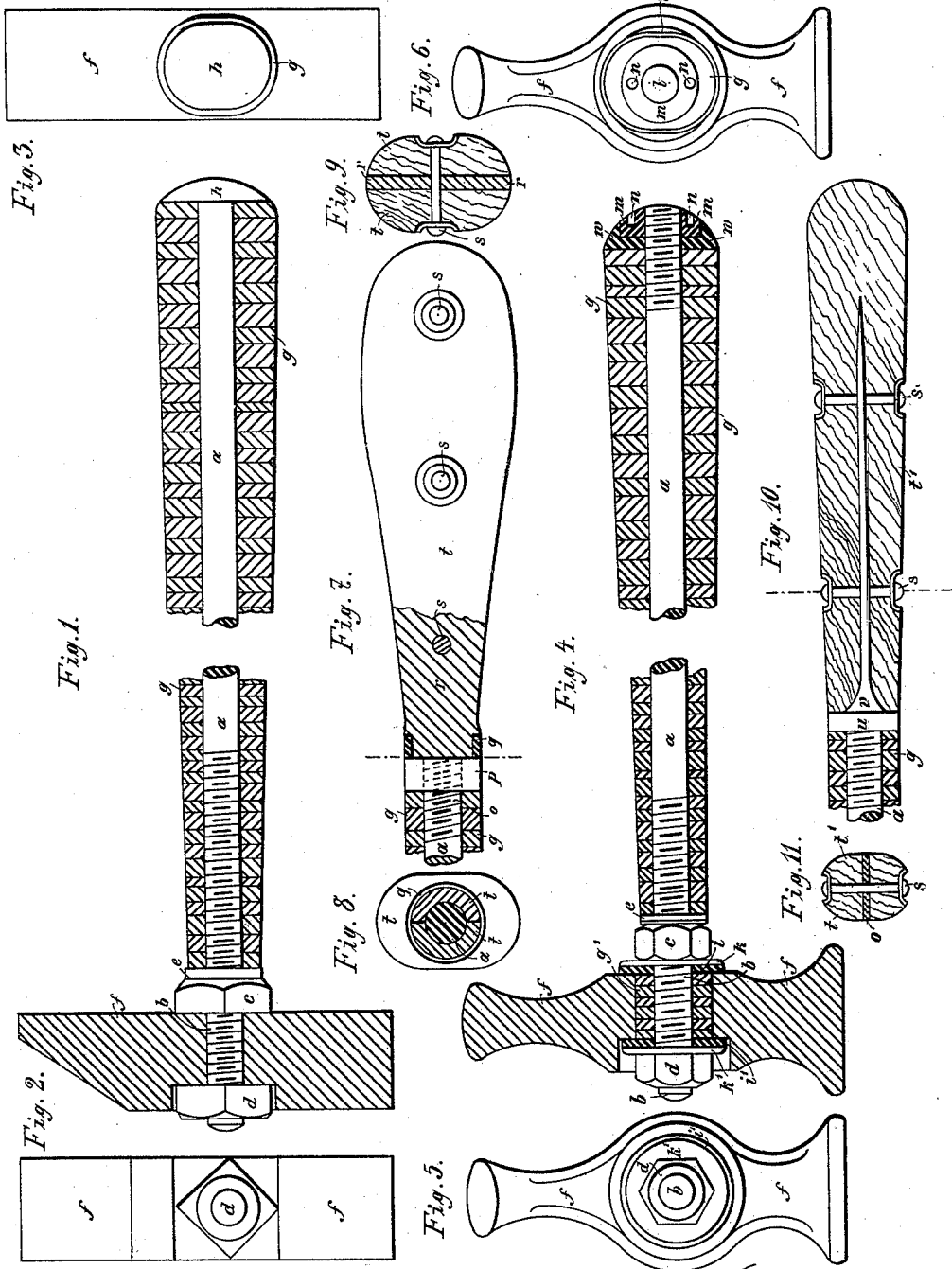


(No Model.)

E. HÜLLER.
TOOL HANDLE.

No. 419,953.

Patented Jan. 21, 1890.



Witnesses:
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UNITED STATES PATENT OFFICE.

ERNST HÜLLER, OF NUREMBERG, BAVARIA, GERMANY.

TOOL-HANDLE.

SPECIFICATION forming part of Letters Patent No. 419,953, dated January 21, 1890.

Application filed August 6, 1889. Serial No. 319,933. (No model.)

To all whom it may concern:

Be it known that I, ERNST HÜLLER, manufacturer, a subject of the King of Bavaria, and a resident of Hammer, near Alvegeldorf, Nuremberg, Kingdom of Bavaria, German Empire, have invented certain new and useful Improvements in Tool-Handles, of which the following is a specification, reference being had to the accompanying drawings.

The fastening of the heads of hammers, hatchets, axes, and other tools or implements to a wooden handle, as heretofore practiced, presents several inconveniences. The well-known connection by means of wedges driven into the wood is at first very firm; but in a comparatively short time it becomes so loose that the head may suddenly fly off the handle and may cause serious accidents.

According to the present invention the aforesaid inconvenience is obviated and a novel implement is provided; to which ends the invention consists in the features of construction and the combination or arrangement of parts hereinafter described and claimed; reference being made to the accompanying drawings, in which—

Figure 1 is a section, Fig. 2 a front view, and Fig. 3 a rear view, of a hammer. Figs. 4, 5, and 6 show a longitudinal section and a front and rear view, respectively, of a hammer in which the handle is fixed by means of interposed leather disks, so as to obviate any injurious jars being caused by the blow. Figs. 7, 8, and 9 are sections of a handle having a covering of wood instead of leather. Figs. 10 and 11 show a modification of the arrangement represented in Figs. 7 to 9.

In the hammer illustrated in Fig. 1 the handle is formed of an iron, steel, or other metal rod *a*, which has a head *h* at its rear end and is formed with a screw-thread *b* at the front end. Upon this screw-threaded part are screwed nuts *c* and *d*, an iron washer *e* being placed behind the nut *c*. Upon the rod *a* are first slid perforated leather disks *g*, which are pressed together as forcibly as possible through the medium of the nut *c* and washer *e*. After this operation the hammer-head *f* is placed on the said rod and is firmly secured thereon by means of the nut *d*. As this connection of the hammer-head with the rod is absolutely rigid, the former can never

fly suddenly from the rod, and should the nut *d* become loose it can readily be screwed tight again. If by long-continued hammering the iron changes its structure and breaks through brittleness, as many leather disks are removed from behind the washer *e* as will correspond to the length of the piece broken off, and the nut *c*, with washer *e*, is again screwed tight, so that the protruding piece of the rod *a* will be long enough to receive the hammer-head, together with the nut *d*, for securing the latter.

The arrangement of the improved hammer illustrated in Figs. 4 to 7 is substantially the same as that hereinbefore described; but for mitigating the jars or thrusts the part of the rod *a* within the hammer-head is covered with leather disks. The object of this leather covering is to preclude the direct transmission of the hard blows which the hammer-head sustains to the rod *a*. The metal forming the latter will not, therefore, easily become brittle and suddenly break.

In lieu of leather disks, as shown in Fig. 4, use can advantageously be made of other strong but yielding material. It is advisable to employ for this purpose a more yielding metal than iron—for example, lead, tin, copper, or alloys of two or more such metals. The latter can then either be cast in a heated state between the handle and rod or pieces which have been cast previously can be inserted.

One advantage of the hammer represented in Fig. 4 consists in that the rod *a* does not present a head at the end of the haft, but has a screw-threaded part *l* for the reception of a nut *m*. The hammer can therefore be composed by commencing either with the end receiving the head or with the other end of the rod, and the leather disks can be compressed with great power. For this purpose the said rod *a* can be passed through the head *f* after the washer *e*, nut *c*, and leather disk *i* have been put upon its screw-threaded part *b*. Then the leather disks *g'*, leather disk *i'*, and washer *k'* are slid upon the screw-threaded part *b*, and the whole is screwed so tight by means of the nut *d* that the aforesaid leather disks *g'* will be firmly pressed together in the head *f*. As many perforated leather disks *g* are next placed upon the rod *a* as

are necessary for its length, the whole being then pressed together through the medium of the washer *w* and the nut *m*, which is provided with holes *nn* to enable it to be turned.

- 5 When metallic pieces are inserted in lieu of the leather disks *g'*, the operation may be carried out in a similar manner.

In the hammers represented in Figs. 1 to 6 the handle consists of leather disks, which
10 are slid upon a metal core, and are subsequently turned. Such a leather handle has special advantages over the ordinary wooden handles. In the first place, the leather handle cannot crack, and parts of the same are
15 not liable to come off, as with wood. Of still more importance, however, is that the surface of the leather will adhere much better to the inner surface of the hand than wood. A leather handle can therefore be held with
20 considerably more safety than a wooden handle, which in course of time becomes so very smooth that it is liable to slip from the hand in the hammering. For heavy forge-hammers, which must be swung over the head,
25 such a leather handle will, for example, present considerable safety against the slipping of the same away from the hand. When such advantages appear to be unnecessary, a wooden handle may be employed.

30 Figs. 7 to 9 illustrate a hammer having a wooden handle. The hammer-head can be secured in the manner described with reference to Figs. 1 to 6. The core of the handle is flattened at its rear end, as shown in Fig. 9, in
35 order to receive the wooden pieces or scales *tt* at its two sides. In the composition or mounting of this hammer it is necessary to commence at the haft end in order to enable the leather disks *g* to be firmly secured. The
40 object of these leather disks is the same as that above explained with reference to Fig. 1—that is to say, to permit the removal, in case the rod *a* breaks in the hammer-head, of as many leather disks as will correspond
45 to the length of the piece broken off, so that the said hammer-head can be secured upon the uncovered front end of the rod *a*. In this manner, if such breakage really occurs, the hammer can at once be refitted for use. Upon
50 the flattened part *r* are fixed the wooden pieces or scales *tt* by means of rivets *ss* and the ring *q*. Then the round nut *p* is screwed in its place and the leather disks *g* are slid

on. A washer *e* and a nut *c*, as shown in Figs. 1 and 4, are employed for pressing the leather
55 disks together. The hammer-head is then fixed in the manner hereinbefore described.

Figs. 10 and 11 show a slight modification of the arrangement represented in Figs. 7 to 9, inasmuch as the nut *p* and the ring *q* are
60 replaced by a collar *u* upon the rod *a*. For the flattened portion *r* of the handle *a* is, moreover, substituted a broad spike *v*, which is driven into a slot of the haft *t'* and is fixed therein by means of rivets *ss*. The composition or mounting of this hammer is commenced at the collar *u*, and it is immaterial
65 which part of the handle is made first. The hammer-head can be fixed in any desired manner.

By a combination of the specified modes of manufacture with each other other forms or
70 arrangements can be obtained, which, however, present less characteristic differences between each other than those above described.

What I claim is—

1. The combination, with a hammer or other tool-head *f*, having an eye, of a rod *a*, formed with a screw-threaded end *b*, extending
80 entirely through the eye, a screw-nut *c*, located on the rod between the ends of the screw-threaded part, a screw-nut *d* on the threaded end of the rod at the outer side of the tool-head, and the removable disks *g*, located on
85 the handle back of the nut *c*, so that if the rod breaks between the nuts the nut *c* can be adjusted backward by removing some of the disks, and a fresh screw-threaded portion of said rod inserted through the tool-eye and
90 secured by the two nuts, substantially as described.

2. A tool-head *f*, having an eye, in combination with a handle having a screw-threaded portion extending through the eye, a series of
95 leather or other flexible disks arranged on the screw-threaded portion within said eye, and inner and outer screw-nuts *cd*, between which the head is clamped, substantially as described.

In witness whereof I have hereunto set my hand in presence of two witnesses.

ERNST HÜLLER.

Witnesses:

ALBERT BERNHARD,
WILLIAM R. MATTHES.