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(54) **TEMPORARY EXPLOSION-PROOF SUSPENDED ROPEWAY BRIDGE**

(57) The present invention is composed of a steel rope, erect a temporary explosion-proof suspended ropeway bridge, applied to urgently transport personnel, vehicles, or similar heavy equipment over mountain valleys, col, cliffs, and other areas where bridges are required, a temporary ropeway bridge may be quickly erected by the method of the present invention, the method is that, when the personnel and equipment reach the valley side, start with a guide rope path (14), two people carried portable stakes (8) (Patent 112018006104.3) and tools across the valley, after installing the portable stake, personnel from both sides shall cooperate with the erection of steel wire rope ropeway (11), Install the crane pulley (6), it can transport ordinary vehicles or military vehicles, tanks and vehicles, armored vehicles, self-propelled artillery and other equipment through the canyon, the characteristics are that, installation and disassembly simply save time, flexible, concealed, not easy to detect, can adjust the flexibility degree and droop degree at any time, not easy to be hit by other rigid objects or a guided bomb hit it, even if it hits it, can also automatically slide on.

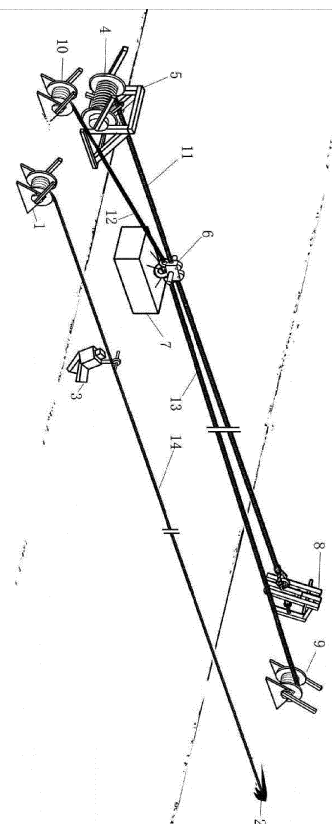


FIG.1

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Description

TECHNICAL FIELD

[0001] The present invention relates to a technology of erecting a temporary ropeway bridge and a necessary engineering equipment assembly, and specifically to a steel rope ropeway composed of a wire rope suspension structure, acting as a temporary bridge for transporting heavy vehicle equipment and having an explosion-proof function.

BACKGROUND OF THE INVENTION

[0002] The main role of a bridge is to make personnel, vehicles and heavy equipment across a section of areas that cannot pass normally, such as rivers, valleys and other naturally formed obstacles, and the buildings are set up on rivers, lakes, seas, mountains and valleys, so that vehicles and pedestrians can pass smoothly. A complete bridge, the basic components of the bridge span part, pier part, support part, abutment part, pier and foundation composition, these are the most basic components, it can be said that without these several parts of the bridge is not a complete bridge. Construction of such a 100 meters long, 50 tons of bridge, at least a year, generally this kind of bridge are fixed position, public exposure, long use, impossible to remove or change position, no concealment, if there is explosives into a bridge from the air, it is easy to hit any part of the bridge, and repair the bridge needs a long time, also can't guarantee safety. Therefore, how to avoid the occurrence of these adverse conditions, to ensure that a large number of personnel and equipment can surprise smoothly through between the valley without a bridge, therefore developed a single wire rope combination winch, portable stake, positioning pile, simple ropeway bridge, with simple operation, anytime, anywhere, convenient, convenient to use, high concealment, not easy to find, difficult to destroy.

SUMMARY OF THE INVENTION

[0003] In order to mountain channel for person, vehicles and other equipment passing between canyon in very short time, the present invention provided a device and method structure to erect temporary explosion-proof suspended ropeway bridge, the structure has a convenient conditions for convenient installation, anytime, easy operation, fast time saving, less auxiliary erection equipment, only two people can installed in a very short time, and good concealment, flexible structure, not easy to find or destroy, to achieve the purpose of passing through many personnel and equipment in a state of emergency

[0004] To achieve the above purpose, the present invention is a temporary explosion-proof suspended ropeway bridge. The installation method is, when the personnel and vehicle equipment to the valley side, First, build a guide rope path that can transport people and light tools

and equipment to the other side, two men then carried portable stakes (PCT / CN2018 / 081654) and tools to the opposite side of the canyon by using guide ropes, After the installation of portable stakes, people from both sides cooperate to set up a heavy wire rope ropeway, install a crane pulley, and they can transport vehicles and other equipment through the canyon.

[0005] Further, the one end of the guide rope is attached with a barbed anchor hook. Further, the anchor hook with a gun thrust is fired through the small rocket to the other side of the area.

[0006] Further, personnel, portable stakes, tools, and other spare parts are transported to the other side by the guide rope.

[0007] Further, people transported by the guide rope are dressed in foam or airbag type or other styles of protective clothing.

[0008] Further, the guide rope adopts the industrial standard, the most commonly used is the safety rope for the fire fighter, the selected model to meet the weight of all the portable stake components transported at a time.

[0009] Further, the steel wire rope for forming the ropeway bridge uses the steel core steel wire rope.

[0010] Further, the wire rope can be painted with camouflage of the same color as the surrounding scenery.

[0011] Further, the nominal tensile strength of the wire rope is greater than 2,000MPa.

[0012] Further, the wire rope nominal diameter is determined according to the maximum weight of the equipment in a single transport vehicle.

[0013] Further, the ropeway bridge wire rope has a manual chain unwinding device, which can apply tension or relaxation of the steel rope to adjust the steel rope sag as required.

[0014] Further, Install a crane point slide on the steel rope ropeway, which moves forward or backward along the steel rope ropeway to form a ropeway bridge transporting personnel and equipment.

[0015] Further, in order to make the lifting point on the wire rope moving more stable safety, using longitudinal layout of more than two pulley, flexible ropes are attached to the front and rear of the pulley, The two ends of the rope are connected to the small deceleration winch, dragging the pulley back and forth to achieve the effect of transporting the vehicle equipment, the winch can be manual or electric or various small engines

[0016] Further, the flexible rope of the towing point pulley movement can be connected to the pulley or directly to the transported vehicle equipment, as determined based on the site situation.

[0017] Further, a winch one-directional braking supporting positioning pile device is generally used when fixing the winch

[0018] Further, according to the site geological terrain situation, the portable stake of the fixed steel wire rope can be replaced by a winch one-directional braking supporting positioning pile device.

[0019] The beneficial effects achieved by the present

invention are:

The present invention proposes a ropeway bridge with little equipment demand, a simple, fast and convenient erection process, and is based on a single wire rope, can be erected anytime and anywhere, high concealment, not easy to destroy, when the personnel and equipment through, can be immediately removed, to achieve the unexpected, unpredictable, unimaginable and other bridges that do not feature during construction and use.

[0020] The present invention uses a temporary explosion-proof suspended ropeway bridge composed by a single wire rope, a winch winding the wire rope and a portable stake (pct / cn2018 / 081654), reasonable structure, simple operation, no difficulty, the erection and disassembly process is time-saving and convenient. Steel rope ropeway has only a few couplings with winches and portable stakes, which are standard industrial parts. Through practical verification, the theoretical bearing capacity can be shown and proved, ensuring the reliable safety and stability in practical use.

BRIEF DESCRIPTION OF THE DRAWINGS

[0021]

FIG. 1 is a schematic diagram of the visible partial working state of the integral apparatus of the present invention

FIG. 2 is a schematic diagram of the ropeway bridge device of the present invention

FIG. 3 is a schematic diagram of the explosion-proof function operation process of the present invention

FIG. 4 is a schematic practical application diagram of the device of the present invention

[0022] The tab in the attached Figure 1-2 is described as follows:

1-Guide rope winch, 2-guide rope anchor hook, 3-guide rope crane pulley, 4-ropeway bridge steel rope winch, 5-winch fixed pile, 6-ropeway bridge steel rope crane pulley, 7-heavy vehicle equipment, 8-portable stake, 9-slide forward winch, 10- slide back winch, 11-ropeway bridge steel rope, 12-pull back steel rope, 13-forward steel rope, 14-guide rope.

DESCRIPTION OF EMBODIMENTS OF THE INVENTION

[0023] In order to more clearly explain the objectives, technical solutions, and advantages of the present invention, the present invention is further described in detail in connection with the accompanying drawings.

[0024] As shown in Figure 1, Temporary explosion-proof suspended ropeway bridge, wherein : Guide rope winch 1, guide rope anchor hook 2, guide rope crane pulley 3, rope bridge rope winch 4, winch fixed pile 5, rope bridge steel rope crane pulley 6, heavy vehicle equipment 7, portable stake 8, slide forward winch 9,

slide back winch 10, rope bridge rope 11, back steel rope 12, forward steel rope 13, guide rope 14. Once the specifications and models of these devices are selected, a temporary suspended steel wire rope ropeway bridge can be erected between the mountain valleys, valleys and cliffs, through which people, vehicles and other equipment can be transported through the other side of the mountain canyon one by one. Generally, remove it immediately after completing a transport task, so it is not recommended as a long-term ordinary bridge.

[0025] When the personnel and vehicle equipment reached the valley side, first install the guide rope winch 1, rope bridge cable winch 4, winch fixed pile 5, and the ropeway bridge steel rope 11, back pull steel rope 12, drag steel rope 13 with the crane pulley 6 assembly, then erect a guide rope that carries people and light tools and equipment to the other side, there are many ways to build light-duty guide ropeways, generally, but not limited to: Fire rescue mode, industrial aerial operation mode, high-altitude power installation mode and special operations team off-road mode, as long as the personnel and light equipment and tools can be transported to the other side of the canyon.

[0026] The way given in Figure 1 is that, fixed the light guide rope winch 1 wrapped around the rope first, then tie the guide rope 14 to the small rocket, the small rocket has been fitted with the guide rope anchor hook 2, launch the small rocket across the canyon, after confirming that the anchor hook 2 is fixed, send two personnel hung on guide rope crane pulley 3, portable stake 8 (pct / cn2018 / 081654), light winch 9, one end of the ropeway bridge steel rope 11, and the necessary working tools to the other side of the canyon through the guide rope 14, after installing the portable stake, people on both sides of the canyon cooperate to set up a heavy steel wire rope ropeway, connect one end of the ropeway bridge steel rope 11 to a portable stake, at this point, the crane pulley 6 can slide back and forth, the vehicle and other equipment are connected to the crane pulley and then can be transported to the other side of the canyon

Claims

1. The temporary explosion-proof suspended ropeway bridge comprising:
By the guide rope winch, guide the rope anchor hook, guide crane pulley, cable steel rope winch, winch fixed pile, steel rope crane pulley, portable stake, crane pulley forward winch, crane pulley back winch, ropeway bridge steel rope, pull back steel rope, forward steel rope, guide rope constitute the main structure of the ropeway bridge, equipment to be delivered are hung on the crane pulley, The crane pulley slide moves back and forth on the steel rope ropeway to achieve the effect of transporting supplies on both sides of the crossing area.

2. The temporary explosion-proof suspended ropeway bridge according to claim 1, **characterized in that**, to make the crane pulley move back and forth, place pulley forward winch and pulley back winch with flexible safety ropes on both sides of the span area, two flexible safety ropes are connected to the ends of the crane pulley or directly to the front and rear of the delivery equipment, turn the pulley forward winch and the pulley back winch respectively to enable the crane pulley of the mounted equipment to achieve the purpose of transporting objects 5 10
3. The temporary explosion-proof suspended ropeway bridge according to claim 1, **characterized in that**, the ropeway steel rope winch is used in conjunction with the winch fixed pile to prevent the ropeway steel rope winch from moving during work. The common winch fixed pile adopts a winch one-directional brake supporting positioning pile device. 15 20
4. The temporary explosion-proof suspended ropeway bridge according to claim 1, **characterized in that**, the portable stake is a Portable mechanically assembled ground fixation stake device (pct / cn2018 / 081654) that is installed in accordance with the technical requirements of this portable stake. 25
5. The temporary explosion-proof suspended ropeway bridge according to claim 1, **characterized in that**, one end of the guide rope is attached with a barbed anchor hook, launched by a small rocket to the other side of the crossing area, and then, the personnel, the guide rope winch, the portable stake (pct / cn2018 / 081654), and the necessary tools are transported to the other side of the crossing area. 30 35
6. The temporary explosion-proof suspended ropeway bridge according to claim 1, **characterized in that**, all of the winches in the present invention have a controllable drop rope and release brake lock function, which can control the droop of the cable steel rope and prevent damage from rigid collision with rigid objects or explosives. 40
7. The temporary explosion-proof suspended ropeway bridge according to claim 1, **characterized in that**, the ropeway bridge wire rope is installed at the portable stake link with an industrial heavy manual chain device, which allows you to fine-tune the droop of the rope as desired. 45 50
8. The temporary explosion-proof suspended ropeway bridge according to claim 1, **characterized in that**, the cable rope adopts steel core wire rope with a nominal tension of greater than 2000mpa, the wire rope surface is painted with camouflage of the same color as the surrounding landscape. 55

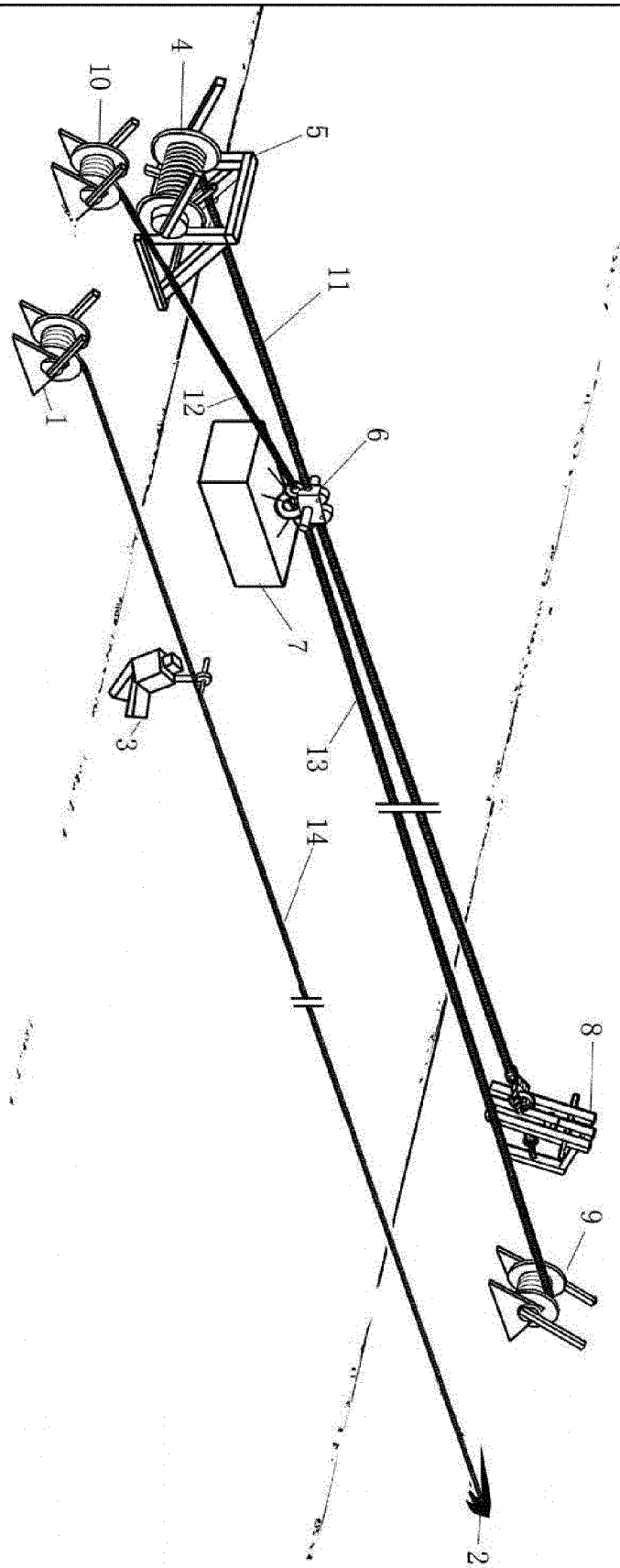


FIG.1

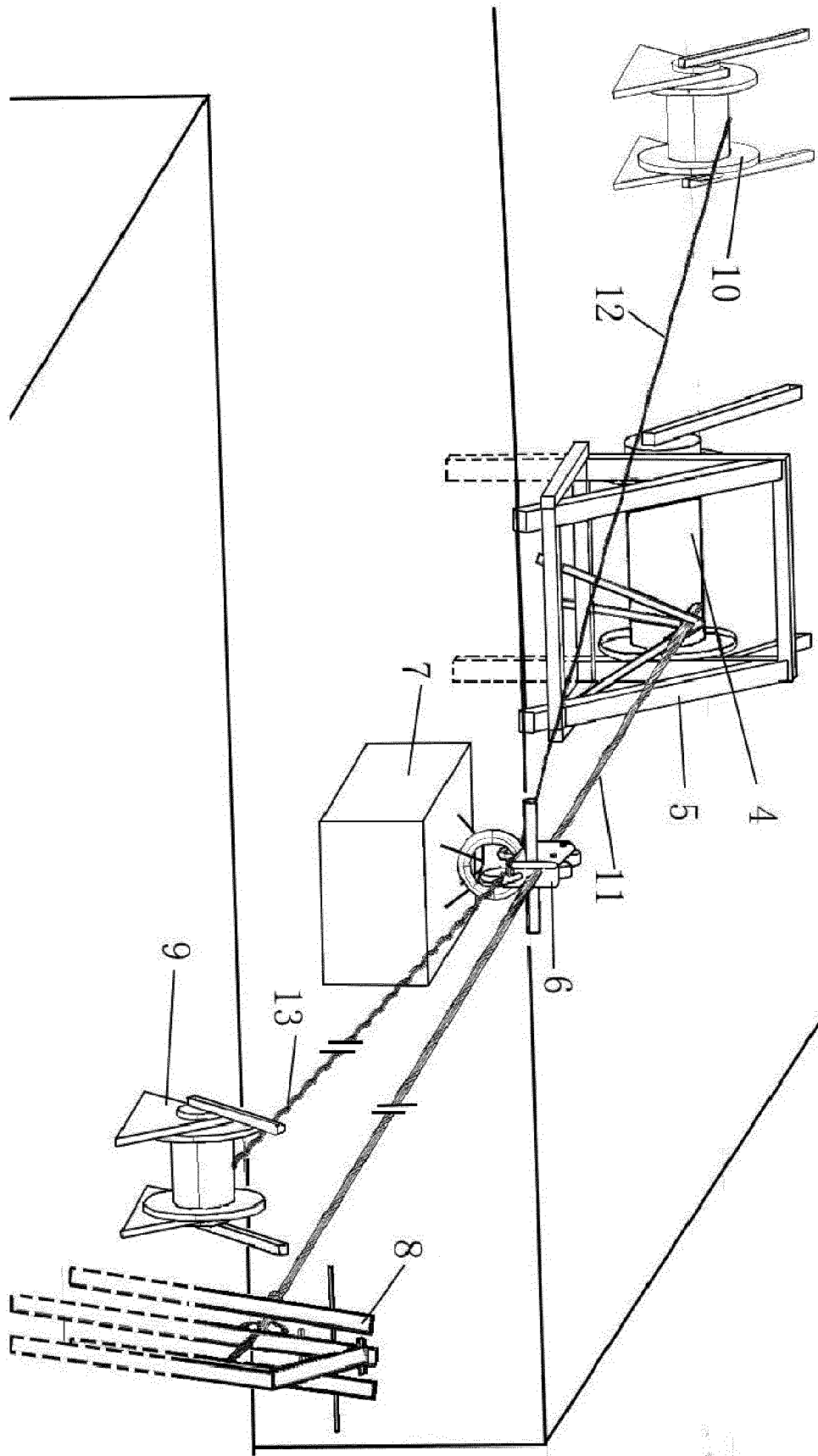


FIG. 2

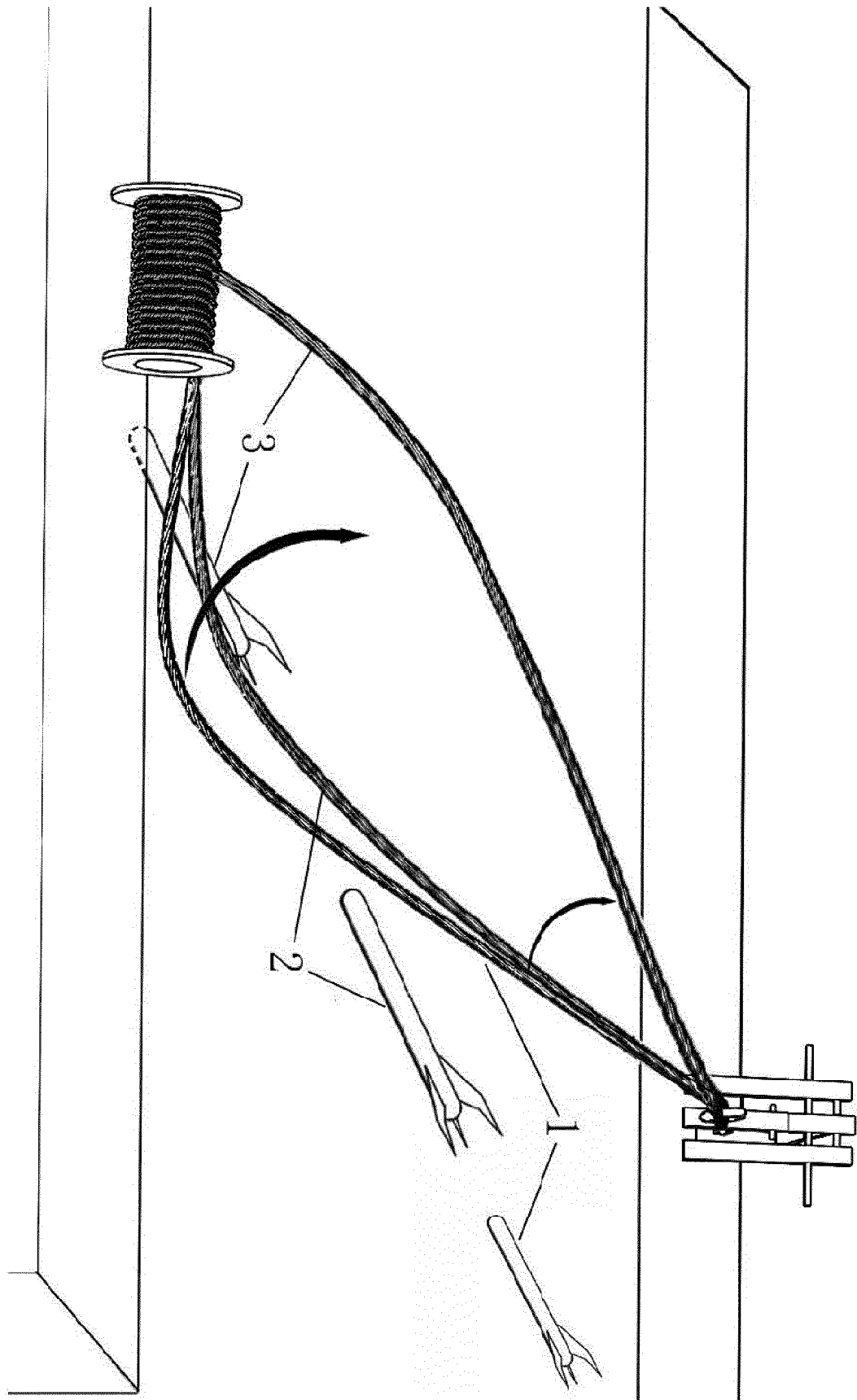


FIG. 3

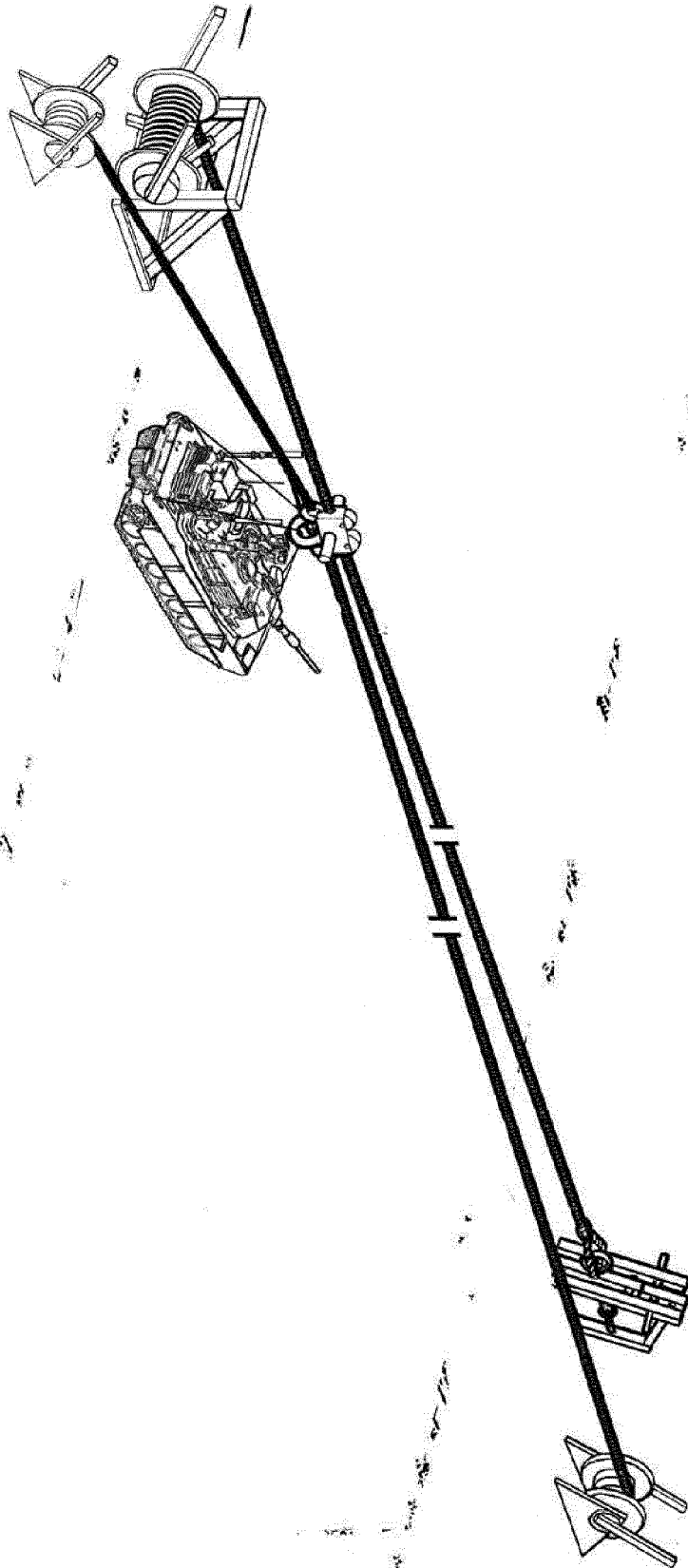


FIG. 4



EUROPEAN SEARCH REPORT

Application Number

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EPO FORM 1503 03.82 (P04C01)

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	CN 115 045 175 A (XU SHAOGANG) 13 September 2022 (2022-09-13) * claims 1-8 *	1-8	INV. B61B7/02
A	CN 207 727 552 U (XU SHAOGANG) 14 August 2018 (2018-08-14) * figures 5-6 *	1-8	
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			TECHNICAL FIELDS SEARCHED (IPC)
			B61B
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 26 April 2023	Examiner Saretta, Guido
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26-04-2023

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