BUILDING ENGINEERING*

# *WOODEN CONSTRUCTION WALLS IN BUILDINGS*



Erasmus+



Photo The Uniate church in Kostomłoty. Source: wikimedia



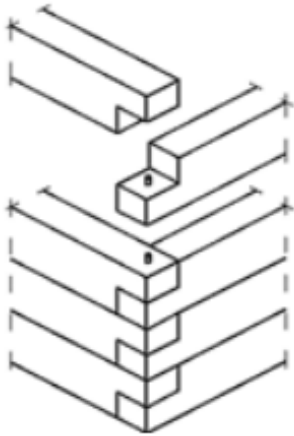
Photo. Wall construction with ticks.  
Source: architektura.knap.cz Źródło: architektura.knap.cz



Photo. A church construction with swords. source: wikipedia

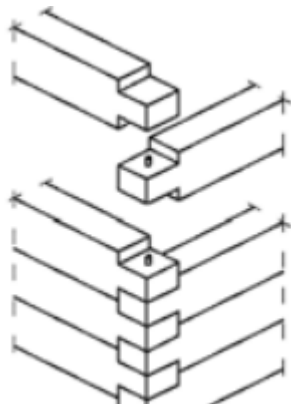
# Types of connections of wall elements in a coronary structure:

- Straight overlay with pins



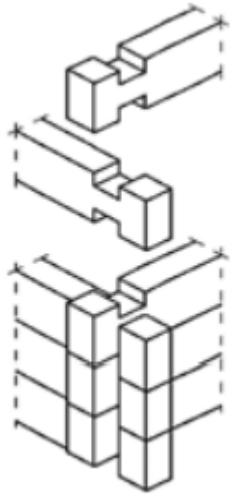
The ends of the beams are cut in half and half by wreaths aligned from the top and bottom. [1]

- On the shell without any remnants (double sided cover with pins)



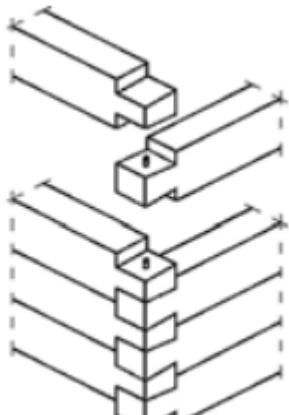
The wreaths are not aligned, the beams pass each other alternately. The so-called. smooth coals, necessary pinning. [1]

- Both sides with remnants (double-sided overlay with remnants)



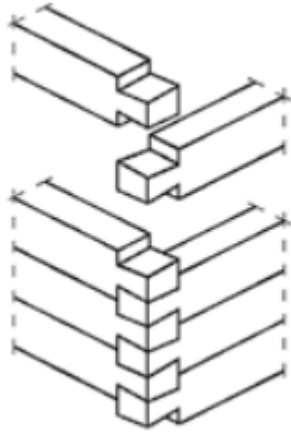
Like the above, with remnants left behind the face of the wall.  
Mutable connection, if remnants are released. [1]

- Double-sided cover extended



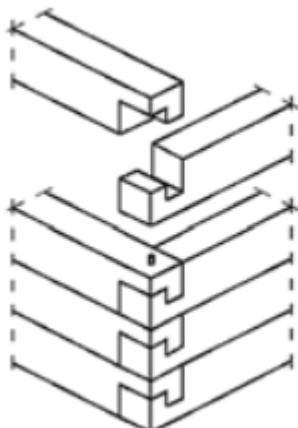
The cover is widened on both sides - in one beam from the side from the inside, in the other from the end. The so-called galvanizing, connection secured against one-way extension. [1]

- Slavic joint, Tyrolean joint



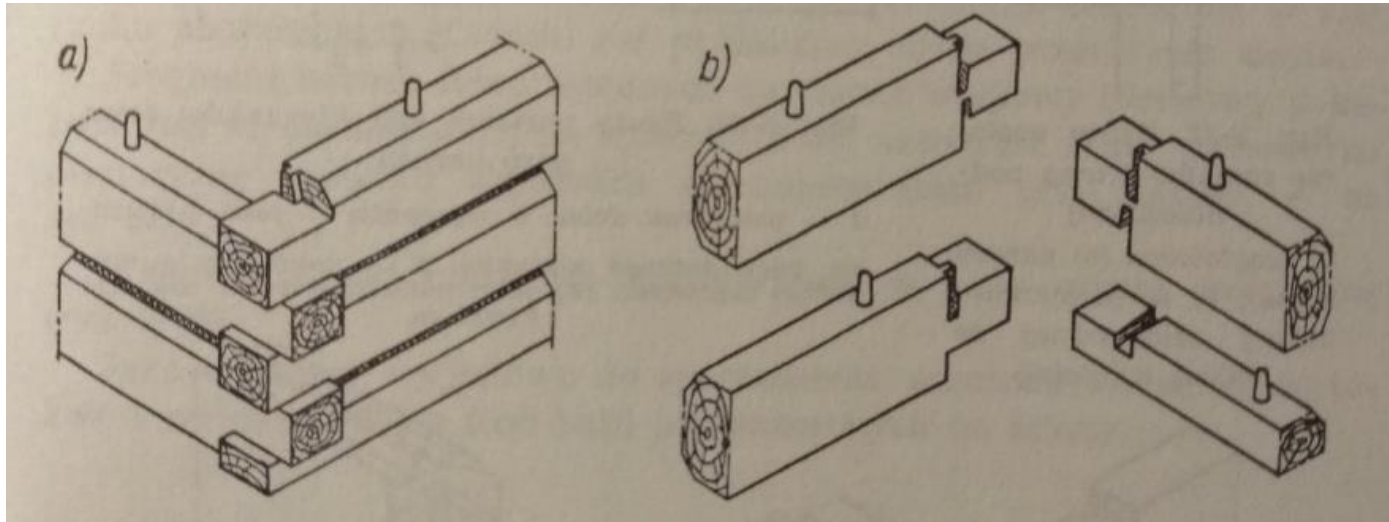
Notches in the beams widened both at the ends and on the inside of the sides [1]

- French joint



Wreaths aligned on both sides with cutouts forming a lock, one of the beams is held with a hook end, the other is widened with a dovetail. [1]

- Podhalanski joint



In structural terms, this is a variation of the corner joint into a cross-over, concentrated and sealed with wedge-shaped fingers called fingers that are clamped in the corresponding grooves. Walls joined together with such locks form a stiff whole, so that you can set them without foundations, supporting only in corners on larger stones. [3]

The joints with the lasts prevented the beams from spreading out on the coils and formed stable corners. They were simple pleats or dovetail. Connectors without residues were made as straight or diagonal pleats. They were characterized by poorer thermal insulation - they were frozen in the corners due to the higher heat transfer coefficient for wood along than across the fibers. [2]





Chapel pw. Of the Sacred Heart of Jesus in Zakopane source: apartamenty-tatry.com.pl



Buildings with coronal walls are characterized by numerous advantages: execution speed use of cheap local forces. Healthy living conditions resulting from high thermal properties of wood. The possibility of partial use at the endless building Lower construction costs compared to refractory buildings. The most serious disadvantage of buildings with coronal walls is settlement of them due to drying and shrinking of wood. [2] [3]



Wooden church in Haczów, the largest log church in Europe.  
Source: [wypadnaweekend.blogspot.com](http://wypadnaweekend.blogspot.com)

## Wall skeleton wall

It is a structural system consisting in separating the functions of supporting elements (frame) and filling elements (walls or shields).

In wooden wall constructions, you can distinguish:

Walls with a wooden frame with a brick filling. It is a half-timbered wall known as the colloquial wall or a professional.



Historic tenement house ul. Sandomierska 49 in Gdańsk - half-timbered construction with a Prussian wall.  
photo: aspirin, source: <http://zabytki.ocalicodzapomnienia.eu>



The Spar- und Bauverein building in Poznań from 1897, source: pl.wikipedia.org

Walls with a wooden frame filled with cane or straw mixed with clay. It is called a half-timbered construction. In practice, especially in the case of plastering walls, one can not distinguish between a half-timbered house and a Prussian wall, so often, especially colloquially, these names are used interchangeably.



wołowo, an example of half-timbered (timber) construction dating back to 1865, source: pl.wiki

Skeletal walls made of logs and boards - they consist of vertical log posts with the height of storey of the building, braces stiffened in the corners. The corner posts of buildings with higher heights are made as continuous from three logs connected with each other. Overhang bolts are placed above the window and door openings. For the skeleton, boarding (shuttering) is fixed with nails vertically or horizontally. Planking can be made as double-sided or single-sided, then from the side of the room panels made of wood-based materials, which can be plastered, for example. The space between the claddings is filled with insulating material. In the construction of such walls, sawdust and peat were often used.



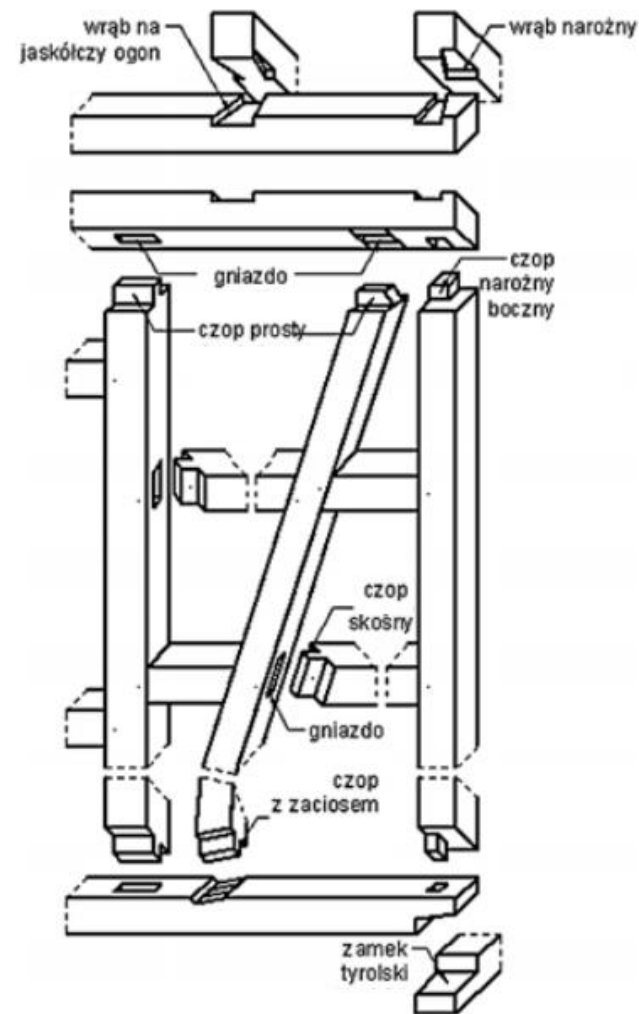
Church of St. Hubert in Nowe Warpno



Evangelical Church Rzym.-Kat. pw. St. Antoni Padewski in Golce, photo: Waldemar Witek

The foundations were formerly made of oak. Arranged on the foundation, along the entire length, they were connected in corners to a finned lock (also called Tyrolean),

- with a straight pin or a French zipper. Their task is to transfer the weight of their own building and other loads to the foundation, usually made of brick or stone.
- intermediate (middle) poles were connected with the foundation for straight spigots,
- corner posts were connected with the foundation for side plugs (offset);
- the shots are inserted into the foundation and the cap is slanted with slants or without (not connected with poles);
- bolts connected with poles to straight spigots (pegged connection), and in lintels and window sills with shed. Bolts with braces were connected to oblique plugs (pegged connection);
- in the caps the poles and columns were put in. The hooks were joined in the corners as foundations, there were roof beams connected to the joists at the gingers (dovetail, corner). [1] [4]



# Sumic-post construction of walls

A construction also called a frame, in which the associated poles (pillars) play the main role. At the top and bottom of the horizontal beams. The filling of fields between columns is short dusks or draws - totals. It is a construction related to the half-timbered construction static, but much less solid. [2]



Fot.20. Dom z konstrukcją sumikowo-łątkową w Oberrieden (Szwajcaria) źródło: wikipedia



## Half-timbered house

The essence of such a house is that the upper floors are based on the overhangs, or arched supports surrounding the wooden cutting room. Przystupy resemble arcades, they are decoratively carved. Between them there are windows of a log house (a beam) - a wooden "chest", which does not have a supporting function for higher storeys. It is a residential part in which traditionally the weavers had their headquarters. Complicated the construction was invented just now for them to dampen vibrations well loom. The logging room was separated hallway (with stairs to the first floor) from economic, usually brick from stone or brick. Partially the economy could be located for example, a stable. [7]



Photo. Maja Mozga-Górecka , source:muratorodom.pl



Photo.: Maja Mozga-Górecka, źródło: domprzyslupowy.blogspot.com



Photo.: Maja Mozga-Górecka, źródło: domprzyslupowy.blogspot.com

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