DESCRIPTION

BINDING TOOL

TECHNICAL FIELD

[0001]

The present invention relates to a binding tool with which an item to be bound that has an insertion hole is removably bound.

BACKGROUND ART

[0002]

Conventionally, for example, as a binding tool which is used in a binder, a file or the like and with which an item to be bound such as a document or a folder is removably bound, a configuration is known in which a fixed base portion is fixed to the front sheet of a binder, a file or the like, in which a rotation base portion is rotatably provided with respect to the fixed base portion, in which a first binding member provided in the fixed base portion and a second binding member provided in the rotation base portion are inserted through the insertion hole of an item to be bound and in which engagement holding means is provided (for example, see PTL 1).

[0003]

In the binding tool described in PTL 1, in a state where the first binding member and the second binding member are not engaged with each other, a tip end portion of a ring piece serving as the first binding member which is provided in a fixed base plate serving as the fixed base portion and a tip end portion of a ring piece serving as the second binding member which is provided in a rotation base plate serving as the rotation base portion are slightly deflected in a direction

perpendicular to the rotation direction of the rotation base plate. While at least one of the ring pieces is being bent, the tip end portions of the ring pieces are engaged with each other, and thus the engaged state is strengthened by the resilience of the ring pieces.

[0004]

Furthermore, in the binding tool described in PTL 1, the rotation base plate is rotatably supported in a core shaft with respect to the fixed base plate, and by a torsion coil spring provided in a predetermined position of the core shaft, the rotation base plate is biased so as to be rotated in a direction in which the rotation base plate is separated from the fixed base plate. Then, in a state where the rotation base plate is rotated against this biasing force to the side of the fixed base plate and where thus the ring pieces are engaged, the engaged state of the ring pieces is stabilized so as to be strengthened by the biasing force of the torsion coil spring, the ring piece is bent so as to release the engagement of the ring pieces and thus the rotation base plate is rotated by the biasing force so as to be separated from the fixed base plate, with the result that the ring of the binding tool is brought into an opened state.

[0005]

Here, for example, as a binding tool with which an item to be bound, such as a loose-leaf, that has a large number of insertion holes is removably bound, a configuration is known in which a large number of rings are arranged along the longitudinal direction of an elongated base (see, for example, PTL 2).

[0006]

In the binding tool as described in PTL 2, in a state where the rings are opened, the insertion holes of the item

to be bound are inserted into the rings and are thereby engaged therewith.

CITATION LIST

Patent Literature

[0007]

PTL 1: Japanese Examined Utility Model Application Publication No. 6-30471

PTL 2: Japanese Laid-open Patent Publication No. 2003-211886

SUMMARY OF INVENTION

Technical Problem

[0008]

However, in the configuration of PTL 1 described above, since one ring piece is provided so as to be inclined with respect to the other ring piece, and is bent at the time of engagement, the distance between the tip end portions of the adjacent ring pieces does not coincide with the distance between the insertion holes in the item to be bound, and thus the tip end portions of the ring pieces are easily displaced from the insertion holes of the item to be bound. In particular, in an elongated binding tool in which a large number of ring pieces are provided, the distance between the tip end portions of the adjacent ring pieces is easily affected by the accuracy of the production and the usage environment, and thus the tip end portions of the ring pieces are easily displaced from the insertion holes of the item to be bound.

[0009]

When the tip end portions of the ring pieces are displaced from the insertion holes of the item to be bound, an operation of inserting the ring pieces into the insertion

holes is complicated, and after the insertion, rips and the like are caused in the vicinity of the insertion holes of the item to be bound, with the result that it may be impossible to stably bind the item to be bound.

[0010]

Although it can be considered that the cross-sectional area of the ring piece is decreased as compared with the area of the insertion hole such that the displacement of the tip end portion of the ring piece from the insertion hole of the item to be bound can be allowed, the ring piece becomes thin, and thus the strength thereof is reduced.

[0011]

In a configuration in which a torsion coil spring is provided in a rotation base plate, its production cost is increased, it takes much time to produce it, the production process is complicated and even after the production, the function of the binding tool may be lowered by the displacement and degradation of the torsion coil spring.

[0012]

Furthermore, when the configuration as described in PTL 1 is applied to the elongated binding tool in which a large number of ring pieces are provided as described in PTL 2, it is significantly complicated to bend and engage the ring pieces, and thus it is impossible to easily bind the item to be bound.

[0013]

Specifically, it is difficult to simultaneously bend a large number of ring pieces so as to be displaced in the same direction only by the same distance, and it is likely that only a part of ring pieces are appropriately engaged and that the other ring pieces are not engaged, with the result that it may be impossible to stably bind the item to be bound.

[0014]

The present invention is made in view of the foregoing points, and has an object to provide a binding tool with which an item to be bound can be easily and stably bound.

Solution to Problem

[0015]

The present invention provides a binding tool with which an item to be bound having an insertion hole is removably bound, the binding tool including: a fixed base portion; a rotation base portion which is provided rotatably with respect to the fixed base portion; a first binding member which is provided in the fixed base portion and which can be inserted into the insertion hole of the item to be bound; a second binding member which is provided in the rotation base portion and which can be inserted into the insertion hole of the item to be bound; a third binding member which is provided in the fixed base portion so as to be aligned with the first binding member and which can be inserted into the insertion hole of the item to be bound; and a fourth binding member which is provided in the rotation base portion so as to be aligned with the second binding member and which can be inserted into the insertion hole of the item to be bound, where the first binding member includes a first engagement portion, the second binding member includes a second engagement portion which can be engaged with the first engagement portion, the rotation base portion is rotated such that the first engagement portion of the first binding member is contacted to and separated from the second engagement portion of the second binding member, in the first binding member and the second binding member, the first engagement portion and the second engagement portion are engaged so as to configure a first ring, in the third binding

member and the fourth binding member, tip end portions are brought into contact with each other so as to configure a second ring and the length of the second ring is longer than the length of the first ring.

Advantageous Effects of Invention

[0016]

In the present invention, a rotation base portion is only rotated with respect to a fixed base portion, and thus it is possible to easily bind an item to be bound, and since the length of a second ring configured with a third binding member and a fourth biding member is longer than the length of a first ring configured with a first binding member and a second binding member, a first engagement portion and a second engagement portion are engaged in a state where the second ring is bent, with the result that it is possible to stably bind the item to be bound.

BRIEF DESCRIPTION OF DRAWINGS

[0017]

[Fig. 1] Fig. 1 is a plan view showing the configuration of a binding tool according to an embodiment of the present invention;

[Fig. 2] Fig. 2 is a cross-sectional view showing a binding tool main body of the binding tool described above;

[Fig. 3] Fig. 3(a) is a side view showing the parallel state of a rotation base portion in the binding tool described above, and Fig. 3(b) is a side view showing the inclined state of the rotation base portion in the binding tool described above; and

[Fig. 4] Fig. 4 is a bottom view showing the rotation base portion of the binding tool described above.

DESCRIPTION OF EMBODIMENTS

[0018]

The configuration of an embodiment according to the present invention will be described below with reference to drawings.

[0019]

In Fig. 1, reference sign 1 represents a binding tool, and the binding tool 1 removably binds an unillustrated item to be bound, such as a loose-leaf or a document, that has insertion holes.

[0020]

The binding tool 1 is provided by being fixed to the front sheet of a binder, a file or the like, and includes a binding tool main body 2 which is configured in a planar shape that individually configure two sides by both ends in a first direction (longitudinal direction) and a second direction (lateral direction) perpendicular to the first direction, for example, a quadrangular plate shape.

[0021]

In the vicinity of both end portions of the binding tool main body 2 in the first direction, on one side in the second direction, a fixed base portion 3 is integrally provided, and on the other side in the second direction, a substantially rectangular plate-shaped rotation base portion 4 is rotatably pivoted with respect to the fixed base portion 3.

[0022]

In the binding tool main body 2, in a portion which corresponds to the position where the rotation base portion 4 is pivoted, an unillustrated concave portion which corresponds to the shape of the rotation base portion 4 is provided adjacent to the fixed base portion 3.

[0023]

Also, in a boundary portion between the fixed base portion 3 and the concave portion of the binding tool main body 2, a fixing hole 5 is provided which is utilized when the binding tool main body 2 is fixed to the front sheet.

[0024]

Furthermore, in an end portion of the binding tool main body 2 in the second direction, an attachment hole 7 is provided through which a shaft 6 serving as a rotation shaft provided in the rotation base portion 4 is inserted so as to be attached, and the rotation base portion 4 is rotatably pivoted through the shaft 6.

[0025]

Also, in a center portion of the binding tool main body 2 in the first direction, that is, between the two fixed base portions 3 located at both ends in the first direction and in a region between the two rotation base portions 4, as shown in Fig. 2, a tapered portion 8 is provided in which the thickness is decreased toward the outside in the second direction, for example, which is inclined toward the front sheet.

[0026]

In the fixed base portion 3, two first binding members 11 are integrally provided which can be inserted through the insertion holes of the item to be bound and which are formed in the shape of an arc bar.

[0027]

In the rotation base portion 4, two second binding members 12 which can be inserted through the insertion holes of the item to be bound and which are formed in the shape of an arc bar are integrally provided so as to correspond to the positions of the first binding members 11.

[0028]

Between the first binding members 11 in the fixed base portion 3, two third binding members 13 which can be inserted through the insertion holes of the item to be bound and which are formed in the shape of an arc bar are aligned with the first binding members 11 and are provided integrally with the fixed base portion 3.

[0029]

Furthermore, between the second binding members 12 in the rotation base portion 4, two fourth binding members 14 which can be inserted through the insertion holes of the item to be bound and which are formed in the shape of an arc bar are aligned with the second binding members 12 and are provided integrally with the rotation base portion 4 so as to correspond to the positions of the third binding members 13.

[0030]

The first binding members 11, the second binding members 12, the third binding members 13 and the fourth binding members 14 are formed of, for example, a material having flexibility, such as a synthetic resin.

[0031]

In the first binding member 11, a first engagement portion 15 is provided at a tip end portion on the side opposite to a base end portion connected to the fixed base portion 3.

[0032]

The first engagement portion 15 includes a tip end base portion 15a which is located at the tip end of the first binding member 11 and a hook-shaped protrusion portion 15b which is protruded from the tip end base portion 15a to the outside, that is, to the side opposite to the third binding member 13.

[0033]

In the second binding member 12, at a tip end portion

on the side opposite to a base end portion connected to the rotation base portion 4, a second engagement portion 16 is provided which can be engaged with the first engagement portion 15.

[0034]

The second engagement portion 16 includes a tip end base portion 16a which is located at the tip end of the second binding member 12 and a hook-shaped protrusion portion 16b which is protruded from the tip end base portion 16a to the inside, that is, to the side of the fourth binding member 14.

[0035]

The first engagement portion 15 and the second engagement portion 16 are engaged such that the protrusion portion 15b and the protrusion portion 16b are hooked to each other.

[0036]

In the third binding member 13, an insertion hole 17 is provided at a tip end portion on the side opposite to a base end portion connected to the fixed base portion 3.

[0037]

In the fourth binding member 14, a protrusion portion 18 which can be inserted into the insertion hole 17 is provided at a tip end portion on the side opposite to a base end portion connected to the rotation base portion 4.

[0038]

The rotation base portion 4 can be rotated about the shaft 6 together with the second binding member 12 and the fourth binding member 14 between a parallel state where as shown in Fig. 3(a), the rotation base portion 4 is placed in the concave portion so as to be substantially parallel to the fixed base portion 3 and an inclined state where as shown in Fig. 3(b), an end portion on the side opposite to the shaft

6 is separated from the concave portion so as to be inclined with respect to the fixed base portion 3. In other words, the rotation base portion 4 can be rotated about the shaft 6 such that the first engagement portion 15 of the first binding member 11 is contacted to and separated from the second engagement portion 16 of the second binding member 12.

[0039]

As described above, as the rotation base portion 4 is rotated, the first engagement portion 15 is engaged with the second engagement portion 16, and thus a first ring 21 is configured which is substantially continuous from the base end portion of the first binding member 11 to the base end portion of the second binding member 12.

[0040]

When the rotation base portion 4 is in the inclined state, the engagement of the first engagement portion 15 and the second engagement portion 16 is released, and thus the first binding member 11 is separated from the second binding member 12, with the result that the first ring 21 is brought into an opened state.

[0041]

Also, as the rotation base portion 4 is rotated, the tip end portion of the third binding member 13 and the tip end portion of the fourth binding member 14 are brought into contact with each other, and thus the protrusion portion 18 is inserted into the insertion hole 17, with the result that a second ring 22 is configured which is substantially continuous from the base end portion of the third binding member 13 to the base end portion of the fourth binding member 14.

[0042]

In addition, when the rotation base portion 4 is in the

inclined state, the tip end portion of the third binding member 13 is separated from the tip end portion of the fourth binding member 14, with the result that the second ring 22 is brought into an opened state.

[0043]

In the first ring 21 and the second ring 22, the total length of the second ring 22 from the fixed base portion 3 to the rotation base portion 4, that is, the length from the base end portion of the third binding member 13 to the base end portion of the fourth binding member 14 is longer than the total length of the first ring 21 from the fixed base portion 3 to the rotation base portion 4, that is, the length from the base end portion of the first binding member 11 to the base end portion of the second binding member 12.

[0044]

Hence, when the rotation base portion 4 is in the parallel state, the first ring 21 is configured whereas in a state where the third binding member 13 and the fourth binding member 14 are bent, the second ring 22 is configured.

[0045]

Also, in the first binding member 11 and the second binding member 12, as shown in Fig. 3(a), in a state where the first engagement portion 15 and the second engagement portion 16 are engaged so as to configure the first ring 21, the first engagement portion 15 and the second engagement portion 16 are formed so as to be engaged in a state where they are displaced from each other in a substantially vertical direction with respect to the binding tool main body 2. In other words, in the first ring 21, the second engagement portion 16 is located on the side of the fixed base portion 3 and the rotation base portion 4 with respect to the first engagement portion 15, and the shortest distance between the

first engagement portion 15 and the fixed base portion 3 is longer than the shortest distance between the second engagement portion 16 and the fixed base portion 3.

[0046]

Here, as shown in Fig. 4, on a surface on the side opposite to the surface on which the second binding member 12 and the fourth binding members 14 in the rotation base portion 4 are provided, that is, on a surface located on the side of the concave portion in a state where the rotation base portion 4 is placed in the concave portion so as to be substantially parallel to the fixed base portion 3, a convex portion 23 which is protruded in such a state toward the concave portion is provided.

[0047]

The convex portion 23 is arranged in the vicinity of a corner portion located at an end portion on the side opposite to an end portion close to the shaft 6 on the surface on the side of the concave portion of the rotation base portion 4.

[0048]

In the process in which the rotation base portion 4 is rotated so as to be brought from the inclined state into the parallel state, before the first engagement portion 15 is engaged with the second engagement portion 16, the convex portion 23 reaches the rotation limit point of the rotation base portion 4, and before the entire rotation base portion 4 is placed within the concave portion, the convex portion 23 is brought into contact with the bottom surface of the concave portion.

[0049]

Hence, in order to engage the first engagement portion 15 with the second engagement portion 16, it is necessary to press the rotation base portion 4 into the side of the concave

portion so as to bend the rotation base portion 4.

[0050]

Also, in the rotation base portion 4, a notch portion 24 is provided which is cut out from an end portion (the other end portion in the second direction) on the side opposite to the shaft 6 serving as the rotation shaft on which the rotation base portion 4 is pivoted to the side of the shaft 6 (the side of the end portion in the second direction).

[0051]

The notch portion 24 is cut out from the other end portion in the second direction toward the end portion in the second direction close to the shaft 6, and the tip end portion which is the end portion of the notch portion 24 on the side of the shaft 6 is located on the side of the shaft 6 with respect to the position of the convex portion 23.

[0052]

Since the convex portion 23 and the notch portion 24 are arranged as described above, in the process in which the rotation base portion 4 is rotated so as to be brought from the inclined state into the parallel state, when the rotation base portion 4 is pressed into the side of the concave portion so as to bend the rotation base portion 4 as described above, only the side of the end portion in the first direction with respect to the notch portion 24 in the rotation base portion 4 is bent.

[0053]

The action, the operation and the effects of the embodiment discussed above will then be described.

[0054]

The engagement of the first engagement portion 15 and the second engagement portion 16 in the first ring 21 is first released so that the item to be bound is bound to the binding

tool 1 in a state where the rotation base portion 4 is substantially parallel to the fixed base portion 3, where the first binding member 11 and the second binding member 12 configure the first ring 21 and where the third binding member 13 and the fourth binding member 14 configure the second ring 22.

[0055]

When the engagement of the first engagement portion 15 and the second engagement portion 16 is released, portions in the vicinity of the tip end portions (the first engagement portion 15) of the first binding members 11 located on both sides of the fixed base portion 3 are pressed into the inside, that is, into the direction toward the third binding member 13, and thus the engagement of the first engagement portion 15 and the second engagement portion 16 is released.

[0056]

Here, since the total length of the second ring 22 is longer than the total length of the first ring 21, in a state where the first ring 21 and the second ring 22 are configured, the third binding member 13 and the fourth binding member 14 are bent, and thus the rotation base portion 4 is biased in the rotation direction.

[0057]

Hence, when the engagement of the first engagement portion 15 and the second engagement portion 16 is released, the rotation base portion 4 is automatically rotated, by a biasing force resulting from the bending of the third binding member 13 and the fourth binding member 14, in the direction in which the first engagement portion 15 is separated from the second engagement portion 16, and a pop-up action for inclination with respect to the fixed base portion 3 is produced, with the result that the first ring 21 and the second

ring 22 are brought into an opened state.

[0058]

In the state where the first ring 21 and the second ring 22 are opened as described above, the second binding member 12 and the fourth binding member 14 are inserted into the insertion holes of the item to be bound. In addition, the first binding member 11 and the third binding member 13 may be inserted into the insertion holes of the item to be bound.

[0059]

Then, in the state where the second binding member 12 and the fourth binding member 14 are inserted into the insertion holes of the item to be bound, the rotation base portion 4 is rotated in a direction in which the first engagement portion 15 approaches the second engagement portion 16.

[0060]

When the rotation base portion 4 is rotated in the direction in which the first engagement portion 15 approaches the second engagement portion 16 as described above, before the first engagement portion 15 and the second engagement portion 16 reach a position in which they can be engaged, the tip end portion of the third binding member 13 and the tip end portion of the fourth binding member 14 are brought into contact with each other.

[0061]

Hence, the third binding member 13 and the fourth binding member 14 whose tip end portions are in contact with each other are bent, and thus the first engagement portion 15 and the second engagement portion 16 are engaged.

[0062]

As described above, in the process in which the rotation base portion 4 is rotated, before the protrusion portion 18

is inserted into the insertion hole 17, the convex portion 23 reaches the rotation limit point of the rotation base portion 4 to make contact with the concave portion which is the end point of the rotation range.

[0063]

Hence, the rotation base portion 4 is rotated such that the side of the end portion (the side of the convex portion 23) of the rotation base portion 4 in the first direction with respect to the notch portion 24 is bent inward of the notch portion 24, the protrusion portion 18 is inserted into the insertion hole 17 to configure the second ring 22 and thereafter the rotation base portion 4 is further rotated, with the result that the first engagement portion 15 and the second engagement portion 16 are engaged so as to configure the first ring 21.

[0064]

In the state where the first ring 21 and the second ring 22 are configured, since the third binding member 13 and the fourth binding member 14 configuring the second ring 22 are bent as described above, the rotation base portion 4 is biased by the resilience thereof so as to be rotated into the inclined state. In the state where the first ring 21 and the second ring 22 are configured and where the rotation base portion 4 is brought into the parallel state, since the convex portion 23 is brought into contact with the concave portion so as to be bent with the notch portion 24 being a boundary, the rotation base portion 4 is biased by the resilience thereof so as to be rotated into the inclined state.

[0065]

Hence, in a state where the protrusion portion 15b of the first engagement portion 15 and the protrusion portion 16b of the second engagement portion 16 are hooked to each

other, they are unlikely to be displaced from each other, and in a state where the first engagement portion 15 and the second engagement portion 16 are engaged, a rattle and the like are unlikely to be caused, with the result that the engaged state is stabilized.

[0066]

In the binding tool 1 described above, the rotation base portion 4 is only rotated with respect to the fixed base portion 3, and thus it is possible to switch between the state where the first ring 21 and the second ring 22 are configured and the state where the first ring 21 and the second ring 22 are opened, with the result that it is possible to easily bind the item to be bound.

[0067]

Also, since the length of the second ring 22 is longer than that of the first ring 21, the second ring 22 is bent, and thus the first engagement portion 15 and the second engagement portion 16 are engaged while the rotation base portion 4 is being biased in the direction in which the rotation base portion 4 is rotated into the inclined state. Hence, the state where the protrusion portion 15b is hooked to the protrusion portion 16b is stabilized, and thus the engagement can be securely achieved, with the result that it is possible to stably bind the item to be bound.

[0068]

Since in the state where the first ring 21 and the second ring 22 are configured, the biasing force resulting from the bending of the second ring 22 is exerted, the engagement of the first engagement portion 15 and the second engagement portion 16 is only released, and thus it is possible to simplify an operation of removing the item to be bound by the pop-up action for rotating, with the biasing force, the rotation base

portion 4 into the inclined state.

[0069]

Furthermore, the convex portion 23 is provided on the rotation base portion 4, and thus in the parallel state, the rotation base portion 4 is bent and is thereby biased so as to be rotated into the inclined state, with the result that as with the biasing resulting from the bending of the second ring 22, it is possible to stabilize the state where the item to be bound is bound and to simplify the operation of removing the item to be bound.

[0070]

Also, for example, when the rotation base portion 4 is formed of a material which is relatively hard and which has low flexibility so that its strength is enhanced, the rotation base portion 4 is unlikely to be bent. Hence, the notch portion 24 is provided in the rotation base portion 4, thus it is possible to divide the rotation base portion 4 through the notch portion 24 into a region where the convex portion 23 is present and a region where the convex portion 23 is not present and the region where the convex portion 23 is present is only bent so that the rotation base portion 4 is brought into the parallel state, with the result that it is not necessary to bent the entire region of the rotation base portion 4. Hence, even when the rotation base portion 4 is formed of a material which is relatively hard and which has low flexibility, it is possible to acquire the ease of bending in the region where the convex portion 23 is present while maintaining the strength of the material.

[0071]

In addition, as the region where the convex portion 23 is present, that is, the region to be bent is designed so as to become smaller, the region is more easily bent whereas as

the region to be bent is designed so as to become larger, the region is more significantly affected by the hardness of the material so as to be unlikely to be bent. The size of the region to be bent as described above is preferably designed as necessary according to the assumed number of items to be bound and the corresponding thickness and size of a binder or a file.

[0072]

In the first ring 21, the second engagement portion 16 is located on the side of the fixed base portion 3 and the rotation base portion 4 with respect to the first engagement portion 15, the shortest distance between the first engagement portion 15 and the fixed base portion 3 is longer than the shortest distance between the second engagement portion 16 and the fixed base portion 3 and thus for example, even when in a state where the item to be bound is bound, an impact is received from the outside, it is possible to cope with a displacement between the first engagement portion 15 and the second engagement portion 16 caused by the impact, with the result that it is possible to stably bind the item to be bound. In other words, although for example, when a large number of items to be bound are bound or when a binder where the binding tool 1 is provided is dropped, a large force is applied to the binding tool 1, the second engagement portion 16 is made to slide with respect to the first engagement portion 15 and thus the engaged state may be released, since the shortest distance between the first engagement portion 15 and the fixed base portion 3 is longer than the shortest distance between the second engagement portion 16 and the fixed base portion 3, it is possible to prevent the engagement of the second engagement portion 16 and the first engagement portion 15 from being released even when the second engagement portion 16 is made to slide.

[0073]

Here, when the numbers of first binding members 11, second binding members 12, third binding members 13 and fourth binding members 14 are increased, it is complicated to insert all of them into the insertion holes of the item to be bound, with the result that in terms of operability, the numbers of first binding members 11, second binding members 12, third binding members 13 and fourth binding members 14 are preferably decreased.

[0074]

On the other hand, when the numbers of first binding members 11, second binding members 12, third binding members 13 and fourth binding members 14 are decreased, a load is applied, in a concentrated manner, to the insertion holes into which they are inserted, and thus the insertion holes may be damaged, with the result that in terms of strength, the numbers of first binding members 11, second binding members 12, third binding members 13 and fourth binding members 14 are preferably increased.

[0075]

Hence, with consideration given to a balance between the operability and the strength, the fixed base portions 3 and the rotation base portions 4 are provided only in the vicinity of both end portions of the binding tool main body 2 in the first direction, and thus it is not necessary to insert the first binding member 11 and the third binding member 13 and the second binding member 12 and the fourth binding member 14 into all the insertion holes of the item to be bound so as to achieve satisfactory operability and to prevent the excessive concentration of forces resulting from the engagement, with the result that it is possible to easily and stably bind the item to be bound.

[0076]

In particular, two first binding members 11 are provided in the fixed base portion 3, two second binding members 12 are provided in the rotation base portion 4, the third binding member 13 is arranged between the two first binding members 11 and the fourth binding member 14 is arranged between the two second binding members 12, and thus it is possible to utilize the pop-up action described previously and to achieve the satisfactory balance between the operability and the strength, with the result that it is possible to easily and stably bind the item to be bound.

[0077]

More specifically, in the configuration in which two third binding members 13 are provided between two first binding members 11 and in which two fourth binding members 14 are provided between two second binding members 12, in a state where a document is bound as the item to be bound, the insertion holes of the document are unlikely to be damaged when the sheets of the document are turned, and the like, and the size of the insertion operation into the insertion holes is relatively small, with the result that it is possible to easily and stably bind the item to be bound.

[0078]

Also, even in the configuration in which the fixed base portions 3 are provided in the vicinity of both end portions of the binding tool main body 2 in the first direction, the tapered portion 8 is provided in the binding tool main body 2, and thus for example, in a case where a document is bound as the item to be bound, and like, and where the document is bent when the sheets of the document bound are turned, the edge portion of the bent document on the side of the insertion holes is unlikely to be hooked between the fixed base portions

3 in the binding tool main body 2.

[0079]

Although in the embodiment described above, the fixed base portions 3 and the rotation base portions 4 are provided at both end portions of the binding tool main body 2 in the first direction, there is no limitation to this configuration, and for example, a configuration may be adopted in which the fixed base portions 3 and the rotation base portions 4 are provided from one end side of the binding tool main body 2 in the first direction to the other end side or a configuration may be adopted in which the binding tool 1 is designed to be shorter than the edge portion where the insertion holes of the item to be bound are provided, in which its length is set to correspond to only a part of the insertion holes and in which only a partial region of the item to be bound is used to bind the item to be bound.

[0080]

The shape of the binding tool main body 2 is not limited to a quadrangular plate shape, and as long as a planar plate shape is provided in which both ends in at least one of the first direction and the second direction configure two sides, such a shape can be applied as necessary.

[0081]

When the binding tool main body 2 has a rectangular plate shape, there is no limitation to the configuration in which the longitudinal direction is the first direction and in which the lateral direction is the second direction as described above, and a configuration may be adopted in which the longitudinal direction is the second direction and in which the lateral direction is the first direction.

[0082]

Although the rotation base portion 4 is configured to

be pivoted to the binding tool main body 2 through the shaft 6, there is no limitation to such a configuration, and for example, the rotation base portion 4 may be formed integrally in the binding tool main body 2 through a hinge, and as long as the rotation base portion 4 can be rotated with respect to the fixed base portion 3, any configuration may be adopted.

[0083]

Also, although the rotation base portion 4 is configured such that the convex portion 23 is provided, there is no limitation to such a configuration, and a configuration may be adopted in which the convex portion 23 is not provided.

[0084]

When a configuration in which the convex portion 23 is provided is adopted, the position of the convex portion 23 is not limited to the vicinity of the corner portion of the rotation base portion 4, and the position of the convex portion 23 can be determined as necessary with consideration given to resilience based on the material, the size and the like of the individual members.

[0085]

Furthermore, although the rotation base portion 4 is configured such that the notch portion 24 is provided, there is no limitation to such a configuration, and a configuration may be adopted in which the notch portion 24 is not provided.

[0086]

Also, in a configuration in which the notch portion 24 is not provided, since the rotation base portion 4 is unlikely to be bent, for example, with consideration given to the material, the size and the like of the rotation base portion 4, a configuration may be adopted in which a thin-walled bent portion is provided such that the rotation base portion 4 is easily bent.

[0087]

The shape of the first binding member 11, the second binding member 12, the third binding member 13 and the fourth binding member 14 is not limited to the shape of an arc bar, such a shape can be determined as necessary with consideration given to bending based on the relationship of the length between the first ring 21 and the second ring 22 and for example, a shape may be adopted in which the first binding member 11 and the second binding member 12 are bent so as to be extended outward of the fixed base portion 3 and the rotation base portion 4.

[0088]

Although the first ring 21 is configured such that the second engagement portion 16 is located on the side of the fixed base portion 3 and the rotation base portion 4 with respect to the first engagement portion 15, and the shortest distance between the first engagement portion 15 and the fixed base portion 3 is longer than the shortest distance between the second engagement portion 16 and the fixed base portion 3, there is no limitation to such a configuration, and as long as the first engagement portion 15 can be engaged with the second engagement portion 16, any configuration may be adopted.

[0089]

Although the second ring 22 is configured such that the protrusion portion 18 of the fourth binding member 14 is inserted into the insertion hole 17 of the third binding member 13, there is no limitation to such a configuration, and as long as the tip end portion of the third binding member 13 and the tip end portion of the fourth binding member 14 are brought into contact with each other so as to configure the second ring 22, for example, a configuration may be adopted

in which the tip end portions are engaged with each other.

INDUSTRIAL APPLICABILITY

[0090]

The present invention is used in for example, a binder and a file, and the like, and can be utilized for removably binding items to be bound such as a document and a folder.

REFERENCE SIGNS LIST

[0091]

1 binding tool
2 binding tool main body
3 fixed base portion
4 rotation base portion
6 shaft serving as rotation shaft
11 first binding member
12 second binding member
13 third binding member
14 fourth binding member
15 first engagement portion
16 second engagement portion
21 first ring
22 second ring
23 convex portion
24 notch portion

CLAIMS:

1. A binding tool with which an item to be bound having an insertion hole is removably bound, the binding tool comprising:

a fixed base portion;

a rotation base portion which is provided rotatably with respect to the fixed base portion;

a first binding member which is provided in the fixed base portion and which can be inserted into the insertion hole of the item to be bound;

a second binding member which is provided in the rotation base portion and which can be inserted into the insertion hole of the item to be bound;

a third binding member which is provided in the fixed base portion so as to be aligned with the first binding member and which can be inserted into the insertion hole of the item to be bound; and

a fourth binding member which is provided in the rotation base portion so as to be aligned with the second binding member and which can be inserted into the insertion hole of the item to be bound,

wherein the first binding member includes a first engagement portion,

the second binding member includes a second engagement portion which can be engaged with the first engagement portion,

the rotation base portion is rotated such that the first engagement portion of the first binding member is contacted to and separated from the second engagement portion of the second binding member,

in the first binding member and the second binding member, the first engagement portion and the second engagement portion

are engaged so as to configure a first ring,

in the third binding member and the fourth binding member, tip end portions are brought into contact with each other so as to configure a second ring and

a length of the second ring is longer than a length of the first ring.

2. The binding tool according to claim 1,

wherein the rotation base portion includes a convex portion that is protruded from a surface on a side opposite to a surface on which the second binding member and the fourth binding member are provided, and

in a process in which the rotation base portion is rotated in a direction in which the second engagement portion approaches the first engagement portion, the convex portion reaches a rotation limit point of the rotation base portion before the first engagement portion and the second engagement portion are engaged.

3. The binding tool according to claim 2,

wherein the rotation base portion includes: a rotation shaft which is located in a vicinity of an end portion of the rotation base portion and on which the rotation base portion is rotatably pivoted with respect to the fixed base portion; and a notch portion which is cut out from the other end portion on a side opposite to the end portion, and

a tip end portion of the notch portion is located on a side of the rotation shaft with respect to a position of the convex portion.

4. The binding tool according to any one of claims 1 to 3,

wherein in a state where the first ring is configured, a shortest distance between the first engagement portion and the fixed base portion is longer than a shortest distance

between the second engagement portion and the fixed base portion.

5. The binding tool according to any one of claims 1 to 4, the binding tool comprising:

a plate-shaped binding tool main body in which the fixed base portion is provided and in which the rotation base portion is provided rotatably with respect to the fixed base portion,

wherein the fixed base portion and the rotation base portion are arranged in a vicinity of both end portions of the binding tool main body in one direction thereof.

6. The binding tool according to any one of claims 1 to 5,

wherein in the fixed base portion, two of the first binding members are provided,

in the rotation base portion, two of the second binding members are provided,

the third binding member is arranged between the two of the first binding members and

the fourth binding member is arranged between the two of the second binding members so as to correspond to a position of the third binding member.

7. The binding tool according to claim 6,

wherein in the fixed base portion, two of the third binding members are provided, and

in the rotation base portion, two of the fourth binding members are provided.