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PADLOCK FOR TIRE CARRIERS AND THE LIKE

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Fig. 1.

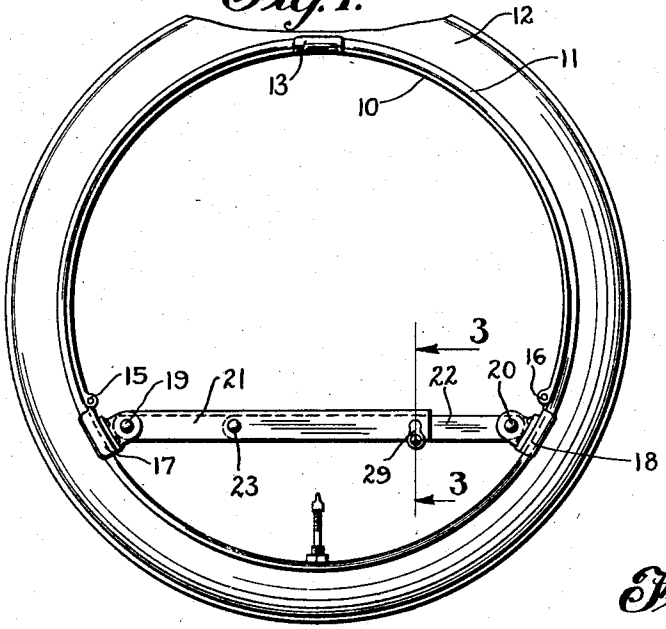


Fig. 2.

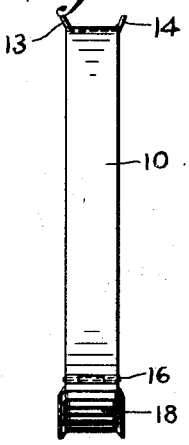


Fig. 3.

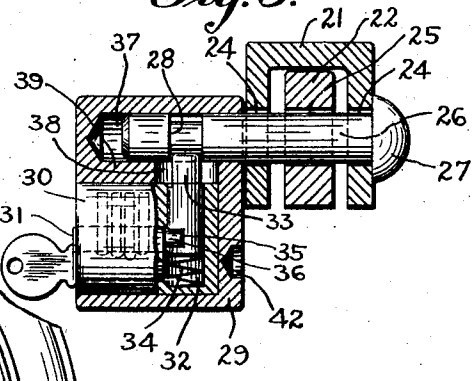
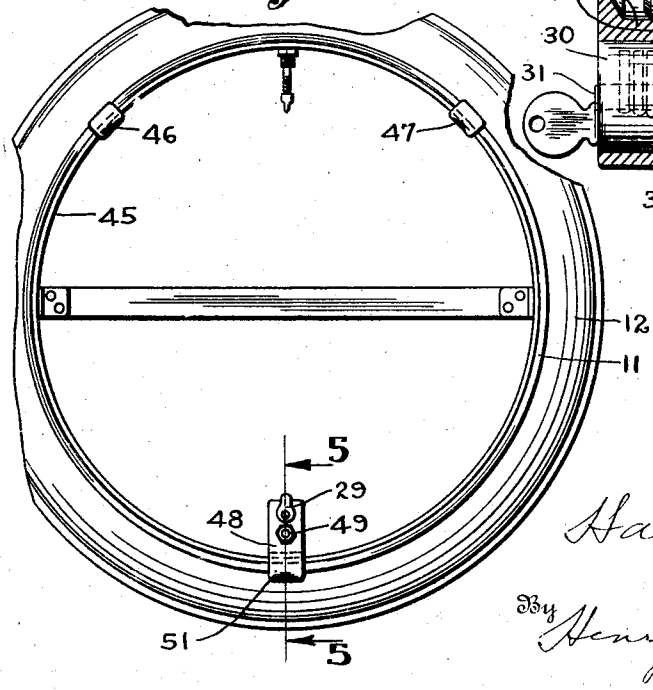


Fig. 4.



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Fig. 5.

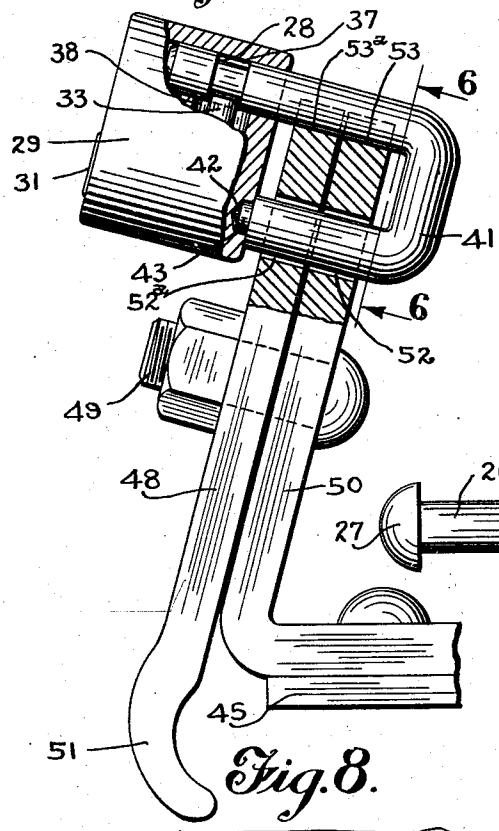


Fig. 6.

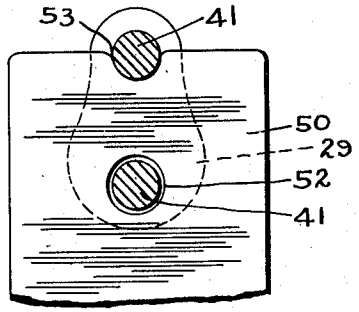


Fig. 7.

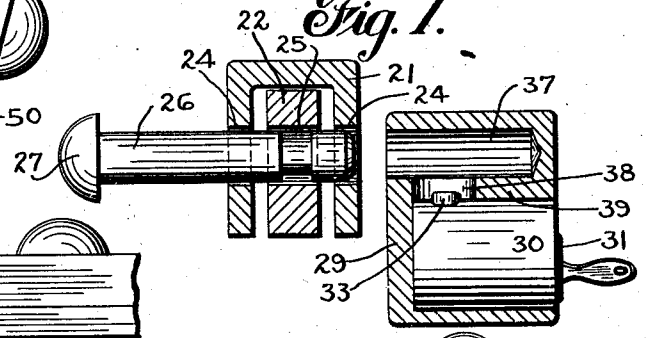


Fig. 8.

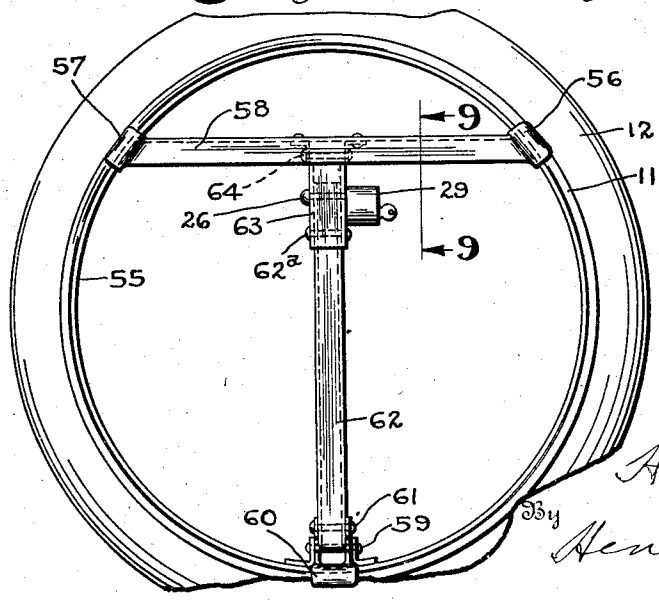
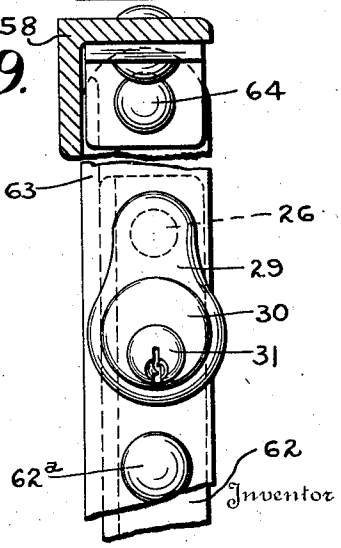


Fig. 9.



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UNITED STATES PATENT OFFICE

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PADLOCK FOR TIRE CARRIERS AND THE LIKE

Application filed January 11, 1923. Serial No. 612,150.

My invention relates to padlocks, and more particularly to a padlock provided with an improved form of shackle and locking mechanism cooperating therewith.

In some situations, it is difficult to secure a padlock provided with the ordinary shackle, which is permanently secured to the case of the lock, to the parts which are adapted to be locked together, and in some cases, when the shackle is made sufficiently large so that it may be secured in position with ease, it will be quite loose when it is locked and an objectionable noise or rattle will result. This has been found to be true especially in the use of padlocks in connection with tire carriers upon the rear of automobiles, and while the form of my invention shown in the drawings is particularly adapted to such use, it will be understood that the invention is capable of broader application, and that the principles thereof may be used in other relations.

Further, in many of the padlocks now in use, it is only necessary to apply a moderately strong wrench to the case of the lock, and by a twisting operation, the lock may be broken and released. By the present invention, the shackle is rotatably secured or locked to the case so that even if the case is turned relatively to the shackle by means of a wrench, the locking mechanism will not be disturbed and the lock cannot be broken and released.

One object of my invention is the provision of a padlock having a detachable shackle so that the latter may be inserted through the members to be locked together from the side thereof opposite that upon which the lock case lies.

Another object of my invention is to provide a padlock adapted to be detachably associated with and locked to a shackle so that a number of shackles of different form may be used with the same lock case.

A still further object of my invention is the provision of a shackle which may be rotatably locked to the case so that the shackle and case may be turned relatively to each other without disturbing the lock mechanism in any way.

Further objects of my invention are to provide a padlock which consists of a simple and economical structure which will be efficient in operation, which may be made cheaply and of such material that it cannot be easily broken or released, by means of a saw or the like.

To these and other ends, the invention consists in the novel features and combinations of parts to be hereinafter described and claimed.

In the accompanying drawings:

Fig. 1 is a rear elevational view of a tire carrier provided with a lock embodying my improvements;

Fig. 2 is a side view of the structure shown in Fig. 1;

Fig. 3 is a sectional view through the lock mechanism on line 3—3 of Fig. 1;

Fig. 4 is a view similar to Fig. 1 showing a modified form of tire carrier with which a different type of shackle is used in my improved lock;

Fig. 5 is a sectional view through the lock mechanism on line 5—5 of Fig. 4;

Fig. 6 is a sectional view on line 6—6 of Fig. 5;

Fig. 7 is a view showing how the lock mechanism may be applied to the members to be locked together;

Fig. 8 shows still another form of tire carrier with which my improved lock may be used;

Fig. 9 is a sectional view on line 9—9 of Fig. 8.

It will be understood that the manufacturers of automobiles use many different types of mechanisms to carry the spare tires upon the rear of their automobiles. It will also be understood that my improved padlock may be used upon practically all of such tire carriers now in use, and that the particular forms shown are merely illustrative of the various uses to which the lock may be put and are not to be considered as showing all of the forms contemplated.

In Fig. 1 of the drawings, I have shown a tire carrier 10 upon which is mounted a rim 11 carrying the usual inflated tire 12. The carrier 10 is provided, near its upper portion, with the lugs 13 and 14 between

which the rim 11 may be placed. The tire carrier in this instance consists of a metallic rim or band of circular form which comprises somewhat more than half of a complete circle. To the lower ends of the carrier are pivoted, at 15 and 16, the swinging lugs 17 and 18 which are adapted to be swung upwardly to permit the positioning of the rim upon the carrier.

To the lugs 17 and 18 are pivoted respectively at 19 and 20 the links 21 and 22 which are in turn pivoted together at 23. The link 21, as clearly shown in Figure 3, is of channelled form in cross section and is adapted to receive the link 22 between the walls of the channel. These links are provided with registering openings 24 and 25 through which the shackle of the lock may be inserted to lock the parts together. It will be apparent, that when this shackle is withdrawn and the free end of the link 21 drawn upwardly, the pivot point 23 will also be carried upwardly acting as a toggle point which will draw inwardly and upwardly the lugs 17 and 18 until these lugs no longer engage the tire rim. The tire may then be freely removed from the carrier. It will also be obvious that when the shackle of the padlock is secured in the openings 24 and 25 and the two links locked together at this point, the structure will be rigid and the lugs 17 and 18 will be locked in position to engage the tire rim and prevent its removal from the carrier.

My improved lock is provided, in this instant, with a bolt-like shackle 26, clearly shown in full lines in Figure 3. The shackle is provided with an enlarged head 27 which is of such a size that it will not pass through openings 24. Adjacent the end of the shackle, opposite this head, is provided an annular recess 28, the purpose of which will be described hereinafter.

The lock mechanism consists of a case 29 recessed or bored at 29^a to provide a seat to receive a cylindrical lock casing 30 containing locking mechanism of the pin tumbler or any approved type, and in which casing is rotatably mounted the usual key plug 31. At its inner end the cylindrical casing is provided with a transverse bore 32, in which is mounted the sliding bolt 33, urged to its outward or locking position by the spiral spring 34 mounted in the bore or recess 32 behind the bolt.

This bolt is notched at 35 and a projecting pin 36 upon the end of the key plug is adapted to be received within this notch to operate the bolt.

The padlock case is also provided with an opening or bore 37 which extends substantially parallel to the axis of the lock cylinder and which is adapted to receive the end of the shackle 26, the locking bolt 33 being of such a length as to project into the bore 37 through an opening 38 in the partition 39 in the casing, and engage within the annular channel 28 to lock the shackle to the case.

The lock mechanism which secures the shackle 26 within the padlock case is all housed within the lock casing 30 so as to provide a unitary lock mechanism which may be assembled within the casing 30 before the latter is placed in the seat 29^a in the case 29, and is thereafter inserted into this seat as a unit. In this way the structure of the padlock casing 29 is greatly simplified, and at the same time a secure structure is provided. In the lock shown, the pin tumbler mechanism 31^a is of course mounted within the case 30 prior to the insertion of the latter within the bore 29^a.

It will be apparent that when it is desired to apply the padlock so as to secure the tire rim upon the carrier, the shackle may be inserted through the openings of the links 21 and 22 from one side thereof and the lock case applied at the other side of these links, as shown in Figure 7, as when the bolt 33 is withdrawn from the channel 28, the shackle 26 may be completely detached from the lock case. It is not necessary therefore to provide a shackle of sufficient size to embrace the two links or one which shall have a sufficient opening between the end of the shackle and lock case when the shackle is in open position so that it may be slipped over the links. The shackle 26 may be made of such a length that the head 27 upon one side and lock case 29 upon the other will lie in close juxtaposition to the sides of the link 21, so that there will be very little likelihood of the parts to rattle. Moreover it will be apparent that lock case 29 may be freely rotated relatively to the shackle 26, the end of the bolt 33 turning freely in the channel 28. It will, therefore, be impossible to break the lock by a relative twisting movement of the lock and shackle with a wrench, as is often done. It would also, of course, be very difficult for such a twisting motion to be applied to the lock embodying the present invention as the shackle 26 turns freely in the openings 24 and 25 and as it would be difficult to grip the head 27 in a wrench or light tool, to hold it against rotation.

I have shown in full lines in Figure 5 another form of shackle which may be used with my improved lock. This shackle consists of a U shaped member 41, one leg of which is considerably longer than the other and is provided with the annular recess 28 to cooperate with the lock bolt 33 as has already been described. The shorter leg of this shackle 41 may be adapted to be received in the recess 42 formed in the upper side of the lock case. For this purpose, and as shown, this leg of the shackle is provided with a reduced end 43 which is received in the recess 42. It will be understood that this leg of the shackle is not secured in the recess 42 in any manner and

the engaging of the reduced end 43 in the recess 42, is not really a part of the locking mechanism of the padlock. Its function chiefly is to prevent play or rattling of the parts and it will be apparent that when the bolt 33 is withdrawn from the recess 28, the shackle 41 may be completely detached from the lock case just as in the case of shackle 26. If desired, the shackle 41 may be used with the tire carrier mechanism shown in Figures 1–3, the shackle and lock case being applied at opposite sides of the link 21, as has already been described.

The shackle 41 is particularly adapted to be used with my improved lock, however, in connection with the form of tire carrier shown in Figures 4 and 5 wherein the carrier is in the form of a circular rim or band 45 having the fixed lugs 46 and 47 thereon. At the lower portion of the carrier 45 which is secured to the rear end of the car by any approved means, the link 48 is pivotally mounted upon the bolt 49 in the plate 50 which is also secured rigidly to the rear of the car. The link 48 is provided at its lower end with the projecting lug 51 adapted to engage the tire rim when in the position shown in Figure 5 and in this position, it will cooperate with the lugs 46 and 47 to secure the rim in position. The link 48 and the plate 50 are provided with registering openings 52 and 52[a] and at their upper ends with registering notches 53 and 53[a]. It will be apparent that with the usual form of padlock shackle, it would be quite difficult to insert the end of the shackle through the openings 52 and 52[a], and notches 53 and 53[a], to secure the link 48 to the plate 50. With my improved form of shackle, however, it may be completely detached from the lock case and the shackle 41 may be placed in position to hold the link 48 and plate 50 together and the case 29 thereafter applied to the shackle.

It will be understood that when the lock is removed, the link 48 may be rotated about the bolt 49 so as to move the lug 51 to the position in which it will not engage the tire rim, and the rim and tire may at that time be freely lifted from the carrier. If, however, the link 48 is secured to the plate 50 at another point as in the case when they are locked together as shown in Figure 5, such rotation cannot occur. Moreover, it is desirable to have the shackle of the padlock secure the members 48 and 50 at more than one point or else the bolt 49 might be removed and the link 48 rotated about the padlock shackle; for example, if the notches 53 and 53[a] were not provided to receive one of the legs of the shackle, or if the shackle used was in the form of the shackle 26, the bolt 49 could be removed and the link 48 rotated about the padlock shackle and the tire removed from the carrier. When the parts are, however, secured as shown in Figure 5, such manipulation will be impossible.

In Figures 8 and 9, I have shown a still further form of tire carrying mechanism with which my improved lock may be advantageously used. In this case the circular tire carrier 55 is provided with the fixed lugs 56 and 57 and with a rigid cross bar 58. At the lower part of the carrier 55 is pivoted, at 59, the lug 60. This lug is in the form of a bell-crank and to the free end thereof, is pivoted at 61, the link 62 which is in turn pivoted at 62[a] to a second link 63, pivotally connected at 64 to the cross bar 58. The links 62 and 63 are provided with registering openings through which may be inserted the shackle of the padlock. In the form shown, I have preferred to use in this instance the bolt shackle 26 which is shown in Figures 8 and 9 passing through registering openings in the links, securing them together in much the same manner as has already been described in connection with the form shown in Figures 1, 2, 3 of the drawings.

While I have shown and described some preferred embodiments of my invention, it will be understood that it is not to be limited in all the details shown, but is capable of modification and variation within the spirit of the invention and within the scope of the appended claims.

What I claim is:

1. A padlock comprising a casing provided with a bore extending through one face thereof, a second bore extending through the opposite face thereof, and a third bore providing communication between said first two bores, one of said first named bores being adapted to receive the padlock shackle, a cylinder lock mounted in the other bore, said lock being provided with locking mechanism comprising key operated tumblers, a locking bolt, and means engaged by a key and actuated thereby to operate said bolt, said bolt projecting from the cylinder lock and extending through said communicating bore into the shackle bore and engaging said shackle, and said bolt engaging a part of the casing when in projecting position to prevent the removal of the cylinder lock from the casing.

2. In a padlock, a casing provided with a bore extending through one face thereof, a second bore extending through the opposite face thereof, one of said bores being adapted to receive a shackle, a unitary locking mechanism mounted in the other of said bores, said mechanism comprising a reciprocable locking bolt and key operated means to reciprocate said bolt, said bolt, when in projected position, engaging said shackle and also engaging a part of the casing of the padlock to prevent removal of the lock mechanism.

In witness whereof, I have hereunto set my hand this 5 day of January, 1923.

HARRY B. PAGE.