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G. AMBORN.

CHAIN WRENCH.

APPLICATION FILED JULY 18, 1904.

NO MODEL.

Fig. I.

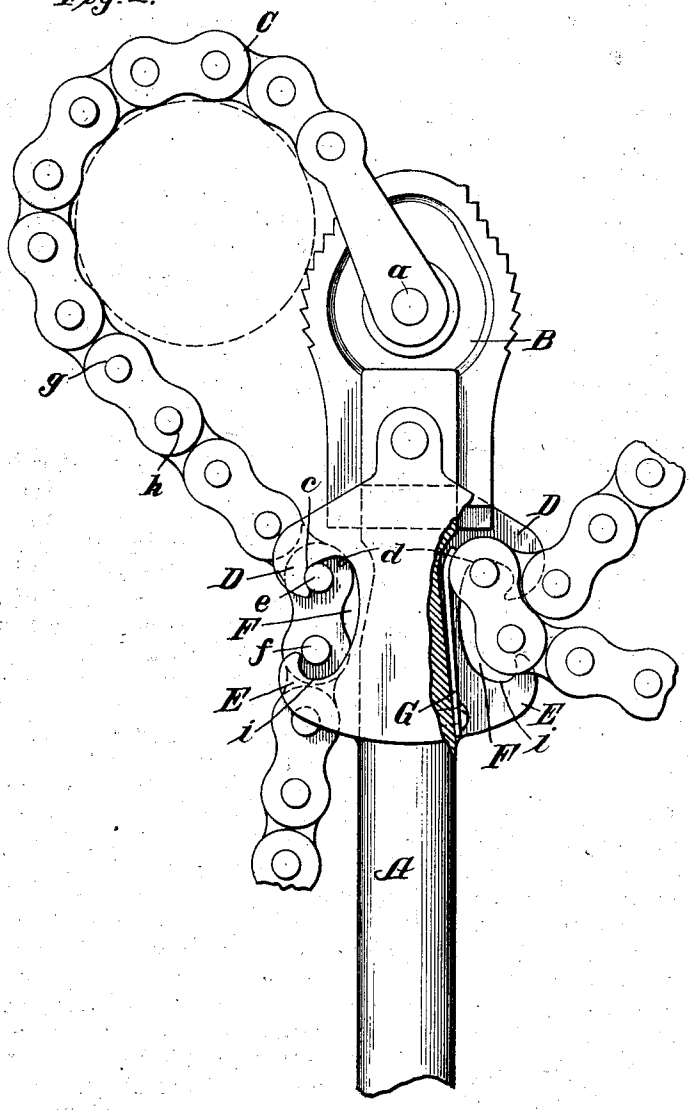
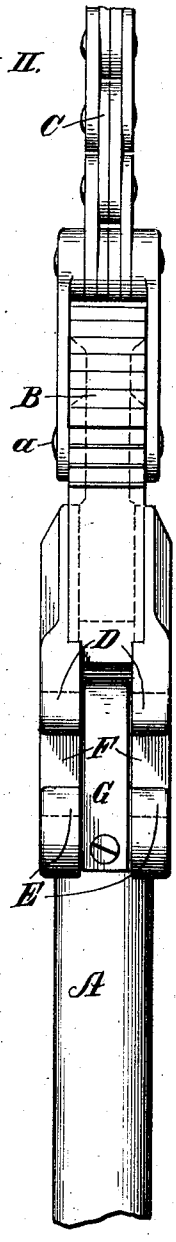


Fig. II.



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No. 769,043. Patented August 30, 1904.

UNITED STATES PATENT OFFICE.

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CHAIN WRENCH.

SPECIFICATION forming part of Letters Patent No. 769,043, dated August 30, 1904.

Application filed July 18, 1904. Serial No. 217,123. (No model.)

To all whom it may concern:

Be it known that I, GEORGE AMBORN, of the borough of Brooklyn, county of Kings, city and State of New York, have invented certain new and useful Improvements in Chain Wrenches, of which the following is a specification.

In the use of chain wrenches the chain becomes slack during the return movement of the wrench preparatory to taking a fresh grip on the article to be turned, and some provision is necessary to prevent the chain becoming unlocked at this time, particularly when the wrench is used in certain positions. The United States Patent of Booth and Redfield, No. 499,508, granted June 13, 1893, describes a construction for this purpose consisting of inclinations of the locks toward the handle, which are efficient for the purpose with the type of wrench illustrated in said patent, wherein the wrench has a double head between which the chain swings and the chain being pivoted close to the locks. This construction to avoid the accidental disengagement of the chain has proven, however, to be unreliable in wrenches having a single head to which is pivoted a double-acting single-course chain which opposes the gripping-faces of the head, so as to squarely embrace an article grasped between them, such a wrench being shown, for example, in the United States Patent of Bufford, No. 743,058, granted November 3, 1903. The lock construction of the Booth and Redfield patent when applied to such a wrench as is shown in the Bufford patent does not effectually retain the chain, especially when the chain is used with the head up.

The particular object of the present invention is to provide effective means for preventing the accidental disengagement of the chain in wrenches having a single head to which a double-acting single-course grip-face-opposing chain is pivoted. To this end the wrench is provided with retainers which engage a pintle of the chain adjacent to the one engaging the locks in such manner as to prevent the locking-pintle when the chain is slack dropping away by gravity so far from the lock as to become disengaged therefrom. In connection with the retainers there is also preferably employed springs which act upon the chain and thrust the lock-pintle into engagement with the locking-seats.

The present improvements are illustrated in the accompanying drawings, in which—

Figure 1 is a side view of the wrench, parts being broken away on one side to illustrate the construction; and Fig. 2 is an edge or face view of the wrench.

The illustrated wrench has a handle A, a single head B, rigid with the handle, and a double-acting single-course flat-link chain C, pivoted to the head at *a* in a manner similar to what is set forth in the above-mentioned Bufford patent, No. 743,058. The head is serrated on opposite faces, and the chain is squarely opposed to the faces, so as to squarely grip between the chain and the grip-face in use an article held between them. The chain, as usual, has projecting pintles which coöperate with locks D, which are rigid with the handle and head and on both sides of the wrench. Each lock is hook-shaped and is bifurcated, so as to permit the passage of the chain-links when a chain-pintle is engaged therewith. In all of these respects the illustrated wrench is or may be substantially like the wrench of the aforesaid Bufford patent.

The principal feature of the present improvements consists of the means for retaining the chain when locked from accidental disengagement when the wrench is used in such a situation that the locking-pintle might drop by gravity away from the lock in use when the chain is slackened on the reverse movement of the wrench. To this end a retainer E is provided on each side of the wrench, coöperating with the corresponding lock, said retainer being rigid with the handle and head of the wrench. This retainer is bifurcated similarly to the lock, so as to permit the passage of the chain-links, and it is hook-shaped. The retainer faces the lock, and there is provided between and by the retainer and lock an open-mouthed pintle-recess F.

This recess has certain important characteristics. The recess has a wall extending from the point of the lock around to the point of the retainer, and this wall furnishes a locking-seat *c* and a disengaging-seat *d*. As shown at the left in Fig. 1, one of the chain-pintles *e* is in engagement with the locking-seat *c*, and for convenience of reference this pintle will be designated as the "locking-pintle." At the same time an adjacent pintle of the chain *f* is within the recess F and engages or may engage the retainer E, as shown at the left in Fig. 1. For convenience of reference this pintle will be referred to as the "retaining-pintle." The pintles of the chain are all located at equal distances apart, and consequently whenever there is one pintle engaging the lock there will be an adjacent pintle located within the pintle-recess and adapted to engage the retainer, excepting, of course, in the particular and rare instance of the extreme end pintle of the chain being in use. The contour or wall of the pintle-recess F bears certain relations to the lock and retainer and to the chain-pintles which are of importance. These relations can be most conveniently expressed with reference to the distance between the extreme portions of adjacent pintles. This distance is that between the points *g* and *h*, (see Fig. 1,) and for brevity this distance will be defined as the "outside pintle distance." The distance between the points of the lock and of the retainer is less than this outside pintle distance. The distance from the point of the retainer to any part of the locking-seat *c* is less than this outside pintle distance. The distance from the point of the lock to any point of the wall of the recess is less than this outside pintle distance, while the distance from the point of the retainer to the disengaging-seat *d* is greater than the outside pintle distance. As a result of these relations it will be evident from an inspection of Fig. 1 that as long as the locking-pintle *e* is in contact with the locking-seat *c* the retaining-pintle *f* cannot pass out through the mouth of the recess, because it will engage the retainer. Likewise should the chain become slack and the locking-pintle drop down by gravity away from the lock the retaining-pintle *f* will drop against the bottom *i* of the recess, and the locking-pintle cannot then escape through the mouth of the recess because it will be engaged by the point of the lock, which, as just stated, is nearer any point of the recess-wall than the outside pintle distance. To disengage the locking-pintle from the lock, it is necessary that the locking-pintle should be brought into contact with the disengaging-seat *d*. When this is done, as shown at the right in Fig. 1, the retaining-pintle *f* can be freely swung out through the open mouth of the recess, because the distance between the point of the retainer and the disengaging-seat *d* is greater than the outside pintle distance. It is obvious that when the wrench is held in any position where the locking-pintle could drop by gravity away from the lock it requires a lifting of the locking-pintle to bring it against the disengaging-seat *d* and therefore there can be no accidental unlocking or disengaging of the chain. To either lock or unlock the chain requires that the locking-pintle should be brought into contact (or substantially so) with the disengaging-seat, at which time the retaining-pintle can pass freely through the open mouth of the recess.

An additional precaution is shown at the right in Fig. 1 and in Fig. 2 of the drawings. A leaf-spring G is secured to the wrench between the bifurcations of the retainer, and it extends back of the recess, with its upper free end opposite the lock. This spring acts upon the chain-links and thrusts the same outwardly, thereby elastically maintaining the locking-pintle in contact with the locking-seat. This spring is a light one, so that its presence does not interfere with the ready locking and unlocking of the chain, and it efficiently performs its duty because it has simply to resist the weight of a small portion of the chain.

The chief utility of the improved retainer is in connection with a double-acting single-course flat-linked chain pivoted to the head of the wrench at a point remote from the locks. The retainers could, however, be used with other types of chain wrenches.

I claim as my invention—

1. A chain wrench having, in combination, a handle; a single serrated head rigid with the handle; a double-acting single-course chain pivoted to the head and opposed to the serrated faces of the head, said chain having projecting pintles; a hook-shaped bifurcated lock for said chain on each side of the wrench rigid with the head and handle; a hook-shaped bifurcated retainer rigid with the head and handle on each side of the wrench and facing the corresponding lock; an open-mouthed recess formed by each facing lock and retainer and constructed to receive a pair of adjacent pintles, said recess furnishing a locking-seat and a disengaging-seat for the locking-pintle, said locking-seat being at a less distance from the point of said retainer than the outside pintle distance, said disengaging-seat being at a greater distance from the point of the retainer than the outside pintle distance, and the point of said lock being at a less distance from any point in the recess than the outside pintle distance; and a spring opposite the recess which bears upon the chain and thrusts the locking-pintle toward the locking-seat.

2. A chain wrench having, in combination, a handle; a single serrated head rigid with the handle; a double-acting single-course chain pivoted to the head and opposed to the serrated faces of the head, said chain having pro-

jecting pintles; a lock for said chain on each side of the wrench rigid with the head and handle; a retainer on each side of the wrench rigid with the head and handle and facing the corresponding lock, and an open-mouthed recess formed by each facing lock and retainer, and constructed to receive a pair of adjacent pintles, said recess furnishing a locking-seat and a disengaging-seat for the locking-pintle, said locking-seat being at a less distance from the point of said retainer than the outside pintle distance, said disengaging-seat being at a greater distance from the point of the retainer than the outside pintle distance, and the point of said lock being at a less distance from any point in the recess than the outside pintle distance.

3. A chain wrench having, in combination, a handle; a head; pivoted chain having locking-pintles; a lock for said chain; a retainer facing said lock; an open-mouthed recess formed by said facing lock and retainer, and constructed to receive a pair of pintles, said recess furnishing a locking-seat and a disengaging-seat for the locking-pintle, said locking-seat being at a less distance from the point of said retainer than the outside pintle distance, said disengaging-seat being at a greater distance from the point of the retainer than the outside pintle distance, and the point of said lock being at a less distance from any point in the recess than the outside pintle distance; and a spring opposite the recess which bears upon the chain and thrusts the locking-pintle toward the locking-seat.

4. A chain wrench having, in combination, a handle; a head; a pivoted chain having locking-pintles; a lock for said chain; a retainer facing said lock; and an open-mouthed recess formed by said facing lock and retainer, and constructed to receive a pair of pintles, said recess furnishing a locking-seat and a disengaging-seat for the locking-pintle, said locking-seat being at a less distance from the point of said retainer than the outside pintle distance, said disengaging-seat being at a greater distance from the point of the retainer than the outside pintle distance, and the point of said lock being at a less distance from any point in the recess than the outside pintle distance.

5. A chain wrench having, in combination, a handle, a head, a pivoted chain having locking-pintles, a lock for said chain, and a spring which bears upon the chain and thrusts the locking-pintle against the lock.

6. A chain wrench having, in combination, a handle; a single serrated head rigid with the handle; a double-acting single-course chain pivoted to the head and opposed to the serrated faces of the head, said chain having projecting pintles; a lock for said chain on each side of the wrench rigid with the head and handle; and a retainer on each side of the wrench rigid with the head and handle which engages another pintle of the chain before the locking-pintle can drop free from the lock.

7. A chain wrench having, in combination, a handle; a single serrated head rigid with the handle; a chain pivoted to the head and having locking-pintles; a lock for said chain rigid with the head and handle; a retainer rigid with the head and handle which engages another pintle of the chain before the locking-pintle can drop free from the lock.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

GEORGE AMBORN.

Witnesses:
MORTIMER J. TRAVIS,
JAMES H. SAN JULE.