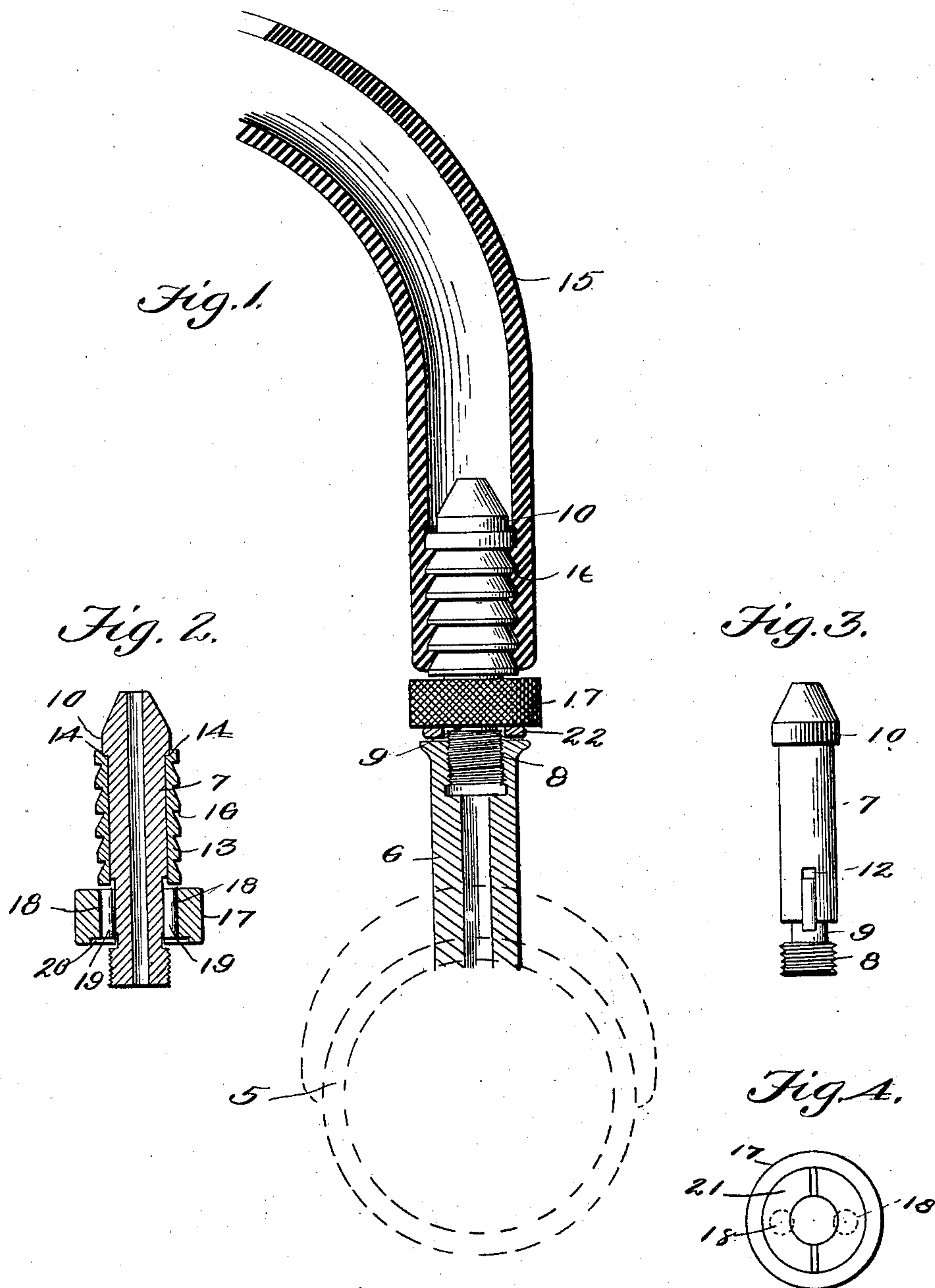


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Patented Nov. 5, 1901.

S. E. HART.
AIR PUMP CONNECTION.
(Application filed Jan. 26, 1901.)

(No Model.)



Witnesses:
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UNITED STATES PATENT OFFICE.

SAMUEL E. HART, OF WILMINGTON, DELAWARE.

AIR-PUMP CONNECTION.

SPECIFICATION forming part of Letters Patent No. 686,061, dated November 5, 1901.

Application filed January 26, 1901. Serial No. 44,890. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL E. HART, a citizen of the United States, residing at Wilmington, in the county of Newcastle and State of Delaware, have invented new and useful Improvements in Air-Pump Connections, of which the following is a specification.

This invention relates to an air-pump connection or union, and it is of peculiar advantage in combination with pumps for inflating pneumatic tires for bicycles and other kinds of vehicles, the connection being simple and efficient and of such a character as to take up wear and prevent waste of air.

The improved appliance involves as one of its essential features a barrel having keyways, a hub surrounding the barrel also having keyways, keys fitted in the respective keyways, and means to hold the keys in place. I provide, in connection with the foregoing elements, a tube slidably fitted on the barrel adapted to receive the usual flexible tube or piping connected with the air-pump, the periphery of the first-mentioned tube being of a formation that will maintain the flexible tube firmly in place, and means on the barrel to force the tube against the hub to thereby close all unnecessary openings. A convenient means of securing the keys in place (said keys being freely fitted in their keyways) consists of a split washer placed in a counterbore formed in the face of the hub and preferably rigidly secured to the latter, and in practice I prefer to interpose between the split washer and the tire-nozzle a second washer, which aids in assuring a snug joint. The members briefly outlined may be of any suitable character and arranged in different ways within the scope of the appended claims. The invention is shown in one convenient and efficient form thereof in the accompanying drawings, constituting a part of this specification.

Figure 1 is a cross-sectional elevation of a portion of a cycle-tire with my pipe connection united thereto. Fig. 2 is a longitudinal central section of the barrel, tube, and other parts thereon. Fig. 3 is an elevation of the barrel, and Fig. 4 is a face view of the hub and the split washer therein.

Like characters refer to like parts in all the figures of the drawings.

The numeral 5 indicates a pneumatic tire, it having the usual projecting internally-threaded inflating-nozzle 6, to which an air-pump can be connected.

The air-pump connection involves in its construction a center barrel or tube, as 7, bored centrally its entire length and externally threaded, as at 8, at its inner end to engage the internal threads on the nozzle 6, as indicated in Fig. 1. To the rear or back of the thread 8 an annular groove or fillet 9 is formed, its bottom being below said threads, and beyond the groove the barrel is turned straight, constituting a bearing-surface up to the shoulder or collar 10, the inner face of which is squared and the outer end of the barrel being conveniently tapered. There are formed in said barrel the diametrically opposite keyways or slots 12, opening into the annular groove or fillet 9 and extending in a straight direction rearward therefrom. On the rear portion of the central barrel 7 the sleeve 13 is freely and slidably fitted, its extreme outer end being counterbored, as at 14, to fit over the annular collar or shoulder 10 on said barrel. The loose sleeve has its outer surface roughened, so as to more perfectly retain the hose or pipe 15 of the air-pump in place. This roughening of the sleeve I may secure by transversely grooving or scoring the same, as shown at 16, the grooves conveniently extending the entire length thereof. A hub or ring, as 17, surrounds the central barrel 7, it being freely slidable thereon and having its periphery roughened or knurled to secure its ready manipulation, and it is adjacent to the slidable coupling-sleeve 13. The wall of the central opening or bore of the knurled hub or ring has the diametrically opposite keyways 18, mating or corresponding with those on the central barrel; but the keyways 12 are longer than the others, this permitting the longitudinal movement of the hub on the central barrel. The keys are denoted by 19, and they are represented as consisting of pins, circular in cross-section, adapted to be dropped in the complementary keyways in the hub and barrel, respectively, said keyways being substantially semicircular in cross-section. The outer face of the knurled hub 17 is counterbored, as at 20, the counterbore being alined with the an-

nular groove or fillet 9. I may place in this counterbore a split washer, as 21, which fits tightly therein and which extends into the groove 9, but is entirely free of the walls of the latter. This washer is preferably rigidly held in place, it being conveniently soldered to the hub, and being partially disposed in the grooves it prevents the hub from slipping over the thread 8. The keys 19 are freely fitted in their seats, and their inner ends abut against the washer 21, the latter thereby serving to hold the keys in place or against falling from their seats. The outer face of the split washer is flush or in the plane of the corresponding face of the hub or ring 17, and a washer, as 22, of leather or equivalent material, fits against the same and surrounds the outer end of the barrel.

To inflate a tire, the threaded end of the barrel 7 will be inserted in the nozzle 6, and said barrel will be then turned by rotating the hub or ring. As the barrel turns it will be simultaneously moved forward, and its annular shoulder 10 bearing against the sleeve will carry the same therewith and force it against the hub. This operation will be continued until the hub is wedged firmly against the washer 22 and the latter against the nozzle. This will result in positively closing all places at which air might waste during the inflation of the tire.

The keys or pins 19 rotatively connect the barrel and hub, whereby, in effect, these parts constitute a single rotative element, and during the coupling operation the keys or pins slide in their seats in the barrel, being held against displacement from their seats in the hub 17 by the split washer 21.

The parts are assembled as follows: The sleeve 13 is placed on the barrel 7 and slid along the same until the shoulder 10 on said barrel is seated in the counterbore or recess 14. The keys 19 are then inserted in the keyways 12 in the barrel 7, after which the hub or ring 17 is slipped over the forward end of the barrel, so that said keys can be entered in the keyways 18 in said hub. With the parts thus mounted the split washer 21 is inserted in the recessed end of the hub and is suitably secured in place—for example, by solder. When the union is made, the pump (not shown) can be operated to inflate the tire.

Having described the invention, what I claim is—

1. In a device of the class described, a barrel having keyways, a hub surrounding the

barrel, having complementary keyways, keys fitted in the respective keyways, a sleeve slidable on the barrel and adapted to engage the hub, and means on the barrel to force the sleeve forward as the barrel is advanced, and means on the hub to prevent the keys from being displaced.

2. In a device of the class specified, a barrel having keyways, a hub surrounding the barrel, having corresponding keyways, keys fitted in the respective keyways, a sleeve slidable on the barrel and adapted to engage the hub, means on the hub to prevent the keys from being displaced, and a shoulder on the barrel to engage the sleeve.

3. In a device of the class specified, a barrel having a keyway, a hub on the barrel having a complementary keyway, a key in the respective keyways, means to prevent the displacement of said key, a sleeve slidable on the barrel, and means for jamming said sleeve against the hub as the latter is turned.

4. In a device of the class specified, a barrel having keyways, a hub loose on said barrel, having corresponding keyways, an annular shoulder on the barrel, a sleeve slidable on the barrel between the shoulder and hub, having a counterbore to receive said shoulder, and keys loose in said keyways.

5. In a device of the class specified, a barrel having keyways and an annular groove, a hub loose on said barrel, having corresponding keyways, a washer secured rigidly to the hub and partially disposed in said groove, keys loose in the keyways and adapted to engage the washer, a sleeve slidable on the barrel and adapted to engage the hub, and an annular shoulder on the barrel to fit against the sleeve.

6. In a device of the class specified, a barrel having keyways and an annular groove, a hub loose on the barrel, having corresponding keyways and a counterbore in one face, a split washer secured in said counterbore and partially disposed in said groove, keys loose in said keyways, adapted to abut against the split washer, a sleeve slidable on the barrel, having a counterbore, and an annular shoulder on the barrel, to fit in said counterbore.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

SAMUEL E. HART.

Witnesses:

CHARLES G. GUYER,
A. B. ROBERSON.