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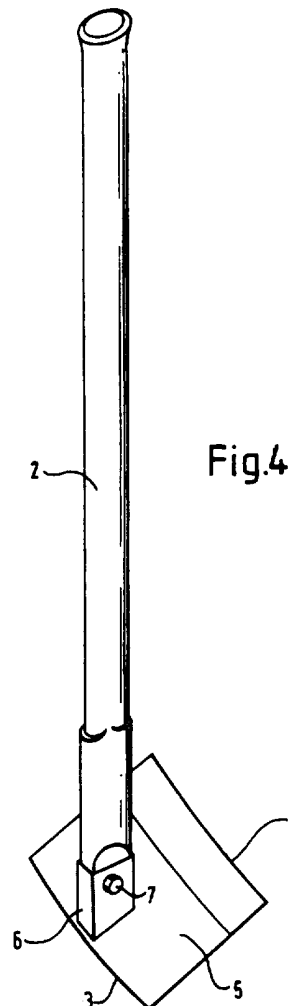
(52) UK CL (Edition O )  
**A1B B1C**

(56) Documents Cited  
**GB 2186471 A GB 0988111 A GB 0567999 A**  
**GB 0317779 A US 4037668 A US 3797581 A**

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UK CL (Edition N ) **A1B B1C**  
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(54) Hand tool

(57) A hand tool comprising an elongate handle 2 and a blade 3 transversely mounted at an end thereof, the blade 3 having a socket 6 for receiving the handle 2 and a curved surface 5 with a cutting edge 4 along a curved edge thereof. The socket 6 is mounted on the blade 3 (by welding) at such an angle that, with the blade 3 resting on the ground, the centre of gravity of the handle 2 lies over the central area of the blade 3, so that the tool can rest on the blade 3 in an upright position. The tool can be used as a ground working tool for a number of jobs such as digging or ground levelling or as a hoe.



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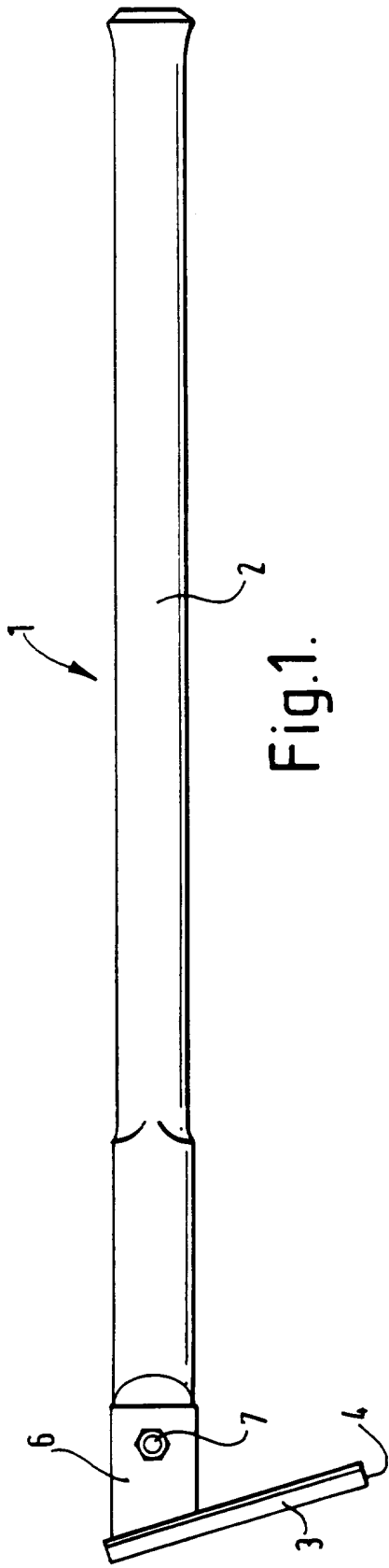


Fig. 1.

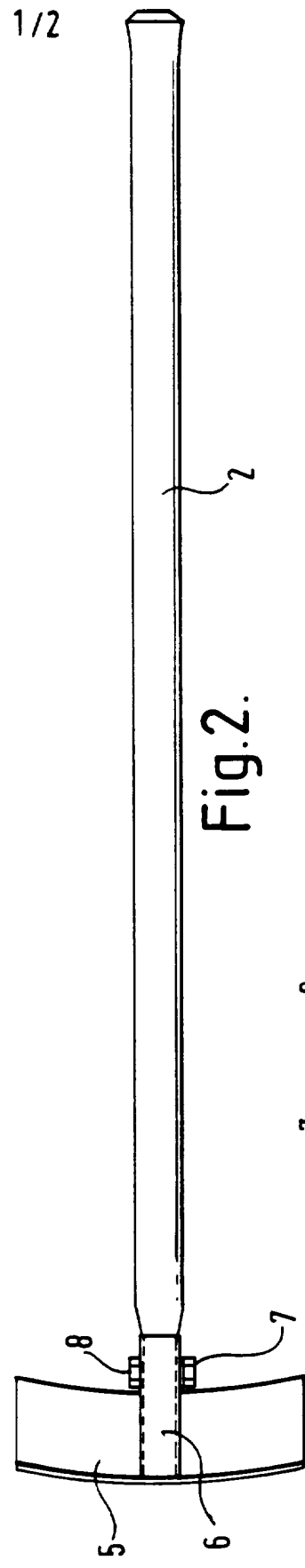


Fig. 2.

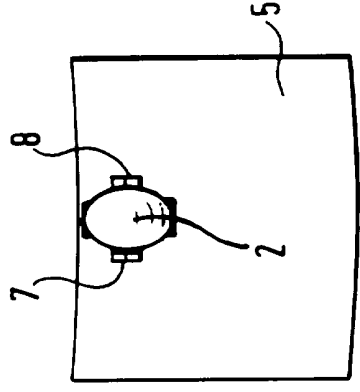


Fig. 3.

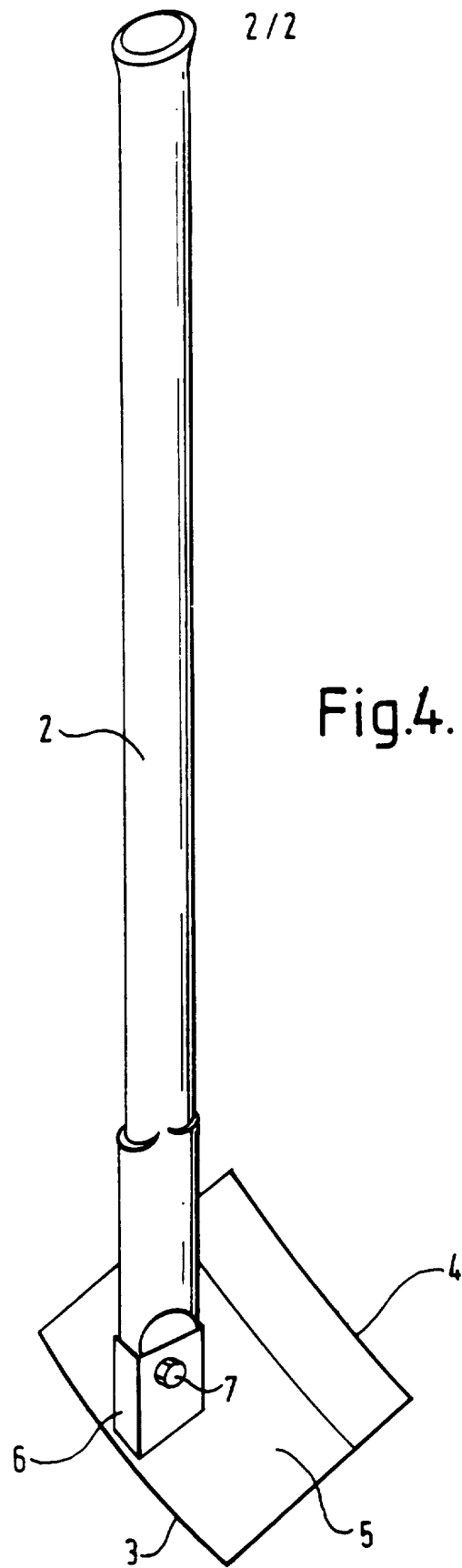


Fig.4.

HAND TOOL

This invention relates to hand tools, and more particularly to a hand tool having improved versatility and ease of use.

5 A wide variety of hand tools are available to the gardener, builder and similar contractor for carrying out external tasks in and around the house and garden. These can include, for example, spades, shovels, forks, picks, rakes, hoes and the like. Such hand tools have not  
10 changed very much over the centuries and each has its own specific, and rather restricted, use. Efforts to provide tools of more general applicability have, for the most part, not met with commercial acceptance or technical success.

15

Nevertheless, it is apparent that if a single tool could be provided which could perform a number of functions previously requiring several different tools, this would be a major advantage.

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In addition, none of the hand tools mentioned above can be balanced in an upright position unless they are stood against a wall or, where the ground is soft enough, impaled into the soil, with the handle extending upwards.  
25 This means that such tools must be frequently laid down

and picked up, which is particularly inconvenient for the elderly, or those with back disabilities.

A tool has been proposed which comprises a forged  
5 blade mounted transversely on an elongate handle for digging trenches. The handle passes through a hole in the forged blade and is secured thereto by means of a rubber bush inserted in the hole. The blade is in the form of a flat, generally pear-shaped member and does not  
10 have a cutting edge. The axis of the handle is substantially perpendicular to the plane of the blade and the tool cannot easily be balanced in a stable, upright position on a flat surface.

15 In a first aspect, the present invention provides a hand tool comprising a relatively long elongate handle having a blade member transversely mounted at an end thereof, the blade member having a cutting edge and a socket member for receiving an end of the elongate  
20 handle, the arrangement being such that, on a generally flat surface, the tool can stand in a stable, upright position when balanced on the blade member as a base.

In a further aspect, the invention provides a hand  
25 tool comprising a relatively long elongate handle having a blade member transversely mounted at an end thereof, the blade member having a curved surface and a cutting edge along a curved edge thereof, and having an

upstanding socket member secured thereto, the arrangement being such that the elongate handle is received in the socket member with the longitudinal axis of the elongate handle extending at an angle to the blade member.

5

The hand tool can be used for a variety of digging, lifting, and ground working applications, as will be explained in more detail hereinafter, and the elongate handle is preferably of such a length that the hand tool  
10 of the invention can be used for such purposes whilst the operator is in a standing position. By "relatively long" in this specification, is meant that elongate handle is long with respect to the greatest dimension of the blade member. For example, the elongate handle can be from  
15 four to seven, preferably from five to six, times the length or width of the blade member, whichever is the greater.

The elongate handle is preferably straight, and can  
20 have, for example, an oval cross section in order to provide for easy gripping of the tool. The elongate handle could, however, be gently curved in one or two directions, if required, and could have any other suitable cross section. Typically, the handle is from 90  
25 to 100 cm in length. The longitudinal axis of the elongate handle, if the handle is not straight, is the straight line drawn from end to end.

The blade member is preferably of a generally rectangular shape and preferably has a slightly curved surface. The curvature of the blade member can prevent the edges thereof from "digging in" when the hand tool is used for ground levelling. Preferably the blade member has a cutting edge which lies along a curved edge of its curved surface, which cutting edge is preferably of a length of from 12 to 25 cm, more preferably from 15 to 20 cm. The cutting edge is preferably formed upon the long side of a rectangular blade member. The sides of the rectangular blade adjacent to the cutting edge preferably have a length of from 12 to 20 cm, more preferably from 15 to 17 cm.

Although the blade member is preferably of a generally rectangular shape, other shapes are also possible, although it is preferred that the cutting edge should be relatively straight, apart from the curvature of the blade member itself.

20

An advantage of the present invention is that the blade member can be formed by simply rolling a steel plate into the desired shape, and does not require any forging operations.

25

The blade member is preferably provided with an upstanding socket for receiving an end of the elongate handle, which socket can be secured, for example, by

welding, or by bolts or rivets, to a major surface of the blade member. Where the blade member is curved, the socket is preferably secured to the blade member such that the surface of the blade member facing the elongate  
5 handle is concave.

The socket and one end of the elongate handle can be shaped such that the end of the elongate handle is received in the socket in close fitting engagement. The  
10 socket can, for example, be of rectangular hollow section and the end of the elongate handle can be of rectangular section and adapted to fit therein. Any other suitable cross sections can, of course, also be used. If desired, securing means can be provided, and, for example, the end  
15 of the elongate handle can be releasably secured in the socket, for example, by means of a bolt passing transversely through holes in the socket and the handle which are in register when the handle end is pushed into the socket. If for any reason the handle becomes damaged  
20 in use, it will be appreciated that this method of mounting makes it very easy for the handle to be replaced.

It is an important feature of the present invention  
25 that the blade member is mounted transversely and at an angle to the elongate handle, such that the tool can stand in a stable, upright position when balanced on the blade member as a base. The angle of the blade member to



the handle is preferably, therefore, such that the centre of gravity of the handle lies relatively centrally of the blade member when the tool is standing in an upright position. Preferably the longitudinal axis of the  
5 elongate handle extends at an angle to the plane of the blade member of from 70 to 84° and preferably the angle lies in a plane at right angles to the cutting edge of the blade member.

10 Preferably the blade member is only gently curved, and, for example, it preferably has a radius of curvature of from 75 to 90cm.

The elongate handle and the blade member can be made  
15 of any suitable materials, although usually the handle will be made of wood or hard plastics material and the blade will be made from a suitable carbon steel.

A preferred embodiment of a hand tool according to  
20 the invention will now be described, by way of example only, with reference to and as illustrated in the accompanying Drawings in which:

Figure 1 shows a hand tool according to the  
25 invention in side elevation;

Figure 2 shows a front elevation of the hand tool of  
Figure 1;

Figure 3 shows a top elevation of the hand tool of Figure 1; and

Figure 4 shows a perspective view of the hand tool of Figure 1 with the tool in an upright position.

Referring firstly to Figure 1, the hand tool, illustrated generally at 1, comprises a wooden elongate handle 2 and a carbon steel blade member 3. The blade member comprises a curved carbon steel plate having a cutting edge 4 along a curved edge thereof. Mounted on the concave surface 5 of the blade member 3 is a rectangular section hollow socket 6 which is welded to the blade member 3. A bolt 7 passes through holes in the socket 6 and the handle 2 and is secured by means of a washer and nut 8.

The blade member 3 is mounted at an angle of  $74^{\circ}$  to the handle 2, as can be seen in Figure 1, and has a curved surface as can be more readily seen from Figure 2. The rectangular shape of the blade member is best seen in Figure 3.

Referring now to figure 4, the hand tool of the invention is shown in perspective view, standing in an upright position. It will be appreciated that, notwithstanding the slight curvature of the blade member, the tool is quite stable in this position, and can be

readily picked up without the necessity for the operator to bend down.

It will be appreciated that the blade member of the  
5 hand tool can be made using simple metal forming operations, and does not require any tooling expenses for forging dies and the like.

Hand tools of the invention can be exceedingly  
10 robust and have a far greater versatility than those commonly available to the gardener, builder, or other contractor. Some examples of the uses of the hand tool of the invention are given below, although it will be appreciated that many other applications are possible:

15

1. Removing grass sods and roots from rough terrain, for example, in new housing developments;

2. Cutting and lifting difficult roots, for  
20 example, brambles, shrubs, young trees, and well established mature perennial flowers;

3. Earthing up of vegetable root plants, for example, potatoes, and strawberry plants;

25

4. Cutting and breaking up of poor soils, for example, clay soils and very dry soils;

5. Clearing gulleys and drains of debris and cutting away ingress of growing vegetation;

6. Lifting of paving flags and large stones from embedded positions in soil, and levelling the soil;

7. Levelling and clearing terrain for established lawns;

8. Landscaping, positioning of soil features, pond excavation and removing unwanted vegetation;

9. Horticultural harrowing of soil for sowing of seeds and plants;

15

10. Snow removal; and

11. Ground working prior to concreting and block paving.

20

In many of the above applications, the curvature of the blade is important in that it allows levelling of soil without "digging in" at the side edges of the blade member.

25

In certain applications, the hand tool of the invention can also perform the function of a pick axe.

Many other applications will be apparent to those skilled in the art.

The reader's attention is directed to all papers and documents which are filed concurrently with or previous to this specification in connection with this application and which are open to public inspection with this specification, and the contents of all such papers and documents are incorporated herein by reference.

10

All of the features disclosed in this specification (including any accompanying claims, abstract and drawings), and/or all of the steps of any method or process so disclosed, may be combined in any combination, except combinations where at least some of such features and/or steps are mutually exclusive.

Each feature disclosed in this specification (including any accompanying claims, abstract and drawings), may be replaced by alternative features serving the same, equivalent or similar purpose, unless expressly stated otherwise. Thus, unless expressly stated otherwise, each feature disclosed is one example only of a generic series of equivalent or similar features.

The invention is not restricted to the details of the foregoing embodiments. The invention extends to any

novel one, or any novel combination, of the features disclosed in this specification (including any accompanying claims, abstract and drawings), or to any novel one, or any novel combination, of the steps of any  
5 method or process so disclosed.

**CLAIMS**

1. A hand tool comprising a relatively long elongate handle having a blade member transversely mounted at an end thereof, the blade member having a cutting edge and a socket member for receiving an end of the elongate handle, the arrangement being such that, on a generally flat surface, the tool can stand in a stable, upright position when balanced on the blade member as a base.
2. A hand tool according to Claim 1, in which the blade member has a curved surface and a cutting edge along a curved edge thereof.
3. A hand tool according to Claim 1 or 2, in which the elongate handle is received in the socket member with the longitudinal axis of the elongate handle extending at an angle to the blade member.
4. A hand tool according to any of the preceding claims, in which the elongate handle is of such a length that the hand tool can be used for ground working applications whilst the operator is in a standing position.

5. A hand tool according to Claim 4, in which the elongate handle is from 5 to 6 times the length or width of the blade member.
- 5 6. A hand tool according to any of the preceding claims, in which the blade member is of a generally rectangular shape.
7. A hand tool according to any of the preceding  
10 claims, in which the blade member has a cutting edge which lies along a curved edge of a curved surface thereof, the cutting edge having a length of from 15 to 20cm.
- 15 8. A hand tool according to any of the preceding claims, in which the cutting edge is relatively straight, apart from the curvature of the blade member itself.
- 20 9. A hand tool according to any of the preceding claims, in which the blade member is provided with an upstanding socket for receiving an end of the elongate handle, which socket is welded to a major surface of the blade member.
- 25 10. A hand tool according to Claim 9, in which the blade member is curved, and the socket is secured to the



blade member such that the surface of the blade member facing the elongate handle is concave.

11. A hand tool according to any of the preceding  
5 claims, in which securing means are provided for securing the elongate handle in the socket member.
12. A hand tool according to any of the preceding  
10 claims, in which the angle between the longitudinal axis of the elongate handle and the blade member is such that the centre of gravity of the elongate handle lies relatively centrally of the blade member when the tool is standing in an upright position.
- 15 13. A hand tool according to any of the preceding claims, in which the longitudinal axis of the elongate handle extends at an angle to the plane of the blade member of from 70 to 84°, and the angle lies in a plane at right angles to the cutting edge  
20 of the blade member.
14. A cutting tool according to any of preceding claims, in which the blade member has a radius of curvature of from 75 to 90cm.
- 25 15. A hand tool comprising a relatively long elongate handle having a blade member transversely mounted at an end thereof, the blade member having a curved

surface and a cutting edge along the curved edge thereof, and having an upstanding socket member secured thereto, the arrangement being such that the elongate handle is received in the socket member with the longitudinal axis of the elongate handle extending at an angle to the blade member.

5

16. A hand tool according to any of the preceding claims substantially as described with reference to and as illustrated in the accompanying Drawings.

10

17. A hand tool substantially as hereinbefore described.

Patents Act 1977  
Examiner's report to the Comptroller under Section 17  
(The Search report)

Application number  
GB 9514879.7

Relevant Technical Fields

- (i) UK Cl (Ed.N)      A1B, B1C, B1Z
- (ii) Int Cl (Ed.6)    A01B 1/06, 1/08, 1/10

Search Examiner  
MR S WALLER

Date of completion of Search  
12 OCTOBER 1995

Databases (see below)

(i) UK Patent Office collections of GB, EP, WO and US patent specifications.

Documents considered relevant following a search in respect of Claims :-  
1-14

(ii)

Categories of documents

- X:** Document indicating lack of novelty or of inventive step.
- Y:** Document indicating lack of inventive step if combined with one or more other documents of the same category.
- A:** Document indicating technological background and/or state of the art.
- P:** Document published on or after the declared priority date but before the filing date of the present application.
- E:** Patent document published on or after, but with priority date earlier than, the filing date of the present application.
- &:** Member of the same patent family; corresponding document.

| Category | Identity of document and relevant passages          | Relevant to claim(s)  |
|----------|---|-----------------------|
| X        | GB 2186471 A (KEE) see Figures 1 and 2              | 1, 3, 4, 6, 8, 9      |
| X        | GB 988111 (SCHWABISCHE) see Figures 9, 10 and 16    | 1, 3, 4, 6, 8, 9      |
| X        | GB 567999 (DAVIS) see Figure 2                      | 1, 3, 4, 8, 11, 12    |
| X        | GB 317779 (KEEP MACPHERSON LTD) see Figures 1 and 2 | 1, 3, 4, 6, 8, 12, 13 |
| X        | US 4037668 (SVEJDA) see Figures 1 and 3             | 1, 3, 4, 6, 8, 12, 13 |
| X        | US 3797581 (HOLLOWAY) see Figure 3                  | 1, 3, 4, 6, 8, 11, 12 |

Databases: The UK Patent Office database comprises classified collections of GB, EP, WO and US patent specifications as outlined periodically in the Official Journal (Patents). The on-line databases considered for search are also listed periodically in the Official Journal (Patents).