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3,370,307

COMBINATION TOOL DEVICE

Filed Aug. 24, 1965

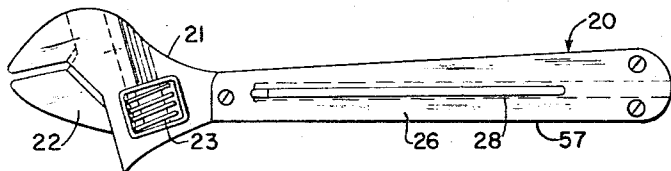


FIG. 1.

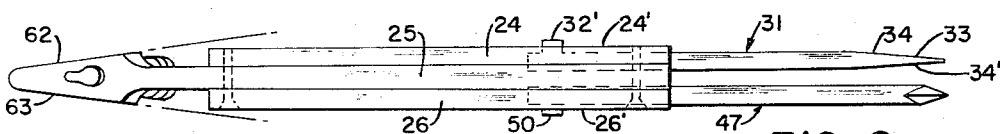


FIG. 2.

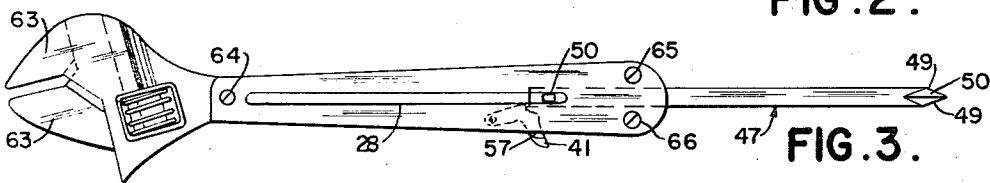


FIG. 3.

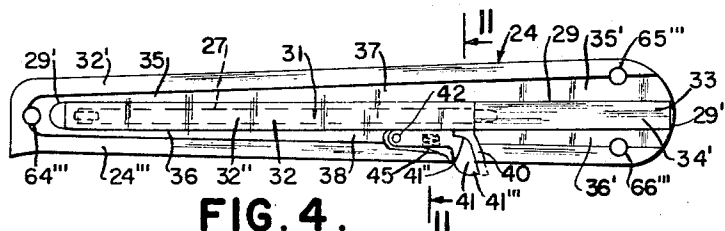


FIG. 4.

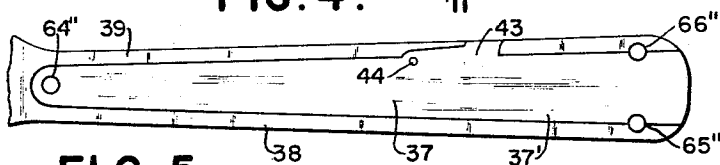


FIG. 5.

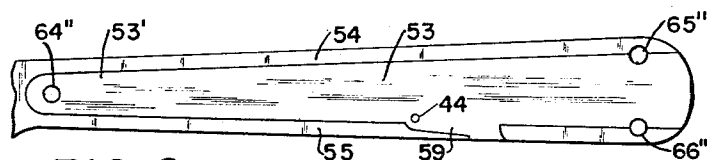


FIG. 6.

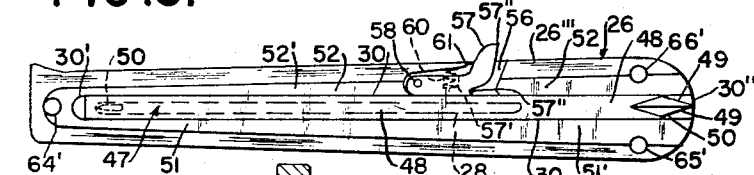


FIG. 7.

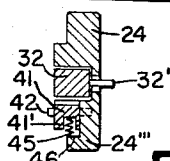


FIG. 11.

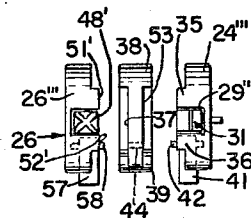


FIG. 8.

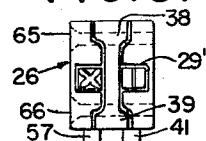


FIG. 9.

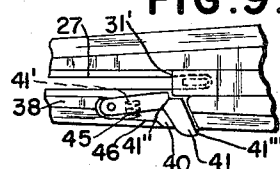


FIG. 10.

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COMBINATION TOOL DEVICE

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2 Claims. (Cl. 7—7)

ABSTRACT OF THE DISCLOSURE

A tool comprising a wrench, the wrench having jaws with their forward ends inclined downwardly, said wrench having a handle projecting from the rearward end of one of the jaws, a pair of elongated housing plates extending substantially the length and height of said handle and abutting opposite sides of the handle in complementary relation, said housing plates each having channels which cooperate with the outer faces of the handle to form passageways with a rectangular cross-section, a pair of screwdrivers each having a stem with a rectangular cross-section slidably mounted in said rectangular passageways, said housing plate each having slots centrally of the height of the plates and extending along their length, and communicating with said passageways and of reduced height with respect to height of said passageways, said screwdriver stems having lugs projecting in opposing relation to one another out through said slots for moving said screwdriver stems along said passageway to project said screwdriver out the rear of said housing plates, pivotally mounted levers beneath the passageways to lock said stems in their projected position.

This invention relates to mechanical tools, more particularly, the invention relates to mechanical combination tools.

It is an object of this invention to provide a novel wrench having a pair of retractable screwdrivers mounted in its handle.

It is a further object of the invention to provide a novel wrench having two different types of screwdrivers mounted to the wrench handle which may be individually projected for use.

It is another object of the invention to provide a novel tool having additional tool structure mounted in its handle.

Further objects and advantages of the invention will become apparent as the description proceeds and when taken in conjunction with the accompanying drawing wherein:

FIGURE 1 is a side elevational view of the combination wrench screwdriver invention.

FIGURE 2 is a top plan view of the combination wrench screwdriver invention, with both screwdrivers shown fully projected or extended.

FIGURE 3 is a side elevational view of the combination wrench screwdriver invention with the Phillips head screwdriver shown fully extended for operative use.

FIGURE 4 is a side elevational view of the straight blade screwdriver and its outer housing.

FIGURE 5 is a side elevational view of the handle of the wrench showing the side of the wrench handle adapted to receive the straight blade screwdriver and straight blade screwdriver housing.

FIGURE 6 is a side elevational view of the opposite side of the wrench handle adapted to receive the Phillips head screwdriver and its housing.

FIGURE 7 is a side elevational view of the Phillips head screwdriver and its outer housing.

FIGURE 8 is a exploded end view of the combination wrench screwdriver invention.

FIGURE 9 is a similar end view of the combination wrench screwdriver invention.

FIGURE 10 is fragmentary side elevational view of the straight blade screwdriver housing, illustrating the straight blade in its extended operative position.

FIGURE 11 is a cross-sectional view taken along line 11—11 of FIGURE 4.

Briefly stated, the invention comprises a wrench having a handle, a pair of elongated housing members on opposite sides of the wrench handle and forming an enlarged handle construction, a straight blade screwdriver mounted in one of said housing members, a Phillips head screwdriver mounted in the other of said housing members, said screwdrivers being adapted to slide rectilinearly out of the rear of the housing members for use, lock means to lock the screwdrivers in their extended position.

Referring more particularly to the drawing, in FIGURES 1 and 2 the combination wrench screwdriver invention 20 is illustrated as having a wrench head 21 with an adjustable jaw 22 adapted to be threaded upward and downward by a screw 23 in a conventional manner.

A housing member 24 is mounted on one side of the handle portion 25 of the wrench head 20, and a housing member 26 is mounted on the opposite side of the handle portion 25.

The housing members 24 and 26 have elongated slots 27 and 28 respectively, which communicates with the exterior faces 24' and 26' of the housing members.

The housing members 24 and 26 have the same size and construction in laterally opposed relation, each having a rectangular elongated channel portion 29 and 30, respectively, along their portions 29 and 30 communicate with slots 27 and 28, respectively.

The straight blade screwdriver 31 has an elongated stem 32 with a rectangular cross-section, and a straight blade 33 at one end, formed by opposed inwardly tapered sides 34 and 34'. The channel member 29 of the housing member 24 has a rectangular cross-section with one end 29' rounded and the other end 29'' open, and is adapted to slidably receive the screwdriver 31 so that it may slide rectilinearly and axially along the channel 29.

The stem 32 of the straight blade screwdriver 31 has a laterally projecting lug 32' projecting laterally into the slot 27 and which limits the sliding movement of the screwdriver 31 in the channel 29 of the housing 24, and which also provides a handle for moving the screwdriver 31 along the channel 29.

The housing member 24 has upper and lower projecting shoulders 35 and 36 which extend along the length of the channel 29 and form the outer sides of the channel 29. The shoulders 35 and 36 have their outer faces 37' and 38' terminating flush and parallel with the outer face 32'' of the stem 32.

The projecting shoulders 35 and 36 are adapted to be fitted in the wide channel 37 of the wrench handle 25, snugly within the confines of the ridges 38 and 39 on one side 37 of the wrench handle, when assembling the invention, as illustrated in FIGURES 2 and 9.

The housing 24 has a slot 40 cut into its lower shoulder 36 and cut partly into the backing plate 24''' of the housing 24. The slot 40 is adapted to receive a lever 41, and the lever 41 is pivotally mounted in the slot 40 by a pin 42 which at one end projects into a bore in the backing plate 24'''. The wrench handle 25 also has a slot 43 along its ridge 39, to receive the other side portion of the lever 41, and a bore 44 in the wrench handle 25 receives the other end of the pin 42 to provide a pivotal support at the other side of the lever 41.

A coil spring 45 at one end is mounted in a bore 41' in the lever 41, and its other end rests on the upper edge of the shoulder 46 formed by the slot in the slot 40 in the backing plate 24''', and the spring acts to urge the lever to the position illustrated in FIGURE 10.

Similarly in the housing member 26, the channel member 30 has a rectangular cross-section with one end 30' rounded and the other end 30'' open, and is adapted to slidably receive the Phillips head screwdriver 47.

The Phillips head screwdriver 47 has an elongated stem 48 with a rectangular cross-section, and four converging blades 49 at one end forming a Phillips head 50. The channel member 30 of the housing 26 has a rectangular cross-section with one end 30' rounded and the other end 30'' open, and is adapted to slidably receive the Phillips head screwdriver 47, so that the screwdriver 47 may slide rectilinearly and axially along the channel 30.

The stem 48, of the Phillips head screwdriver 47, has a laterally projecting lug 50 projecting laterally into the slot 28 and which limits the sliding movement of the screwdriver 47 in the channel 30, and which also provides a handle for moving the screwdriver along the channel 30.

The housing 26 has upper and lower projecting shoulders 51 and 52 which extend along the length of the channel 30 and form the outer sides of the channel 30. The shoulders 51 and 52 have their outer faces 51' and 52' terminating flush with and parallel with the outer face 48' of the stem 48.

The projecting shoulders 51 and 52 are adapted to be fitted in the wide channel 53 of the wrench handle 25, snugly within the ridges 54 and 55 of the other side 53' of the wrench handle, when assembling the invention as illustrated in FIGURES 2 and 9.

The housing 26 has a slot 56 cut in its lower shoulder 52 and cut partly into the backing plate 26''' of the housing 26. The slot 56 is adapted to receive a lever 57. The lever 57 is pivotally mounted in the slot 56 by a pin 58 which at one end projects into a bore in the backing plate 26'''. The wrench handle 25 also has a slot 59 along its ridge 55 to receive the other side portion of the lever 57, and the bore 44, which passes entirely through the wrench handle, receives the other end of the pin 58 to provide a pivotal support for the other side of the lever 57.

A coil spring 60 at one end is mounted in a bore 57' of the lever 57 and at the other end rests on the upper edge 61 of the shoulder 52 and the spring acts to urge the lever clockwise when viewed from FIGURE 7, in the same manner as lever 41.

Operation

The straight blade screwdriver 31 may be projected rearwardly from its position illustrated in FIGURE 1, and as shown in FIGURE 4 to its position illustrated in FIGURE 2 by the operator engaging the lug 32' of the screwdriver 31 with his fingers and pushing the lug rearwardly until the lug engages the end 27' of the slot 27, which causes the screwdriver 31 to project out as shown in FIGURE 2.

When the lug 32' engages the end 27' of the slot, it will have just slipped by the notch 41'' in the lever 41, releasing the lever 41 and allowing it to pivot upward counterclockwise from its position illustrated in FIGURE 4 to its position illustrated in FIGURE 10, with the spring 45 urging and maintaining the lever 41 in its locked position shown in FIGURE 10, with the notch 41'' of the lever engaging the rear end 31' of the stem of the screwdriver 31, thereby locking the straight blade screwdriver in its projected position illustrated in FIGURES 2 and 10, so that the screwdriver 31 may be used in turn screws.

When it is desired to retract the straight blade screwdriver 31, after use, the operator's fingers will engage the nose 41''' of the lever 41 with his finger and pivot the lever clockwise down to its position shown in FIGURE 4, and will hold the lever in this position, against the resistance of the spring 45, and will push the lug 32' thereby moving the screwdriver 31 back slightly until the end 31' of the stem 32 has slid by the notch 41'', whereafter the screwdriver can be slid freely by the lug back

into its retracted position, as the lever 41 will ride freely along the under surface of the stem 32 until the screwdriver 31 again reaches its retracted position illustrated in FIGURES 1 and 4.

Similarly the Phillips head screwdriver 47 will be projected and retracted in the same manner as the straight blade screwdriver, by the operator pushing the lug 50 until the screwdriver 47 projects outward to its position illustrated in FIGURE 2. As the stem 48 reaches its projected position the spring 60 will urge the lever 57 toward the end of the stem with the notch 57'' engaging the end of the stem and locking the Phillips head screwdriver in its projected position.

To retract the Phillips head screwdriver 47, similarly, the operator will engage the nose 57''' of the lever 57 with his finger and pivot the lever 57 away from the stem, so that the screwdriver 47, may be slid back to its position illustrated in FIGURES 1 and 11, with the operator using the lug 50 to push the screwdriver 47 back to its retracted position.

For normal use, either the straight blade 31 will be projected or the Phillips head screwdriver 47 will be projected, depending upon the type of screw to be threaded or unthreaded.

The wrench head 21 has converging opposing flat faces 62 and 63, which lie along planes 62' and 63' so that when the wrench head is being used to unthread a bolt, either the face 62 or 63 may lie flat on the mounted surface, and the housing members 24 and 26 will clear the mounted surface.

The tool is assembled by placing the screwdrivers 31 and 47 in their respective housing members 24 and 26 as shown in FIGURES 4 and 7, respectively. Three screws 64, 65, and 66 are then inserted into the housing 26, in holes 64', 65', and 66' each having a tapered annular outer edge to receive the heads of the screws 64, 65, and 66. The screws 64, 65, and 66 also pass through holes 64'', 65'', and 66'' in the wrench handle 25, and are threaded into holes 64''', 65''', and 66''' in the housing 24, to tighten the housing members 24 and 26 to opposite sides of the wrench handle, to thereby assemble the invention, as shown in FIGURE 2.

The housing members 24 and 26 are intended to have identical dimensions with respect to one another in laterally opposed relation as to their structure. Consequently, the holes for receiving the screws 64, 65, and 66 will align with one another, as well as the holes in the wrench handle 25, for receiving the screws.

Thus, it will be seen that a novel combination wrench and screwdriver has been provided which may be used for turning bolts and different types of screws.

It will be obvious that various changes and departures may be made to the invention without departing from the spirit and scope thereof and accordingly, it is not intended that the invention be limited to that specifically described in the specification or illustrated in the drawing but only as set forth in the appended claims where what is claimed is:

1. A tool comprising a wrench, said wrench having jaws and an elongated handle fixed at the rear of said jaws and projecting rearward, a pair of elongated housing plates extending substantially the length and width of said handle, said plates having a central projecting ridge and said handle having a central recess along opposite sides of the handle to receive said ridges whereby said plates about the opposite sides of said handle in substantially complementary relation, said housing plates each having elongated channels in their ridges which cooperate with the recessed faces of said handle to form passageways having a rectangular cross-section, said housing plates each having elongated slots extending along at least a major portion of the length of the plates and centrally of the height of said plates and adjacent the passageways, said slots being of reduced size with respect to said passageways and communicate with said passageways, a

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pair of screwdrivers each having a stem with a rectangular cross-section adapted to be slidably mounted in said rectangular passageways, said stems each having a lug projecting outward in opposing relation to one another and through said slots for pushing the stems of the screwdrivers along the passageways to project said screwdrivers out of the rearward end of said handle and housing plates, a pair of spring urged levers pivotally mounted to the housing plates beneath said passageways with portions projecting out of the bottom of said housing plates, said levers having notches at their forward upper ends, said levers being spring urged to pivot upward with their notches engaging the rearward ends of the screwdriver stems to lock said screwdrivers in their extended position.

2. A tool comprising a wrench, the wrench having jaws with their forward ends inclined downwardly, said wrench having a handle projecting from the rearward end of one of the jaws, a pair of elongated housing plates extending substantially the length and height of said handle, said plates having a central projecting ridge and said handle having a central recess along opposite sides of the handle to receive said ridges whereby said plates abut the opposite sides of said handle in substantially complementary relation, said housing plates each having channels in said ridges which cooperate with the recessed faces of the handle to form passageways with a rectangular cross-section, a pair of screwdrivers each having a stem with a rectangular cross-section slidably mounted in said rectangular passageways, said housing plate each

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having slots centrally of the height of the plates and extending along their length, and communicating with said passageways and of reduced height with respect to height of said passageways, said screwdriver stems having lugs projecting in opposing relation to one another out through said slots or moving said screwdriver stems along said passageway to project said screwdriver out the rear of said housing plates, individually spring urged pivotally mounted levers beneath the passageways to lock said stems in their projected positions and having their major portions concealed with the confines of the housing plates and a minor portion projecting outwardly to form handles for operating the levers.

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