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PUMP HANDLE

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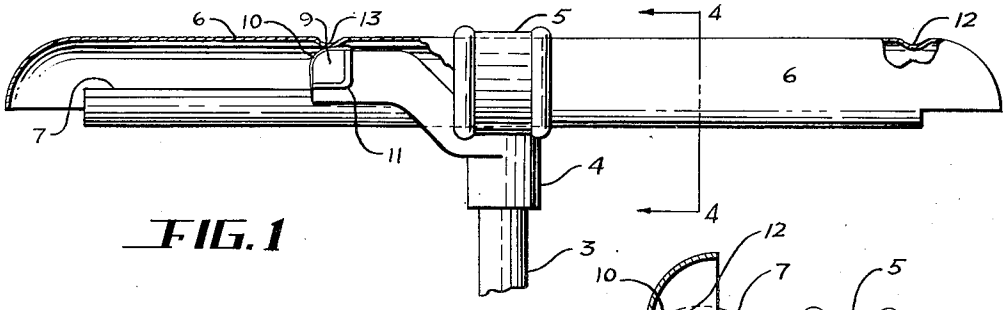


FIG. 1

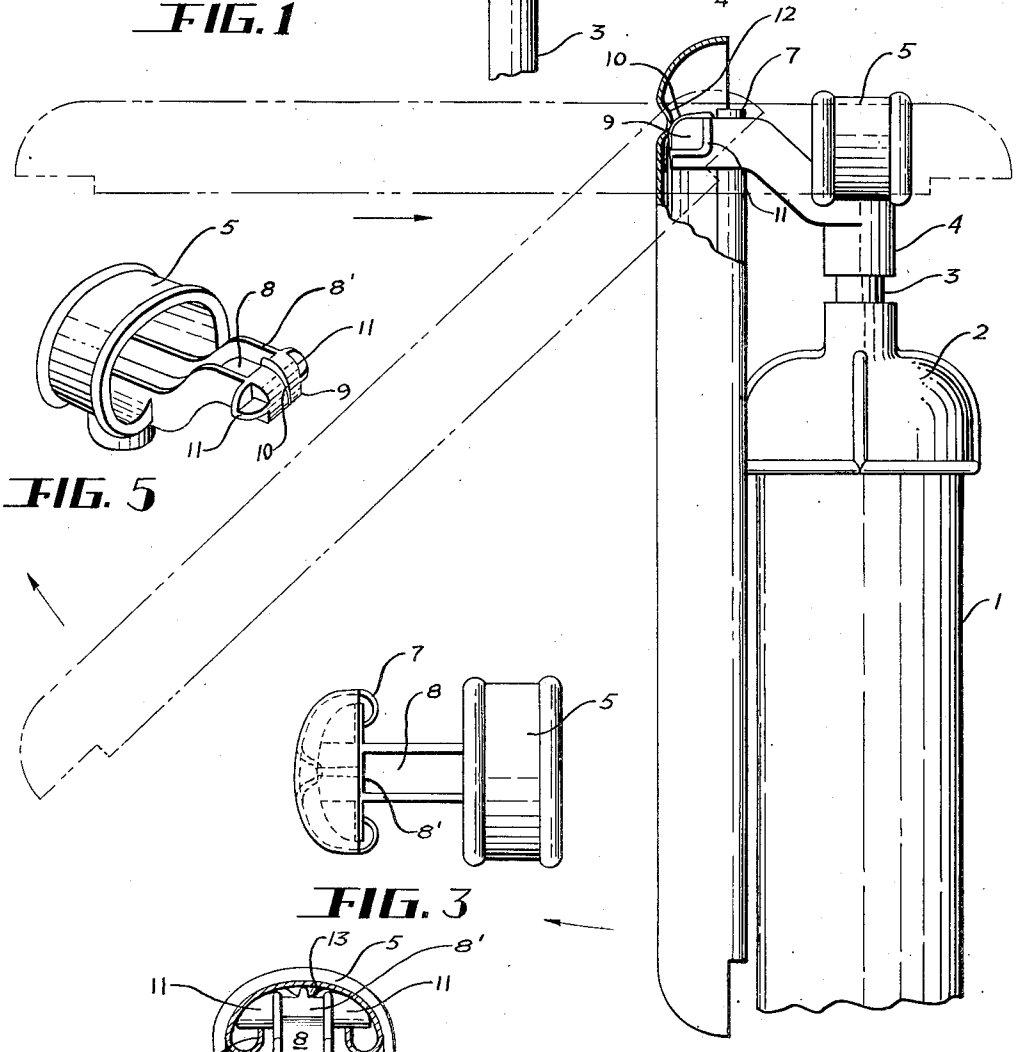


FIG. 2

FIG. 5

FIG. 3

FIG. 4

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PUMP HANDLE

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This invention pertains to manually operated reciprocatory piston pumps and more particularly to a retractable folding cross handle therefor.

There is contemplated a cross handle having transverse sliding engagement with the stem of the pump piston which when retracted to the limit of its range of transverse movement, is capable of oscillatory motion into substantially parallel relation with the direction of reciprocation of the piston, to facilitate storage. For illustrative purpose the invention is illustrated as embodied in a pump of the tire inflation type, but is obviously not limited thereto.

The object of the invention is to improve the construction as well as the means and mode of operation of retractable folding cross handles for reciprocatory piston pumps, whereby they may not only be economically constructed, but will be more efficient in use, capable of being easily and quickly adjusted, uniform in operation, having but few operating parts and be unlikely to get out of repair.

A further object of the invention is to provide a handle structure which will be strong and resistant when assembled, and capable of being readily and quickly retracted into compact form for storage.

With the above primary and other incidental objects in view as will more fully appear in the specification, the invention intended to be protected by Letters Patent consists of the features of construction, the parts and combinations thereof, and the mode of operation, or their equivalents, as hereinafter described or illustrated in the accompanying drawings.

In the drawings wherein is illustrated the preferred, but not necessarily the only form of embodiment of the invention,

Fig. 1 is a side elevation, partly in section of the cross handle in its adjusted operative position.

Fig. 2 is a side elevation of an assembled pump showing by solid lines the cross handle in its fully retracted position, while successive stages of its relative movement are shown by dotted lines.

Fig. 3 is a top plan view of the mounting head, with the cross arm in its retracted position corresponding to that shown in Fig. 2.

Fig. 4 is a side elevation, partly in section of the mounting head and cross handle viewed from the right of Fig. 1.

Fig. 5 is a detail perspective view of the mounting head.

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Like parts are indicated by similar characters of reference throughout the several views.

Referring to the drawings, 1 is the barrel of a conventional reciprocatory piston pump, such as used for tire inflation purposes. Surmounting the barrel 1 is a cap or dome 2 through which protrudes a reciprocatory piston stem 3. Connected to the end of the piston stem 3 is a mounting head comprising a hub 4 fixedly secured upon the end of the piston stem 3 and supporting a loop 5 having an opening therethrough conforming to the cross sectional shape of a cross handle bar 6. The cross handle 6 is of substantially semicylindrical channel shape closed at its ends. Its longitudinal margins 7 are inturned, thus forming parallel interior guide flanges which terminate in spaced relation with the ends of the handle 6.

Projecting laterally from the mounting hub 4 is an inclined arm 8 having in its top surface a channel closed at its end forming a shoulder 8'. The closed end of the channelled arm is provided with a rounded head 9 having mid length thereof a rib 10 slightly eccentric to the contour of head 9 of the arm 8. The head 9 is continued laterally forming two oppositely disposed angular lugs 11 which function as trunnions, slidingly engageable with the inturned marginal guide flanges 7, of the handle bar, which at the limit of its range of sliding motion is oscillatory thereabout. The channel shaped cross handle 6 is provided with two relatively spaced inwardly projecting stop bosses 12 and 13, which are alternately engageable with the head 9 of the arm 8 to limit the reciprocatory motion of the handle bar 6 in alternate directions. Upon withdrawal of the handle bar from the loop 5 of the mounting head, preparatory to folding movement thereof into parallel relation with the barrel 1, the guide flanges 7 slide beneath the trunnion lugs 11 until arrested by engagement of the stop lug 12 with the shoulder 8' of the arm 8, whereupon the handle arm may be oscillated about the arcuate head 9 of the arm. The space between the stop boss when the handle is so retracted and the guide flanges 7 is so restricted that the boss 12 can not pass beyond the head 9 and the handle bar is temporarily supported in a dependent position as shown by solid lines in Fig. 2. The handle bar is thus prevented from complete disconnection from the mounting head.

For use in actuating the pump piston rod 3, the handle bar 6 is manually turned from its dependent position, as in Fig. 2, to a transverse position in alignment with the opening in the loop 5 of

the mounting head through which it is then thrust, as in Fig. 1. As the handle bar approaches the limit of its adjustment transversely through the mounting head loop 5, the second stop boss 13 at an approximately medial position upon the handle bar engages with the slightly eccentric rib 10 to limit its adjustment, the final motion of which causes the stop boss 13 to effect a wedging engagement with the rib 10 thereby frictionally maintaining the adjusted relation of the handle bar. However the handle bar may be easily dislodged therefrom for retraction by a mere pull thereon.

It is only upon complete withdrawal of the handle bar from the mounting head loop 5 that the handle bar is free for oscillation to its dependent position, but its interconnection with the mounting head is maintained whereby it may not be completely separated from the pump.

From the above description it will be apparent that there is thus provided a device of the character described possessing the particular features of advantage before enumerated as desirable, but which obviously is susceptible of modification in its form, proportions, detail construction and arrangement of parts without departing from the principle involved or sacrificing any of its advantages.

While in order to comply with the statute the invention has been described in language more or less specific as to structural features, it is to be understood that the invention is not limited to the specific features shown, but that the means and construction herein disclosed comprise the preferred form of several modes of putting the invention into effect, and the invention is therefore claimed in any of its forms or modifications within the legitimate and valid scope of the appended claims.

Having thus described our invention, we claim:

1. A retractable cross handle for a reciprocatory piston type pump including a channel shaped handle member, marginal guides formed by inturning the side margins of the channel shaped handle member, a mounting head carried by the pump piston having an opening therein, through which the handle member is slidable to and fro, a laterally extending arm carried by the head projecting within the channel of the handle member, a pair of oppositely projecting trunnions carried by the arm in overlying relation with the marginal guides which are slidable relative thereto as the handle member is reciprocated through the opening in the mounting head a stop limiting the sliding movement of the handle upon its withdrawal from the opening in the mounting head preventing complete disengagement of the handle member from the laterally extending arm of the mounting head, the handle member being capable of oscillatory movement about the trunnions at the limit of its sliding movement out of the opening in the mounting head, whereupon the handle member is capable of oscillatory movement to a position substantially parallel to the direction of reciprocation of the pump piston.

2. A retractable cross handle for a reciprocatory piston type pump, including a channel shaped handle member, the longitudinal margins of which are inturned, guide flanges formed thereby, a mounting head having an opening therein within which the handle member is receivable, an arm on the mounting head extending laterally within the channel shaped handle, a pair of oppositely projecting trunnions carried by the arm overlying the inturned guide flanges, relative to which the handle member is capable of alternate sliding and oscillatory motion, the oscillatory motion of which is prevented and the handle restricted to its sliding motion only so long as the handle member is engaged within the opening in the mounting head, and which is permitted only upon withdrawal of the handle member from the opening in the mounting head and a stop limiting the retractive sliding motion of the handle relative to the trunnions on said arm preventing disengagement of the handle therefrom.

3. A retractable cross handle for a reciprocatory piston pump presenting a piston rod for attachment of the handle, including a channel shaped handle section the ends of which are closed and the sides of which are inturned to form a pair of exteriorly closed marginal guide passages, a loop shaped mounting head carried by the piston rod through which the handle section is slidingly adjustable, an arm on the head extending laterally therefrom within the channel of the cross handle, a pair of oppositely projecting trunnions carried by the arm and relative to which the marginal guide passages are movable as the cross handle is shifted to and fro, a stop upon the end of the cross handle engageable with the mounting head arm as the cross handle approaches the limit of its retractive travel motion, to prevent complete disengagement of the cross handle and mounting head the cross handle being rotatively adjustable about the trunnions of the mounting head arm to enable turning of the cross arm into approximate parallel relation with the direction of reciprocation of the piston when withdrawn from the loop.

4. A retractable cross handle for a reciprocatory piston pump presenting a piston rod for attachment of the handle, including a channel shaped handle closed at its end, a mounting head therefor carried by the piston rod, a guide loop on the head, through which the handle is slidingly adjustable, a laterally extending arm on the mounting head projecting within the channel shaped handle, oppositely directed trunnions on the arm having both sliding and pivotal engagement within the channel shaped cross handle and a stop on the cross handle engaging with the arm of the mounting head to prevent complete disengagement of the handle and mounting head when the cross handle is withdrawn entirely from the loop at the limit of range of movement of the cross handle, the cross handle being rotatively adjustable into substantially parallel relation with direction of reciprocation of the piston, when fully disengaged from the mounting head loop.

5. A retractable cross handle for a reciprocatory piston pump presenting a piston rod for attachment of the handle including a cross handle member, a mounting head therefor carried by the piston rod having therein an opening through which the cross handle is reciprocatory to and fro, a pair of trunnions carried by the mounting head in laterally offset relation therewith having alternate sliding and pivotal engagement with the cross handle, and a stop automatically preventing disengagement of the cross handle from the mounting head when fully withdrawn from the opening therein, preparatory to oscillatory movement of the handle section about the trunnions into substantially parallel relation with the direction of reciprocation of the piston.

6. A retractable cross handle for a reciprocatory piston pump presenting a piston rod for al-

tachment of the handle, including a reciprocatory handle section centrally disposed relative to the pump, a mounting head therefor carried by the piston rod and having therein an opening through which the cross handle is freely movable to and fro, a laterally offset arm projecting from the mounting head into sliding engagement with the cross handle for relative movement, a pivotal connection between the cross handle and the arm at the limit of sliding movement of the cross handle when fully withdrawn from the opening in the mounting head, stop means preventing complete disengagement of the cross arm from the mounting head when retracted from the opening therein, preparatory to oscillatory motion of the cross handle into substantially parallel relation with the direction of reciprocation of the piston.

7. A retractable cross handle for a reciprocatory piston pump presenting a piston rod for attachment of the handle, including a reciprocatory handle centrally disposed relative to the piston, a mounting head therefor carried by the piston rod, having an opening therein through which the cross handle is slidingly movable, a sliding pivotal coupling between the cross handle and the mounting head in laterally offset relation with the latter, and a stop limiting the sliding movement of the cross arm when withdrawn from the opening in the mounting head to prevent complete disengagement thereof while permitting oscillatory motion of the cross arm, to a substantially parallel relation with the direction of reciprocation of the piston.

8. A retractable cross handle for the reciprocatory piston rod of a pump including a loop carried by the pump piston rod through which the cross handle is insertable, pivotal connection in offset relation with the loop, relative to which the cross handle is capable of to and fro sliding adjustment, and about which the cross handle is oscillatory to a position approximately parallel with the direction of reciprocation of the piston when the cross handle is withdrawn from the loop, a stop for limiting the extent of withdrawal of the cross handle and engageable with such connection to temporarily support the cross handle in a dependent position, and a second stop for limiting the range of sliding adjustment of the cross handle through the loop and an inclined bearing surface with which the second stop has wedging engagement to retain the cross arm temporarily in its adjusted relation.

9. A retractable cross arm for a reciprocatory piston pump centrally disposed in transverse relation thereto when in operative position, a mounting head including a loop through which the cross arm is reciprocatory, a lateral arm projecting therefrom with which the cross arm is capable of to and fro sliding movement, and of oscillatory movement to a dependent position when withdrawn from said loop, stops limiting the reciprocatory motion in alternate directions.

10. A retractable cross arm for a reciprocatory piston pump, a mounting head therefor having therein an opening through which the cross arm is capable of reciprocatory motion in alternating directions, a pair of trunnions in laterally offset relation with the opening in the mounting head relative to which the cross arm is capable of sliding movement into and out of the opening, and about which the cross arm is capable of oscillatory motion upon withdrawal from the opening in the mounting head into a dependent position.

11. A retractable cross arm for a reciprocatory piston pump presenting a piston rod for attachment of the cross arm, including a channel shaped cross arm, inturned marginal guide flanges thereon, a mounting head engageable with the piston rod for unison motion having an opening therein through which the cross arm is reciprocatory, a bearing member carried in laterally offset relation by the mounting head, overlying the inturned guide flanges of the cross arm, relative to which the cross arm is slidable to and fro, and about which the arm is oscillatory when withdrawn from the opening in the mounting head, stop means limiting the sliding motion of the cross arm in alternating directions, and means for maintaining suspensory connection of the cross arm with said bearing member when in its oscillated position.

12. A hand operated pump wherein a reciprocatory piston having an extended piston rod, is manually reciprocated within an elongated cylinder having a discharge outlet, including a cross arm handle carried by the piston rod, an eye on the piston rod through which the cross arm handle is slidingly adjustable to and fro, spaced stops limiting the to and fro sliding motion of the cross arm handle relative to the eye of the piston rod, and a pivotal connection about which the cross arm handle is oscillatory into substantially parallel relation with the piston rod when at one limit of its to and fro sliding motion while maintaining its interconnection with the reciprocatory piston.

13. A hand operated pump wherein a reciprocatory piston having an extended piston rod, is manually reciprocated within an elongated cylinder having a discharge outlet, including a cross arm handle interconnected with the piston rod for reciprocatory sliding motion and pivotal swinging motion of the handle to achieve an oscillated dependent position thereof relative to the piston rod, and an interengaging portion maintaining the interconnection of the piston rod and cross arm handle in the oscillated position of the cross arm handle.

14. A hand operated pump wherein a reciprocatory piston having an extended piston rod, is manually reciprocated within an elongated cylinder having a discharge outlet, including a cross arm handle engaged with the piston rod for to and fro sliding motion, and for pivotal swinging motion into and out of substantially parallel relation with the piston rod, at one limit of its sliding motion, and an interengaging portion for maintaining said cross arm handle in connected suspended relation to said piston rod.

15. A hand operated pump wherein a reciprocatory piston having an extended piston rod, is manually reciprocated within an elongated cylinder having a discharge outlet, including a swinging cross arm handle adjustable to and from substantially parallel relation with the piston rod, and a portion upon the piston rod laterally offset relative to the axis thereof with which the cross arm handle is alternatively engageable in positions of parallel and transverse relation with the piston rod.

16. A retractable cross handle for a reciprocatory piston pump presenting a piston rod for attachment of the cross handle and including an elongated grip member, a mounting head for said grip member carried by said piston rod and having an opening through which the grip member is reciprocable to and fro, a laterally offset arm projecting from said mounting head, co-

operating portions on said arm and said grip member providing a guideway for reciprocation of said grip member and permitting rocking of said grip member to a suspended position parallel to said piston upon withdrawal of said member from the opening in said mounting head, and additional cooperating portions on said arm and said grip member for holding said grip member in operating position within the opening in said mounting head and for holding said grip member in suspended position.

17. A retractable cross handle according to claim 16, characterized in that said additional cooperating portions comprise a rib on said laterally offset arm alternatively engageable by longitudinally spaced projections on said grip member.

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