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HAND TOOL WITH SHEAR ASSEMBLY

Abstract

A hand tool including a shear assembly is provided, including a first handle, a second handle including a cutting member, and a cutting blade. The cutting blade forms a first opening and a second opening. The first handle is attachable in a first operating mode to the cutting blade at the first opening via a first fastener. The first handle is attachable in a second operating mode to the cutting blade at the second opening via the first fastener. The cutting blade is attached in pivotal arrangement to the second handle via a second fastener.

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Background/Summary

PRIORITY STATEMENT [0001] The present application claims the benefit of priority to U.S. Provisional Patent Application Ser. No. 63/168,893, filed on Mar. 31, 2021, the disclosure of which is incorporated by reference herein in its entirety.

FIELD

[0002] The present subject matter is directed generally to hand tools with shear assemblies, such as outdoor shears and loppers.

BACKGROUND

[0003] Hand tools, such as outdoor shears, garden shears, hedge shears, or loppers, are configured to cut members by a force exerted by a user at a pair of handles. Members, such as branches, hedges, bushes, etc., may be of various thicknesses, densities, or strengths, which may correspondingly require different amounts of force to be exerted by the user through the handles. Limited movement of the handles may limit an amount of force that may be exerted by the hand tool to cut such various members. Additionally, hand tools may require repeated motions to quickly cut through multiple members. For instance, a user may require a hand tool to quickly cut through thinner, lighter members, such as hedges and bushes. In another instance, a user may require a hand tool to apply relatively large amounts of shear force to cut through relatively thicker, denser, or stronger members, such as branches. Shear assemblies for hand tools may generally perform one type of usage or the other.

[0004] Accordingly, improved shear designs are desired in the art. In particular, improved shear designs which can move between compound and single action would be advantageous. Still particularly, improved shear designs which can move between compound and single action for a single hand tool would be advantageous.

BRIEF DESCRIPTION

[0005] Aspects and advantages of the invention will be set forth in part in the following description, or may be obvious from the description, or may be learned through practice of the invention.

[0006] An aspect of the present disclosure is directed to a hand tool including a shear assembly. The hand tool includes a first handle, a second handle including a cutting member, and a cutting blade. The cutting blade forms a first opening and a second opening. The first handle is attachable in a first operating mode to the cutting blade at the first opening via a first fastener. The first handle is attachable in a second operating mode to the cutting blade at the second opening via the first fastener. The cutting blade is attached in pivotal arrangement to the second handle via a second fastener.

[0007] These and other features, aspects and advantages of the present invention will become better understood with reference to the following description and appended claims. The accompanying drawings, which are incorporated in and constitute a part of this specification, illustrate embodiments of the invention and, together with the description, serve to explain the principles of the invention.

Description

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] A full and enabling disclosure of the present invention, including the best mode thereof, directed to one of ordinary skill in the art, is set forth in the specification, which makes reference to

the appended figures, in which:

[0009] FIG. 1 depicts a top-down view of an exemplary embodiment of a hand tool in accordance with aspects of the present disclosure;

[0010] FIG. 2 depicts an exemplary embodiment of a first handle of the hand tool of FIG. 1 in accordance with aspects of the present disclosure;

[0011] FIG. 3 depicts an exemplary embodiment of a linkage of the hand tool of FIG. 1 in accordance with aspects of the present disclosure;

[0012] FIG. 4A depicts an exemplary embodiment of the hand tool of FIG. 1 in a first operating mode in a closed position in accordance with aspects of the present disclosure;

[0013] FIG. 4B depicts an exemplary embodiment of the hand tool of FIG. 1 in a first operating mode in an open position in accordance with aspects of the present disclosure;

[0014] FIG. 5A depicts an exemplary embodiment of the hand tool of FIG. 1 in a second operating mode in a closed position in accordance with aspects of the present disclosure;

[0015] FIG. 5B depicts an exemplary embodiment of the hand tool of FIG. 1 in a second operating mode in an open position in accordance with aspects of the present disclosure;

[0016] FIG. 6 depicts an exemplary embodiment of a hand tool in accordance with aspects of the present disclosure;

[0017] FIG. 7 depicts a perspective view of an exemplary embodiment of the hand tool of FIG. 6 in accordance with aspects of the present disclosure;

[0018] FIG. 8 depicts a top-down view of an exemplary embodiment of a hand tool in accordance with aspects of the present disclosure;

[0019] FIG. 9 depicts a perspective view of an exemplary embodiment of the hand tool of FIG. 8 in accordance with aspects of the present disclosure;

[0020] FIG. 10 depicts a top-down view of an exemplary embodiment of a hand tool in accordance with aspects of the present disclosure;

[0021] FIG. 11 depicts a perspective view of an exemplary embodiment of the hand tool of FIG. 10 in accordance with aspects of the present disclosure;

[0022] FIG. 12 depicts a perspective view of an exemplary embodiment of the hand tool of FIG. 10 in accordance with aspects of the present disclosure;

[0023] FIG. 13 depicts a top-down view of an exemplary embodiment of a cutting blade in accordance with aspects of the present disclosure;

[0024] FIG. 14 depicts a perspective view of an exemplary embodiment of the cutting blade of FIG. 13 in accordance with aspects of the present disclosure;

[0025] FIG. 15 depicts a perspective view of an exemplary embodiment of a fastener in accordance with aspects of the present disclosure;

[0026] FIG. 16 depicts a side view of an exemplary embodiment of the fastener of FIG. 15 in accordance with aspects of the present disclosure;

[0027] FIG. 17 depicts a perspective view of an exemplary embodiment of a first handle in accordance with aspects of the present disclosure;

[0028] FIG. 18 depicts a top-down view of an exemplary embodiment of the first handle of FIG. 17 in accordance with aspects of the present disclosure;

[0029] FIG. 19 depicts a top-down view of an exemplary embodiment of a hand tool in a first operating mode in accordance with aspects of the present disclosure; and

[0030] FIG. 20 depicts a top-down view of an exemplary embodiment of the hand tool of FIG. 19 in a second operating mode in accordance with aspects of the present disclosure.

[0031] Repeat use of reference characters in the present specification and drawings is intended to represent the same or analogous features or elements of the present invention.

DETAILED DESCRIPTION

[0032] Reference now will be made in detail to embodiments of the invention, one or more examples of which are illustrated in the drawings. Each example is provided by way of explanation

of the invention, not limitation of the invention. In fact, it will be apparent to those skilled in the art that various modifications and variations can be made in the present invention without departing from the scope or spirit of the invention. For instance, features illustrated or described as part of one embodiment can be used with another embodiment to yield a still further embodiment. Thus, it is intended that the present invention covers such modifications and variations as come within the scope of the appended claims and their equivalents.

[0033] The present disclosure is generally directed to improved shear designs, and in particular improved shear designs which can move between compound and single action.

[0034] As used herein, the terms “first”, “second”, and “third” may be used interchangeably to distinguish one component from another and are not intended to signify location or importance of the individual components.

[0035] Embodiments of a hand tool with a shearing, cutting, lopper, or other appropriate cutting tool are provided. Various embodiments of the hand tool provided herein are configured to selectively articulate between a single action movement and a compound action movement, such as to allow for greater range or angle of motion between handles. Embodiments provided herein may allow a user to relatively simply and quickly change between operating modes, such as to facilitate greater application of force for cutting members in a first operating mode, and such as to facilitate quicker opening and closing action in a second operating mode. Still particular embodiments provided herein may allow a user to articulate between the first and second operating modes without necessitating removal, separation, or disconnection of components from the hand tool. Various embodiments provided herein may form a hedge shear, a garden shear, a lopper, a pruner tool, or other appropriate hand tool.

[0036] Exemplary embodiments of a hand tool with a shear assembly are provided. Referring now to FIGS. 1-3, FIGS. 4A-4B, and FIGS. 5A-5B, exemplary embodiment of hand tool **100** includes a shear assembly having a first handle **110** and a second handle **120**. Second handle **120** includes a cutting member **112**, such as a shaving block or shearing tool, configured to selectively engage a cutting blade **130**. The cutting blade **130** is connected to the first handle **110**. Cutting blade **130** includes a blade edge **132**. Blade edge **132** is configured to selectively engage cutting member **112**, such as to cut, shear, or lop a member placed between the blade edge **132** and the cutting member **112**. In a particular embodiment, cutting blade **130** is affixed to the second handle **120** at fastener **147**. Fastener **147** extends into second handle **120** and cutting blade **130**, such as through an opening at a second handle-cutting blade interface, such as a first interface **157**, corresponding to second handle **120** and cutting blade **130**. In various embodiments, fastener **147** extends fully through cutting blade **130** and at least partially through second handle **120**. In particular embodiments, second handle **120** is configured to allow cutting blade **130** to pivot at fastener **147** extended through the opening at first interface **157**.

[0037] In a particular embodiment, first handle **110** is affixed to second handle **120** at fastener **127**. Fastener **127** extends into first handle **110** and second handle **120** at a second interface **167**. Second interface **167** forms an opening into second handle **120** and first handle **110** into which fastener **127** is positioned. In various embodiments, fastener **127** extends fully through first handle **110** and at least partially through second handle **120**. In particular embodiments, second handle **120** is configured to allow first handle **110** to pivot at fastener **127** extended through the opening at second interface **167**.

[0038] First handle **110** forms a proximal end **121** relative to second handle **120**. First handle **110** forms opening **126** configured to receive fastener **127** at the proximal end **121**. Accordingly, opening **126** is positioned at second interface **167** at which first handle **110** and second handle **120** are connected via fastener **127** at the proximal end **121** of second handle **120**.

[0039] First handle **110** furthermore forms a first fastener opening **122** and a second fastener opening **124**. First fastener opening **122** is formed proximate to opening **126** relative to the second fastener opening **124**. First handle **110** forms first fastener opening **122** separated along axis **125**

from second fastener opening **124**. In various modes of operation, such as further described herein, fastener **123** is positioned through one of first fastener opening **122** or second fastener opening **124** and a respective opening at linkage **140**.

[0040] Cutting blade **130** forms a distal end **131** relative to blade edge **132**. First interface **157** is positioned between blade edge **132** and distal end **131**. In a particular embodiment, cutting blade **130** includes linkage **140** configured to attach cutting blade **130** to first handle **110**. Cutting blade **130** is affixed to linkage **140** at fastener **143**. Fastener **143** extends into linkage **140** and cutting blade **130** at a third interface **177**. Third interface **177** forms an opening into the cutting blade **130** and linkage **140** into which fastener **143** is positioned. In various embodiments, fastener **143** extends fully through linkage **140** and at least partially through cutting blade **130**. In particular embodiments, linkage **140** is configured to allow cutting blade **130** to pivot at fastener **143** extended through the opening at third interface **177**.

[0041] Referring to FIG. 3, linkage **140** includes a body **141** forming a plurality of openings **142**, **144**, **146** each extending through body **141**. Body **141** includes a first member **147** extending in a first direction and a second member **149** extending a second direction oblique or perpendicular to the first direction. Opening **142** is configured to correspond to third interface **177** (FIG. 1) at which fastener **143** is extended into linkage **140** and cutting blade **130**.

[0042] Linkage **140** forms a first linkage opening **144** and a second linkage opening **146** each extending through body **141**. First linkage opening **142** and second linkage opening **144** are each separated substantially along an axis corresponding to an extension of the first handle **110** when cutting blade **130** and cutting member **112** are together in a closed position, such as depicted via axis **125** in FIG. 4A and FIG. 5A. Fastener **123** (FIG. 1) is configured to be received through one of a pair of first fastener opening **122** and first linkage opening **144**, such as depicted in FIGS. 4A-4B, or a pair of second fastener opening **124** and second linkage opening **146**, such as depicted in FIGS. 5A-5B.

[0043] In accordance with an exemplary embodiment, hand tool **100** includes a first mode of operation, such as depicted in FIGS. 4A-4B. In the exemplary first mode of operation, fastener **123** is extended through first fastener opening **122** (FIG. 2) at the first handle **110** and through first linkage opening **144** at linkage **140** (FIG. 3). Accordingly, first handle **110** is attachable via fastener **123** in the first operating mode to the cutting blade **130** at the first fastener opening **122** and the first handle **110** at the first fastener opening **122**. FIG. 4A depicts hand tool **100** in an exemplary closed position and FIG. 4B depicts hand tool **100** in an exemplary open position. In the first mode of operation, hand tool **100** allows first handle **110** to extend into open position by pivoting relative to fastener **127** at second interface **167** (FIG. 1). Fastener **123** is extended into openings **122**, **144** (FIGS. 2-3), allowing for compound action movement of second handle **120** relative to cutting blade **130** through linkage **140**. Cutting blade **130** pivots via fastener **147** at first interface **157** (FIG. 1). First mode of operation allows first handle **110** to extend in open position, such as extended from closed position (FIG. 4A) to open position (FIG. 4B), at an angle **129**. In various embodiments, first handle **110** may extend at angle **129** up to approximately 92 degrees from the closed position (FIG. 4A) to the open position (FIG. 4B). In such an embodiment, first mode of operation may form a compound mode or compound action movement of the hand tool **100** from the closed position to the open position.

[0044] In accordance with an exemplary embodiment, hand tool **100** includes a second mode of operation, such as depicted in FIGS. 5A-5B. In the exemplary second mode of operation, fastener **123** is extended through second fastener opening **124** (FIG. 2) at the first handle **110** and through second linkage opening **146** at linkage **140** (FIG. 3). Accordingly, first handle **110** is attachable via fastener **123** in the second operating mode to the cutting blade **130** at the second fastener opening **124** and the first handle **110** at the second fastener opening **124**. FIG. 5A depicts hand tool **100** in an exemplary closed position and FIG. 5B depicts hand tool **100** in an exemplary open position. In the second mode of operation, hand tool **100** allows first handle **110** to extend into open position by

pivoting relative to fastener **127** at second interface **167** (FIG. **1**). Fastener **123** is extended into openings **124**, **146** (FIGS. **2-3**), allowing for movement of first handle **110** relative to cutting blade **130** through linkage **140**. Cutting blade **130** pivots via fastener **147** at first interface **157** (FIG. **1**). Second mode of operation allows first handle **110** to extend in open position, such as extended from closed position (FIG. **5A**) to open position (FIG. **5B**), at angle **129**. In various embodiments, first handle **110** may extend at angle **129** up to approximately 49 degrees from the closed position (FIG. **5A**) to the open position (FIG. **5B**).

[0045] In various embodiments, first handle **110**, second handle **120**, cutting blade **130**, and linkage **140** are form separable components relative to one another. Fasteners **127**, **143**, **147** may each include pins, screws, bolts, or other mechanical fasteners appropriate for allowing pivoting movement such as described above. Fastener **123** may include any appropriate type of mechanical fastener. Fastener **123** may furthermore include any appropriate type of mechanical fastener such as may allow for quick-disconnect and re-assembly of fastener **123** into pairs of openings at linkage **140** and second handle **120**, such as described above.

[0046] Referring now to FIGS. **6-7**, exemplary embodiments of hand tool **150** are provided. Hand tool **150** includes a shear assembly having a first handle **110**, a second handle **120**, a cutting member **112**, and a cutting blade **130**, such as described in regard to hand tool **100**. A reference axis **125** extends substantially along an extension of first handle **110**. In a particular embodiment, reference axis **125** extends from a center point of opening **126** configured to receive fastener **127**. First handle **110** forms a channel **168** extending substantially along axis **125**. Channel **168** is configured to receive fastener **123**. In a still particular embodiment, channel **168** is extended from a first end proximate to proximal end **121** to a second end distal to the proximal end **121** along axis **125**. Channel **168** forms a first fastener opening or end **122** at the first end and a second fastener opening or end **124** at the second end.

[0047] Referring still to FIGS. **6-7**, linkage **140** forms a pair of linkage openings **142**, **146**. Linkage opening **142** (e.g., a first linkage opening) is configured to receive fastener **143**. Fastener **143** is configured to extend through opening **142** and extend through cutting blade **130**, such as described in regard to interface **177**. Accordingly, cutting blade **130** is pivotably connected linkage **140** at fastener **143** through opening **142**. Linkage opening **146** (e.g., a second linkage opening) is configured to receive fastener **123**. Fastener **123** is configured to extend through channel **168**. Accordingly, cutting blade **130** is connected to first handle **110** via linkage **140** via fastener **123** extending through channel **168**.

[0048] Fastener **123** is further configured allow for selective articulation or movement through channel **168**. In a first operating mode, or compound mode, fastener **123** is positioned through channel **168** at first fastener opening or end **122**. Such positioning may allow for greater angular movement of first handle **110** relative to second handle **120**, such as depicted and described in regard to FIGS. **4A-4B**. In a second operating mode, or single action mode, fastener **123** is positioned through channel **168** at second fastener opening or end **124**. Such positioning may allow for relatively quick cutting action movement of first handle **110** and second handle **120**.

[0049] Referring to FIG. **7**, in a particular embodiment, hand tool **150** may include a pair of linkages **140**. A first and second linkage **140** may be position at opposing sides of first handle **110** and cutting blade **130**. Accordingly, fasteners **123**, **143** may be configured to fasten or connect the pair of linkages **140** and the respective cutting blade **130** and first handle **110** between the pair of linkages **140**. Fastener **123** may be configured as a pin, spring-loaded device, button, rod, or other appropriate type of mechanical fastener such as may allow for selectively sliding movement of fastener **123** to ends **122**, **124** through channel **168**.

[0050] Referring back to FIGS. **6-7**, in certain embodiments, hand tool **150** further includes guide piece **113**. Guide piece **113** is positioned at second handle **120** and configured to interface with one or both of cutting blade **130** and first handle **110**. In a particular embodiment, proximal end **121** of first handle **110** is configured to abut guide piece **113**. Guide piece **113** may be configured as an

end stop, such as to limit movement of cutting blade **130** or linkage **140** into first handle **110** or one or more fasteners (e.g., fastener **127**).

[0051] In still various embodiments, first handle **110** includes a first portion **110A** and a second portion **110B**. First portion **110A** extends substantially along axis **125** (e.g., first axis). In a particular embodiment, reference axis **128** (e.g., second axis) extends at an acute angle relative to axis **125**. In a still particular embodiment, reference axis **128** extends toward second handle **120**. In various embodiments, openings (e.g., opening **126**, **122**, **124**) and channel **168** are formed through first portion **110A** of first handle **110**. Second portion **110B** may particularly form a portion of the first handle **110** at which handle grip **115** is positioned onto the first handle **110**. In a particular embodiment, first portion **110A** and second portion **110B** allow handle grip **115** at first handle **110** to position more closely to the handle grip **115** at the second handle **120** when in a closed position. When the user articulates the handle grips **115** into an open position, the user may receive power transfer benefits related to compound action movement and speed benefits related to single action movement while further having a reduced arc between the handle grips **115**.

[0052] Referring now to FIGS. **8-12**, exemplary embodiment of hand tool **200** are provided. Hand tool **200** includes a shear assembly having a first handle **210** and a second handle **220**. A cutting member **222**, such as a shaving block or shearing tool, is attached to the second handle **220**.

Fastener **221** is configured to extend through cutting member **222** into second handle **220** to affix cutting member **222** at a first location relative to the second handle **220**. Cutting member **222** is configured to selectively engage a cutting blade **230**. Cutting member **222** includes a cutting tool **223**. Cutting blade **230** includes blade edge **232** configured to selectively engage cutting member **222**, such as to cut, shear, or lop a member placed between the blade edge **232** and the cutting tool **223**.

[0053] Cutting blade **230** is connected to second handle **220** at a second handle-cutting blade interface, such as a first interface **257**. In a particular embodiment, fastener **247** extends into cutting blade **230**, cutting member **222**, and second handle **220**, such as through an opening extended correspondingly into cutting blade **230**, cutting member **222**, and second handle **220** at the first interface **257**. Accordingly, fastener **247** may affix cutting blade **230**, cutting member **222**, and second handle **220** in a stacked arrangement. Fastener **247** allows for cutting blade **230** to pivot based on movement or articulation of first handle **210**.

[0054] Cutting blade **230** is connected to first handle **210** at a first handle-cutting blade interface, such as a second interface **267**. In a particular embodiment, fastener **227** extends into cutting blade **230** and first handle **210**, such as through an opening extended correspondingly into cutting blade **230** and first handle **210**. Accordingly, fastener **227** may affix cutting blade **230** and first handle **210** in a stacked arrangement. In still particular embodiments, first interface **247** is positioned proximate to a blade edge **232** at cutting blade **230** and cutting tool **223** at cutting member **222**. Furthermore, first interface **247** is positioned more proximate to the blade edge **232** and cutting tool **223** than second interface **227**.

[0055] Cutting blade **230** forms a first opening corresponding to the second interface **267** and a second opening corresponding to third interface **269**. The first opening and the second opening are each separated substantially along an axis corresponding to an extension of the first handle **210** when cutting blade **230** and cutting member **222** are together in a closed position, such as depicted via axis **225** in FIG. **8** and FIG. **11**.

[0056] First handle **210** includes a plurality of first teeth **214** configured to selectively engage with a plurality of second teeth **224** at second handle **220**, such as further described herein. In a first operating mode, the plurality of first teeth **214** and the plurality of second teeth **224** are engaged to one another. In a second operating mode, the plurality of first teeth **214** and the plurality of second teeth **224** are disengaged from one another. Referring briefly to the perspective views provided in FIGS. **13-14**, an embodiment of cutting blade **230** is provided. Cutting blade **230** forms an opening and channel along which fastener **227** is allowed to translate. In particular, cutting blade **230** forms

a substantially circular orifice **267A** and a substantially star-patterned opening **269A** connected together by channel **268**. The star-pattern opening **269A** includes a plurality of lobes **271** extending from an inner circumference. In a particular embodiment, the star-pattern opening **269A** corresponds to a star bit, a hexalobular internal, or other appropriate multi-point pattern, such as to limit stripping, provide high torque transfer, and resistance to wear. In a still particular embodiment, the substantially circular orifice **267A** is formed at the cutting blade **230** and positioned more proximate to the blade edge **232** in contrast to the star-patterned opening **269A**. Still further, first interface **257** is positioned more proximate to the blade edge **232** than orifice **267A**. In various embodiments, such as further described herein, fastener **227** may form a pin, a locking pin, a rod, a tie rod, or other structure configured to fasten, secure, hold, or otherwise retain two or more components in position.

[0057] Referring briefly to the perspective views provided in FIGS. **15-16**, an embodiment of fastener **227** is provided. Fastener **227** forms a cap **201**, a neck **202**, cylindrical body **203**, and a star body **204**. In particular embodiments, cap **201**, neck **202**, cylindrical body **203**, and star body **204** are each formed in serial arrangement relative to one another. In particular, cap **201** is positioned at a first end along the upward direction **101**, and wherein the star body **204** is positioned at a second end distal to the first end. Neck **202** is positioned proximate to the cap **201**. Cylindrical body **203** is positioned proximate to star body **204**. Cylindrical body **203** and neck **202** abut one another.

[0058] Cap **201** forms a body at which a user is allowed to push fastener **227** down into cutting blade **230**. Neck **202** forms a relatively narrow portion allowing fastener **227** to slide or articulate through channel **268** into either orifice **267A** or opening **269A** (FIG. **14**). Cylindrical body **203** is configured to position in orifice **267A** (FIG. **14**). Star body **204** is configured to position in opening **269A**. As further described herein, hand tool **220** is configured to operate in different modes based at least on sliding or articulating fastener **227**. Particular portions of fastener **227** are configured to position into particular openings, such as to desirably position first handle **210** relative to second handle **220**. Particular modes of operation particularly engage or disengage the plurality of first teeth **214** at first handle **210** relative to the plurality of second teeth **224** at second handle **220**.

[0059] Referring to FIG. **15**, fastener **227** forms a cavity **205** extending into star body **205**. A spring **206** or springing device is configured to position into cavity **205**. Spring **206** is configured to push or bias fastener **227** in an upward direction **101**. Referring to FIG. **16**, in various embodiments, fastener **227** includes a plurality of diameters **1201**, **1202**, **1203**, **104** each corresponding respectively to cap **201**, neck **202**, cylindrical body **203**, and star body **204**. Diameter **1201** corresponds to cap **201**. Diameter **1202** corresponds to neck **202**. In a particular embodiment, spring **206** exerts a force along the upward direction **101** to position diameter **1203**, corresponding to cylindrical body **203**, into corresponding geometry at orifice **267A** when fastener **227** is correspondingly aligned to orifice **267A**. When a user pushes cap **201** along a downward direction (i.e., opposite of the upward direction **101**), diameter **1201** limits an extent to which cap **201** may be pushed along the downward direction. When the user pushes cap **201** along the downward direction, diameter **1202** of neck **202** is positioned to allow for movement along channel **268** (FIG. **14**). Diameter **1202** is configured to permit fastener **227** to slide or articulate through channel **268** into either orifice **267A** or opening **269A** (FIG. **14**). Diameter **1203** corresponds to cylindrical body **203**. Diameter **1204** corresponds to star body **204**. In a particular embodiment, spring **206** exerts a force along the upward direction **101** to position diameter **1204**, corresponding to star body **204**, into corresponding geometry at opening **269A** when fastener **227** is correspondingly aligned to orifice **269A**. In certain embodiments, diameter **1204** is an outer diameter greater than diameter **1203**. In still certain embodiments, diameters **1201**, **1203** are greater than diameter **1202**.

[0060] Referring briefly to the perspective view provided in FIG. **17** and view provided in FIG. **18**, an embodiment of at least a portion of first handle **210** is provided. First handle **210** includes a buttress **209** extending over a main body **211** of the first handle **210**. A slot **208** is formed between buttress **209** and main body **211**. In an embodiment, the plurality of first teeth **214** is extended from

the main body **211**. Orifice **267B** is formed through buttress **209** and extending therethrough, such as to correspond to cap **201** of fastener **227**. Opening **269B** is formed extended into main body **211**, such as to correspond to star body **204**. Spring **206** and star body **204** of fastener **227** (FIG. 15) is positioned in opening **269B** at first handle **210**.

[0061] An exemplary first operating mode of hand tool **200** includes a user pushing fastener **227** along the downward direction and pushing first handle **210** forward (i.e., toward an interface of first teeth **214** and second teeth **224**). When user pushes first handle **220** toward to align cylindrical body **203** of fastener **227** with opening **267A** at cutting blade **230**, spring **260** pushes or snaps cylindrical body **203** into position at orifice **267A** at cutting blade **230**. First teeth **214** are moved toward to engage with second teeth **224**, such as configured as gear teeth meshed into one another. Engagement of teeth **214**, **224** allows for compound action movement of the cutting blade **230** when articulating first handle **210** and second handle **220** toward one another to perform a cutting action between blade edge **232** and cutting member **222**. Accordingly, the plurality of first teeth **214** is engaged with the plurality of second teeth **224** in the first operating mode via fastener **227** extending through orifice **267A** at cutting blade **230**.

[0062] Another exemplary mode of operation of hand tool **200** includes a user pushing fastener **227** along the downward direction (i.e., opposite of upward direction **101**). Star body **204** portion of fastener **227** is depressed into opening **269B** at first handle **210**. Neck **202** is positioned to allow for sliding or articulation along channel **268** of cutting blade **230** (FIG. 14). In an exemplary second operating mode, user pulls first handle **210** back (i.e., away from an interface of first teeth **214** and second teeth **224**). When user pulls first handle **210** back to align star body **204** of fastener **227** with opening **269A** at cutting blade **230**, spring **260** pushes or snaps star body **204** of fastener **227** into position at opening **269A** at cutting blade **230**, such as to lock the first handle **210** to the cutting blade **230**. Locking the first handle **210** to the cutting blade **230** forms a first position at which teeth **214**, **224** are disengaged from one another. Accordingly, the plurality of first teeth **214** is disengaged from the plurality of second teeth **224** in the second operating mode via fastener **227** articulating through the channel **268** and extending through the opening **269A** at cutting blade **230**.

[0063] Referring back to the exemplary embodiments depicted in FIGS. 8-9, in certain embodiments, hand tool **200** includes a lock mechanism **215** at first handle **210**. In a particular embodiment, lock mechanism **215** is secured within a channel **212** formed within first handle **210**. A hinge **213** attaches lock mechanism **215** to interior walls of first handle **210** at channel **212**. Lock mechanism **215** forms an opening **217** configured to correspond to fastener **227**, such as to allow at least a portion of fastener **227** to extend into opening **217** when lock mechanism **215** is rotated or flipped into position over fastener **227**. Lock mechanism **215** includes a body configured to extend within channel **212** at first handle **210**. Lock mechanism **215** includes a step **216** configured to position a first portion **1216** of lock mechanism **215** in a different plane from a second portion **1217**. In particular, step **216** may allow the first portion **1216** at which opening **217** is positioned to extend over fastener **227** while second portion **1217** is positioned alongside an aft end **272** of cutting blade **230**. Lock mechanism **215** may further include a pin **218**. In a particular embodiment, pin **218** is positioned at an aft end **219** of lock mechanism **215**. In a still particular embodiment, pin **218** is positioned at aft end **219** of first portion **1216** of lock mechanism **215**.

[0064] Referring still to FIGS. 8-9, cutting blade **230** may form an opening at second interface **267**. Cutting blade **230** forms an opening at a third interface **269**. Respective openings **267**, **269** are connected via channel **268**.

[0065] An exemplary mode of operation of hand tool **200**, such as depicted in FIGS. 8-9, includes modes of operation such as described above. An exemplary mode of operation of hand tool **200** includes a user pushing fastener **227** along the downward direction (i.e., opposite of upward direction **101**). The user slides or otherwise articulates the first handle **210** back (i.e., away from an interface of first teeth **214** and second teeth **224**), such as to disengage first teeth **214** from second teeth **224**. The user slides the first handle **210** back until fastener **227** is positioned through opening

269. The user flips or rotates lock mechanism **215** such as via hinge **213**, to align opening **217** over fastener **227**. Additionally, user rotates lock mechanism to position pin **218** into opening **267**. When lock mechanism **215** is rotated, such as to position pin **218** into opening **267**, step **216** is positioned adjacent to aft end **272** of cutting blade **230**. Accordingly, rotation or other movement of first handle **210** relative to cutting blade **230** is limited. Another exemplary mode of operation of hand tool **200** includes depressing fastener **227** and sliding fastener **227** through channel **268** from opening **269** to opening **267**, such as to allow for first teeth **214** to engage second teeth **224**. Such mode of operation positions hand tool **200** in a compound mode such as described herein.

[0066] Referring now to FIGS. **19-20**, exemplary embodiments of hand tool **300** are provided. Embodiments of hand tool **300** include embodiments of shear assemblies such as depicted and described in detailed view of hand tool **100**, **200** provided above. Hand tool **300** includes a first handle **310** having a cutting blade **330** connected to the first handle **310**. Hand tool **300** includes fastener **327** at interface **357**. First handle **310** is configured to slide or otherwise articulate at interface **357**. In certain embodiments, fastener **327** is configured substantially such as described above in regard to fastener **127** or fastener **227**. In a first operating mode, such as depicted in FIG. **19**, interfaces **367**, **377** each provide pivot points when fastener **327** is positioned in a compound action position at a channel at interface **357**. In various embodiments, interface **357** may be configured substantially as described above in regard to channel **268** and openings **267**, **269**. In a second operating mode, such as depicted in FIG. **20**, fastener **343** is positioned at interface **367**, such as to lock first handle **310** in position relative to cutting blade **330**. Interface **357** provides a pivot point at fastener **327**. Second operating mode may accordingly provide a single action configuration of hand tool **300**.

[0067] Embodiments of hand tool **300** allow for a compound action movement with first handle **310** fixed with two (2) pivot positions and allowed to slide across a channel at interface **357** along the cutting blade **330**. When a user changes hand tool **300** into single action operating mode, a lower pivot restraint is removed from interface **377** and a fastener **343** is positioned at interface **367**, such as to lock or restrain the cutting blade **330** relative to first handle **310** to articulate as one. Such operating mode may lock fastener **327** at the channel at interface **357** from a sliding movement to a pivot point. A user may change hand tool **300** from compound action movement to single pivot movement by articulating three (3) fasteners or pins in and out. A fastener at interface **377** is removed and a pair of locked fasteners or pins at respective sides of the hand tool are pushed in to lock the first handle **310** along with the cutting blade **330** and prevent pivoting moment around the first handle **310** and the cutting blade **330**.

[0068] Embodiments of hand tool **100**, **150**, **200**, **300** may be interchanged with one another, or include aspects of one another. Hand tool **150** depicted in FIGS. **6-7** may include handle grips **115** selectively connectable to various embodiments of first handle **110**, **210**, **310** and second handle **120**, **220**, **320** such as provided herein. Hand tool **300** depicted in FIGS. **19-20** may include handle grips **315** selectively connectable to various embodiments of first handle **110**, **210**, **310** and second handle **120**, **220**, **320** such as provided herein.

[0069] Certain embodiments of hand tool (e.g., hand tool **150**, **200**, **300**) may allow a user to switch between the first and second operating modes (i.e., the compound and single action movements) without necessitating removal of a fastener (e.g., fastener **123**, **227**) from the first handle (e.g., first handle **110**, **210**). Compound action movement allows the user to open the hand tool to a wider position, such as to apply greater force through the handles and through to the cutting member and cutting blade. Single action movement allows the user to open the hand tool to a lesser angle relative to the compound action movement, such as to allow the user to articulate the handles, and associated cutting blade and cutting member, with greater speed. Embodiments of the hand tool provided herein may allow the user to articulate between the compound mode and single action mode relatively quickly. Still further embodiments of the hand tool provided herein may allow such articulation between modes without necessitating additional parts, components, fasteners, and

without requiring removal of fasteners, parts, or components from the hand tool.

[0070] Further aspects of the invention are provided by one or more of the following clauses:

[0071] 1. A hand tool, the hand tool including a first handle; a second handle comprising a cutting member; and a cutting blade forming a first opening and a second opening, wherein the first handle is attachable in a first operating mode to the cutting blade at the first opening via a first fastener, wherein the first handle is attachable in a second operating mode to the cutting blade at the second opening via the first fastener, and wherein the cutting blade is attached in pivotal arrangement to the second handle via a second fastener. [0072] 2. The hand tool of any one or more clauses herein, wherein the cutting blade includes a linkage at which the first opening and the second opening are formed. [0073] 3. The hand tool of any one or more clauses herein, wherein the cutting blade and linkage are pivotally attached via a third fastener. [0074] 4. The hand tool of any one or more clauses herein, wherein the first handle forms a first fastener opening and a second fastener opening, wherein the first fastener opening is separated along the axis from the second fastener opening. [0075] 5. The hand tool of any one or more clauses herein, wherein the first handle is attachable via the first fastener in the first operating mode to the cutting blade at the first opening and the first handle at the first fastener opening. [0076] 6. The hand tool of any one or more clauses herein, wherein the first handle is attachable via the first fastener in the second operating mode to the cutting blade at the second opening and the first handle at the second fastener opening. [0077] 7. The hand tool of any one or more clauses herein, wherein the first handle includes a plurality of first teeth, and wherein the second handle includes a plurality of second teeth. [0078] 8. The hand tool of any one or more clauses herein, wherein the plurality of first teeth and the plurality of second teeth are engaged to one another in the first operating mode, and wherein the plurality of first teeth and the plurality of second teeth are disengaged from one another in the second operating mode. [0079] 9. The hand tool of any one or more clauses herein, wherein the cutting blade forms a channel connecting the first opening and the second opening. [0080] 10. The hand tool of any one or more clauses herein, wherein the plurality of first teeth is engaged with the plurality of second teeth in the first operating mode via the first fastener extending through the first opening at the cutting blade. [0081] 11. The hand tool of any one or more clauses herein, wherein the plurality of first teeth is disengaged from the plurality of second teeth in the second operating mode via the first fastener articulating through the channel and extending through the second opening at the cutting blade. [0082] 12. The hand tool of any one or more clauses herein, wherein a lock mechanism is rotatably attached to the first handle, wherein the lock mechanism forms an opening corresponding to the first fastener. [0083] 13. The hand tool of any one or more clauses herein, wherein the lock mechanism includes a pin positioned at an aft end of the lock mechanism, wherein the pin corresponds to the first opening at the cutting blade. [0084] 14. The hand tool of any one or more clauses herein, wherein the lock mechanism includes a step, wherein the step positions a first portion of the lock mechanism in a different plane from a second portion of the lock mechanism, and wherein the pin is positioned at the aft end of the first portion. [0085] 15. The hand tool of any one or more clauses herein, wherein the pin is positioned in the first opening at the cutting blade when the first fastener is positioned in the second opening, and wherein the lock mechanism surrounds the first fastener through the opening when in the second operating mode. [0086] 16. The hand tool of any one or more clauses herein, wherein the second opening at the cutting blade forms a star-pattern opening. [0087] 17. The hand tool of any one or more clauses herein, wherein the first handle includes a buttress extending over a main body, wherein a slot extending along the axis is formed between the buttress and the main body. [0088] 18. The hand tool of any one or more clauses herein, wherein the first handle forms a fastener opening into the main body, and wherein the fastener opening forms a star-pattern corresponding to the star-pattern opening at the cutting blade. [0089] 19. The hand tool of any one or more clauses herein, wherein the first handle forms a fastener opening into the main body, wherein the fastener opening forms a star-pattern corresponding to the star-pattern opening at the cutting blade, and wherein the buttress forms an

orifice extending through the buttress in alignment with the fastener opening at the main body. [0090] 20. The hand tool of any one or more clauses herein, wherein the first fastener includes a cap; a neck; a cylindrical body; and a star body, wherein the cap, the neck, the cylindrical body, and the star body are in serial arrangement relative to one another. [0091] 21. The hand tool of any one or more clauses herein, wherein the first fastener opening and the second fastener opening are connected via a channel formed through the first handle. [0092] 22. The hand tool of any one or more clauses herein, wherein the first handle forms a channel extending along an axis of extension of the first handle. [0093] 23. The hand tool of any one or more clauses herein, wherein the channel forms a first fastener opening at a proximal end of the first handle, and wherein the channel forms a second fastener opening distal to the proximal end. [0094] 24. The hand tool of any one or more clauses herein, wherein the hand tool is any one or more of a hedge shear, a garden shear, a lopper, a pruner tool. [0095] 25. A hand tool, the hand tool including a first handle; a second handle including a cutting member; a cutting blade forming a first opening and a second opening, wherein the first opening and the second opening are each separated substantially along an axis corresponding to an extension of the first handle when the cutting blade and the cutting member are together in a closed position, wherein the first handle is attachable in a first operating mode to the cutting blade at the first opening via a first fastener, wherein the first handle is attachable in a second operating mode to the cutting blade at the second opening via the first fastener, and wherein the cutting blade is attached in pivotal arrangement to the second handle via a second fastener. [0096] 26. A shear assembly, the shear assembly including the first handle of any one or more clauses herein; the second handle including the cutting member; and the cutting blade of any one or more clauses herein.

[0097] This written description uses examples to disclose the invention, including the best mode, and also to enable any person skilled in the art to practice the invention, including making and using any devices or systems and performing any incorporated methods. The patentable scope of the invention is defined by the claims, and may include other examples that occur to those skilled in the art. Such other examples are intended to be within the scope of the claims if they include structural elements that do not differ from the literal language of the claims, or if they include equivalent structural elements with insubstantial differences from the literal languages of the claims.

Claims

1.-20. (canceled)

21. A hand tool, the hand tool comprising: a first handle; a cutting blade; a second handle comprising a cutting member; a first fastener extending into the second handle and the cutting blade, wherein the second handle is permitted to pivot relative to the cutting blade at the first fastener; the first handle comprising a first fastener opening, a second fastener opening, and an opening through which a second fastener extends into the first handle and the second handle, wherein the first handle is permitted to pivot relative to the second handle at the second fastener; a linkage comprising a first linkage opening, a second linkage opening, and an opening at which a third fastener extends into the linkage and the cutting blade and permits the cutting blade to pivot relative to the linkage, the first linkage opening and the second linkage opening separated from one another substantially along an axis corresponding to an extension of the first handle when the cutting blade and the cutting member are in a closed position, the first fastener opening and the second fastener opening separate from one another substantially along the axis corresponding to the extension of the first handle when the cutting blade and the cutting member are in the closed position, wherein the cutting blade is attached to the first handle in a first operating mode through connection of a fourth fastener extending into the linkage and the first handle through the first linkage opening and the first fastener opening, and wherein the cutting blade is attached to the first

handle in a second operating mode through connection of the fourth fastener extending into the linkage and the first handle through the second linkage opening and the second fastener opening.

22. The hand tool of claim 21, wherein the second fastener extends into the second handle at the cutting member.

23. The hand tool of claim 22, wherein the opening through which the second fastener extends into the first handle and the second handle is separated from the first fastener opening and the second fastener opening substantially along the axis corresponding to the extension of the first handle when the cutting blade and the cutting member are in the closed position.

24. The hand tool of claim 21, wherein an axis of separation of the third fastener and an interface at which the first fastener extends into the second handle and the cutting blade is substantially parallel to the axis of separation of the first fastener opening, the second fastener opening, and the opening through which the second fastener extends into the first handle and the second handle when the cutting blade and the cutting member are in the closed position.

25. The hand tool of claim 24, wherein the linkage positions the opening at which the third fastener extends into the linkage and the cutting blade such that the axis of separation of the third fastener and the interface at which the first fastener extends into the second handle and the cutting blade is substantially parallel to the axis of separation of the first fastener opening, the second fastener opening, and the opening through which the second fastener extends into the first handle and the second handle when the cutting blade and the cutting member are in the closed position.

26. The hand tool of claim 21, the linkage comprising a body at which the first linkage opening, the second linkage opening, and the opening at which the third fastener extends into the linkage are formed, wherein the body comprises a first member extending in a first direction and a second member extending in a second direction oblique or perpendicular to the first direction from the second linkage opening.

27. The hand tool of claim 26, wherein the opening at which the third fastener extends into the linkage is formed at the first member, and wherein the first linkage opening is formed at the second member.

28. The hand tool of claim 21, wherein the first handle is extendable in the first operating mode to an open position up to approximately 92 degrees from the closed position.

29. The hand tool of claim 21, wherein the first handle is extendable in the second operating mode to an open position up to approximately 49 degrees from the closed position.

30. The hand tool of claim 21, wherein the first handle, the second handle, the cutting blade, and the linkage form separable components relative to one another.

31. The hand tool of claim 21, the hand tool comprising a hedge shear, a garden shear, a lopper, or a pruner tool.

32. The hand tool of claim 21, wherein the fourth fastener is selectively releasable from extension into the first linkage opening and the first fastener opening to extension into the second linkage opening and the second fastener opening.

33. A shear assembly for a hand tool, the shear assembly comprising: a first handle; a cutting blade; a second handle comprising a cutting member; a first fastener extending into the second handle and the cutting blade, wherein the second handle is permitted to pivot relative to the cutting blade at the first fastener; the first handle comprising a first fastener opening, a second fastener opening, and an opening through which a second fastener extends into the first handle and the second handle, wherein the first handle is permitted to pivot relative to the second handle at the second fastener; a linkage comprising a first linkage opening, a second linkage opening, and an opening at which a third fastener extends into the linkage and the cutting blade and permits the cutting blade to pivot relative to the linkage, the first linkage opening and the second linkage opening separated from one another substantially along an axis corresponding to an extension of the first handle when the cutting blade and the cutting member are in a closed position, the first fastener opening and the second fastener opening separate from one another substantially along the axis corresponding to the

extension of the first handle when the cutting blade and the cutting member are in the closed position, wherein the cutting blade is attached to the first handle in a first operating mode through connection of a fourth fastener extending into the linkage and the first handle through the first linkage opening and the first fastener opening, and wherein the cutting blade is attached to the first handle in a second operating mode through connection of the fourth fastener extending into the linkage and the first handle through the second linkage opening and the second fastener opening.

34. The shear assembly of claim 33, wherein the opening through which the second fastener extends into the first handle and the second handle is separated from the first fastener opening and the second fastener opening substantially along the axis corresponding to the extension of the first handle when the cutting blade and the cutting member are in the closed position.

35. The shear assembly of claim 33, wherein an axis of separation of the third fastener and an interface at which the first fastener extends into the second handle and the cutting blade is substantially parallel to the axis of separation of the first fastener opening, the second fastener opening, and the opening through which the second fastener extends into the first handle and the second handle when the cutting blade and the cutting member are in the closed position.

36. The shear assembly of claim 35, wherein the linkage positions the opening at which the third fastener extends into the linkage and the cutting blade such that the axis of separation of the third fastener and the interface at which the first fastener extends into the second handle and the cutting blade is substantially parallel to the axis of separation of the first fastener opening, the second fastener opening, and the opening through which the second fastener extends into the first handle and the second handle when the cutting blade and the cutting member are in the closed position.

37. The shear assembly of claim 33, the linkage comprising a body at which the first linkage opening, the second linkage opening, and the opening at which the third fastener extends into the linkage are formed, wherein the body comprises a first member extending in a first direction and a second member extending in a second direction oblique or perpendicular to the first direction from the second linkage opening.

38. The shear assembly of claim 37, wherein the opening at which the third fastener extends into the linkage is formed at the first member, and wherein the first linkage opening is formed at the second member.

39. The shear assembly of claim 33, wherein the first handle is extendable in the first operating mode to an open position up to approximately 92 degrees from the closed position, and wherein the first handle is extendable in the second operating mode to an open position up to approximately 49 degrees from the closed position.

40. The shear assembly of claim 33, wherein the first handle, the second handle, the cutting blade, and the linkage form separable components relative to one another, and wherein the fourth fastener is selectively releasable from extension into the first linkage opening and the first fastener opening to extension into the second linkage opening and the second fastener opening.
