Feb. 21, 1950 G. E. PETERS ET AL 2,497,907

PUMP HANDLE

Filed March 6, 1946 2 Sheets-Sheet 1

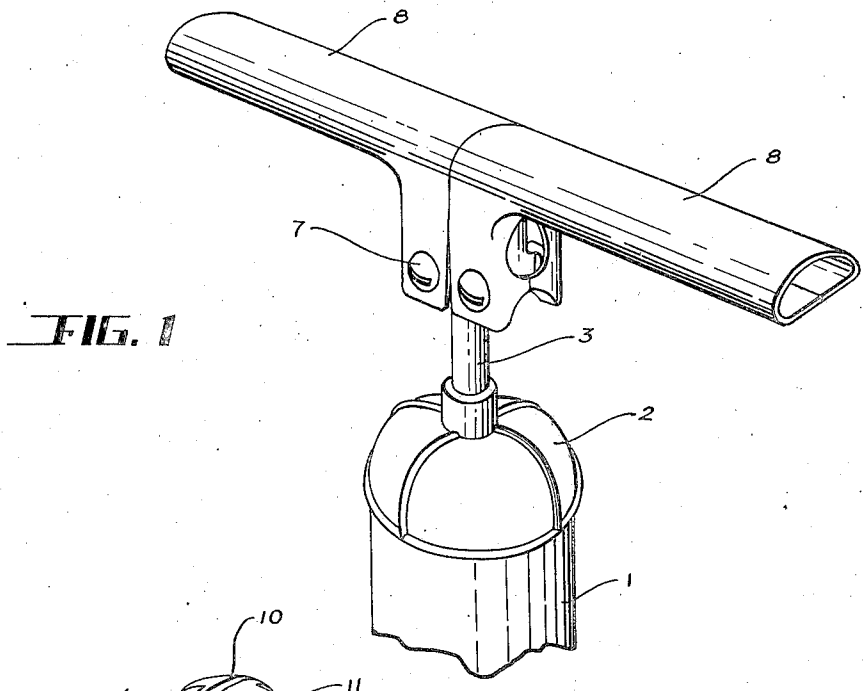


FIG. 1

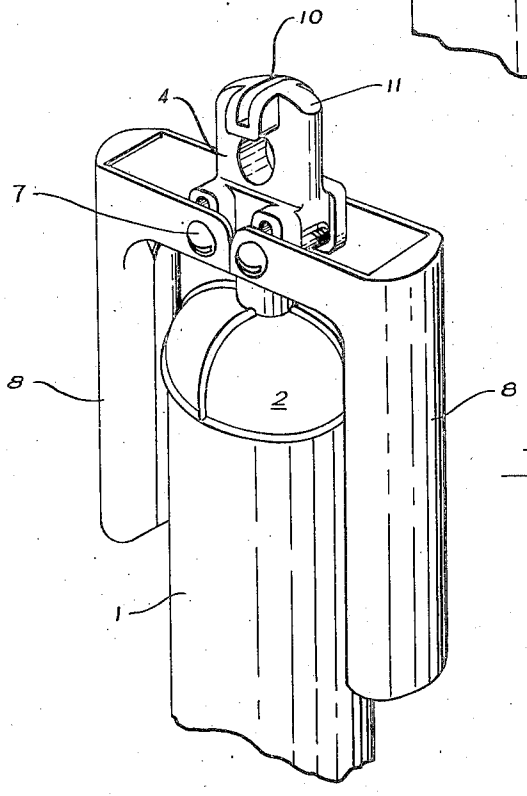


FIG. 2

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Filed March 6, 1946 2 Sheets-Sheet 2

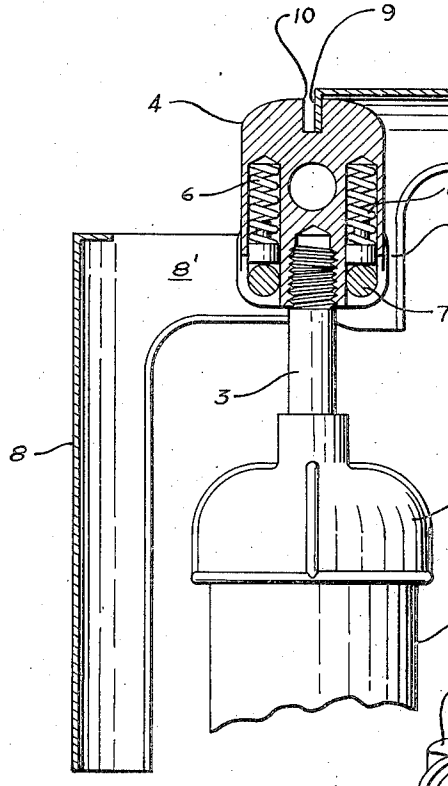


FIG. 3

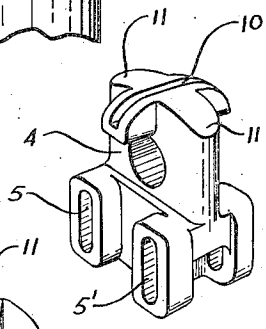


FIG. 6

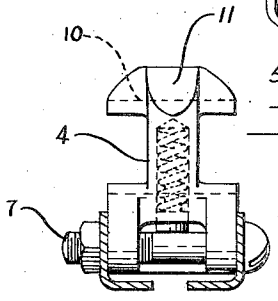


FIG. 5

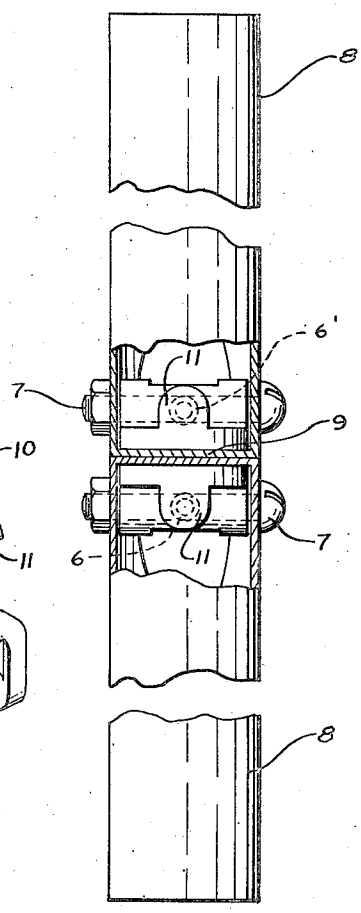


FIG. 4

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2,497,907

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2,497,907

PUMP HANDLE

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Application March 6, 1946, Serial No. 652,468

12 Claims. (Cl. 74—547)

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This invention pertains to manually operated pumps of the type having reciprocatory pistons actuated by cross arm handles carried by the stem of the piston, and more particularly to a folding handle therefor to facilitate storage.

There is contemplated a reciprocatory pump piston having a divided cross handle the sections of which are pivoted for oscillatory adjustment from a transversely aligned operative relation to a substantially parallel retracted relation, together with means for automatically locking the handle sections in their aligned operative positions.

The object of the invention is to improve the construction, as well as the means and mode of operation of folding cross arm handles whereby they may not only be economically manufactured but will be more efficient in use, automatic in action, uniform in operation, having relative few operating parts and be unlikely to get out of repair.

A further object is to provide a quick acting handle which may be readily extended and contracted, and which will not involve the use of loose parts.

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 shown the preferred, but not necessarily the only form of embodiment of the invention,

Figs. 1 and 2 illustrate a cross arm handle pump embodying the present invention with the arms thereof extended and retracted in the respective views.

Fig. 3 is a vertical detail sectional view, showing one handle section extended, and the other retracted.

Fig. 4 is a detail sectional top plan view of the mounting yoke.

Fig. 5 is a detail side elevation thereof.

Fig. 6 is a perspective view of the mounting yoke.

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

Referring to the drawing, 1 indicates a conventional cylinder for a reciprocatory piston pump, such as is ordinarily used for pneumatic tire inflation. The top of the cylinder 1 is surmounted by a dome shaped cap 2. A conventional piston

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is mounted to reciprocate within the cylinder 1, the stem 3 of which extends through the cap 2 to receive the folding cross handle forming the subject matter hereof.

Attached to the extremity of the reciprocatory piston rod is a mounting yoke 4 having therein two parallel vertical bores in which are positioned helical springs 6—6'. The walls of the yoke 4 are slotted at 5—5' through which extend, beneath the springs 6, transverse trunnion pins 7 for the respective handle sections 8.

The handle sections 8 are of generally L shape, the longer arms of which are of semicyclindrical tubular form and are bifurcated at their inner ends 8'. At the exterior junction of the L-shaped arms are inturned integral lips 9 which engage in a slot 10 in the crown of the yoke 4 when the arm sections 8 are extended. The top of the yoke is rounded or cam shaped at 11 with the slot 10 at a mid point thereof. The short arms of the L-shaped handle sections are pivoted upon the trunnion pins 7 for oscillatory motion. The trunnion pins 7 are vertically movable relative to the mounting yoke, against the tension of the springs 6. Thus the handle sections are permitted a sliding pivotal movement.

The radial distance between the trunnion pins and the cam shaped top of the yoke 4 is somewhat less than the distance between the trunnion pins 7 and the margin of the inturned lips 9 of the handle sections. When the folded arm sections are raised toward aligned relation the margins of the inturned lips 9 engage and ride upon the cam surfaces 11 of the yoke 4 which exerts a pulling influence upon the trunnion pins against the yielding tension of the springs 6 until each handle section shall reach the slot 10 into which the integral lips 9 will snap under the retractive influence of the springs 6. The slot 10 is sufficiently wide to enable the lips 9 of both sections to be received therein when the handle sections are aligned. The handle sections are thus locked in their operative aligned relation and may be grasped by the operator for reciprocation of piston stem 3. When it is decided to retract the foldable cross handle sections 8 the before described operation is reversed. By grasping the handle sections and pushing downwardly on one section 8 while pulling upwardly on the other, the latter may be lifted against the resistance of its spring 6 to disengage its lip 9 from the slot 10 where upon it may be turned to a dependent position where it will be held by the tension of the spring 6. The other handle section is then released by pulling upward against the tension of its spring

6 to release its locking lip 9 while holding the previously disengaged handle section and yoke against movement in opposition to retractive influence upon the other handle section. Obviously a body of resilient material, such as rubber, may be substituted for the springs 6.

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. An extensible and retractible cross arm handle including a mounting yoke, a pair of L-shaped handle sections, vertically adjustable trunnion pins in said mounting yoke, springs against the tension of which the trunnion pins are independently movable, cam surfaces upon the mounting yoke having therein an open notch, locking lips on the handle sections engageable with the cam surfaces of the mounting yoke to exert a pulling influence upon the trunnion pins against the yielding resistance of the springs as the handle sections are oscillated toward their aligned relation, until the locking lips thereof enter the notch under retractive influence of the springs.

2. A folding cross arm handle for a reciprocatory piston pump including a pair of L-shaped handle sections movable from aligned operating relation to substantially parallel retracted relation and vice versa, a mounting yoke therefor, adjustable trunnion pins for the L-shaped handle sections mounted in the yoke, yielding resistance means against the tension of which the trunnion pins are movable, a locking projection upon each handle section, a cam surface upon the yoke engaged by the locking projection as each handle section is oscillated about its trunnion pin toward extended aligned relation the camming action of which exerts a pulling influence upon the handle section trunnion pin against its yielding resistance the cam surface having a recess therein into which the locking projection is retracted at the limit of its oscillatory motion by the retractive influence of the yielding resistance.

3. A foldable cross arm handle for a reciprocatory piston pump including a pair of L-shaped handle sections mounted for oscillation from aligned operating position to substantially parallel retracted relation and vice versa, a mounting yoke upon which the handle sections are independently pivoted, a yielding resistance continuously applied in a direction parallel to the plane of movement of the reciprocatory piston against the tension of which the handle sections are movable relative to the mounting yoke additional to their pivotal movement, a cam surface upon the yoke engaged by the handle section to enable such additional movement against the tension of the yielding resistance and interlocking portions upon the mounting yoke and the handle sections drawn into interengaging relation at the limit of oscillatory motion of the handle sections by reaction of the yielding resistance.

4. A foldable handle for a reciprocatory piston pump, including a pair of oscillatory handle sections movable from aligned relation to substantially parallel relation and vice versa, a mounting yoke therefor with which the handle sections are connected for sliding pivotal motion, a spring mounted in said yoke and against the tension of which each handle section is capable of sliding motion independently of its pivotal movement, and interengaging portions upon the handle sections and mounting yoke interlocked under influence of the reactance of the said spring when the handle sections reach aligned relation, and disengageable by the sliding movement of the handle sections against the tension of said spring.

5. A foldable handle for a reciprocatory piston pump or the like, including a pair of oscillatory handle sections relatively movable from an aligned operative relation to a substantially parallel retracted relation and vice versa a mounting yoke therefor, sliding pivotal connections independently connecting the handle sections with the mounting yoke, yielding tensioned resistance means continuously applied in a direction parallel to the plane of movement of the reciprocatory piston against the influence of which the handle sections are slidingly movable in one direction additional to their pivotal movement, and under the influence of which the handle sections are automatically retracted, and interlocking means for maintaining the handle sections in aligned relation automatically interengaged under reactive influence of the tensioned resistance means.

6. A foldable handle for a reciprocatory piston pump, a pair of adjustable handle sections adjustable from an aligned relation substantially transversely of the direction of reciprocation of the said piston, to positions substantially parallel therewith, a mounting yoke therefor, sliding pivotal connections connecting the handle sections with the mounting yoke, yielding tensioned resistance means continuously applied in a direction parallel to the plane of movement of the reciprocatory pitson against the influence of which the handle sections are sliding adjustable, cam surfaces on the mounting yoke engaged by the handle sections during their adjustment toward transversely aligned relation exerting a sliding influence thereon against the tension of said yielding resistance means.

7. A foldable cross handle for manually actuating a conventional reciprocatory pitson pump presenting a piston rod for attachment of the handle, including a mounting yoke carried by the pump piston rod, a pair of cooperating handle sections movable from aligned relation substantially transversely of the direction of reciprocation of the pump piston to a retracted relation substantially parallel therewith, a mounting yoke therefor, combined sliding and pivotal connections inter-connecting the handle sections with the mounting yoke, tensioned resisting means continuously applied in a direction parallel to the plane of movement of the reciprocatory piston against the resistance of which the handle sections are slidable relative to the mounting yoke, cam means operative by the pivotal movement of the handle sections relative to the mounting yoke to slidingly adjust said pivotal connections during adjustment of the handle sections toward transversely aligned relation, and interlocking

means for holding the handle sections in adjusted relation interengaged by retraction of the handle sections under influence of reactance of the tensioned resistance means.

8. A foldable cross handle for the piston stem of a reciprocatory piston pump including a pair of oscillatory handles adjustable from aligned relation to substantially parallel relation and vice versa, a mounting yoke carried by the piston stem to which the handles are connected for simultaneous sliding and pivotal movement relative thereto, cam means for inducing sliding movement of the handle sections relative to the mounting yoke incident to oscillation thereof, a yielding resistance means continuously applied in a direction parallel to the plane of movement of the reciprocatory piston against the tension of which such sliding movement of the handle sections is effected, and locking means limiting the oscillation of the handle sections engaged and disengaged by the sliding movement thereof.

9. A foldable cross handle for a reciprocatory piston pump, including a pair of oscillatory handle sections adjustable from aligned relation transversely of the direction of reciprocation of the pump piston to a substantially parallel relation therewith and vice versa, a mounting head to which the handle sections are connected, sliding pivotal connections therefor, resilient means against the yielding resistance of which the handle sections are movable in one direction, and by reactance of which the handle sections are movable in reverse direction, cam means operable upon oscillation of the handle sections toward their aligned relation for sliding the handle sections against the yielding resistance means and locking means for limiting the pivotal movement of the handle sections interengaged upon sliding motion of the handle sections under reactance of the resilient means.

10. A foldable cross handle for a reciprocatory piston pump, including a pair of oscillatory handle sections adjustable from aligned relation transversely of the direction of reciprocation of the pump piston to a substantially parallel relation therewith and vice versa, a mounting head to which the handle sections are connected, slidable pivotal connections between the handle sections and the mounting head, arcuate cam surfaces upon the head separated by a notch therein, contact portions on the handle sections engaging the cam surfaces of the head as the handle sections are oscillated, to slide the pivotal connection thereof relative to the mounting head, a resilient member tensioned by the sliding movement of the pivotal connections of the handle sections and locking portions on the handle sections retracted into the notch by the reactance of the tensioned resilient resistance means at the limit of oscillation of the handle sections.

11. A foldable handle for a reciprocatory piston pump, including a pair of oscillating handle arms foldable from a transversely aligned position in which they cooperate to form the handle to substantially parallel relation, a mounting yoke therefore, pivotal connections between said arms and said mounting yoke constructed and arranged to permit relative sliding and oscillating motions of said arms with respect to said yoke, interengaging locking portions of said arms and said yoke brought into cooperative relation by motion of said arms into transversely aligned position, and spring means acting upon said arms yieldingly to urge said arms rotatively toward retracted parallel position during motion of said arms toward and from interengagement of said locking portions and acting upon said arms yieldingly to urge said arms rotatively toward aligned relation during interengagement of said locking portions.

12. A foldable handle according to claim 11, characterized in that said locking portions comprise a centrally located notch in said yoke and cooperating lips on said arms, while said spring means comprise springs housed in said yoke in laterally offset relation to said notch, the lips on said arms moving to opposite sides of the plane of their respective springs during motion of said arms toward and from transversely aligned position.

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