Sept. 16, 1930. W. L. LATOU 1,775,727

HANDCUFF

Filed July 26, 1928

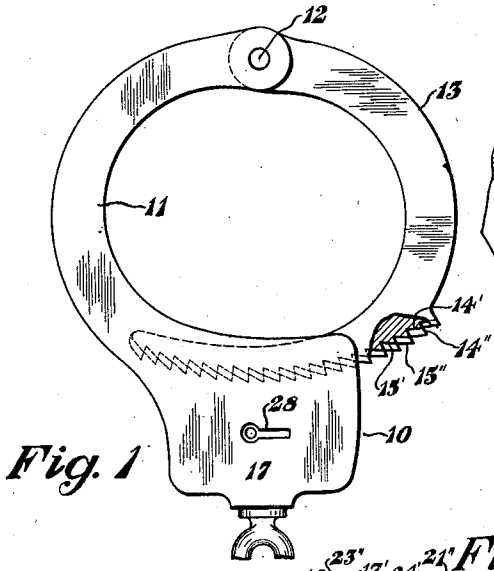


Fig. 1

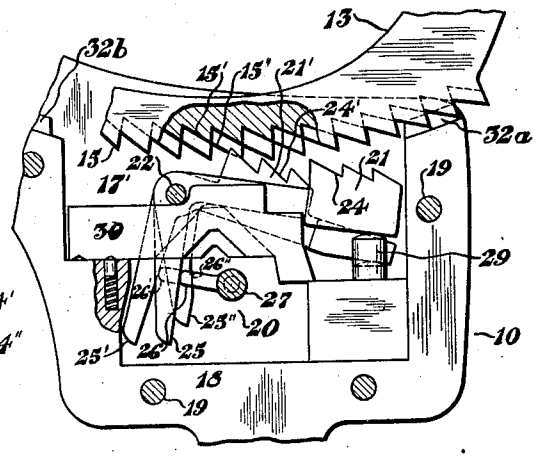


Fig. 6

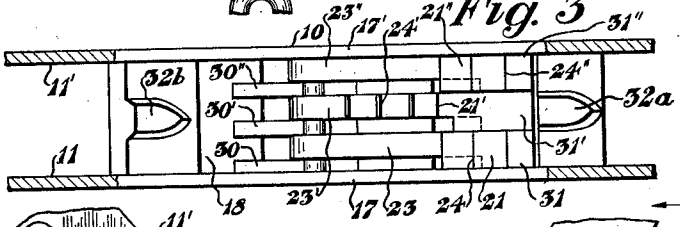


Fig. 3

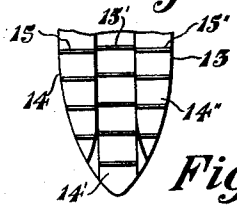


Fig. 5

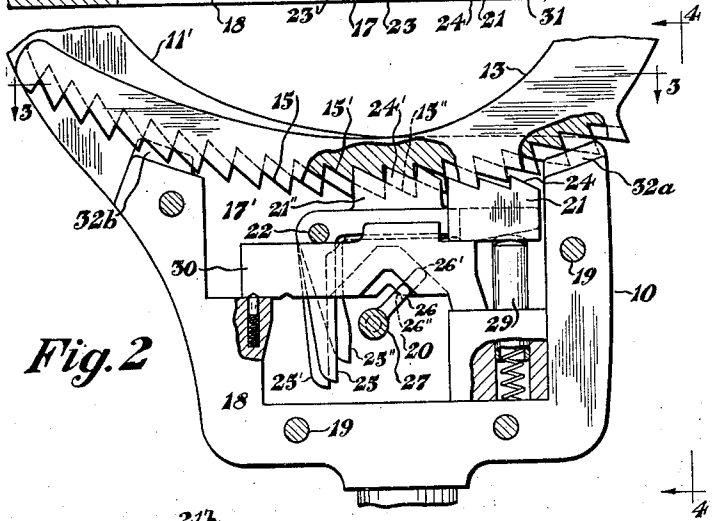


Fig. 2

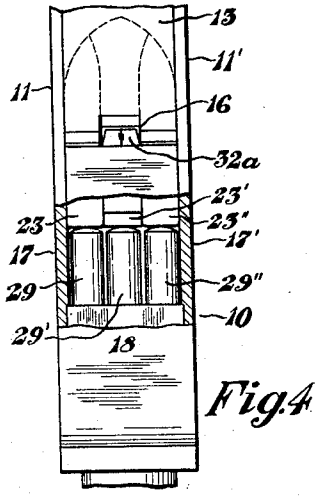


Fig. 4
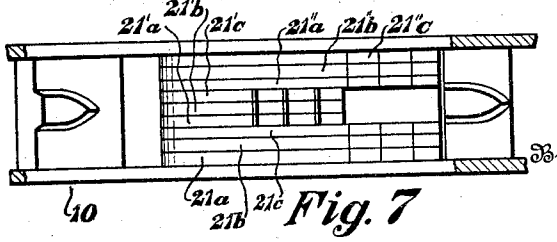


Fig. 7

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1,775,727

UNITED STATES PATENT OFFICE

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HANDCUFF

Application filed July 26, 1928. Serial No. 295,443.

My invention relates to handcuffs including arms, pivotally connected with each other, the pivotal connection preferably enabling free rotation of the arms in either direction with respect to each other, one of the arms having a lock secured thereon, and the other arm being lockable and provided with teeth for being engaged by latch teeth of the lock, and the lock being capable of being selectively actuated for permitting rotation of the lockable arm in either direction, for permitting rotation of the arm in one direction only, or for preventing rotation of the arm in either direction.

A handcuff of this character usually includes a lock having a single latch, and coplanar locking teeth on the lockable arm, and on the latch; and the latch is usually spring pressed, normally permitting rotation of the lockable arm in one direction excepting when the latch teeth are disengaged from the teeth of the lockable arm by a key or the like; and a single bolt independent of the latch is usually provided for selective actuation by the key or the like, to prevent movement of the latch and rotation of the lockable arm in either direction.

Accordingly, it is only necessary for a prisoner to perform two operations to release himself from a handcuff of this usual character, after the lock of the same has been actuated to prevent rotation of the arm in either direction.

These operations are: First, pick the lock to disengage the single bolt from the single latch; and, second, interpose a small strip of metal or a match stick or the like between the then spring pressed latch teeth, after which the lockable arm may be freely rotated in either direction, so that the prisoner may release himself from the handcuff.

Prisoners, particularly of the professional criminal class, are aware of the ease with which the usual handcuffs may be released, and it is possible in a very short time for such a prisoner, either alone or with an accomplice, to remove the usual handcuffs as aforesaid.

Accordingly the objects of the present invention include the provision of a handcuff which require more than two and preferably at least six operations for effecting an unauthorized opening thereof, thereby increasing the time required to effect the unauthorized opening, and rendering the same practically impossible.

These objects are attained in the present invention, exemplified in detail, and claimed hereinafter, and which may be stated in general terms as comprising a handcuff of the character described and including a plurality of separate latches, and a plurality of separate latch bolts, which may be easily actuated simultaneously only by the proper key, the latches being adapted for interengagement with separate sets of circumferentially arranged teeth on the lockable arm, one set being radially spaced from another set, and one of the sets being preferably located at the base of a groove, the outer walls of which are formed by outer sets of teeth, and the latch for one set being circumferentially spaced from the latch for another set, and one or more tongues slidably extending within the groove formed by the sets of teeth for rendering difficult the insertion of a strip of material for disengaging the latch for the set of teeth of less circumference.

Preferred embodiments of the present invention are illustrated in the accompanying drawing forming part hereof, in which

Figure 1 is an elevation view with portions broken away of a handcuff embodying the present improvements;

Fig. 2, an enlarged view thereof with one side of the lock case removed illustrating the improved handcuff of Fig. 1 in locked position;

Fig. 3, a view with portions broken away, as on line 3—3, Fig. 2, with the lockable arm removed;

Fig. 4, a view looking in the direction of the arrows 4—4, Fig. 2, portions of the lock case being broken away;

Fig. 5, a view illustrating the tapered end of the lockable arm;

Fig. 6, a view similar to Fig. 5, illustrating the lock in the unlocked position for permitting the lockable arm to rotate in either direction; and

Fig. 7, a view similar to Fig. 3, illustrating a modified embodiment of the improvements.

Similar numerals refer to similar parts throughout the several views.

The improved handcuff, indicated generally at 10, includes laterally spaced similarly curved arms 11 and 11′ pivotally secured as by a pin 12 at one of their ends to one end of another curved arm 13 which is preferably interposed between the laterally spaced arms 11 and 11′.

The other end of the curved arm 13 is provided with a plurality of side by side sets 14, 14′, and 14″ comprising, respectively, circumferentially arranged teeth 15, 15′, and 15″.

The outer sets 14 and 14″ are preferably radially spaced from the set 14′ interposed therebetween, and there is thus formed a groove 16 between the outer sets of teeth.

The other ends of the arms 11 and 11′ preferably terminate in side plates 17 and 17′ of a lock case, which is completed by a U plate 18 interposed between the side plates, the side plates and the U plate being secured to each other as by rivets 19.

The lock case houses a lock indicated generally at 20, and which includes side by side latches 21, 21′, and 21″ for engaging, respectively, with the teeth of the sets 14, 14′, and 14″, the latch 21′ being circumferentially and radially spaced from the latches 21 and 21″, for the purposes of the present invention, as will be hereinafter set forth in detail.

The latches 21, 21′, and 21″ are preferably in the form of bell cranks pivotally mounted within the lock case as by a common pivot pin 22.

The bell crank latches 21, 21′, and 21″ include, respectively, arms 23, 23′, and 23″, having respectively a plurality of latch teeth 24, 24′, and 24″, extending therefrom each for engagement, respectively, with the teeth of the sets 14, 14′, and 14″ on the lockable arm 13.

The latch teeth 24 and 24″ are mounted at the outer ends of the bell crank arms 23 and 23″, respectively, and the latch teeth 24′ are mounted intermediate the outer end of the arm 23′ and its pivotal mounting at 22, the latch teeth 24′ being as aforesaid circumferentially and radially spaced from the latch teeth 24 and 24″.

For oscillating the latch teeth into and out of engagement with the teeth on the lockable arm, the bell crank latches 21, 21′, and 21″, also include, respectively, key actuated arms 25, 25′, and 25″, each of the key actuated arms, preferably having a different angle with respect to the latch teeth arms, for being actuated, respectively, by wing sections 26, 26′, and 26″ of different lengths, of a key 27 arranged to be inserted into the lock case through a suitable key hole 28.

The toothed latch arms 23, 23′, and 23″ are normally urged towards the teeth on the lockable arm, by means of spring pressed plungers 29, 29′, and 29″, respectively, and unless the key is utilized to rotate the latches in the opposite direction, the toothed latch arms permit rotation of the lockable arm 13 only in a direction towards the lock to reduce the circumference of the handcuff closure formed by the curved arms, and preventing reverse rotation of the arm 13.

After the teeth of the latches have been engaged with the teeth of the sets on the lockable arm 13, the bell crank latches 21, 21′, and 21″ may be secured in engagement with the lockable arm 13, preventing rotation in either direction thereof, by means of bolts 30, 30′, and 30″, which may be slidably mounted in the lock case, for extension and withdrawal, respectively, preferably by the same key 27 beneath catches, which may be in the form of enlarged outer ends 31, 31′, and 31″, on the latch arms 23, 23′, and 23″.

The bolts 30, 30′, and 30″ are arranged to be withdrawn from securing engagement with the latches, preferably at the beginning of a counter-clockwise or unlocking rotation of the key 27 as viewed on the drawing, and prior to the actuation of the several latches by the key, and vice versa.

At the outer end of the legs of the U plate 18, preferably tapered guide tongues 32^a and 32^b are provided for extending into the groove 16, for guiding the rotary movements of the arm 13, and for rendering difficult the disengagement of the latch 23′ from its set of teeth on the lockable arm, by a strip of material inserted into the groove 15.

The outer end of the lockable arm and the outer end of each of the outer sets 14, and 14″, are preferably tapered as illustrated in Fig. 5, for cooperating with the guide tongues 32^a and 32^b, for facilitating the rotation of the lockable arm into engagement with the latches.

Fig. 2 as aforesaid illustrates the improved handcuff herein, with the latches in locking engagement with the lockable arm 13, and the bolts in securing engagement with the latches.

When the key 27 is removed by a clockwise rotation from the position illustrated in Fig. 2, and withdrawn from the key hole 28, in order that a prisoner, upon whom the handcuff may have been applied, can be released from the handcuff without the use of the proper key, it is first necessary to withdraw each of the three bolts 30, 30′, and 30″ from engagement with the latches 21, 21′, and 21″. Then it would be necessary as by the use of three thin strips of material, to simultaneously disengage the three latches 21, 21′, and 21″ from the lockable arm 13.

Such unauthorized manipulation is in itself very difficult, and is furthermore rendered practically impossible by the presence of the guide tongue 32ª and the circumferential and radial spacing of the latch teeth 24′ of the latch 21′, from the latch teeth of the other latches, and the extension of the teeth 24′ into the groove 16.

The modified embodiment 10′ of the improved handcuff illustrated in Fig. 7, is similar in construction to the embodiment 10, with the exception that the several latches comprise separate and independently actuated latch laminæ 21ª, 21ᵇ, and 21ᶜ; and 21′ª, 21′ᵇ, and 21′ᶜ; and 21′′ª, 21′′ᵇ, and 21′′ᶜ, for rendering still more difficult the picking of the lock.

I claim:

1. A handcuff including a lock mounting arm and a lockable arm pivotally connected with each other, a lock on the lock mounting arm, a plurality of sets of circumferentially arranged teeth on the lockable arm, one set of teeth being radially spaced from another set, and the lock including a plurality of latches, each latch being adapted for engagement and disengagement with one of the sets of teeth on the lockable arm.

2. A handcuff including a lock mounting arm and a lockable arm pivotally connected with each other, a lock on the lock mounting arm, a plurality of sets of circumferentially arranged teeth on the lockable arm, one set of teeth being radially spaced from another set, and the lock including a plurality of latches, each latch being adapted for engagement and disengagement with one of the sets of teeth on the lockable arm, and a plurality of bolts, each bolt being adapted for engagement and disengagement with one of the latches.

3. A handcuff including a lock mounting arm and a lockable arm pivotally connected with each other, a lock on the lock mounting arm, a plurality of sets of circumferentially arranged teeth on the lockable arm, one of the sets of teeth being located between outer sets and being radially spaced from and forming a groove between the outer sets, and the lock including a plurality of latches, each latch being adapted for engagement and disengagement with one of the sets of teeth on the lockable arm.

4. A handcuff including a lock mounting arm and a lockable arm pivotally connected with each other, a lock on the lock mounting arm, a plurality of sets of circumferentially arranged teeth on the lockable arm, one of the sets of teeth being located between outer sets and being radially spaced from and forming a groove between the outer sets, and the lock including a plurality of latches, each latch being adapted for engagement and disengagement with one of the sets of teeth on the lockable arm, and a plurality of bolts, each bolt being adapted for engagement and disengagement with one of the latches.

5. A handcuff including a lock mounting arm and a lockable arm pivotally connected with each other, a lock on the lock mounting arm, a plurality of sets of circumferentially arranged teeth on the lockable arm, one set of teeth being radially spaced from another set, and the lock including circumferentially spaced latches, each latch being adapted for engagement and disengagement with one of the sets of teeth on the lockable arm.

6. A handcuff including a lock mounting arm and a lockable arm pivotally connected with each other, a lock on the lock mounting arm, a plurality of sets of circumferentially arranged teeth on the lockable arm, one set of teeth being radially spaced from another set, and the lock including circumferentially spaced latches, each latch being adapted for engagement and disengagement with one of the sets of teeth on the lockable arm, and a plurality of bolts, each bolt being adapted for engagement and disengagement with one of the latches.

7. A handcuff including a lock mounting arm and a lockable arm pivotally connected with each other, a lock on the lock mounting arm, a plurality of sets of circumferentially arranged teeth on the lockable arm, one of the sets of teeth being located between outer sets and being radially spaced from and forming a groove between the outer sets, and the lock including a case, a plurality of latches operatively mounted within the case, each latch being adapted for engagement and disengagement with one of the sets of teeth on the lockable arm, and a tongue on the lock case extending into the groove on the lockable arm.

8. A handcuff including a lock mounting arm and a lockable arm pivotally connected with each other, a lock on the lock mounting arm, a plurality of sets of circumferentially arranged teeth on the lockable arm, one of the sets of teeth being located between outer sets and being radially spaced from and forming a groove between the outer sets, and the lock including a case, a plurality of latches operatively mounted within the case, each latch being adapted for engagement and disengagement with one of the sets of teeth on the lockable arm, a plurality of key operable bolts operatively mounted within the case, each bolt being adapted for engagement and disengagement with one of the latches, and a tongue on the lock case extending into the groove on the lockable arm.

In testimony that I claim the above, I have hereunto subscribed my name.

WILLIAM L. LATOU.