(No Model.)

H. G. SELLMAN.

WRENCH.

No. 342,643. Patented May 25, 1886.

Fig. 1.

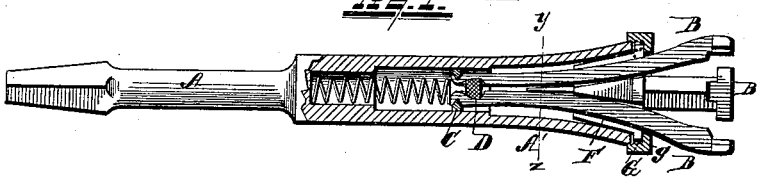


Fig. 2.

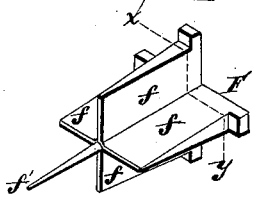


Fig. 3.

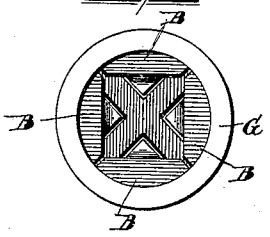


Fig. 4.

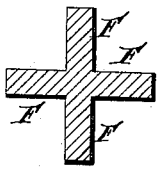


Fig. 5.

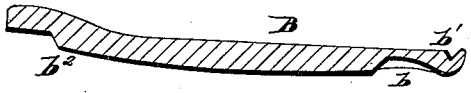
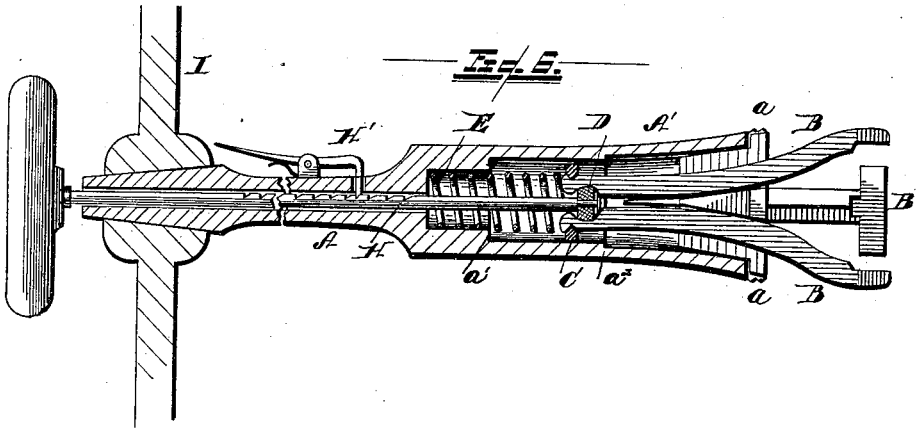


Fig. 6.



WITNESSES
Samuel E. Thomas
N. S. Wright.

INVENTOR
Henry G. Sellman
By W. W. Legg & Co
Attorney

N. PETERS. Photo-Lithographer. Washington, D. C.

UNITED STATES PATENT OFFICE.

HENRY G. SELLMAN, OF SOUTH LYONS, MICHIGAN.

WRENCH.

SPECIFICATION forming part of Letters Patent No. 342,643, dated May 25, 1886.

Application filed February 10, 1885. Serial No. 155,519. (No model.)

To all whom it may concern:

Be it known that I, HENRY G. SELLMAN, of South Lyons, county of Oakland, State of Michigan, have invented a new and useful Improvement in Socket-Wrenches; and I declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form a part of this specification.

My invention consists of the combinations of devices and appliances hereinafter specified, and more particularly pointed out in the claims.

The object of my invention is to provide an improved socket-wrench, and is designed to provide such a wrench, adapted for turning burrs of various sizes by various degrees of pressure or by other means of adjustment which may be readily operated.

My improved wrench is adapted particularly for use with ordinary braces or bit-stocks, although it may be employed in any desired manner.

In the drawings, Figure 1 is a longitudinal section of a device embodying my invention. Fig. 2 is a separate view of the division-wall. Fig. 3 is an end view showing the levers compressed together. Fig. 4 is a cross-section along the line *x y*. Fig. 5 is a separate view of one of the levers. Fig. 6 is a modification adapting the device for use with a T-handle.

I carry out my invention as follows:

A is the stem, which may be adapted to be used with a bit-stock or in any desired way.

A′ is a tapering socket, adapted to receive a suitable number of levers, B. These may be conveniently four in number; but I would have it understood that I do not confine myself to any particular number of levers to be employed in this connection. These levers are recessed at their base, as shown at *b*, and also grooved to receive a binding-ring C, as shown at *b′*. The groove *b* is constructed to receive an elastic packing, of rubber or other suitable material, D, said packing being adapted to throw the outer ends of the levers open or to automatically expand the same when removed from the burr.

E is any suitable spring, located at the base of the levers. It may be conveniently connected to the packing in any desired manner.

F represents dividing-walls, made removable, their various partitions *f* preferably wedge-shaped, as shown in Fig. 2, to assist in opening the levers when pressure is removed from the spring. These division-walls are also designed and adapted to resist the strain upon the levers when the wrench is rotated upon the burrs.

To engage the levers in the socket, the division-walls are removed, the spring and the levers inserted in the socket, as shown in Fig. 1. The division-walls are then inserted, the outer end of the socket being preferably slotted or grooved, as shown at *a*, to receive the edges of these walls, after which a ferrule may be engaged upon the outer extremity of the socket; but I prefer, instead of the ferrule, to screw-cut the end of the socket, as shown in Fig. 1, and after the levers and dividing-walls are in place to run a suitable burr, G, upon the end of the socket to strengthen the same. This burr I prefer to construct with an annular shoulder, as shown at *g*, extending over the inner edge of the socket and limiting the friction of the levers as they are reciprocated in the socket. I prefer to construct these levers at their outer ends of such a form that when they are closed together their periphery will be a circle, as shown in Fig. 3. These levers are also constructed at their open or free ends with shoulders b^2, to engage against the face of the burr, so that the pressure applied will cause the levers to grip the burr. Should even one of these shoulders be engaged against the face of the burr pressure would cause the remaining levers to grip thereon. These shoulders also add strength to the levers at the very point where a considerable degree of strain ordinarily comes, as the levers are made heavier adjacent to said shoulders.

As shown in Fig. 6, where it is desired to use the device with a T-handle, I, or where it will not be convenient to apply pressure to compress the extremities of the levers, I design to sleeve through the stem A a rod, H, connected with the base of the levers in any suitable manner—as, for instance, by connecting said rod with the elastic cushion—the con-

struction being such that by drawing said rod through the sleeve the levers will be correspondingly drawn into the socket, and thereby compressed at their outer ends in the manner already described. Suitable ratchet mechanism, H′, may be connected with this rod to hold the same in a given position.

These wrenches with a T-handle are more especially designed for use when large sizes are desired. The rod H is extended through and beyond the stem, as shown, and may have an eye at its outer end, so as to be readily engaged by the operator to close the jaws when it is not convenient to apply pressure, the ratchet mechanism serving to hold the rod and the jaws in desired position.

The operation of the device is as follows: The outer ends of any of the levers are engaged upon the burr and pressure applied upon the bit-stock or the rod H retracted, as the case may be, in consequence of which the levers will be suitably retracted in the socket until they firmly bind upon the burr. In this manner they may be engaged upon burrs of various sizes, the only adjustment necessary being the application of different degrees of pressure or the retraction of the rod H, as the levers will thus be retracted more or less to fit burrs of various dimensions. The spring at the base of the levers will throw the levers forward when the pressure is relaxed and the pressure removed from the burr.

It is evident that by constructing the socket and the levers tapering, as shown, the outer ends of said levers are closed more or less simply by contact of the levers upon the socket when they are forced therein.

This is a very simple device and efficient in its operation.

Instead of tapering the inside of the socket its whole length I prefer to construct its walls a suitable distance from the base forward parallel, so that the inner end of the socket will be tubular. Said end may also be of narrower diameter, to receive the spring, as shown in the drawings. Forward of the receptacle for the spring I prefer to widen the diameter of the socket, leaving a shoulder, a', still extending the socket forward to a suitable distance with parallel walls—as for instance, to a shoulder, a^2—from whence the socket tapers to its mouth. I prefer also to construct the binding-ring C at the base of the levers equal in outside diameter to a measurement across the closed levers intermediate of their extremities—as, for instance, along the line $y\,z$. Then as the binding-ring is thrown forward when the levers are opened a liability of the levers rattling against the socket is effectually prevented, said ring coming in contact with the walls of the socket the entire distance to which the levers are reciprocated. This construction is especially designed to make the levers more firm and strong, keeping them in place.

In order to prevent the levers from coming forward too far, I prefer to provide the dividing-walls F with an extended stop, f', adapted to engage against the packing D as the levers are thrown forward and limit their reciprocation.

To enable the operator to grip the largest possible burr and the smallest burr with one and the same compact wrench, I construct these levers with curvature, said curvature being greatest at the outer ends of the levers and graduated toward the base. The result of this peculiar curvature of the levers is that the resistances offered by a small burr and a large burr are the more nearly equalized to the pressure necessary to be applied by the operator to secure the grip of the levers thereon.

What I claim is—

1. In a socket-wrench, the combination, with a socket, of a series of levers located therein, constructed and arranged to be moved inwardly in the socket by pressure upon their outer ends, and thereby compressed to grip burrs of various sizes, said levers provided with a spring to move them forward when said pressure is relaxed, substantially as described.

2. The combination, with the stem A and socket A′, of a spring, E, located in said socket at the base of said levers, a rod engaged with the base of said levers and sleeved through and extended to the exterior of said stem, and a spring, D, for expanding the levers, substantially as described.

3. The combination, with a socket, of a series of levers arranged to be reciprocated therein, wedge-shaped partition-walls located in the socket between said levers, a spring located in the socket for advancing the levers, and a spring-packing interposed between the inner ends of the levers to expand the same, substantially as described.

4. The combination, with the stem A and socket A′, of reciprocating levers, a spring located in said socket at the base of the lever, a rod engaged with the base of said levers and sleeved through and extended to the exterior of said stem, ratchet mechanism to hold said rod and levers in a given position, and a spring-packing interposed between the inner ends of the levers to expand the same, substantially as described.

5. In a socket-wrench, a socket provided with reciprocatory levers, said socket constructed with a tubular section and said levers with a binding-ring corresponding in diameter to the diameter of said tubular portion, substantially as described.

6. In a wrench, the combination of the socket or shell A, having the removable dividing-walls F at its front end, the sliding jaw-levers B, passing through the chambers formed by said walls, and a spring acting upon the rear ends of the levers within the shank A, substantially as described.

7. In a wrench, the combination of the sliding jaw-levers B, having grooves b and notches b' at their rear ends, and the binding-ring C,

and elastic packing D, with the shell or socket A, and a spring bearing upon the rear ends of the levers, substantially as described.

8. In a wrench, the combination of the removable dividing-walls F, and the flanged nut or collar G, with a socket or shell, A, and the sliding spring-pressed jaw-levers, substantially as described.

9. The combination, with a socket, of a series of levers provided with grooves *b'*, a ring engaging said levers and located in said grooves, an elastic packing or spring, D, to expand said levers, a spring located at the base of the levers for advancing the same, dividing-walls located between said levers, and a burr to hold said walls in place, substantially as described.

10. The combination, in a wrench, of the socket slotted or grooved with the removable division-walls, the edges of which are received by the slots or grooves of the socket, substantially as and for the purposes described.

In testimony whereof I sign this specification in the presence of two witnesses.

HENRY G. SELLMAN.

Witnesses:

M. B. O'DOGHERTY,

N. S. WRIGHT.