

July 15, 1924.

1,501,751

C. W. CRANNELL

METAL WORKING TOOL

Filed Aug. 14, 1922

2 Sheets-Sheet 1

FIG. 1.

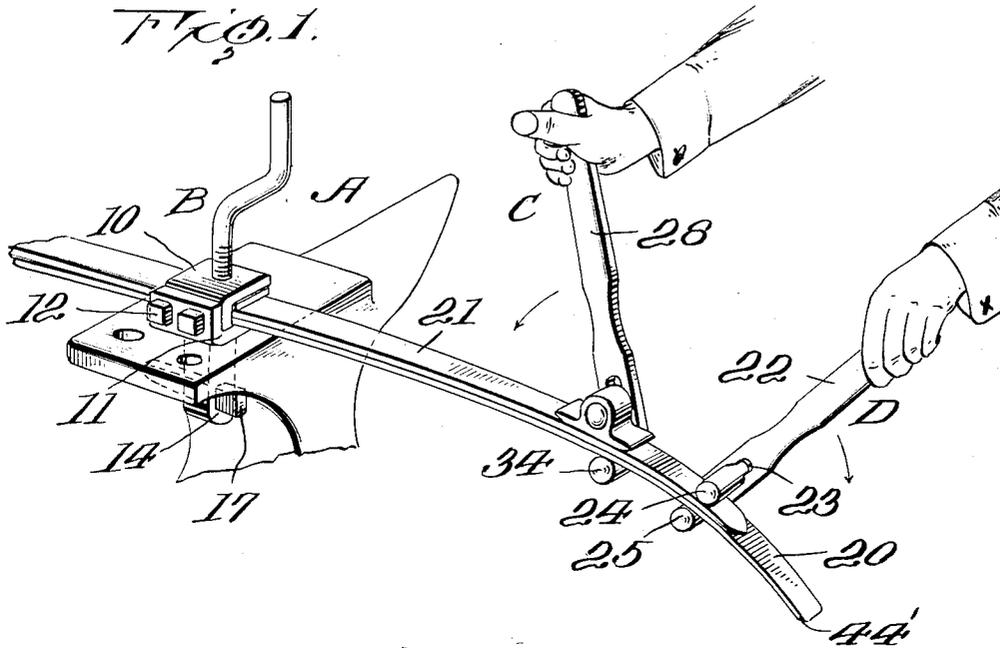
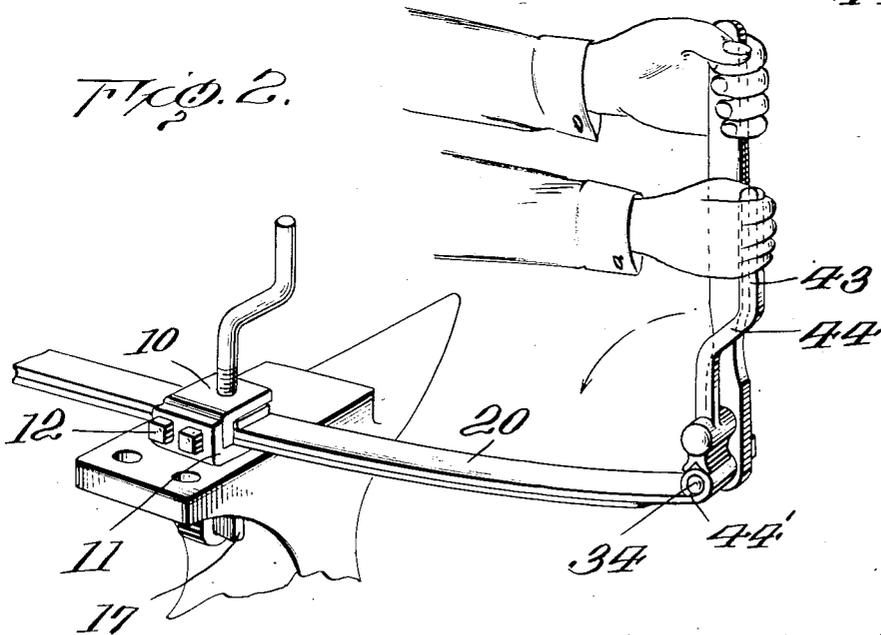


FIG. 2.



Inventor

C. W. Crannell,

By A. Stettin,

Attorney

July 15, 1924.

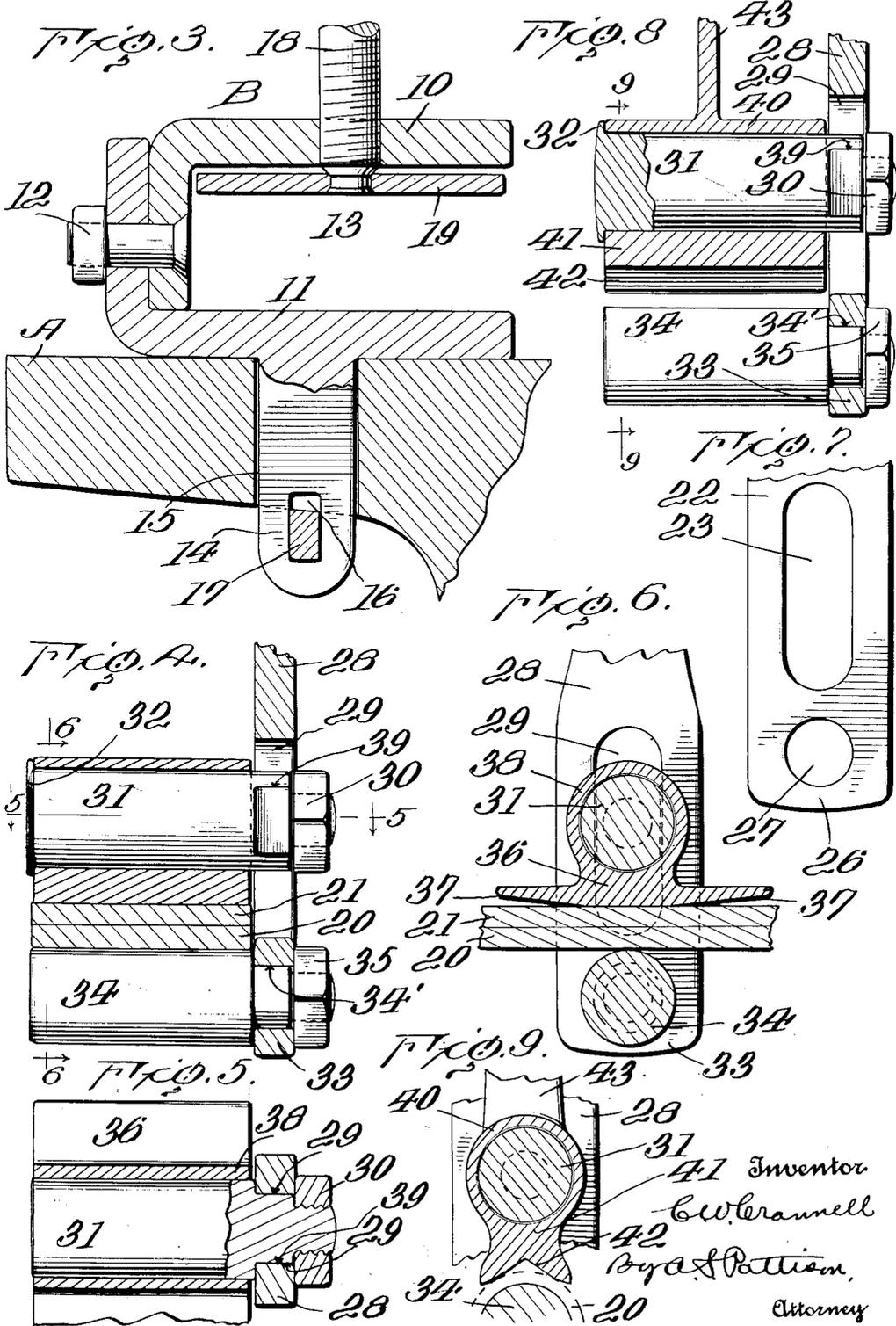
1,501,751

C. W. CRANNELL

METAL WORKING TOOL

Filed Aug. 14, 1922

2 Sheets-Sheet 2



Inventor
C. W. Crannell
By A. S. Pattison,
Attorney

UNITED STATES PATENT OFFICE

CHARLES W. CRANNELL, OF CHAPPEL, NEBRASKA, ASSIGNOR OF ONE-HALF TO
BENJAMIN J. CONNOR, OF CHAPPEL, NEBRASKA.

METAL-WORKING TOOL.

Application filed August 14, 1922. Serial No. 581,686.

To all whom it may concern:

Be it known that I, CHARLES W. CRANNELL, a citizen of the United States, residing at Chappel, in the county of Deuel and State of Nebraska, have invented certain new and useful Improvements in Metal-Working Tools, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to improvements in metal working tools for the bending and shaping of metals.

In the particular embodiment of the invention as shown in the drawings and hereafter described in the specification I have shown and described the use of my improved tools for repairing, shaping and making springs for vehicles.

Very often one or more leaves in springs used upon pleasure or trucking vehicles become broken and it is necessary to replace the broken spring leaves. My invention is particularly useful in the shaping of new leaves to replace the broken spring leaves and my invention also has the embodiment of a structure adapted to form eyes in the ends of the main spring leaves.

The primary object of my invention is to provide an improved set of tools for the bending and shaping of metals.

A further object of my invention is to provide a tool set of novel construction for the repairing, fitting and shaping of vehicle springs.

Another and further object of my invention is to provide a metal working tool for rolling or bending eyes in metal.

A still further object of my invention is to provide a set of tools of novel construction which are cheap and easy of manufacture and highly efficient in operation for bending and shaping metals.

Other further objects and novel features of construction of my improved invention will appear in the following description and accompanying drawings.

In the drawings Figure 1 is a perspective view showing the use of my improved tools for fitting a new leaf to a main leaf.

Fig. 2 is a perspective view showing the use of my improved tool for rolling or bending an eye in the end of a main spring leaf.

Fig. 3 is a vertical sectional view taken through the vise which is used in conjunction with my tools.

Fig. 4 is a vertical sectional view taken through my improved grab lever, the lever being provided with what I have termed a flatter.

Fig. 5 is a fragmentary transverse sectional view taken on the line 5—5 of Fig. 4, looking in the direction indicated by arrows.

Fig. 6 is a vertical sectional view taken on the line 6—6 of Fig. 4 looking in the direction indicated by arrows.

Fig. 7 is a fragmentary side view of the lower end of the holding lever.

Fig. 8 is a vertical sectional view taken through my improved grab lever, the lever being fitted with what I have termed a grab.

Fig. 9 is a vertical sectional view taken on the line 9—9 of Fig. 8, looking in the direction indicated by arrows.

Referring now to the drawings which show the embodiment of my invention for the particular use of shaping spring leaves, like parts are designated by similar reference numerals.

For the particular use of the tools shown in the drawings I use an anvil A, a vise B, a grab lever C, and a holding lever D.

The anvil A is of any common form to be found in a blacksmith's or work shop while the vise B consists of the two L shaped members 10 and 11 which are bolted or otherwise suitably fastened together as at 12 to form the opening 13. The bottom jaw member of the vise is provided with a downwardly extending portion 14 adapted to be inserted in the opening 15 which is common to anvils. The downwardly extending portion 14 of the vise extends below the anvil and is provided with an opening 16 into which is inserted a wedge 17 or the like to clamp the vise upon the anvil. Screw-threadedly mounted in the upper jaw member 10 of the vise is an operating handle or crank 18 which carries on its lower end within the jaw opening 13 the jaw clamping member 19 which is adapted to clamp articles in the vise jaws when the jaw clamping member is forced downwardly through the medium of the operating handle.

In Fig. 1 of the drawings I have shown the use of my improved tools in fitting or shaping a new leaf to a main spring leaf. In this figure of the drawings 20 represents the main leaf and 21 the leaf being shaped while both of the leaves are clamped in the vise B in the manner previously described and clearly shown in the drawings.

60

65

75

85

90

95

100

105

110

It will be readily understood by those skilled in the art that in shaping metal the metal must be hot. The spring leaves herein spoken of as being bent and shaped have first been heated and are being handled while hot.

In shaping the new leaf 21 to the main leaf 20 as shown in Fig. 1 of the drawings I use both the grab lever C and the holding lever D. The holding lever D consists of the handle 22 having in its lower end a slot 23 in which is adjustably mounted an outwardly extending pin 24, while the end 26 of the handle is provided with an opening 27 in which is suitably fastened an outwardly extending pin 25. Once the upper pin 24 is set in the desired relation to the lower pin 25 the adjustment is rarely changed but when it is desired to work with metals of different thicknesses it is sometimes necessary to increase or diminish the distance between the two pins.

The grab lever C consists of the main handle 28 in the lower end of which is a slot 29 in which is adjustably mounted by means of a nut 30, or the like, an outwardly extending pin 31 provided at its outer end with an enlarged head 32.

The inner end of the pin 31 is provided with two flattened sides 39 which impinge against the side walls of the slot 29 of the handle 28 and prevent the pin from rotating and in like manner is the end of the pin 34 provided with flattened sides 34'.

The lower end 33 of the handle 28 carries an outwardly extending pin 34 which is retained in the handle in any suitable manner such as by means of the nut 35 all of which clearly appears in the drawings and more particularly in Fig. 4 thereof.

When the grab lever C is used with the holding lever D for the work shown in Fig. 1 of the drawings I mount on the grab lever what I have termed a flatter. This flatter consists of an approximate flat base 36 which has its ends slightly beveled or rounded as at 37. Above the base 36 of the flatter and integral therewith is a bearing 38 which is adapted to fit over the pin 31. To mount the flatter on the pin it will be readily understood that the nut 30 of the pin must be removed, the pin inserted through the flatter and the nut 30 then replaced. The enlarged head 32 of the pin 31 prevents the flatter from escaping over the outer end of the pin and the flatter can not escape over the inner end of the pin because of the operating handle 28.

With the two tools of the construction just described and with the spring leaves 20 and 21 in the vise as shown in Fig. 1 the levers C and D are operated as clearly shown in this figure. The two leaves of the spring are between the two pins 24 and 25 of the holding lever and between

the pin 34 and the flat base 36 of the flatter. The two levers are then moved along the spring leaves until the new leaf 21, just being fitted to the main leaf 20, has assumed the curve of the main leaf. As clearly appears in Fig. 1 of the drawings the leaves are clamped between the pins by putting a thrust upon the levers at an angle to the leaves. I have found that by moving the flatter along the leaves, while holding the end of the leaves together by the holding lever D, that the new spring leaf can be made to assume the shape of the main leaf and that a perfect fit will result.

From the foregoing description it will be readily understood that the same manner of bending and shaping of any metals that are worked in a similar manner to springs, that is one metal above the other, can be followed with the use of my improved tools. It will likewise be readily understood that any number of new leaves for a spring can be shaped and fitted in the manner described.

In making a main leaf, in which it is necessary to form an eye in the leaf ends, I use the grab lever and in place of the flatter I mount a grab, which as clearly appears in Figs. 2, 8 and 9 of the drawings, consists of the bearing 40 having a thickened base 41 in the lower face of which is formed an approximately V-shaped longitudinal groove 42. The top of the bearing 40 of the grab is provided with an upwardly extending operating handle 43 which is provided with an offset 44 so as to protect the knuckles of the operator when using this tool. It will be readily understood of course that the rest of the grab lever construction is the same as has been previously described for use with the flatter, the flatter being merely removed and the grab inserted on the pin 31, of the grab lever, in place of the flatter. By means of the operating handle 43 the grab is rotated upon the pin 31 of the tool.

In forming the eye in the ends of the spring leaf the leaf end is cut on a slant or angle as clearly appears at 44' so that when the eye is rolled in the leaf end will fit close upon the leaf when the eye is finished. To form the eye the pin 34 of the grab lever is rested upon the top of the main spring leaf 20, as clearly appears in Fig. 2 of the drawings, and the end of the leaf is clamped between the pin 34 and the V-shaped base 42 of the grab. While maintaining this hold upon the end of the spring leaf the tool is rotated upon the pin 34 in a direction indicated by arrow in Fig. 2, the result being the forming of a perfect eye or circle in the end of the spring leaf of a diameter similar to the diameter of the pin 34 of the tool. Due to the tapered end 44' of the main spring leaf 20 the end of the leaf will rest snugly upon

the upper face of the leaf as clearly appears in Fig. 1 of the drawings, making a close fit and nicely formed eye.

It will be readily understood that an eye of any desired diameter can be formed by using in place of the pin 34 a pin of the diameter of the desired size of the eye.

If for any reason it should be desired to straighten out or unroll the eye of the main spring leaf the grab can be made to engage the leaf 20 in the manner shown in Figs. 2 and 9 of the drawings and the tool rotated in opposite direction.

From the foregoing it will be seen that I have provided a set of tools with which repairing and shaping of metals and particularly spring leaves can be successfully carried out. These tools make it possible for any one who understands the heating of spring steel to repair springs successfully as there is no reason why repaired springs should not be as good as the original. The trouble heretofore has always been in properly fitting the repaired or newly made spring leaves. I know of no tool made for the purpose of repairing or fitting of spring leaves which will accomplish the result of my improved tool. My improved tools make perfect fitting leaves with no unequal strains or humps in them and at the same time allow and provide for the making of the eyes in the ends of the main spring leaves. My tools are also well adapted for reshaping the spring leaves that have sagged out of shape due to various causes.

I also desire to point out that my improved grab lever tool when fitted with the grab and made on a larger scale could also be used to bend eyes or rings in steel for other purposes than that mentioned heretofore without departing from the spirit of my invention.

Having thus described my invention what I desire to protect and claim by Letters Patent is:

1. A set of tools for working metal springs or the like, comprising a combination of a metal holding tool, a metal working member comprising an operating handle having two outwardly extending members in separated parallel relation, the inner extending member of the working member provided with a metal working tool having a flat elongated base with beveled ends, and the metal working tool adapted to be moved along the work, for the purpose described.

2. A set of tools for working metal springs or the like, comprising a combination of a metal holding tool, a metal working member comprising an operating handle having two outwardly extending members in separated parallel relation, and the inner ex-

tending member of the working member provided with a metal working tool having a flat elongated base rotatably mounted, for the purpose described.

3. A set of tools for working metal springs or the like comprising a combination of a metal holding tool having outwardly extending members in separated parallel relation adapted to receive between them the metal to be held, a metal working member comprising an operating handle having two outwardly extending members in separated parallel relation, the inner extending member of the working member provided with a metal working member having a flat elongated base, and the metal working tool adapted to be moved along the work, for the purpose described.

4. A set of tools for working metal springs or the like, comprising a metal holding member and a metal working member, the metal holding member composed of an operating handle provided with two outwardly extending members in separated parallel relation, the metal working tool comprising an operating handle having two outwardly extending members in separated parallel relation, the inner extending member of the metal working tool provided with a metal working member having a flat elongated base, and the inner outwardly extending members of both tools adjustable in relation to their adjacent extending member, for the purpose described.

5. A metal working tool comprising an operating handle provided with two outwardly extending members in separated parallel relation, and the inner extending member of the tool rotatably carrying a metal working member having a flat elongated base with beveled ends, for the purpose described.

6. A metal working tool comprising an operating handle provided with outwardly extending members in separated parallel relation at right angles to the handle, the inner extending member rotatably carrying a metal working member having a flat elongated base with beveled ends, and the metal working member free to rotate, for the purpose described.

7. A metal working tool comprising an operating handle provided with two outwardly extending members in separated relation at right angles to the handle and the inner extending member of the tool adapted to receive interchangeably a flatter and a grab, for the purpose described.

In testimony whereof I hereunto affix my signature.

CHARLES W. CRANNELL