J. E. FROST.

DEVICE FOR PULLING, STRETCHING, HOISTING, &c.

APPLICATION FILED DEC. 31, 1913.

1,132,082.

Patented Mar. 16, 1915.

2 SHEETS—SHEET 1.

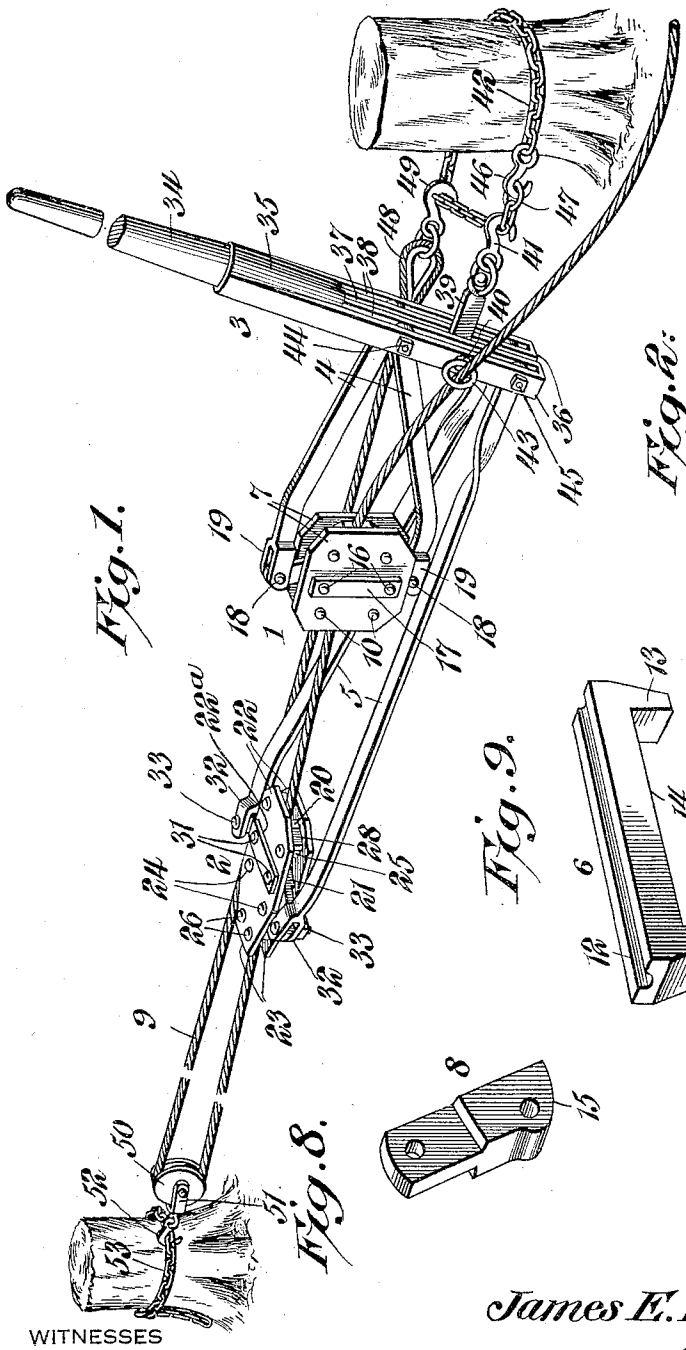


Fig. 1.

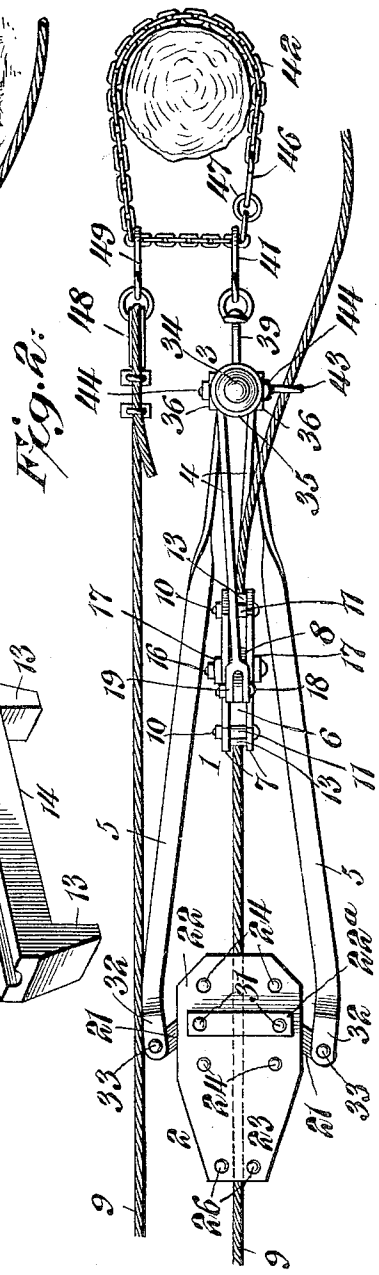


Fig. 2.

Fig. 9.

Fig. 8.

WITNESSES

Howard D. Orr.

H. F. Riley

James E. Frost, INVENTOR,

BY E. G. Siggers

ATTORNEY

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

J. E. FROST.

DEVICE FOR PULLING, STRETCHING, HOISTING, &c.

APPLICATION FILED DEC. 31, 1913.

1,132,082. Patented Mar. 16, 1915.

2 SHEETS—SHEET 2.

Fig. 5.

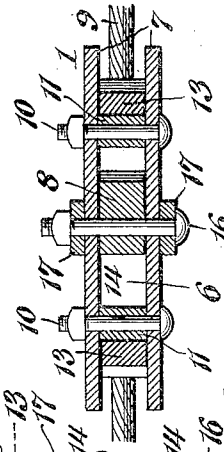


Fig. 7.

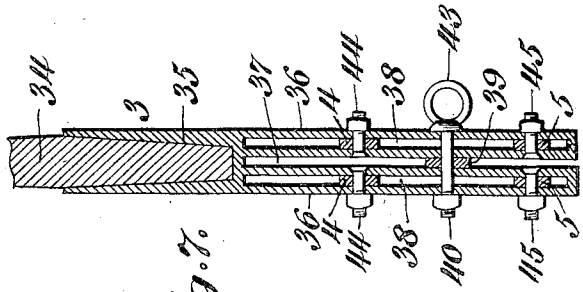


Fig. 4.

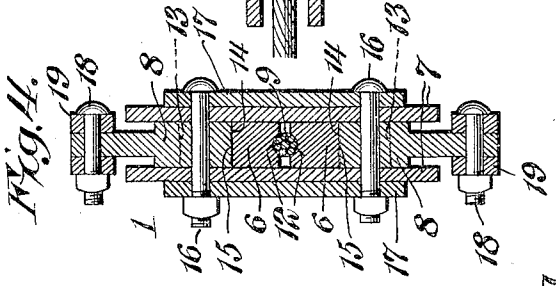


Fig. 3.

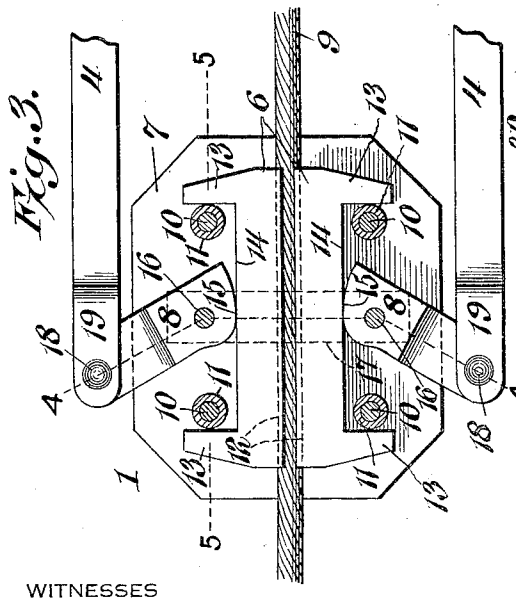
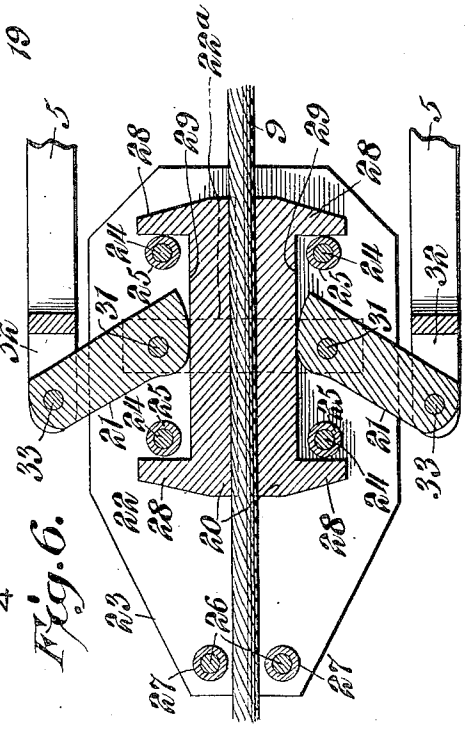


Fig. 6.



WITNESSES

Howard D. Orr.

H. C. Riley

James E. Frost, INVENTOR,

BY E. L. Siggers.

ATTORNEY

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D.

UNITED STATES PATENT OFFICE.

JAMES EDWARD FROST, OF LADYSMITH, WISCONSIN.

DEVICE FOR PULLING, STRETCHING, HOISTING, &c.

1,132,082. Specification of Letters Patent. Patented Mar. 16, 1915.

Application filed December 31, 1913. Serial No. 809,666.

To all whom it may concern:

Be it known that I, JAMES E. FROST, a citizen of the United States, residing at Ladysmith, in the county of Rusk and State of Wisconsin, have invented a new and useful Device for Pulling, Stretching, Hoisting, &c., of which the following is a specification.

The invention relates to improvements in devices for pulling, stretching and hoisting.

The object of the present invention is to improve the construction of devices for pulling, stretching and hoisting, and to provide a simple, efficient and comparatively inexpensive device of this character of great strength and durability designed for pulling stumps and for various other purposes, and capable of being readily connected to a relatively large stump or other anchoring means and of easy operation to pull the stump to be extracted.

It is also the object of the invention to provide a pulling device adapted to exert a continuous pull on a rope or cable and equipped with gripping devices capable of alternately engaging and releasing such rope or cable without liability of injuring the same.

With these and other objects in view, the invention consists in the construction and novel combination of parts hereinafter fully described, illustrated in the accompanying drawings, and pointed out in the claims hereto appended; it being understood that various changes in the form, proportion, size and minor details of construction, within the scope of the claims, may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings:—Figure 1 is a perspective view of a pulling device, constructed in accordance with this invention. Fig. 2 is a plan view of the same, the pulley being omitted. Fig. 3 is a longitudinal sectional view of the vertically disposed gripping device, the jaws being shown in side elevation. Fig. 4 is a transverse sectional view of the same on the line 4—4 of Fig. 3. Fig. 5 is a horizontal sectional view on the line 5—5 of Fig. 3. Fig. 6 is a central horizontal sectional view of the horizontally disposed gripping device. Fig. 7 is a longitudinal sectional view of the lower portion of the operating lever. Fig. 8 is a detail perspective view of one of the cam levers. Fig. 9 is a similar view on one of the jaws.

Like numerals of reference designate corresponding parts in all the figures of the drawings.

In the accompanying drawings in which is illustrated the preferred embodiment of the invention, the latter is shown in the form of a stump puller, but it is adapted to be employed for stretching fence wires and woven wire fencing, pulling automobiles out of mud, holes, ditches, etc., moving buildings and other heavy objects or loads and for hoisting purposes, and it is designed to be constructed in various sizes for the performance of such purposes and may be made sufficiently small to be conveniently carried in an automobile or kept in a garage.

The invention comprises in its construction a pair of gripping devices 1 and 2, designed to be constructed of any suitable material and arranged vertically and horizontally so as not to interfere with each other and connected rigidly with an operating lever 3 by links 4 and 5. The vertically disposed gripping device comprises in its construction a pair of jaws 6, guided between spaced side plates 7 and being of a width to extend entirely across the space between the said plates and actuated in their inward gripping movement by cam levers 8 to engage a wire cable 9, but a rod, or the like may be employed for coacting with the gripping devices. The plates 7 are connected by bolts 10 and are spaced by sleeves 11, arranged on the bolts and interposed between the plates, as clearly illustrated in Fig. 5 of the drawings, but any other suitable means may, of course, be employed for connecting the side plates and for maintaining the same in spaced relation. The jaws, which present inner concave engaging faces 12 to the cable 9, are provided with spaced transversely disposed arms 13, preferably arranged at the ends of the jaws and guided in the inward and outward movements of the latter by the side plates 7 and by the spacing sleeves 11 and the bolts 10, as indicated in Fig. 3 of the drawings. The guiding arms 13, which are arranged vertical in the vertically disposed gripping device, prevent relative longitudinal movement or displacement of the jaws

6. The jaws 6 are provided at their outer sides with straight flat longitudinal faces 14, which are engaged by curved cam edges 15 of the levers 8. The levers 8, which are located beyond the jaws at the central portion of the gripping device, are fulcrumed on pins or bolts 16, arranged adjacent to the inner ends of the levers, which are adapted to be oscillated with respect to the plates and the jaws for forcing the latter inwardly to grip the cable and to permit the said jaws to release the cable. The levers, which are preferably enlarged at their inner portions, as clearly shown in Fig. 8 of the drawings, extend beyond the side edges of the plates, which form a casing or housing for the gripping mechanism. The casing or housing is reinforced at the center by bars or pieces 17, located at the outer faces of the side plates and secured to the same by the fulcruming bolts 16 of the cam levers 8. The outer ends or arms of the cam levers 8 are pivoted by pins or bolts 18 in bifurcations 19 of the links 4, which extend inwardly from the gripping device 1 to the operating lever 3, and when the latter is oscillated to move the gripping device 1 inwardly or toward the operating lever, the jaws grip the cable and pull upon the same. In the outward movement of the gripping device 1, the cam levers are caused to move outwardly from the jaws to permit the same to release the cable and slide outward along the said cable while the other gripping device 2 is engaging the latter and pulling upon the same.

The horizontally disposed gripping device 2 comprises jaws 20 actuated by cam levers 21 and mounted between upper and lower side plates 22, which are provided with tapered extensions 23. The plates 22 are connected by bolts 24, or other suitable fastening devices and are spaced by sleeves 25, arranged on the bolts and interposed between the plates. The extensions 23, which are tapered, are located at the outer ends of the plates and are connected by bolts 26 and are spaced apart by sleeves 27. The sleeves 27 are arranged in spaced relation to form an outer guide or interspace between which the cable passes. The jaws 20 are constructed the same as the jaws 6 heretofore described being provided with transversely disposed arms 28 and having concave inner faces for engaging the cable. The arms 28 are guided by the sleeves 24 and the connecting bolts and the jaws are provided with outer straight flat longitudinal faces 29 and are engaged and actuated by the cam levers 21. The cam levers 21, which are fulcrumed on pins or bolts 31, are constructed like those heretofore described and their outer portions, which project beyond the side edges of the side plates, are pivoted in bifurcations 32 of the links 5 by pins or bolts 33. The bolts 31 also serve to secure reinforcing pieces 22^a to the outer faces of the side plates 22 for strengthening the casing or housing.

The operating lever 3 preferably consists of a wooden bar or handle 34, and a metallic socket 35 fitted on the lower end of the wooden bar or handle 34 and provided with longitudinal side members 36, spaced apart to form a central longitudinal slot or opening 37 and provided with longitudinal slots or openings 38, located at opposite sides of and in parallelism with the central slot or opening 37. The central slot or opening 37 receives an anchoring bar 39, pivoted by a transverse bolt 40 in the central slot or opening 37 and provided at its outer end with a swivel hook 41 adapted to engage an anchoring chain 42. The bolt 40, which extends entirely through the operating lever, forms a pivot or fulcrum for the same and is preferably equipped at its head with a guide eye 43 through which the free end of the cable 9 passes, when the device is used as a stump puller or the like. The links 4, which converge inwardly toward the operating lever, are pivoted in the upper portions of the side slots or openings 38 by upper bolts 44 having their heads countersunk in the members 38 at the central slot or opening to avoid interfering with the oscillation of the lever. The other links 5, which are provided adjacent to their inner ends with quarter bends, are pivoted in the side slots or openings 38 below the pivoted bolt 40 by lower bolts 45, arranged in the same manner as the upper bolts 44, but the links 4 and 5 may be pivotally connected to the operating lever in any other suitable manner. When the lever is oscillated, the gripping devices will be simultaneously moved in opposite directions and will produce a continuous pull on the rope or cable.

The chain 42 is designed to be passed around a relatively large stump and is provided at one end with a hook 46 and at the other end with a ring 47 to receive the hook. The cable, which is designed to be anchored at one end, is provided thereat with an eye 48, and is equipped with a hook 49 for engaging the chain 42. It extends from the anchoring chain 42 to a pulley 50 mounted in a yoke or clevis 51, which is provided with a hook 52 for engaging a chain 53, designed to be secured around the stump to be extracted. The operation of the lever gradually pulls upon the free end or portion of the cable and operates to pull the stump to be extracted from the ground, as will be readily understood. The device may be used either with or without the pulley 50 and the latter may be utilized as a guide for changing the direction of the pull, when it is desired to use the device for hoisting or pulling a load or the like. Also the gripping devices may be used singly and may

either be utilized for engaging a rope or cable to anchor the same or to operate as a splicing device.

What is claimed is:—

1. A device of the class described including a casing, opposite transversely slidable jaws housed within the casing, means for guiding the jaws in their transverse movement within the casing and for holding the jaws against movement longitudinally of the casing, cam levers arranged to engage the jaws for moving the same inwardly, and operating mechanism provided with means for oscillating the cam levers and for reciprocating the casing.

2. A device of the class described comprising a casing, transversely slidable jaws arranged within the casing, cam levers fulcrumed at the outer sides of the jaws and engaging the same centrally thereof for moving the jaws inwardly, means located at opposite sides of the cam levers for guiding the jaws in their transverse movement within the casing and for holding the jaws against movement longitudinally of the casing, and operating mechanism provided with means for oscillating the cam levers and reciprocating the casing.

3. A device of the class described including a casing, jaws arranged in the casing and provided with spaced transversely disposed arms, means carried by the casing and coöperating with the arms for guiding the jaws in their transverse movement and for holding the said jaws against relative longitudinal movement, cam levers fulcrumed in the casing between the said arms and arranged to engage the jaws for forcing the same inwardly, and operating mechanism connected with the cam levers and adapted to oscillate the latter and reciprocate the casing.

4. A device of the class described including a casing, transversely movable opposite jaws provided with inner gripping faces and having outwardly extending spaced transversely disposed arms, said jaws being also provided between the arms with straight flat longitudinal faces, means carried by the casing and engaging the arms for holding the jaws against relative longitudinal movement, levers fulcrumed in the casing and having cam edges arranged to engage the said faces for forcing the jaws inwardly, and operating mechanism provided with links connected with the cam levers and adapted to oscillate the same and reciprocate the casing.

5. A device of the class described comprising inner and outer gripping devices arranged vertically and horizontally, each provided with a pair of gripping jaws, cam levers arranged to engage and actuate the jaws in their transverse movement, an operating lever fulcrumed at an intermediate point, links arranged in pairs and pivoted at one end to the cam levers and connected at the other end to the operating lever at opposite sides of the pivotal point thereof, the links of one pair being spaced apart to receive between them the gripping device to which the other links are connected.

6. A device of the class described comprising inner and outer gripping devices arranged vertically and horizontally and each including a pair of gripping jaws and levers arranged to engage and actuate the jaws, an actuating lever fulcrumed at an intermediate point, converging links connecting the levers of the vertically disposed gripping device with the operating lever at one side of the pivotal point thereof, and other links spaced apart to receive the vertical gripping device between them and connected with the operating lever at the opposite side of the said pivotal point and extending to and pivotally connected with the levers of the horizontally disposed gripping device.

7. A device of the class described including an operating lever provided with central and side longitudinal slots or openings, an anchoring device provided with a bar or members pivoted in the central slot or opening of the operating lever and constituting a fulcrum for the same, gripping devices including opposite levers, and links connected to the levers of the gripping devices and pivoted to the operating lever in the side slots or openings thereof and in opposite sides of the said fulcruming bar or member.

8. A device of the class described comprising a rope or cable, an operating lever, means for fulcruming the same and for anchoring one end of the cable, gripping devices including opposite jaws presenting concave faces to the rope or cable and levers for actuating the jaws, means for connecting the levers of the gripping devices with the operating lever, and a pulley having anchoring means and receiving the cable in advance of the gripping devices.

In testimony, that I claim the foregoing as my own I have hereunto affixed my signature in the presence of two witnesses.

JAMES EDWARD FROST.

Witnesses:

RAYMOND E. SCOTT,

G. RALPH DAVIS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."