July 2, 1963 H. F. McKNIGHT ETAL 3,095,723

LOCK AND MAGNETIC RELEASE DEVICE

Filed May 23, 1962

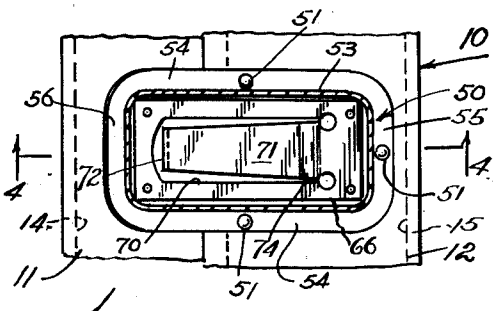

Fig. 1.

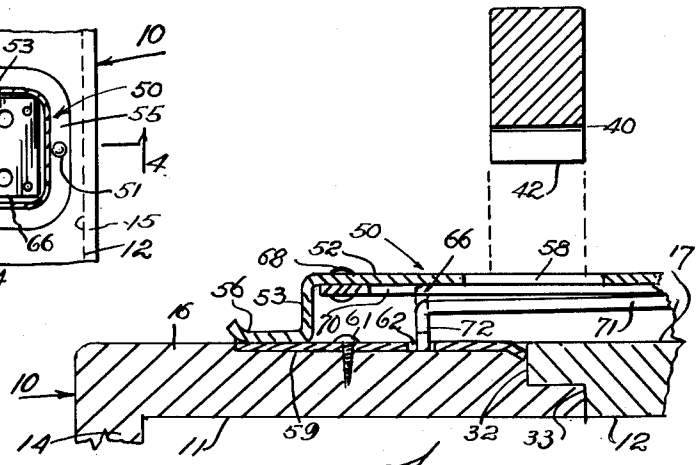

Fig. 2.

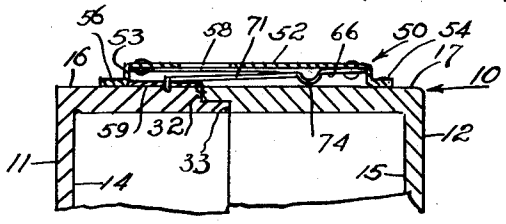

Fig 4

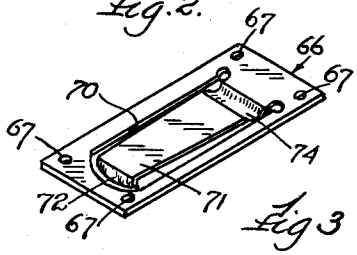

Fig 3

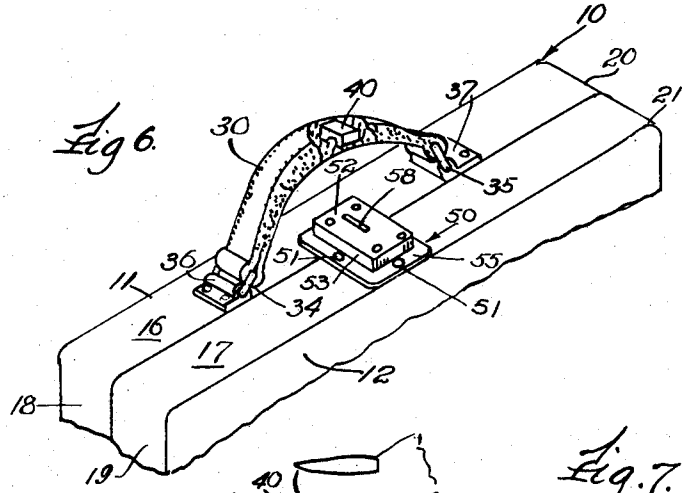

Fig 6.

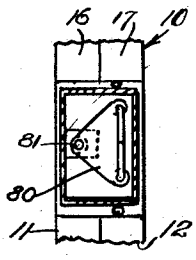

Fig. 5

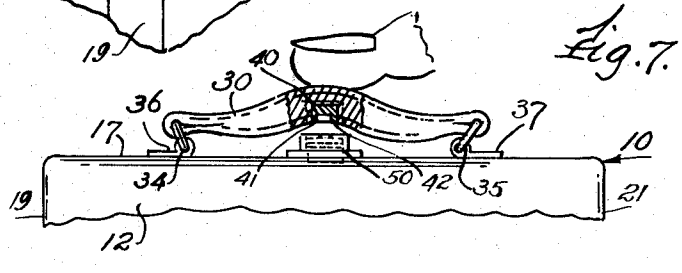

Fig. 7.

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LOCK AND MAGNETIC RELEASE DEVICE

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7 Claims. (Cl. 70—69)

Our invention relates to lock construction and more particularly to an improved magnetic lock device adapted to secure and release relatively movable members in a given relative position. While our invention is adapted for many uses, it is particularly designed for use with a hand bag as used by women, or other portable bags, suitcases and the like.

One of the objects of our invention is to provide a lock device and releasing means of improved construction and comprising a part or parts which, when the members to be secured together are in a given relative position, are adapted upon movement thereof to a certain position to coact with another part or magnet to release the same.

Another object of our invention is to provide a magnetic lock device of such construction that when the same is in operative or locked condition, it is adapted to be readily released or unlocked by a magnet embedded in a flexible bag handle which can be moved relative to and adjacent the locking device.

Another object of our invention is to provide a lock device and magnetic releasing means of this character which is of such construction as to release the lock without any auxiliary or separate key means, the magnet within the flexible handle of a form to effect the unlocking of the device.

Still further objects of our invention are to provide a locking device and magnetic releasing means which are simple in construction, effective in operation and economical to manufacture.

Other objects and features of our invention will be hereinafter more specifically described and claimed.

In order that our invention may be more clearly understood, attention is directed to the drawing accompanying and forming a part of this specification, and in which:

FIGURE 1 is a fragmentary top plan view of a suitcase with the locking device in closed position, parts in section;

FIGURE 2 is an enlarged fragmentary sectional view of the suitcase and locking devices shown in FIG. 1 with the carrying handle arranged therewith;

FIGURE 3 is a perspective view of the locking plate sometimes referred to as the keeper;

FIGURE 4 is a sectional view taken substantially on line 4—4 of FIG. 1;

FIGURE 5 is a fragmentary top view of a bag and a modified type of keeper with parts in section;

FIGURE 6 is a fragmentary perspective view of a bag, or suitcase, embodying a flexible carrying handle with a magnet arranged thereon, parts in section; and

FIGURE 7 is a side fragmentary elevational view of the bag shown by FIG. 6, having the flexible handle depressed and magnet above and adjacent the keeper, parts in section.

Referring to the drawings, reference character **10** designates a substantially rectangular bag, or suitcase, in which two sections **11** and **12** are hingedly connected along their bottoms disposed in the same plane, providing side walls **14** and **15**, top walls **16** and **17**, and end walls **18**, **19**, **20** and **21**. The top wall **16** of the supporting section is provided with a flexible handle **30** by which the bag **10** can be carried, and a suitable fastener is provided for fastening together the meeting edges **32** and **33** of the top walls **16** and **17**, shown by FIGS. 2 and 4. The ends of the handle **30** are arranged about the pivotal links **34** and **35** mounted in journals **36** and **37** secured to the central top portion of top wall **16**. Midway between the ends of said flexible handle **30** is arranged therein a magnet **40**. Midway between the end walls **19** and **21** of section **12** and upon the top surface of top wall **17** is mounted a locking member **50** and secured thereto by pin fasteners **51**. The locking member **50** is formed, or drawn, from a substantially rectangular plate into an inverted cup-shaped member; said locking member **50** having a top wall **52**, depending side walls **53**, side flanges **54**, rear flange **55** and a front flange **56**. Said side flanges **54** and rear flange **55** are rigidly secured to said wall **17**, while front flange **56** rests in juxtaposition with said top wall **16** when the bag is closed. Said top wall **52** is provided with a central, longitudinal slot **58**. A latch plate **59** is embedded within the top surface of top wall **16**, the plate **59** is formed of metal and secured to the wall **16** adjacent the meeting edge **32** thereof by screws **61**, said plate having an opening **62**, or slot, extending parallel with said meeting edge **32**, said slot **62** for receiving the depending portion of the keeper **66**, later to be described.

The keeper **66** is formed from a substantially rectangular plate. The corners are formed with holes **67** therein to receive rivets **68** which are arranged within holes formed in the corners of the top wall **52** and in vertical alignment with said holes **67** in keeper **66**. The keeper **66** is perforated with a "U-shaped" slot **70** forming a longitudinal tongue **71** with an outer depending free end **72**. The depending free end **72** is positioned in vertical alignment with opening **62** in said latch plate **59**, and due to the transverse roll portion **74** formed at the rear of said tongue **71**, the tongue **71** extends outwardly and downwardly in a resilient manner, forcing the depending free end **72** normally into said slot **62** of plate **59**.

A modified type of keeper **80** is shown by FIG. 5, it being triangular in configuration, pivotally secured at its rear end and having a locking pin **81** arranged in its apex, the plate **80** resting upon the latch plate thereof by force of gravity.

For use in effecting the opening of the bag **10**, is the magnet **40** with depending north and south pole portions **41** and **42**, shown by FIG. 7.

The present invention may be applied in a wide number of ways, to suit different uses thereof, including among others such adaptations as make-up boxes or hand cases used by moving picture people for carrying the toilet articles and make-up materials for convenient use on location, or dressing rooms; also for various types of bags wherever flexible carrying handles can be employed. It is not intended that the invention be limited to this specific embodiment or this specific use, but rather that this form be considered merely as illustrative.

The construction and operation of the improved bag, or suitcase, is as follows:

Considering first the form shown in FIGURES 1 to 4 and 6 to 7 inclusive, the device would be mounted by securing it on the movable lid side of the suitcase by suitable rivets or fasteners **51** inserted through aligned holes in the locking device and adjacent surface.

Considering the parts to be in the position shown by FIGURES 4 and 6, which correspond to the closed or locked position of the suitcase, in which position the depending end portion **72** of the keeper **71** extends into the slot **62** in the latch plate **59** rigidly secured to the supporting section or handle carrying section of the suitcase, the movable section of the suitcase is locked with the other section thereof. Since the top wall surface **52** is rigidly secured above the keeper **71**, there is not any suitable means of lifting the keeper by a tool. However, the magnet **40** in the flexible handle of non-magnetic material can be brought into juxtaposition above the keeper **71**, the top surface **52** having a slot **58** therethrough assisting in effecting the magnetic attraction of

the magnet for the keeper **71**; the magnet will attract and hold the keeper in raised position, in which position it is clear of the slot in the latch plate carried by the supporting section or handle portion of the suitcase, and thus the suitcase can be easily opened.

In opening the suitcase, or bag, the authorized person who knows of the magnet being embedded within the flexible handle, simply presses it downwardly over the top of the locking device without attracting the attention of any unauthorized person; the bag is opened upon release of the keeper from the slot in the latch plate so that the contents thereof may be removed.

After removal of the desired contents of the bag, it is again locked by simply raising the handle so as to support the bag therewith, pushing the two sections of the bag together until the keeper engages the slot in the latch plate due to the resiliency and downward action of the keeper relative to the rest of the locking device. The magnet in the handle being at a distance from the keeper will have no effect upon the keeper.

An important feature of the locking device is that the magnet is only operative when accurately positioned with respect to the keeper; and if the handle is pressed, or positioned, either too far to one side or the other, out of alignment with the slot in the top surface of the locking device, it will not operate to maintain the keeper to be raised, in order to open the bag. The flexible strap type handle tends to accurately position the magnet in its proper location, the strap being rectangular in cross-section.

The construction shown by FIG. 5 is similar; however, the keeper **80** is not resiliently held into locking position but is pivotally mounted and operates by force of gravity. The keeper **80** is raised by the same type of magnet in the same type of handle as described above.

The procedure, therefore, in opening the suitcase, bag or container, consists merely of pressing the flexible handle, embodying the magnet downwardly into its proper position; this raises the keeper within the locking device and the movable section of the bag falls open. The closing of the movable section is accomplished by simply raising the handle with the magnet therein, then pushing the sections of the bag toward each other; the keeper will fall and be retained in its locked position out of any range of the magnetic force of the magnet.

The mechanism is such that there is provided gravity, or resiliently controlled means for normally locking the two sections of the bag and magnetically controlled keeper means for rendering the locking means inoperative to permit opening of the free section of the bag.

From the foregoing it will be apparent that the invention provides an improved bag, suitcase or container, having a flexible handle carrying means of the type described whereby the objects set forth have been attained.

Various modifications may be made in this invention without departing from the spirit thereof or the scope of the claims, and therefore the exact forms shown are to be taken as illustrative only and not in a limiting sense, and it is desired that only such limitations shall be placed thereon as are disclosed in the prior art.

What we claim as our invention is:

1. Locking mechanism for containers having a supporting section and a pivotal section for locking the pivotal section in juxtaposition with the supporting section of the container, said supporting section having a flexible carrying type handle secured to the top surface thereof, a magnet member embodied within said handle intermediate its ends, a latch plate with a latch opening mounted upon the upper surface of said supporting section, locking frame means rigidly mounted upon the upper surface of said pivotal section, said locking frame means embodying a resilient keeper with a depending portion, said depending portion of said keeper adapted to fit within said latch opening in said latch plate when said pivotal section is in closed position relative to said supporting section, said magnet member for releasing said depending portion of said keeper from said opening in said latch plate, and said handle coacting with said supporting section for accurately positioning said magnet member in keeper-releasing position.

2. Locking mechanism for containers having a supporting section and a hinged section hingedly secured together, said supporting section having a latch plate mounted thereon, said hinged section having latch means for locking the hinged section in closed juxtaposition with said supporting section, said latch means having at least a movable keeper associated therewith formed from magnetic material, a magnetic member for releasing said movable keeper from said latch plate, a flexible strap type carrying handle mounted upon said supporting section of said container, said magnetic member mounted with and carried by said carrying handle intermediate its ends, said handle coacting with said supporting section of said container for accurately positioning said magnetic member in latch-releasing position above said latch means mounted upon said hinged section of said container.

3. The locking mechanism as claimed in claim 2 wherein said flexible strap is rectangular in cross-section and the ends thereof are pivotally mounted upon ring type members which are journaled in suitable means arranged upon said supporting section of the container.

4. Locking mechanism for bags having a supporting section, carrying handle pivotally mounted at both ends thereof with said supporting section, a movable section hingedly secured at its bottom portion with the bottom portion of said supporting section, latch means for securing said supporting section and said movable section in closed position relative to each other, said latch means having a latch plate mounted upon said supporting section and a latch frame member mounted upon said movable section, said latch plate having an opening therein, said latch frame member having a keeper secured therewith, said keeper member embodying a resilient type keeper tongue with a depending end portion, said depending end portion adapted to fit into said opening in said latch plate when said bag sections are in closed juxtaposition, a flexible strap type handle having end portions secured to the top of said supporting section and arranged above a portion of said latch frame attached to said movable section, a magnetic member for releasing said keeper tongue from said opening in said latch plate, said magnetic member secured with the lower surface portion of said flexible strap and midway between its ends, the ends of said strap being pivotally mounted with ring-type rotatable means secured to said supporting section coacting with said strap for accurately positioning said magnetic member in keeper tongue releasing position.

5. A locking device for a ladies' hand bag having two sections hingedly connected together and separable at the top portion thereof, one section being a supporting section and the second a movable section, a flexible strap of rectangular cross-section mounted upon the upper portion of said supporting section and movable up and down relative to the top surface of said supporting section, a magnetic member secured to the lower surface portion of said strap and intermediate its ends, a latch plate having an opening therein mounted upon said upper portion of said supporting section below said strap, a latching frame secured upon the upper portion of said movable section of said hand bag and having a free end portion adapted to extend over said latch plate when said sections are in closed position, said latch frame having a latch type member with a depending portion adapted to fit within the opening in said latch plate, said magnetic member for releasing said latch type member from said opening in said latch plate, said strap being flexible in a vertical plane coacting with said supporting section for accurately positioning said magnetic member in latch-releasing position.

6. A magnetic locking device for a container, said

container having a supporting section and a movable section hingedly connected together and separable from each other at the top, a flexible handle mounted on said supporting section, a latch plate mounted on said supporting section and beneath said handle, a locking frame mounted on said movable section and adapted to have an end portion thereof extend over said latch plate, a locking member attached to said locking frame and adapted to enter an opening in said latch plate, and a permanent magnet concealed and embedded within said handle intermediate its ends for releasing said locking member from said opening in said latch plate, and said handle coacting with said supporting section for positioning said magnet in latch member releasing position.

7. The magnetic locking device as claimed in claim 6 wherein said handle is formed of a strap rectangular in cross-section and flexible in a vertical plane to carry said permanent magnet in a vertical plane to and from said locking frame.

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