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A MEANS FOR HOLDING SHEET-LIKE MATERIALS

The present invention is directed to a device for holding one or more sheet like materials in a substantially flat state against a substantially flat surface. It is especially directed to a device for holding currency notes in a flat state in a cash register drawer. However, the invention is not limited to this context.

Sheet-like materials such as currency notes can be easily creased and crumpled when carried around in clothing or in bags. It appears that plastic notes are especially prone to creasing and crumbling. This can give rise to difficulties when currency notes are stored in cash register drawers. A cash register drawer typically has a flat bottom and is divided up into a number of compartments for storing different denominations of money. It is preferable that the notes be stored substantially flat in the compartments as this makes it easier to remove the notes from the cash register drawer and also allows a greater number of notes to be stored in any one compartment. However, it can be difficult to store the notes in a flat state in the drawer if the notes are in a creased or crumpled state before they are placed in the drawer. This problem is particularly acute with respect to plastic notes which crease more easily than paper notes and once creased, are more difficult to flatten than paper notes.

It can also be difficult to remove currency notes placed in a compartment of a cash register drawer if the notes are free to move around in the compartment. This is especially true if the notes can move to the back of the compartment where it is difficult for the cashier to reach.

It is an object to the present invention to provide a device that alleviates one or more of these problems.

It is a further object to this invention to provide a device that will assist in flattening a sheet-like material that is crumpled and creased whilst the material is stored in a receptacle and thus assists in improving the condition of the sheet-like material.

To meet one or both of these objectives, the present invention provides a device suitable for holding a sheet-like material in a substantially flat state against a substantially flat surface of a receptacle in which the sheet-like material can be stored. The device includes an arm which is suitable for pivotable mounting to the receptacle. To the arm there is mounted a contacting means for contacting the sheet-like material.

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The contacting means is configured so that it may hold the sheet-like material in a substantially flat state.

In operation, the device is attached to a receptacle and is movable between a first position where the contacting means is located away from the flat surface of the receptacle to allow the sheet-like material to be placed adjacent the flat surface of the receptacle and a second position where the contacting means contacts the sheet-like material and presses the sheet-like material against the flat surface of the receptacle so that the sheet-like material is held in a substantially flat state.

The present invention is also directed to a receptacle for storing sheet-like material in a substantially flat state having the device described above for holding the sheet-like material substantially flat in the receptacle.

The invention is also directed to a method of holding a sheet-like material in a substantially flat state against a substantially flat surface of a receptacle having the device described above, the method including positioning the device in the first position and placing the sheet-like material against the flat surface of the receptacle and moving the device to the second position to hold the sheet-like material in the substantially flat state.

The invention may of course be used to hold substantially flat a stack of sheet-like materials positioned one on top of the other. For example, a stack of sheet-like materials can be placed adjacent the flat surface and the contacting means is adapted to contact at least the uppermost sheet-like material of the stack and press down on the stack of the sheet-like materials to hold all the materials in a substantially flat state. Accordingly, throughout the description and claims of this application, any reference to a single sheet-like material includes reference to more than one sheet-like material arranged in a stack.

Throughout the description and claims of this application, references to a sheet-like material being in a substantially flat state shall mean that the whole or substantially the whole of the material is in a smooth, even and level state. Furthermore, a 'sheet-like material' is defined to include a substantially flat sheet-like material and a sheet-like material that is creased, crumpled or warped.

The contacting means of the present device is configured so that it is able to hold even a creased or warped sheet-like material in a substantially flat state against a flat surface. As the sheet-like material is stored in this flat state, the area of contact

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between the material and the flat surface is maximised. The friction between the sheet-like material and the flat surface and also the pressure placed on the sheet-like material by the device assists in holding the sheet-like material in position. Furthermore, as the sheet-like material can be held by this device in a flat state for a period of time, this can assist in removing creases from the sheet-like material.

Preferred Embodiments of the Invention

The following description relates to the preferred embodiments of this invention.

As noted earlier, this device is suitable for mounting to a receptacle in which sheet like material can be stored. The receptable may be a cash register drawer. The device is attachable to the drawer and can be used for storing currency notes in a substantially flat state in a compartment of the cash register drawer.

The device can be mounted to a side wall of the drawer. Alternatively, a cash register drawer often has a series of projections extending from a side wall, each projection extending into a compartment in the drawer. The device can be mounted to such projections.

The contacting means may be a single plate having a planar contacting surface for contacting the sheet-like material. Where the contacting means is a plate, the skilled addressee will appreciate that to hold the sheet-like material substantially flat against the flat surface of the receptacle to which the device is attached, the planar surface of the plate should be located substantially parallel to the flat surface of the receptacle when the device is in the second position. Furthermore, the skilled addressee will appreciate there should be a sufficiently large area of contact between the plate and the sheet-like material to enable the device to hold the material substantially flat.

The plate can be of any shape so long as it provides a sufficient area of contact to hold the sheet-like material flat. For example, if the device is to be mounted to a cash register drawer to contact a currency note having a rectangular shape, the plate may be of a similar rectangular shape to cover a substantial portion of the note. Furthermore, the rectangular plate may have a recess or cut away portion in the front end of the plate. This allows a person to easily obtain access to the currency note positioned underneath the rectangular plate when the mounted device is in the second

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position. The cut-away portion can be just large enough to allow a person to contact the currency note with one of their fingers so that the person can slide the note out from underneath the plate whilst the plate remains in the second position.

The plate need not be rectangular. For example, it could be an "H" shape.

Alternatively, the contacting means may comprise a plurality of plates that provide a number of planar contacting surfaces that contact the sheet-like material. In this embodiment, it is important that there is a sufficient number of plates and that the plates be arranged so as to enable the contacting means to hold the sheet-like material substantially flat.

The plate or plurality of plates of the contacting means may be made out of a transparent material such as plastic. This allows a person to view the sheet-like material located beneath the plate or plates when the device is mounted to the receptacle and is in the second position. This can be particularly advantageous where the device is to be used in a cash register drawer divided into a number of compartments for receiving different denominations of money. In this embodiment, a device of this invention is preferably mounted adjacent each compartment for holding the money notes substantially flat in each compartment. As the plate or plates of the devices are transparent, the cashier can see through the plate or plates and see what denomination of money is located beneath each device in the various compartments.

Alternatively, instead of a single plate or plurality of plates, the contacting means could consist of a plurality of contact points that contact the sheet-like material, the number and positioning of the contact points being sufficient to hold the sheet-like material in a substantially flat state. For example, if the sheet-like material is a currency note, the contact means may comprise 5 contact points, one for each corner of the note and one for the center of the note.

As noted before, when the device is mounted to a receptacle and is in the second position, the contact means presses the sheet-like material against the flat surface of the receptacle and this pressing action may assist in removing creases that are present in the sheet-like material. When the contact means is a plate, this pressure is necessarily spread over a wider area than when the contact means includes a series of contact points. Accordingly, one advantage of using a plate contact means is that it is more effective in removing creases from a sheet-like material than a contact means comprising a series of contact points.

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In a preferred embodiment of this invention, the contacting means is pivotably mounted to the pivoting arm of the device. This allows the contacting means to move relative to the arm so that as the arm is pivoted toward and away from a flat-surface the contacting means is still in the correct orientation relative to the flat surface to hold the sheet-like material substantially flat. This enables the contact means to hold in a substantially flat state sheet-like materials of different thicknesses or different amounts of sheet-like materials arranged in a single stack.

For example, where the contacting means is a plate having a planar contacting surface, the planar surface should be oriented so that it is substantially parallel to the flat surface of the receptacle to which the device is mounted to properly contact the sheet-like material and hold the sheet-like material substantially flat. As the pivoting arm is moved to adjust the distance between the flat surface of the receptacle and the planar surface of the plate, the plate can be pivoted so that the planar surface of the plate remains substantially parallel to the flat surface of the receptacle. Thus, the plate can remain in the correct orientation at different distances from the flat surface of the receptacle so that it may contact sheet-like materials having varying thicknesses to hold them substantially flat.

In a preferred embodiment, the pivoting arm can be connected to the contact means at a number of different selected points on the contact means. This allows the position of the contacting means to be moved relative to the arm so that the device can be attached to receptacles of different sizes.

In a further preferred embodiment, the contacting means is a plate having one or more slots located in the surface of plate with one or more brackets slidably connected to the one or more slots. The arm is pivotably connected to the one or more brackets. As the brackets are slidably connected to the one or more slots, the position of the plate can be adjusted relative to the arm.

As noted earlier, when the device is attached to a receptacle and is in the second position the contacting means presses the sheet-like material against the flat surface of the receptacle. This pressing action may arise from the weight of the device acting to press down on the sheet-like material. Alternatively, the device can include a biasing means that biases the device towards the second position and a suitable biasing means includes a spring attached to the pivotable arm and attachable to the

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receptacle. Other biasing means well known to the skilled addressee could be also used in this invention.

As noted earlier when the device is mounted to a receptacle it is movable from the first position to the second position. In the first position, the contacting means is located away from the flat surface of the receptacle so as to allow a person to place a sheet-like material adjacent to this flat surface. In a preferred embodiment, this first position includes the positioning of the arm in an upright position where it is at or close to 90° to the flat surface of the receptacle. In this upright first position, the arm and contacting means are located substantially away from the periphery of the receptacle to allow a person to more easily obtain access to the receptacle.

Where the contacting means is a plate pivotably mounted to the end of the arm, the plate may be able to rotate through nearly 180° on the end of the arm when the pivoting arm is located in the upright first position. Accordingly, the plate may be able to rotate from a first resting position where the top of the plate is adjacent to the lower surface of the arm to a second resting position where the top of the plate is adjacent the upper surface of the arm. It is undesirable for the plate to be able to move to the second resting position if it can remain in this position when the arm and plate are moved from the upright first position back toward the flat surface of the receptacle. If the plate can remain adjacent the upper surface of the arm, it will not be correctly oriented to contact the sheet-like materials and hold the material substantially flat against the flat surface of the receptacle. Accordingly, in a preferred embodiment of this invention the plate is pivotably mounted to the arm at a distance from the end of the arm. As the plate of this embodiment is rotated from the first resting position toward the second resting position, the plate reaches a point where the end of the arm abuts the top of the plate thereby preventing further rotation and preventing the plate reaching the second resting position.

Where the device includes a biasing means, it may be located so that it assists in holding the device mounted to the receptable in the upright first position. For example, where the biasing means is a spring, it may be located so that movement of the device away from the upright first position towards the flat surface of the receptacle initially causes the spring to expand. Therefore, when the device is located approximate to the upright first position, it is biased towards the upright first position by the spring. Accordingly, in a further preferred embodiment of this invention, the biasing

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means biases the contacting means towards the first and second positions when the device is approximate the first and second position respectively, but biases the contacting means away from a position intermediate the first and second positions.

The invention shall now be described with reference to the following figures which illustrate a preferred embodiment of this invention.

Figure 1 is a perspective view of the device of this invention not attached to a receptacle.

Figure 2 is a perspective view of the device of this invention attached to a receptacle, the device being in the first position.

Figures 3 and 4 are side views of the device of this invention attached to a receptacle, the device being in the second position.

Figure 5 is a perspective view of the device of this invention attached to a receptacle, the device being in the upright first position.

Figure 6 is a perspective view of a variation of the device of this invention not attached to a receptacle.

Figure 7 is a perspective view of a variation of the device of this invention not attached to a receptacle.

Figure 8 is a perspective view of a variation of the device of this invention attached to a receptacle.

Figures 9 (a) and (b) show side views of the device of this invention attached to a receptacle and in the upright first position.

Turning to figure 1, the device 1 includes a pivoting arm 2 pivotably attached to contacting means 3 which in this embodiment is a plate. The plate has contacting surface 3a which may contact the sheet-like material. A spring 4 is attached to pivoting arm 2.

Figure 2 shows a perspective view of the device of this invention attached to a cash register drawer 5 having compartment 6. In figure 2 the device 1 is positioned such that contacting plate 3 is located some distance away from the flat surface 7 of the register drawer 5 (the first position). This allows currency notes (not shown) to be placed in compartment 6 underneath the device 1. The pivoting arm 2 of the device 1 is pivotably attached to an overhanging section 9a of side wall 9 of compartment 6. The spring 4 is also attached to overhanging section 9a so that the device 1 is biased towards the second position shown in figures 3 and 4.

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Figure 3 shows a side view of the device 1 attached to a receptacle and in the second position. In the second position, the contacting surface 3a of plate 3 contacts currency notes 10 and the spring 4 causes the plate 3 to press the currency notes 10 substantially flat against the flat surface 7 of the register drawer. The plate 3 is shaped so that the contacting surface 3a contacts a substantial portion of the currency notes 10 to hold the notes 10 substantially flat against surface 7. As can be seen in figure 3, contacting surface 3a of plate 3 lies substantially parallel to surface 7 and plate 3 is distance (a) from surface 7.

Figure 4 shows device 1 attached to a receptacle and in the second position, the plate 3 pressing against a greater number of currency notes 10 then shown in figure 3. The distance between plate 3 and surface 7 is designated (b) which is greater than distance (a) in figure 3. As is illustrated in figure 4, the contacting surface 3a of plate 3 remains substantially parallel to surface 7. The pivoting attachment of plate 3 to arm 2 allows the plate 3 to remain parallel to surface 7 as the pivoting arm 2 moves away from surface 7 and the distance between plate 3 and surface 7 increases.

The biasing of the device 1 towards the second position shown in figures 3 and 4 is achieved by spring 4 mounted to arm 2 and to overhanging section 9a of the receptacle. The biasing action arises from the contraction of spring 4 as the device 1 moves towards the second position. In alternative embodiments, arm 2 and spring 4 can be mounted directly to side wall 9 of compartment 6.

In figure 5, arm 2 is pivoted to an upright first position where arm 2 and plate 3 stand substantially beyond the periphery of compartment 6. This allows the user to easily place notes 10 in the compartment 6. In figure 5 the spring 4 is arranged such that movement of the arm 2 from the upright first position toward the second position initially causes the spring 4 to expand. Thus the spring 4 assists in holding the device 1 in the upright first position and will bias the device 1 towards the upright first position when the device 1 is located approximate to the upright first position. Thus the spring 4 biases the device 1 towards the first and second positions where the device 1 is approximate to the first and second position respectively but biases the device 1 away from a position intermediate the first and second positions.

Figure 6 shows a variation of the device of this invention wherein the contacting plate 3 has various points of attachment 11 for the pivoting arm 2 to attach to plate 3. In this embodiment, the position of plate 3 can be moved relative to arm 2 by adjusting

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the point of attachment of arm 2 to plate 3. This allows the device to be attached to cashier draws having compartments of different lengths as the position of plate 3 can be moved relative to arm 2 so that the device can be fitted to the compartments of various sizes.

Figure 7 shows a variation of the device shown at figure 1. In Figure 7 plate 3 has a cut-out portion 12 in the front end of the plate 3. When the device is mounted to a receptacle and located in the second position, with sheet-like material positioned between the plate 3 and the flat surface of the receptacle, a person can locate one of their fingers in the cut-out portion 12, contact the sheet-like material immediately adjacent the plate 3 and slide the material out from underneath the plate 3. This can be done whilst the device 1 remains in the second position.

Figure 8 shows a variation of the device of this invention attached to a receptacle. The device 1 has an arm 2 pivotably mounted to a cash register drawer 5 so that it may be located in compartment 6. In figure 8 the device is depicted in the second position with the plate 3 contacting a number of currency notes 10. The upper surface of the plate 3 is depicted 3(b) and slots 13 are located in surface 3(b). Brackets 14 are slidably connected to slots 13 and arm 2 is pivotably mounted to brackets 14. As the position of the brackets 14 can be moved relative to the plate 3, this allows the point of contact of the arm 2 to plate 3 to be moved.

In figure 8 the slots 13 extend side to side across to plate 3. Thus, the plate 3 can be moved side to side relative to the arm 2. The slots 13 can be positioned to extend in different directions so that the plate 3 can be adjustable in different directions relative to the arm 2.

The device in figure 8 does not include a biasing means. In this embodiment the weight of the device presses the note 10 substantially flat against the flat surface 7 of the compartment 6 and holds notes 10 in a substantially flat state.

Figure 9 (a) and (b) show a side view of the device 1 of this invention mounted to an overhanging section 9(a) of a cash register drawer 5. The device is in the upright first position with the arm 2 and plate 3 standing upward from the cashier register draw 5. In figure 9(a) the plate 3 in complete lines is in the first resting position with the top of the plate 3(b) adjacent to the bottom of the arm 2(a). The plate 3 is pivotably mounted at the end of the arm 2(c). Accordingly, the plate can rotate almost through 180° to the second resting position shown in phantom lines. In this position the top of

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the plate 3(b) is adjacent to the top of the arm 2(b). From the diagram it is readily apparent that if the plate 3 were to remain in the second resting position when the arm 2 and plate 3 are moved toward the receptacle 5, the plate 3 would be in the wrong orientation to contact the sheet-like material against the flat surface 7 of the receptacle 5.

In Figure 9 (b) the plate 3 is pivotably attached to the arm 2 at a point away from the end 2(c) of the arm. As it is apparent in figure 9(b), if the plate 3 is rotated from a first resting position (shown in complete lines) toward the second resting position, the upper surface of the plate 3(b) comes into contact with the end 2(c) of the arm, thus preventing further rotation of the plate 3. Thus the plate 3 can only rotate from the first resting position to the position shown in the phantom lines and cannot reach the second resting position which is shown in Figure 9(a). Accordingly, when the arm 2 and plate 3 are moved from the upright first position towards the receptacle, the plate 3 is in the correct orientation to contact the sheet-like materials against the flat surface 7 of the receptacle 5.

In the embodiment of this invention shown in figures 1 to 9, the plate 3 is made of a transparent material so that currency notes 10 can be viewed through the plate when the device is mounted to a cash register drawer and the device is in the second position holding the notes 10 against the floor 7 of compartment 6.

It is noted that different denominations of money have different sizes. Accordingly the size of plate 3 can be altered so that it can hold different sized currency notes substantially flat.

It should be understood that various modifications and variations may be made to the device of this invention as hereinbefore described without departing from the spirit and ambit of the present invention.

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Claims

1. A device suitable for holding a sheet-like material in a substantially flat state against a substantially flat surface of a cash register drawer in which the sheet-like material can be stored wherein the device includes:

an arm pivotably mountable to the cash register drawer and

a contacting means mounted to the arm for contacting the sheet-like material, the contacting means being configured so that it may hold the sheet-like material in the substantially flat state.

2. The device according to claim 1 wherein the contacting means is a plate having a planar surface for contacting the sheet-like material.

3. The device according to claim 2 wherein the plate has a rectangular shape.

4. The device according to any one of claims 2 or 3 wherein the plate is pivotably mounted to the arm.

5. The device of any one of claims 1 to 4 wherein the device includes a biasing means, wherein the biasing means is suitable for biasing the contacting means towards the substantially flat surface of the cash register drawer when the device is attached to the cash register drawer.

6 The device according to claim 5 wherein the biasing means is a spring attached to the arm.

7 A receptacle for storing sheet-like material in a substantially flat state, said receptacle having a substantially flat surface and one or more of the devices of any one of claims 1 to 6 wherein the pivoting arm of the device is mounted to the receptacle and the device is movable between a first position where the contacting means is located away from the flat surface of the receptacle to allow the sheet-like material to be placed

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Claims

1. A device suitable for holding a sheet-like material in a substantially flat state against a substantially flat surface of a cash register drawer in which the sheet-like material can be stored wherein the device includes:

an arm pivotably mountable to the cash register drawer and

a contacting means mounted to the arm for contacting the sheet-like material, the contacting means being configured so that it may hold the sheet-like material in the substantially flat state.

2. The device according to claim 1 wherein the contacting means is a plate having a planar surface for contacting the sheet-like material.

3. The device according to claim 2 wherein the plate has a rectangular shape.

4. The device according to any one of claims 2 or 3 wherein the plate is pivotably mounted to the arm.

5. The device of any one of claims 1 to 4 wherein the device includes a biasing means, wherein the biasing means is suitable for biasing the contacting means towards the substantially flat surface of the cash register drawer when the device is attached to the cash register drawer.

6 The device according to claim 5 wherein the biasing means is a spring attached to the arm.

7 A receptacle for storing sheet-like material in a substantially flat state, said receptacle having a substantially flat surface and one or more of the devices of any one of claims 1 to 6 wherein the pivoting arm of the device is mounted to the receptacle and the device is movable between a first position where the contacting means is located away from the flat surface of the receptacle to allow the sheet-like material to be placed

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adjacent to the flat surface of the receptacle and a second position wherein the contacting means contacts the sheet-like material and presses the sheet-like material against the flat surface of the receptacle so that the sheet like material is held in the substantially flat state.

8. A receptacle according to claim 7 wherein the device includes a biasing means attached to the receptacle to bias the contacting means towards the second position.

9. A receptacle according to claims 7 or 8 wherein the biasing means biases the contacting means towards the first and second positions when the contacting means is approximate the first and second positions respectively, but biases the contacting means away from a position intermediate the first and second positions.

10. The receptacle according to claims 8 or 9 wherein the biasing means is a spring attached to the arm of the device.

11. A receptable according to any one of claims 7 to 10 wherein the receptacle is a cash register draw.

12. A method of holding a sheet-like material in a substantially flat state in the receptacle of any one of claims 7 to 11 including:

positioning the device in the first position and placing the sheet-like material against the flat surface of the receptacle and

moving the device to the second position to hold the sheet-like material in a substantially flat state.

13. A device suitable for holding currency notes in a substantially flat state against a substantially flat surface of a cash register drawer, wherein the device includes:

- an arm pivotably mountable to the cash register drawer

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- a contacting plate made from transparent material and substantially the same size as currency note so that the contacting plate can hold the currency note in the substantially flat state.

wherein the contacting plate is pivotably mounted to the arm.

14. A device according to claim 13 wherein the arm is pivotably connected to one or more brackets that are slidably connected to one or more slots located on the contacting plate so that the point of connection of the arm to the contacting plate may be adjusted

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