

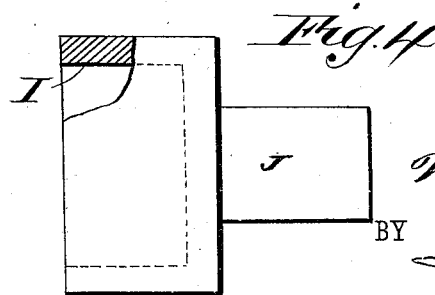
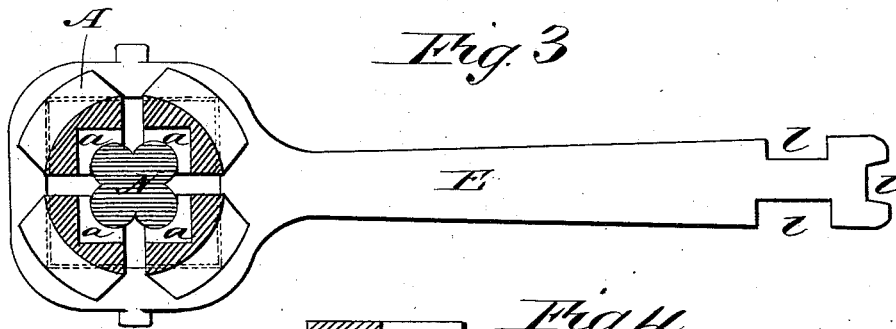
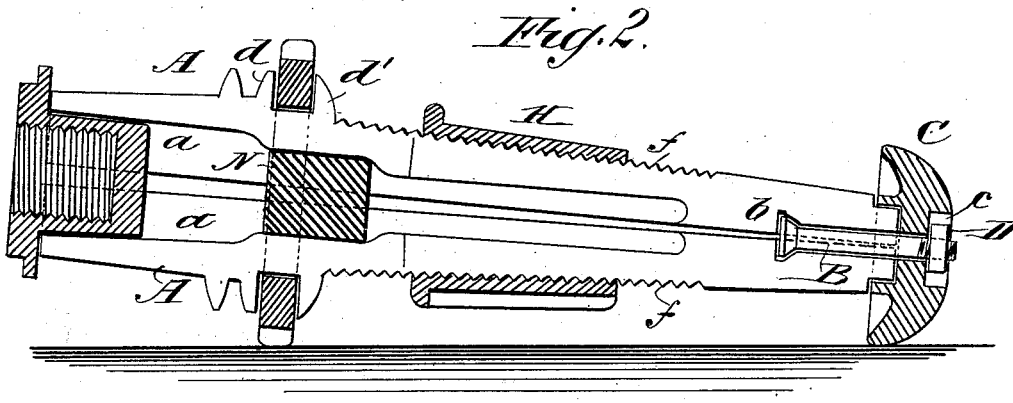
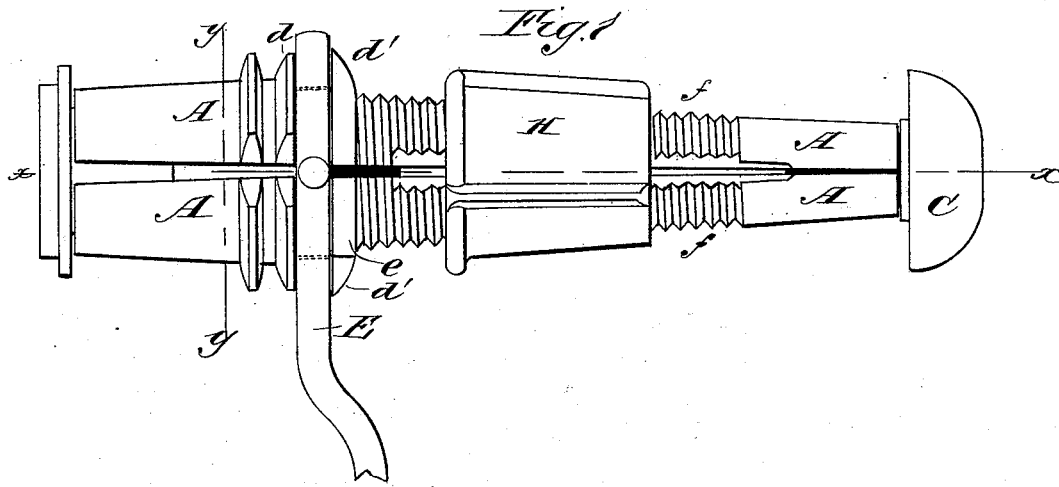
(No Model.)

W. H. BRADLEY.

WRENCH.

No. 347,681.

Patented Aug. 17, 1886.



WITNESSES:

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WILLIS H. BRADLEY, OF ROCKFORD, ILLINOIS.

WRENCH.

SPECIFICATION forming part of Letters Patent No. 347,681, dated August 17, 1886.

Application filed December 22, 1885. Serial No. 186,461. (No model.)

To all whom it may concern:

Be it known that I, WILLIS H. BRADLEY, of Rockford, in the county of Winnebago and State of Illinois, have invented a new and Improved Adjustable Carriage-Wrench, of which the following is a full, clear, and exact description.

My invention relates to the construction of a wrench which may be readily adjusted so as to be used for turning either a large or a small nut, the object of the invention being to construct a wrench which, having been adjusted to the proper size, may be placed upon the nut, which will be securely held thereby without any further setting of the parts.

To this end the invention consists of the construction and arrangement of parts, as will be hereinafter fully described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a general view of my improved form of wrench. Fig. 2 is a sectional view of the same, taken on line *xx* of Fig. 1. Fig. 3 is a cross-sectional view taken on line *yy* of Fig. 1, and Fig. 4 is a view of an attachment which is designed to be used when extremely large nuts are to be operated upon.

In constructing such a wrench as is illustrated in the drawings I provide four sections, A, each of which is formed with a rectangular recess, *a*, upon its inner face, so that when the four sections are placed together, as shown in Fig. 3, there will be a square recess adapted to receive a square nut.

In order that the sections may be united, I form each one so that when the four are placed together there will be a recess, *b*, within which there is fitted the head and shank of a bolt, B, the extreme ends of the sections A fitting in a central socket formed in a cap, C, said cap being centrally apertured in order that it may receive the shank of the bolt B, which passes through the central web of the cap and extends within an exterior recess, *c*, the end of the bolt being threaded to engage with a nut, D, this construction being clearly shown in Fig. 2. Each of the sections is formed with flanges, as *d d'*, and between these flanges there is fitted the yoke of the lever E,

which has a square aperture to correspond with the rectangular outline of the sections A between the flanges. One of the flanges, as shown at *e*, is cut away, the idea being to permit of the introduction of all of the sections within the socket of the yoke of the lever E, the three sections with full-formed flanges being first introduced, and the section without the flange being then slid in. The shanks of all the sections, which are slightly tapering, are threaded, as shown at *f*, and this threaded portion is engaged by a sleeve, H, that is correspondingly threaded, so that as the sleeve is advanced toward the lever E the socketed ends of the sections will be brought together, thus decreasing the size of the socket.

In order that the various sections may be held apart, I place a rubber or other form of spring, N, between the various sections, so that although the sections may be pressed against the tension of the spring they will be open when the sleeve is turned, so as to move toward the cap C. From this construction it will be seen that the wrench may be adjusted for use with nuts of varying sizes, and that after the nuts have been removed from the axle they will be retained within the recess of the wrench, so that the whole device may be laid upon the floor or ground without bringing the nut in contact with the sand or grit.

In order that the bite upon the nut may be more perfect, I form the sides of the recesses *a a* so that they slightly taper as they approach the lever; and in order that the device may be used to remove deep-seated nuts I extend the recessed ends of the sections A A quite a distance beyond the lever, as shown.

Although I have illustrated and described a wrench as composed of four adjustable sections, and as applicable for use upon a square-headed nut, it will of course be understood that there might be six or eight of the sections arranged for use in connection with a hexagonal or octagonal headed nut. When very large nuts have to be loosened, I provide such an attachment as is illustrated in Fig. 4, wherein I is a jaw the proper size to engage with a nut, and J a shank projecting from said jaw and arranged to engage with the recess of the wrench previously described.

Such a wrench as I have described protects

the nuts removed thereby from all danger of coming in contact with grit or sand, and consequently such sand or grit will not be brought in contact with the axle and box. If desired, one, two, three, or more notches or jaws, as *l*, may be formed in the end of the lever-arm *E*, said notches being preferably formed to fit smaller nuts than could be grasped by the adjustable jaws.

Another advantage of my improved construction is, that the hands of the operator are not liable to be soiled by the dirt and grease upon the nut.

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

1. A carriage-wrench comprising sections *A*, recessed at *a* to receive a nut, and recessed at the opposite ends to form a central bolt-shaped aperture, a headed bolt in said aperture and projecting beyond the ends of the sections, a centrally-apertured cap fitted on the ends of the sections, the bolt passing through the aperture and secured to the cap, an adjusting-collar surrounding the sections, and an operating-handle, substantially as set forth.

2. A carriage-wrench comprising sections

A, recessed at *a*, screw-threaded on the outer sides and formed with flanges *d d'*, the surface between said flanges being polygonal, the lever *E*, having a polygonal aperture to receive the sections between their flanges *d d'*, the adjusting-sleeve on the screw-threaded parts of the sections, and a cap connecting the ends of the sections, substantially as set forth.

3. A carriage-wrench consisting in the sections *A*, having the recesses *a* at one end to form a polygonal aperture, and recessed on the inner adjacent faces of their opposite ends to form a bolt-shaped recess, flanges *d d'*, and screw-threads *f* on the outer faces of the sections, the bolt *B* in the bolt-shaped aperture, having its end projected beyond the ends of the sections, the cap *C*, fitting on the said ends and having a central aperture through which the bolt passes, and a recess, *c*, for the nut of the bolt, the adjusting-sleeve *H*, the lever *E*, having a polygonal aperture receiving the sections between their flanges *d d'*, and a separating-spring between their flanges *d d'*, substantially as set forth.

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Witnesses:

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