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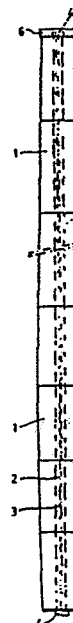
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⑤④ **A pile construction for fender and other wood constructions.**

⑤⑦ A pile construction for fender and other wood constructions, which pile construction consists of timber pieces (1) joined in the length together by means of at least one stretch rod (3) pulled through holes (2) drilled in longitudinal direction in said timber pieces (1) in which the joining parts (1) are sawn smooth in a plane normal to the length of said timber pieces (1), which timber pieces (1) can have a different diameter in such way that the part with the greatest diameter is situated in that part of the pile which is highest loaded.



A pile construction for fender and other wood constructions.

The invention relates to a pile construction by which piles of wood can be constructed in longer lengths than trees are growing.

5 Constructions of square wooden piles are known in which
several piles are connected together by means of steel
plates or profiles. Such type of connection, however,
can only be used a few times for one pile and till a
maximum diameter of about 50 or 60 cm, because of the
lack of elasticity at the position of the connection
10 and the high costs for such a connection.

An object of the invention is primary to obtain long
lengths of piles while retaining the good elastic
properties of wood. A second object of the invention
is to make it possible to use short timber pieces in
15 their natural shape, which pieces remain by the
production of wood in forest and sawmill.

According to the invention a construction is proposed
consisting of timber pieces joined in the length together
by means of at least one stretch rod pulled through
20 holes drilled in longitudinal direction in said timber
pieces, in which the joining parts are sawn smooth
in a plane normal to the length of said timber pieces.

Normally the length of said timber pieces will lie
between 100 and 200 cm, but it will be clear, that
25 other lengths can be used as well.

By using the construction according to the invention at the same time faults present in the growing tree can be eliminated without a big loss of material.

5 By combining timber pieces with a different diameter the strength of a pile can be influenced in a such way that the part with the greatest diameter is situated in that part of the pile which is highest loaded, such that material can be saved.

10 According to the invention in case of one hole being drilled in each of said timbers this hole will be positioned near the center of said timbers, while the diameter of said hole depends on the diameter of the stretch rod to be used.

15 After drilling a hole in each individual timber, the timbers are placed beside each other in such way that the part with the greatest diameter is situated in that part of the pile which is highest loaded, the diameter of the adjacent lying parts being gradually smaller.

20 After this the stretch rod can be passed through the holes in the adjacent timbers for connecting the parts together.

25 It will be clear, that also more than one hole can be provided in each timber, so that more than one stretch rod can be provided. The stretch rods can have the shape of a solid steel bar or can be shaped by steel wires or by artificial material, e.g. carbon fibers and such like.

30 These stretch rods are pre-stretched till the desired load is obtained and can be blocked in a well known way. Attention must be paid to the fact that the plates, in particular steel plates, which are bringing over the load of the rod on the surface of the wood, are having a sufficient surface to do so.

It is also possible to pre-stretch two or more pieces together at the moment of joining of the timber pieces, which gives the opportunity to make bended constructions or piles with a break point at a pre-chosen place.

- 5 If it is desired to have a smooth outside surface of a pile, this can be obtained in a sawmill.

- When wood of less durability is used a center hole in it can be filled with anti-mould and/or an insect killing and/or a rost protection medium, which medium will
10 penetrate entirely into the material of the pile.

For an easy joining it is recommendable to use an accessory like a piece of artificial tube when connecting the timber parts, by placing said piece of tube in the ends of the drilled holes.

- 15 In special cases it is possible to apply a packing material between the pieces of timber.

The invention will be explained by the description of embodiments given in the drawing, in which:

- figure 1 and 2 are side elevational views of two
20 different piles according to the invention;
figure 3 is an exploded view of a pile according to the invention;
figure 4 is a view on a part of the pile of figure 3;
and
25 figure 5 is a sectional view of the pile of figure 3.

- The piles shown in the figures 1, 2 and 3 are composed of a number of pieces of timber 1. Each piece 1 is provided with a longitudinal hole 2 through which runs a stretch rod 3. The ends of this stretch rod 3 are
30 fastened in blocks 4, which can be made of steel.

Between the blocks 4 and the end of the adjacent piece of timber 1 a plate 5, see figure 4, is provided for dividing the force exerted by the block 4 over the end

surface of the piece of timber 1.

In this way in most cases it will be sufficient to use only one stretch rod 3.

5 The diameter of the hole 2 is made such large, that the hole can contain a sufficient amount of protective liquid which will penetrate into the wood of the entire pile.

Further the top of the pile is covered by a cap 6 for protecting the stretch rod 3 and the fastening block 4 for this.

10 In case of the piles according to figures 1 and 2 the pieces of timber 1 with the greatest diameter are positioned at the place of the pile which will be heaviest loaded.

In case of the pile according to figure 1 the outer surface of the pieces is worked afterwards for obtaining
15 a smooth outer surface of the pile.

In case of the pile of figure 3 all pieces of timber have the same diameter.

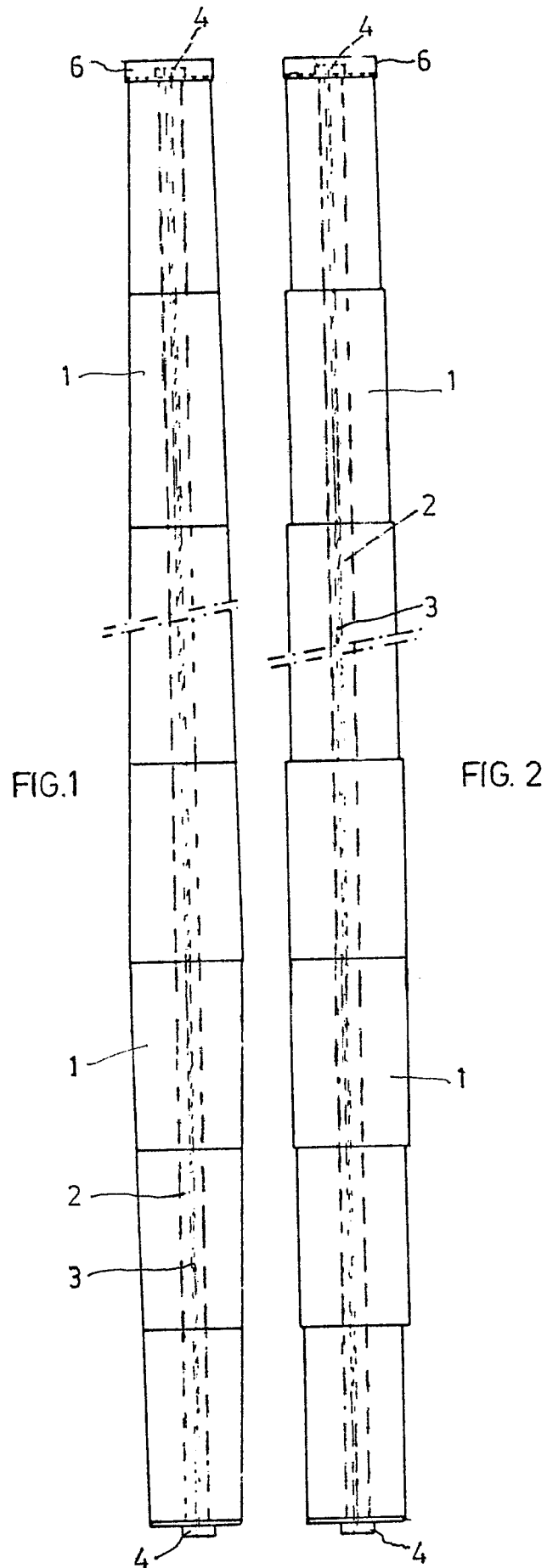
It will be obvious that only some embodiments of the invention are described and that various modifications
20 are possible without leaving the scope of the invention.

Claims:

1. A pile construction for fender and other wood constructions,
characterized in
that the pile construction consists of timber pieces
5 (1) joined in the length together by means of at
least one stretch rod (3) pulled through holes (2)
drilled in longitudinal direction in said timber
pieces (1), in which the joining parts (1) are
sawn smooth in a plane normal to the length of
10 said timber pieces (1).
2. A pile construction according to claims 1,
characterized in
that it consists of timber pieces (1) with a
different diameter in such way that the part with
15 the greatest diameter is situated in that part
of the pile which is highest loaded.
3. A pile construction according to claim 1 or 2,
characterized in
that only one hole (2) is drilled in each of said
20 timber pieces (1), which hole (2) is positioned
near the center of said timber pieces, while the
diameter of it depends on the diameter of the
stretch rod (3) which is used.
4. A pile construction according to one of the
25 preceding claims,
characterized in
that between the locking part (4) of the stretch
rod (3) and the adjacent surface of a timber piece
(1) is positioned a metal plate (5) for bringing
30 over the load of the stretch rod (3) on the surface
of the timber piece (1).
5. A pile constructions according to one of the
preceding claims,

characterized in
that said stretch rod (3) is also blocked between
two of said timber pieces (1).

- 5 6. A pile construction according to one of the preceding
 claims,
 characterized in
 that the holes in the timber pieces are filled
 with anti-mould and/or an insect killing and/or
 a rost protection medium, which medium will penetrate
10 entirely into the material of the pile.
7. A pile construction according to one of the preceding
 claims,
 characterized in
 that the outside of the pile is worked smooth over
15 the hole or a part of its length.
8. A pile construction according to one of the preceding
 claims,
 characterized in
 that a packing material is inserted between two
20 timber pieces (1).



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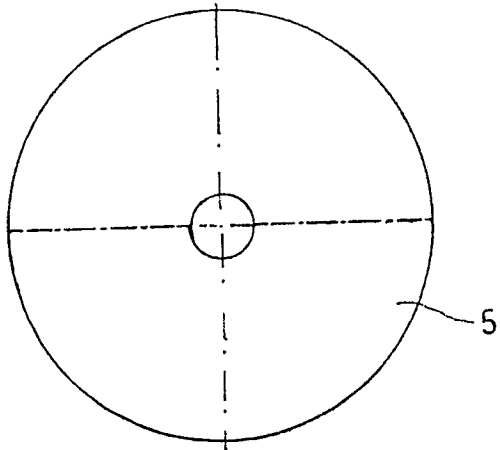


FIG. 4

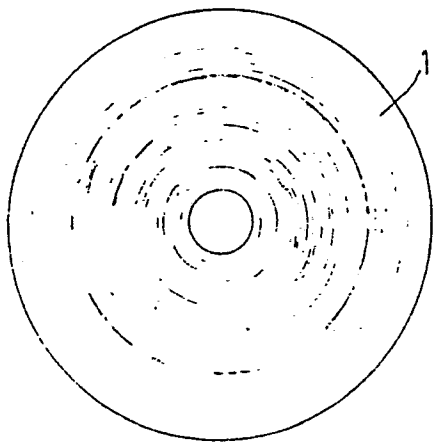


FIG. 5

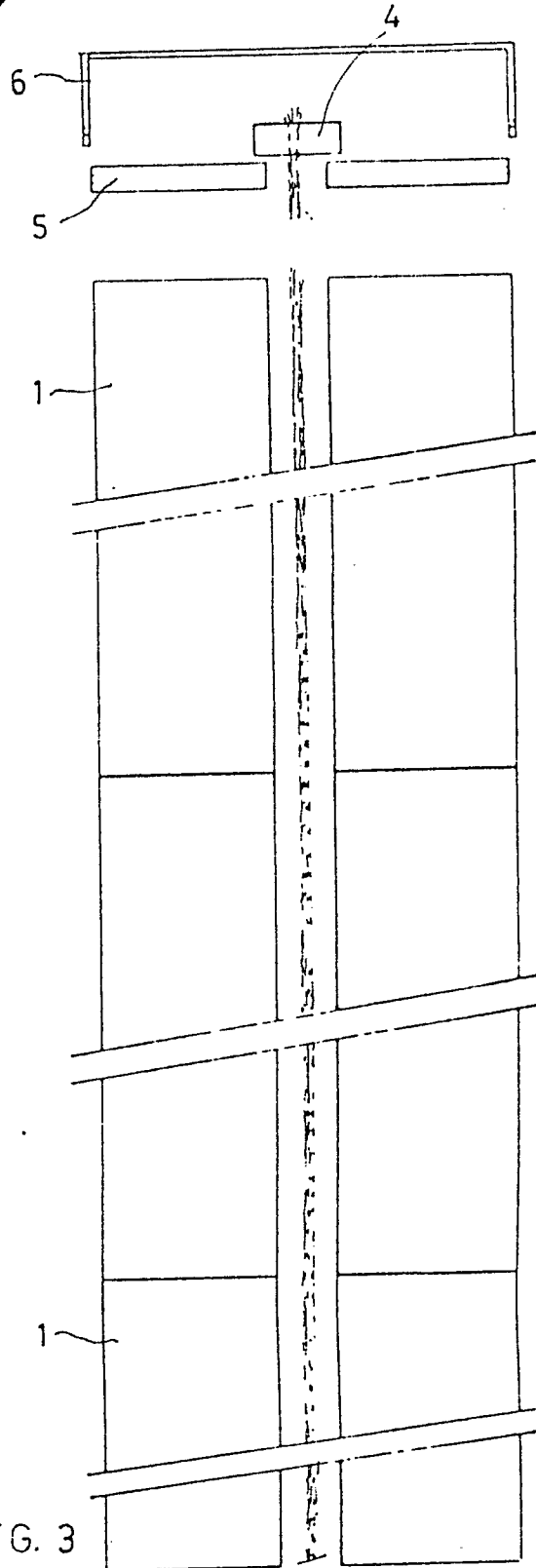
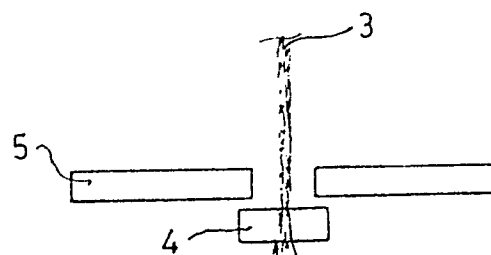


FIG. 3





European Patent
Office

EUROPEAN SEARCH REPORT

0056287
Application number
EP 82 20 0012

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int. Cl. ³)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
A	<u>FR - A - 2 264 144</u> (MICOPERI S.P. A) * Page 1, line 28 - page 2, line 1; figure 1 * --	1,2	E 02 B 3/22
A	<u>FR - A - 2 022 164</u> (MULLENSCHLA- DER)		
A	<u>NL - C - 76 799</u> (N.V. SCHOKBETON) ----		
			TECHNICAL FIELDS SEARCHED (Int.Cl. ³)
			E 02 B E 04 B E 04 H E 02 D
			CATEGORY OF CITED DOCUMENTS
			X: particularly relevant if taken alone Y: particularly relevant if combined with another document of the same category A: technological background O: non-written disclosure P: intermediate document T: theory or principle underlying the invention E: earlier patent document, but published on, or after the filing date D: document cited in the application L: document cited for other reasons
The present search report has been drawn up for all claims			&: member of the same patent family, corresponding document
Place of search The Hague	Date of completion of the search 24-03-1982	Examiner CLASING	