PORTABLE COMBINATION TOOL

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ABSTRACT OF THE DISCLOSURE

There is provided a portable combination tool intended for manual use in penetrating barriers occurring in such disasters as fire, collapsed buildings and the like, into the region of which it is difficult to carry a plurality of special tools. The combination tool consists of two parts, each provided with its respective shaft capable of being collapsed telescopically one within the other, and which can be locked together in different extended or collapsed positions. One portion of the tool is provided with an axe-and-pick head and a laterally projecting crow bar and suspension loop, while the other portion of the tool is provided with forked leg members, shaped to form a chisel-like member and a cutting tool respectively, and wherein said tool portions can also be used as a wedging means and a hammer.

The present invention is concerned with a portable combination tool intended to replace a plurality of special tools intended for penetrating barriers of metal, wood, glass, plastics, rubber and lighter forms of brickwork in conjunction with such catastrophic incidences as fire, collapsed buildings and the like, where weight and space prevent the necessary assortment of special tools to be carried into the region of the disaster. The working operations which might be required in such incidences include hewing, prizing, wedging, pulling, lifting, striking, cutting and propping.

The tool of the invention is provided with a plurality of tool elements adapted to effect the aforementioned working operations wherewith, in addition to having at immediate disposal the tool necessary for the individual task on hand, the capacity of the tool to effect the task can be strengthened by increasing the length of the shaft in a simple manner, without the length of said tool being unsuitable for carrying purposes.

The invention is mainly characterized in that the tool consists of two parts, each having its respective shaft, the shafts being collapsible telescopically one within the other, one tool portion having an axe head presenting an axe blade and an oppositely directed spike, and projecting laterally from one side of the head is a lip adapted to be used as a crow bar, and in the opposite lateral direction there is provided a loop, while the other portion of the tool is provided with claw-like leg members of which one is shaped at the end thereof to form a chisel-like member and on the other side is provided with a saw-toothed edge, and the other leg has a cutting edge confronting the saw-toothed edge, the legs together forming a cutting tool having wedge-shaped sides, and that the shaft has cooperating locking means so adapted that the shafts can be locked to each other when telescoped and in a limited extended position, and that the shafts are movable but not rotatable between the end positions and can be dismantled from each other by mutual rotation in the extended position.

The invention will now be described in more detail with reference to the accompanying drawing, further characterizing features of the invention being disclosed in conjunction therewith.

In the drawing:
FIG. 1 is a partially sectioned side view of the tool of the invention,
FIG. 2 is a longitudinal section through the line II—II in FIG. 1, and
FIG. 3 is a section along the line III—III in FIG. 1.

In the drawing there is illustrated the tool of the invention having at one end an axe portion 1 which at one side of the tool shaft presents a blade 2 furnished with a cutting edge 3 and tooth-like serrations 4, 5 on the upper and lower long edge thereof, adapted to facilitate removal of objects etc., and on the opposite side of the shaft presents a spike 6 for making holes etc. The bottom edge of the spike 6 is provided with a cutting edge 7 to enable a hole made with the spike 6 to be split and widened. The head of the axe portion 1 also presents a laterally projecting, wedge-shaped lip 8 which can be used for bending and levering purposes, e.g. to bend up flooring, and which, owing to the fact that the upper side 9 of the axe head is formed so that the tool can grip and roll on an abutment surface, affords a high bending force. Furthermore, there are disposed at right angles to each other in the axe head holes 10, 11 for a purpose which will be explained below. The side of the axe head positioned opposite the lip 8 is in the shape of a yoke 12 which can be employed for hanging up the tool during transport and for engaging ropes, metal sheets etc. The shaft of the axe consists of a tube 13 which is attached to the axe head and on which a handle 14 made of rubber, plastic or the like is fitted. At the end of the shaft 15 there is welded a steel ring 15 into which is tangentially inserted a pin 16.

The other portion of the tool, the claw portion 17, is telescopically mounted for movement in the shaft 13 of the axe portion. The claw portion 17 consists of a rod 18 having a diameter slightly smaller than the inner diameter of the tubular shaft 13 and presenting a planar surface 19 along the majority of its length, and adjacent the free end thereof is arranged a circumferentially extending groove 20, and beyond said groove a planar surface 21 on the side opposing the surface 19. The claw portion 17 is fixed to the end of the rod 18 and is shaped to form a fork-like member, one leg 22 of which forms a chisel-like member presenting a saw-toothed edge 23, while the other leg 24 presents an edge 25 confronting the edge 23, the legs between them forming a V-shaped cutting tool intended, for instance, for loosening or cutting bolts or the like. Arranged on the side surface of the claw portion is an abutment surface 26 which enables the claw portion 17 to be used as a hammer. The legs 22 and 24 are wedge-shaped to enable the claw portion to be used for wedging and levering operations.

The tool can be used with both tool portions combined, or each separate portion of the tool may be used per se for different tasks.

When assembling the two tool portions to form a combined tool, the end of the rod 18 is inserted in the ring 15 with the planar side 21 facing the pin 16, and is inserted until the movement is stopped by the edge of the groove 20 meeting the pin 16. The width of the groove 20 is adapted to the thickness of the pin 16 to enable the rod 18 to be turned one-half revolution, whereby the planar surface 19 is turned to face the pin. In this position the rod 18 can be pushed fully home into the shaft 13. To retain the claw portion 17 in the inserted position, a locking pin 27 having a spherical end is mounted in the axe head 1, wherewith by depressing the pin 27 the spherical end of said pin can be moved into a spherical recess 28 in the rod 18. The locking pin 27 is retained in locking or free position by means of a spring-loaded ball 29. The recess 28 is so positioned that the claw 17 in its
inserted position presents a small clearance to the ring 15, and to release the locking pin 27 the tool is held by the axe portion 1 and the claw portion 17 struck against a hard surface to force said portion further into the shaft 13, whereupon the locking pin 27 is forced out of the recess 28 and the rod 19 is released. The ball 29 holds the pin out of engagement until it is re-pressed into engagement with the pin 27 when assembling the two tool portions to a single combination tool.

As a result of the coaction between the pin 16 and the planar surface 19 arranged on the rod 18, it is impossible to separate the two tool portions unintentionally. With the locking member 27 in free position, the claw portion 17 can thus be applied to an object and the axe portion used as a hammer tool by impact of ring 15 against the flange on the claw portion 17. The shaft is extended by withdrawing the claw portion 17 until the pin 16 engages in the groove 20 and then rotating the portion 17 through 90°, thus providing the axe 2 or the spike 6 with an increased impact force or a longer lever when bending with the claw portion 17.

The diameter of the holes 10 and 11 are such that the end of the rod 18 can be inserted in either of said holes so that the two tool portions form an angular support which, for instance when wishing to lift heavy objects to a small extent, can be used in a manner whereby the claw portion 17, inserted in the hole 11, constitutes a support for the axe head, around which a line or other support means can be attached. The support can also be used to prevent a collapse of the structure of narrow passages.

The field of use of the tool is naturally not restricted to those aforementioned, but the tool can be used in all situations when it is required to rapidly penetrate a closed passage, a wrecked car etc., and in many other forms of rescue and salvage work.

What I claim is:

1. A portable combination tool for penetrating obstacles occurring in such disasters as fire and collapsed buildings or the like, characterized in that the tool comprises two detachable portions each provided with a shaft, said shafts being telescopically mounted one within the other, one of said portions presenting an axe head having an axe blade and a spike directed in the opposite direction to said axe blade and a laterally extending lip for levering purposes and a loop extending laterally in the opposite direction to said lip, said other portion being provided with claw-like leg members one of which at the end thereof being formed as a chisel and having a saw-toothed cutting edge on one of the side edges, the other leg having a cutting edge confronting said saw-toothed edge, the leg members together forming a cutting tool having wedge-shaped sides, the two shafts being provided with cooperating locking means adapted to lock the shafts when fully collapsed and in a predetermined extended position, and said shafts having means which during movement between said positions prevent relative rotation but in said position permit detachment by mutual rotation thereof.

2. A tool as claimed in claim 1, characterized in that the axe blade is provided on the edges thereof with teeth.

3. A tool as claimed in claim 1, characterized in that the spike has a cutting edge.

4. A tool as claimed in claim 1, characterized in that the axe head presents perpendicularly opposed holes through which the shaft of the other tool portion can be inserted.

5. A tool as claimed in claim 1, characterized in that said other tool portion has an abutment surface which can be used as a hammer head.

6. A tool as claimed in claim 1, characterized in that the shaft of the first tool portion comprises a tube having a ring mounted at the free end thereof, that the shaft of said other tool portion is a rod having a planar surface, that a pin inserted tangentially through the ring is adapted to cooperate with said planar surface and to permit movement in the longitudinal direction of the shaft but to prevent rotation thereof.

7. A tool as claimed in claim 1, characterized in that the locking means for the shafts in the collapsed position comprises a locking pin adjustable to different positions and mounted in the axe head, and a recess for said pin arranged in the shaft of the other tool portion.

8. A tool as claimed in claim 6, characterized in that the shaft of the other tool portion is provided at the end with an annular groove for the pin through the ring and a planar surface beyond the groove directed in the opposite direction to the first mentioned planar surface for the purpose of permitting dismantling of the shafts by mutual rotation thereof.

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