J. R. RIDLON.

MEANS FOR DRAWING GEARS, PULLEYS, &c., FROM SHAFTS.

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1,131,868.

Patented Mar. 16, 1915.

Fig. 1.

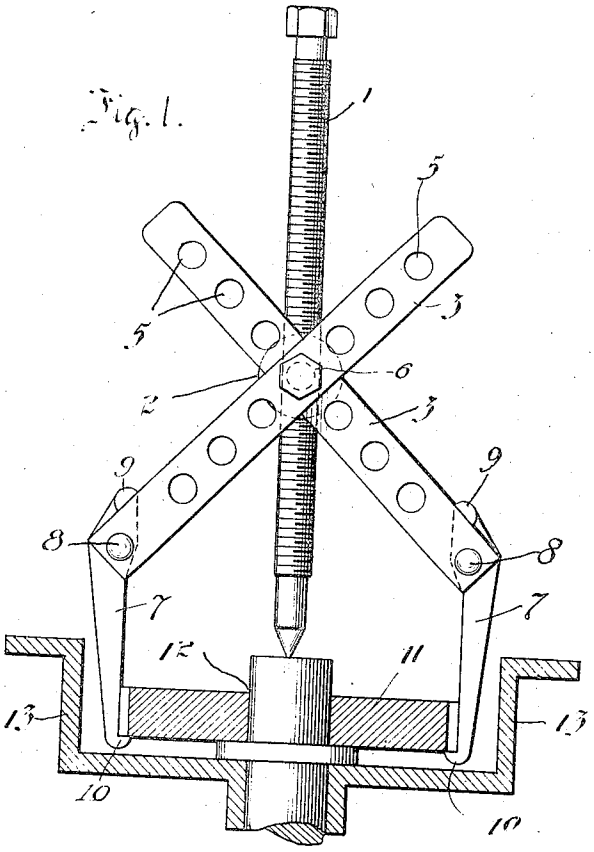
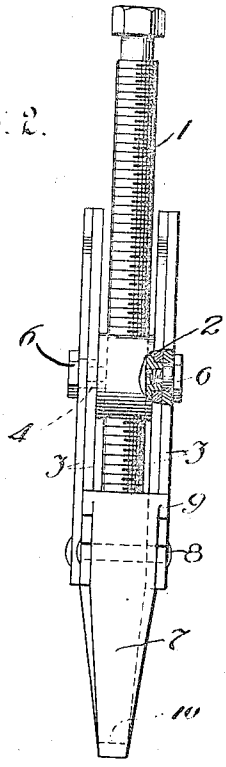


Fig. 2.



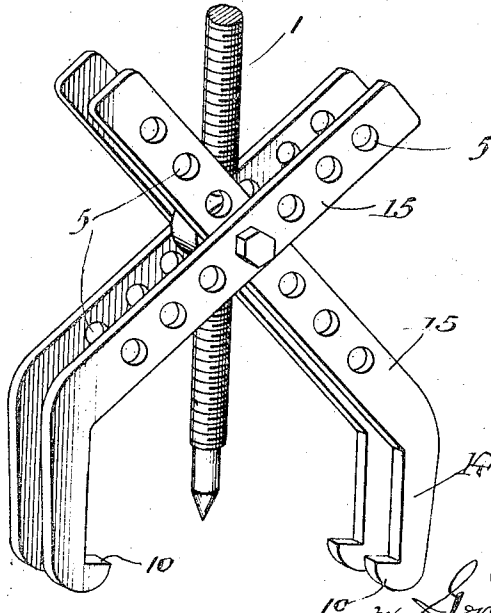


Fig. 3.

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JOHN R. RIDLON, OF CHICAGO, ILLINOIS.

MEANS FOR DRAWING GEARS, PULLEYS, &c., FROM SHAFTS.

1,131,868. Specification of Letters Patent. Patented Mar. 16, 1915.

Application filed December 2, 1912. Serial No. 734,030.

To all whom it may concern:

Be it known that I, JOHN R. RIDLON, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Means for Drawing Gears, Pulleys, &c., from Shafts, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to means for drawing gears, pulleys, wheels or the like from the shafts on which they are mounted.

The primary object of the invention is to improve on prior devices of this character. As contributory to attaining this general object, other objects of the invention are, to provide a device which may be readily adjusted to gears or other objects of various different sizes; which maintains an effective hold thereon when being operated; which may be applied where the gear or other object is closely surrounded by a casing or housing, leaving only a small clearance; and which is of comparatively simple construction, lending itself to economical manufacture.

In the accompanying drawings I have illustrated two embodiments of the invention. The invention, however, is not limited to these devices, but may be embodied in other forms.

Figure 1 is a side elevation of one form of device, showing the same applied to a gear and shaft; Fig. 2 is an end elevation thereof; and Fig. 3 is a perspective view of another form of device.

The device shown in Fig. 1 comprises a screw-threaded spindle or shaft 1, which passes through a corresponding screw-threaded opening in a block 2. Two pairs of arms 3 are mounted on each side of said block and are pivotally secured thereto. The inner arm of each pair is mounted on a hub or shoulder 4 formed integrally with said block, said hub being received within one of the holes 5 provided in each of the arms. The outer arm of each pair is secured to said block by a shoulder screw 6, which is screwed into said shoulder or hub. A pair of depending links, fingers or extensions 7 are pivotally supported by said arms, each extension being pivotally secured to the lower extremity of two of said arms by suitable rivets 8 or equivalent means, as shown in Fig. 2, and is pivoted so that it may swing freely in one direction, while its swing in the other direction is limited by a shoulder 9 on the upper end of said extension, said shoulder engaging preferably both of said arms. At the lower end of each link or extension is a catch or shoulder 10 adapted to engage the gear, pulley or wheel, to be removed from its shaft.

The manner of applying the devices is illustrated in Fig. 1, in which the extensions 7 are arranged in substantially parallel relation on opposite sides of the gear 11, which is to be removed from its shaft 12. Said extensions are inserted between said gear and the adjacent walls 13 of the gear casing or housing, and being relatively thin they may be applied even where the clearance is comparatively slight, as is the case with the timing gears used on automobiles. The lower end of the screw-threaded spindle 1 is tapered and is adapted to be centered in the end of the spindle 12. The upper end of said spindle has a polygonal head, which may be engaged by a suitable socket wrench or other wrench. When the gear puller is properly adjusted, not only are the extensions 7 substantially parallel, as previously mentioned, but the upper faces of the catches 10 are substantially horizontal, being arranged at right angles to said extensions; hence they are adapted to engage squarely the under surface of the gear, and there is little tendency for the extensions to slip or spring, as is the case in certain prior devices with which I am familiar. The outward swing of the fingers away from each other is, of course, limited by the shoulders 9, and as the gear is being forced from its shaft the pivotal joint tends to straighten out, thereby maintaining the desired engagement with the gear.

The device lends itself readily to adjustment for gears of various different sizes. In making this adjustment the shoulder screws 6 are removed and the arms 3 adjusted with respect to the block 2, one of the holes 5, acting as the pivotal connection for the respective arm with said block. These holes should not be placed too close together, otherwise said arms would be weakened. However, by having said arms arranged diagonally, which is the preferable construction, the effect of much closer adjustments of the catches 10 toward and away from each other is obtained, as will be readily apparent.

In the device shown in Fig. 3, the fingers, links or extensions 14 are constructed in-

tegrally with the arms 15 there being four such extensions instead of two as in the prior form of device. The remaining features are substantially the same as those previously described. In both forms of device the proper adjustment is obtained by trial. If the extensions as adjusted are too close together when the catches are hooked under the gear, the lower ends of said extensions will diverge. If they are too far apart, they will converge. If an exact parallel arrangement cannot be obtained, it is better to have them converge slightly rather than have them diverge slightly. However, with the diagonal arrangement of the arms and the holes provided therein, sufficiently fine adjustments may be obtained to insure a firm grip of the gear by the catches 10 in any case.

With the first form of device illustrated the width of the engaging face of the catch 10 is sufficient so that when the spindle is being rotated the thrust exerted against the end of the shaft is exactly central thereof and there is no tendency for the device to tip to one side or the other. In the device illustrated in Fig. 3 there is still less tendency to tip, as the effective width of the engaging surfaces of the catches 10 is increased due to the provision of two catches arranged side by side.

It is to be understood that the invention is not to be limited to the arrangement of elements described above or to the details of said elements, except where limitations are imposed in the appending claims. Furthermore, the various words and phrases used in this specification have been employed in a descriptive rather than in a limiting sense. Accordingly, I desire to cover in the appended claims any suitable equivalent means for accomplishing the desired results wherever said means fall within the scope of said claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent of the United States is:

1. In a device of the class described, substantially parallel fingers having inwardly facing catches, a supporting element, and diagonally arranged means supported on said element and to which said fingers are secured, said means being adjustable with respect to said support to permit movement of said fingers toward and away from each other without disturbing the parallel arrangement thereof.

2. In a gear remover, substantially parallel fingers having inwardly facing shoulders, a supporting element, and diagonally arranged arms pivotally supported thereon, said fingers being carried by said arms, each of said arms having a plurality of holes permitting adjustment of the pivotal support thereof to move said fingers toward and away from each other.

3. In a gear remover, a screw-threaded spindle, a screw-threaded block thereon, two pairs of arms pivotally supported on said block, with the arms of each pair arranged on opposite sides of said block in parallel relation, the pivotal axes of said arms being radial with respect to said spindle, the arms of one pair being parallel to the arms of the other pair, and extensions on said arms normally parallel to each other.

4. In combination, a screw-threaded spindle, a pair of fingers, supporting means on said spindle having a bodily transverse adjustment with respect to said spindle and to which said fingers are pivoted, and means for limiting the swinging movement of said fingers away from each other, whereby said fingers may be adjusted toward and away from each other while remaining parallel to each other.

5. In combination, a spindle, a pair of fingers having catches thereon, and supporting means adjustable on said spindle and to which said fingers are connected whereby the points of connection are adjustable toward and away from said spindle, said connection permitting a limited movement of said fingers with respect to said means.

6. In a gear remover, a screw-threaded spindle, a cylindrical block with which said spindle has screw-threaded engagement, a pair of perforated arms mounted on each side of said block, said mounting including a shoulder screw, a finger arranged between the lower extremities of a pair of adjacent arms and pivotally secured thereto, means on the upper end of each finger for engaging said arms to limit the movement of said fingers, and a catch at the lower end of each finger.

7. A gear remover comprising a screw threaded spindle, a screw threaded block thereon, bosses on opposite sides of said block, a pair of arms on each side of said block having openings therein of the same diameter as said bosses, each of the latter fitting within an opening in one arm of each pair and studs screwed centrally into said bosses, said studs having circular shoulders the size of said openings, each fitting within an opening in one of the remaining arms of said pairs, said arms having means for engaging the opposite side of the gear from that nearest to the end of said spindle.

In witness whereof, I hereunto subscribe my name this 26th day of November, 1912.

JOHN R. RIDLON.

Witnesses:
McCLELLAN YOUNG,
ALFRED H. MOORE.