

(No Model.)

3 Sheets—Sheet 1.

W. H. WALLINGFORD.

SUPPORTING STAND OR RACK FOR BICYCLES.

No. 581,499.

Patented Apr. 27, 1897.

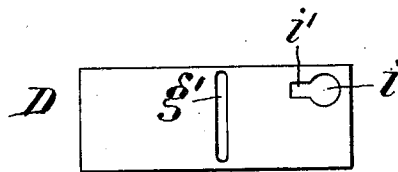
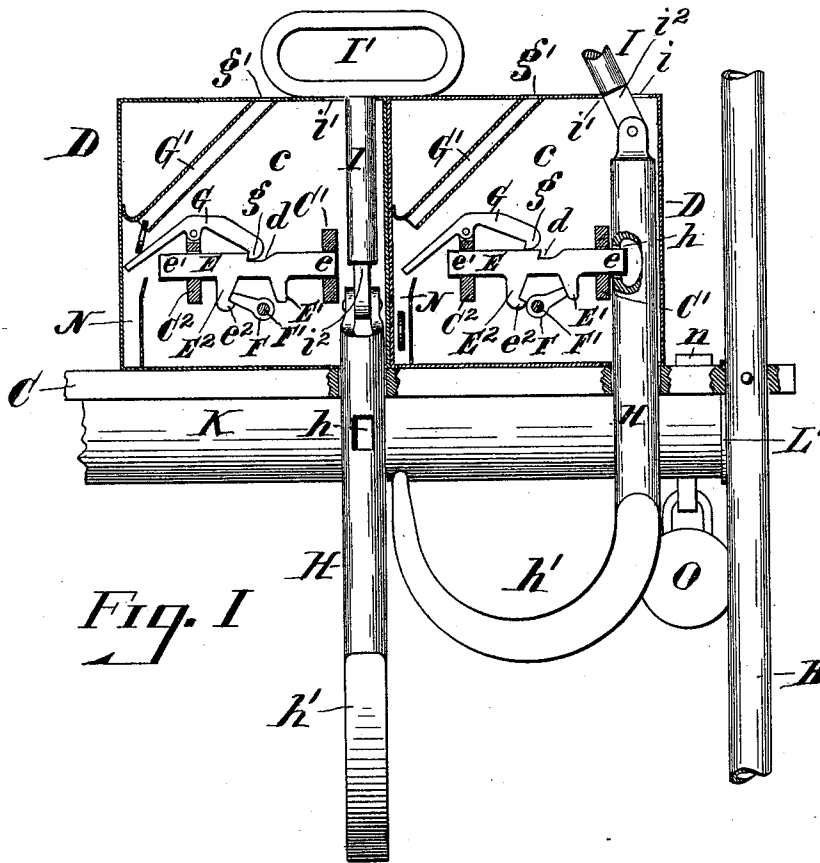


Fig. 2

WITNESSES

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W. P. Riddle

INVENTOR

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his attorney.

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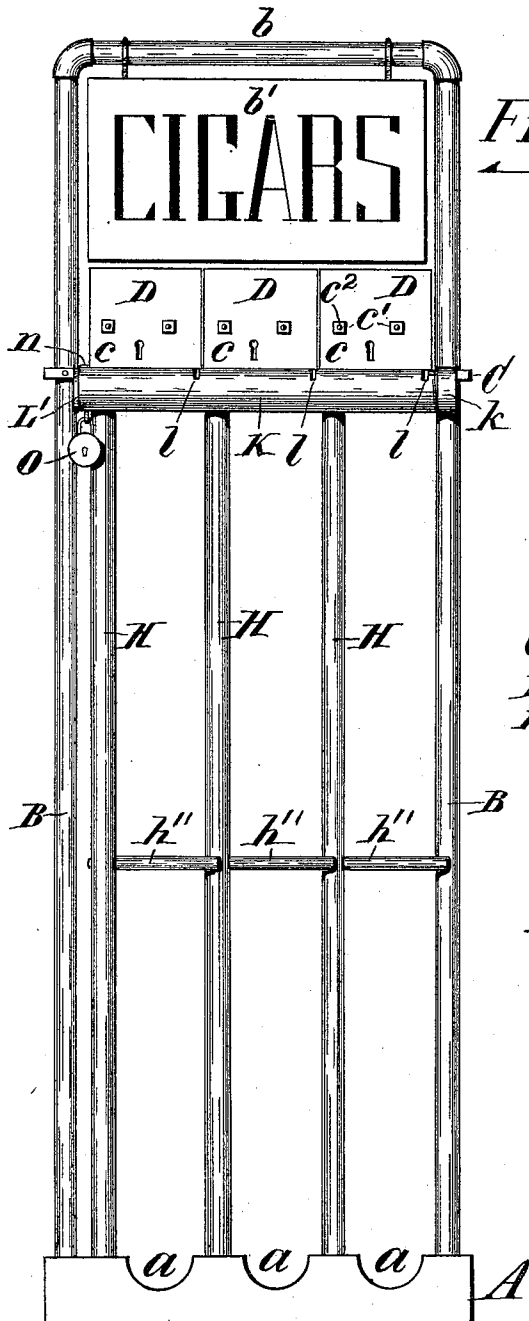


Fig. 3

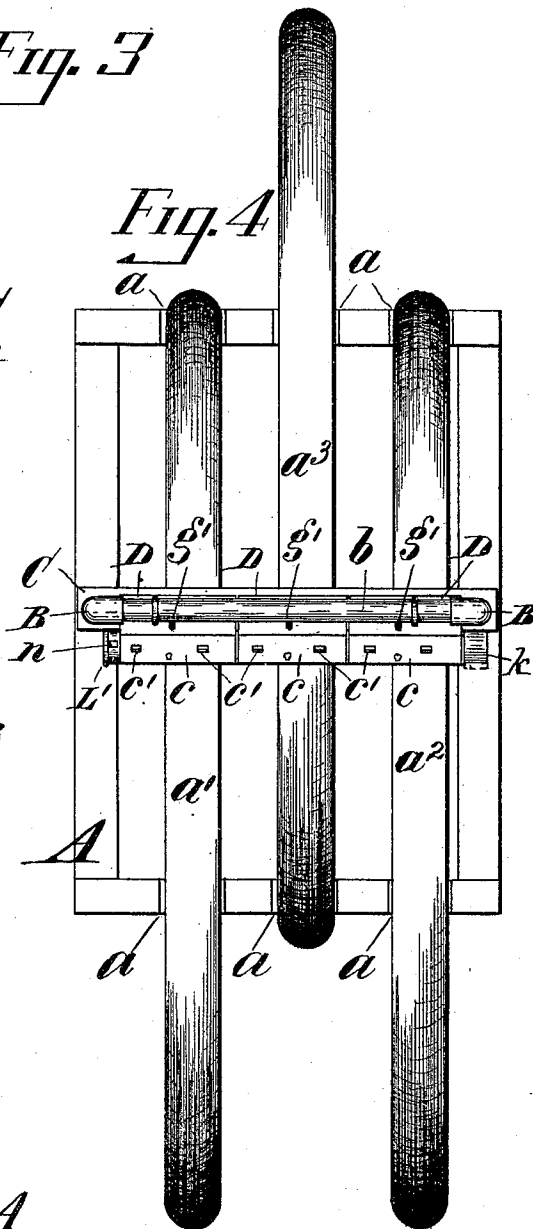


Fig. 4

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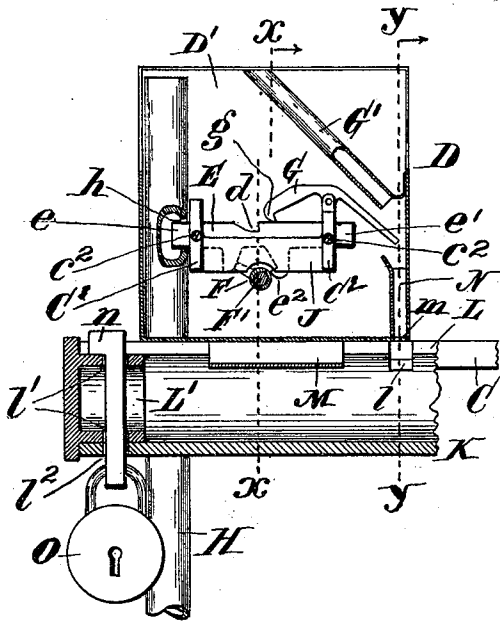


Fig. 5

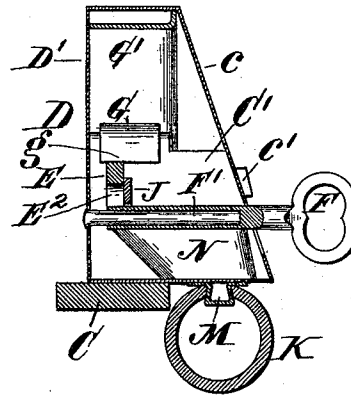


Fig. 6

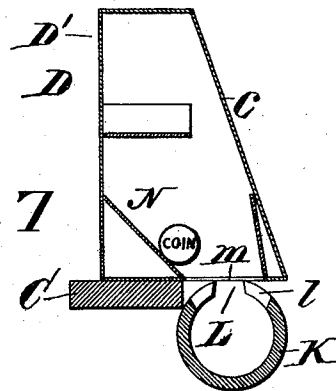


Fig. 7

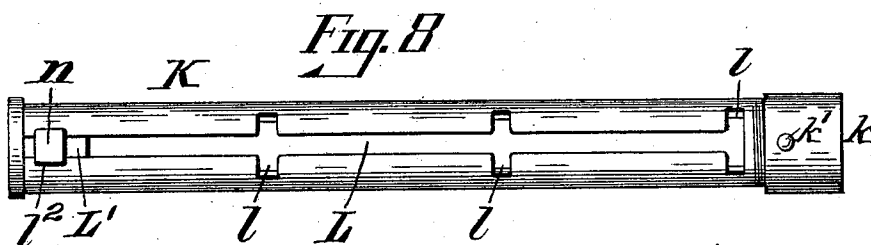


Fig. 8

WITNESSES

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UNITED STATES PATENT OFFICE.

WILLIAM H. WALLINGFORD, OF NEWPORT, KENTUCKY.

SUPPORTING STAND OR RACK FOR BICYCLES.

SPECIFICATION forming part of Letters Patent No. 581,499, dated April 27, 1897.

Application filed September 19, 1896. Serial No. 606,449. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. WALLINGFORD, a citizen of the United States, residing at Newport, in the county of Campbell and State of Kentucky, have invented certain new and useful Improvements in Supporting Stands or Racks for Bicycles, of which the following is a specification.

My invention relates to stands or racks for supporting one or more bicycles; and it consists in the novel features of construction, comprising locking and supporting devices, which are hereinafter fully described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a broken sectional elevation showing my improvement in its preferred form, interior views of a pair of locking devices being illustrated with their backs or rear plates removed in order to present their coin-freed apparatus and bolt mechanism to view, one bolt mechanism being at rest or free from locking engagement with a wheel catch-arm and the other in action or locking engagement with another wheel-catch arm; Fig. 2, a plan view (of the top only) of one of the lock-casings to show the coin-slot and the peculiarly-formed opening or slot for the operating-handle of the wheel-catch arm; Fig. 3, a front elevation of a complete supporting-stand having three locking-stalls and embodying my invention in a modified form; Fig. 4, a plan view of my stand, showing the manner in which the bicycles are preferably placed in the stalls, the wheels shown being simply the fore ones of three bicycles, one entering from one side and the other two from the opposite side; Fig. 5, a broken sectional elevation showing an interior view of a lock device covering said modified form and looking from the front, the lock mechanism being shown in engagement and as it appears when a wheel or bicycle is secured in the stand; Fig. 6, a transverse section of Fig. 5, looking to the right, on a vertical line $x x$ with the key; Fig. 7, another transverse section of Fig. 5 on a vertical line $y y$; and Fig. 8, a plan view of the coin-collecting receptacle or trough, which is placed beneath said lock devices.

A represents the base or bottom of the stand, having concavities or guideways a for the wheels $a^1 a^2 a^3$ to rest in. Each of said wheels

(shown in Fig. 4) represents the fore wheel of a bicycle, those a^1 and a^3 being introduced from one side, which, for convenience, may be termed the "front," and the other, a^2 , being introduced or placed in the stand from the other side, which, for convenience, may be termed the "rear," so that the stand may be compactly built and the handle-bars, pedals, and other laterally-projecting parts of the bicycle may clear each other and have ample room to conveniently enter and depart from the stand.

B B represent a pair of uprights, one at either side the base A, supported thereby midway between its ends and having an upper connecting-bar b , from which latter conveniently hangs a sign-board b' , containing advertising matter or directions of any kind.

C represents a flat cross-bar which binds or strengthens the two uprights B B near their upper ends and supports one or more lock devices D, the number corresponding to the number of bicycles to be accommodated by the stand. In the drawings I show two lock-stalls in Fig. 1 and three lock-stalls in Figs. 3 and 4, but the number most popular for ordinary use is six, as that provides a stand which is sufficiently large to come within the usual space available where the stands are to be used and to suit the average patronage of such fixtures.

c represents the lid or front plate of the lock, which is secured in place by means of nuts c' , engaging the threaded studs or contracted ends c^2 of the horizontal posts $C' C^2$, and which latter project a suitable distance apart from the back plate D' within the casing. The outer ends of the studs c^2 are riveted or flattened down when the nuts are in place to prevent surreptitious removal of the front plate and tampering with the lock mechanism within. An ordinary keyhole-slot is provided in each front plate c for the entrance and withdrawal of the keys.

E represents a sliding bolt or lock-bar comprising the usual bolt-plate having a bolt-head e and bolt-tail e' , the said head and tail engaging in slots pierced in the rear ends of the posts $C' C^2$ and sliding back and forth therein for operation for either locking or unlocking purposes.

$E' E^2$ represent a pair of pendent lugs on

the lower edge of the lock-bar, against and between which the bit of the key F operates to either throw or retract said bolt.

G represents a pivoted tumbler or gravitating lever mounted on the post C' and having a dog or lug *g* at one end fitting a notch *d* in the upper edge of the lock-bar or bolt-plate, from which notch the dog must be released before the bolt can be thrown. The other end of the lever G lies under a chute or raceway G', which is mounted or set at an inclination from the top of the casing, said top being provided with a transverse slot *g'*, leading to the upper end of said raceway and in which a coin is inserted, which coin passes down said raceway and falls on the tumbler, and as said coin overbalances the hook or dog end of the tumbler the said dog is released from the notch in the lock-bar, and then the latter may be shot forward by the action of the key for locking engagement with the slot *h* of a vertical bar H. The preferred form of bar H is shown in Fig. 1, in which a hook or curved arm *h'* is constructed at its lower end, and a manipulating or pull bar I is pivotally connected or hinged to its upper end. The straight portion or body of vertical bar H passes upward through a hole in the flat cross-bar C, and thence through a hole in the bottom of the casing well back in the corner of said casing, and the inner end of the pull-bar I is made flat or contracted, while the body thereof is round in cross-section, so that said round body shall engage the enlarged eye portion *i* and the said flat end shall engage the slot or contracted portion *i'* of the keyhole-shaped opening in the back corner of the top plate of the casing.

I' is a transverse grip-loop or handle at the upper or outer end of the pull-bar I, which enables the operator to conveniently draw the bar H upward for bringing its hook end *h'* into locking engagement with the fore wheel of a bicycle placed in the stand. Said handle also prevents the hook-bar H dropping down from the casing when the bolt is disengaged therefrom and the bicycle is released. When the hook-bar is in locked position, the pull-bar I is set at an inclination, as shown in the right-hand lock in Fig. 1, the lower flattened portion and its shoulder *i*² engaging the contracted or narrow slot portion *i'* of said keyhole-shaped opening, the latter being best shown in Fig. 2.

It will be seen that in Fig. 1 I show two locking devices side by side, one being locked and the other unlocked, which fully illustrates the operation of my invention. It will also be seen in the locked device (to the left hand) that the tail end of the lock bar or bolt lies close to the under side of the free end of the tumbler, which relation is intended and provided so that the coin when it initially lodges on the said end of the tumbler will not at once slide off of same before the key can be turned for projecting or advancing the bolt forward into locking engagement with

the bar H. In fact, the dog end of the tumbler is not rocked upward or raised to full stroke away from the upper edge of the lock-bar, although released from the notch therein, until the bolt-head enters fully into the socket or slot of the vertical bar H and the bolt thus shot entirely across for locking engagement with said bar. The rear end of the lock-bar thus prevents the tumbler descending too far until said locking engagement takes place, and the coin is not really released or does not fall into the straight down-chute and the receptacle below until said locking engagement is effected, and the coin thus performs its intended function of enabling the operator to lock the device and not be wasted or lost to his use before he can effect his said purpose. In Fig. 1 I show a coin in the several lock devices, so that the said operation thereof can be fully understood.

The slot is made in the bar H at right angles with the handle I', the latter being in line with the lower hook end *h'*, and thus the operator readily determines when he shall drop his coin in the slot *g'* above, the resting of the pull-bar in the contracted slot portion of the keyhole-opening, as aforesaid, also assuring him that the slot *h* in said vertical bar H is in line for the reception of the bolt-head. This construction makes a positive and easy action of the parts certain at all times. The key used in my lock device is an especially safe one, as it is made hollow practically throughout its barrel, which is unusual in keys of the kind, and a very long pin F' is provided, on which the key turns, as best seen in Fig. 6. The casing is made deep at its lower portion to contain the necessary coin-freeing devices, which are extremely simple and their number of elements reduced to a minimum, which enables them to operate readily and to be produced quickly and at the lowest possible expense, all of which is most important in the carrying out of an invention of this character.

In order to prevent the improper withdrawal of the key when the lock is unlocked, I secure a stationary guard-plate J in front of the lower lug portion of the lock-bar, as best seen in Fig. 5, which plate is stretched between the two posts C' C² and suitably attached thereto at its opposite ends. The bit of the key lies between said guard-plate and the back plate of the casing, and the key is still further protected from improper withdrawal (when the lock is unlocked) by means of a shoulder or projection *e*², constructed at the lower end of lug E², which projection is disposed forwardly in the path of the key-bit and forms an obstruction against further revolution thereof in that direction, as best seen in the left-hand lock in Fig. 1.

K represents a longitudinal tube mounted directly beneath the bottom of the lock-casing and just forward of the flat cross-bar C, as best seen in Figs. 6 and 7. This tube has a longitudinal slot L cut along its upper side,

(see Fig. 8,) which engages over a dovetail rib or formation M, constructed along the bottom of the several lock-casings, (see Fig. 6,) and is thereby detachably slid and held in position.

5 l represents each one of a number of transverse slots made in said tube, which cross said longitudinal slot L, and each registers with a transverse opening or slot m , made in the bottom of each of the lock-casings in line
10 with and under the discharge end of the raceway or chute G' to receive the dropping coin, said tube K forming a trough or receptacle for the coins which are dropped into the stand or rack in order to effect the locking
15 operation.

A vertical guideway or open box N is provided within the casing to properly receive the coin from the tray end of the dog tumbler or lever G and direct it to the opening m and
20 thence into the receptacle K below. One end of receptacle or tube K is provided with a cap k , which is screwed thereto and then permanently riveted in place, as best shown at k' in Fig. 8, and a short shouldered plug L' is detachably fitted into the other end. Plug
25 L' is provided with a pair of holes l' , which register vertically with a pair of holes l^2 , made in the tube K, and a staple or headed bar n is passed through said holes l' and l^2 to receive a padlock O at its lower end, (which has a hole therein to accommodate the bow of said padlock,) as best seen in Fig. 5. Access
30 to the coin-receptacle is readily gained by simply unlocking and removing the padlock O, then removing the staple or headed bar n , then removing the plug L' by taking convenient hold of its outer flanged end, and then slightly tilting the stand (which is not necessarily very heavy) or introducing a scraper
40 when it is desired to remove the coin from said receptacle.

In the modified form seen in Figs. 3 and 5 the vertical bars H are long ones and form upright rods or pickets whose upper ends do
45 not project through any top openings in the lock-casing, as they do in the preferred form, and neither have they any top handle-bars; but they have each a slot h near their upper ends for the reception of the bolt-head in the
50 locking engagement thereof, and a lateral bar or arm h' , which takes the place of the hook-arm of the preferred form, and engages the felly of the fore wheel about mid-height, all the arms on all the vertical bars H being
55 shown as they appear when in locking engagement (but with no wheels shown therein) in Fig. 3.

In the operation of my device the vertical bars of the preferred form (when unlocked)
60 are dropped or remain normally down into their lowermost positions and hang by the handles of their pull-bars I, and those of the modified form have their lower ends resting on the base A, free to turn a quarter of a revolution thereon; but when locked those of the preferred form are raised to their uppermost positions, as seen in Figs. 1 and 5.

To lock a bicycle in the stand or rack, it is placed with its fore wheel resting in one of the grooves a in base A, the preferred form
70 of lock device enabling the wheel to go clear across the base, as seen in Fig. 4. The vertical bar H is then turned or brought into locking engagement with the felly of the wheel. A coin (say one cent, for convenience)
75 is dropped into the proper upper slot g' and finds its way at once to the gravitating lever or tumbler G, which latter rocks on its bearings and releases its dog from engagement with the notch in the upper edge of the lock-
80 bar, at which time the key is turned to throw the said lock-bar, whose head shoots into the slot of the vertical bar H, and then the key is withdrawn. The engagement of the bolt-head with the slot of the vertical bar prevents
85 the turning of the latter in either direction or disengagement from the wheel, and thus retains the bicycle duly locked and supported in the stand, from which it can be readily released by simply introducing and operating
90 the key and thereby retracting the bolt, when the vertical bar can be turned and its lock-arm released from the wheel-felly. When the lock-bar has been retracted, the key cannot be withdrawn nor a wheel locked in the stand
95 without first dropping a bolt releasing or freeing coin in the slot.

It will be seen that the bolt cannot be fully shot or locked unless the vertical wheel-lock-bar slot is in line therewith for fastening the
100 wheel in place, nor can the key be removed unless a suitable coin is placed in the machine to free the dog or detent devices, nor can a wire or other pick be very easily introduced into the raceway to disengage the dog
105 or detent devices, as the arrangement of said raceway at the inclination shown serves to prevent any such act.

The detachability of the locks and coin-receptacle enables the ready repair or replacing
110 of parts of the device, and in the event any one should make a duplicate key for the purpose of taking a bicycle in future and which is not his own the locks of one rack or stand could be readily exchanged for those of another and placed elsewhere, so that he would
115 not know where to locate the lock of which he had a duplicate key, as all the locks are interchangeable, and he would thereby be successfully thwarted from his nefarious object of removing a machine not belonging to
120 him. The frame and vertical bars H are preferably made of hollow tubing or gas-pipe, which gives the stand both lightness and strength and also economy in manufacture.
125

I claim—

1. In a lock supporting-stand for bicycles, the combination of an upright open frame having a suitable base; a coin-freed lock mechanism supported by the vertical side
130 bars of said frame; a vertical rotatory bar having an outer arm which engages one of the wheels of the bicycle for retaining the latter in said frame, and also having a slot

near its upper end within the lock-casing for the fastening engagement of the key-operated lock-bolt; and a coin-receptacle beneath the lock devices; substantially as herein set forth.

2. In a lock supporting-stand for bicycles, the combination with a grooved base having a pair of upright side bars and a top cross-bar, which together constitute a suitable open frame; of an inner cross-bar supported by said side bars near their upper ends; one or more coin-freed lock devices inclosed in casings and supported by said inner cross-bar; a vertical, rotatory bar having an outer lateral arm which interlocks with the fore wheel of the bicycle, and also having a slot near its upper end which lies within the lock-casing, and said slot is engaged by the bolt-head of the key-operated lock-bar for securely fastening the rotatory bar against turning and consequent disengagement from the bicycle-wheel; a coin-receptacle having a longitudinal slot cut along its upper side and detachably supported beneath the bottom of the lock-casings by means of a dovetail rib or formation constructed on said bottom of the lock-casings and which engages the said longitudinal slot, and a suitable locking-head or lock-entrance to said coin-receptacle, substantially as herein set forth.

3. In a lock supporting stand or rack for bicycles and other purposes, a coin-freed lock device composed of an inclosing box or casing having a pair of internal horizontal posts; a bolt or lock-bar having head and tail ends which engage rear openings made in said posts for the reciprocating or sliding movement thereof, and also having a pair of pendent lugs, between and against which the bit of a suitable key operates for throwing and retracting it; a gravitating lever or tumbler pivotally mounted on one of said posts and having a dog or detent-lug at one end which normally engages a notch in the upper edge of the lock-bar when the lock is unlocked; an inclined raceway or chute leading from a coin-entrance slot in the top of the casing to the free end of the dog-tumbler, to guide the coin, for actuating it; a suitable coin-receptacle; and a slotted, upright bar whose upper end is passed upward through an opening in the lower corner of the casing, opposite to that of the coin down-chute, and is engaged by the head of said lock-bar, substantially in the manner and for the purpose herein set forth.

4. In a lock supporting stand or rack for bicycles, the combination of a suitable open frame; a vertical rotatory bar having a lateral

arm or hook at its lower end which has locking engagement with the fore wheel of the bicycle; a coin-freed locking device supported by said frame above the wheel, and having an opening in the bottom of its inclosing casing for the upward passage or accommodation of the upper end of said rotatory bar, which latter has a socket or slot therein for the reception of the lock-bolt head when thrown; a pull-bar hinged at one end to the upper end of said rotatory wheel lock-bar and having a manipulating bar-supporting handle at its outer end, the inner end of said pull-bar being shouldered and contracted for engagement with the narrow portion of a key-slot-shaped opening in the top of said casing, in a vertical line with said rotatory bar; and a suitable coin-receptacle, substantially as herein set forth.

5. In a lock supporting stand or rack for bicycles, the combination with a suitable frame and a coin-freed lock device supported thereby, of a longitudinally-slotted coin receptacle or trough detachably supported beneath the lock-device casing by means of a dovetail connection therewith, and having a cross-slot which registers with a transverse slot or opening in the bottom of the said casing for the downward passage and final lodging of the dog releasing or actuating coin; a cap rigidly secured at one end of said coin-receptacle; a detachable plug fitting the other end of said receptacle; and a suitable locking device for said plug, substantially as herein set forth.

6. In a lock supporting stand or rack for bicycles and other purposes, a coin-freed lock device comprising a lock-bar, which latter has a pair of pendent lugs constructed on its lower edge and one of said lugs has an extension hook or projection thereon; a guard-plate mounted on a pair of posts in the lock-casing and covering the face of the opening or space between said pendent lugs at all times, whereby a safety device is provided which prevents the surreptitious withdrawal of the lock-bar-actuating key; and suitable coin-freeing mechanism to permit the operation of said key for the locking movement, substantially as herein set forth.

In testimony of which I have hereunto set my hand in the presence of two subscribing witnesses.

W. H. WALLINGFORD.

Witnesses:

W. P. BIDDLE,
JOHN E. JONES.