(No Model.)

H. F. KORS.

WRENCH.

No. 418,337. Patented Dec. 31, 1889.

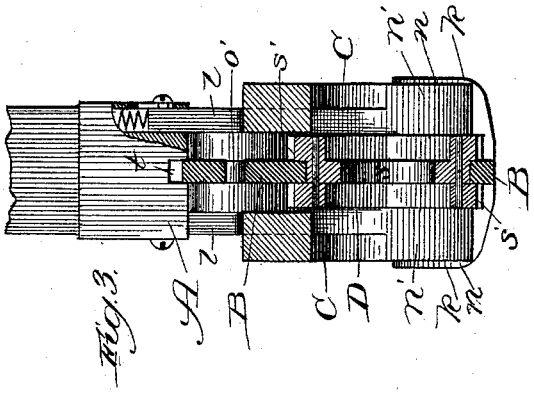

Fig. 3.

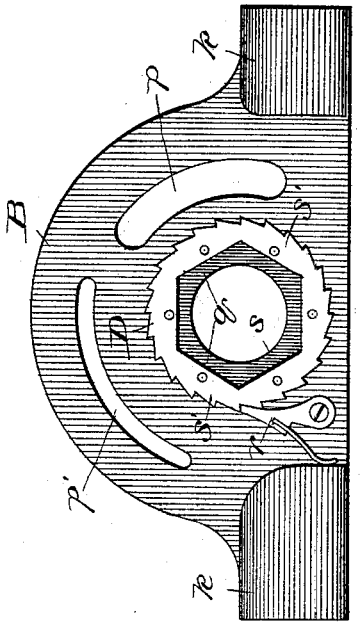

Fig. 2.

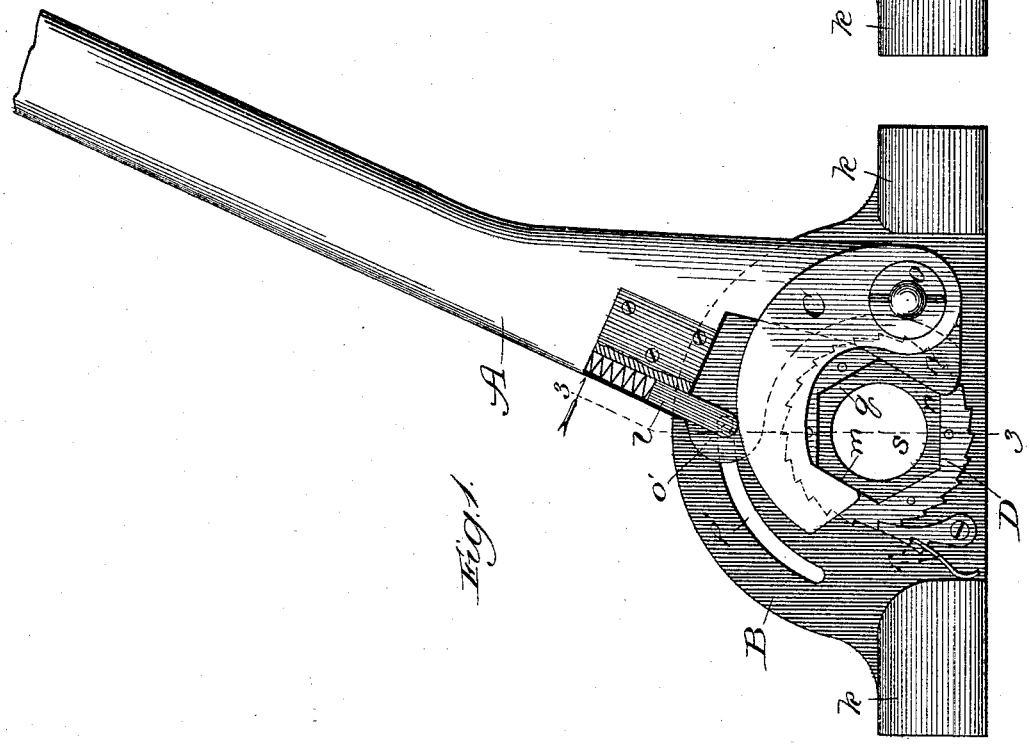

Fig. 1.

Witnesses:
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UNITED STATES PATENT OFFICE.

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WRENCH.

SPECIFICATION forming part of Letters Patent No. 418,337, dated December 31, 1889.

Application filed September 9, 1889. Serial No. 323,407. (No model.)

To all whom it may concern:

Be it known that I, HENRY F. KORS, a citizen of the United States, residing at Virginia, in the county of Cass and State of Illinois, have invented a new and useful Improvement in Wrenches, of which the following is a specification.

My invention relates to an improvement in wrenches of the class used more especially for turning bolts and nuts; and the object of my invention is to afford such a wrench of an improved construction to adapt it for use, more particularly for turning the nuts of bolts used in securing in place the fish-plates of railway-rails. As is well known, the location of the bolts named, more especially where flanged fish-plates are employed, renders the nuts upon the bolts difficult to engage with wrenches of ordinary construction, so that turning of the nuts to tighten or loosen them has been hitherto necessarily slow and laborious. In the construction of my improved wrench, therefore, my aim has been to provide a device which will operate to engage readily the nut of a fish-plate bolt and enable it to be quickly and easily tightened or removed.

In the drawings, Figure 1 is a broken view of my improved wrench in side elevation with part of a housing broken away to expose a detail; Fig. 2, a view in elevation of a detail, and Fig. 3 a broken section taken on the line 3 3 of Fig. 1 and viewed in the direction of the arrows.

A represents the handle of the wrench, and B a bearing-plate having an arched upper edge and fitting loosely with its upper portion in a narrow slot *t* in the handle A, which bifurcates the latter for a short distance from its lower end in a way to admit the plate B between the forks and permit it to oscillate readily and without lateral play. At the center of the plate B is a round hole, which extends through the plate and in which a rotary socket-wheel D is mounted. The wheel D consists of a bush *s*, provided at opposite sides with rings *s'*, which overlap the edges of the plate around the hole to hold the bush and each other in place. The inner periphery of the bush *s* is of a diameter to admit readily the shank of a bolt of the standard size in use for the purpose stated upon railroads, and the inner peripheries of the rings *s'* are hexagonal in form and afford sockets *q*, which fit the nuts of standard size and shape used with the said bolts. The outer periphery of one of the rings *s'* is serrated to afford a ratchet, which a spring-pawl *r* upon the plate B is caused to engage to allow turning of the wheel D in but one direction. Toward opposite sides of the plate B are curved guide-slots *p p'*, concentric with the wheel D, and preferably just wide enough to permit the ready sliding in them without lateral play of pins *o o'*, which connect the forks of the handle A through the slots *p p'*, respectively, and at relatively corresponding positions in said slots. At the lower bifurcated end of the handle are laterally-projecting bosses *n n*, which, with the adjacent part of the handle, afford straight edges *n'* to engage one of the sides of a nut, as hereinafter described. Adjacent to the bosses *n*, respectively, are pivotal dogs C C, mounted, preferably, on the pin *o*, which extends beyond opposite sides of the handle for that purpose.

Each dog C is hook-shaped to surround partly the nut to be turned, and is provided toward its free end with a straight edge *m*. The normal position of each dog, beyond which in a downward direction it is prevented from turning by stops upon the handle, is that shown in the drawings, wherein the straight edge *m* is substantially parallel with the edge *n'* to engage the diametrically-opposite flat side of the nut. Spring-actuated plungers *l*, housed in the handle A, press downward against the dogs and tend to maintain the latter in normal position, from which they can only rise a limited distance against the resistance of the spring-plungers. The mechanism being substantially the same on both sides of the device, it may be used to turn the nut in either direction, depending upon the side employed. Toward the opposite ends and on the opposite sides of the plate B, at its lower edge, are laterally-projecting lugs *k*, and in the adjustment of the device into operative position those of the lugs which are on the side which engages the nut rest upon the flange of the rail or fish-plate.

In operation, to remove a nut, for example,

the device is so adjusted in position that the nut will extend into the socket q on the proper side of the device, and should the end of the bolt project beyond the nut it will extend through the wheel D. In the movement of the handle from the position shown in Fig. 1, which is the final position, the dog springs over the corners of the nut until the initial position is reached, the pins o o' being then at the opposite ends of the respective guide-slots in the plate B. In the movement of the handle in the contrary direction, the dog engages the nut and turns it, the wheel D being at the same time turned by the nut. As the handle is moved to its initial position again, the engagement of the pawl r with the ratchet holds the socket-wheel and consequently the nut against turning, so that the pressure of the dog against the corners of the nut in its backward movement will not turn the nut, however loose the latter may be upon the bolt. The guide-slots p p' are preferably of a length to allow the wrench with each manipulation to give to the nut not more than about a one-sixth turn, so that the nut is in position to be gripped by the dog just as the latter reaches its initial position. When thus constructed, there will be no slipping or lost motion in the positive movement of the handle.

The wrench being for a specific purpose and the nuts upon which it is to operate of standard size, it is unnecessary to provide for change in the adjustment of the various parts of the device. However, to compensate for any slight variation in the nuts from the standard size, the jaws of the wrench between m and n' may be slightly wider than the standard size would require. The teeth on the ring s', which are engaged by the pawl r, should be so located that there can be little, if any, return of the socket-wheel when the wrench has been moved to its final position, and while I prefer to construct the wheel as shown, six teeth upon the ring properly located would answer. Instead of two slots p p', one continuous slot in the plate B could be employed; but as this would tend to weaken the plate, I prefer the construction shown.

In the use of the device the strain due to the resistance of the nut against turning is wholly upon the dogs C and handle. As the bearing-plate B operates only to keep the wrench in position, while its socket-wheel has merely to prevent the nut from being turned backward under the pressure of the spring-plungers, these parts may be so made as to add comparatively little to the weight of the device.

The wrench, as before stated, should be constructed for use in turning nuts in either direction, and while the applications of a device intended to turn the nuts in only one direction would be less extended, such a construction is obviously within the spirit of my invention, since the complete device represented in the drawings is in effect a right and left hand duplication of the device for turning in one direction only.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a wrench, the combination of the handle A, dog C upon the handle to engage the object to be turned, bearing-plate B, to which the handle is secured so as to have limited independent play, a rotary ratchet-wheel D on the bearing-plate having a nut-socket q, and a pawl for preventing a return movement of the ratchet-wheel, substantially as and for the purpose set forth.

2. In a wrench, the combination of the bifurcated handle A, having the engaging faces n', spring-actuated dogs C upon the handle having the engaging faces m, bearing-plate B between the forks of the handle and the dogs, a ratchet-wheel D upon the plate having nut-sockets q in its opposite faces, and a pawl upon the plate to engage the ratchet, substantially as and for the purpose set forth,

3. In a wrench, the combination of the bifurcated handle A, having the engaging faces n', spring-actuated dogs C upon the handle having the engaging faces m, bearing-plate B between the forks of the handle and the dogs having one or more guide-slots, one or more pins upon the handle movable in the guide-slots, a ratchet-wheel D upon the plate having nut-sockets q in its opposite faces, and a pawl upon the plate to engage the ratchet, substantially as and for the purpose set forth.

HENRY F. KORS.

In presence of—
THOS. V. FINNEY,
JOHN DINEEN.