

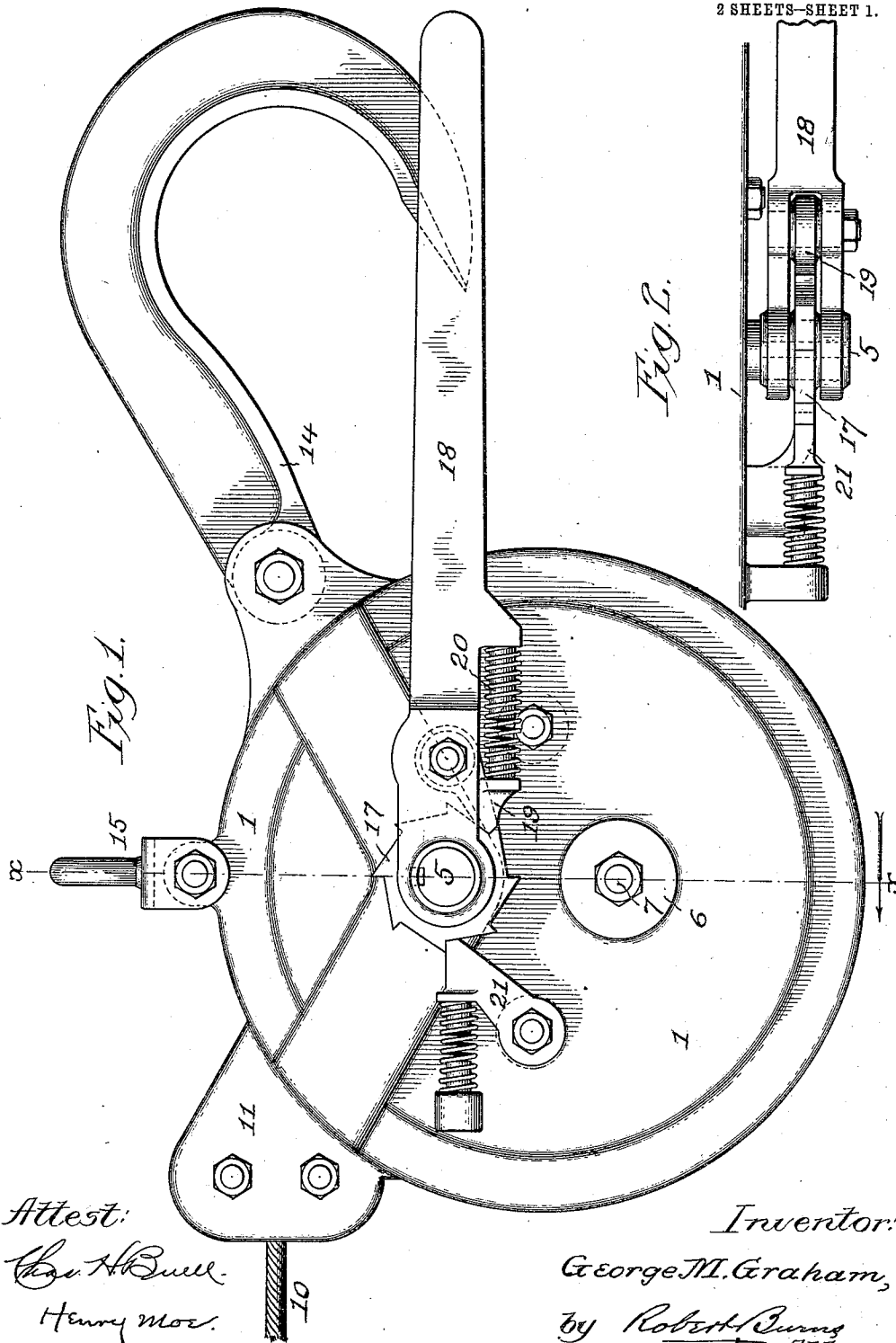
G. M. GRAHAM.
PULLING JACK.

APPLICATION FILED SEPT. 27, 1909.

1,007,559.

Patented Oct. 31, 1911.

2 SHEETS-SHEET 1.



Attest:
Chas. H. Bull.
Henry Mor.

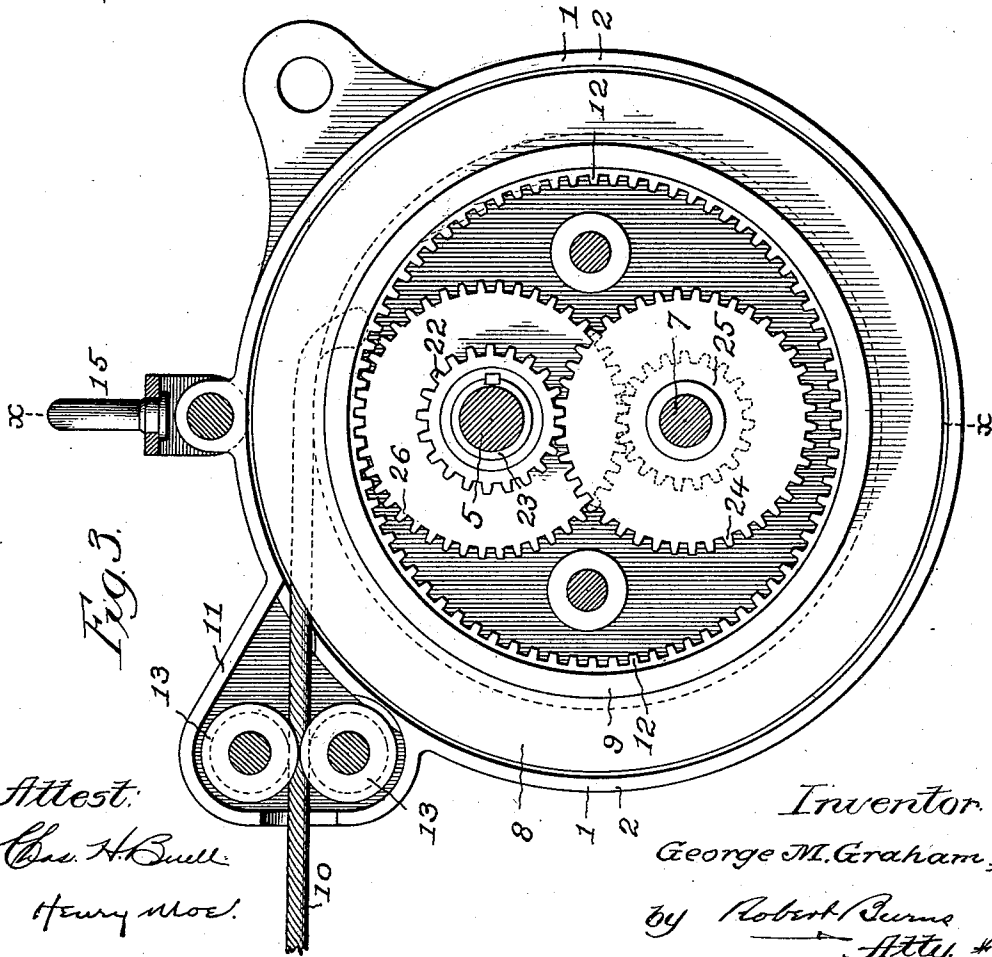
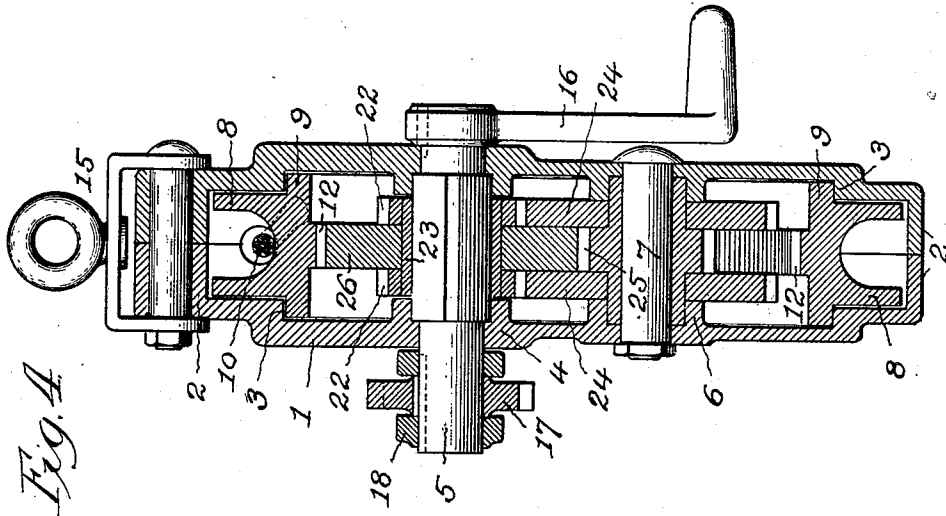
Inventor:
George M. Graham,
by *Robert Burns*
Atty. &

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2 SHEETS—SHEET 2.



Attest:
Chas. H. Buell
Henry Moe.

Inventor.
George M. Graham,
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UNITED STATES PATENT OFFICE.

GEORGE M. GRAHAM, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO
SUSPENSION STEEL CONCRETE COMPANY, A CORPORATION OF DELAWARE.

PULLING-JACK.

1,007,559.

Specification of Letters Patent.

Patented Oct. 31, 1911.

Application filed September 27, 1909. Serial No. 519,798.

To all whom it may concern:

Be it known that I, GEORGE M. GRAHAM, a citizen of the United States of America, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Pulling-Jacks, of which the following is a specification.

This invention relates to a pulling jack for drawing wires or rods under a condition of high tension in the skeleton centers of reinforced concrete structures, such as constitutes the subject matter of my prior Letters Patent No. 865,490, dated September 10th 1907. And the present improvement has for its object to provide a simple and efficient arrangement and combination of parts adapted to afford a very powerful pulling action combined with lightness, strength and portability as well as convenience in operation, all as will hereinafter more fully appear.

In the accompanying drawings: Figure 1, is a side elevation. Fig. 2, is a detail plan view of the operating ratchet lever and accessories. Fig. 3, is a longitudinal sectional elevation with one of the casing members removed. Fig. 4, is a transverse section on line $x-x$, Fig. 3.

Similar numerals of reference indicate like parts in the several views.

Referring to the drawings, 1 represents the inclosing shell or housing of the jack, which in the preferred form of the present invention as shown, is formed by two counterpart cup shaped members having circular flanges 2 at their peripheries which meet end to end and are secured together by transverse bolts in any usual manner, to provide an inner closed containing chamber for the pulling mechanism of the jack.

3 are annular ledges on the inner faces of, and adjacent to the peripheries of, the casing members aforesaid to provide annular bearings for the pulling sheave or annulus hereinafter described. 4, are hubs on said casing members in eccentric relation to the centers thereof, and in which the primary or power shaft 5 of the pulling mechanism has bearing. Said casing members are also provided with companion hubs 6, in spaced relation to the hubs 4, to provide bearings for the intermediate shaft 7 of the pulling mechanism.

8 is the pulling sheave or annulus above

referred to, journaled by means of annular side bearing rims 9 upon the aforesaid annular ledges 3, of the casing members. Said sheave is formed with the usual groove or channel in its periphery for the reception of the pliable pulling rope 10, or other equivalent pliable connection, and which is attached at one end in said groove and extends outside the casing through a tangentially arranged hood 11, on said casing, to be connected to an ordinary gripping or "come along" device.

12 is an internal toothed gear formation on the inner circular face of the sheave or annulus 8, for positive driven connection with the train of gearing hereinafter described.

13, are guide sheaves within the tangential hood 11 for guiding the pulling rope to its sheave 8.

14 is an attaching hook pivotally connected to the periphery of the casing in longitudinal alinement with the hood 11, crown of the sheave 8 and pulling rope 10, in order to attain a direct strain on the parts and prevent a canting of the jack in actual use.

15 is a suspension clevis attached to the crown of the casing 1 for convenient overhead support of the jack when required.

16 is a hand crank fixedly attached to one end of the power shaft 5, aforesaid, and which for this purpose extends a sufficient distance outside the casing 1 as shown. 17 is a ratchet wheel fixedly attached to the other end of said power shaft 5 and outside the casing 1.

18 is a hand lever pivoted on the power shaft 5 and carrying a pawl or dog 19 adapted for operative engagement with the ratchet wheel 17 to attain a powerful rotation of the shaft 5 in the final pulling operation of the jack and when the greatest resistance is encountered. In the initial pulling operation of the jack, and when comparatively small resistance is encountered, the rotation of the shaft 5 will be effected directly and speedily by the hand crank 16 above described. Said hand crank is also employed in the reverse or unwinding movement of the jack mechanism.

20 is a spring tending to hold the pawl or dog 19 to its engagement with the ratchet wheel 17 aforesaid.

21, is a spring pawl or dog pivoted to the side of the casing 1 and engaging the ratchet

wheel 17 to prevent a retrograde rotation of the same during its operation by the hand lever and dog above described.

22 are a pair of toothed pinions fixedly secured to a sleeve or hub 23 which in turn is keyed or otherwise secured to the power shaft 5 so as to turn therewith.

24 are a pair of toothed wheels connected together by an intermediate toothed pinion 25 and mounted idly on the intermediate shaft 7 of the pulling mechanism. Said wheels and pinion 24, 25, rotate as a whole in the operation of the mechanism.

26 is a toothed idler wheel mounted on the sleeve or hub 23 and between the toothed pinions 22 above described. Said toothed wheel 26 meshes with the pinion 25 and with the internal toothed gear formation 12 of the pulling sheave 8 to transmit the slow and powerful motion of said pinion to the pulley sheave.

Having thus fully described my said invention what I claim as new and desire to secure by Letters Patent, is:

1. A pulling jack comprising, an inclosing casing, a primary shaft journaled in said casing, means for rotating said shaft, a sleeve fixed on and turning with said shaft, a pair of pinions secured in separated relation on said sleeve, a toothed idler wheel turning loosely on said sleeve between said pinions, an intermediate shaft journaled in the casing, a pair of toothed wheels mounted on said shaft and meshing with the pinions aforesaid, a pinion rotating with said toothed wheels and meshing with the aforesaid toothed idler wheel, and a pulling

sheave journaled in the casing and having an annular form to encompass the aforesaid train of wheels and pinions, said pulling sheave being provided with an internal toothed formation meshing with the toothed idler wheel aforesaid, substantially as set forth.

2. A pulling jack comprising an inclosing casing formed in two portions formed near their peripheries with annular bearing ledges in opposed relation, a primary shaft journaled in said casing, means for rotating said shaft, a sleeve fixed on and turning with said shaft, a pair of pinions secured in separated relation on said sleeve, a toothed idler wheel turning loosely on said sleeve between said pinions, an intermediate shaft journaled in the casing, a pair of toothed wheels mounted on said shaft and meshing with the pinions aforesaid, a pinion rotating with said toothed wheels and meshing with the aforesaid toothed idler wheel, and a pulling sheave having annular rims at its respective sides for bearing on the annular ledges of the casing, said pulling sheave being provided with an internal toothed formation intermediate of said annular rims and adapted to mesh with the toothed idler wheel aforesaid, substantially as set forth.

Signed at Chicago, Illinois, this 20th day of September 1909.

GEORGE M. GRAHAM.

Witnesses:

ROBERT BURNS,
HENRY MOE.