

July 18, 1939.

W. C. MONZINGO

2,166,874

AIR CHUCK

Filed April 27, 1938

Fig. 2.

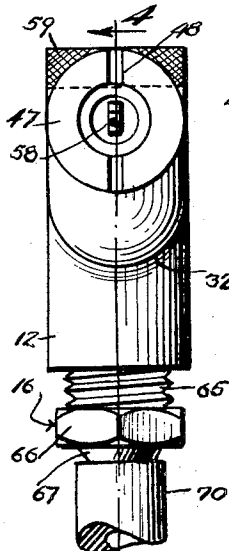


Fig. 1.

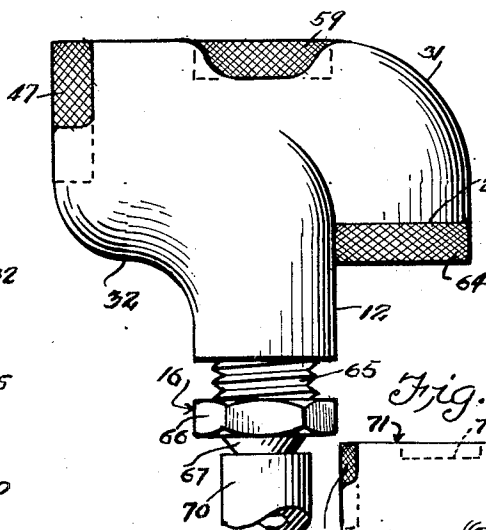


Fig. 3.

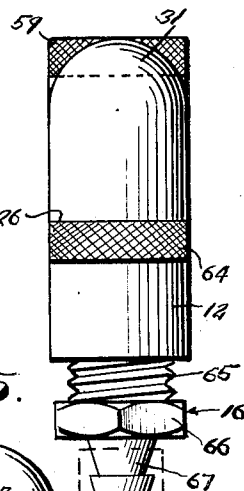


Fig. 5.

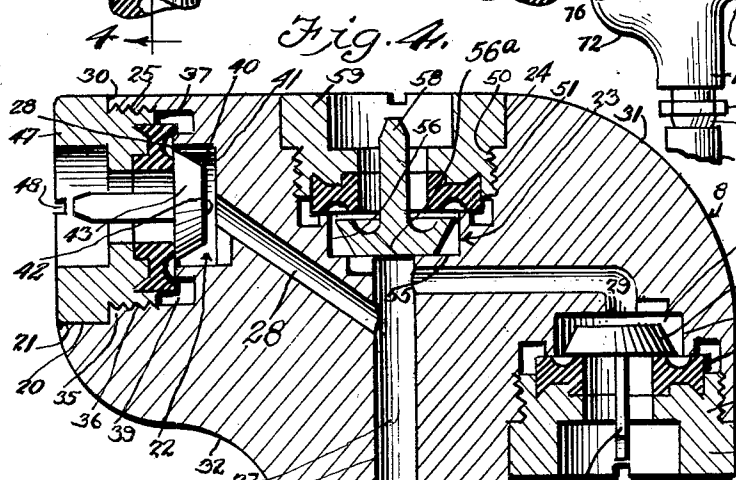
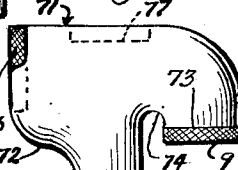


Fig. 7.

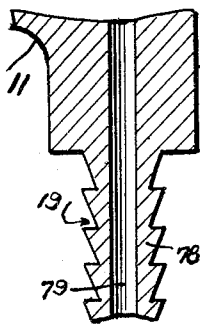


Fig. 6.

Willie C. Monzingo.

Kimmel & Crowell

Attorneys.

UNITED STATES PATENT OFFICE

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AIR CHUCK

Willie C. Monzingo, near Abilene, Tex.

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3 Claims. (Cl. 284—17)

This invention relates to an air-chuck.

The invention has for its object to provide, in a manner as hereinafter set forth, a device of the class referred to including a series of valve controlled outlets, at least three, for delivering compressed air and with the outlets being so disposed in angular relation to thereby provide what may be termed an all service device substantially adaptable for all situations.

A further object of the invention resides in the construction of a three-way head for an air chuck.

A further object of the invention is to provide, in a manner as hereinafter set forth an air chuck so constructed to enable for the convenient application to the air stems on dual pneumatic tired wheels.

A further object of the invention is to provide, in a manner as hereinafter set forth, a three-way chuck having its outer surface flush with the outer ends of the air delivering outlets.

A further object of the invention is to provide, in a manner as hereinafter set forth, an air chuck capable of being pushed or shoved flat up against a solid disc wheel thereby facilitating reaching and connecting with the air stems on the tires in certain types of disc wheels.

Further objects of the invention are to provide, in a manner as hereinafter set forth, an air chuck which is comparatively simple in its construction and arrangement, strong, durable, compact, readily assembled, thoroughly efficient in its use, conveniently handled when arranging in air application position, and comparatively inexpensive to manufacture.

Embodying the objects aforesaid and to others which may hereinafter appear, the invention consists of the novel construction, combination and arrangement of parts as will be more specifically referred to and illustrated in the accompanying drawing, wherein is shown embodiments of the invention, but it is to be understood that changes, variations and modifications may be resorted to which fall within the scope of the invention as claimed.

In the drawing:

Figure 1 is a front elevation of the chuck broken away, with the air supply line attached.

Figure 2 is an elevation broken away looking towards one side of the chuck with the air supply line attached,

Figure 3 is an elevation looking towards the other side of the chuck with the air supply line attached, the latter being shown in dotted lines,

Figure 4 is a section on line 4—4, Figure 2,

Figures 5 and 6 are front elevations, broken away of modified forms of chucks in accordance with this invention, and

Figure 7 is a fragmentary view in vertical section of still another modified form of chuck in accordance with this invention.

The chuck includes a head which may be of a contour as shown by Figures 1 to 4 and designated 8, or as shown by Figure 5 and indicated at 9, or as shown in Figure 6 and indicated at 10. The head 11 Figure 7 may be of the form to accord with a head 8, 9 or 10.

The chuck includes a head, a stem and an air supply line coupler. The stems are integral with the heads. In Figures 1 to 4 the stem is designated 12; in Figure 5 at 13; in Figure 6 at 14; and in Figure 7 at 15. The air line coupler may or may not be formed integral with a stem. The coupler shown in Figures 1 to 4 is indicated at 16; in Figure 5 at 17; in Figure 6 at 18; and in Figure 7 at 19. The couplers 16, 17 and 18 are detachably connected to the stems 12, 13 and 14 respectively. The stem 18 is integral with the stem 19. Preferably the heads and stems will be of circular cross section and are so shown. The stems extend from and are disposed at right angles to the rear of the heads.

The head 8 is formed with a rabbet 20 on its side 21, an outer chamber 22 disposed lengthwise thereof and opening at the inner wall of the rabbet, a central chamber 23 opening at its leading face 24 and disposed at right angles to and spaced from chamber 22, an outer chamber 25 disposed at right angles to and spaced from chamber 22, opening at the flat portion 26 of its follower face and extending in an opposite direction with respect to and spaced from the chamber 23, an air supply channel 27 opening into chamber 23 through the base or inner wall of the latter, a channel 28 leading from channel 27 and opening into chamber 22 through the base or inner wall of the latter, and a channel 29 leading from channel 27 and opening into the chamber 25 through the base or inner wall of the latter.

The head 8 has leading corners 30, 31, the former is sharp and the latter rounded. The follower face of head 8 also includes a portion 32 of compound curvature which is spaced from the portion 26. The latter is arranged forwardly with respect to the portion 32. The stem 12 merges into the follower face of head 8 between the portions 26, 32, and it is formed with a channel 33 providing a flush rearward continuation of the channel 27, and a threaded socket 34 opening at the rear end thereof. The rear end of channel

33 opens into the socket 34 through the base or inner wall of the latter.

The chamber 22 is cylindrical and its purpose is for housing a valve and a valve seat forming member. The chamber 22 includes wall forming portions 35, 36, 37, an annular shoulder 38 formed with an annular groove 39, a wall forming portion 40 and its inner or base wall indicated at 41. The portion 36 is arranged between the portions 35, 37 and it is threaded. The said portion 40 in connection with the base wall 41 provides a compartment 42 for a shiftable valve 43. Aligning with the groove 39 and the open end of compartment 42 is a resilient annulus 44 forming a valve seat for the valve 43. The latter has a stem 46 projecting outwardly therefrom and extends through the annulus 44 into a flanged tubular peripherally threaded plug 47 which carries the annulus 44 on its inner end and threadedly engages with the wall forming portion 36. The plug 47 at its outer end is formed with diametrically disposed notches 48. When plug 47 is secured in position with respect to the head 8 it is flush respectively with the leading face 24, the non-rabbeted part of the side 21, and the front and the rear of head 8. The wall forming portions 37, 40 are of less diameter than the wall forming portions 35, 36. The portion 37 is of greater diameter than portion 40.

The chamber 23 is cylindrical and its purpose is for housing a valve and a valve seat forming member. The chamber 23 includes wall forming portions 49, 50, 51, an annular shoulder 52 formed with an annular groove 53, a wall forming portion 54 and its base or inner wall 55. The length of wall forming portion 49 is greater than that of the portions 50, 51 and 54. The portion 51 is arranged between portion 50 and the shoulder 52 and is threaded. The portion 54 in connection with the wall 55 provides a compartment 56 for a shiftable valve 56^a. Aligning with the groove 53 and the open end of compartment 56 is a resilient annulus 57 forming a valve seat for the valve 56^a. The latter has a stem 58 projecting outwardly therefrom and which extends through the annulus 57 into a flanged tubular peripherally threaded plug 59 which carries the annulus 57 and threadedly engages with the wall forming portion 51. When plug 59 is secured in position with respect to the head 8 it is flush with the leading face of the latter.

The chamber 25 is cylindrical and its purpose is for housing a valve and a valve seat forming member. The form of chamber 25 accords with that of chamber 22. The valve receiving compartment of chamber 25 is indicated at 60, and the valve, its stem, the resilient valve seat forming member and the peripherally threaded flanged tubular plug respectively at 61, 62, 63 and 64 and which correspond in form and are arranged in the chamber 25 in a manner similar to the arrangement of the elements in the chamber 22. The flange of plug 64, when the latter is connected to head 8 abuts the part 26 of the follower face of the head. When plug 64 is secured in position it is flush with the front, rear and non-rabbeted side of the head.

The coupler 16 includes a peripherally threaded head 65, a polygonal shaped flange 66 at the outer end of head 65, and an elongated coupling portion 67 integral at its inner end with the outer end of head 65 and formed of a series of truncated flared parts 68 merging into each other. The head 65 is of greater diameter than the portion 67. The coupler 16 is formed with

a channel 69 from end to end thereof. The head 65 extends into and has threaded engagement with the wall of socket 34 to an extent to have flange 66 abut stem 12, and when so arranged channel 69 registers with channel 33. The portion 67 of the coupler 16 connects the air line 70 therewith whereby when head 65 is secured to the wall of socket 34 the line 70 is coupled to the head 8.

The form of chuck shown by Figure 5 and indicated at 71 will be the same construction as the chuck shown in Figure 1, with this exception, that the follower face of chuck 71 will not only include a curved part 72 corresponding to part 32, a flat part 73 corresponding to part 26, but also a forwardly directed curved part 74 between stem 13 and part 73. The curved part 74 provides for clearance when using the chuck. Otherwise than that as stated the construction of the chuck 71 will correspond to that of the chuck shown in Figure 1.

The form of chuck 75 shown by Figure 6 is of T-form and includes a pair of oppositely extending tubular flanged plugs 76 extending into the head 10 from the ends thereof and a tubular flanged plug 77 countersunk in the leading face of head 10. The plugs 76 extend into chambers corresponding in form to the chamber 22. The plug 77 extends into a chamber corresponding in form to the chamber 23. The stem 14 will be disposed centrally of the follower face of head 10. The said follower face is not offset as the follower face of the chucks shown in Figures 1 to 5. Otherwise than that as stated the chuck 75 will be of the same form as the chucks shown in Figures 1 and 5.

In the form shown in Figure 7 the air line coupler 19 is integral with the stem 15 and consists of an elongated tubular part formed of a series of truncated flared portions 78 merging into each other. The coupler 19 provides a channel 79 which opens into the channel 80 in the stem 15.

Although preferably the flat portion 26 of the follower face of the heads 8, 9 will be disposed horizontally yet it may be set up at an inclination with respect to the stem 12 or 13 to provide for the outer end of the plug 64 to deflect at an angle away from the stem in order to facilitate the use of the chuck on the tube stems of tires and tubes, in instances where such tube stems come out of the tubes or rims at an angle; some tube stems come out of the tubes or rims at an angle around 45° and some of them crook over after coming out. The portion 26 of the follower face of the head may be deflected at an angle of 5° with respect to the stem to provide for the use of the chuck for tube stems disposed as aforesaid.

What I claim is:

1. In a chuck, a head formed with three spaced compressed air receiving chambers, each adapted to have confined therein an operable compressed air supply controlling valve for normally closing the chamber to the passage of compressed air outwardly therethrough, said head including a leading face, a follower face and a pair of sides, one of said chambers opening at the leading face of the head, another opening at one of the sides of the head and the other opening at the follower face of the head, said head provided with means for conducting compressed air to said chambers, and tubular confiners for said valves extending into and connected to the walls of said chambers,

said confiners at their outer ends being flush with the periphery of said head.

2. In a chuck for the purpose set forth, a head formed with a central and a pair of outer compressed air receiving chambers disposed in spaced relation and extending in different directions, each of said chambers adapted to have confined therein an operable compressed air supply controlling valve, said chambers opening into the atmosphere at spaced portions of the periphery of said head, and said head being formed with means for conducting compressed air to said chambers, said means consisting of a main channel leading from a compressed air supply and a pair of oppositely extending channels branching off of the main channel, each channel permanently opening into a chamber at the inner end of the latter, and tubular valve confiners extending into and threadedly engaging with the walls of said chambers.

3. In a chuck, a head formed with a central and a pair of outer cylindrical compressed air receiving chambers opening at the periphery of the head and each adapted to have shiftably confined therein a compressed air supply controlling valve for normally closing the chamber to prevent the discharge of compressed air therefrom, said outer chambers being disposed in right angular relation and spaced from each other and from said central chamber, one of said outer chambers being disposed at right angles to said central chamber, the other one of said outer chambers extending in an opposite direction with respect to the direction in which the central chamber extends, and said head being provided internally thereof with branched means permanently opening into the inner ends of said chambers for simultaneously supplying compressed air thereto.

WILLIE C. MONZINGO.