

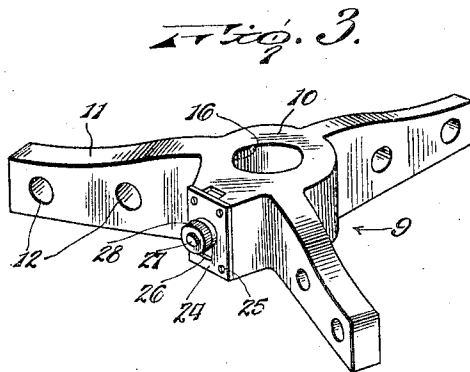
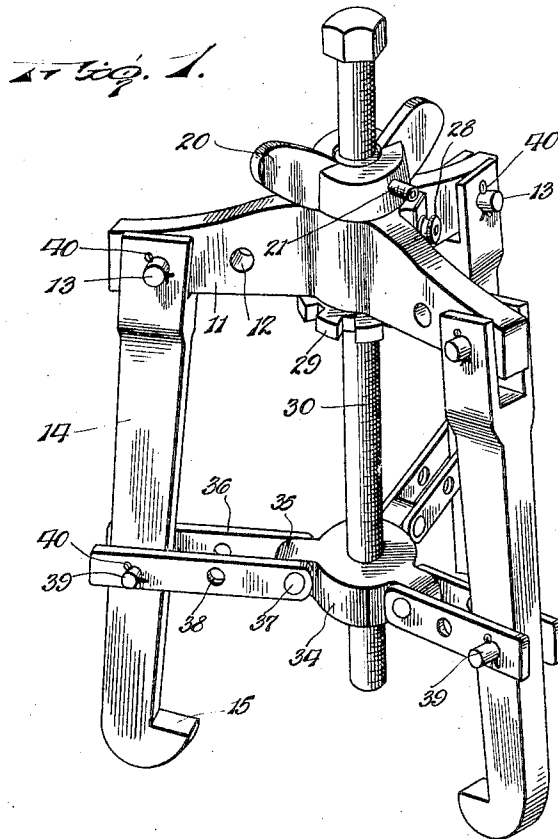
Oct. 9, 1923.

1,470,310

E. E. WINCHELL
WHEEL AND GEAR REMOVER

Filed June 28, 1922

2 Sheets-Sheet 1



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UNITED STATES PATENT OFFICE.

ERNEST E. WINCHELL, OF SEATTLE, WASHINGTON.

WHEEL AND GEAR REMOVER.

Application filed June 28, 1922. Serial No. 571,455.

To all whom it may concern:

Be it known that I, ERNEST E. WINCHELL, a citizen of the United States, residing at Seattle, in the county of King and State of Washington, have invented certain new and useful Improvements in Wheel and Gear Removers, of which the following is a specification.

My invention relates to an implement for removing gears, wheels, pulleys, and the like from tight fitting shafts, and the principal object of this invention is to provide an implement of this character that can perform the work effectually and with great ease.

For this purpose all parts of the implement are made very substantial and it consists mainly of a body with radiating arms, from which are depending two or more gripping jaws or fingers intended to firmly hold the wheel or gear, and a driving bolt intended to push the shaft out of engagement with the gear or wheel.

Another object of the invention is to furnish an implement of this class, which is self-centering at all times and which as a consequence operates to the best advantage, as there will be no side strain on the parts. The reason for this being, that directly the implement has been centered on the work to be operated upon the parts are firmly locked together to prevent any shifting of the parts.

The device is preferably manufactured in different sizes, large and small, in accordance with the work it has to perform, this work ranging from removal of bearings on small generators and dynamos, to the removal of heavy fly wheels, pulleys, and the like on large engines.

One embodiment of the invention is illustrated in the accompanying drawings:

Figure 1 shows a perspective view of the implement;

Fig. 2 is an axial section thereof;

Fig. 3 is a perspective view of the body portion of the implement;

Fig. 4 is a perspective view of some details, and

Fig. 5 shows a transverse section of the adjusting nut.

The body member 9 of the implement has a cylindrical center portion 10 from which radiate two, three or more arms 11 which are integral with the central portion or rigidly secured thereon. Each of these arms 11 is provided with two or more apertures 12 intended to carry a pivot pin 13 from

which is suspended a jaw or gripping finger 14 terminating at its lower end in a hook 15. The pivots 13 are removably secured in the apertures 12, so that each jaw 14 may be positioned further in or further out along its corresponding arm 11 on the body member. This shifting of the jaws 14 to different positions on the arms 11 is made for the purpose of adjusting the grip of the jaws for larger or smaller work.

In the smooth central bore 16, provided in the body member 9, is revolvably seated an adjusting nut 17 having a thin collar 18 abutting against the underside of the body member and an upwardly directed hollow shank 19 engaging in the smooth bore 16. The upper end of the shank 19 extends above the top of the body member and is threaded to engage a wing nut 20, which retains the adjusting nut 17 in position in its seat. A set-screw 21 is provided in the wing nut 20, by means of which the wing nut may be clamped on the shank 19 when so desired.

In a body member 9 is provided a perpendicular groove 22 running the entire length from top to bottom thereof and intended to form a guide for a latch key 23, which is held in position on the body member by means of a cover plate 24 secured on the face thereof in any suitable manner as, for instance, by screws 25. This plate 24 has a longitudinal slot 26 through which extends a threaded pin 27 forming a part of the latch key 23. This pin carries a thumb nut 28, by means of which the position of the latch key 23 in its guide 22 may be determined, so that when the key is inactive, the nut will hold it entirely concealed in the guide 22 in its upper position. When the latch key 23 is let down into the position indicated in Fig. 2, it engages between the teeth 29 provided circumferentially on the thin collar 18 of the adjusting nut 17, in this manner rigidly locking the adjusting nut to the body member.

The shank 19 of the adjusting nut 17 is internally threaded for engaging a driving bolt 30 which is threaded along its entire length and provided with a head 31 at its upper end adapted to be gripped by a wrench. The other end of the driving bolt 30 is rounded, as seen in Fig. 2, or it may at times be pointed for the purpose of firmly engaging with a shaft 32 which has to be removed from a gear 33 held between the jaws 14.

A hub 34 is also threaded on the driving bolt 30 and is provided with lugs 35 equally spaced around the circumference of the hub 34 and of the same number as the arms 11 provided on the body member 9. These lugs 35 are each connected by means of links 36 with one of the gripping jaws 14. These links are pivoted as at 37 on the hub 34 and provided with openings 38 along the length for engaging with pivot pins 39 running through the respective jaws 14 and held in position by means of cotter pins 40 in the same manner as the pivot pins 13. These pivot pins 39 may be shifted inwards or outwards along the links 36 in accordance with the shifting of the pivot pins 13 in the arms 11 of the body member in order to widen or narrow the grip of the jaws 14.

The operation of the implement is as follows: Referring particularly to Fig. 2, a gear 33 is indicated as resting on the hooks 15 of the jaws 14 for the purpose of removing the shaft 32 therefrom. In order to do this the jaws 14 will be supposed to be open sufficiently to pass over the edge of the gear 33. The driving bolt 30 is then held from rotating by means of a wrench, while the adjusting nut 17 is turned by means of the wing nut 20 which is rigidly attached thereto at this time by the set screw 21. The latch key 23 has previously been withdrawn from engagement with the teeth 29 in the adjusting nut so that the latter is free to turn in its seat in the body member. It will now be seen that through the threaded engagement between the adjusting nut 17 and the driving bolt 30 the latter will be lifted in the body member. As the bolt 30 also has threaded engagement with the hub 34, this hub will partake in the upward movement of the driving bolt 30 and in this manner draw the jaws 14 close together by means of the pull on the links 36, so that the hooks 15 will engage with the underside of the gear 33. As soon as a tight grip between the jaws and the gear has been obtained, the latch key 23 is let down by loosening the thumb nut 28, so that the adjusting nut 17 will be locked to the body member 9. By means of the wrench engaging the head 31, the driving bolt 30 is now screwed down in the adjusting nut 17 and the hub 34, both being stationary, and the lower end of the driving bolt will advance and exert a pressure against the end of the shaft 32 and remove the latter from the gear 33.

It will be evident that instead of the three arms and jaws provided in the implement shown on the accompanying drawings, only two of these jaws may at times be supplied and in this case the jaws and arms will be placed diametrically opposite each other in the implement.

In case the shaft 32 should stick very

hard in the gear 33, a blow may be applied to the head 31 to start it, but in that case the set screw 21 should first be loosened to permit a partial unscrewing of the wing nut 20 on the shank 19 in this manner permitting a limited axial movement of the adjusting nut 17 with the driving bolt 30 in the body member.

Having thus described the invention, what is claimed as new is:

1. An implement of the class described comprising a body member having a central opening, gripping jaws pivotally mounted thereon, a nut revolubly mounted in said opening, a threaded bolt engaging with said nut, means cooperating with said nut for axially retracting the bolt in said opening, link connections between said bolt and said jaws adapted to regulate the grip of the jaws through the retraction of said bolt, and a latch in said body member adapted to lock said nut, whereby upon turning the bolt in the nut, the bolt is axially advanced.

2. An implement of the class described comprising a body member having a central opening, gripping jaws pivotally mounted thereon, a threaded bolt mounted in said opening, means for axially displacing the bolt in said opening, connections between said bolt and said jaws adapted to regulate the grip of the jaws through the action of said bolt, said connections including a hub engaging with the threads of the bolt, links pivotally mounted on said jaws and said hub, said means comprising an adjusting nut revolubly seated in said central opening and having threaded engagement with said bolt, and a latch member for said adjusting nut slidably mounted in said body member.

3. An implement of the class described comprising a body member having a central opening, gripping jaws pivotally mounted thereon, a threaded bolt mounted in said opening, means for axially displacing the bolt in said opening, connections between said bolt and said jaws adapted to regulate the grip of the jaws through the action of said bolt, said connections including a hub engaging with the threads of the bolt, links pivotally mounted on said jaws and said hub, and a retaining nut for said adjusting nut provided with a set screw for securing said nuts together.

4. An implement of the class described comprising a body member having a central opening, gripping jaws pivotally mounted thereon, a threaded bolt mounted in said opening, means for axially displacing the bolt in said opening, connections between said bolt and said jaws adapted to regulate the grip of the jaws through the action of said bolt, said connections including a hub engaging with the threads of the bolt, links pivotally mounted on said jaws and said

hub, said means comprising an adjusting
nut revolubly seated in said central open-
ing and having threaded engagement with
said bolt, a latch member for said adjust-
5 ing nut mounted in said body member, and
a retaining nut for said adjusting nut pro-
vided with a set screw for securing said
nuts together.

10 5. An implement of the class described
comprising a body member having a central
opening, gripping jaws pivotally mounted

thereon, a threaded bolt mounted in said
opening, a nut revolubly mounted in said
opening and having threaded engagement
with said bolt, connections between said 15
bolt and said jaws adapted to regulate the
grip of the jaws through the action of said
bolt and nut, and means for locking the nut
to hold the jaws in adjusted position.

In testimony whereof I affix my signature.

ERNEST E. WINCHELL. [L. s.]