CLAIMS

1. A lattice structure constituting a portion of a working machine and detachably couplable to another lattice structure adjacent to the lattice structure, the lattice structure comprising:

a plurality of main members extending along a longitudinal direction of the lattice structure and arranged at intervals in a direction perpendicular to the longitudinal direction;

a plurality of diagonal members each extending so as to be inclined with respect to the longitudinal direction, each of the diagonal members connecting two main members among the plurality of main members with each other;

a plurality of connectors respectively connected to ends of the main members in the longitudinal direction thereof; and

at least one reinforcement part, wherein

the main members include a first main member and a second main member,

the connectors include a first connector connected to an end of the first main member and a second connector connected to an end of the second main member,

the diagonal members include a plurality of first diagonal members connecting the first main member and the second main member with each other, the first diagonal members including a first nearest diagonal member located nearest to the first connector, ~~and~~

the at least one reinforcement part includes a first reinforcement part extending from the first nearest diagonal member to the second main member ~~or the second connector~~ in a first specific direction for connecting the first nearest diagonal member~~,~~ and the second main member ~~or the second connector~~ with each other~~.~~, and

the first specific direction is perpendicular to the longitudinal direction of the lattice structure,

the lattice structure further comprising a sub-reinforcement part for connecting the first main member and the first nearest diagonal member with each other, the sub-reinforcement part being arranged at such a position as to overlap the first reinforcement part when the sub-reinforcement part is viewed in the first specific direction and extending from the first main member to the first nearest diagonal member in a direction parallel to the first specific direction, wherein

the first reinforcement part constitutes a portion of a continuous member continuously extending from the first main member to the second main member in the first specific direction, the portion including an end of the continuous member that is connected to the second main member, the continuous member being made of a single member,

the sub-reinforcement part constitutes another portion of the continuous member, the another portion including another end of the

continuous member that is connected to the first main member, and

the first nearest diagonal member includes:

an intermediate section included in the continuous member and located between the first reinforcement part and the sub-reinforcement part;

a first member connected to the intermediate section and extending from the intermediate section to the first main member or the first connector; and

a second member connected to the intermediate section and extending from the intermediate section to the second main member,

the second member is a cylindrical pipe, and the first member is a plate-like member or a shaped steel member, the shaped steel member having a pair of flanges extending parallel to each other and a web perpendicular to the flanges for connecting the flanges with each other.

2. The lattice structure according to claim 1, wherein

the first nearest diagonal member has one end connected to the first connector and another end connected to the second main member so that the first nearest diagonal member connects the first main member and the second main member with each other.

~~3. The lattice structure according to claim 1 or 2, wherein~~

~~the first specific direction is perpendicular to the longitudinal direction of the lattice structure.~~

~~4.~~3. The lattice structure according to claim 1 or 2~~any one of claims 1 to 3~~, wherein

the main members further include a third main member and a fourth main member,

the first main member and the second main member are respectively disposed, when the lattice structure is viewed in the longitudinal direction thereof, at positions corresponding to two adjacent vertices among four vertices of a quadrangular shape, and the third main member and the fourth main member are disposed at positions corresponding to remaining two vertices among the four vertices,

the connectors further include a third connector connected to an end of the third main member and a fourth connector connected to an end of the fourth main member,

the diagonal members include a plurality of second diagonal members connecting the third main member and the fourth main member with each other, the second diagonal members including a second nearest diagonal member located nearest to the third connector, and

the at least one reinforcement part further includes a second reinforcement part extending from the second nearest diagonal member to the fourth main member or the fourth connector in a second specific

direction for connecting the second nearest diagonal member, and the fourth main member or the fourth connector with each other.

~~5.~~4. The lattice structure according to claim ~~4~~ 3, wherein

the second nearest diagonal member has one end connected to the third connector and another end connected to the fourth main member so that the second nearest diagonal member connects the third main member and the fourth main member with each other.

~~6.~~5. The lattice structure according to claim ~~4~~ 3 or ~~5~~ 4, wherein

the second specific direction is perpendicular to the longitudinal direction of the lattice structure.

~~7. The lattice structure according to any one of claims 1 to 6, further comprising~~

~~a sub-reinforcement part for connecting the first main member and the first nearest diagonal member with each other.~~

~~8. The lattice structure according to claim 7, wherein~~

~~the sub-reinforcement part is arranged at such a position as to overlap the first reinforcement part when the sub-reinforcement part is viewed in the first specific direction.~~

~~9. The lattice structure according to claim 8, wherein~~

~~the sub-reinforcement part extends from the first main member to the first nearest diagonal member in a direction parallel to the first specific direction.~~

~~10. The lattice structure according to any one of claims 7 to 9, wherein~~

~~the first nearest diagonal member is a continuous member continuously extending from the first main member or the first connector to the second main member,~~

~~the first reinforcement part has one end and another end in the first specific direction, the one end being connected to the first nearest diagonal member and the another end being connected to the second main member or the second connector, and~~

~~the sub-reinforcement part has one end connected to the first main member and another end connected to the first nearest diagonal member.~~

~~11. The lattice structure according to claim 10, wherein~~

~~the sub-reinforcement part is made of at least a plate-like member, a shaped steel member, or a member having a box shape.~~

~~12. The lattice structure according to any one of claims 7 to 9, wherein~~

~~the first reinforcement part constitutes a portion of a continuous member continuously extending from the first main member to the second main member or the second connector in the first specific direction, the portion including an end of the continuous member that is connected to the second main member or the second connector,~~

~~the sub-reinforcement part constitutes another portion of the continuous member, the another portion including another end of the continuous member that is connected to the first main member, and~~

~~the first nearest diagonal member includes:~~

~~an intermediate section included in the continuous member and located between the first reinforcement part and the sub-reinforcement part;~~

~~a first member connected to the intermediate section and extending from the intermediate section to the first main member or the first connector; and~~

~~a second member connected to the intermediate section and extending from the intermediate section to the second main member.~~

~~13.~~6. The lattice structure according to any one of claims 1 to 5~~claim 12~~, wherein

the first member is arranged at such a position as to overlap the second member when the first member is viewed in a longitudinal direction of the second member.

~~14.~~7. The lattice structure according to claim ~~13~~ 6, wherein

a longitudinal direction of the first member is parallel to the longitudinal direction of the second member.

~~15. The lattice structure according to any one of claims 12 to 14, wherein~~

~~the first member is made of at least a plate-like member, a shaped steel member, or a member having a box shape.~~

~~16. The lattice structure according to any one of claims 7 to 9, wherein~~

~~the first nearest diagonal member is a continuous member continuously extending from the first main member or the first connector to the second main member,~~

~~the first reinforcement part constitutes a portion of a reinforcement continuous member continuously extending from the first main member to the second main member or the second connector in the first specific direction, the portion of the reinforcement continuous member extending from the first nearest diagonal member to the second main member or the second connector,~~

~~the sub-reinforcement part constitutes another portion of the reinforcement continuous member, the another portion of the reinforcement continuous member extending from the first main member to the first~~

nearest diagonal member,

one member of the reinforcement continuous member and the first nearest diagonal member has a through hole penetrating the one member in a direction intersecting a longitudinal direction of the one member, and

the other member of the reinforcement continuous member and the first nearest diagonal member is inserted in the through hole and arranged to intersect the one member.

17. The lattice structure according to any one of claims 1 to 6, wherein

the first nearest diagonal member includes:

a diagonal member main body extending from the second main member toward the first main member and the first connector; and

an interposition member interposed between the diagonal member main body and at least one of the first main member and the first connector, and having a portion connected to at least one of the first main member and the first connector,

the interposition member having a diagonal member main body connection part to which one end of the diagonal member main body is connected and a reinforcement connection part to which one end of the first reinforcement part is connected.

18. The lattice structure according to claim 17, wherein

the interposition member has a diagonal member continuous part being continuous from the diagonal member main body connection part to at least one of the first main member and the first connector in a direction parallel to a longitudinal direction of the diagonal member main body.

19. The lattice structure according to claim 17 or 18, wherein

the interposition member has a reinforcement continuous part being continuous from the reinforcement connection part to the first main member in a direction parallel to a longitudinal direction of the first reinforcement part.

20. The lattice structure according to claim 17, wherein

the interposition member has:

a diagonal member continuous part being continuous from the diagonal member main body connection part to at least one of the first main member and the first connector in a direction parallel to a longitudinal direction of the diagonal member main body, and being configured to have a leading end connected to at least one of the first main member and the first connector;

a reinforcement continuous part being continuous from the reinforcement connection part to the first main member in a direction parallel to a longitudinal direction of the first reinforcement part, and being

~~configured to have a leading end connected to the first main member at a position farther away from the first connector than the leading end of the diagonal member continuous part in the longitudinal direction of the first main member; and~~

~~a bridge part extending along the first main member for bridging the leading end of the diagonal member continuous part and the leading end of the reinforcement continuous part.~~

~~21. The lattice structure according to claim 17, wherein~~

~~the interposition member has:~~

~~a diagonal member continuous part being continuous from the diagonal member main body connection part to at least one of the first main member and the first connector in a direction parallel to a longitudinal direction of the diagonal member main body, and being configured to have a leading end connected to at least one of the first main member and the first connector;~~

~~a reinforcement continuous part being continuous from the reinforcement connection part to the diagonal member continuous part in a direction parallel to a longitudinal direction of the first reinforcement part, and being configured to have a leading end connected to the diagonal member continuous part; and~~

~~a bridge part located closer to the second main member than a specific portion of the interposition member where the leading end of the reinforcement continuous part is connected to the diagonal member continuous part for bridging the diagonal member continuous part and the reinforcement continuous part.~~

~~22. The lattice structure according to claim 21, wherein~~

~~the interposition member further has a second bridge part located farther away from the first connector than the leading end of the reinforcement continuous part in the longitudinal direction of the first main member for bridging the diagonal member continuous part and the first main member.~~

~~23. The lattice structure according to claim 22, wherein~~

~~the interposition member further has a third bridge part extending along the first main member for bridging the leading end of the diagonal member continuous part and a leading end of the second bridge part, the leading end of the second bridge part being connected to the first main member.~~

~~24. The lattice structure according to any one of claims 17 to 23, wherein~~

~~the diagonal member main body connection part has a welding surface which is flat for welding the one end of the diagonal member main body, and~~

~~the reinforcement connection part has a welding surface which is flat for welding the one end of the first reinforcement part.~~

~~25. The lattice structure according to claim 24, wherein~~

~~the diagonal member main body connection part and the reinforcement connection part are formed of an integrally continuous member.~~

~~26. The lattice structure according to any one of claims 17 to 25, wherein~~

~~the first main member has an insertion part having at least one of a groove and a hole in which a portion of the interposition member is inserted, and~~

~~the interposition member is fixedly attached to the first main member in a state where the portion of the interposition member is inserted in the insertion part.~~

~~27.~~8. A working machine comprising:

a base body;

an upper slewing body slewably mounted on the base body; and

a boom rotatably attached to the upper slewing body and having the lattice structure according to any one of claims 1 to ~~26~~ 7 and the another lattice structure adjacent to the lattice structure, wherein

each of the connectors of the lattice structure is connected to a corresponding connector of the another lattice structure with a pin, and the first specific direction in which the first reinforcement part extends is perpendicular to an axial direction of the pin.