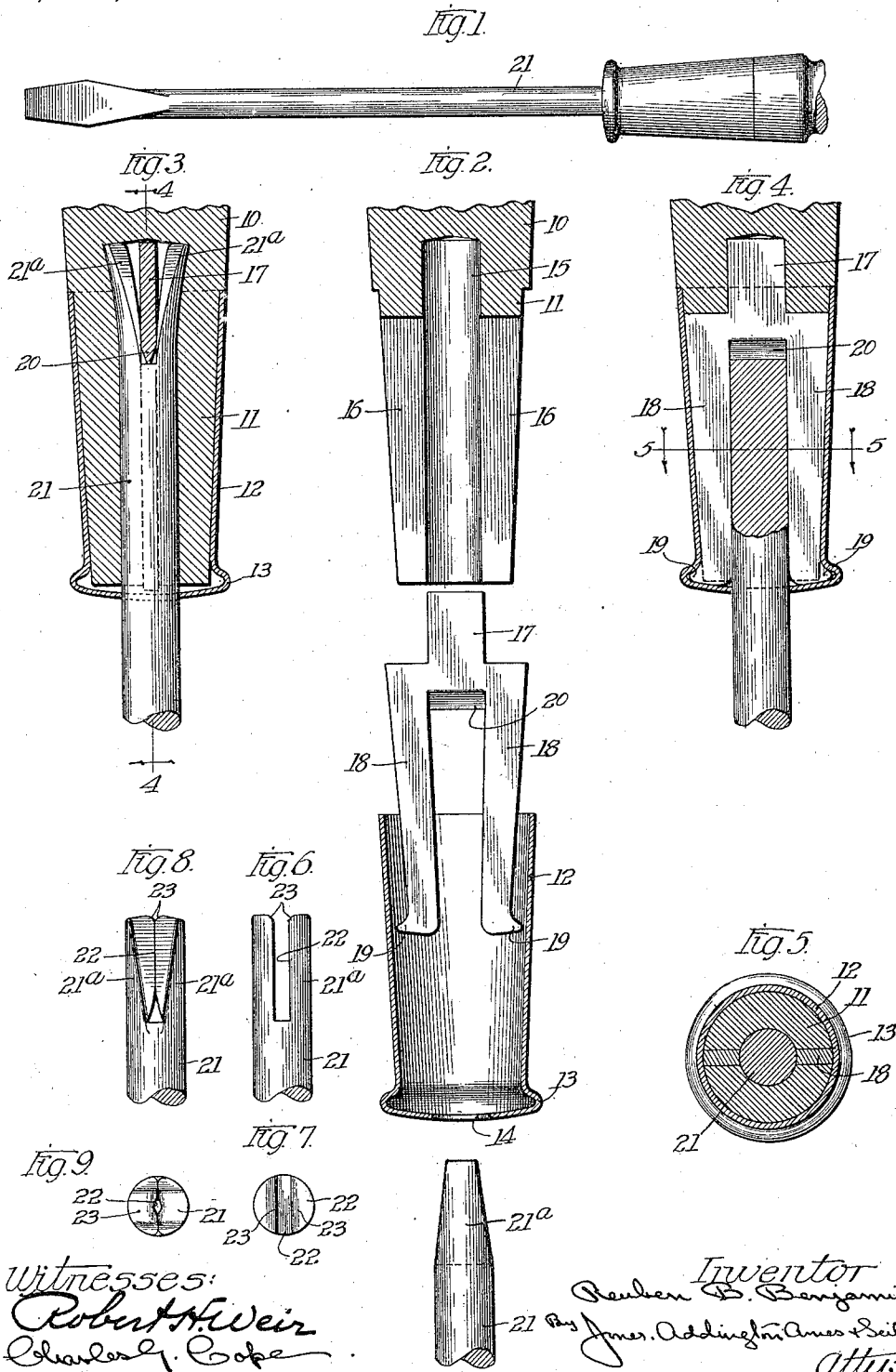


R. B. BENJAMIN.
HAND TOOL.
APPLICATION FILED JAN. 5, 1914.

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REUBEN B. BENJAMIN, OF CHICAGO, ILLINOIS, ASSIGNOR TO BENJAMIN-SELLAR MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

HAND-TOOL.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, REUBEN B. BENJAMIN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Hand-Tools, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

My invention pertains to hand tools, the handles of which are formed of wood or a similar material, and especially to screw drivers of this nature. Screw drivers having handles of wood or the like are ordinarily subject to the objection that the shank of the blade is liable to become loose with respect to the handle, and that the ferrule, where one is used, is also liable to become loose.

It is an object of my invention to provide a screw driver, or similar hand tool, having a handle formed of wood or a similar material, in which there will be no possibility of the blade-shank becoming loose with respect to the handle either in a longitudinal direction or in a direction of rotation.

It is a further object of my invention to provide a screw driver of the kind designated, in which there is no possibility of the ferrule becoming loose.

It is a further object of my invention to obtain the above advantages while still retaining an economical construction, and without sacrificing the appearance of the tool. And other and further objects of my invention will appear from the following specification taken in connection with the appended claims.

A screw driver embodying my invention is shown, by way of example, in the accompanying drawing, and described in the following specification. It is to be understood, however, that the invention may be embodied in other forms than that described and shown, and that changes may be made in the described embodiment without exceeding the scope thereof as defined in the appended claims.

In the drawings: Figure 1 is a view of the completed screw driver, a portion of the handle being broken away; Fig. 2 is a view showing the parts of the screw driver in detached relation; Fig. 3 is a longitudinal section through the portion of the screw driver

at which the blade-shank is connected with the handle; Fig. 4 is a section on the line 4-4 of Fig. 3, looking in the direction of the arrows; Fig. 5 is a horizontal section taken on the line 5-5 of Fig. 4, looking in the direction of the arrows; Fig. 6 is a side view of the end of the blade-shank prior to the final forming operation; Fig. 7 is a plan of the same; Fig. 8 is a side view of the blade-shank after the final forming operation; and Fig. 9 is a plan of the same.

Like reference characters refer to like parts throughout the following specification and the several figures of the accompanying drawing.

Referring now to the drawing, the embodiment of my invention shown therein includes a wooden handle 10, the lower end, 11, of which is reduced to receive a ferrule 12, the outer face of which is flush with that of the handle 10. The ferrule 12 is formed, at its lower end, with a peripheral hollow bead 13 and with an aperture 14 through which the blade-shank may pass. The lower end of the handle 10 is formed with an axial cavity 15 for receiving the blade-shank, and with a pair of slots 16 extending laterally from the cavity 15, but terminating short of the upper end of the latter.

A locking member is provided for securing the handle 10, the ferrule 12 and the blade-shank together, which locking member is formed of flat metal and includes a tongue 17 adapted for insertion in the upper end of the cavity 15. Extending laterally from the tongue 17 are a pair of side wings 18 of substantially the same length as the slots 16, and adapted to be contained therein. The side wings 18 are provided, at their lower ends, with outwardly extending teeth 19. The distance between the wings 18, at the upper ends of the latter, is substantially the same as the diameter of the blade-shank, but the wings are inclined toward each other somewhat so that the distance between them, at their lower ends, is less than the diameter of the blade-shank. The tongue 17 is formed with a wedge portion 20 disposed between the upper ends of the wings 18.

In producing the blade-shank 21, the latter is formed, at its upper end, (Figs. 6 and 7) with a slot 22 of a size to receive snugly the tongue 17 of the locking member, whereby a pair of forked portions 21^a are produced at the upper end of the shank.

The corners of the slot 22 are rounded as at 23. The slotted upper end of the shank 21 is then placed in a suitable press and flattened out, transversely of the slot 22, in the taper manner shown in Figs 8 and 9. During the flattening out operation, the sides of the shank, at the slot 22, are held against spreading, the result being that the metal of the shank is forced into the slot, closing up a portion of the latter as shown in Figs. 8 and 9.

The operation of connecting together the various members described above is performed as follows: The locking member is inserted into the ferrule 12 so as to be contained within the latter, the short distance between the lower ends of the wings 18 permitting the teeth 19 to pass into a position in which they are directly opposite the hollow bead 13 of the ferrule. The handle 10 is then pushed into the ferrule, the wings 18 of the locking member entering the slots 16 and the shank 17 of the locking member entering the top end of the cavity 15. This brings the parts into the position indicated in Fig. 3, with the exception that the blade-shank is not in place. The operations so far described may be performed by hand. When the handle, the locking member and the ferrule are thus assembled together, these parts are put into a press and the blade-shank 21 forced through the aperture 14 of the ferrule and into the cavity 15 of the handle. As it is thus inserted, the blade-shank 21, by engaging against the inner parts of the ends of the wings 18 (which, it will be remembered, are separated by a distance less than the diameter of the blade-shank) forces these wings apart and consequently forces the teeth 19 into firm engagement with the inside of the hollow bead 13 of the ferrule. When, during the pressing operation, the rounded edges 23 of the slot 22 in the upper end of the blade-shank strike the wedge portion 20 of the locking member, this wedge portion is caused to enter into the slot 22, thereby causing the forked portions 21^a of the shank to be spread laterally, and forcing them bodily into the wood of the handle 10. When the pressing operation is completed the parts are in the condition shown in Figs. 3 and 4, the forked portions 21^a spread out in the manner clearly shown in Fig. 3.

It will be seen that when the several members of the screw driver have been assembled together in the manner described above, it is impossible for any one of them to become loose with respect to the others in any direction of movement. One of the most common troubles with screw drivers is that the blade-shank becomes loose with respect to the handle in a rotary direction. My invention renders anything of this kind impossible by reason of the engagement of

the wings 18 in the slots 16 of the handle. Longitudinal movement of the blade with respect to the handle is absolutely prevented by reason of the spreading of the forked portions 21^a of the blade-shank, and of the fact that these forked portions are driven bodily into the wood during the spreading operation. Rotary or longitudinal movement of the ferrule with respect to the handle is prevented by reason of the firm engagement of the teeth 19 in the hollow bead 13, and the firm engagement of the outer edges of the wings 18 with the inside of the ferrule. It will be observed further that all of the parts are of an exceedingly simple and economical construction, and that they are assembled together with the necessity of but a single pressing operation. Consequently the tool can be placed upon the market at a very reasonable price.

While I have described and shown one form in which my invention may be embodied, I do not limit myself to such embodiment, or, in such embodiment, to the mechanical details thereof, what I claim being:

1. A hand tool comprising a blade-shank, a handle having a cavity for receiving said shank, and a member in said cavity, said member having a portion coöperating with said shank to prevent rotation of said shank and force a portion of said shank laterally when said shank and handle are pressed together, and said member having a portion extending laterally with respect to said cavity, thereby to prevent rotation of said member relative to said handle.

2. A hand tool comprising a blade-shank having a forked end, a handle having a cavity for receiving said end and having a laterally extending recess, and a member disposed in said cavity, said member having a portion coöperating with said shank to force the forked portions thereof laterally when said shank and handle are pressed together, and said member having a portion extending laterally into said recess, thereby to prevent rotation of said member relative to said handle.

3. A hand tool comprising a blade-shank, a handle having a cavity for receiving said shank, a ferrule on said handle, said ferrule having a shoulder, and a member in said cavity, said member having a portion coöperating with said shank to force a portion of the latter laterally when said shank and handle are pressed together, and having a second portion arranged to engage the shoulder of said ferrule when said shank and handle are pressed together.

4. A hand tool comprising a blade-shank having a forked end, a handle having a cavity for receiving said shank and having a pair of recesses extending laterally from said cavity, a ferrule on said handle, said

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5 ferrule having a shoulder, and a member in said cavity, said member having a wedge portion and having wings disposed in said recesses, and adapted to be forced into engagement with the shoulder of said ferrule when said handle and shank are pressed together.

In witness whereof, I have hereunto subscribed my name in the presence of two witnesses.

REUBEN B. BENJAMIN.

Witnesses:

E. R. KING,
CHARLES G. COPE.

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