

Locking device

The present invention relates to a locking device for introducing into a recess of an arrangement to be locked, wherein the locking device has an actuation bolt and a latch section which is rotationally fixedly connectable to the actuation bolt and which can be locked and/or unlocked by rotating the actuation bolt, wherein the latch section can be fastened to the actuation bolt in a plurality of positions. The invention further relates to the use of such a locking device as a transportation lock of a corpus part to be locked such as a device housing door of a security-sensitive gambling device, betting device and/or entertainment device.

End customers or device operators of various security-sensitive equipment such as gambling machines, betting machines or entertainment machines want to be able to lock the security-relevant housing components with their own locks to be able to ensure the observation of their own, individual security requirements or to be able to exclude security vulnerabilities, for example during transport. With respect to the named gambling machines, betting machines and/or entertainment machines, this may be the device door which is to be locked by a user-specific lock. Depending on the device, however, this can also be a cover or a flap, for example, with which a money storing unit in the device interior can be closed or a removable drawer or a tray on which a security-relevant component is provided.

Such devices to be locked should nevertheless to date already be provided with locking device by the manufacturer, for example to prevent an unwanted opening or an unauthorized opening during transport or to be able to carry out a function test during acceptance, which can to date require a proper locking of doors and flaps. In order, on the one hand, to ensure a proper locking, but, on the other hand, to facilitate the conversion of the locking device frequently carried out by the end customer, it would be desirable to be able to introduce a fully functional locking device into the recess of the device to be locked into which the lock desired by the

end customer is installed according to its intended purpose and simultaneously to allow an authorized user a simple disassembling. In this respect, it would furthermore be desirable to be able to use the locking device for different recesses or devices to be locked since the named recesses are sometimes ordered by different customers in different geometries in order exactly to match the customer's individual, final locking device. As, for example, the documents US 2005/0192101, US 2006/0012184 or US 2010/0117384 show, door locks of gaming machines can have very different configurations so that the door recesses or housing recesses into which these locks have to be inserted with an exact fit can be configured very differently.

Documents CA 2691923, US 3,593,458 or US 4,718,195 show transportation locking device by means of which doors can be locked for transport to the final customer, wherein the corresponding locking device can be inserted into the door or into the door post recess in which then the final door lock is installed. These transportation locking devices are, however, rather of only a provisional nature and not really fully functional in the sense that the door could be locked and unlocked multiple times by an actuating element to be handled conventionally such as a rotary knob or a slider. In addition, these transportation locking device require an individual matching to the device to be locked or they can practically not be used for different doors or inserted into differently configured recesses.

Document WO 2008/119541 shows a locking device for a door in which an actuation bolt in the form of a rotatable mandrel can be inserted into a bearing recess of a fitting component, wherein an actuating handle is plugged onto the mandrel from one side and the mandrel itself is rotationally fixedly plugged into a transmission plate which converts a rotary movement of the mandrel into a sliding movement of the actual latch section of the fitting.

Documents DE 39 32 939 and CH 553 903 show further locking device in which the locking plate is respectively screwed tight to the actuation bolt. Furthermore, document US 4,492, 394 shows a locking device in which the locking plate can be fastened to the actuation bolt in different/various axial positions. The locking plate is in this respect likewise screwed onto the actuation bolt and is secured against

rotation at a specific screwing height by a friction clutch, at least as long as the rotary actuating forces do not exceed the inhibition of the friction clutch. If the actuation bolt is overrotated while the latch plate is in contact, the named friction clutch slips so that the locking plate is screwed to the pin and is thus axially adjusted.

It is the underlying object of the present invention to provide an improved locking device of the initially named kind which avoids disadvantages of the prior art and further develops the latter in an advantageous manner. The locking device should preferably be able to be inserted into different recesses with an exact fit and should ensure a fully functional lock also with multiple actuation, but simultaneously allow a simple disassembling, as free of tools as possible, to simplify the replacement of the locking device by an authorized end customer.

This object is satisfied in accordance with the invention by a locking device in accordance with claim 1 and by the use of such a locking device in accordance with claim 17. Preferred embodiments of the invention are the subject of the dependent claims.

To be able to match the locking device simply to recesses of different depths or to devices to be locked of different thickness, the latch section can be fixed at different sections of the actuation bolt so that the locking device receives a different length. In accordance with the invention, the actuation bolt and the latch section have releasable latching/detent means having a plurality of latching/detent positions for latching/detent the latch section to the actuation bolt in a plurality of axial positions. The latching/detent means in this respect comprise latch contours which engage into one another in a shape-matched manner, which can be pushed beyond one another in the longitudinal direction of the actuation bolt with elastic deformation and which can latch into one another transversely to the longitudinal direction of the actuation bolt by elastic recoil so that the latch section is held axially at the actuation bolt in the respective latching/detent position. Depending on how thick the corpus is in which the recess is formed into which the locking device is to be introduced or depending on how large the spacing is of the counter-piece to be caught by the latch part from the named recess, the latch section can be fixed to

the actuation bolt in a different axial position. The locking device can hereby be used simply for different devices to be locked, wherein the latch section fixes itself at the actuation bolt on the plugging together in the respectively desired position by the latching/detent means. The latch section and the actuation bolt only need to be plugged to one another in the axial direction of the actuation bolt and to be displaced relative to one another for so long until the desired position is found in which the latching/detent means then lock.

The latching/detent means can in this respect operate elastically to be able to be locked and unlocked a multiple of times and to ensure a multiple reuse of the locking device at different devices to be locked. In this respect, the latching/detent means are configured as releasable in a nondestructive manner so that the locking device can be dismantled in a simple manner, preferably free of tools, in that the latch section is again released from the actuation bolt. The disassembling by an authorized end customer is hereby considerably simplified.

The latching/detent means can in this respect generally comprise differently configured latch/detent contours. In an advantageous further development of the invention, the latch/detent contours of the latching/detent means comprise at least one latch projection which is configured as elevated transversely to the longitudinal direction of the actuation bolt and at least one latch depression which is configured as sunk transversely to the longitudinal direction of the actuation bolt, wherein the latch depression and the latch projection are shape-matched to one another, are in particular configured complementary to one another, so that the latch projection can be lowered into the latch depression and can latch into it. To be able to realize the named plurality of latching/detent positions and to be able to fix the latch section at the actuation bolt in different axial positions, the latch contours in this respect advantageously comprise a plurality of latch depressions which are arranged behind one another and/or spaced apart from one another in the longitudinal direction of the actuation bolt so that the at least one latch depression can selectively latch into one of the plurality of latch depressions. Alternatively or additionally, a plurality of such latch projections can conversely also be provided of which selectively one can latch into the at least one latch depression, wherein the named plurality of latch projections can be arranged behind one another and/or

spaced apart from one another in the longitudinal direction of the actuation bolt.

The latch contours, in particular in the form of the named latch projections and latch depressions, can be formed as undercuts, viewed in the longitudinal direction of the actuation bolt, wherein the undercuts at the latch section and at the actuation bolt are shaped-matched to one another so that a respective undercut pair disposed in engagement engages under one another transversely to the longitudinal direction of the actuation bolt. A covering of the respective latch contour pair arises due to the undercut of the latch contours - viewed in the longitudinal direction of the actuation bolt - in the latched position.

At least one of the named latch contours, for example the latch projection or the latch depression or also both, are in this respect themselves elastic or are arranged on an elastic part or on a movably supported, elastically preloaded part so that at least one of the latchable latch contours is movable so far transversely to the longitudinal direction of the actuation bolt for unlatching that the latch contour can be pushed beyond the other latch contour.

In an advantageous further development of the invention, the latching/detent means can comprise a ribbed and/or grooved surface structure at the actuation bolt and/or at the latch section, which surface structure can be brought into shape-matched holding engagement with a counter-contour piece with elastic and/or plastic deformation of the surface structure and/or of the named counter-contour piece on the axial plugging onto one another of the latch section and actuation bolt. Such a ribbed or grooved surface structure allows a fine setting of the desired axial position of the latch section and the actuation bolt. The ribbed surface structure at the actuation bolt can advantageously comprise a plurality of holding ribs at the actuation bolt which are preferably arranged, staggered behind one another in the longitudinal direction of the actuation bolt, at least partly at the periphery of the actuation bolt, wherein the counter-contour piece can comprise at least one holding rib at the latch section which can advantageously be provided at least partly at an inner peripheral side of the latch section, in particular in a passage recess pluggable onto the actuation bolt. The arrangement of the holding ribs staggered behind one another at the actuation bolt allows a large adjustment path. At the

same time, on the provision of the counter-contour piece in a passage recess, a sufficiently rigid seat can be ensured to apply the holding forces.

In an advantageous further development of the invention, the ribbed or grooved surface structure or the counter-contour piece cooperating therewith can be configured such that different actuating forces and holding forces result, in particular such that the force required for plugging on the latch section and the actuation bolt is smaller than the force which is required for the opposite, axial release of the latch connection. A high operating comfort in the assembly can be combined with sufficiently high holding forces by such a configuration of the grooving or ribbing. The relatively small plug-on forces allow a simple plugging on by hand and thus also a precise, coordinated achieving of the desired position, whereas conversely the higher unlatching forces ensure that the latch section is sufficiently held at the actuation bolt and is secured against slipping down. The holding ribs provided staggered behind one another at the actuation bolt and/or the holding rib provided at the counter-contour piece can in particular be formed in the manner of saw teeth, i.e. can have flanks of differently strong inclinations, which lock with the respective counter-contour or enter into engagement therewith such that the plugging onto one another with elastic and/or plastic deformation of the involved components is easier than the pulling or pushing apart from one another taking place in the reverse direction.

The locking device can generally be received or supported in the recess of the component to be locked in different manners. For example, the actuation bolt can be directly stored or supported in the recess, in particular when the named recess has a rotationally symmetrical contour, which is not, however, a requirement. For example, the actuation bolt can comprise a corresponding shoulder which forms an axial support surface and/or a bearing head, for example thickened and in particular cylindrical, which is supported at the peripheral side at an inner contour of the recess or which forms a radial bearing surface. In order, however, to allow a simpler matching to different recesses and to achieve a better rotatability, in an alternative further development of the invention, a rotary guide part can be associated with the actuation bolt; it is pluggable with an exact fit into the named recess and has latching/detent means for latching/detent to a marginal contour

surrounding the recess.

The actuation bolt can advantageously be rotatably received in the rotary guide part, wherein in this case, the rotary guide part can be configured such that the rotary guide part can be rotatably fixedly latched in the recess. In general, the named rotary guide part could, however, also be rotationally fixedly joined to the actuation bolt and can in this case be rotatably supported in the recess or in an interposed bearing piece and/or adapter piece. With a rotatable connection between the actuation bolt and the rotary guide part, the fixing of the rotary guide part in the recess is, however, simplified.

In an advantageous further development of the invention, the latching/detent means of the rotary guide part can comprise at least one latch projection which projects radially at the peripheral side from the corpus of the rotary guide part, which is radially elastically deformable on the axial insertion of the rotary guide part into the recess and which snaps back radially after passing through the recess so that the latch projection prevents a pulling back again or a pulling of the rotary guide part out of the recess. The rotary guide part can in this respect advantageously be configured and/or intended to be plugged into the named recess from an outer side of the component to be latched or of the associated corpus part so that the latch projection comes to lie on an inner wall side or springs back in the locked state so that an unauthorized release of the latch projection is prevented or the latch projection is only accessible and can be opened in an open position of the device to be locked.

In order to be able to insert the rotary guide part with an exact fit into recesses of different depths or to be able to use it for corpus parts of different thicknesses, the latching/detent means of the rotary guide part can comprise a plurality of latch projections which are arranged staggered behind one another in the longitudinal direction of the rotary guide part such that a respective different latch projection can be latched with an exact fit with marginal contours of the recess of different thicknesses. The latch connection in this respect is actuated automatically irrespective of the respective marginal contour thickness such that, on the insertion of the rotary guide part, a plurality of the latch projections arranged staggered

behind one another are initially pressed back and spring back again until the end position of one or more latch projections has been reached, while one or more latch projections remain pressed back since they do not again exit the recess or its narrow section. The rotary guide part is then held with an exact fit in the recess by at least one of the springing-back latch projections moving into the locking position. The locking device can be adapted in a simple manner to corpuscorpus parts of different thicknesses or to recesses of different depths and can be used without problem for such differently configured components by the provision of a plurality of latch projections staggered behind one another in the insertion direction of the rotary guide part.

The actuation bolt can be received freely rotatable in the rotary guide part or can be rotatable without fixing over the total, optionally limited, rotary range. However, to signal to an operator when the unlocked position or the locked position has been reached, in a further development of the invention, latching/detent means for latching/detent the actuation bolt in an unlocked rotary position and/or in a locked rotary position can be provided at the rotary guide part and/or at the actuation bolt, wherein the named latching/detent means advantageously snap elastically in the respective latched position and allow a rotation of the actuation bolt which is as resistance-free as possible in the unlatched position. In an advantageous further development of the invention, the named latching/detent means can have at least one transverse rib and/or at least one transverse groove at an axial support surface of the rotary guide part and/or of the actuation bolt and/or can comprise at least one longitudinal rib and/or at least one longitudinal groove at a radial support surface of the rotary guide part and/or of the actuation bolt. In an advantageous further development of the invention, at least one transverse rib extending transversely to the axis of rotation and a transverse groove equally extending transversely can respectively be provided at the end face at the rotary guide part and at the end face at the actuation bolt, the transverse rib and the transverse groove are latching/detent into one another when they are aligned with one another so that the rotary position of the actuation bolt is fixed relative to the rotary guide part. The actuation bolt and the rotary guide part can in this respect, for example, be preloaded elastically axially with respect to one another by a spring device or also by a certain elasticity of the actuation bolt in the longitudinal direction so that, on a

corresponding rotary position, the transverse rib is pulled into the named transverse groove and conversely an unlatching is possible by rotating the actuation bolt. The actuation bolt can also be axially latched at the rotary guide part, wherein the latching/detent means can be configured such that the actuation bolt has a certain elasticity axially from the latched position, i.e. can be pulled out a little from the latched position and is pulled back again by the latching/detent means.

The axial means for the axial latching/detent of the actuation bolt at the rotary guide part can, for example, have a peripheral groove and a peripheral projection cooperating therewith, the two being able to have slanted or rounded flanks to achieve the named elasticity or spring effect.

To be able to secure a plurality of positions by latching/detent, for example the unlocked and the locked position of the latch section, a plurality of transverse grooves can advantageously be provided for one transverse rib and/or a symmetrical arrangement of transverse grooves and transverse ribs can be provided which can be brought in alignment with one another in different rotary positions.

The actuation bolt can advantageously comprise a circular-cylindrical guide section, optionally also a plurality of circular-cylindrical guide sections having relief grooves arranged therebetween, which at least one guide section rotatably supports the actuation bolt in a recess, in particular in a recess in the named rotary guide part, such that a smooth rotary actuation of the actuation bolt is made possible. On the other hand, the actuation bolt can have a latch section which can have a cross-sectional contour differing from the circular and which serves the latch connection with the latch section at a bolt/pin section arranged displaced with respect to the named circular-cylindrical guide section in the axial direction. The cross-sectional contour of the named latch section is in this respect advantageously dimensioned and configured such that it lies within the contour of the circular-cylindrical guide section when observed in the longitudinal direction of the actuation bolt so that the latch section can be plugged through the bearing recess without being caught for a rotatable support of the actuation bolt. The named latch section of the actuation bolt can in particular have a flattened portion at the peripheral side,

preferably two flattened portions arranged opposite one another, at which flattened portions the aforesaid latching/detent means can be provided for latching/detent the latch section and the actuation bolt.

To achieve a simple assembly with a simultaneous protection from unauthorized disassembling, provision is made in an advantageous further development of the invention that the actuation bolt has an actuating head and can be plugged into the recess of the device to be locked from a side such that the actuating head comes to lie on a side of the recess and the latch section can be placed onto the actuation bolt from an oppositely disposed side of the recess. The corpus part of the device to be locked having the recess is hereby received in the manner of a sandwich between the actuating head of the actuation bolt, on the one hand, and the latch section to be rotated, on the other hand, so that the latch section is not accessible in the closed state of the corpus part. Apart from this, the named sandwich-like reception of the corpus part to be locked between the actuating head and the latch section can also be utilized so that the locking device is secured against unwanted slipping out or pulling out at the corpus part, for example when the latch connection of the aforesaid rotary guide part at the marginal contour of the recess fails. For this purpose, the latch section can be configured as larger than the recess viewed in the direction of rotation of the locking device and/or can be arranged projecting beyond the recess at the marginal side so that the latch section seated on the actuation bolt prevents a pulling out of the locking device. In a further development of the invention, the named latch section can be a latch section which projects radially from the actuation bolt, which is approximately of plate shape and whose radial overhang beyond the actuation bolt can exceed the radius, preferably also the diameter, of the recess in the component to be locked.

The present invention will be explained in more detail in the following with reference to a preferred embodiment and to associated drawings. There are shown in the drawings:

Fig. 1: a longitudinal section through the locking device as well as a side view of the locking device in accordance with an advantageous embodiment of the invention in an exploded representation which shows the actuation

bolt, the rotary guide part and the latch section in a row behind one another along the rotary actuation axis of the locking device;

Fig. 2: a perspective exploded representation of the locking device shown in Fig. 1;

Fig. 3: different views of the locking device of the two preceding Figures in the assembled state in which the actuation bolt is plugged through the rotary guide part and is latched to the latch section, wherein the part view (a) shows a perspective view, the part view (b) shows a plan view in the direction of the rotary actuation axis and the part section (c) shows a side view perpendicular to the named rotary actuation axis;

Fig. 4: a perspective exploded view of the locking device of the preceding Figures, wherein different latch sections latchable to the actuation bolt are shown which are selectively latchable to the actuation bolt to be able to match the locking device to different devices to be locked;

Fig. 5: a perspective representation of the inner side of a device door to be locked, wherein the part of the locking device, including the latch section, the actuation bolt and the rotary guide part, can be seen which projects on the inner side of the door;

Fig. 6: a side view of the locking device installed in the device door from Fig. 5 in a direction of view perpendicular to the rotary actuation axis, wherein the part view in accordance with Fig. 6 (a) shows a plan view and the part view in accordance with Fig. 6 (b) shows a sectional view; and

Fig. 7: a perspective representation of a gaming machine having a locking device in accordance with the preceding Figures.

As the Figures show, the locking device 1 can substantially comprise only three components, wherein a substantially mandrel-shaped actuation bolt 6 can be plugged through a rotary guide part 8 so that the actuation bolt 6 is rotatably

received in the named rotary guide part 8 and can be rotationally connected at a pin section projecting from the rotary guide part 8 to a, for example, plate-shaped latch section (bolt part) which engages behind a contour piece of a bolt striker plate to be caught or releases it in dependence on the rotational position.

The named actuation bolt 6 can, as Figures 1 and 2 show, comprise an at least approximately cylindrical guide section 6a which can be adjoined by a latch section 6b differing from the circular. The named latch section 6b can - cf. Fig. 2 - approximately continue the contour of the guide section 6a, but in this respect have at least one, preferably two, oppositely disposed flattened portions at which latching/detent means 10 are provided for latching/detent with the latch section 7. The cross-sectional contour of the actuation bolt 6 in the named latch section 6 is advantageously dimensioned such that it lies within the cross-sectional contour defined by the guide section 6a viewed in the longitudinal direction of the actuation bolt 6 so that the actuation bolt 6 can be plugged without disturbance through the bearing borehole 23 in the rotary guide part 8.

At the side of the guide section 6a disposed opposite the named latch section 6b, the actuation bolt 6 has an actuating head 17 which is considerably enlarged in diameter with respect to the guide section 6a in diameter and can in particular have the shape of an approximately plate-shaped widened portion. As Fig. 2 (a) shows, the named actuating head 17 can comprise a passage recess 24, for example to be able to lock the actuating head 17 with a padlock or to be able to connect an actuating handle rotationally fixedly to the actuating head 17.

The end face of the actuating head 17 facing the rotary guide part 8 forms an axial bearing surface 19 which cooperates at the rotary guide part 8 with an axial bearing surface 20 which axial bearing surface 20 can be formed by an end face of the named rotary guide part 8. The named axial bearing surfaces 19 and 20 can contact one another to define the axial position of the actuation bolt 6 relative to the rotary guide part 8. As Figures 1, 2 and also 6 (a) show, second latching/detent means 18 are provided at the named axial bearing surfaces 19 and 20 for rotary latching/detent of the actuation bolt 6 at the rotary guide part 8, which second latching/detent means 18, on the one hand, comprise a projecting transverse rib 21

and a plurality of transverse grooves 22 which are matched to the transverse rib 21 and which extend in different rotary orientations. In the embodiment drawn, the transverse rib 21 is provided at the actuating head 17, whereas the transverse grooves 22 are provided in the rotary guide part 8. In principle, however, the transverse rib could also conversely be provided at the rotary guide part 8 and the transverse grooves at the actuating head 17, wherein, however, in particular with the approximately plate-like contouring of the actuation bolt 17 shown in the Figures, the arrangement of the transverse rib 21 at the actuating head 17 shown in the Figures is preferred to achieve a more uniform support of the axial bearing surfaces 19 and 20 on one another over the total rotary region.

For example, transverse grooves 22 which are arranged at right angles to one another can be provided at the end face of the rotary guide part 8 to be able to latch the latch section 7 in positions rotated at right angles to one another, which rotary positions can advantageously correspond to a locked position and an unlocked position.

The latch section 6b of the actuation bolt 6 can be introduced in accordance with its intended purpose into a counter-contour piece 13 at the latch section 7 matched thereto, wherein the named counter-contour piece 13 and the latch section 6b can advantageously be configured such that they can be pushed into the named counter-contour by an axial pushing in of the actuation bolt 6 in the longitudinal direction of the named actuation bolt 6. The named counter-contour piece 13 can in particular be formed by a passage recess of the latch section 7 matched in diameter to the latch section 6b of the actuation bolt 6.

The latching/detent means 10 for latching/detent the latch section 7 and the actuation bolt 6 are in this respect advantageously configured such that they automatically latch on the plugging onto one another of the latch section 7 and the actuation bolt 6. The latching/detent means 10 in this respect comprise latch contours which are provided at the latch section 7 and at the actuation bolt 6, which are each formed as undercut in the longitudinal direction of the actuation bolt and which are shape-matched to one another such that an undercut pair disposed in engagement in a respective latch position can engage behind one another and

overlap at least partly viewed in the longitudinal direction of the actuation bolt. Latch contours, for example in the form of a latch tongue and a latch depression, can in particular be formed at the latch section 7 and at the actuation bolt 6 as latch contours and can project or be depressed transversely to the longitudinal direction of the pin, said latch tongue and latch depression being pushable beyond one another in the longitudinal direction of the actuation bolt under elastic deformation and/or deflection transversely to the longitudinal direction of the bolt and thus being able to latch into one another by an elastic snapping back or springing back transversely to the longitudinal direction of the bolt and thus being able to enter into shape-matched holding engagement by which the latch section is axially fixed at the actuation bolt.

As Fig. 1 shows, the latching/detent means 10 can, on the one hand, comprise a grooved or ribbed surface structure 11 at the actuation bolt 6, in particular at the flattened portions 6c of the latch section 6b of the actuation bolt 6, the surface structure being able to comprise a plurality of holding ribs 12 which are of saw tooth shape and which are arranged staggered behind one another in the longitudinal direction of the actuation bolt 6, cf. Fig. 1. The saw tooth profile of the holding ribs 12 is in this respect advantageously orientated such that the named surface structure 11 can be pushed into the passage recess of the latch section 7 with relatively small forces, but can only be pulled out again in the opposite direction with increased forces, or sets increased forces against a pulling out.

The counter-contour piece 13 at the latch section 7 can likewise have a surface structure ribbed or grooved in a similar manner. As the drawn embodiment in accordance with Fig. 1 shows, the latching/detent means 10 at the counter-contour piece 13 can, however, also have only a single holding rib 14. Depending on the design of the fit and depending on the material selection, such a holding rib could optionally be fully dispensed with, for example when the material of the counter-contour piece 13 is sufficiently soft so that the holding ribs 12 of saw tooth shape at the actuation bolt 6 can dig into or hook at the named counter-contour piece 13. Conversely, it would also be conceivable to provide a corresponding, preferably saw tooth shaped and/or ribbed and/or grooved surface structure at the named counter-contour piece 13 and to configure the actuation bolt 6 free of a grooved

and/or ribbed surface structure, in particular when the pin is formed from a sufficiently soft and/or flowable material, for example thermoplastics, so that a surface structure at the counter-contour piece 13 can dig into or hook at the shaft of the, for example completely cylindrical latch section of the actuation bolt.

However, the latch contour design shown in the Figures is preferred both at the actuation bolt 6 and at the counter-contour piece 13 having mutually engaging latch contour projections or holding ribs 12 and 14 which can be pushed beyond one another under elastic deformation and can latch into one another by an elastic springing back.

The latch section 7 can be latched to the actuation bolt 6 at different axial positions due to the holding ribs 12 staggered behind one another, i.e. the latch section 7 be plugged more or less far, as desired in each case, onto the actuation bolt 6 and can be secured in the respective position by latching/detent the latching/detent means 10, wherein the holding rib 14 respectively comes into shape-matched engagement with another holding rib 12.

As Figures 1 and 2 show, the rotary guide part 8 can comprise an at least approximately cylindrical plug-in section 25 as well as an adjoining contact or head section 26 which projects radially with respect to the plug-in section 25 and/or is configured much larger in diameter than the plug-in section 25. The named head section 26 can in particular form a contact shoulder with which the rotary guide part 8 can be set at an end-face marginal contour of the recess into which the locking device 1 can be inserted. As Figures 5 and 6 show, a component to be locked such as the door 2 of a housing 3 of a gaming machine, but optionally also another corpus part such as a drawer, a flap or a cover, can comprise a recess 9 into which the locking device 1 can be inserted. The named recess 9 can in this respect in particular be a passage recess which passes through a panel part of the device to be locked and which can, for example, be a cylindrical passage hole.

As Fig.6 (b) illustrates, the plug-in section 25 of the rotary guide part 8 can be shape-matched to the named recess 9 such that the plug-in section 25 can be plugged into the recess 9 with an exact fit. The outer diameter of the plug-in section

24 can in particular be adapted to the inner diameter of the recess 9 or to its clearance so that a seat with an exact fit results. In this respect, the named plug-in section 25 of the rotary guide part 8 is advantageously axially longer than the depth of the recess 9 so that the plug-in section 25 projects a little from the recess 9 on a complete plugging in, cf. Fig. 5 and Fig. 6 (b). In its intended position, the rotary guide part 8 contacts an outer side marginal contour of the recess 9, for example a flat outer side of the component to be locked, with the shoulder of the head section 24 and projects with an end section of the plug-in section 25 on a rear side or inner side of the component from the recess.

As Fig. 4 shows, third latching/detent means 15 are provided at the rotary guide part 8 to latch the rotary guide part 8 to the named recess 9 and to fix it in the position in accordance with its intended purpose. The named latching/detent means 15 can in particular comprise latch projections 16 which project at the periphery of the plug-in section 25 over it radially and which can be formed, for example, by integrally molded spring tongues.

In this respect, a plurality of such latch projections 16 are advantageously arranged staggered behind one another in an axial plug-in direction to be able to latch the rotary guide part 8 with an exact fit to corpus parts of different thickness or to recesses 9 of different depths. The named latch projections 16 are spaced apart from the shoulder of the head section 26 of the rotary guide part by different amounts for this purpose so that the different latch projections 16 define a different clearance from the named head section 26. Depending on how thick the marginal contour surrounding the recess 9 is, a different latch projection 16 latches, as is shown in Fig. 6 (b).

The named latch projections 16 are advantageously arranged group-wise distributed over the periphery of the rotary guide part 8, for example pair-wise on oppositely disposed sides so that at least two latch projections spaced apart from the shoulder of the head section 26 by the same amounts can always latch.

Fig. 4 furthermore shows different latch sections 7 which can be latched with the actuation bolt 6 and which can be selectively latched to the actuation bolt 6 to be

able to match the locking device 1 to different devices to be locked. In a further embodiment (not shown in the Figures), a latch section 7 can have a hook-shaped section which can be brought into engagement with a corresponding counter-piece in a locked position.

As can be seen, from example, from Figures 4, 5 and 6, the locking device 1 can be assembled as follows: First, the rotary guide part 8 is pushed from the outside into the recess 9 at the device 3 to be locked, for example the door 2 shown, so that the latch projections 16 latch and the rotary guide part 8 is held at the door 2 at an exact position.

The actuation bolt 6 is then plugged into the rotary part 8. Optionally, the plugging-in of the actuation bolt 6 can also already take place before the insertion of the rotary guide part 8. As Fig. 6 (b) shows, latching/detent means 27 can latch or hold the actuation bolt 6 axially in the rotary guide part 8. Said latching/detent means 27 can, for example, comprise an annular projection in the passage bore 23 of the rotary guide part 8 and an annular constriction at the actuation bolt 6 which snap into the rotary guide part 8 on reaching the axial position of the actuation bolt 6 according to its intended purpose to hold the actuation bolt 6 axially fixedly, but rotatably about the axis of rotation 28 of the actuation bolt 6. Alternatively, an annular latch projection which can latch into an annular groove or into another latch contour at the rotary guide part 8 could also be provided at the actuation bolt 6.

The latch section 7 is then axially plugged onto the actuation bolt 6 from the oppositely disposed side of the component to be locked, that is in particular from its inner side, and is pushed so far onto the pin until the latch section 7 has reached the desired axial position which can be seen from Fig. 6 (a). In this respect, the latching/detent means 10 move into latching/detent engagement and fix the latch section 7 axially on the actuation bolt 6.

The latch section 7 is simultaneously rotationally fixedly connected to the actuation bolt 6 by the contour shape of the latch section 6b differing from the circular and by a contour shape of the counter-contour piece 13 likewise different from the circular so that the latch section 7 can be moved to and fro between a locking and a non-

locking position by rotating the actuation bolt 6. In this respect, the transverse rib 21 at the actuating head 17 and one of the transverse grooves 22 at the rotary guide part 8 respectively come into engagement to hold the actuation bolt 6 and thus the latch section 7 in a latching/detent manner in the locked position and in the non-locked position.

To disassemble the locking device 1, a procedure can generally be followed in the opposite order as in the assembly in order then, for example, to install the desired final lock into the recess 9 by the end customer.

The gaming device shown in Fig. 7 in the drawn embodiment is configured as a so-called upright device which comprises a closet-like device housing in which a display unit is provided in the form of two large screens and a display field disposed therebetween for displaying gaming information in a manner known per se. A projecting operating panel section which can comprise operating buttons for the game control is provided at the front side at the device housing in a lower half.

Furthermore, a mouthpiece for introducing bills into a bill processing device is provided at the front side of the device housing, for instance in the region of the named operating panel section. In the embodiment shown, a housing door is pivotally connected to the base housing corpus pivotable about an upright axis.

The housing door has a recess 9 into which the locking device 1 can be inserted.

Claims

1. A locking device for introducing into a recess (9) of an arrangement (3) to be locked, the locking device (1) having an actuation bolt (6) as well as a latch section (7) which is rotatably fixedly connectable to the actuation bolt (6) and which can be locked and/or unlocked by rotating the actuation bolt (6), wherein the latch section (7) can be fastened in a plurality of positions at the actuation bolt (6), characterized in that the actuation bolt (6) and the latch section (7) have releasable detent means (10) having a plurality of detent positions locking the latch section (7) in a plurality of axial positions at the actuation bolt (6), wherein the detent means (10) have detent contours which engage into one another in a shape-matched manner, which can be pushed beyond one another in the longitudinal direction of the actuation bolt under elastic deformation and which can latch into one another by elastic spring back transversely to the longitudinal direction of the actuation bolt (6).
2. A locking device in accordance with the preceding claim, wherein the latch contours of the detent means (10) comprise at least one latch projection configured as elevated transversely to the longitudinal direction of the actuation bolt and at least one latch depression sunk transversely to the longitudinal direction of the actuation bolt, wherein the latch depression and the latch projection are configured shape-matched to one another and the latch projection can be lowered into the latch depression and/or the latch contours of the detent means (10) are configured as undercut in the longitudinal direction of the actuation bolt.
3. A locking device in accordance with one of the preceding claims, wherein the detent means (10) comprise as latch contours a ribbed and/or grooved surface structure (11) at the actuation bolt (6) and/or at the latch section (7), which surface structure (11) can be brought into shape-matched holding engagement with a counter-contour piece (13) under elastic deformation of the surface structure (11) and/or of the counter-contour piece (13) on an

axial plugging onto one another of the latch section (7) and the actuation bolt (6).

4. A locking device in accordance with the preceding claim, wherein the ribbed surface structure (11) comprises a plurality of holding ribs (12) at the actuation bolt (6) which are arranged staggered behind one another in the longitudinal direction of the actuation bolt (6) at least partly at the periphery of the actuation bolt (6) and the counter-contour piece (13) comprises at least one holding rib (14) at the latch section (7).
5. A locking device in accordance with the preceding claim, wherein the holding rib (14) of the counter-contour piece (13) is provided at least partly at an inner peripheral side of the latch section (7) and/or in a passage recess of the latch section (7) which can be plugged onto the actuation bolt (6).
6. A locking device in accordance with one of the two preceding claims, wherein the holding ribs (12, 14) are configured in the form of saw teeth and/or the surface structure (11) has a contour such that plug-on forces which are necessary for the axial plugging on of the latch section (7) and the actuation bolt (6) are smaller than removal forces which are necessary for the axial pulling of the latch section (7) from the actuation bolt (6) and for the release of the latch connection.
7. A locking device in accordance with one of the preceding claims, wherein the actuation bolt (6) has a rotary guide part (8) associated with it which can be plugged into the named recess (9) with an exact fit and has detent means (15) for detent to a marginal contour surrounding the recess (9).
8. A locking device in accordance with the preceding claim, wherein the detent means (15) of the rotary guide part (8) comprise at least one latch projection (16) which projects radially at the peripheral side from the corpus of the rotary guide part (8), which latch projection (16) is radially elastically deformable on the axial plugging of the rotary guide part (8) into the recess (9) and snaps back radially after passing through the recess (9).

9. A locking device in accordance with the preceding claim, wherein a plurality of latch projections (16) are provided at the rotary guide part (8) which are arranged staggered behind one another in the longitudinal direction of the rotary guide part (8) such that a respective other latch projection (16) can be latched with an exact fit with marginal contours of the recess (9) of different thicknesses.
10. A locking device in accordance with one of the three preceding claims, wherein the actuation bolt (6) is rotatably received in the rotary guide part (8) and the rotary guide part (8) is configured such that the rotary guide part (8) is rotationally fixedly latchable in the recess (9).
11. A locking device in accordance with one of the preceding claims, wherein the actuation bolt (6) and/or the rotary guide part (8) has/have detent means for axial detent, allowing axial rotary movements. of the actuation bolt (6) at the rotary guide part (8), wherein the named detent means (27) are preferably configured such that the actuation bolt (6) is movable elastically a little axially from the axial position latched as intended and is urged back elastically by the detent means (27) into the axial position latched as intended.
12. A locking device in accordance with one of the preceding claims, wherein the actuation bolt (6) and/or the rotary guide part (8) has/have two detent means (18) for the releasable rotary detent of the actuation bolt (6) in an unlocked rotary position and/or in a locked rotary position.
13. A locking device in accordance with the preceding claim, wherein the second detent means (18) are provided at an axial support surface (19, 20) of the rotary guide part (8) and/or of the actuation bolt (6) and/or comprise at least one transverse rib (21) extending transversely to the axis of rotation of the actuation bolt (6) and/or one transverse groove (22) extending transversely to the axis of rotation (28) of the actuation bolt (6).

14. A locking device in accordance with one of the preceding claims, wherein the actuation bolt (6) has an actuating head (17) and can be plugged from one side into the recess (9) such that the actuating head (17) comes to lie on a side of the recess (9) and the latch section (7) can be set onto the actuation bolt (6) from an oppositely disposed side of the recess (9).
15. A locking device in accordance with one of the preceding claims, wherein the actuation bolt (6) has a circular-cylindrical rotary guide section (6a) as well as a latch section (6b) which latch section (6b) has a cross-sectional contour which differs from the circular and which lies within the contour of the guide section (6a) viewed in the longitudinal direction of the actuation bolt.
16. A locking device in accordance with the preceding claim, wherein the named latch section (6b) of the actuation bolt (6) comprises oppositely disposed flattened portions at which the latch means (10) are provided.
17. Use of a locking device in accordance with one of the preceding claims as a provisional transportation lock of a lockable corpus part of a gaming and/or entertainment device, which provisional transportation lock is replaced by a final closing system.