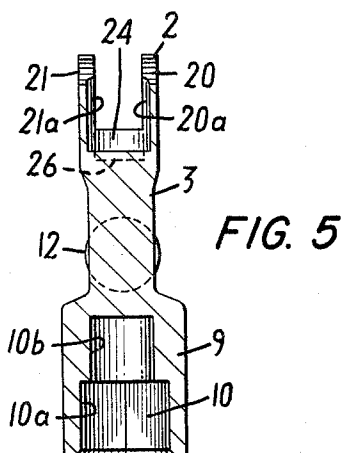
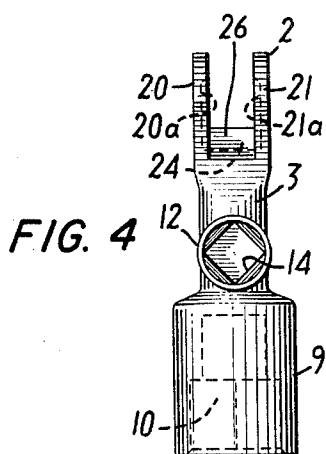
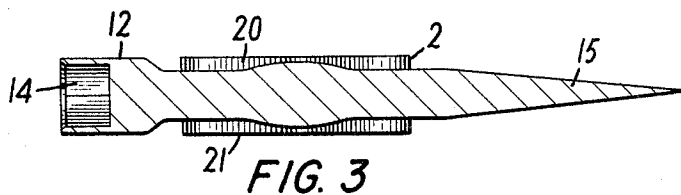
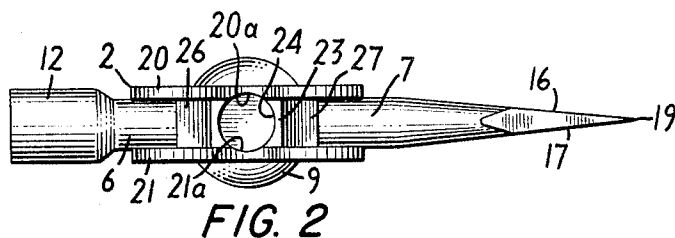
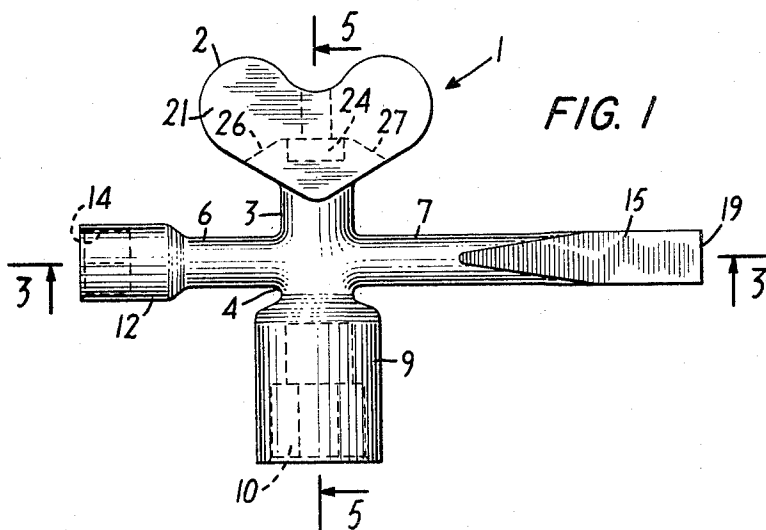


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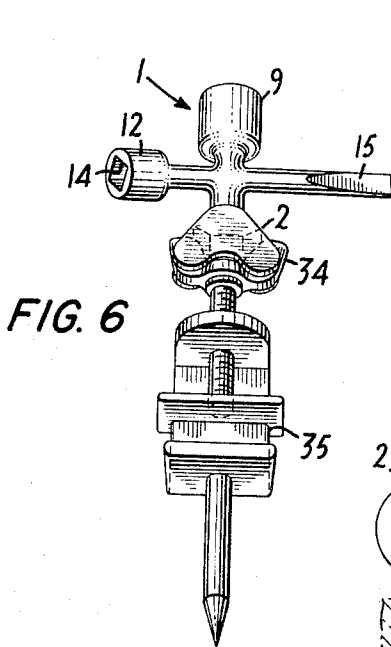


FIG. 6

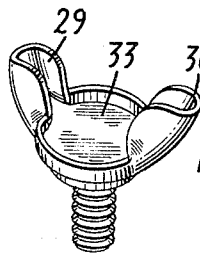


FIG. 7

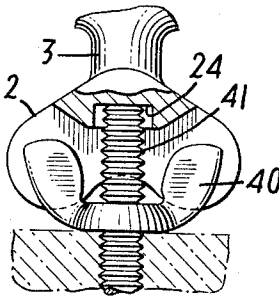


FIG. 8

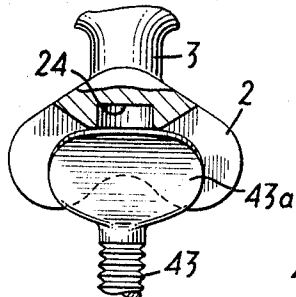


FIG. 9

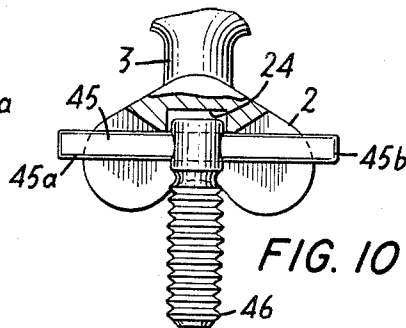


FIG. 10

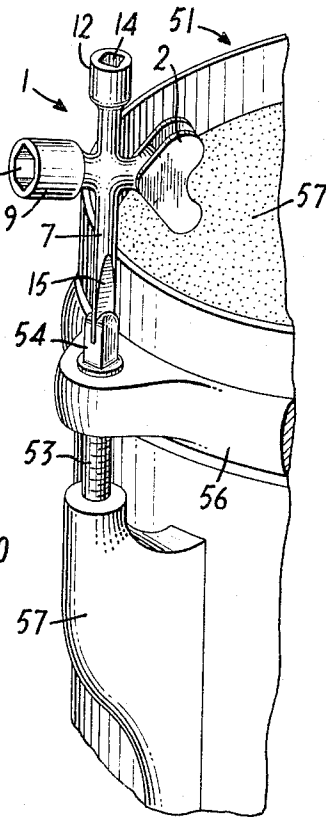


FIG. 11

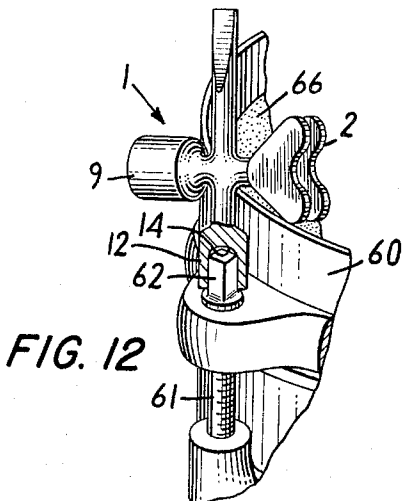


FIG. 12

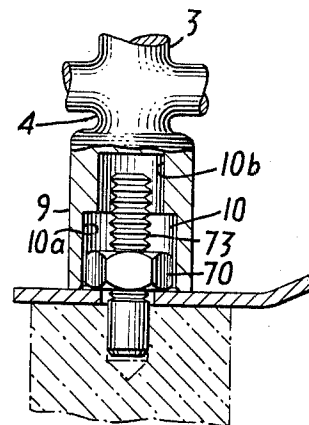


FIG. 13

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MULTIPLE KEY TUNER AND ADJUSTER

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Filed Sept. 8, 1964, Ser. No. 394,885

2 Claims. (Cl. 81-90)

This invention relates generally to fasteners and more particularly to keys and adjusters for fasteners.

Known fasteners are of several types, for example screws or bolts, having hex heads and nuts thereon, fasteners having slotted heads and finger-operated fasteners or wing fasteners. Generally, the keys and tools for adjusting these fasteners are for use on one general type of fastener.

Moreover, known keys and tools which are a combination of keys or tools do not have provision thereon for adjusting or tightening and loosening finger-operable fasteners such as wing fasteners.

It is a principal object of the present invention to provide a multiple key device having a key for adjusting, tightening and loosening wing fasteners.

Another object of the present invention is to provide a drum tuning key device having multiple keys for tuning and adjusting drums, drum sets and accessories, and other musical instruments and their accessories.

A feature of the multiple key device of the invention is the provision of a key for tightening and loosening finger-operable fasteners such as wing fasteners.

Other features and advantages of the multiple key device in accordance with the present invention will be better understood as described in the following specification and appended claims, in conjunction with the following drawings in which:

FIG. 1 is a side view of a multiple key device according to the invention;

FIG. 2 is a top view of the device of FIG. 1;

FIG. 3 is a section view taken along section line 3-3 of FIG. 1;

FIG. 4 is an end view of the device in FIG. 1;

FIG. 5 is a section view taken along section line 5-5 of FIG. 1;

FIG. 6 is an elevation view of the key device illustrated according to the invention applied to a wing fastener;

FIG. 7 is a perspective view of one type of a wing fastener adjustable by the device in FIG. 1;

FIG. 8 is a fragmentary side view partly in section illustrating a key on the device of FIG. 1 for tightening a wing fastener;

FIG. 9 is a fragmentary view of the device in FIG. 1 illustrating the key for wing fasteners as applied to tightening a thumb screw;

FIG. 10 is another fragmentary view of the multiple key device in FIG. 1, illustrating its application for use on a different type wing screw;

FIG. 11 is a fragmentary perspective view of the device in FIG. 1 as applied to tuning a drum with slotted head rods;

FIG. 12 is a fragmentary perspective view of the multiple key device in FIG. 1 as applied to tuning a drum with a rod adjustable with a socket key portion; and

FIG. 13 is a fragmentary view partly in section of a key socket in the device in FIG. 1.

While the multiple key device according to the invention will be described as a drum tuning multiple key device or an adjuster usable on a drum and drum set, it will be understood by those skilled in the art that the device is usable for adjusting and tuning other musical instruments and their accessories thereof and other types of instrumentalities.

The term "finger-operated fasteners" as hereinafter employed is a generic term synonymous with the term "wing

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fasteners," and will include all types of thumb screws, wing nuts, wing screws and the like. Wing fasteners is a term generic to wing screws and nuts and various types fasteners having projections or wings in a T or V configuration.

According to the drawing, the multiple key device 1 illustrated in FIGS. 1-5 comprises means defining a key 2 for tightening and loosening wing fasteners or finger-operable fasteners. The key 2 is integral with a shank 3 aligned coaxially with a shortened shank portion 4 and normal to two shanks 6, 7 on which are mounted keys as hereinafter described.

Directly opposite to the key 2 and integral with the shank 4 is disposed a key 9 constructed as a socket for receiving nut fasteners, for example hexagon nuts in a cavity 10. A second key socket 12 is mounted integral with the shank 6 and is provided with a cavity 14 for receiving nut fasteners, for example square nuts of smaller dimension than the cavity 10 of the key 9. Directly opposite to the second key socket is disposed a blade tuner key 15 having oppositely disposed and converging flat surfaces 16, 17 converging toward a flat free end 19.

The multiple key device is made of a suitable material, for example a metal and preferably is polished or otherwise coated to enhance the physical appearance of the key device and to protect it against corrosion and the like.

The key 2 comprises two pairs of spaced-apart projections or ears 20, 21 defining therebetween an elongated slot or socket 23. The two pairs of ears have oppositely disposed recesses 20a, 21a concentrically disposed with a recess 24 in the bottom of the socket and recessed into the shank 3. The bottom of the socket 23 is defined by the recess or cavity 24 and bevelled surfaces 26, 27 diverging outwardly from the cavity in a direction toward the main body portions of the key device as illustrated in FIG. 1.

The key 2 is dimensioned to receive extending longitudinally therein oppositely disposed wings of a wing fastener, for example wings 29, 30 of a wing fastener or screw 33. When the key is being used the wings extend on opposite sides of the axis of the shanks 3 and 4 and are engaged by the ears 20, 21 as shown generally in FIGS. 6-10, where the device is illustrated as applied to other types of wing fasteners. FIG. 6 illustrates the multiple key device 1 with the key 2 engaging a wing fastener 34 for adjusting a clamp arrangement 34 on a drum spur 36.

Another application of the key 2 is illustrated in FIG. 8 in which the key is illustrated engaging a wing nut fastener 40 on a threaded screw 41 it being understood that the screw and wing form a wing screw. As illustrated, the key 2 is constructed to permit a relatively long extension of a screw 41 to extend into the recess and the socket for adjustment and tightening. Thus the key 2 makes possible adjustment of wing fasteners of other types than the type illustrated in FIG. 7 in which the screw portion thereof does not extend through the wing nut or head.

The key device according to the invention is usable for receiving thumb screws, as illustrated in FIG. 9 in which a thumb screw 43 having a head 43a which is received between the ears of the key 2 for tightening and adjusting. The key device provides for adjusting substantially all types of wing fasteners. Wing fasteners in which the wings are configured so that the wing screw is a T screw 45 as illustrated in FIG. 10 are receivable in the key 2 and the head thereof is received in the recess 24. Although a wing or clamp screw 45 is illustrated as having wings 45a, 45b extending normal to a screw portion 46, it will be understood that many wing screws of this type may have the wings defining any angle between their

longitudinal axis and the longitudinal axis of the screw portion other than 90°, so that the wings define a V, not shown, in which case the bevelled surfaces 26, 27 permit such types of wing screws or fasteners to be engaged by the key socket and adjusted.

A preferred application of the multiple key and adjuster according to the invention is as a multiple key tuner and adjuster for adjusting and tuning drums as illustrated in FIGS. 11-13 inclusive. FIG. 11 illustrates a drum 51 fragmentarily and illustrates a drum having a plurality of rods such as an adjusting rod 53 provided with a slotted head 54 in which the tuning key 15 is received for adjusting a hoop 56 in order to adjust or tighten a drum head 57. It being understood, that the rod 53 is connected through a turn buckle arrangement 57 to another rod mounted on a lower hoop, not shown, for adjusting a lower head of the drum not shown. As can be seen in FIG. 11, the shank 7 and tuning key 15 is sufficiently long for the tool to clear the hoop.

The multiple key tuner and adjuster device of the invention provides for tuning drums of other types in which the rods are provided with other types of fasteners or heads as illustrated in FIG. 12 in which a drum 60 is illustrated fragmentarily as having an adjustment rod 61 provided with a square head 62 receivable in the key 4 for tuning a drum head 66 as described with respect to the drum in FIG. 11.

The key socket 9 is illustrated in FIG. 13 in use adjusting a nut fastener 70 that does not completely extend a full axial length of the cavity 10. FIG. 13 illustrates the cavity arrangement in the key socket and shows the socket as having a major diameter cavity 10a and a cavity portion 10b of reduced diameter extending upwardly of the cavity portion 10a and axially therewith to allow adjustment of fasteners in which a screw portion, for example a screw portion 73, extends upwardly out of the nut fastener 70 and makes adjustment of this type of fastener as well as the fasteners in which the head may be shaped so as to be axially received by the socket 9.

Those skilled in the art will understand that the multiple key tuner and adjuster illustrated is usable for tightening, loosening and adjusting all types of hardware and accessories of drums and drum sets, for example triangle and cowbell mounts or brackets, pedals, cymbal tilters, extension arms, spurs and the like on which some screws and other types of fasteners are generally found. Moreover, those skilled in the art will recognize that the device is applicable to and usable for adjusting accessories, such as musical stands for chimes, gongs, xylophones, vibraphones, miramba and conga drums and the like.

The device is also usable for adjusting musical instruments of other types, for example the frets to tune fretted instruments, tuning of percussion instruments of all types and can be used to wind metronomes and music boxes and the like. Moreover, while the invention has been described as a tuner and adjuster device for drums and musical instruments and accessories thereof, it will be understood that the device can be constructed in different

dimensions and is usable for children's toys for fasteners thereon and as a household key for winding clocks, adjusting desired heights of furniture in which thumb or wing fasteners are employed such as cribs, strollers, Christmas tree stands, lamps and the like.

Furthermore, outdoorsmen will find the device according to the invention useful for adjusting the heights of legs of telescopes, outdoor swimming pool frames and clamps and the key device is usable for adjusting wing fasteners wherever they may be found such as display stands of all types.

Moreover, it will be understood that the various keys are disposed defining angles therebetween and are of sufficient length along with their shanks to provide the necessary clearance of the other keys not in use and keys function as lever arms which provide sufficient leverage for actuating the device.

While a preferred embodiment of the invention has been shown and described, it will be understood that many modifications and changes can be made within the true spirit and scope of the invention.

What I claim and desire to secure by Letters Patent is:

1. A wrench for tightening and loosening wing and finger operable fasteners comprising thumb screws, wing nuts, clamp screws and the like, said wrench comprising means defining a socket having spaced, opposed surfaces defining an elongated slot open at opposed ends and on one side and open at portions of the other side adjoining each of said opposed ends, handle means and a shank adjoining said handle means and joining said socket at said other side, said opposed surfaces being spaced and dimensioned so that said slot has a length and a width to receive individually therein wing fasteners including at least a portion of the fastener wings for rotatably driving the wing fasteners, said shank having a thickness at said other side less than the length of said slot, said opposed surfaces extending outwardly beyond said shank, said open opposed ends of said slot permitting the wings to extend outwardly of the ends of said slot and said open portions of said other side of said slot permitting the wings to extend upwardly of said other side of said slot.
2. A wrench according to claim 1, in which said shank has a recess disposed extending normal to and facing said one side.

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