

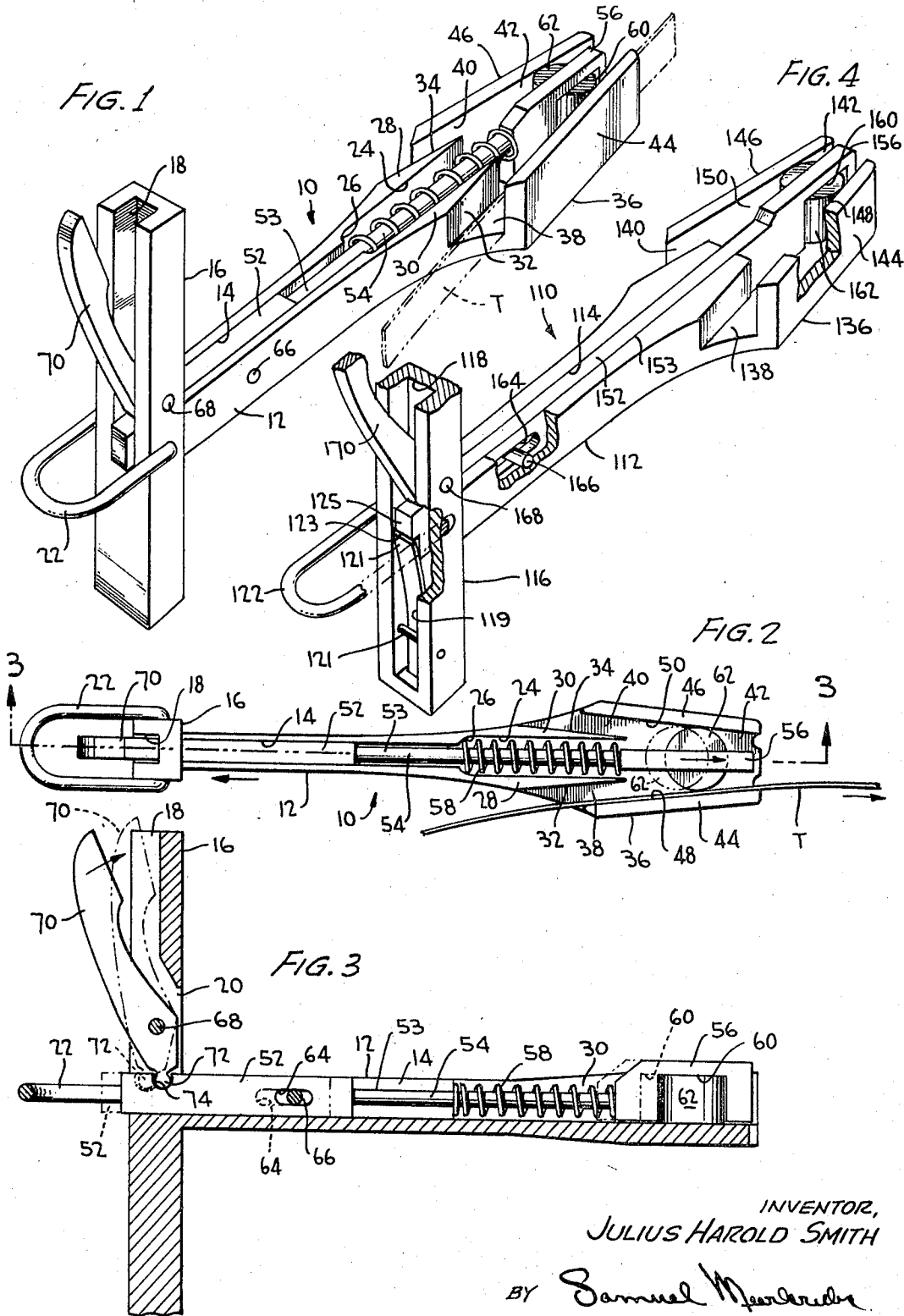
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TAPE GRIP AND HANDLE

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TAPE GRIP AND HANDLE

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ABSTRACT OF THE DISCLOSURE

A hand tool for manually drawing a surveyor's chain or measuring tape and the like taut in which the tool has a channel-like body having a transverse handle at one end in which handle a trigger element is pivotally supported for pivoting into and out of the plane of the handle and is operatively connected to a force transmitting bar reciprocally supported in said body; in which the body opens at the end opposite the handle and trigger element and the bar captivates, for movement therewith a clutch element cooperating with the channel-like body to gripingly engage a chain or tape that can be readily and manually inserted into the open end of the body and a lateral opening therein; and in which the bar is limited in reciprocable movement, and a spring is operatively connected to the bar and trigger element urging the clutch element toward gripping engagement and pivots the trigger element out of the plane of the handle.

Primary objects of the present invention are: to provide a novel chain grip in which a novel jaw and releasable clutch includes means for readily reorienting the tool with respect to a surveying or measuring chain; to provide a novel release mechanism for the clutch of the chain grip; to provide a novel jaw in which increased tension on the chain being gripped increases the clutch pressure proportionately due to a novel jaw construction; to provide a tool which facilitates ready indexing of the tool with respect to a reference point to promote accurate measuring.

These together with other and more specific objects and advantages of the invention will become apparent from a consideration of the following description of an exemplary embodiment when taken in conjunction with the drawing forming a part hereof, wherein:

FIG. 1 is a perspective view of the novel chain grip showing a surveyor's chain or tape in phantom lines;

FIG. 2 is a top plan view of the tool;

FIG. 3 is a longitudinal section taken on the plane of line 3—3 of FIG. 2; and

FIG. 4 is a perspective view of another embodiment of the invention with portions broken away to show details.

Referring to the drawing in detail, and first considering FIGS. 1-3, the novel chain grip is indicated generally at 10 and comprises an elongated body element 12 constructed of any suitable material. The body element 12 has a generally U-shaped cross section providing an upwardly opening guide channel 14. Secured to one end of the body member, in a suitable manner, is a transversely disposed handle 16 which includes a rearwardly opening channel 18 and transverse opening 20 communicating with one end of the channel 14 of the body element. The handle conveniently has a ring element 22 mounted thereon whereby a tension scale can be attached so that the chain is subject to the same tension during all measurements, or provides means whereby the tool can be hung from one's belt, for example.

The body element 12 channel 14 conveniently incorporates an enlarged portion 24 forming an abutment shoulder 26 and has enlarged flanking lips 28 and 30. The lips 28 and 30, respectively, include guide surfaces 32

and 34, respectively, along which a measuring chain or tape T will be disposed when the tool is being used. The body element includes an enlarged head portion 36 having formed therein upwardly-opening, tape-receiving channels 38 and 40, opening into a common entrance-channel 42. The outer walls 44 and 46 which respectively complete channels 38 and 40, as well as the entrance channel, have diverging inner surfaces 48 and 50, respectively, which function with a clutch element to be described.

The channel 14 reciprocally receives therein a rectangular cross-sectioned portion 52 of a force transmitting bar 53 which includes an intermediate circular shaft portion 54 and a forward notched head portion 56. A compression spring 58 is circumposed about the bar portion 54 with one end in engagement with shoulder 26 and the other end in engagement with the rear end of head 56. The spring 58 normally urges the bar toward the entrance or forward end of the head portion 36 of the body element.

The apertured head 56 includes a rectangular downwardly opening notch or aperture 60 and receives therein a cylindrical clutch element 62 which engages one side of the tape T in opposition to either the inner surface 48 or 50 depending upon which side of the head 36 the tape has been inserted.

It will be observed that the tool can be readily used by either right or left hand persons. Further, due to the convergence of the surfaces 48 and 50, even in the absence of spring 58, tension on the tape T in the direction indicated in FIG. 2, i.e. toward the right, will tend to cause increased pressure between the walls 44 and 46 and the clutch element 62.

The rectangular cross-sectioned portion 52 of the force transmitting bar includes an elongated, longitudinally extending retaining slot 64 which has extending there-through a retaining pin 66 extending through opposed apertures in the body element 12.

The handle 16 has intermediately pivoted on a transverse pin 68, a lever or trigger element 70 which includes a lower portion 72 keyed in a notch 74 formed in the upper surface at the rear end of the force transmitting bar. The trigger element 70 is guidingly received in channel 18 of the handle 16, and when moved toward the right as indicated by the direction arrow shown in FIG. 3 will result in movement of the bar and clutch element toward the left as shown in FIG. 2. This movement will release the grip on the tape.

The tool as described can be readily engaged on a tape or chain, can be comfortably retained in one hand, provides means by which a plumb bob can be readily attached, can be readily indexed or positioned on the measuring indicia on the tape T, is simple and inexpensive in construction, and is simple to use by even the most inexperienced rodman (chainman).

The novel tool prevents excessive flexing and/or bending of the chain or tape as is normally encountered through the use of a chainman's hands, pliers or the like. The chain or tape flexing, over an extended period of time, causes a crystallizing of the metal and breakage, which is substantially eliminated through the use of the tool.

Another embodiment is disclosed in FIG. 4, and this embodiment affords all of the advantages of the embodiment of FIGS. 1-3. In the embodiment of FIG. 4, reference numerals similar to those of FIGS. 1-3, however, the hundreds series will be used.

Referring to FIG. 4, the tool is indicated generally at 110 and comprises a relatively shorter body element 112. The body element 112 includes an upwardly opening channel 114. Suitably formed or secured to the body element 112 is a transverse handle 116 which includes a rearwardly opening channel 118. The channel will com-

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municate with the channel 114 through a suitable opening (not shown).

The body element 112 includes an enlarged head portion 136 having formed therein tape-receiving channels 138 and 140 flanking a common entrance channel 142. The outer walls 144 and 146 extend vertically from a bottom and have diverging inner surfaces 148 and 150, respectively.

The channel 114 reciprocally receives therein a rectangular cross-sectioned portion 152 of a force transmitting bar 153 which includes an intermediate elongated slot 164 which has a retaining pin 166 extending therethrough, and thus the force transmitting bar is limited in reciprocable movement. The forward end 156 of the bar 153 includes a downwardly opening notch 160 extending over a cylindrical clutch element 162. The bar 152 will generally be disposed in alignment with forward end of the walls 144 and 146.

The handle 116 has pivotally mounted on a pin 168 disposed in the channel 118 a trigger element 170 cooperating with a notch in the bar similar to the construction shown in detail in FIG. 3, for example.

The channel 118 continues in a lower portion 119 having a retaining pin 121 extending thereacross. A leaf spring 158 is retained in channel 119 and includes an upper portion 121 engaged in an undercut portion 123 formed on the rear end portion 125 of the force transmitting bar 153. The leaf spring 158 has a function comparable to that of spring 58 of FIGS 1-3, however, provides a more simplified construction.

A ring element 122 is provided on the tool for the purpose of readily hanging the tool from the chainman's belt.

Although the tool can be conveniently produced from suitable metals, welded, soldered, milled, cast, etc., it is clearly evident that the tool can be produced from plastics or the like.

It will be obvious to those skilled in the art that various changes may be made without departing from the spirit of the invention and therefore the invention is not limited to what is shown in the drawing and described in the specification, but only as indicated in the appended claims.

What is claimed is:

1. A hand tool for gripping and manually stretching a surveyor's chain or tape taut comprising:
 - a elongated body element;
 - a handle fixed to and extending substantially at right angles to said body element;
 - a force transmitting bar reciprocally supported for longitudinal movement in said body element and having a portion projecting in intersecting relation with said handle;
 - a trigger element pivotally mounted on said handle and for movement toward and away from the plane of said handle on a pivot axis normal to the path of reciprocation of said force transmitting bar, said trigger element having a portion operatively connected to said force transmitting bar below the pivot axis of said trigger element whereby the portion of said trigger element above said pivot axis pivots away from said handle when the force transmitting bar reciprocates away from said handle;
 - spring means operatively connected to said force transmitting bar and said trigger element normally urging said trigger element to pivot about its pivot axis away from the plane of said handle and normally causing said force transmitting bar to be urged away from said handle,
 - said body element including an upwardly and terminally open channel into which a terminal portion of said force transmitting bar projects

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and is normally urged, said channel having at least one side wall converging toward the path of reciprocation of said terminal portion of said force transmitting bar,

said body element including a lateral opening in said one wall and communicating with said open channel intermediately of said body element, said lateral opening opening upwardly; and a cylindrical clutch element disposed within said open channel and captivated within the terminal portion of said force transmitting bar between the terminal end of said channel and said lateral opening,

said cylindrical clutch element being tangentially engageable with said one side wall of said channel whereby a surveyor's chain or tape can be readily inserted at an intermediate portion thereof into said channel and will normally be gripped therein and can be drawn taut manually, and pivoting of said trigger element into the plane of said handle will release said tape or chain and permit it to be lifted out of said channel.

2. The structure as claimed in claim 1 in which said body element includes a second wall and lateral opening corresponding to those first mentioned, said walls and openings being disposed symmetrically about said clutch element and each of said walls defining similarly functioning relationships with said clutch element.

3. The structure as claimed in claim 1 in which said force transmitting bar and body element include cooperating stop means limiting relative reciprocation therebetween.

4. The structure as claimed in claim 1 in which said channel includes a bottom surface, the terminal portion of said force transmitting bar in said channel including a downwardly-opening notch communicating with said channel bottom surface, said cylindrical clutch element being captivated within said downwardly opening notch and being slidable on said channel bottom surface.

5. The structure as claimed in claim 1 in which said spring means comprises a leaf spring extending along said handle and abuttingly engaging said force transmitting bar adjacent the end opposite that in which said clutch element is captivated.

6. The structure as claimed in claim 1 in which said spring means comprises a compression spring circumposed about said force transmitting bar at an intermediate portion thereof and within said body element, said compression spring abuttingly engaging a portion of said bar and a portion of said body element.

7. The structure as claimed in claim 1 including a hook element connected to said handle and substantially in the plane of said body element.

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