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WRENCH.

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To all whom it may concern:

Be it known that I, SAMUEL ELMER FESS, a citizen of the United States, residing at North Star, in the county of Darke and State of Ohio, have invented certain new and useful Improvements in Wrenches, of which the following is a specification, reference being had to the accompanying drawings.

This invention is an improved wrench which may be used as a pipe wrench and may also be used for other purposes and for gripping objects, such as the calks of horse-shoes, which are of other than cylindrical form, the invention consisting in the construction, combination and arrangement of devices hereinafter described and claimed.

In the accompanying drawings—Figure 1 is a side elevation of a wrench constructed in accordance with my invention, with a portion of the lever removed so as to disclose the eccentric cam, and also showing a portion of the lever in section. Fig. 2 is partly an end elevation and partly a sectional view of the same on the plane indicated by the line *a—a* of Fig. 1.

The jaws 1, 2 of my improved wrench are respectively provided with arms 3, 4 which are pivotally connected together at one end by means of a bolt 5. Each of the jaws is of substantially semi-cylindrical form in cross section, and with their concave sides opposed so that the jaws are adapted to grip cylindrical objects, such for instance as the end portion of a pipe. To enable the jaws to grip objects of other than cylindrical form, I provide them with bits 6 which are detachable therefrom, and which are provided in their opposing sides with angular or other suitably shaped recesses 7, to conform to the shape of the objects to be gripped or held by the wrench. The arm 3 of the jaw 1 is provided on opposite sides with a pair of guide plates 8 which extend from one side of the said arm, and across the arm 4 of the jaw 2, so that the arm of the jaw 2 is movable in the space between the said plates and toward and from the jaw 1. A handle 9 is also attached to the outer side of the arm 3 of the jaw 1, and extends a suitable distance therefrom, and is here shown as also connected to the plates 8.

In practice the handle, the plates, the jaw 1, and the arm 3 thereof, may, if preferred be integral, the plates 8 in effect constituting guide lugs which project from the jaw 1

and between which the jaw 2 operates. The said plates or guide lugs are provided at their outer ends with segmental edges 10 which are provided with locking teeth 11. The lever 12 is provided at its inner end with a fork 13, the arms 14 of which bear on the outer sides of the lugs or plates 8, and are pivotally connected thereto, by a bolt 15. The said bolt also forms the pivot for an eccentric cam 16, the curved edge 17 of which bears against the outer side of the jaw 2. The said cam is also provided with an inner curved edge 18 which is provided with lock notches 19. A locking dog 20 is provided to adjustably connect the eccentric cam to the lever 12. The said locking dog is here shown as provided with a stem 21 which operates in a longitudinal bore 22 with which the lever is provided, and which opens at the inner end of the fork, between the arms 14 thereof. A spring 23 is employed which bears against the inner end of the fork and also against a suitable shoulder 24 with which the dog is provided, the spring acting to engage the dog with one of the notches, and thereby lock the eccentric cam to the lever so as to cause the lever and the cam to actuate the jaw 2 when the lever is turned.

In order to disengage the dog 20 from the eccentric cam when it is desired to readjust the eccentric cam with respect to the lever, I provide the dog with a handle 25 which enables it to be readily moved out of engagement with the eccentric cam against the tension of its spring 24. To secure the lever and hence also the eccentric cam in any desired position, and hence keep the jaws 12 closed against any object with which the wrench may be engaged, I provide a locking pawl 26 which is here shown as U-shaped, its arms 27 being pivotally connected to the fork arm 14 of the lever as at 28, the intermediate portion of the said pawl engaging the teeth 11 of the lugs or plate 8. A spring 29 is provided which bears between the jaws 1, 2, and serves to open them when the lever and the cam are moved in one direction.

It will be understood that the lever may be adjusted with respect to the eccentric cam to extend therefrom, at any desired angle according to the nature of the work, and the desired extent of movement of the lever in order to close the jaws of the wrench, and hence the wrench may be used under conditions and in places where it would not be possible to use it if the lever and cam

were rigidly connected together, and were incapable of relative angular adjustment.

I claim:—

1. In a wrench, the combination of a pair
5 of jaws, pivotally connected together, one of
the said jaws having a lug extending across
the other, a spring to open said jaws, and a
lever pivotally connected to the lugs, and
having an eccentric cam to operate against
10 one side of the other jaw, and move the lat-
ter against the tension of the said spring,
the said cam being mounted for angular ad-
justment with respect to the lever, and
means to secure the cam and the lever to-
15 gether, at any desired adjustment.

2. The herein described wrench compris-
ing a pair of jaws having arms pivotally
connected together, one of the said jaws hav-
ing a handle extending in one direction, a
20 pair of guide lugs extending in the opposite

direction, and across the other jaw, the last
mentioned jaw being movable between the
said lugs, a lever having a fork, the arms of
which are pivotally mounted on the said
lugs, an eccentric cam actuated by the lever, 25
bearing against the outer side of the last
mentioned jaw, and mounted for angular ad-
justment with respect to the lever, the said
cam being provided with lock devices, and
the said lever being provided with a dog to 30
engage said lock devices of the cam, and a
spring to hold said dog in engaged position,
and means to secure the lever and hence also
the cam in any desired adjusted position.

In testimony whereof I hereunto affix my 35
signature in the presence of two witnesses.

SAMUEL ELMER FESS.

Witnesses:

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LUELLA GOSLEE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."
