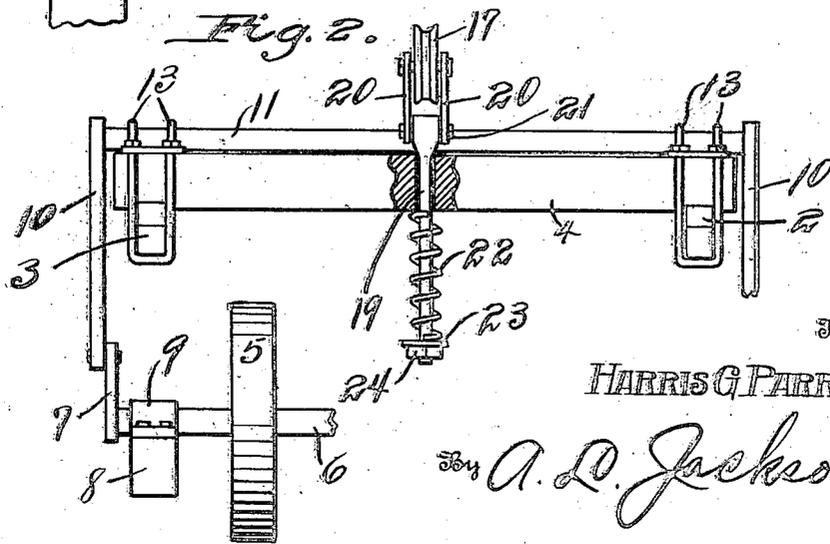
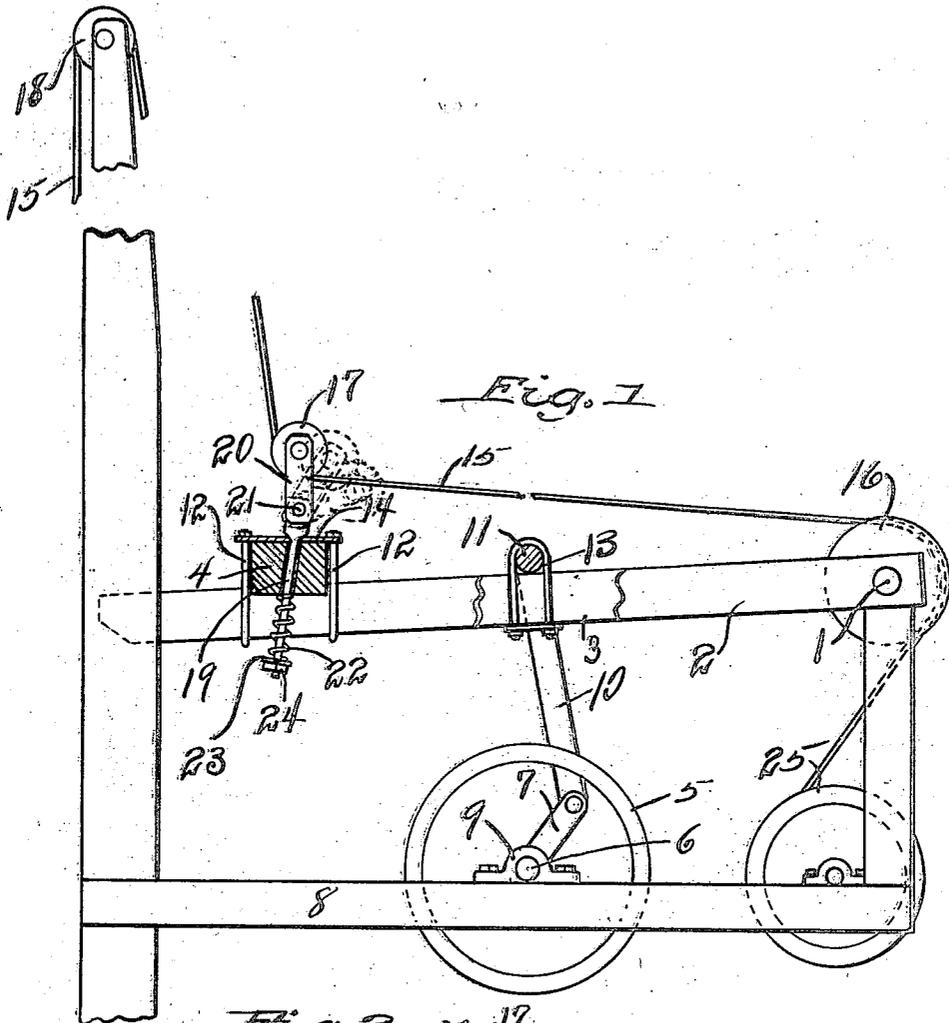


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H. G. PARR.
KNUCKLE JOINT FOR WIRE-LINE SHEAVE WHEELS.
FILED Nov. 4, 1921.



Inventor

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UNITED STATES PATENT OFFICE.

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KNUCKLE JOINT FOR WIRE-LINE SHEAVE WHEELS.

Application filed November 4, 1921. Serial No. 512,823.

To all whom it may concern:

Be it known that I, HARRIS G. PARR, a citizen of the United States of America, residing at Fort Worth, in the county of Tarrant and State of Texas, have invented certain new and useful Improvements in Knuckle Joints for Wire-Line Sheave Wheels, of which the following is a specification.

My invention relates to improvements in well drilling machines and more particularly to certain safety devices and means for improving the operation; and the object is to provide a simple device for preventing the severe hammering that goes on during the operation in such machines heretofore on the market and in operation and preventing the rapid wear of the parts affected. Another object is to provide a device which will make the operation of well drilling machines less dangerous to the workmen who operate the machines.

Other objects and advantages will be fully explained in the following description and the invention will be more particularly pointed out in the claims.

Reference is had to the accompanying drawings which form a part of this application.

Fig. 1 is a side elevation of the improved device together with sufficient part of a well drilling machine to show the application of the improvement. Fig. 2 is a detail view illustrating the construction of the improved device.

Similar characters of reference are used to indicate the same parts throughout the several views.

The drawings show the spudding frame which actuates the cable which carries the drilling tool. The actuating frame is pivotally mounted on a shaft 1. This frame is provided with arms or beams 2 and 3 and a cross-beam 4 attached thereto. This frame is vibrated by means of the bull wheel 5 which is rigid with the shaft 6. A crank 7 is rigid with shaft 6. There are two cranks 7, one of which is shown. The shaft 6 is connected to the beams 8 by means of bearings 9. The cranks 7 are connected to the spudding frame or beams 2 and 3 by

link bars 10 which are pivotally connected to the cranks 7 and pivotally connected to a shaft 11. The shaft 11 is connected to the spudding frame by U-bolts 13. The bull wheel 5 is driven by a belt from a suitable power wheel (not shown). The spudding beam 4 is attached to the beams or arms 2 and 3 by U-bolts 12 and a plate 14. The spudding frame is thus vibrated with the shaft 1 as the center of vibration. The spudding frame actuates the cable 15 which carries the drilling tool. The cable 15 is fed from a spool 25 over a sheave wheel 16, thence under the sheave wheel 17, passing over a sheave wheel or pulley 18 and then down to the drilling tool (not shown). The sheave wheel 17 is connected to the spudding frame beam 4 by means of an eye-bolt 19 and link bars 20 which are pivotally connected to the shaft of pulley or sheave wheel 17 and pivotally connected to the eye-bolt 19 by a pivot pin 21. The eye-bolt 19 operates through the spudding beam 4 and a spiral spring 22 is mounted on the eye-bolt 19 between the beam 4 and a washer 23 which is held on the eye-bolt by a nut 24. The spring permits a yielding of the eye-bolt upwardly. The eye-bolt will be drawn back to normal position after an operation by the spring 22.

The sheave wheel 17 and the link bars 20 form a knuckle joint with the eye-bolt 19. The object of the knuckle joint is to prevent the severe hammering of the eye-bolt on the spudding beam 4 and also to prevent slack in the cable 15. The head of the eye-bolt rests on the metal plate 14 and the beam is thus protected. In operation, the spudding frame is actuated by the bull wheel 5 through link bars or arms 10 and the cranks 7. When the free end of the spudding frame is drawn downwardly, the sheave wheel 17 will draw on the cable 15 and so raise the drilling tool. When the free end of the spudding frame swings upward or downward and throws the spudding frame in different positions as compared with the normal, considering the normal position to be parallel with the beams 8, the cable 15 will be actuated for operating the drilling tool.

With the old construction when the sheave wheel 17 was journaled in a clevis which was rigid with the bolt 19 and a stiff bolt was used, there was much side pulling and lashing, tearing up of beams, and breaking of bolts. These troubles are avoided by using the knuckle joint. By reason of the knuckle joint, the sheave wheel 17 has the swinging movement caused by the vibrations of the spudding frame and, in addition, has a swinging movement permitted by the knuckle joint, relative to the beam 4, as shown by dotted outlines. By such construction, the sheave wheel 17 will take up the slack of the cable 15 or prevent slack in this cable at idle points and will thus avoid the sudden severe and positive jerks and hammering of the working parts, and yet leave the string of drilling tools free to make their sudden drop necessary for most successful drilling and at the same time protecting the drilling cable from undue strain at certain points by taking up the slack at the point of contact with the sheave wheel 17. This construction also prevents the danger of the bolt 19 breaking and injuring the man or men operating the machine and also prevents damage to the equipment. The weight of the sheave wheel 17 will cause this wheel to swing downwardly relative to beam 4 and follow the cable 15 so that when the spudding beam swings upwardly there will be no slack in the cable but the sheave wheel, on account

of the knuckle joint will readily move back to positive working position.

What I claim, is,—

1. In a well drilling machine provided with a spudding frame, an eye-bolt in said frame yieldable upwardly, a wire line sheave wheel, and a knuckle joint pivotally connecting said sheave wheel to said eye-bolt.

2. In a well drilling machine provided with a spudding frame including a cross-beam, an eye-bolt movable upwardly in said frame and held normally downwardly, a wire line sheave wheel and a shaft for said wheel, and link bars pivotally connected to said shaft and to said eye-bolt.

3. In a well drilling machine provided with a spudding frame including a cross-beam, an eye-bolt movable in said cross-beam, a spring normally holding the eye of said bolt down on said beam, a wire line sheave wheel provided with a shaft, and link bars pivotally connected to said shaft and to said eye-bolt.

4. In a well drilling machine provided with a spudding frame including a cross-beam, an eye-bolt normally held with the eye thereof resting on said beam but yieldable upwardly, a wire line sheave wheel, and a knuckle joint connecting said wheel to said eye-bolt.

In testimony whereof, I set my hand, this 22nd day of October, 1921.

HARRIS G. PARR.