March 5, 1929. O. B. GREEN 1,704,600

WHEEL REMOVER

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Fig. 1.

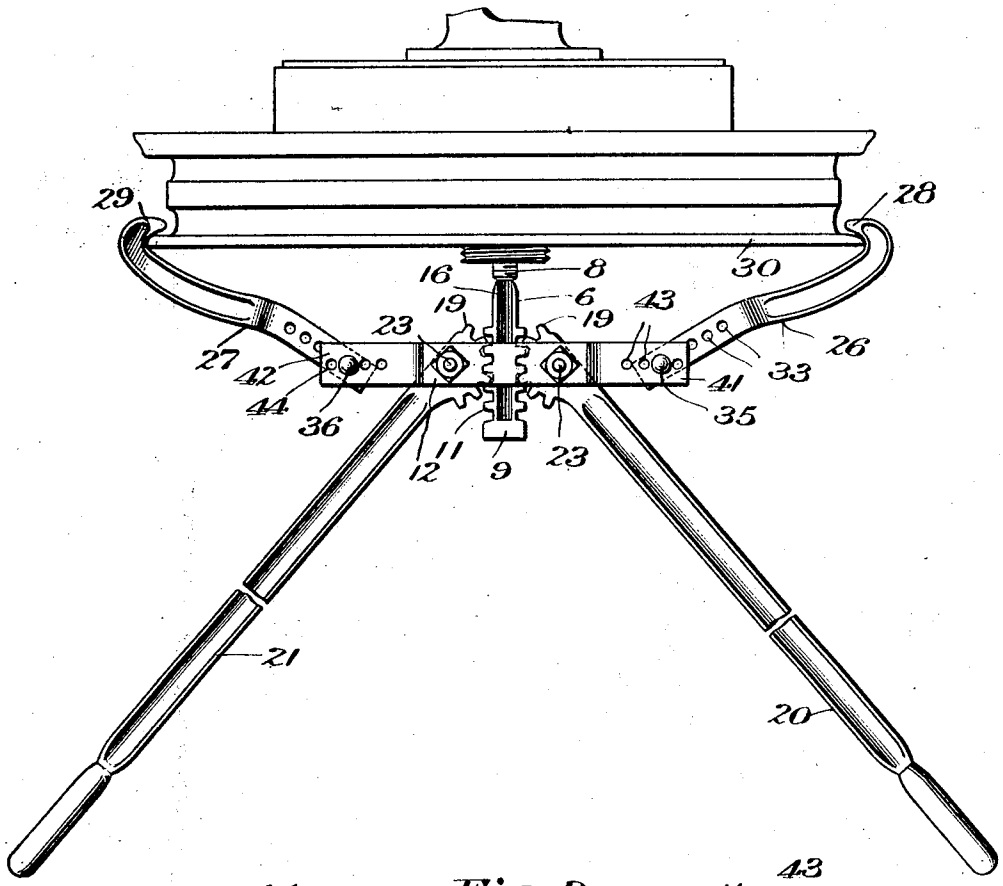
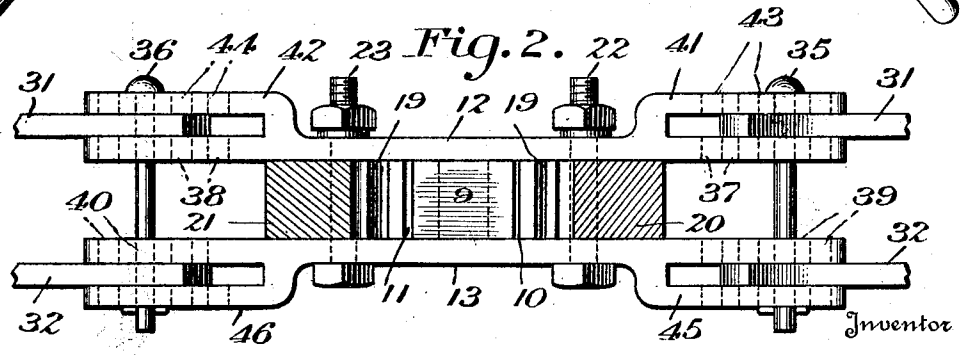


Fig. 2.



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Fig. 3.

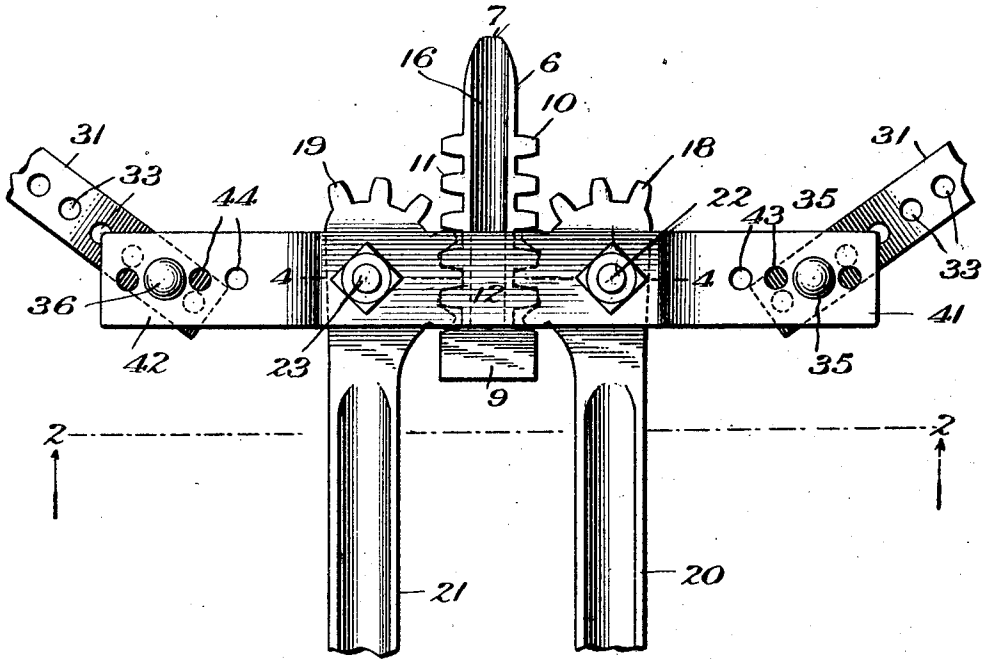


Fig. 4.

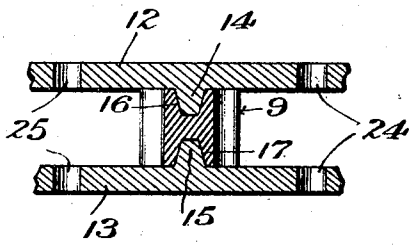
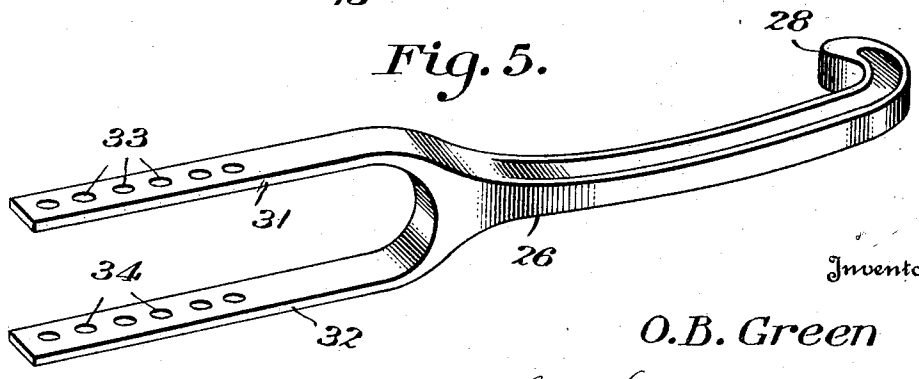


Fig. 5.



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UNITED STATES PATENT OFFICE.

ORIN B. GREEN, OF HAMMOND, INDIANA.

WHEEL REMOVER.

Application filed July 26, 1928. Serial No. 295,552.

The present invention relates to improvements in wheel removers, and has for an object to provide an improved wheel remover in which simplicity and strength of construction are combined with ease of application and operation.

Another object of the invention is to provide a device of this character exercising great pulling effort through mechanical operation without imposing burdensome work upon the operator.

A further object of the invention resides in providing an improved wheel remover in which the application of force is direct and equalized and free from lateral strain.

With the foregoing and other objects in view, the invention will be more fully described hereinafter, and will be more particularly pointed out in the claims appended hereto.

In the drawings, wherein like symbols refer to like or corresponding parts throughout the several views,

Figure 1 is a top plan view of the device, with parts broken away and showing the same applied to a felly of a wheel to be removed.

Figure 2 is a section taken on the line 2—2 in Figure 3.

Figure 3 is an enlarged fragmentary plan view of the device shown in a position subsequent to Figure 1.

Figure 4 is a section taken on the line 4—4 in Figure 3 with the levers and gear segments removed, and

Figure 5 is a perspective view of one of the claw arms.

Referring more particularly to the drawings 6 designates a plunger shaped at one end with a nose 7 for taking against the end of an axle 8 represented in Figure 1. The other end of the plunger 6 is provided with an enlarged and heavy head 9 positioned freely of other parts so as to receive blows from a hammer when necessary. Opposed rack teeth 10 and 11 are formed upon opposite longitudinal side edges of the rack bar 6 from adjacent the head 9 thereof along a maximum length thereof.

As shown in Figure 3, the plunger 6 is slidably mounted between frame bars 12 and 13 which are provided with the opposed internally projecting ribs 14 and 15 for taking into the longitudinal grooves 16 and 17 in the upper and lower edges of the plunger. The ribs and grooves are preferably wedge-shaped in form with truncated apexes, giving the plunger 6 the cross sectional form of an H. By reason of this form the plunger 6 is reinforced and strengthened by the flanges and connecting web and at the same time the plunger is guided in a true rectilinear path.

Gear sectors 18 and 19 are positioned to mesh with the rack teeth 10 and 11 respectively, these sectors being mounted upon levers 20 and 21 which are fulcrumed on pins 22 and 23 mounted in the frame bars or plates. Alining openings 24 and 25 are provided in the upper and lower plates 12 and 13 to receive the bolts or pins 22 and 23.

As shown more particularly in Figure 2, the ends of the plates 12 and 13 are bifurcated to receive the claw arms 26 and 27 having the claws 28 and 29 for grasping the rim of the felly 30 or other part of the wheel, pulley or the like.

Each claw arm 26, as shown in Figure 5, is provided with a pair of spaced shanks 31 and 32. Each shank is provided with a row of perforations 33, 34, corresponding perforations being in axial alinement to receive the pins or bolts 35 and 36 by which the claw arms are pivotally secured to the frame bars 12 and 13. The ends of the frame bar 12 are provided with the perforations 37 and 38; while the end portions of the companion frame bar 13 are formed with rows of perforations 39 and 40. Extension pieces 41 and 42 are carried by the bar 12 and extend in spaced relation outwardly beyond and in substantial parallelism with the perforated end portions 37 and 38. These extension pieces are open at their upper and lower edges and at their outer ends and receive between the same and the perforated end portions of the frame bar, the shanks 31. The extension pieces are provided with the rows of perforations 43 and 44, corresponding with the rows of perforations 37 and 38 in order to adjustably receive the pins 35 and 36 whereby the pivotal points of the claw arms, and incidentally the claw arms themselves, may be set inwardly or outwardly of the frame. By selecting the perforations 33 and 34 through which the pins 35 and 36 may be passed, the claw arms may be either shortened or lengthened.

In a similar way perforated extension pieces 45 and 46 are carried by the lower side of the lower frame bar 13 and receive therebetween the lower shanks 32 of the claw arms.

In the operation of the device, the levers 20

and 21 are initially in a spread condition, as indicated in Figure 1, although they may be more widely spread. In this condition of the parts, the nose 7 of the plunger 6 is applied to the end of the axle 8 so that the axis of the plunger and the axis of the axle extend in alinement. The claws 28 and 29 are then applied to the part to be removed, for instance to the rim 30, by swinging the claw arms 26 and 27 upon the fulcrum points 35 and 36. The parts are now in condition for operation, which is accomplished by moving the levers 20 and 21 together as indicated in Figure 3. This movement of squeezing the levers together is accompanied by a partial rotation of the gear sectors 18 and 19, which, meshing with the rack teeth 10 and 11, serve to move the frame outwardly along the plunger 6, the plunger being held against movement by its engagement with the axle 6. The shifting of the frame outwardly upon the plunger will be accompanied by a pull upon the arms 26 and 27 and these arms will draw with them the wheel 30, pulley or whatever they may be attached to. In case the parts stick or a great resistance is interposed to the movement of the levers 20 and 21 together, the head 9 of the plunger may be subjected to blows from a hammer.

It will be noted that the presence of the gear sectors upon opposite sides of the double rack plunger 6 have a compensating and equalizing effect whereby the operating force is centralized along the axis of the plunger. The arrangement avoids possibility of unequal pressures at opposite sides of the rack bar and prevents the shifting of the device laterally which would throw the rack bar out of line with the axle and impose unnecessary strains upon the hooks or claws and other parts. By the use of the device the thrust is kept in a true rectilinear path and as a consequence ease of manipulation is secured to a high degree.

It is obvious that various changes and modifications may be made in the details of construction and design of the above specifically described embodiment of this invention without departing from the spirit thereof, such changes and modifications being restricted only by the scope of the following claims.

What is claimed is:—

1. An improved wheel remover comprising a frame composed of spaced bars having end portions provided with rows of perforations, extension pieces on the ends of the bars having rows of perforations therein, claw arms having spaced shanks for fitting between the ends of the bars and the respective extension pieces, pins passing through the bars, extension pieces and said shanks, means carried by the frame for engaging an axle, and means also carried by the frame for cooperating with the first named means to move the frame and claw arms outwardly from the axle.

2. An improved wheel remover comprising spaced bars having perforated ends and perforated extension pieces outwardly of said ends, claw arms having bifurcated perforated shanks extending adjustably between said perforated bar ends and extension pieces, pins for extending selectively through the perforations of the shanks, bar ends and extension pieces, there being wedge-shaped ribs on the intermediate portion of said bars, a plunger H-shaped in cross section fitted slidably to said ribs and having rack teeth on opposite sides thereof, and levers fulcrumed between the bars at opposite sides of said plunger and having toothed sectors meshing with the opposite rack teeth.

In testimony whereof I affix my signature.

ORIN B. GREEN.