

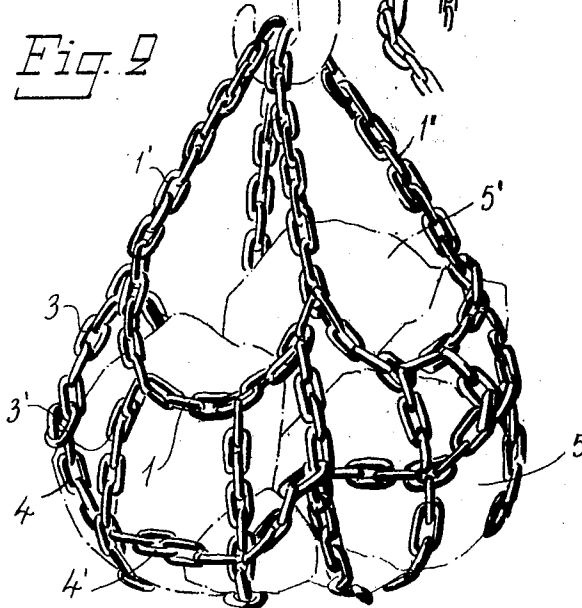
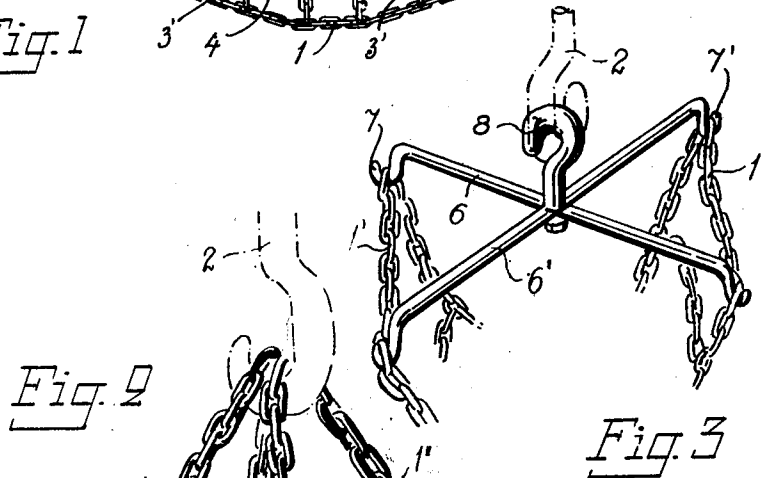
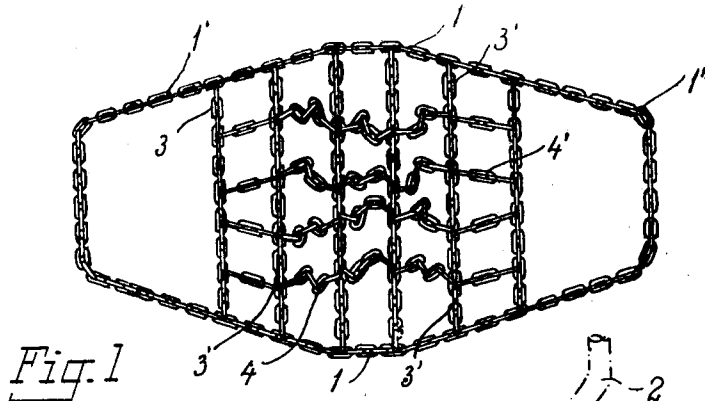
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LIFTING DEVICE FOR PIECE MATERIAL

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LIFTING DEVICE FOR PIECE MATERIAL

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This invention relates to a lifting device for piece material such as stones and the like.

Hitherto chains provided with hooks, chain nooses and rigid containers of various types have been used for lifting stones.

When stones are to be lifted out of narrow trenches or the like it is often difficult to apply chains and chain nooses to the stones, primarily because the space is scarce. It is also troublesome to load the stones manually in rigid containers and particularly to obtain centric loading of the containers, which is very important for convenient hoisting from the trench.

The lifting device according to this invention has for its main object to facilitate removal of stones from narrow trenches, pits and like excavations in the ground, but is also very suitable for loading large and heavy stones on vehicles.

For reasons of safety it is very unsuitable and mostly even prohibited to use lifting devices in the form of net bags made of wire, rope and the like for lifting pieces of hard material with high specific gravity. The main cause is that the hard pieces can easily damage some part of the device so that its strength is no longer homogenous, and this is very difficult to discover due to the structure of the material.

The outstanding feature of the device according to the invention is that it consists of a number of chains, which are fixedly interconnected so as to form a net bag, the confining edge of which is an endless chain and which, when placed on a fairly plane and horizontal base forms a mat on which the piece material can be placed without being lifted, the net bag enclosing and automatically centering the material when being hoisted, so that the material cannot fall out unintentionally.

Another feature of the lifting device is that the endless chain forms loops at least at two opposite end portions of the net bag, which loops are not fastened to the chain net and constitute connection means for a hoisting means, such as a crane hook.

A further feature of the lifting device is the provision of a permanently fixed or detachable support adapted to space the loops from each other in order to facilitate loading of the material when the net bag is hanging, for instance carried by a crane hook or the like.

An embodiment of the invention is described more closely below, reference being made to the accompanying drawing, in which—

FIG. 1 is a plane view of the device,

FIG. 2 is a perspective view of the device when lifting piece material,

FIG. 3 shows in perspective the upper portion of the device provided with a support for spacing the end portions of the device.

Referring now to the drawing, the numeral 1 designates the endless chain, which forms, at two end portions of the net bag, connection means in the form of loops 1', 1'' for a hoisting means such as a crane hook 2. The ends of a number of substantially parallel extending chains 3, 3' are linked to the endless chain 1. Extending between the chains 3, 3' with their ends linked to the latter, are several short chains 4, 4', so that a chain net fastened to the endless chain 1 is formed.

When the lifting device is used for lifting a load, consisting for instance of stones 5, 5', the latter can be rolled

in place on the device after this has been laid out flat like a mat. Then the end portions 1', 1'' of the net bag, i.e. the loops, can be hooked on to the crane hook 2. When the hoisting begins, the net gradually forms into a net bag which encloses the stones 5, 5' so that the latter cannot fall out. At the same time the load is automatically centered in the bag and the hoisting from narrow trenches or pits thus facilitated. To unload the stones from the bag, the latter can simply be lowered towards an horizontal base and the stones be unrolled from it. When unloading from the hook 2, one end portion 1' of the net bag can be removed from the hook and the lifting be continued, whereby the stones will unload themselves. Due to the nature of the chain net 3, 3', 4, 4', the stone load is distributed practically evenly on all chain links in the lifting device or net bag, and particularly so as regards the chain links of the chain net. This means that the device has a very large safety margin. The simple construction of the lifting device ensures low manufacturing costs.

Larger and heavier stones need not be placed on the net before lifting. Instead, the net is simply placed around a larger stone and connected to a hoisting means (such as a hoisting crane) by means of a hook, and the hoisting means is started. The stone will now automatically be placed in the net sack, as the endless chain 1 is pressed between the stone and the ground.

As the lifting device according to the invention is made of chains only, the homogeneity of its strength will remain unchanged for a very long time, and damage done to it will be very easy to discover in good time.

The lifting device can be provided with a support, for instance in the form of a cross consisting of interconnected bars 6, 6' of steel or the like, the ends of which are bent into hooks 7, 7' adapted to carry the end portions or loops 1, 1' of the net bag. In a preferred embodiment the bars 6, 6' are provided in the crossing point with a hook 8 in which a hoisting means such as a crane hook, loop or the like can be inserted. This arrangement makes it possible to load the net bag or lifting device with stones or other piece material while in suspended position. The support may also be permanently connected to one end portion of the net bag so that the latter and the support form a unit.

The invention is not confined to the embodiment described above and illustrated in the drawing, as several modifications are possible without abandonment of the inventive spirit. By way of example, the net bag may be made larger or smaller as required, the chains being dimensioned correspondingly. Furthermore, the hooks 7, 7' may have such a shape that the end portions of the net bag, i.e. the loops 1', 1'' can slide in the hooks when the bag is loaded, so that bag and load are automatically centered in the support. The hook 8 of the support may be replaced by a fixed ring or the like.

I claim:

1. A hoist net for forming a bag-like container for handling loose stones and the like comprising a one-piece, elongated chain link member having a central transverse axis and a central longitudinal axis, a continuous marginal element including opposed side portions converging toward each other on each side of the central transverse axis of said hoist net when said net is in a planar condition and is drawn taut by pressure applied at the points of intersection with the transverse axis and at the terminal ends of the opposed side portions on each side of the transverse axis, said marginal element having mutually parallel, transverse loop-forming end elements each formed from a plurality of chain links, one of said end elements extending between said con-

verging side portions on each side of said transverse axis, a plurality of mutually parallel elements each comprising a plurality of chain links for conforming to an irregular surface along its length, said mutually parallel elements extending transversely between the opposed side portions 5 of said net and terminally secured to said side portions, said mutually parallel elements adjacent said central transverse axis being of greater length than those mutually parallel elements adjacent to and disposed outwardly toward opposite ends of said longitudinal axis, and a plu- 10 rality of chain-link elements terminally secured intermediately between said adjacent mutually parallel elements and extending generally in the direction of said longitudinal axis and spaced on opposite sides thereof.

2. The structure of claim 1 in which link elements adjacent the transverse axis of said hoist net are of a length greater than the distance between adjacent mutually parallel elements to which they are terminally connected.

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