

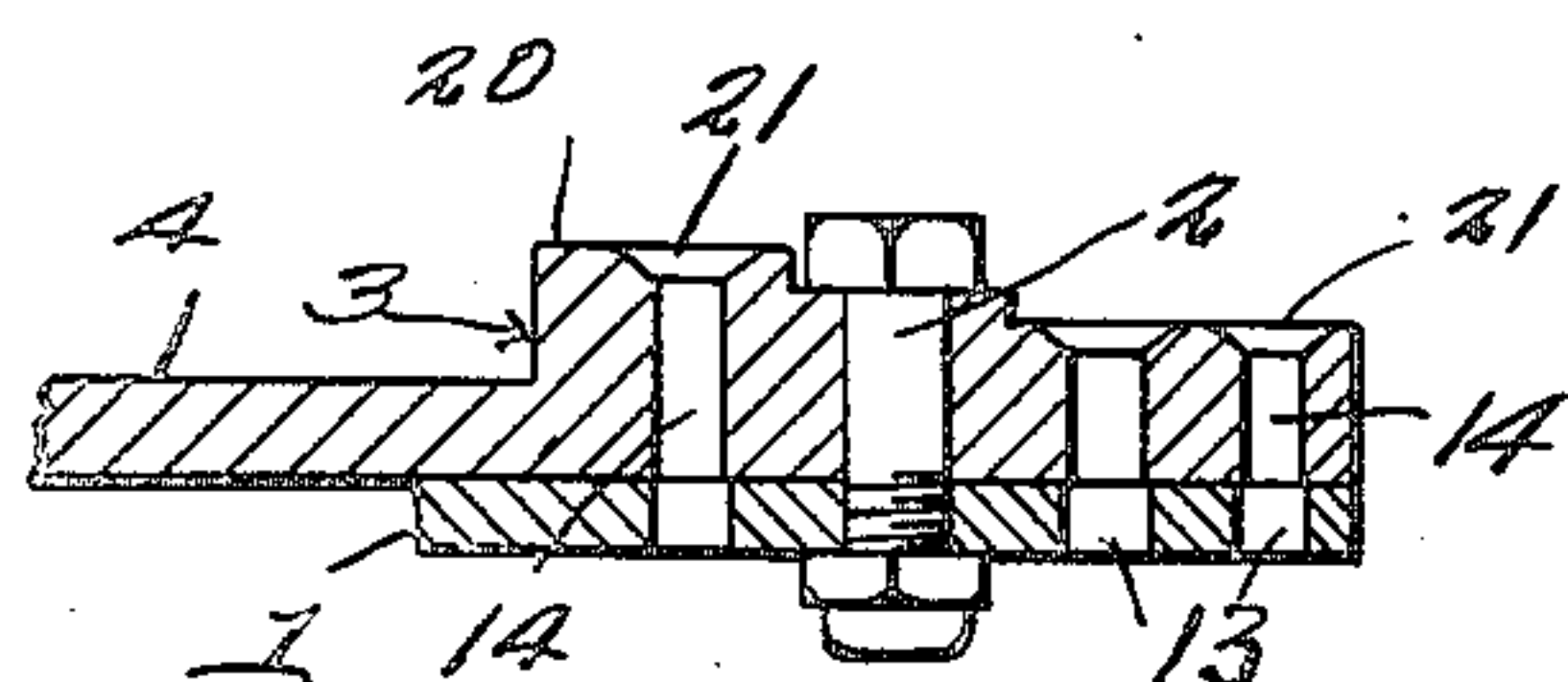
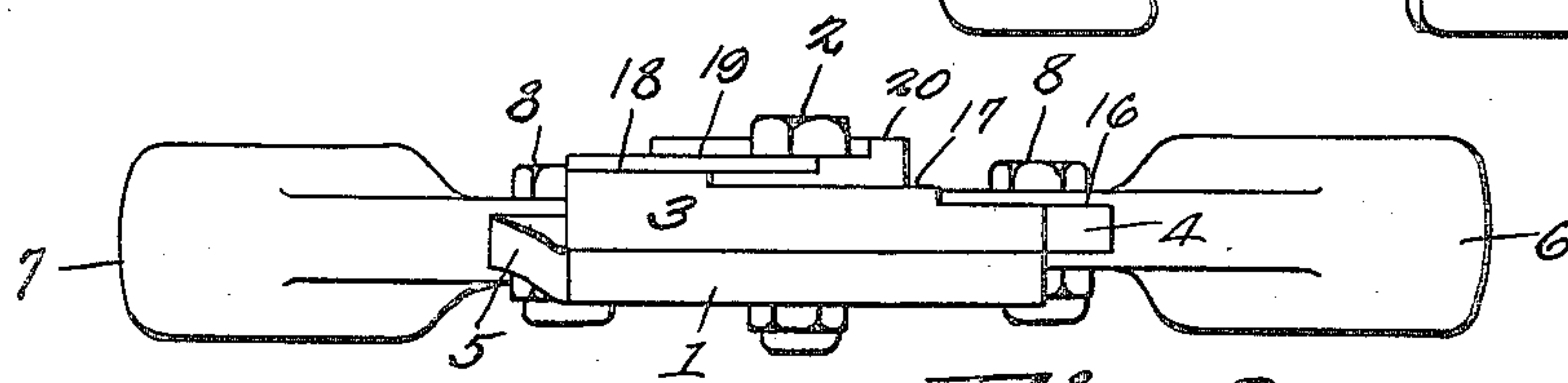
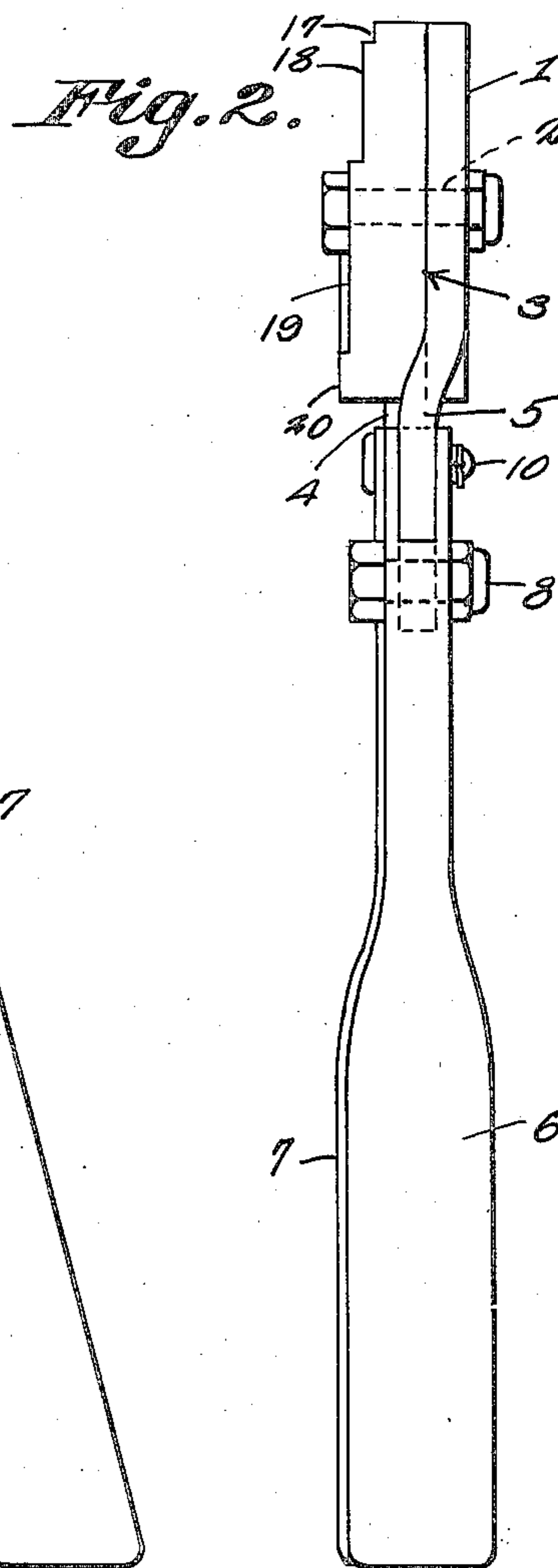
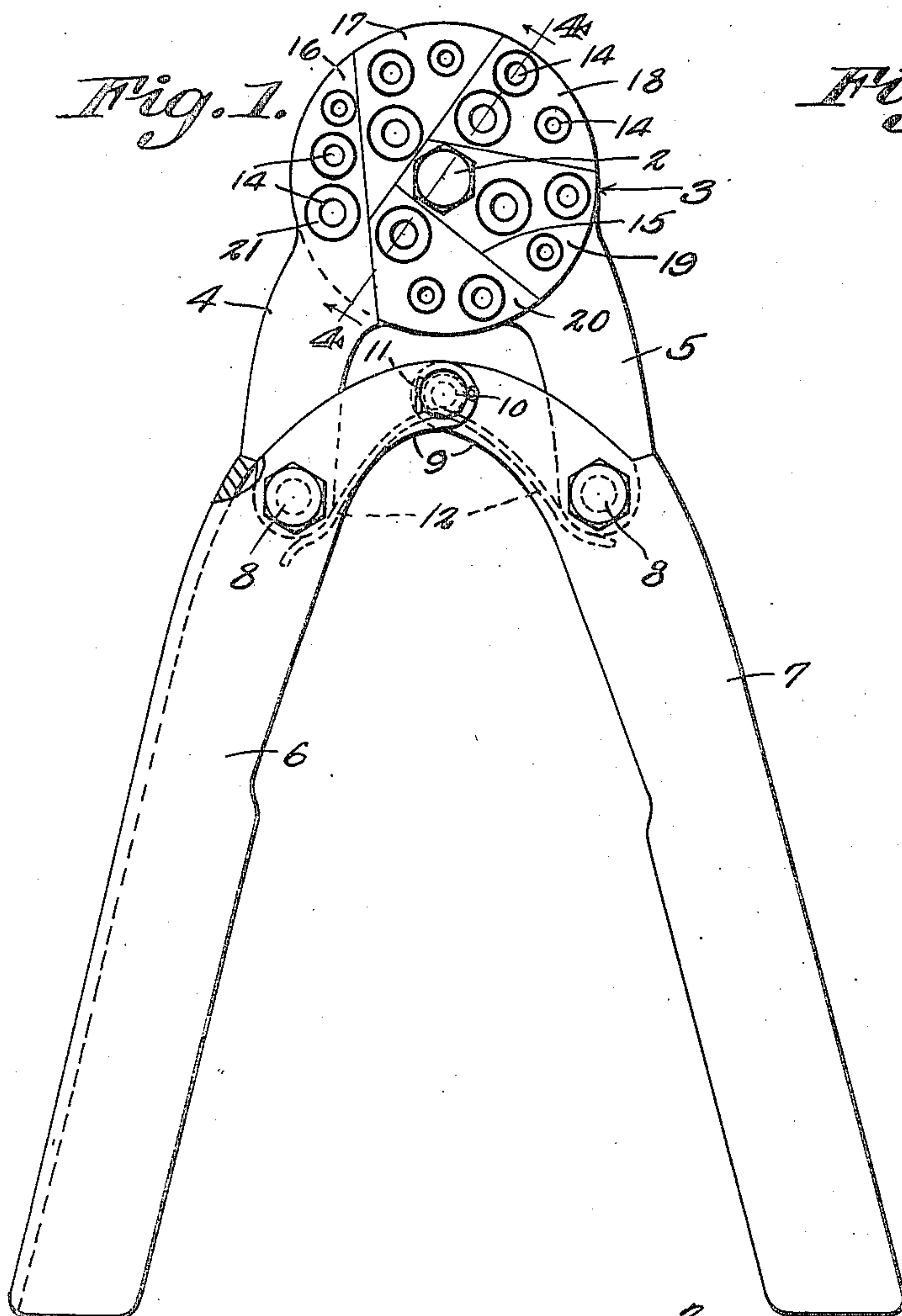
Oct. 31, 1950

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2,527,735

RIVET CUTTER

Filed Jan. 28, 1946



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UNITED STATES PATENT OFFICE

2,527,735

RIVET CUTTER

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Application January 28, 1946, Serial No. 643,857

1 Claim. (Cl. 30—226)

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This invention relates to rivet cutters, one of the objects being to provide a hand tool of the pliers type which can readily be carried from place to place and used for cutting rivets of different sizes, so that the tool thus is adapted particularly for use in making repairs such as those required on aircraft.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain novel details of construction and combinations of parts hereinafter more fully described and pointed out in the claim, it being understood that changes may be made in the construction and arrangement of parts without departing from the spirit of the invention as claimed.

In the accompanying drawing the preferred form of the invention has been shown.

In said drawing:

Figure 1 is a plan view of the tool, a portion being broken away.

Figure 2 is a side view thereof.

Figure 3 is a front elevational view of the tool.

Figure 4 is a section on line 4—4 Figure 1.

Referring to the figures by characters of reference 1 designates the bottom disk of the tool which is joined by a central pivot bolt 2 or the like to a top disk 3, the two disks being preferably of the same diameter. Top disk 3 has an arm 4 extending from its periphery and another arm 5 is extended from the periphery of the bottom disk 1. Opposed handles 6 and 7 are pivotally joined at 8 to the respective arms 4 and 5 and these handles have laterally offset forks 9 which are pivotally joined at their terminals as indicated at 10. The pivot pin 10 extends through the coil 11 of a spring the ends of which extend between the pivots 8 and exert a constant thrust thereagainst so as to hold the handles 6 and 7 normally pressed apart.

Openings of different sizes are formed in the bottom disk 1 as shown at 13 and these openings normally register with corresponding openings formed in the top disk 3 as shown at 14. It is preferred to arrange the openings in groups as indicated in Figure 1 and in order that the openings of each group may differ in length from the openings of other groups, the top disk 1 is formed with a series of progressively higher segmental steps separated by shoulders 15 extending from the periphery of the disk 3 inwardly to points adjacent to the center of the disk. The height of the steps vary to meet the requirements. For example the lower step indicated at 16, and which can be of the same thickness as the arm 4, can

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have a thickness of $\frac{3}{16}$ " and the openings in this particular step can be of different diameters, as shown, whereby rivets of different diameters can be cut off at a length of $\frac{3}{16}$ ". The next step 17 can be higher than the step 16 so as to cut off, for example, a rivet $\frac{1}{4}$ " in length. This step likewise can be provided with openings of different diameters to accommodate rivets of different thicknesses. The third step 18 can be used for cutting longer rivets, such, for example, as rivets $\frac{5}{16}$ " in length and the remaining steps, 19 and 20, can be utilized for cutting other lengths, as for example, $\frac{3}{8}$ " and $\frac{7}{16}$ " respectively. It is to be noted that the various steps are substantially spirally disposed around the center of the disk, this arrangement permitting a construction requiring a minimum use of material, and permitting additionally the construction of a rivet cutting head for the tool of unusual compactness relative to its versatility, whereby the tool can easily be carried in a pocket or small tool kit. In every case, however, the openings in each step are different diameters to accommodate rivets of different diameters. All of the openings are countersunk as indicated at 21.

As before stated the openings in the bottom disk 1 normally register with the openings in the top disk 14. When a rivet is to be cut to a predetermined length, it is inserted into the proper opening in the group located in the step to be used for cutting a rivet of the selected length and following this insertion the handles 6 and 7 are drawn toward each other. This will place the spring under increased tension and at the same time will cause the arms 4 and 5 to be moved toward each other with the result that a relative rotation of the disks will be set up and any rivet located in any one of the openings, will be severed by the disks at the meeting edges of rivet-containing openings. Because of the particular connection between the handles and between the arms and the handles, a toggle action is set up which reduces the power required to effect a cutting of the rivet so that the tool thus can be actuated easily and quickly.

It is to be understood that the measurements heretofore given constitute only one example of the tool and obviously the over-all length of the openings can be changed by increasing or reducing the height of the steps. Furthermore the number of groups can be increased or reduced by correspondingly increasing or reducing the number of steps. While only three openings have been shown in each group, this number obviously can be increased or reduced.

An important characteristic of the tool is the fact that it can be easily carried in a tool kit so that rivets can be cut to selected lengths on the job without requiring the use of massive equipment such as commonly employed, particularly when aircraft repairs are being made.

It will be noted that the opening 13 in the disk 1 is slightly larger than the openings 14, which enables the cut ends to drop out freely.

It will further be noted that the largest opening 14 of each step is located very close to the pivotal connection 2 so far as a majority of the steps is concerned. Further, each step of said majority has an area extending close to said pivotal connection 2. Thus, the thickest steps can comprise this majority of steps and this is the arrangement adopted in the present instance, since the only step which does not extend close to the pivotal connection 2 is the step 16 which is the lowest or thinnest step. As a result of this step arrangement and location of the large openings of the steps, the thickest rivets are cut close to the pivotal connection, where the greatest shear force is exerted and this is true despite the fact that said thickest rivets are all to be cut to different lengths.

What is claimed is:

A rivet cutting hand tool including top and bottom disks pivotally connected at their centers

and resting one upon the other, the bottom disk having a plurality of openings of different diameters, the top disk being formed with a series of segmental steps progressing in height, each of a majority of the steps extending close to the pivotal connection of the discs, there being a group of openings of different diameters formed in each step, the openings of both disks registering when the disks are in normal position, the largest opening of each step of said majority of steps being located close to said pivotal connection, and means for rotating both disks in opposite directions, comprising pivotally connected handles, and arms on the respective disks pivotally joined to the respective handles.

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