United States Patent

Schoonmaker

[15] **3,690,075**

[45] **Sept. 12, 1972**

[54] **DRUM HOLDER**

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[21] Appl. No.: **209,701**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 870,229, July 28, 1969, abandoned.

[52] **U.S. Cl.** .....**51/368,** 51/170 PT

[51] **Int. Cl.** **B24b 45/00,** B24b 23/00

[58] **Field of Search** .....51/364–368, 170 PT

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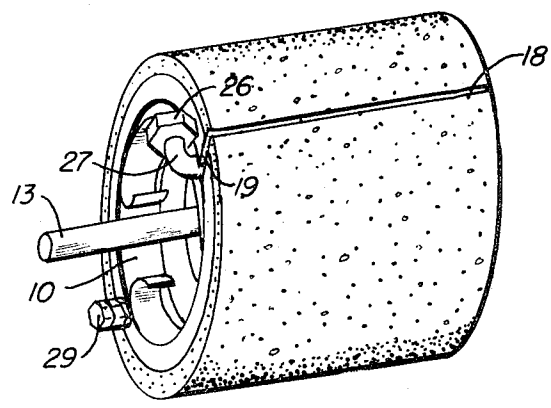
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Primary Examiner—Othell M. Simpson
Attorney—Robert C. Baker

[57] **ABSTRACT**

Disclosed is a new drum holder adapted to receive upon its peripheral cylindrical surface a snug wrapping of a removable sheet material and adapted to substantially continually take up slack as generated in the wrapping during rotation of the holder in use applications. The holder comprises a drum rotatable about its axis, with axially-parallel elements as part of the drum. Those elements include a tightening key chamber, tightening key, and a passage from the key chamber to a slit in the periphery of the drum. The slit is radially advanced with respect to the key chamber during rotation of the drum in use applications. The key holds the trailing end of a sheet wrapped about the drum. The leading end of the sheet is held by pinching action between the key and a radially outward wall of the key chamber. A centrifugal weight on an arm off the key member serves to torque the key itself in a rotary direction opposite to that of the drum rotation in use applications; and this serves in turn to take up slack in the sheet wrapping and also contributes to the holding action on the leading and trailing portions of the sheet wrapping.

8 Claims, 10 Drawing Figures



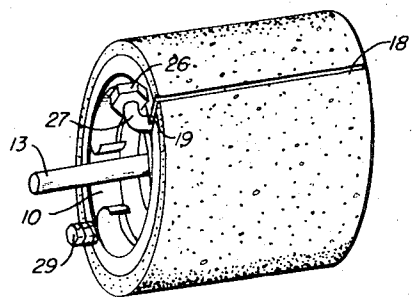


FIG. 1

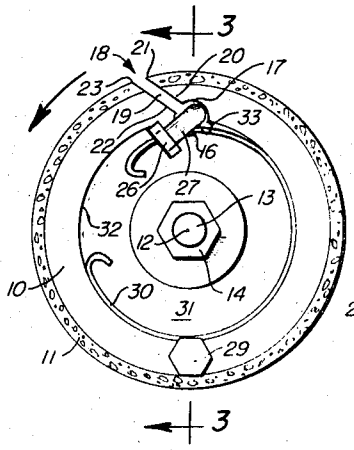


FIG. 2

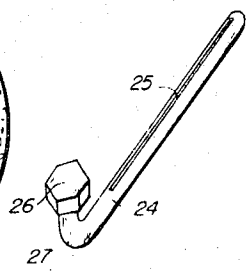


FIG. 4

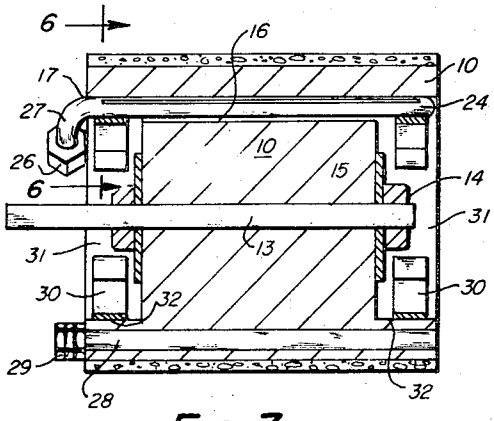


FIG. 3

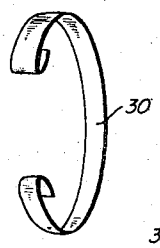


FIG. 5

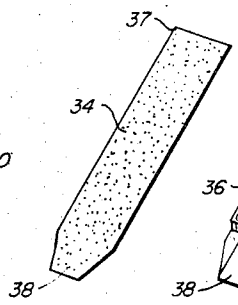


FIG. 9

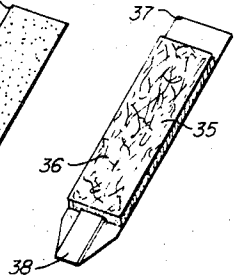


FIG. 10

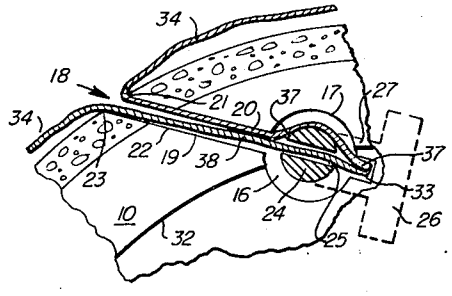


FIG. 6

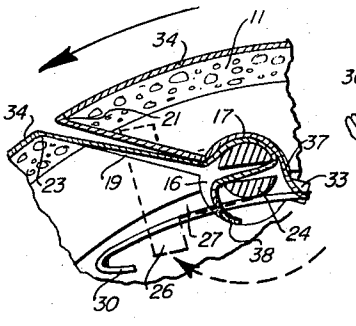


FIG. 7

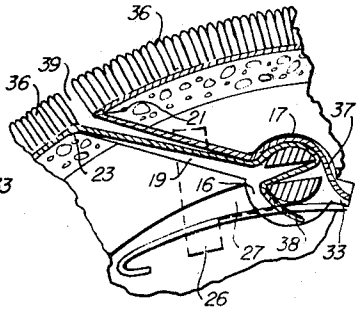


FIG. 8

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DRUM HOLDER

This application is a continuation-in-part of my parent application Ser. No. **870,229**, filed July 28, 1969, now abandoned (which parent application was originally assigned Serial No. 845,409).

This invention relates to a new cylindrical holder for sheet material. The new holder is adapted to receive and hold upon its peripheral cylindrical surface a snug wrapping of a removable sheet material. Simultaneously, the new holder is capable of substantially continually taking up any slack as is frequently generated in such a wrapping during rotation of the holder in use applications.

The principles of the invention may be incorporated in a variety of rotary drum devices. For example, the teachings may be incorporated in rotary drums used for sanding, buffing, polishing, printing, inking or painting (as in screen process work), and in any number of other devices where it is necessary to fasten a removable sheet material of some type as a wrapping about a substantially cylindrical periphery of a drum and maintain it in substantially snug relationship on the periphery during use.

An especially significant feature of the invention is that of the substantially constant tightening action exerted upon a wrapping of sheet material in use applications. This tightening action serves continually to substantially remove any slack generated in the sheet material during surface contact or surface treatment operations (such as abrasion) conducted as rotation of the drum takes place.

A major advantage of this new teaching lies in the simplicity of required structural parts and in the multiple functions performed by the interrelationship of the structural parts. By practicing the preferred embodiment of the teachings hereof, no special tools or wrenches are required for the step of installing upon a cylindrical drum a snug wrapping of sheet material in such a way that slack generated in the sheet material during rotation of the drum in use applications is substantially continually taken up so that the sheet material remains, or is maintained, in a snug relationship on the cylindrical periphery of the drum.

Furthermore, contrary to what might be expected from prior art teachings, the sheet material wrapped about the drum in accordance with the teaching hereof need not necessarily be equipped with special beaded metal ends or the like. Such has heretofore been a common practice in order to provide an interlocking or gripping action between some recess or part of a drum and the sheet material wrapped about the drum; but special metal strips on the ends of a sheet material are not critically necessary when the teachings of this invention are employed.

The basic elements of this new holder can be extraordinarily simple. First, the holder comprises a cylindrical drum rotatable about its axis. Within the body of the drum and spaced from the axis thereof is located an axially-parallel elongated key chamber. This key chamber has a radially outward wall. An axially-parallel slit is located in the periphery of the drum (that is, on the cylindrical surface of the drum). This slit is radially advanced from the radial location of the key chamber as the drum is rotated in use applications (such as surface contact or surface treatment operations). An axially-parallel passage extends between the slit on the peripheral surface of the drum and the key chamber within the body of the drum. This passage is preferably slot-like in character, and extends substantially as a slanted slot from the key chamber to the periphery of the drum. One side wall of the axially-parallel passage forms a substantially acute-angle leading-edge structure with the peripheral surface or periphery of the drum. The other side wall of the passage forms a substantially obtuse-angle following-edge structure with the periphery of the drum. Further, the side wall or side of the passage forming the substantially acute-angle leading-edge structure is the side of the passage where (or essentially adjacent to which) the radially outward wall of the key chamber is disposed.

Within the elongated key chamber is located an elongated key member. This key member is capable of being moved in rotary motion; and preferably, the key member is an entirely separate element which can be removed from the key chamber. (It may, however, be hingedly journaled in the key chamber, if desired.) It is this key member or tightening key which serves as the holder for, that is, the means for holding, the trailing portion of a sheet material. The sheet material is wrapped about the periphery of the drum with the trailing portion of the sheet material extending over the following edge structure of the drum to the key member, where the trailing portion is attached.

The leading portion of a sheet material as wrapped about the periphery of the drum is held by pinching means. The sheet material itself is wrapped about the periphery of the drum with the leading portion of the sheet material extending over the leading-edge structure of the drum into the key chamber to a location between the key member within that key chamber and the radially outward wall of that key chamber. The pinching means itself is formed by the key member pressing against the radially outward wall of the key chamber. This occurs to some extent as the drum is rotated in use applications; and special biasing means may also be employed to push or force the key member against the radially outward wall of the key chamber. Significantly, the pinching means for holding the leading portion of a sheet material is quite operable independently of the holding action of the key member on the trailing portion of the sheet material. The acute angle bend of the sheet material over the leading-edge structure contributes also to the holding of the leading portion of the sheet material in position during use applications.

A further feature of this new holder is the means for applying torque upon the key member as the drum is rotated in use applications. This means comprises a centrifugal weight on an arm extending radially outward from the key member. The weight is so disposed upon rotation of the drum in use applications to cause torque action on the key member in a rotary direction opposite to that of the drum rotation. The result is that any slack as generated in the sheet structure during rotation of the drum is substantially simultaneously taken up by this torque-caused rotary motion of the key member. Still further, the torque-caused rotary motion of the key member is in a rotary direction opposite to that causing ejection of the leading portion of the sheet material from its pinched position between the key member and the radially outward wall of the key chamber.

Basically, therefore, the means for effecting the torque caused rotary motion of the key member is actuated by the drum rotation. The centrifugal weight is on an arm extending radially outward form the axis for the rotary motion of the key member. In fact, the centrifugal weight itself is located in a radially advanced (or circumferentially advanced) position relative to the radial location of the axis of the key member during rotation of the drum in use applications.

Representative embodiments of this invention are herein presented, but it will, of course, be appreciated that the invention is susceptible of incorporation in still other forms coming equally within the scope of the appended claims.

The invention will further be described with the aid of an illustrative drawing made a part hereof, wherein:

FIG. 1 is a schematic perspective view of a drum equipped with the basic elements of the invention, but free of a special removable sheet material wrapping;

FIG. 2 is an end view of the drum of FIG. 1;

FIG. 3 is a schematic cross-sectional view taken on line 3—3 of FIG. 2;

FIG. 4 is a schematic perspective view of a tightening key member, with the centrifugal weight on an arm off the axis of the tightening key;

FIG. 5 is a schematic view of leaf C-spring clip or member for exerting auxiliary biasing force against the key member to cause it to pinch against the radially outward wall of the key chamber;

FIGS. 6, 7, and 8 are schematic cross-sectional views all taken at an approximate location such as at line 6—6 of FIG. 3, and illustrating the detailed features for fixing a sheet material as a wrapping about the drum; and

FIGS. 9 and 10 are schematic sectional views of illustrative sheet material for wrapping about the drum.

Referring particularly to FIGS. 1 to 3 inclusive, the holder comprises a main cylindrical drum body **10**, suitably of solid construction, but optionally of essentially hollow construction, if desired. Drum body **10** may be formed of any suitable material such as wood, plastic, metal or synthetic composition-type material.

Depending upon the specific use application for the drum, it may be covered with a soft pad **11** or resilient covering (such as, for example, flannel, cork, or the like) adhesively fixed to the main underlying body of the drum; but this is not always critically necessary.

The drum is rotatable about its axis **12**; and a common practice is to provide a central axis shaft **13** for the rotatable drum. Shaft **13**, as shown in FIG. **1**, may extend as a shank away from the drum. Suitably, the shank may be equipped with a contour adapting it to be gripped or mounted in the chuck of a hand drill or similar power source. But a variety of axial shaft arrangements may be employed for varied mountings of the drum and varied techniques for imparting rotary motion to it for practical use applications. Nuts **14** and washers or flangers **15** suitably are employed to hold the drum **10** on a shaft **13**.

Within the body of the drum, but spaced from the axis of rotation thereof, is an axially-parallel elongated key chamber **16**. This key chamber **16** extends substantially throughout the length of the rotatable drum; that is, key chamber **16** extends preferably the complete length of the rotatable cylinder **10**. A critical feature of the key chamber is that it must have a radially outward wall **17**. The radially outward wall **17** also should extend substantially the length of the rotatable drum. As aforenoted, this key chamber is essentially parallel with the axis of rotation of the drum; but is spaced from the axis of rotation and is located interiorly from the peripheral circumference of the drum.

On the peripheral surface of the drum is a slit **18** which is likewise parallel with the axis of rotation of the drum. This slit **18** is radially advanced from the radial location of the key chamber **16** as the drum is rotated in use applications. Thus, the slit **18** is circumferentially advanced with respect to the radial location of the key chamber **16** as the drum is rotated in use applications. Slit **18** also should extend the full length of the drum; that is, it should extend across the width of the drum periphery.

The drum may be designed to rotate in either clockwise or counter-clockwise direction as one views the shaft; but the important feature is that the rotation is such that the slit **18** is radially advanced during rotation, as aforenoted. A reverse rotation (with the slit **18** following the key chamber **16**), while not resulting in total inoperability, does leave much to be desired; and does in fact limit or prevent the action of the continual taking up of slack in a wrapping about the drum.

Slit **18** in the periphery of the drum is connected to the key chamber **17** by a passage **19**. This passage **19** is preferably slot-like in character and extends between the terminal slit **18** on the periphery of the drum and the key chamber **16**. While the passage is preferably essentially straight and axially parallel, it is optionally suitable to form the passage with a slight curvature, if desired. Also, the passage should extend in a width direction about equal to the width of the working periphery of the drum as covered by a wrapping. In other words, the slit in the periphery of the drum, the key chamber, and the passage, should all extend sufficiently to at least about equal the width of the working periphery of the drum (that is the length of the working surface of the drum in use applications).

One side wall **20** of the passage **19** forms a substantially acute-angle leading-edge structure **21** with the periphery of the drum. The other side wall **22** of the passage forms a substantially obtuse-angle following-edge structure with the periphery of the drum **23**. While various angles for the slot-like passage **19** may be employed, experience suggests that angles between about **20** and **70** degrees from a plane tangential to the drum at the slit in the periphery thereof are most suitable—with angular directions between about 30° and 60° from a plane tangential to the drum at the slit in the periphery being preferred. It will be appreciated that, as the radial distance of the key chamber **16** is moved closer to the axis of rotation of the drum, the angular direction of the slot-like passage may be easily altered toward a larger angle from a plane tangential to the drum at the slit in the periphery.

In a very general sense, the radial angle between the location of slit **18** and the location of the chamber **16** should never be less than about 5°, and preferably is at least about 10° up to possibly as much as about 90°. A radial angle in excess of about 45°, however, introduces an unnecessary passage length, which, in turn, introduces unnecessary problems in fastening a sheet material about the drum.

Slit 18 is optionally gradually enlarged in width as it progresses toward key chamber 16; and this facilitates the insertion and fastening of sheet material about the drum. Although not preferred, portions of the walls of the slit may be greatly enlarged or even omitted (especially where a hollow drum is used; but preferred practice is to employ a substantially solid drum body 10).

To be observed is that the radially outward wall 17 of the key chamber is on the side of the passage 19 (or is adjacent to the side of passage 19) which leads to the leading edge structure 21.

Within the key chamber 16 is the elongated key member 24. This key member may be shorter or longer than the total length of chamber 16, but preferably is about equal to the length of chamber 16 with an outward projection from chamber 16 for the arm and centrifugal weight. Key 24 suitably consists essentially of a shaft with means for connecting or fastening sheet material to it. The key member serves as means to grip the trailing portion of sheet material wrapped about the drum. Preferably this means consists essentially of a perpendicular elongated slot 25 extending through key 24. Slot 25 extends transversely completely through the shaft of the key 24. Edges of slit 25 may be beveled or expanded on one or both sides at each opening of it, to facilitate the insertion of the trailing portion of sheet material into slot 25.

The centrifugal weight 26 is located off an arm 27 extending radially outward from the shaft of key 24. Suitably, as illustrated, the centrifugal weight 26 and arm 27 may be rigidly united to the shaft of key 24; but optionally, weight 26 on an arm 27 may be formed to be adjustable with respect to the shaft of key 24. Metal such as steel may be employed to form weight 26, arm 27 and the shaft of key 24. A centrifugal weight of only a few ounces has been found suitable for a 3 inch diameter drum.

Key member 24 is preferably completely removable from chamber 16; but if desired, key 24 might be hingedly journaled within chamber 16 so as to be not removable but yet permit it to float or be biased toward radially outer wall 17, as required.

Diametrically opposite the drum location of the tightening key 24 and centrifugal weight 26 is desirably located a counterbalance structure, suitably consisting of a rod 28 extending within the body of the drum and a counterbalance weight 29 positioned to approximately pair off and balance the centrifugal weight structure 26. It will be recognized that alternate means may be employed for counterbalancing or substantially symmetrically weighting the entire structure of the rotatable drum. For example, where substantially hollow plastic drums are employed, a buildup of plastic diametrically opposite to the tightening key 24 and weight 26 may be sufficient to form a substantially balanced drum on rotation.

After a sheet material is wrapped about the drum and its ends fixed as hereinafter described in detail, it is important that the shaft of key 24 be biased against the radially outward wall 17 of the key chamber 16. It is this pressing action of key 24 against the radially outward wall 17 which forms the pinching means to hold the leading edge of the sheet material in position. The weight of the shaft 24 of the key alone is sometimes capable of performing this function when the drum is rotated at high speed, especially when the shaft 24 is formed of metal such as steel. However, auxiliary means pressing the shaft of key 24 against the radially outward wall 17 is preferably also incorporated in the structure.

An illustrative auxiliary means for pressing key 24 against radially outward wall 17 may consist essentially of a spring-type C-shaped resilient member 30 as illustrated in FIG. 5. Such a member 30 may be formed of spring metal such as spring steel. Drum 10 may be provided with a cylindrical recess 31 in each end thereof, with the circumference of the recess sufficiently radially outward from the axis of shaft 13 so as to encompass at least a part of the key chamber 16. In other words, the cylindrical recess 31 for this embodiment should have a circumference 32 great enough so as to intersect at least a part of the opening characterized as the key chamber 16. If the radially outward wall 17 of the key chamber 16 is located more greatly radially outward from the axis shaft 13 than the circumference 32 of recess 31, the distance between the circumference 32 and the radially outward wall 17 should not be greater than the diameter of the key shaft 24. Spring clamp 30 is suitably inserted in each recess 31 at the ends of the drum so that one arm or edge of the C spring presses against key shaft 24 and the other diametrically-opposite portion of the C spring rests against and presses against the circumference wall 32 of the recess 31. In this way, key 24 is biased against radially outward wall 17.

Preferred cylindrical holders of the invention also include another structural feature which is best illustrated in FIGS. 2, 6, 7, and 8. This structural feature consists essentially of an extension of slot 19 into the body of drum 10 beyond key chamber 16, so as to form more or less an elongated pocket 33 into which the ends of sheet material may be inserted. This pocket 33 is preferably aligned with the slanted slot 19. Pocket 33 need not be of any great depth; but it preferably is included as part of the total structure. It may not be more than about a sixteenth of an inch in depth. It is, of course, essentially axially-parallel just as the slot 19 is also essentially axially-parallel. A pocket of greater depth than about a half-inch or even a fourth-inch is unnecessary. But deep pockets do not make the device inoperable (although they may weaken parts of the drum).

Before describing the wrapping and fixing of sheet material on the cylindrical holder, a brief discussion of the preferred nature of sheet material for use in the holder is appropriate. In FIGS. 9 and 10 a miniature showing of suitable sheet material shapes is set forth. In FIG. 9 the sheet material 34 is relatively thin and essentially flat in nature. It may comprise an abrasive sheet, or a printing sheet, or a mere blanket, etc. The sheet material 35 of FIG. 10 is illustrated as one having a built-up special mass 36, such as a carpet-like mass of fibers (nylon, cotton, wool, etc.) useful for buffing operations. The leading portion 37 of each sheet (shown in miniature) suitably is nothing more than a straight cut terminal end of the sheet, making the leading portion 37 "square" cut in configuration. In the case of the sheet of FIG. 10, the added build-up of fibrous material 36 is suitably removed from the very terminal leading portion 37. The trailing portion 38 of

each sheet likewise may consist simply of a "square" cut end of the sheet, but preferably is beveled along its edges so as to form a somewhat narrower terminal trailing end 38. By somewhat "pointing" the trailing end 38, it is more conveniently and easily inserted in the slot 25 of key 24.

Referring to FIG. 6, any suitable sheet such as sheet material 34 (previously cut to a width approximating that for the working surface of drum 10 and preferably previously cut to a shape approximating that shown in FIG. 9) is inserted with its leading portion 37 into slot 19 so that the leading portion 37 extends over the leading-edge structure 21 of the drum and then into the key chamber 16. Within the key chamber 16, the leading-edge 37 must pass between the key member 24 and the radially outward wall 17 of the key chamber. As a practical matter, by employing a removable key member 24, the leading portion 37 is quickly insertable through slot 19 into key chamber 16 and even into the extension pocket 33 of slot 19. Then, key 24 is inserted into the key chamber 16 so as to place the leading edge or leading portion 37 between key 24 and radially outward wall 17. Where an abrasive structure is employed, the abrasive surface of the sheet will be the outer surface as the sheet is wrapped around the drum.

After inserting the leading portion 37 as just described, the sheet 34 is wrapped about the drum and the tailing portion 38 is then inserted over the following-edge structure 23 of the drum into slot 19 and through the key number 24. The terminal trailing edge of the trailing portion 38 is actually inserted through slot 25 of key 24 and even into the extension pocket 33 of slot 19. Opening or slot 25 in the tightening key 24 may be aligned by hand during this step.

At this point in fastening a sheet material about the cylindrical holder, the sheet 34 is rather loosely lying about the peripheral surface of the drum 10. Further, the centrifugal weight 26 and the arm 27 are at this point suitably aligned in a substantially parallel direction with slot 19 and away form the slit opening 18 in the periphery of the drum 10.

As illustrated in FIG. 7, the next step is to rotate key 24 with arm 27 carrying centrifugal weight 26 in a rotary direction opposite that of the rotary direction for the drum in use applications. For the showing in FIGS. 6 and 7, key 24 with the centrifugal weight on arm 27 is rotated in a clock-wise direction (as shown by the broken arrow in FIG. 7). Drum 10 is designed for rotation in a counter-clockwise direction (as shown by the solid arrow in FIG. 7). The rotation of key 24, as illustrated in FIG. 7, effects a twisting and winding of the trailing portion 38 of sheet material 34 upon key 24; and this pulls the sheet material over the following edge structure 23 and tightens the sheet material 34 on the periphery of the drum. To be noted is that the rotation of key 24 for this tightening step is in a direction which also tends to pull upon the leading portion 37 of the wrapping of sheet material. However, the degree of pull exerted upon the leading portion 37 is essentially frictional in nature as distinguished from a positive pull (such as created by the interlocking of the trailing portion 38 of the sheet material in key 24). Furthermore, the acute angle leading-edge structure 21 at the periphery of the drum creates additional resistance to the movement of the leading portion 37 out of slot 19 from its pinched position between key 24 and radially outward wall 17. This pinching of the leading portion 37 of the sheet material is considerably enhanced by inserting the expander C-springs 30, or by using other means causing or forcing key 24 against radially outward wall 17, that is, against the outer side of tightening key chamber 16. It is suitable to insert the C-springs 30 before conducting the rotation of tightening key 24 to the position illustrated in FIG. 7.

The showing in FIG. 8 is comperable to that of FIG. 7, with the exception that the sheet material taken from FIG. 10 is illustrated. It will be noted that a slight gap 39 is suitably and preferably present in the otherwise continuous fibrous buffing structure 36 about the periphery of the drum. As a sheet material having a special built-up structure 36 expands or stretches in use applications, it is desirable to cut off or remove the portion of the built-up structure moving proximately to the obtuse-angle following-edge structure 23 at the periphery of the drum. In this way, the stretch of sheet material moving into slot 19 is maintained at minimal thickness to avoid clogging.

Referring to FIGS. 2 and 7 in particular, as the drum 10 is rotated in use applications (see solid arrow of FIGS. 2 and 7), centrifugal force is exerted by the centrifugal weight 26 off arm 27 of tightening key 24. The centrifugal force causes the tightening key 24 to be under constant torque in a rotary direction illustrated by the dotted arrow in FIG. 7. The result is that of a constant tightening and winding action on the trailing portion 38 of the sheet structure wrapped about the drum. A further effect created during rotation of the drum in use applications is that of a constant tendency, by friction or otherwise, for the sheet material wrapped about the drum to be drawn from the leading-edge structure 21 toward the following-edge structure 23. This effect is especially pronounced in abrasive operations, where friction of the abrasive sheet as it moves over a workpiece tends to pull it from the leading-edge structure 21 to the following-edge structure 23 during rotation. The result is that the trailing portion 38 of the sheet wrapping is constantly fed over the following-edge structure 23 into slot 19 (which is slanted from the key chamber 16 to the slit 18 toward the direction of rotation for the drum). Thus the effect of surface treatment operations is to assist in the tightening action of the sheet wrapping on the drum. At all times during rotary motion of the drum, the centrifugal weight 26 off arm 27 of key 24 effects a tightening torque or action upon the interlocked trailing portion 38 of the sheet material in key 24. Simultaneously, the leading portion 37 is pinched and even fixtionally pulled upon by the action of torque-caused rotary motion of key 24.

Teachings hereof may be used in abrasive sheet holders adapted to hold a variety of sandpaper or other abrasive materials in sheet or roll form (carborundium paper, crokus cloth, emery paper, etc.). Useful abrasive sheets may be cut from standard sheets available on the commercial market. The abrasives may vary from very fine to very course; but the strips are firmly attached to the outer surface of the drum by passing the two ends through a slanted slot 19. This slot 19 meets the outer surface of the drum at an angle slanted towards the direction of rotation. The ends are held in place or anchored by use of the tightening key 24 with

its centrifugal weight in combination with the tightening key chamber 16, especially the radially outward wall 17 of the tightening key chamber.

One might expect that the leading-edge 21 of a cylindrical holder as here taught might subject an abrasive or other sheet material wrapped about it to excessive or rigorous wear. Surprisingly, that has not been found to be the case. Quite to the contrary, sheet materials wrapped about drums as taught herein and used in various treatment operations have been found to exhibit extremely long-wear life, generally greater than they normally exhibit when employed in holders as available heretofore.

Varied rotary power sources such as, for example, one-quarter inch or larger electric hand drills, may be employed. Portable or stationary power sources may be used.

Sheet materials may be reinforced with special backings or strips to improve tension strength, or alter the flexibility or stiffness characteristics of them, etc.

It will be appreciated that there are a multitude of ways to describe this invention. My parent application aforementioned sets forth all the essential features described herein, with inherently the same significance as the description chosen for this application; but the description herein is in much greater detail.

That which is claimed is:

1. A cylindrical holder adapted to receive upon its peripheral cylindrical surface a snug wrapping of a removable sheet material and substantially continually take up slack as generated in said wrapping during rotation of said holder in use applications, and comprising:

i. a cylindrical drum rotatable about its axis,

ii. an axially-parallel elongated key chamber within the body of said drum and spaced from the axis thereof, said key chamber having a radially outward wall,

iii. an axially-parallel slit in the periphery of said drum, said slit being radially advanced from the radial location of said key chamber as said drum is rotated in use applications,

iv. an axially-parallel passage between said slit and said key chamber, one side wall of said passage forming a substantially acute-angle leading-edge structure with the periphery of said drum and the other side wall of said passage forming a substantially obtuse-angle following-edge structure with the periphery of said drum, said radially outward wall of said key chamber being disposed on the side of said passage where said leading-edge structure is located,

v. an elongated key member in said elongated key chamber, said key member being adapted to serve as a holder for the trailing portion of a sheet material as wrapped about the periphery of said drum with the trailing portion of said sheet material extending over said following-edge structure of said drum to said key member,

vi. pinching means for holding the leading portion of a sheet material as wrapped about the periphery of said drum with the leading portion of said sheet material extending over said leading-edge structure of said drum into said key chamber between said key member and said radially outward wall, said pinching means being formed by said key member pressing against said radially outward wall of said key chamber as said drum is rotated in use applications, said pinching means being operable independently of the holding action of said key member on said trailing portion of said sheet material, and

vii. means for applying torque upon said key member as said drum is rotated in use applications, said means comprising a centrifugal weight on an arm extending radially outward from said key member, with said weight so disposed upon rotation of said drum in use applications to cause torque on said key member in a rotary direction opposite to that of said drum rotation, whereby slack generated in said sheet material during rotation of said drum is substantially simultaneously taken up by torque-caused rotary motion of said key member, and whereby such torque-caused rotary motion of said key member is in a rotary direction opposite to that causing ejection of the leading portion of said sheet material from its pinched position between said key member and said radially outward wall of said key chamber.

2. The holder of claim 1 wherein said axially-parallel passage comprises a slot-like configuration.

3. The holder of claim 2 wherein said slot-like configuration of said passage extends at an angle between about 20° and 70° from a plane tangential to said drum at said slit in the periphery of said drum.

4. The holder of claim 1 wherein said key member is completely removable from said key chamber.

5. The holder of claim 1 wherein said arm for said centrifugal weight is permanently united to said key member.

6. The holder of claim 1 wherein said centrifugal weight is immovably fixed on said arm from said key member.

7. The holder of claim 1 additionally including means biasing said key member against said radially outward wall of said key chamber while said holder is at rest.

8. The holder of claim 1 additionally including means counterbalancing the weight of said centrifugal weight during rotation of said drum.

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