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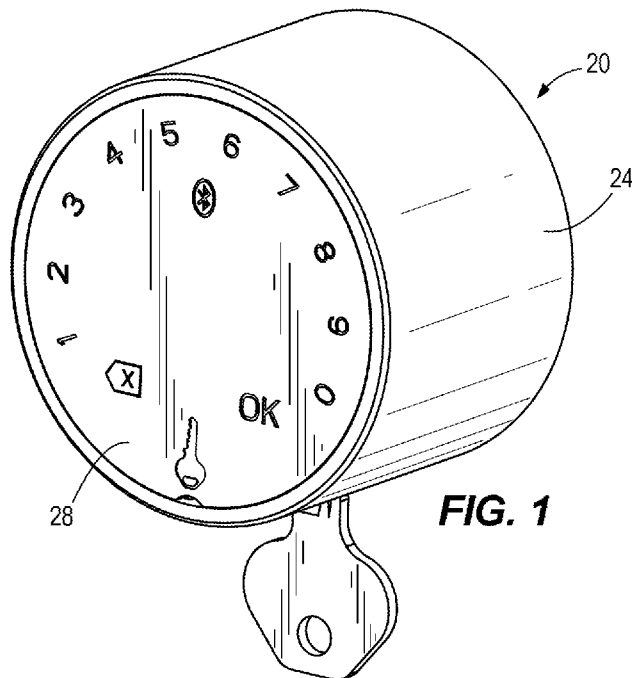
(81) Designated States (*unless otherwise indicated, for every kind of national protection available*):

AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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(54) Title: ELECTRONIC HIDDEN SHACKLE PADLOCK WITH KEY OVERRIDE



(57) Abstract: Systems and apparatuses include a lock including a shackle movable between an unlocked state and a locked state, an electronically actuated blocker selectively engaged with the shackle to inhibit movement of the shackle from the locked state to the unlocked state, the blocker movable between a key override disabled position, a key override enabled position, and an electronic unlock position, and a key cylinder structured to move the shackle to the unlocked state when the blocker is in the key override enabled position.



TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

Published:

- *with international search report (Art. 21(3))*

(88) Date of publication of the international search report:

02 April 2020 (02.04.2020)

A. CLASSIFICATION OF SUBJECT MATTER
 IPC - E05B 47/00, 47/02, 47/06, 63/00 (2019.01)
 CPC - E05B 47/0001, 47/0012, 47/02, 47/026, 47/06

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
 See Search History document

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
 See Search History document

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
 See Search History document

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2005/0006908 A1 (BRUWER F. J. et al.) 13 January 2005; figures 15-24; paragraphs [0097]-[0019]	1-7
A	US 4,901,545 A (BACON M. E. et al.) 20 February 1990; figures 1-9; column 6, lines 10-55; column 7, lines 1-10	1-7
A	WO 2015/065944 A1 (WATERLOO INDUSTRIES, INC.) 7 May 2015; entire document	1-7
A	US 6,539,755 B1 (BRUWER F. J. et al.) 1 April 2003; entire document	1-7
A	US 4,967,577 A (GARTNER K. W. et al.) 6 November 1990; entire document	1-7

Further documents are listed in the continuation of Box C.

See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier application or patent but published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search

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Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

-Continued Within the Next Supplemental Box-

1. As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.
3. As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
Claims 1-7

- Remark on Protest**
- The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
 - The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
 - No protest accompanied the payment of additional search fees.

-***-Continued from Box No. III Observations where unity of invention is lacking -***-

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I: Claims 1-7 are directed toward a lock, comprising: a keypad coupled to a housing and including a user interface; the blocker including a cam follower, a cutout, and a shoulder.

Group II: Claims 8-20 are directed toward a lock and a method, comprising: biasing an electronically actuated blocker; the cam having a key override disabled position and a key override enabled position.

The inventions listed as Groups I-II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

Group I include a lock, comprising: a housing; a keypad coupled to the housing and including a user interface; an actuator in communication with the keypad and movable between a first position, a second position, and a third position; a blocker including a cam follower in selective engagement with the cam, a cutout, and a shoulder; a shackle including a recess sized to receive the blocker and; and the blocker engaging the recess of the shackle to maintain the shackle in the locked state, wherein the second position of the actuator includes the cam interacting with the blocker in the intermediate position, the key cylinder rotating the shackle, and the recess of the shackle engaging the shoulder of the blocker and moving the blocker toward the open position, and wherein the third position of the actuator includes the cutout positioned adjacent the shackle, which are not present in Group II.

Group II include a lock and a method, comprising: moving a cam to a key override disabled position with an electronic actuator; biasing an electronically actuated blocker into engagement with the cam so that the blocker is in a closed position when the cam is in the key override disabled position; inhibiting movement of a shackle from a locked position to an unlocked position when the blocker is in the closed position; moving the cam to a key override enabled position with the electronic actuator; biasing the blocker into engagement with the cam so that the blocker is in an intermediate position when the cam is in the key override enabled position; inhibiting movement of the shackle from the locked position to the unlocked position when the blocker is in the intermediate position; and rotating the shackle with a key cylinder so the blocker is moved to an open position by the movement of the shackle when the cam is in the key override enabled position thereby allowing the shackle to move to the unlocked position, which are not present in Group I.

The common technical features of Groups I and II are a lock, comprising: an actuator; a cam coupled to the actuator and movable therewith; a blocker, the blocker movable between an open position, a closed position, and an intermediate position; a shackle movable between an unlocked state and a locked state; and a key cylinder coupled to and moveable with the shackle, wherein the first position of the actuator includes the cam interacting with the blocker in the closed position, and maintaining the shackle in the locked state, and wherein the third position of the actuator includes the cam interacting with the blocker in the closed position, and the shackle allowed to move between the locked position and the unlocked position.

These common technical features are disclosed by US 2005/0006908 A1 (BRUWER). Bruwer discloses a lock (lock; figure 15; paragraph [0091]), comprising: an actuator (motor 282; figure 15; paragraph [0098]); a cam (272) coupled to the actuator and movable therewith (cam 272 is movable by rotation of motor 282; paragraph [0098]); a blocker (264), the blocker movable between an open position, a closed position, and an intermediate position (three positions of lever 264 corresponding to the position shown in figure 24, the position shown in figure 23, and the position shown in figure 25, respectively; figures 23-25; paragraphs [0117], [0119]); a shackle (224) movable between an unlocked state and a locked state (movable between a position where bolt lever 224 (shackle) does not receive pin 268 of lever 264 (blocker), and position where bolt lever 224 (shackle) receives pin 268 of lever 264 (blocker); figures 23-25; paragraphs [0117], [0119]); and a key cylinder (key cylinder; paragraph [0112]) coupled to and moveable with the shackle (the mechanical key cylinder acts on the bolt axle 220 to turn the bolt lever 224 (shackle); figure 15; paragraph [0112]), wherein the first position of the actuator includes the cam interacting with the blocker in the closed position (position of motor 282 corresponding to the position of cam 272 shown in figure 24 (first position of actuator) where cam 272 abuts spring 270 of lever 264 (blocker), such that pin 268 of lever 264 (blocker) is received in recessed formation 232 of lever 224 (shackle), i.e., closed position of lever 264 (blocker); figure 24; paragraph [0117]), and maintaining the shackle in the locked state (position where recessed formation 232 (recess) of bolt lever 224 (shackle) receives (maintaining in locked state) pin 268 of lever 264 (blocker); figure 24; paragraphs [0112], [0117]), and wherein the third position of the actuator includes the cam interacting with the blocker in the closed position (position of motor 282 corresponding to the position of cam 272 shown in figure 25 (third position of actuator) where cam 272 abuts spring 270 of lever 264 (blocker), such that pin 268 of lever 264 (blocker) is adjacent to and able to enter the recessed formation 232 of lever 224 (shackle), i.e., able to move to closed position of lever 264 (blocker); figure 25; paragraph [0119]), and the shackle allowed to move between the locked position and the unlocked position (in the position shown in figure 25 (third position of actuator) where cam 272 abuts spring 270 of lever 264 (blocker), pin 268 of lever 264 (blocker) is able to enter (moving lever 264 from unlocked position to locked position) the recessed formation 232 of lever 224 (shackle); figure 25; paragraph [0119]).

Since the common technical features are previously disclosed by the Bruwer reference, the common features are not special and so Groups I and II lack unity.