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[54] **VARIABLE HEXAGON SPANNER**

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[56]

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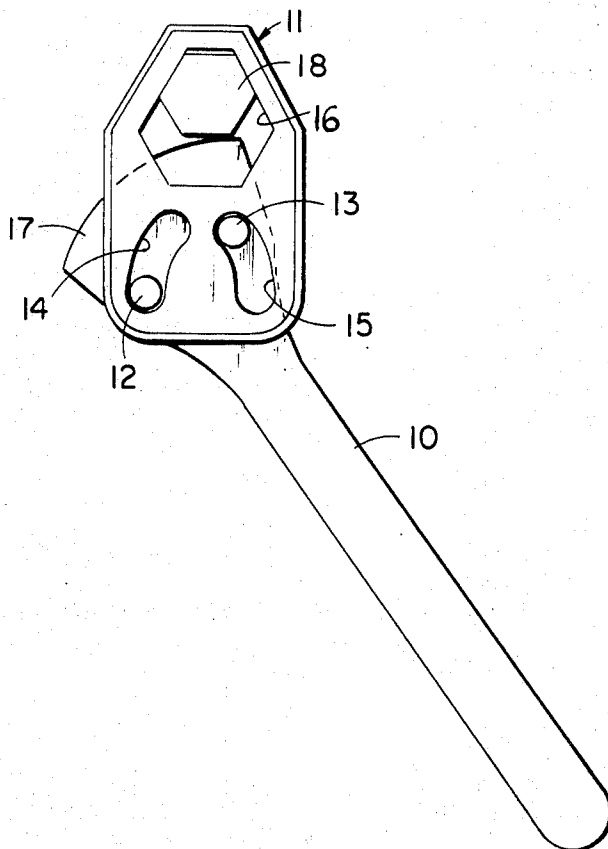
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[57]

ABSTRACT

A variable hexagon spanner comprising a handle pivotally interconnected with a spanner head; the spanner head has a non-symmetrical hexagonal hole into which a cam portion on the handle protrudes a variable amount depending on the angular relationship between the handle and spanner head for positively gripping a hexagonal head positioned in the hole irrespective of the direction of movement of the handle.

10 Claims, 5 Drawing Figures



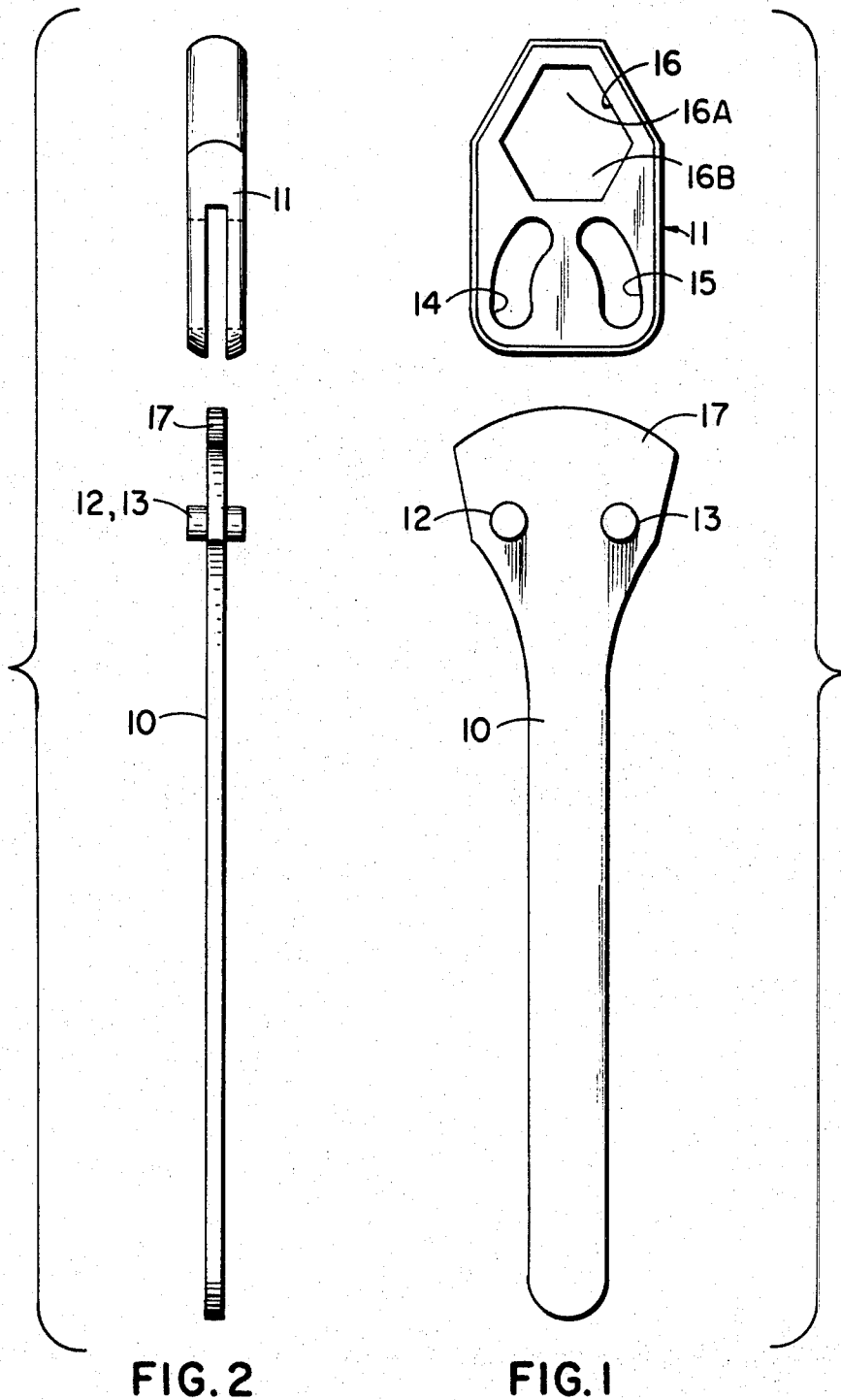
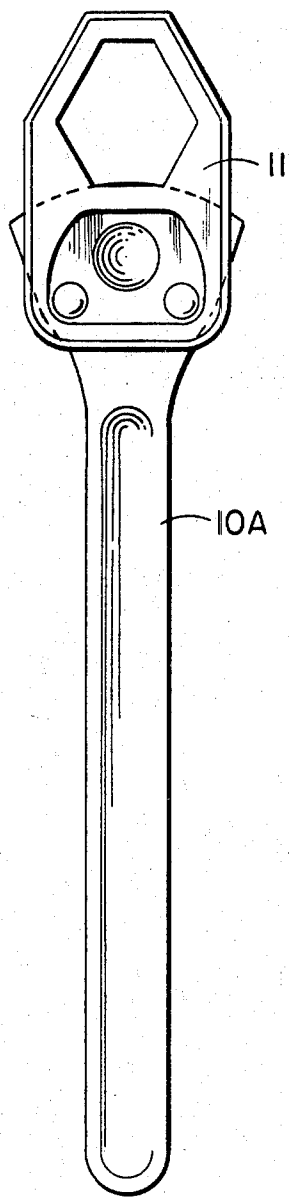
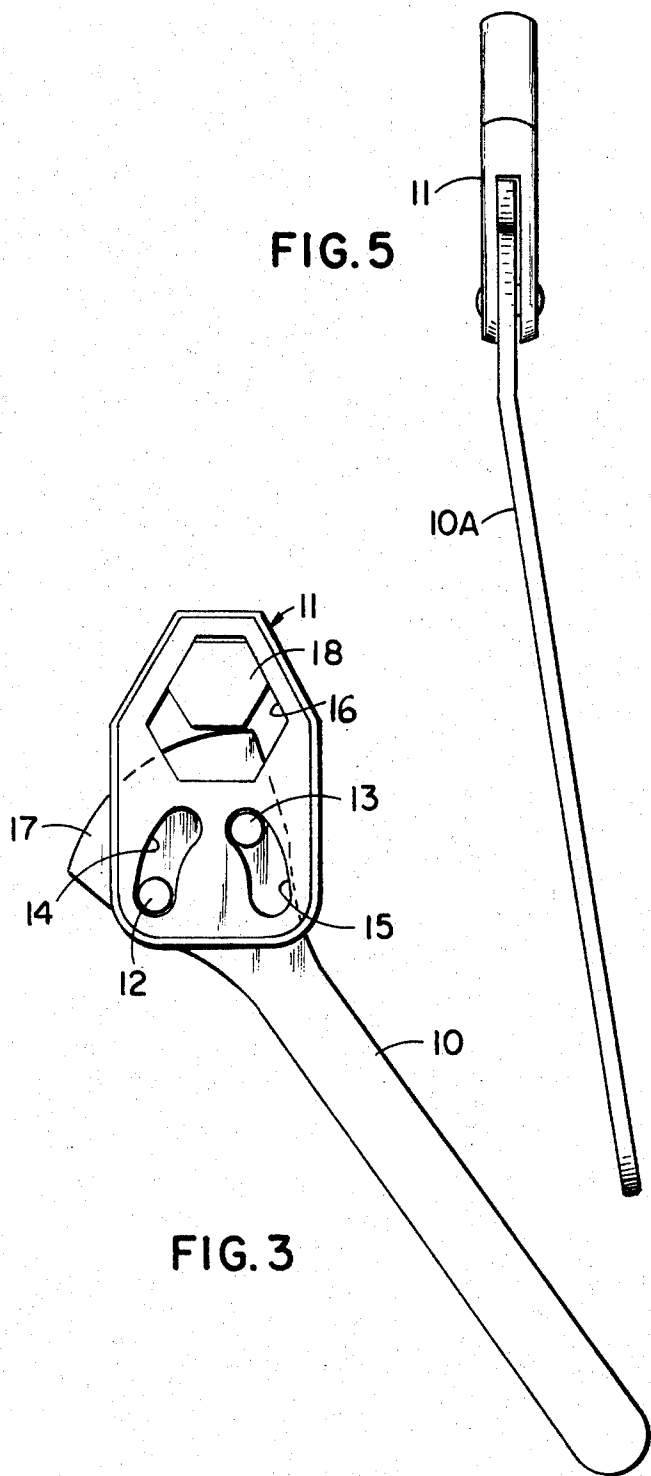


FIG. 2

FIG. 1

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VARIABLE HEXAGON SPANNER

BRIEF DESCRIPTION OF PRIOR ART

A known variable hexagon spanner comprises a handle pivotally connected to a spanner head. The spanner head has a hexagonal key hole with the half which is spaced a greater distance from the pivot axis having a width less than the opposite half. The handle has a nose which extends a variable distance into the key hole in dependence on the degree of relative pivoting between the handle and the spanner head.

Hexagon spanners of this type are used on hexagon screws, nuts and similar fasteners within a predetermined dimensional range and in use they automatically adapt themselves to the actual dimension within the range. For convenience, reference will be had to hexagon heads which term should be understood to include screw heads, nuts and all other turnable members having six flat sides.

The prior art spanner is used turned one way for spanning or tightening and has to be turned the other way for loosening the hexagon head. This is a drawback since the user of the spanner has to consider whether the spanner is applied onto the hexagon head in the right manner. Another drawback of the prior art spanner resides in that it is not possible to work first in one direction and then with the same grip directly in the opposite direction without turning the spanner; sometimes such a mode of operation is highly desirable in mounting and repair techniques. Bearing in mind the necessity of turning the spanner "right" before application the most serious drawback of the prior art spanner is probably that it cannot be designed to have the spanner head and the handle disposed in parallel but slightly offset planes or in planes including an angle with each other. Such a design is necessary where the hexagon head is disposed on a comparatively large flat surface.

SUMMARY OF THE INVENTION

A general object of the present invention is to provide a hexagon spanner wherein the above-mentioned drawbacks are obviated. Therefore, in accordance with the present invention, the hexagon spanner is principally characterized in that the spanner head is pivotally connected to the handle by means of two pivot pins each disposed on an opposite side of the longitudinal axis of the spanner and each being movable in an arcuate slot of a limited length so that in dependence on the direction of movement of the handle the spanner head may pivot around one of the pins which rests against the end of its slot while the other one of the pins moves freely in its slot. Further, the handle has a cam arranged to extend a variable distance into the hexagonal hole in the spanner head depending on the relative angular relationship between the handle and the spanner head, irrespective of the direction of movement of the handle.

The various features of novelty which characterize the invention are pointed out with particularity in the claims annexed to and forming a part of this specification. For a better understanding of the invention, its operating advantages and specific objects attained by its use, reference should be had to the accompanying drawings and descriptive matter in which there is illustrated and described two preferred embodiments of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings:

FIG. 1 is a plan view of one embodiment of a hexagon spanner according to the present invention with the cooperating parts separated from one another;

FIG. 2 is a side view of the hexagon spanner in FIG. 1;

FIG. 3 shows the spanner in one position of operation; and

FIGS. 4 and 5 show a second embodiment of the spanner in plan view and side view, respectively.

DETAILED DESCRIPTION

Referring to the drawings in particular, and specifically to FIGS. 1 - 3, the embodiment of the invention illustrated therein comprises a longitudinally extending handle 10 and a spanner head 11 pivotally connected together. The spanner head extends longitudinally from one end of the handle. The pivotal connection is formed by means of two pins 12, 13, secured to the handle 10, each of which is movable in one of the arcuate slots 14, 15 in the spanner head. Preferably, the pins 12, 13 and the slots 14, 15 are disposed at equal distances from the longitudinal axis of the tool. As is conventional in tools of this type, a hexagonal key hole 16 is designed so that the half 16A located at a greater distance from the pivot axis has a side of less width than the opposite side in the other half 16B. The handle has a cam 17 extending into the spanner head and adapted to engage a hexagon head 18 in an operative manner within a predetermined size range in the hexagonal hole irrespective of whether the handle is moved rightwardly or leftwardly as should be evident from FIG. 3.

In FIG. 3 the spanner head 11 pivots around the pin 12 whereas the pin 13 moves freely in the slot 15, and thus the hexagon head would be loosened. If instead the movement was clockwise, that is in tightening direction, the spanner head would pivot around the pin 13 whereas the pin 12 would move in its arcuate slot 14.

Preferably, the cam 17 is symmetrical with respect to the longitudinal axis of the handle so that equal movements are obtained in both directions for one and the same hexagon head, but this is not a definite requirement.

The embodiment of the invention shown in FIGS. 4 and 5 differs from the one described above with reference to FIGS. 1 - 3 mainly in that the portion of handle 10A spaced from the spanner head 11 is bent to lie in a plane forming an obtuse angle with the plane containing the spanner head 11.

Modifications and alterations as to details may be made within the scope of the appended claims. One such modification would be to provide the handle or cam portions with the slots and to arrange the pivot pins, such as pins 12, 13, in fixed positions in the spanner head. Also, as set forth in FIGS. 4 and 5, the two arcuate slots may be combined to form one single opening having two arcuate sides or edge surfaces.

What is claimed is:

1. A variable hexagon spanner comprising a longitudinally extending handle and a spanner head pivotally connected together, said spanner head being arranged to extend longitudinally from said handle and having a hexagonal key hole spaced from the pivot point between said handle and spanner head, said key hole having a first half and a second half extending generally transversely of the longitudinal direction of said spanner head, said second half being spaced further from the pivot point than said first half and having a width of one side which is less than the width of the oppositely disposed side in said first half, said handle having a protrusion thereon arranged to project a variable distance into the hexagonal keyhole in said spanner head in dependence on the pivoted relationship between said handle and spanner head for effecting an operative engagement of said spanner with a hexagon head disposed in said hexagonal keyhole, wherein the improvement comprises a pair of pivot pins secured to one of said handle and spanner head with each said pivot pin being positioned on an opposite side of the longitudinal axis of the one of said handle and spanner head to which the pins are secured, and the other one of said handle and spanner head having at least one opening arranged to receive said pivot pins and the opening having an arcuate edge surface for each said pivot pin along which said pivot pin rides so that in dependence on the direction of movement of said handle said spanner head can pivot relative thereto about one of said pivot pins which contact the opening at the end the arcuate edge surface while the other said pivot pin is freely displaceable along the other said arcuate edge surface, and said protrusion on said handle having a cam surface thereon arranged to con-

tact a hexagon head within said key hole opposite the side of the second half of said key hole having the lesser width, and the location of contact of said cam surface and the hexagon head being relative to the angular position of the longitudinal axis of said handle and spanner head, but irrespective of the direction of movement of said handle.

2. A variable hexagon spanner, as set forth in claim 2, characterized in that said cam surface extends transversely of and is symmetrical to the longitudinal axis of said handle.

3. A variable hexagon spanner, as set forth in claim 2, characterized in that said pivot pins being secured to said handle and being positioned symmetrically on opposite sides of the longitudinal axis of said handle.

4. A variable hexagon spanner, as set forth in claim 3, characterized in that the opening for receiving said pivot pins comprises a single opening in said spanner head into which said pivot pins extend, and the opening being formed on two sides by a pair of oppositely disposed arcuately shaped edge surfaces, each symmetrically arranged on an opposite side of the longitudinal axis of said spanner head.

5. A variable hexagon spanner, as set forth in claim 3, characterized in that the opening for receiving said pivot pins

comprises a pair of arcuately curved slots in said spanner head, each disposed on an opposite side of, and equally spaced from, the longitudinal axis of said spanner head.

6. A variable hexagon spanner, as set forth in claim 1, characterized in that said handle and spanner head being arranged in co-planar relationship.

7. A variable hexagon spanner, as set forth in claim 1, characterized in that the part of said handle extending longitudinally from said spanner head being positioned in a plane disposed at an angle to the plane of said spanner head.

8. A variable hexagon spanner, as set forth in claim 3, characterized in that said pivot pins being secured to said spanner head and being positioned symmetrically on opposite sides of the longitudinal axis of said spanner head.

9. A variable hexagon spanner, as set forth in claim 8, characterized in that the opening for receiving said pivot pins being located in said handle.

10. A variable hexagon spanner, as set forth in claim 1, wherein said spanner head at the end spaced from said key hole being slotted for receiving said handle therein for relative pivotal engagement with said spanner head.

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