Feb. 9, 1926. 1,572,262

A. D. ABBENZELLER

HANDCUFF

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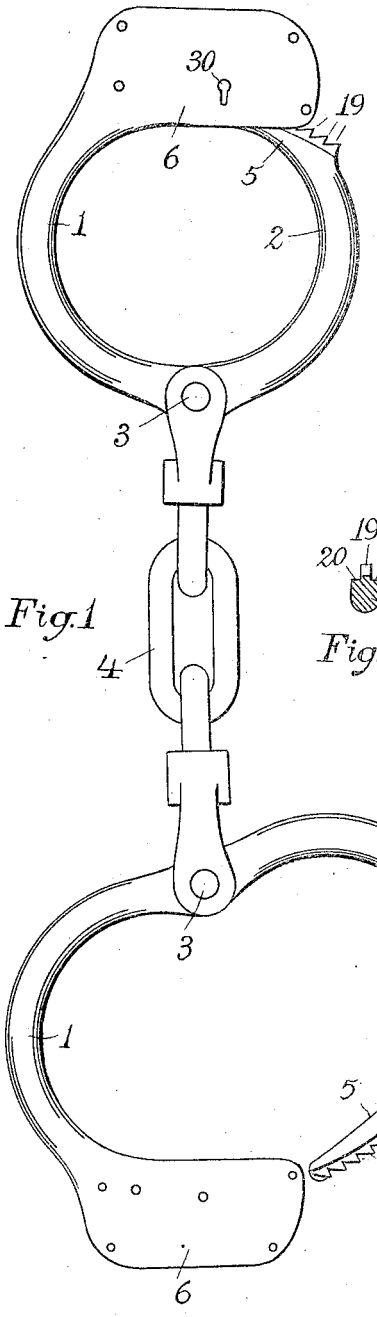

Fig. 1

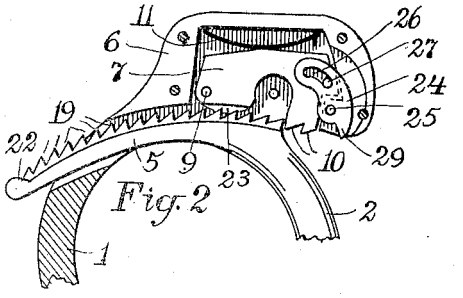

Fig. 2

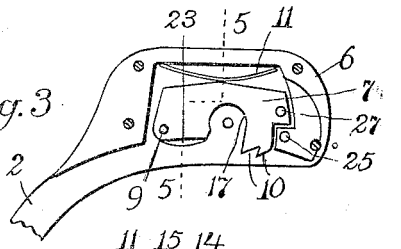

Fig. 3

Fig. 7

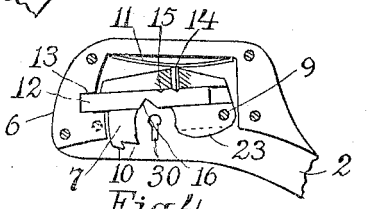

Fig. 4

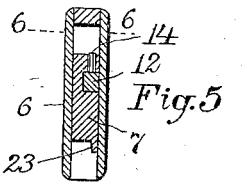

Fig. 5

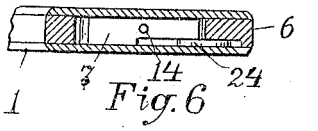

Fig. 6

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UNITED STATES PATENT OFFICE.

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HANDCUFF.

Application filed August 14, 1923. Serial No. 657,316.

To all whom it may concern:

Be it known that I, ALFRED D. ABBENZELLER, a citizen of the United States, and a resident of the city of Boston, in the county of Suffolk and Commonwealth of Massachusetts, have invented certain new and useful Improvements in Handcuffs, of which the following is a full, clear, and exact specification.

The object of this invention is the construction of hand cuffs which will not only lock automatically, but can be made to unlock themselves by pressing the pivoted member inward to a point which leaves the wrist-opening smaller than any adult's wrist, whereby should an attempted clasping of a person's wrist fail of its object, the hand cuffs can instantly be put in condition for another attempt without having to bother with a key.

While I have devised more than one method of accomplishing this, the construction which seems to me to be the most practical comprises a detent which normally engages any of the ratchet teeth of the pivoted clasping member, but which will be caused to remain out of such engagement by the simple act of pressing the clasping member inward to a certain point. This is further constructed in such a manner that pulling the clasping member entirely open will restore the detent to its normal engaging function.

In the drawings forming part of this specification, Fig. 1 is a view of a pair of enchained hand cuffs embodying my improvements. Fig. 2 is a face view of the locking portion of a hand cuff with an enclosing plate removed. Fig. 3 is a similar view but with other parts removed. Fig. 4 is a face view from the opposite direction with the opposite plate removed. Fig. 5 is a sectional view on the broken line 5—5 in Fig. 3. Fig. 6 is a sectional view on the line 6—6 in Fig. 5. Fig. 7 is a cross section of the locking member on the line 7—7 in Fig. 1.

As shown in Fig. 1, the locking rings are shackeled together by a chain in a well known manner, the two members 1 and 2 of each locking ring being pivoted together at 3, the point to which the chain 4 is attached. The point of the chain's attachment to the locking rings is immaterial, however to my invention, the novelty being embraced in the means for enabling the locking member 2 to be automatically released by the simple act of pressing the members 1 and 2 toward each other to a predetermined limit.

The member 2 is provided with a ratchet-toothed jaw 5 curved concentric with the pivot 3, while the member 1 is provided with a case 6 containing the locking mechanism. This locking mechanism comprises a detent 7 pivoted within the case at 9, and provided with one or more teeth 10 adapted to be pressed into engagement with the toothed jaw 5 by a leaf spring 11. A bolt 12 slidable in a groove in the detent and designed to be thrown by a suitable key into engagement with a notch 13 for ensuring against unauthorized unlocking of the toothed jaw, is retained in its set positions by a small pin 14 pressed by the same spring 11 into depressions in the surface of the bolt, as at 15. See Fig. 4. The opposite surface of the bolt is given a notch 16 for being engaged and thrown by the key, the detent 7 having a rounded recess 17 to permit the action of the key.

As shown in Fig. 7, the teeth 19 do not reach across the entire width of the jaw 5 but leave a smooth ledge 20 at each side. One ledge terminates in a cam surface 21 at one extreme, and the other in a cam surface 22 at the opposite end. When the pivoted member 2 is pressed in toward the other member 1 to its predetermined limit, the cam surface 21 comes into engagement with the lip 23 of the detent 7, shown in Figs. 3 and 5, and thereby raises the detent sufficiently to put its teeth 10 out of the path of the teeth 19. To thus retain the detent while the toothed jaw 5 is being withdrawn, a dog 24 is pivoted on a pin 25 held by the case 6, and is formed with an arcuate slot 26 in which is a pin 27 projecting from the detent, the slot being so disposed that when the detent is raised to its topmost limit the upper end of the slot remains in engagement with the pin thereat and thereby holds the detent in such position.

Now, this dog 24 is comparatively thin and lies in the plane with the ledge having the cam surface 22 at its outermost extremity, and is formed with an ear 29 so disposed that when the detent is down in engagement with the toothed jaw 5, it will be

turned back out of the way thereof, but when the detent is raised to its limit and is locked there by the dog, the curvature of the slot 26 is such as to cause the ear to swing downward to the ledge 20 thereunder. When the toothed jaw is now withdrawn from the locking case 6, its cam surface 22 comes against the ear 29 and thereby swings the latter, and hence the dog, in a manner to release the slot from the pin 27 and to allow the detent 7 to descend into its normal position.

In the operation of the hand cuffs, the same being wide open, all that the officer needs to do is to clap them upon the wrists of his prisoner, the engagement of the detents with the toothed jaws 5 serving instantly to lock them in place. If in seeking to locate the cuffs upon a wrist, there is a failure to engage a wrist just before the parts lock together, it is not necessary to produce a key and unlock the cuffs, but merely to press the toothed member toward the other member until its cam surface 21 has elevated the detent 7, and then swings it wide open again, the action of the cam surface 22 against the ear 29 as the member 2 swings open, releasing the detent for its intended work.

When the hand cuffs are finally placed upon the prisoner's wrists, the officer introduces the key through the key hole 30 and throws the bolt 12 into its locking position.

What I claim is:

1. A hand cuff comprising two pivotally united members, one adapted to be introduced into the other, means for automatically locking them together when the two members are brought near enough together to span a human wrist, and means for automatically unlocking them when brought slightly nearer together than said span, whereby they can be drawn apart in the opposite direction without interference from the lock.

2. A hand cuff comprising two pivotally united members, one adapted to be introduced into the other, means for automatically locking them together when the two members are brought near enough together to span a human wrist, and means for automatically unlocking them when brought slightly nearer together than said span, whereby they can be drawn apart in the opposite direction without interference from the lock.

3. A lock comprising two relatively movable members, one having ratchet teeth and a smooth ledge adjacent said teeth, a detent carried by the other member adapted for engaging said teeth, and means located in the plane of said ledge for raising said detent out of its engagement with said teeth.

4. A lock comprising two relatively movable members, one having ratchet teeth and a smooth ledge beside said teeth, and a detent pivotally carried by said other member adapted for engaging said teeth, said detent having a lip lying in the plane of said ledge, and said ledge having a cam surface at its extremity for engaging said lip and releasing said detent.

5. A lock comprising two relatively movable members, one having ratchet teeth and a smooth ledge beside said teeth, a detent pivotally carried by said other member adapted for engaging said teeth, said detent having a lip lying in the plane of said ledge, and said ledge having a cam surface at its extremity for engaging said lip and disengaging said detent from said teeth, and means for retaining said detent in this disengaged position while the toothed member is being withdrawn.

6. A lock comprising a stationary member, a movable member having ratchet teeth and a smooth ledge at each side of the teeth, one ledge having a cam surface at one extremity and the other ledge having a cam surface at its opposite extremity, a detent pivotally carried by the stationary member adapted for engagement with said teeth and having a projection reaching into the plane of one of said ledges, and a dog pivotally supported by the stationary member for retaining said detent in a disengaged position and having a projection extended into the plane of the other ledge when thus holding said detent, whereby the introduction to its limit of the movable member into the stationary member causes the detent to release the teeth of the former, and the withdrawal of the movable member releases the detent from said dog.

7. A lock comprising a stationary member, a movable member having ratchet teeth and a smooth ledge at each side of the teeth, one of said ledges having a cam surface at one extremity and the other ledge having a cam surface at the opposite extremity, a detent pivotally carried by said stationary member for engagement with said teeth and having a projection reaching into the plane of one of said ledges, and a dog pivoted to said stationary member and having an arcuate slot, and also an ear reaching into the plane of the other ledge, said detent having a pin located in said slot, the parts being so disposed that when the detent is disengaged from said teeth said pin rests in said slot in a manner to hold said detent against return to its normal engagement with said teeth, and when said movable member is withdrawn one of said cam surfaces strikes said ear and releases said pin from the control of said slot.

8. A lock comprising a stationary member, a movable member having ratchet teeth, a detent pivotally carried by the stationary

member to engage said teeth, a spring for ensuring such engagement, a bolt carried by said detent adapted to be reciprocated by a key, the stationary member having a notch to receive an end of said bolt, and a pin carried by said detent and pressed by said spring against said bolt to control the latter's movement.

9. A handcuff comprising two pivotally united members one of which is formed with teeth, and the other of which is provided with a detent for engagement with said teeth, and means whereby the detent is forced out from the path of said teeth by the pressure of the toothed member beyond a predetermined limit.

10. Handcuffs comprising a stationary member, a movable member pivoted thereto and having a toothed jaw concentric with the pivot, the jaw having a smooth ledge at both sides of said teeth also concentric with the pivot, one ledge having a cam surface at one end and the other ledge having a cam surface at its end opposite the first cam surface, a detent for engaging said teeth, and means actuated by one of the cam surfaces for throwing said detent out of such engagement, and means actuated by the other cam surface for throwing said detent back into its engagement, whereby the pressure of the pivoted member inward to a certain point releases it from the detent, and its entire withdrawal returns the detent to its engaging position.

In testimony that I claim the foregoing invention, I have hereunto set my hand this 3rd day of August, 1923.

ALFRED D. ABBENZELLER.