March 13, 1934. Y. SMITH-STANGE 1,950,757

HANDCUFF

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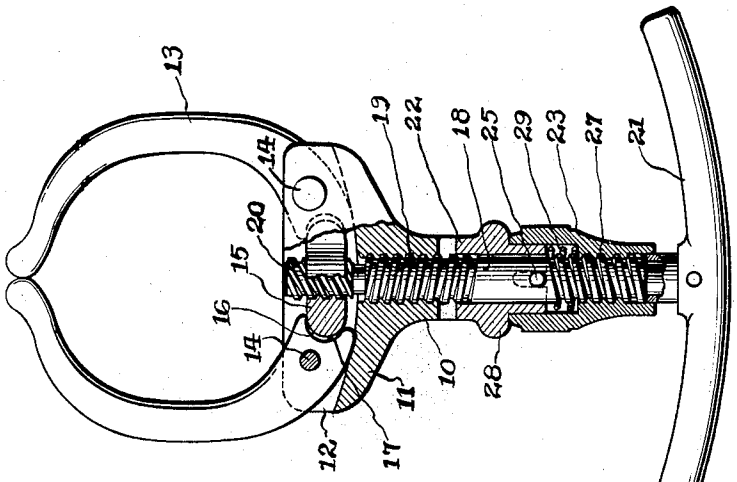


FIG. 2.

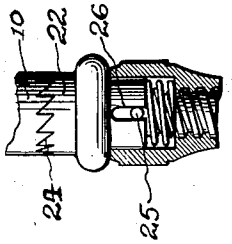


FIG. 3.

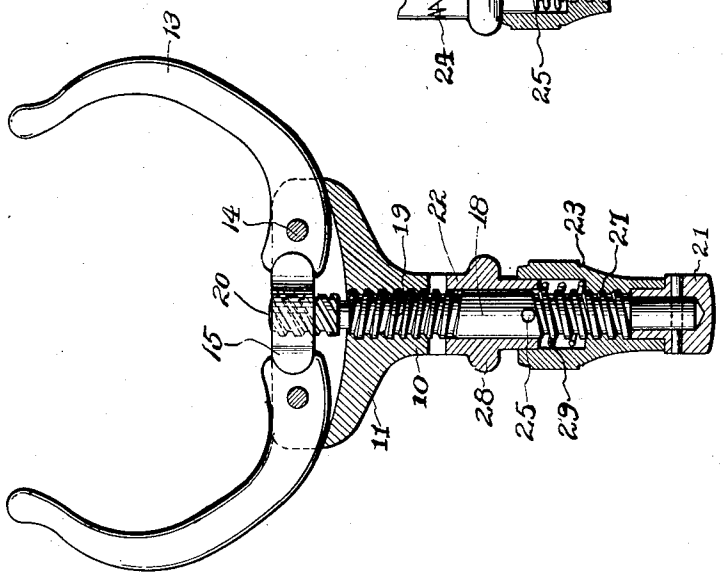


FIG. 1.

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HANDCUFF

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13 Claims. (Cl. 70—24)

The invention relates to handcuffs and like implements especially adapted for use by police officers, and the primary object thereof is to provide a practical implement having a handle bar at one end, a pair of pivoted jaws at the other end, and operating means for the jaws of a character such as to permit of a rapid and effectual seizure of the subject by imparting to the handle bar a short twisting movement.

Another object is to provide in such an implement a rugged and easily disengaged ratchet device operating automatically in the closure of the jaws about the wrist to hold the jaws positively against opening movement.

A further object is to provide a conveniently operable locking device for holding the jaws in wide open position so as to permit the latter to be grasped safely by the hand of the user when employing the handle bar as a striking weapon.

Still another object is to provide a handcuff in which the operating means includes a rotary shaft and an actuating member for the jaws movable axially in the rotation of the shaft, with a novel and structurally advantageous connection between the jaws and their actuating member.

A preferred embodiment of the invention is illustrated in the accompanying drawing forming a part hereof in which:

Figure 1 is a longitudinal sectional view through the body and showing the jaws and operating means in elevation.

Fig. 2 is a similar view but with the jaws in closed position.

Fig. 3 is a fragmentary view partially in section, illustrating particularly the ratchet and lock.

As herein shown, the implement comprises a body having a cylindrical hub or shank 10 with a transverse enlargement forming an elongated head 11 which is provided in one side with an elongated central slot 12. A pair of curved arms 13, constituting the jaws of the device, have their inner ends entered into opposite ends of the slot 12 and secured to the head 11 by means of pivot pins 14.

The operating means for the jaws 13 comprises an actuating member 15 interposed between the inner ends of the jaws 13, within the slot 12, and having rounded ends 16 engaging in sockets 17 formed in the inner ends of the jaws 13. Further, a rotary shaft or spindle 18 extends axially through the cylindrical shank 10 and the head 11 of the body and has a screw-threaded engagement therewith through the medium of screw threads 19.

The spindle 18 projects at one end into the slot 12 for operative association with the actuating member 15, and for this purpose has a screw threaded engagement with said member 15 formed by screw threads 20 of a relatively higher pitch than the screw threads 19 but opposed thereto.

It will be apparent that by imparting a rotational movement to the spindle 18 in one direction or the other, the actuating member 15 will be moved axially, being held against rotation by the side walls of the slots 12, and that in such axial movement, the jaws 13 will be swung either toward or away from each other. In either case, the actuating member 15 is moved a distance equal to the sum of the pitches of the two threads 19 and 20.

Preferably, in order to add to the convenience of operation, the pitches of the threads are such that the spindle need be turned through one-quarter of a revolution only to move the jaws from their extreme open position to their closed position and vice versa; and in most instances, it is found necessary to impart to the spindle substantially less than a quarter turn.

The use of a lower pitched thread at the portion of the spindle engaging the body, as compared with the threads engaging the actuating member, is advantageous for the reason that the former thread, being of lower pitch, reduces the endwise or axial movement of the spindle to a minimum and thus avoids projection of the spindle beyond the body when the jaws are being closed about the wrist of the subject. As a result, possible injury to the subject is avoided.

Rotation of the spindle is accomplished by means of a handle bar 21 rigid with the end thereof opposite the jaws 13. The spindle is of substantially greater length than the body, and between the handle bar and the body is interposed a ratchet device, including a sleeve 22, and a ratchet locking device including a sleeve 23. The sleeve 22 is operatively associated with the outer end of the shank 10 of the body through the medium of relatively steep interengaging ratchet teeth 24, and the sleeve is mounted on the spindle so as to be held against rotation relative thereto but capable of axial movement. For this purpose, a pin 25 projects radially from the spindle and engages in an open-ended slot 26 in the sleeve.

The locking sleeve 23 is mounted on the

spindle adjacent the handle bar 21, and has a screw threaded connection 27 therewith so as to be capable of axial movement, upon rotation relative to the spindle, into and out of engagement with the ratchet sleeve 22. In the present instance, the locking sleeve 23 is counterbored to receive the outer end of the ratchet sleeve 22, and its locking engagement with the latter is through the medium of an annular shoulder provided by a rib 28 on the ratchet sleeve. A coiled expansion spring 29 encircles the spindle within the locking sleeve 23 and engages with the ratchet sleeve to hold it yieldably in operative association with the shank 10 of the body.

When the device is used as a handcuff, the parts are initially in the relation shown in Fig. 1 with the jaws open and the locking sleeve turned to its outermost position so as to permit a relatively free yielding of the ratchet sleeve. Upon application of the jaws to the wrist or other part of the body, the handle may be given a partial turn so as to draw the actuating member 15 into the slot 12 and swing the jaws 13 toward each other. In such operation, the ratchet sleeve is free to yield, and the interengaging ratchet teeth 24 operate automatically as the jaws move inwardly to prevent reverse movement.

Rapid movement of the jaws is insured by the combined action of the oppositely disposed threads 19 and 20. When the jaws have been swung inwardly to a sufficient degree, the locking sleeve 23 may be turned between the fingers of the hand which grasp the handle bar, in a direction to cause the sleeve to move axially into engagement with the shoulder provided by the rib 28 on the ratchet sleeve, and thus lock the jaws against movement in an opening direction. By a reverse rotation of the locking sleeve, it may be restored to its inoperative position, and thereupon the ratchet sleeve may be grasped between two fingers of the hand and withdrawn bodily so as to disengage the ratchet teeth 24 and thus permit reverse rotation of the spindle for the purpose of opening the device. It will be observed in this latter connection that the shank 10 of the body and the ratchet sleeve 22 are so proportioned as to permit the convenient positioning of the fingers of the hand between the head 11 and the rib 28 on diametrically opposite sides thereof, and that the rib constitutes an enlargement with which the fingers thus placed may readily and conveniently engage upon withdrawing the ratchet sleeve into disengaged relation with the body.

When the implement is used as a striking weapon, it is grasped by placing the hand between the open jaws and extending the fingers around the body. When the device is thus to be used, the locking sleeve is first operated into holding relation to the ratchet sleeve so as positively to prevent danger to the user should the subject grasp the handle bar and endeavor to turn it in a direction to contract the jaws upon the hand by which they are held.

The implement thus provided has been found to meet satisfactorily all of the requirements of a practical manacle due to its rugged character and its easy and convenient operation.

This application is a continuation in part of my prior application Serial No. 519,332, filed March 2, 1931.

I claim as my invention:

1. A handcuff comprising, in combination, a body, a spindle rotatably mounted in said body, a pair of jaws pivoted to said body on opposite sides of said spindle and having arms extending toward said spindle with sockets in their ends, and an actuating member slidably and non-rotatably mounted in said body member and threaded on said spindle, said member having parts fitting into the sockets in the arms of the respective jaws adapted to swing the jaws when the nut is moved by said spindle.

2. A handcuff comprising, in combination, a body having ratchet teeth formed thereon, a pair of jaws pivotally secured to said body, an actuating member for swinging said jaws, a spindle threaded into said body for moving said member, a ratchet sleeve mounted on said spindle for rotation therewith and slidable relative thereto, said ratchet sleeve having teeth adapted to mesh with said teeth on the body and formed to prevent rotation of said spindle to open said jaws, a locking sleeve threaded onto said spindle and adapted to be turned into abutment with said ratchet sleeve to lock it against rotation in both directions, and a spring interposed between said ratchet sleeve and said locking sleeve and tending to hold the teeth on said ratchet sleeve in mesh with the teeth on the body.

3. A handcuff comprising, in combination, a body member having ratchet teeth formed thereon, a pair of jaws pivotally mounted in said body member, means for swinging said jaws including a spindle rotatably mounted in said body member, a sleeve mounted to rotate with said spindle and slidable relative thereto and having teeth adapted to mesh with said teeth on the body member to prevent rotation of said spindle in one direction, and means mounted on said spindle adapted to lock said sleeve against sliding movement to prevent rotation of said spindle in both directions.

4. A handcuff comprising, in combination, a body having a shank formed thereon, a pair of jaws pivotally mounted in said body, means for swinging said jaws including a spindle rotatably mounted in said shank, a sleeve mounted adjacent said shank to rotate with said spindle and slidable relative thereto, ratchet teeth formed on the adjacent ends of said shank and said sleeve adapted when engaged to prevent rotation of said spindle in one direction, and means for locking said sleeve against movement in a direction to disengage said teeth whereby said teeth will hold said spindle against rotation in both directions.

5. A handcuff comprising, in combination, a body member, a pair of jaws pivotally mounted to swing relative to said body member, means for swinging said jaws including a spindle rotatably mounted in said member, a ratchet sleeve mounted on said spindle and having a longitudinal slot therein, ratchet teeth formed on the adjacent ends of said body member and said ratchet sleeve adapted when engaged to prevent rotation of said sleeve in one direction, a pin extending from said spindle into said slot to cause said sleeve to rotate with said spindle but permitting relative longitudinal movement, and a locking sleeve enclosing the slotted portion of said ratchet sleeve and adapted to abut against the latter to prevent longitudinal movement thereof to lock the ratchet teeth in engagement and prevent rotation of the spindle in both directions.

6. A handcuff comprising, in combination, a

body having a shank, a pair of jaws pivotally mounted in said body, means for swinging said jaws including a spindle rotatably mounted in said body, a ratchet sleeve mounted adjacent said shank to rotate with said spindle and slidable relative thereto, ratchet teeth formed on the adjacent ends of said shank and sleeve adapted when engaged to prevent rotation of said spindle in one direction, a locking sleeve threaded on said spindle and enclosing the adjacent end of said ratchet sleeve, said locking sleeve being adapted to prevent sliding movement of said ratchet sleeve to lock the ratchet teeth in engagement and prevent rotation of the spindle in both directions, and a spring enclosed within said locking sleeve and bearing against said ratchet sleeve tending to hold the ratchet teeth in engagement.

7. A handcuff comprising, in combination, a body, a pair of jaws pivotally mounted in said body, a member mounted in said body for swinging said jaws, and a spindle having two sets of threads of opposite pitch formed thereon turning respectively in said body member and said dog, the pitch of the threads turning in the body member being less than the pitch of the other threads to impart a relatively smaller axial movement to the spindle relative to the body than is imparted to said member.

8. A handcuff comprising a body having a head and a shank disposed centrally of the head at one side thereof, a pair of jaws mounted at opposite ends of said head, a spindle mounted in the head axially of said shank and operatively connected with said jaws, said spindle being of a length to extend a substantial distance from said body and having a handle bar rigid with its outer end, a spring pressed sleeve slidable on the spindle and having a one-way ratchet engagement with said shank, an annular rib on said sleeve spaced from said head to permit the positioning of the fingers of the hand on said bar between the rib and the head, and a locking sleeve on the spindle adjacent the handle bar operable into holding engagement with said rib.

9. A handcuff comprising, in combination, a body having a shank, a pair of jaws swingably mounted in said body, means for swinging said jaws including a spindle rotatably mounted in said body, a ratchet sleeve mounted adjacent said shank to rotate with said spindle and slidable relative thereto, ratchet teeth formed on the adjacent ends of said shank and sleeve adapted when engaged to prevent rotation of said spindle in one direction, a locking sleeve threaded on said spindle and movable into engagement with said ratchet sleeve to lock the teeth thereof in engagement with the teeth on said shank and thus prevent rotation of the spindle in both directions, and spring means acting upon said ratchet sleeve and tending to hold said ratchet teeth in engagement.

10. A handcuff comprising, in combination, a body member formed with ratchet teeth, a pair of jaws mounted to swing relative to said body, actuating means for said jaws including a spindle having a screw-threaded engagement with the body, a sleeve slidably but non-rotatably mounted on said spindle, said sleeve and body having ratchet teeth adapted to be inter-engaged to prevent rotation of the sleeve in one direction, a second sleeve on the spindle in telescoping relation to the ratchet sleeve and forming therewith a chamber around the spindle, and a spring interposed between said two sleeves within the chamber and tending to force said ratchet sleeve in a direction to engage the ratchet teeth on the body.

11. A handcuff comprising, in combination, a body member, a pair of jaws mounted on the body member for swinging movement, actuating means for the jaws including a spindle having a screw-threaded engagement with the body member and operatively connected with said jaws, a sleeve on said spindle having a longitudinal slot in one end thereof, a pin on the spindle engaging in said slot to hold the sleeve against rotation, said sleeve and body having inter-engageable ratchet teeth, a spring encircling said spindle and engaging said sleeve to hold said ratchet teeth normally in engagement, a handle on the end of said spindle opposite said jaws, and means encircling said spindle adjacent the handle and serving to enclose said spring.

12. A handcuff comprising a body having a head and a shank disposed centrally of the head at one side thereof, a pair of jaws mounted swingably at opposite ends of said head, a spindle mounted in the head axially of said shank and operatively connected with said jaws, said spindle being of a length to extend a substantial distance from said body and having a handle bar rigid with its outer end, a spring pressed sleeve slidable on the spindle and having a one-way ratchet engagement with said shank, an annular rib on said sleeve spaced from said head to permit the positioning of the fingers of the hand on said bar between the rib and the head, and a locking sleeve on the spindle adjacent the handle bar and having an inner end portion in telescoping relation to the outer end portion of the locking sleeve.

13. A handcuff comprising a body having a head and a shank disposed centrally of the head at one side thereof, a pair of jaws mounted swingably at opposite ends of said head, a spindle mounted in the head axially of said shank and operatively connected with said jaws, said spindle being of a length to extend a substantial distance from said body and having a handle bar rigid with its outer end, a spring pressed sleeve slidable on the spindle and having a one-way ratchet engagement with said shank, an annular rib on said sleeve spaced from said head to permit the positioning of the fingers of the hand on said bar between the rib and the head, and a second sleeve screw-threaded on the spindle adjacent the handle bar having an inner end portion in telescoping relation to the outer end portion of the ratchet sleeve with its inner end forming a stop adapted for engagement by said rib.

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