

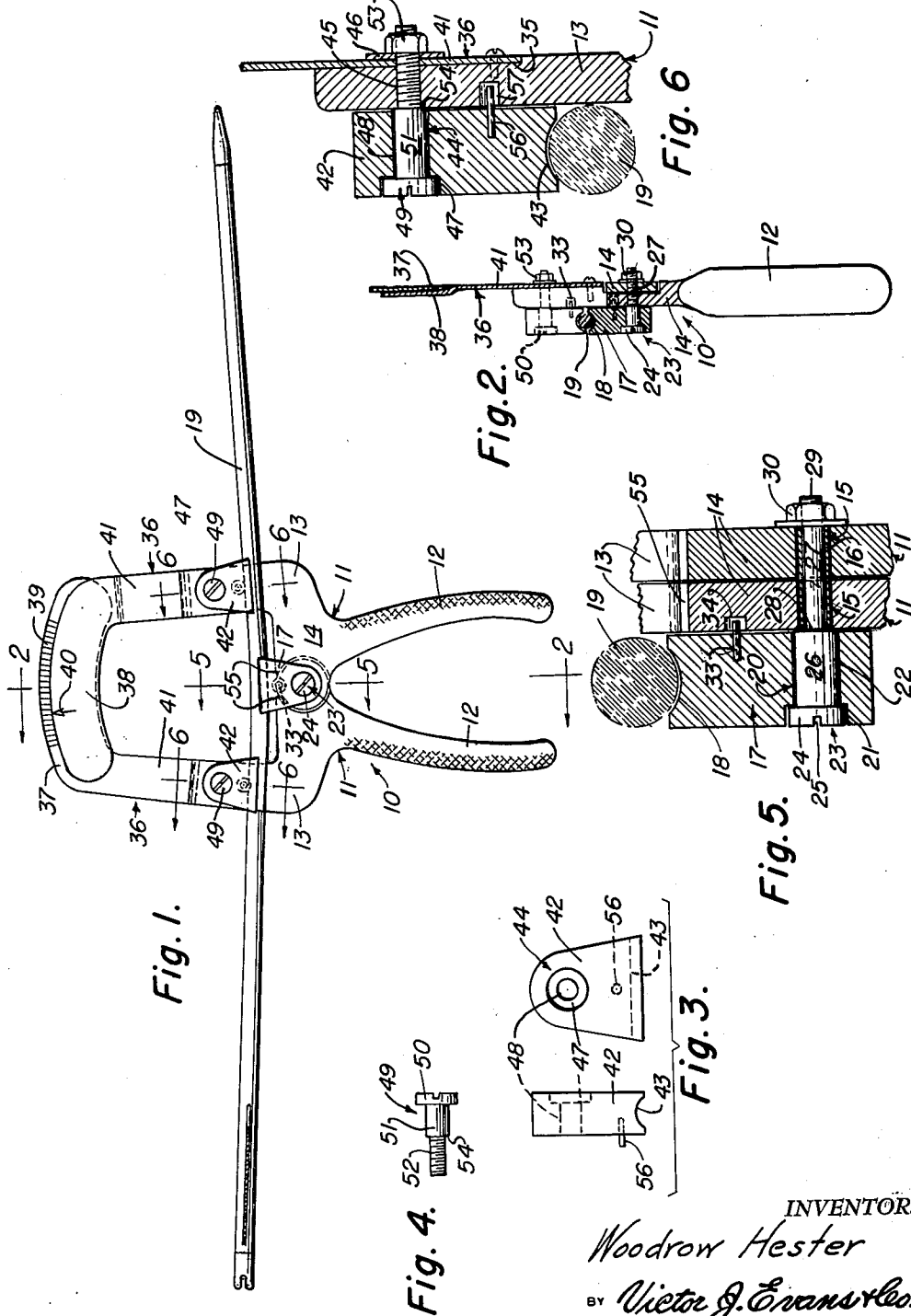
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PLIER-TYPE ARROW OR SHAFT PORTABLE STRAIGHTENER

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1

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**PLIER-TYPE ARROW OR SHAFT PORTABLE  
STRAIGHTENER**

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4 Claims. (Cl. 81-15)

This invention relates to a straightener, and more particularly to a portable arrow or shaft straightener for use in straightening articles such as arrows.

The object of the invention is to provide a device which is adapted to be conveniently used for straightening members or articles such as arrows which have been shot by bows, so that bent arrows or the like can be readily and conveniently straightened whereby the arrows can be used over and over again without the necessity of discarding the arrows because they are bent.

Another object of the invention is to provide an arrow straightener which is provided with a scale mechanism thereon or indicating mechanism thereon so that an accurate means is provided for ascertaining when the arrow is properly straightened.

A further object of the invention is to provide a portable arrow straightener which is extremely simple and inexpensive to manufacture.

Other objects and advantages will be apparent during the course of the following description.

In the accompanying drawings, forming a part of this application, and in which like numerals are used to designate like parts throughout the same:

FIGURE 1 is an elevational view of the portable arrow straightener of the present invention, and showing an arrow in position therein to be straightened.

FIGURE 2 is a sectional view taken on the line 2-2 of FIGURE 1.

FIGURE 3 are views showing the construction of one of the jaws.

FIGURE 4 is an elevational view of one of the securing elements.

FIGURE 5 is a sectional view taken on the line 5-5 of FIGURE 1.

FIGURE 6 is a sectional view taken on the line 6-6 of FIGURE 1.

Referring in detail to the drawings, the numeral 10 indicates the portable straightener of the present invention which is adapted to be used for straightening arrows such as the arrow 19 which may be bent. The straightener 10 of the present invention comprises a pair of similar body members 11 which each include a handle portion 12 and a support portion 13. As shown in the drawings the body members 11 are further provided with superposed flat sections 14 and these flat sections 14 are provided with registering apertures 15, FIGURE 5. A sleeve or bearing 16 extends through these registering apertures 15. The numeral 17 indicates a jaw which is arranged contiguous to the sections 14, and the jaw 17 is provided with a bore 20 which is arranged in alignment with the apertures 15, and the bore 20 includes a first portion 21 and a second portion 22, and these portions are of different sizes or diameters. One end of the jaw 17 is provided with an arcuate groove 18 for snugly receiving therein a portion of the arrow 19 which is being straightened.

There is further provided a pivot means for pivotally connecting the body members 11 together, and this pivot means comprises a securing element 23 which includes an enlarged head 24, and the head 24 is provided with a slot or kerf 25 whereby a suitable tool such as a screwdriver can be arranged in engagement with this kerf in order to adjust or rotate the securing element 23. The securing element 23 further includes a cylindrical section

2

26 which is arranged in the second portion 22 of the bore, and the securing element also includes a reduced diameter section 27, and a shoulder 28 is defined on the securing element between the sections 26 and 27, as shown in FIG-

5 URE 5 for example. An end of the securing element is threaded as at 29, and a fastener or nut 30 is arranged in threaded engagement with the end 29 and serves to maintain the parts in their proper assembled relation. The reduced diameter section 27 extends through the sleeve

10 16. The numeral 33 indicates a pin which is affixed to the jaw 17, and there is provided in the adjacent flat section 14 a socket or space 34 which receives and provides clearance for the projecting end of the pin 33, for a purpose to be later described.

15 The support portions 13 are provided with recesses 35, and plates 36 have straight portions 41 engaging the recesses 35. The plates 36 further include transverse portions 37 and 38 which are arranged contiguous to each other and these transverse portions 37 and 38 are adapted to coact with each other. Thus, these transverse portions provide a coacting indicating mechanism which consist of scale markings 39 on the portion 37, and a pointer or indicator 40 is arranged on the other portion 38 for

25 coaction with the scale markings 39.

As shown in the drawings there is provided a pair of similar jaws 42 and the jaws 42 are adapted to be arranged on one side of the arrow 19 being straightened, while the other jaw 17 is arranged on the opposite side of the arrow as for example as shown in FIGURE 1. The jaws 42 are provided with grooved or recessed surfaces 43 for snugly engaging the adjacent portion of the arrow. Each jaw 42 has a bore or opening 44, and the bore 44 registers with or is aligned with apertures 45 and 46 in the support portions 13 and plate 36, FIGURE 6. The bore 44 includes a first portion 47 and a second portion 48 which is of smaller diameter than the first portion 47, and the portion 48 is of greater diameter than the aperture 45.

30 The numeral 49 indicates a securing element which includes a head 50 that is snugly seated in the first portion 47, and the securing element 49 also includes a section 51 which projects through the portion 48, and the securing element 49 further includes a threaded reduced section 52 which extends through the apertures 45 and 46, and a retainer or nut 53 is arranged in threaded engagement with the end of the section 52 as shown in the drawings. The securing element 49 has a shoulder 54 which is defined at the junction of the sections 51 and

50 52. As shown in the drawings, shoulders 55 are arranged on the body members 11 so as to define stop members which limit pivotal movement of the body members with respect to each other.

55 Pins 56 have end portions fastened to the jaws 42, and the pins 56 are adapted to have their outer projecting end portions arranged in engagement with recesses or spaces 57 in the support portions 13.

60 From the foregoing, it is apparent that there has been provided a tool or implement which is especially suitable or useful for straightening an article such as the arrow 19. In use, when an arrow such as the arrow 19 is to be straightened after the same has become bent from use or the like, it is arranged as for example as shown in FIGURE 1 so that it is clamped between the jaws 42 and the jaw 17 and then by applying pressure to the handles 12, the curvature will be removed from the arrow so that a straight arrow will be provided whereby it will not be necessary to throw away the curved or bent arrow since

70 the straightened arrows can be used again. The pair of body members 11 are pivotally connected together as for example by means of the securing ele-

ment 23, and the sleeve 16 provides a bearing which insures that the members such as the members 11 will properly rotate without binding. In addition the shoulder 28 on the securing element 23 abuts the adjacent face of the section 14 so as to permit a slight amount of movement between the jaw 17 and the adjacent section 14 wherein the jaws can adapt themselves to the configuration of the article such as the arrow which is being straightened.

In addition, the pointer 40 coacts with the scale markings 39 so as to provide a means for accurately ascertaining the proper degree of straightening cycle or steps so that the arrows can be straightened to the high degree of accuracy.

The jaws 42 are connected to the support portions 13 by means of the securing elements 49 and the shoulder 54 abuts the adjacent surface of a portion 13 so as to prevent binding between the jaw and the portion 13. The pin 56 extends into the clearance space 57 and the pin 33 extends into the clearance space 34 so that the jaws can move slightly in order to adjust themselves to the desired position or configuration of the article being handled.

The parts can be made of any suitable material and in different shapes or sizes.

Modern day archers usually shoot wood, aluminum or plastic arrows and after such arrows have been used they sometimes become bent as for example when the arrows strike a hard object or the like, so that the arrow will have to be straightened either by hand or mechanically and with the present invention bends can be very accurately taken out so that the arrows can be restored to their original shape. The parts such as the jaws may be made of a suitable material such as plastic, while the body members may be made of a suitable metal. The arrow which is to be straightened is arranged in engagement with the grooves or recessed portions 43 and 18 and initially the body members 11 are spread apart and then by putting slight pressure on the handles 12 and turning the arrow 19 with the finger tip slowly, it will be seen that the straightening will take place. The indicator point 40 will travel as for example from left to right so as to provide an indicating means for the arrow and when the indicator moves furthest to the left for example, this will be an indication that the highest point of the bend in the arrow has been reached and then the handles can be squeezed so as to bend the arrow to the desired position. By revolving the arrow and observing that the indicator 40 does not move, it will be seen that there is provided an indication that the arrow has been straightened.

Some of the advantages or important aspects or features of the present invention are as follows. The straightener has an indicator and the straightener can be conveniently and easily carried on the person. The construction of the body members including the handles 12 is novel, and the jaws which may be made of plastic so as to provide smooth surfaces permit the arrow to revolve and slide with ease in handling when revolved. In addition, the indicator permits the user to accurately ascertain when the arrow is straight or bent.

The shoulders such as the shoulders 28 and 54 prevent

binding between the adjacent elements or surfaces. The sleeve 16 permits the handles to work or move freely. The shoulders 55 function as stops. The clearance spaces or sockets such as the socket 57 or 34 prevent the jaws from turning around completely, and yet these clearance spaces are sufficiently large so as to permit the jaws to rock or move slightly with the bent arrows. In other words the pin and socket, such as the pin 56 and socket 57, or the pin 33 and the socket or space 34 permits the corresponding jaw to have a slight amount of freedom and yet prevents the jaw from completely turning around.

Minor changes in shape, size and rearrangement of details coming within the field of invention claimed may be resorted to in actual practice, if desired.

15 What is claimed is:

1. In a portable arrow or shaft straightener, a pair of similar body members each including a handle portion and a support portion, said body members including superposed flat sections provided with registering apertures, a sleeve extending through said apertures, a jaw arranged adjacent said flat sections, said support portions being provided with recesses, plates having straight portions engaging said recesses and said plates being fastened to said support portions, said plate further including coacting transverse portions, scale markings on one of said transverse portions, a pointer on the other transverse portion for coaction with said scale markings, a pair of jaws on said support portions, a pin being secured in each jaw, and a socket for receiving each of said pins, said single jaw being centered, with respect to the pair of jaws, and in opposed relation thereto, and wherein when the handle portions are squeezed, the single jaw will oppose the straightening movement of the pair of jaws.

2. The structure as defined in claim 1 wherein said jaws have grooved portions for snugly engaging the arrow or shaft.

3. The structure as defined in claim 1 wherein said jaws are made of plastic.

4. In a portable arrow or shaft straightener, a pair of body members, each including a handle portion and a support portion, scale means operatively connected to said body members, pivot means connecting the body members together, a single jaw connected to said body members adjacent said pivot means, and a pair of jaws connected to said support portions, said single jaw being centered, with respect to the pair of jaws, and in opposed relation thereto, and wherein when the handle portions are squeezed, the single jaw will oppose the straightening movement of the pair of jaws.

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