Nov. 11, 1924.

1,515,302

H. F. GEORGE

LOCKING MEANS

Filed May 24, 1922

2 Sheets-Sheet 1

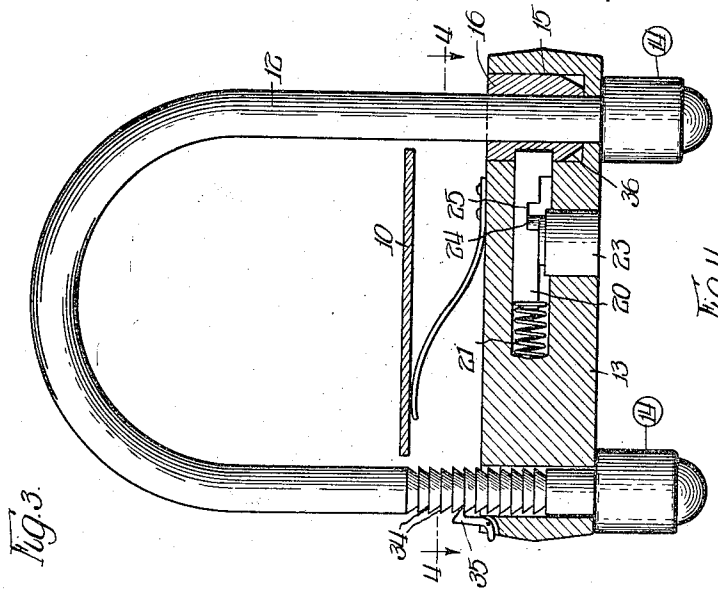


Fig. 3.

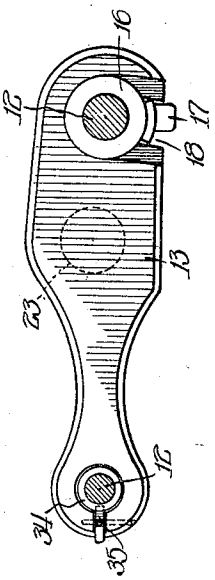


Fig. 4.

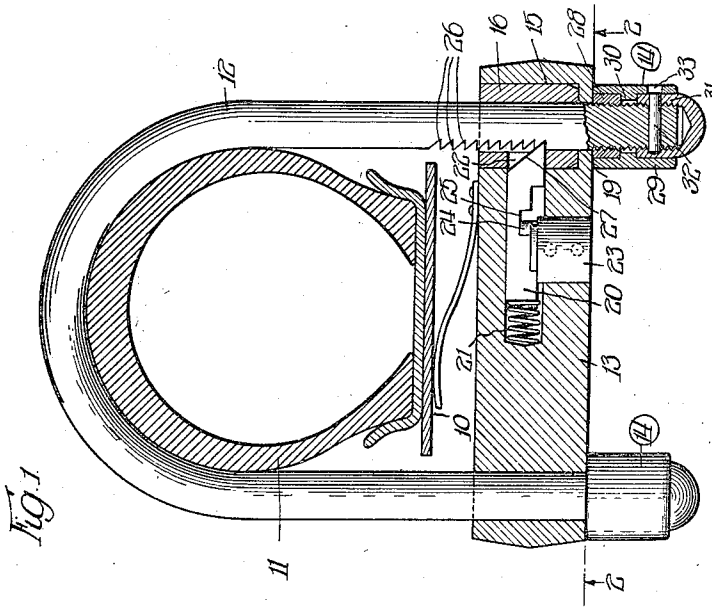


Fig. 1.

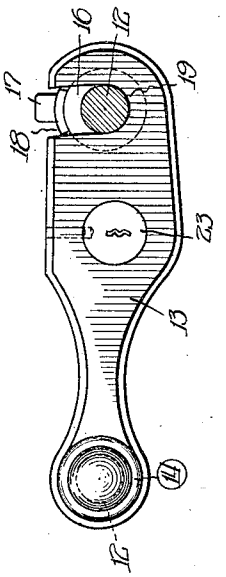


Fig. 2.

Witness:
G. Burkhardt.

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Harry F. George,
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Byron & Knight. Attys.

Nov. 11, 1924.

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Filed May 24, 1922

2 Sheets-Sheet 2

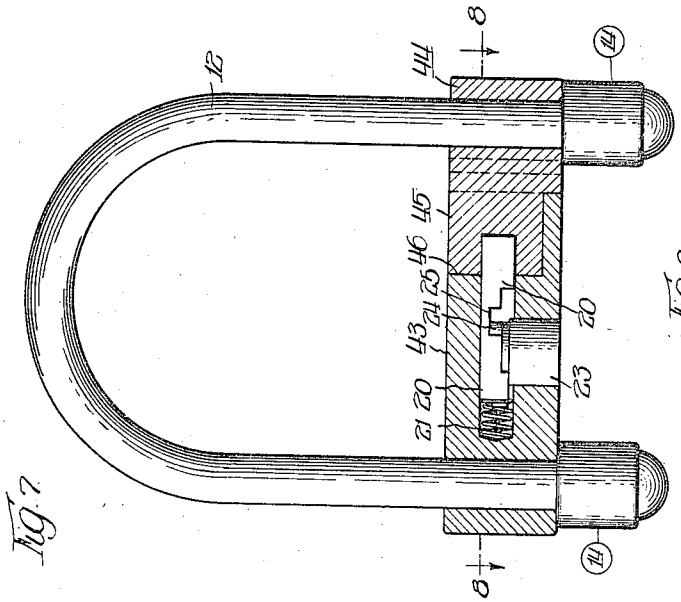


Fig. 7

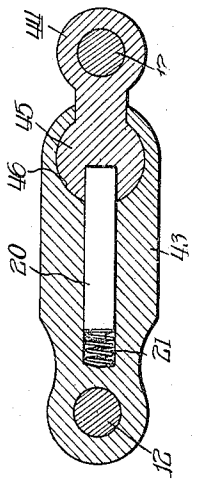


Fig. 8

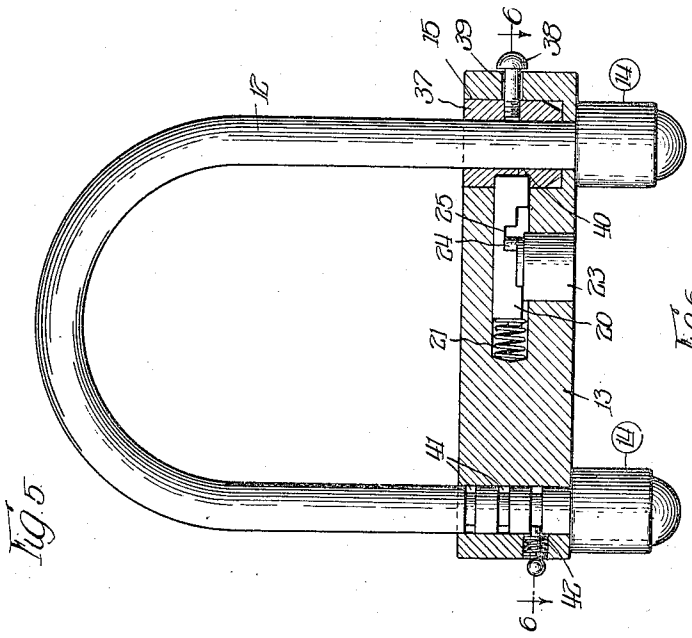


Fig. 5

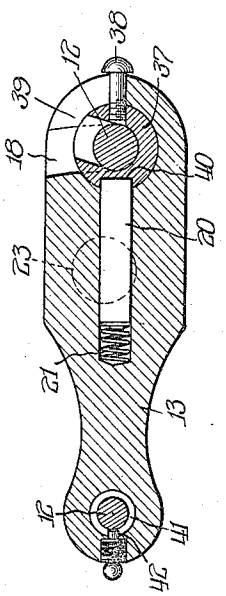


Fig. 6

Witness:
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Patented Nov. 11, 1924. 1,515,302

UNITED STATES PATENT OFFICE.

HARRY F. GEORGE, OF CHICAGO, ILLINOIS.

LOCKING MEANS.

Application filed May 24, 1922. Serial No. 563,291.

To all whom it may concern:

Be it known that I, HARRY F. GEORGE, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Locking Means, of which the following is a specification.

The present invention relates to locking means.

The present invention presents a wide field of usefulness, being adaptable to perform many of the functions performed by padlocks. The invention will be described particularly with reference to its use as a spare tire lock. Another use which will immediately suggest itself to those skilled in the art is that as a shackle for enclosing the tire of a motor car to prevent the unauthorized driving of said car.

An object of the present invention is to provide a locking means or shackle which involves a minimum of operating parts and which may be made of tool resisting material.

A further object is to provide a locking means for enclosing members which will be locked together and which may be conveniently mounted to prevent rattling.

A further object is to provide a locking means of tool resisting material which puts great difficulties in the path of any person who attempts to nullify the effect of said locking means by unauthorized procedure.

Further objects will appear as the description proceeds.

Referring to the drawings—

Figure 1 is a view in side elevation, parts being broken away, showing one embodiment of the present invention;

Figure 2 is a sectional view taken along the line 2—2 of Figure 1;

Figure 3 is a view in elevation, parts being broken away, illustrating a modification;

Figure 4 is a view taken along the plane marked by the line 4—4 of Figure 3;

Figure 5 is an elevational view, parts being broken away, of still another modification;

Figure 6 is a sectional view taken along the plane marked by the line 6—6 of Figure 5;

Figure 7 is a view of a still further modification; and

Figure 8 is a sectional view taken along the plane marked by the line 8—8 of Figure 7.

Referring first to Figures 1 and 2, the numeral 10 indicates a stationary part, which may be the spare tire rim of a motor car. The numeral 11 indicates a spare tire, including its rim, mounted upon the spare tire rim 10. The invention contemplates a readily operable locking means for locking the tire 11 to the rim 10, or for embracing any other element for performing locking functions. Said locking means comprises a locking block 13 and a shackle 12 having parallel legs. The shackle 12 has enlarged head portions 14—14 on the two ends thereof, which head portions will be referred to more in detail hereinafter, which perform the function of preventing the locking block 13 from being forced from the shackle 12. It will be understood as the description proceeds that the head portions 14—14 may be omitted from the structure as illustrated in Figures 1 and 2, if preferred, though their use is recommended.

The locking block 13 is mounted upon one leg of the shackle 12 in a manner to have a swinging and sliding movement relative to said leg. The other end of the locking block 13 is provided with a recess 15 for containing the bushing 16, which is adapted to slide along the right-hand leg of the shackle 12 into and out of recess 15. Said member 16 has been indicated in Figures 1 and 2 as being of cylindrical conformation, the recess being of similar conformation. A finger piece 17 comprises operating means for the bushing 16, whereby when the locking means is in unlocked condition the bushing 16 may be operated longitudinally with respect to its own axis. Said finger piece 17 rides in a slot 18 in the side of the locking block 13, which slide, however, is not of sufficient width to permit lateral movement of bushing 16. Movement of bushing 16 downwardly with respect to locking block 13 may be limited by the shoulder 19, as indicated in Figure 1.

Mounted within the locking block 13 is the reciprocable bolt 20, which is biased by the spring 21 to a position in abutting relation with the bushing 16. Said bushing 16 may be provided with a hole 22 for receiving the reciprocable bolt 20. A lock cylinder 23 may be provided having the operating cam member 24 adapted to fit within a recess 25

in the reciprocable bolt 20 whereby said bolt 20 may be moved against the tension of spring 21 out of engaging relation with the bushing 16. The lock cylinder may be key-controlled, whereby the holder of the proper key may operate the bolt 20 to free said bolt from bushing 16.

If preferred, the right hand leg of the shackle 12, as viewed in Figure 1, may be provided with teeth 26—26, which teeth may be engaged by the end of the bolt 20, said end being beveled, as indicated by the numeral 27, to cooperate with said teeth 26—26. A spring or other cushioning means may be mounted on locking block 13 for engagement with a member enclosed by shackle 12.

The head portions 14—14 may be mounted as follows: Each end of the shackle 12 may be screw-threaded and may have mounted thereon the nut 28 having a circular external outline. After the nut 28 is screwed up upon the end of the shackle 12, a collar 29 may be mounted in proximity to said nut, said collar 29 having the internal projecting shoulder 30 adapted to abut against nut 28. Next the nut 31 may be screwed in place, which nut 31 will be circular in external outline and will have a closed end having a conical or dome shape. Said nut 31 should abut shoulder 30 of collar 29 and may be secured to the end of the shackle by means of the pin 32, said pin being insertable through the hole 33 in the collar 29. Said pin 32 should be driven in sufficiently far to permit rotation of collar 29 on nuts 28 and 31 and should be located in a position to hold the nut 31 securely against rotation on the end of the shackle 12. The collar 29 should extend down sufficiently far upon the nut 31 to prevent the grasping of said nut 31 by means of a wrench. It will be noted that the collar 29 may turn freely, whereby the application of a wrench thereto will have no effect in exerting tortional stresses to any part of the mechanism. Inasmuch as the nut 31 presents no surface which may be grasped by a wrench, the head portions 14 effectively resist attempts by thieves to nullify the effect of the locking mechanism by turning off said head portions.

In operation the shackle 12 will be mounted in place, for example, as indicated in the drawings, upon the spare tire 11 and the spare tire rim 10, the bushing 16 having been moved out of its recess 15 clear of the locking block 13 whereby to permit a swinging movement of said locking block relative to the shackle 12. After the shackle has been placed in position to enclose the members to be locked together, the locking block 13 will be swung to a position wherein the right-hand leg of shackle 12, as viewed in Figure 1, will engage with shoulder 19 of said locking block 13. The bushing 16 may then be moved downwardly along the shackle into the recess 15. When the bushing 16 is in its home position, the locking bolt 20 will enter the hole 22 in said bushing 16, holding said bushing 16 securely against movement along its own axis, whereby swinging movement of the locking block 13 is effectually prevented. The locking block 13 may, however, be moved upwardly along the legs of the shackle 12 whereby to be securely held in engagement with members 10 and 11 to prevent rattling of the locking device. The engagement of locking bolt 20 with the teeth 26—26 will effectually hold the locking block 13 in the position to which it has been moved, reverse movement being possible only through operation of the lock cylinder 23. To permit the necessary reciprocation of bolt 20 in the upward movement of locking block 13, recess 25 in bolt 20 should be sufficiently wide to permit a sufficient retractile movement of said bolt to ride over teeth 26—26 without abutting cam 24.

When it is desired to free the locking device from the members upon which it is mounted, the lock cylinder 23 may be operated to withdraw the locking bolt 20 from bushing 16. Bushing 16 may then be moved out of its recess 15 by relative movement between said bushing 16 and locking block 13. Swinging movement of the locking block relative to the shackle 12 is now permitted, whereby the locking device may be readily freed from the devices upon which it is mounted.

The shackle 12, locking block 13 and collar 29 may be cheaply constructed out of tool resistance material whereby to baffle thieves. By reason of the free turning of collar 29 relative to the remainder of the mechanism, any attempt by a thief to move the head portions by applying tortional stresses thereto is effectually met, as above described.

The modification illustrated in Figures 3 and 4 is similar in many respects to the embodiment illustrated in Figures 1 and 2. According to Figures 3 and 4, however, no teeth are illustrated upon the leg of the shackle which carries the bushing 16. Teeth 34—34 are shown on the opposite leg, however, said teeth being adapted to be engaged by the detent 35, which may be readily operated exclusively of the lock cylinder 23. According to the construction illustrated in Figures 3 and 4, limited movement of the locking block 13 is permitted along the legs of the shackle, said movement being limited on the one hand by the members upon which the shackle is mounted and on the other hand by the head portions 14—14. The detent 35, however, will hold the locking block 13 in the uppermost position to which it is moved until said detent is released from the teeth 34—34 to permit the reverse movement of said locking block 13.

The locking bolt 20 is shown without the beveled end portion 27, any necessary operation of said locking bolt being accomplished by reason of the beveled edge 36 on the lower side of bushing 16.

Figure 5 and 6 illustrate a slightly modified embodiment of the present invention. According to the structure shown in Figures 5 and 6, a bushing 37 is provided in the recess 15, which member 37 is adapted to have a movement of rotation relative to locking block 13 but is held against longitudinal movement relative to locking block 13 along its own axis. Said bushing 37 is provided with an operating member 38 projecting through a slot 39 in the end of the locking block 13. Said bushing 37 is provided with a longitudinal slot 39 adapted to be moved in and out of coincidence with slot 18. The bushing 37 is provided with a recess 40 adapted to receive the end of locking bolt 20. When the locking bolt 20 lies within the recess 40, the slot 39 is out of coincidence with the slot 18 and swinging movement of locking block 13 relative to the shackle 12 is prevented. In order to operate the locking means, the lock cylinder 23 is operated to withdraw the locking bolt 20 from engagement with bushing 37, after which the bushing 37 may be given a movement of rotation to bring slot 39 into coincidence with slot 18. The locking block 13 may then be swung relative to the shackle, whereby said shackle may be applied to the members upon which it is to be mounted or removed from said members.

The form of detent for holding the locking block 13 in a predetermined position on the shackle 12 is slightly different in Figures 5 and 6 from the constructions of Figures 1 to 4. According to Figures 5 and 6, the left-hand leg of the shackle is provided with a plurality of annular recesses 41—41 adapted to receive a spring-pressed pin 42. Said pin is biased in a direction toward the corresponding leg of shackle 12 whereby to snap into one of the recesses 41—41. Said pin 42 will hold the locking block 13 in place, but said locking block may readily be given a limited sliding movement along the shackle 12 by withdrawing pin 42 from engaging position.

According to the construction illustrated in Figures 7 and 8, a locking block 43 of reduced length is used. A member 44 is mounted upon the right-hand leg of shackle 12 in a manner to have sliding relation therewith longitudinally of said leg. Said member 44 has a portion 45 adapted to seat within the recess 46 and the locking block 43. Swinging movement of the locking block relative to the shackle will be prevented when the member 44 is so positioned that the portion 45 lies within the recess 46. The locking bolt 20 will prevent relative movement of member 44 and locking block 43 until the lock cylinder 23 is operated to withdraw the locking bolt 20 from engagement with the portion 45 of member 44. When the locking bolt 20 is thus disengaged the member 44 may be moved along its corresponding leg of shackle 12 and swinging movement of locking block 43 may be readily accomplished.

The chosen embodiments of the present invention, though preferred, are not to be considered in a limiting sense. Many modifications will occur to those skilled in the art. It is intended in this patent to cover all such modifications that fall within the scope of the invention as defined by the appended claims.

I claim:

1. Locking means comprising a shackle having two parallel legs, closure means having swinging engagement with one of said legs, said closure means being provided with a bushing mounted in said closure means for controlling swinging movement of said closure means relative to said shackle, said legs being slidable through said closure means.

2. Locking means comprising a shackle having two parallel legs, a closure means having one end thereof mounted upon one leg of said shackle to have a swinging movement relative thereto, means for locking the other end of said closure means to the other leg of said shackle, said shackle having freely rotatable head portions against which said closure means is adapted to abut.

3. Locking means comprising a shackle having two parallel legs, elongated closure means mounted upon one of said legs to have a swinging movement relative thereto, and means for locking said closure means to the other of said legs, said means including a reciprocable bolt mounted to move longitudinally of said closure means.

4. Locking means comprising a shackle having two parallel legs, closure means mounted upon one of said legs to have a swinging movement relative thereto, and means for locking said closure means to the other of said legs, said means including a bushing having movable engagement with said other leg and a reciprocable bolt adapted to control said bushing.

5. Locking means, including a shackle having a pair of parallel legs, closure means adapted to have sliding movement along said legs, said closure means being mounted upon one of said legs to have a swinging movement relative thereto, and means for locking said closure means to the other of said legs, said legs being slidable through said closure means.

6. Locking means, including a shackle having a pair of parallel legs, closure means adapted to have sliding engagement with

said legs, said closure means being mounted upon one of said legs to have a swinging movement relative thereto, and means for locking said closure means to the other of said legs, said means including a bushing adapted to occupy a position within a recess in said closure means, said bushing being of a contour to prevent swinging movement of said closure means when said bushing is in a certain position in said recess, and means for locking said bushing, said legs being slidable through said closure means.

7. In a locking device, a shackle having a pair of parallel legs, said shackle having a pair of head portions, each of which includes freely rotatable members incapable of transmitting tortional stresses to said shackle.

8. Locking means, including a shackle having a pair of parallel legs, closure means capable of sliding movement along said legs, the ends of said legs being provided with head portions including freely rotatable members incapable of transmitting tortional stresses to said shackle.

9. Locking means comprising a shackle having a pair of parallel legs, closure means having sliding and swinging movement relative to said legs, one of said legs being provided with stepped members for permitting sliding movement of said closure means in one direction and stopping sliding movement in the reverse direction, the ends of said legs being provided with head portions including freely rotatable members incapable of transmitting tortional stresses to said shackle.

10. Locking means comprising a shackle having a pair of parallel legs, closure means mounted upon said shackle and having a sliding and swinging movement relative thereto, one of said legs being provided with stepped portions, and a detent adapted to cooperate with said stepped portions to permit sliding movement of said closure means in one direction but stopping sliding movement in the reverse direction, the ends of said legs being provided with head portions including freely rotatable members incapable of transmitting tortional stresses to said shackle.

11. Locking means comprising a shackle having a pair of parallel legs, closure means mounted upon said legs and capable of sliding and swinging movement relative thereto, a bushing mounted upon one of said legs adapted to occupy a position within a recess in said closure means, said bushing being of a contour to prevent swinging movement of said closure means when said bushing is in a certain position within said recess, and a lock controlled bolt for controlling said bushing, said legs being slidable through said closure means.

12. Locking means comprising a shackle having a pair of parallel legs, closure means mounted upon said legs and capable of sliding and swinging movement relative thereto, a bushing mounted upon one of said legs adapted to occupy a position within a recess in said locking block, said bushing being of a contour to prevent swinging movement of said closure means when said bushing is in a certain position within said recess, one of said legs being provided with stepped portions, and a lock controlled bolt adapted to project into said bushing, said legs being slidable through said closure means.

13. Locking means comprising a shackle having a pair of parallel legs, closure means for said hasp, said legs being adapted to project through said closure means, said closure means having sliding movement relative to said legs, said legs having head portions for limiting sliding movement of said closure means, said head portions presenting exteriorly only freely rotatable portions and conical portions whereby to render it impossible to effectively apply tortional stresses to said head portions.

Signed at Chicago, Illinois, this 22nd day of May, 1922.

HARRY F. GEORGE.