Jan. 31, 1956 Z. M. CHRZANOWSKI 2,733,017

SWINGING RACK FOR ROLLS OF CARPETING AND THE LIKE

Filed Nov. 19, 1954 2 Sheets-Sheet 1

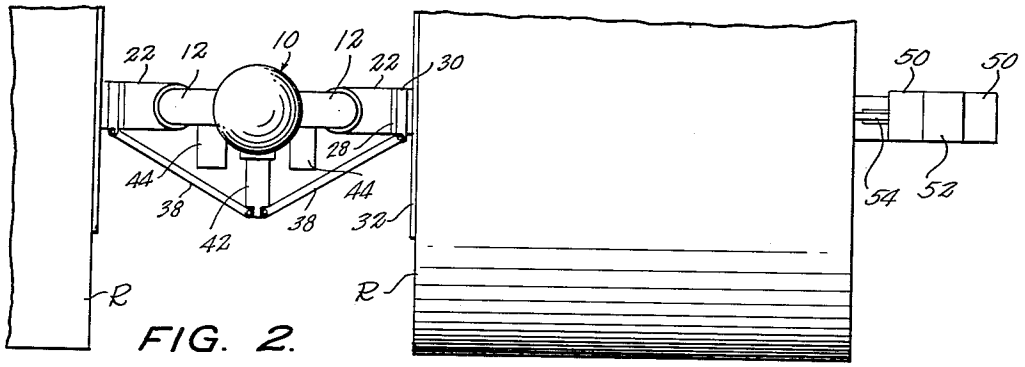


FIG. 2.

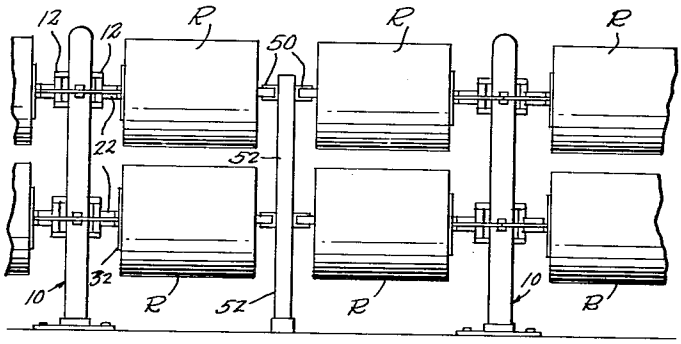
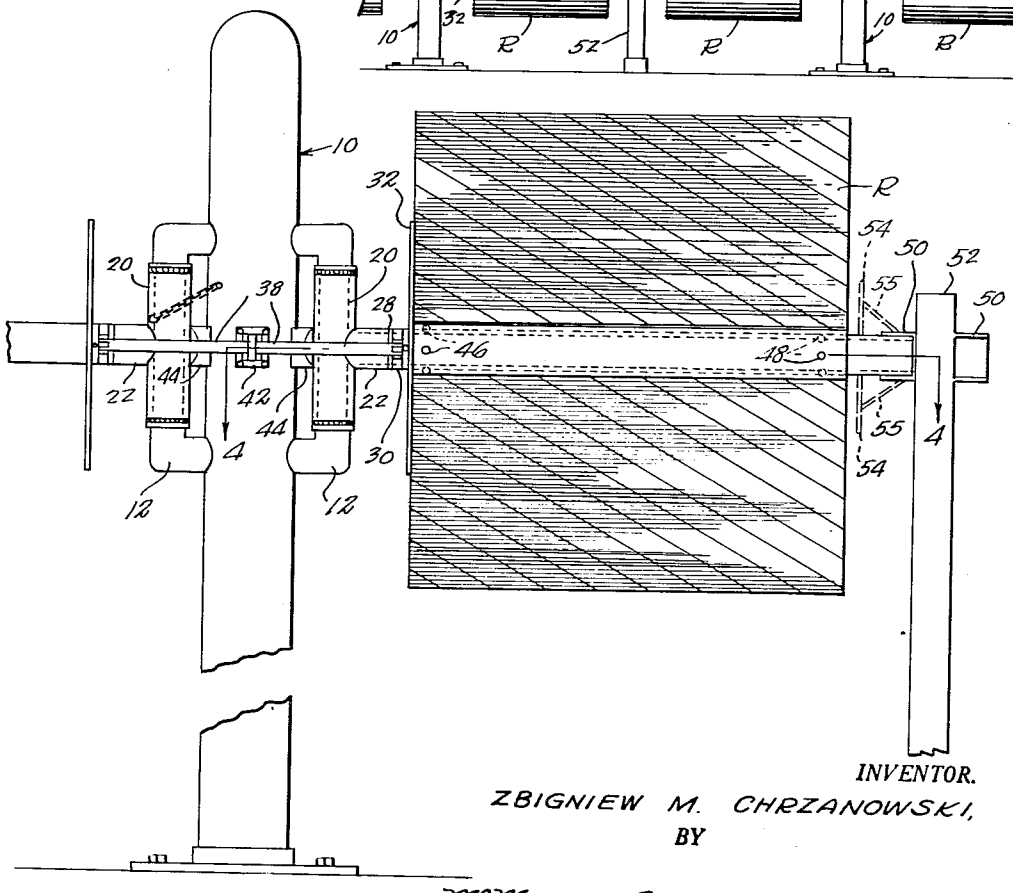


FIG. 1.

FIG. 3.



INVENTOR.
ZBIGNIEW M. CHRZANOWSKI,
BY
McMorrow, Berman + Davidson
ATTORNEYS.

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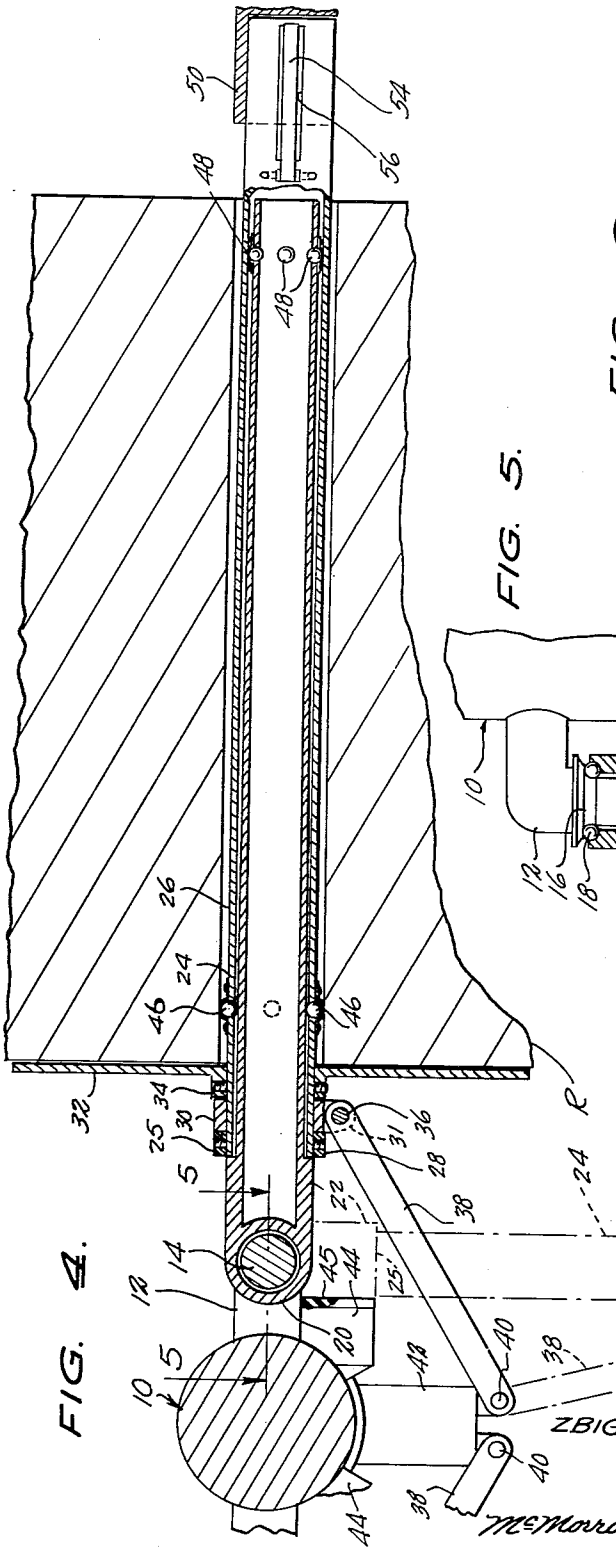


FIG. 4.

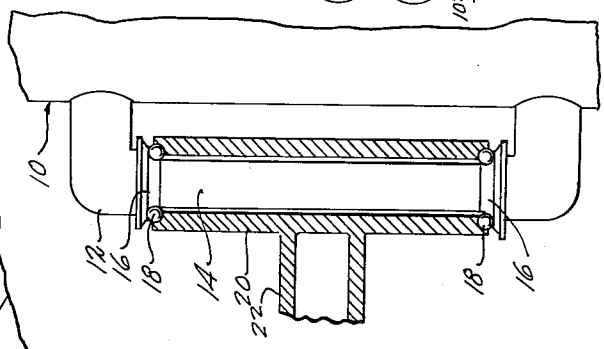


FIG. 5.

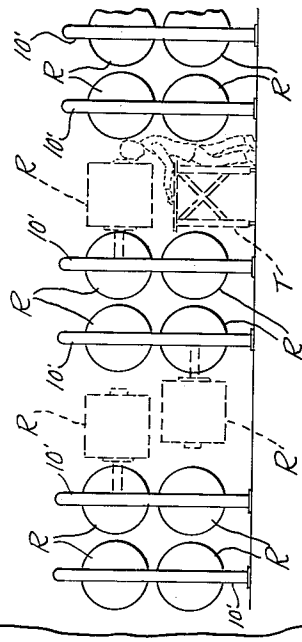


FIG. 6.

INVENTOR.
ZBIGNIEW M. CHRZANOWSKI,
BY
McMorrow, Berman + Davidson
ATTORNEYS

United States Patent Office

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SWINGING RACK FOR ROLLS OF CARPETING AND THE LIKE

Zbigniew M. Chrzanowski, Amsterdam, N. Y.

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5 Claims. (Cl. 242—55.3)

In various establishments, such as rug and carpet mills, mills in which upholstery and other fabrics are woven, and the like, it is necessary to store, in large, heavy rolls, quantities of the various fabrics manufactured.

Continual work must be done on the various rolls, as for example, samples must be cut therefrom, used rolls must be replaced, discontinued items removed, and new items added.

Due to the weight and size of the rolls (carpeting manufacturers, for example, usually maintain said rolls in diameters of 30 inches and in lengths corresponding to the carpet widths, as for example 27 inches) it is difficult to handle the rolls with ease, and considerable damage thereto often results. Further, difficulties are experienced in storing the rolls in a minimum area while still providing sufficient working area for allowing the cutting of material from any selected roll.

The present invention has as its main object the provision of a rack assembly for rolls of the type referred to, which assembly can be erected in a storage room, warehouse, cutting room, or the like, and which will be so designed as to facilitate the handling, cutting and storage of the rolls in a small area.

Another object of importance is to provide an assembly as described which will permit any roll to be swung outwardly from a position along a corridor, into a position in which it extends transversely of the corridor in a location that will facilitate the rolling of a work table or the like thereunder, whereby to permit a piece of material to be cut from a roll.

Another object is to permit the rolls to be swung inwardly and outwardly as desired, without their interfering with rolls adjacent thereto.

Yet another object is to so design the rack as to permit the rolls to be loaded thereon or removed therefrom by conventional load handling apparatus, such as an industrial truck, thus to permit the movement of the rolls onto and off the rack to be accomplished with a minimum of difficulty.

Yet another object is to so design the rack as to cause the roll to be automatically shifted longitudinally of a spindle on which it is rotatable, so as to project well into the work corridor where it will not be interfered with by rolls lining the sides of the corridor, and where it can be readily worked upon.

Another object is to cause the roll to be retracted upon its spindle in an opposite direction responsive to swinging of the roll back into a position in which it extends along the side of the corridor.

Still another objeect is to include, in association with the roll, protective or stop arms that will swing upwardly into a position adjacent one end of the roll, to prevent accidental movement of the roll off its associated spindle.

Other objects will appear from the following description, the claims appended thereto, and from the annexed drawings, in which like parts are designated by like reference characters throughout the several views, in which:

Figure 1 is a side elevational view of a series of the racks, as they appear when lining one side of a work corridor, portions of said series at the ends thereof being broken away;

Figure 2 is an enlarged top plan view, portions of the rolls being broken away;

Figure 3 is an enlarged side elevational view of one of the racks, the roll being shown in section, a portion of the main post being broken away;

Figure 4 is a detail longitudinal sectional view, the scale being still further enlarged, on line 4—4 of Figure 3, the dotted lines showing the rack and roll in extended position;

Figure 5 is a detail sectional view, the scale being enlarged still further, substantially on line 5—5 of Figure 4; and

Figure 6 shows a double series of racks lining the sides of adjoining corridors and both sides of a single corridor.

The reference numeral **10** has been applied generally to a main post. As shown in Figure 1, in a typical installation, a plurality of the main posts would be erected in a straight line, at opposite sides of an elongated, corridor-like working area, so as to in effect define the corridor, a plurality of said corridors being disposed side by side, with each rack being common to the corridors at opposite sides thereof.

In Figure 1, there is shown an installation, in which a lower, horizontally extending row of rolls R are supported, with a pair of the lower rolls being disposed between each pair of adjacent main posts **10**, and wherein there is also an upper row or line of rolls, spaced above the respective lower rolls, thus causing a total of four rolls to be disposed between each pair of main posts **10**.

It will be understood, in this regard, that instead of two vertically spaced, horizontally extending rows, there could be more than two, or if desired only one row.

In any event, in the illustrated arrangement, each main post **10** is provided with upper and lower pairs of C-shaped hinge support arms **12**. The several arms **12** are all identical, with the arms of each pair being arranged oppositely to one another. Each arm includes short, horizontally extending end portions fixedly secured to the main post **10**. The bight portion **14** of each arm (Figure 5) is of reduced diameter relative to the end portions **12**, and is fixedly connected to said end portions by a flared portion **16**, serving as a race for ball elements **18** engaging opposite ends of a sleeve **20**, that is circumposed about the bight portion **14** and is rotatably mounted upon and spaced from said bight portion by the ball elements.

Integral with each sleeve **20**, medially between the ends of the sleeve, is an elongated, horizontally extending, tubular spindle **22**, which, due to the rotatable mounting of the sleeve **20**, is swingable in a horizontal plane about the axis of the bight portion **14**, between the retracted and extended positions thereof shown in full and dotted lines, respectively, in Figure 4.

Each spindle **22**, for the greatest part of its length, is reduced in diameter as at **24**, thus defining, at the inner end of the reduced portion, a circumferential stop shoulder **25** spaced closely from the inner end of the spindle.

An elongated roll support sleeve **26** receives the reduced portion **24** of the spindle, and at one end abuts against the shoulder **25**. Said one end of the support sleeve **26** has a set collar **28** thereon, the collar **28** being fixedly secured to the sleeve end about which it extends to provide an abutment upon the sleeve.

Engaging against the set collar **28** is a ring **30**, and formed upon the ring are spaced, radially and outwardly extending ears **31**.

A roll shield plate **32** has a center opening receiving the inner end portion of the support sleeve **26**, and in-

tegrally formed upon said plate, and extending about said center opening, is a boss **34** having set screws, whereby said boss may be fixedly secured to the sleeve **26** at a selected location longitudinally of the sleeve. The boss **34** is spaced a short distance from the set collar **38**, the ring **30** being confined in the space between the boss and collar so as to be held against movement longitudinally of the support sleeve while still permitting rotatable movement of the support sleeve within the ring.

Extending between the ears **31** of each ring **30** is a pivot pin **36**, passing through one end of a roll shifting link **38**, the other end of which is pivotally connected at **40** to the outer end of a projection **42** fixedly attached to and extending radially and outwardly from the main post **10**. At opposite sides of each projection **42** there are provided oppositely facing stop blocks **44** each of which has a concave outer face in which is mounted a complementarily convexed rubber pad or cushion **45**. The cushions **45** are so disposed as to engage the inner ends of the spindles **22** when said spindles are swung to their dotted line positions of Figure 4.

Mounted in a circumferential series of openings formed in the inner end portion of support sleeve **26** adjacent the circular, flat shield plate **32** are ball elements **46**. These project radially inwardly of the support sleeve **26**, into rollable engagement with the adjacent surface of the reduced portion **24** of the spindle. In this connection, adjacent the other end of the support sleeve, a similar circumferential series of openings is formed in the reduced portion **24**, and mounted in these openings are ball elements **48** projecting radially outwardly of the spindle into rollable engagement with the inner surface of the support sleeve **26**.

By reason of this arrangement, each support sleeve **26** is mounted upon its associated spindle not only for rotation, but also for sliding movement longitudinally of the spindle to the position shown in dotted lines in Figure 4. The ball elements **46**, **48**, of course, reduce friction in both of these movements of the support sleeve relative to the spindle.

Due to the provision of one series of ball elements on the support sleeve, and the other series of ball elements on the spindle, the support sleeve is spaced properly from the spindle in all positions of said sleeve, whether the sleeve is rotating thereon or is being shifted longitudinally thereof, there always being both annular series of ball elements in proper engagement with the support sleeve and spindle respectively even when the support sleeve is almost fully extended beyond the end of the spindle.

The outer ends of the support sleeves **26** project beyond the outer ends of their associated rolls, and in the retracted positions of the rolls are received in semicylindrical support housings **50**, mounted upon and extending outwardly from auxiliary posts **52**, one of which auxiliary posts is medially disposed between each pair of adjacent main posts **10**.

Adjacent the support housings, stop arms **54** are mounted pivotally at their inner ends upon the support sleeves, there being a pair of diametrically opposed arms **54** on each sleeve adjacent the outer end thereof. The arms **54** can be swung to positions in which they are recessed in slots **56** formed in the sleeves, and in the recessed positions of the arms **54**, they are held against movement radially outwardly of the sleeve to the dotted line positions of the arms shown in Figure 3, by the walls of the housings **50**. However, spring means **55**, in the form of leaf springs tensioned to spring radially outwardly of the sleeves, underlie the arms **54** in the recessed positions of the arms, and as a result, as soon as the sleeves are swung out of the housings **50**, the springs **55**, being now free to expand, exert an upward pressure against the stop arms **54**, swinging said stop arms to positions in which they are perpendicular to the axis of the sleeve. As a result, the rolls R are prevented from slipping longitudinally of the sleeve, while material is being cut from said rolls.

In use of the racks, and assuming that material is to be cut from a particular roll, the worker would generally move a rollable table T (Fig. 6) along the corridor until it is abreast of the roll to be used. The selected roll is then grasped and swung outwardly from its full line position of Figure 4, to its dotted line position in this same figure.

When the roll is swung outwardly, the link **38** associated therewith will exert pressure against the adjacent shield **32** in a direction to the right in Figure 4, that is, toward the outer end of the spindle. This will shift the sleeve **26**, together with its associated set collar **28**, shield **32**, and roll R, bodily longitudinally of the spindle, to the dotted line position of Figure 4. The purpose of this arrangement is to cause the roll to be projected well into the working corridor, where other rolls lining the sides of the corridor will not interfere with free rotation of the selected roll.

In its working position, the roll R extends directly across the corridor, the roll thus swinging through 90 degrees from its retracted to its extended position, while at the same time being shifted longitudinally of the spindle while traveling between its retracted and extended positions.

With the roll swung outwardly, it will be disposed above the working table, and the worker can now rotate the roll with its associated sleeve **26** of the spindle, to remove a selected amount of material.

When the roll is to be returned to its retracted position along the side of the working corridor, the stop arms **54** are forced back into their recessed positions, and the spindle **22** is swung about its hinge axis back into its full-line position of Figure 4.

The construction also facilitates the removal or replacement of rolls. Assuming, for example that it is desired to place a roll upon a spindle, using an industrial truck, the truck can be driven up to the rack, with the spindle extending outwardly in the dotted-line position of Figure 4 or in an intermediate position. The rolls are generally supported upon spindles on the elevatable hoist of the industrial truck, and the hoist spindle, when aligned with the spindle **22**, can be properly disposed for sliding the roll onto the sleeve **26**.

In Figure 6 there is shown an installation in which series of horizontally extending rows of rolls R arranged in pairs in side-by-side relation to be disposed between spaced pairs of a row of main posts, generally indicated at **10'**, with corridors defined between the rows of main posts. Thus, the double rows of rolls R line the sides of adjacent corridors and line opposite sides of each corridor so that a selected roll R may be swung into the corridor along which it is arranged for better utilization and conservation of floor space. This will enable a worker to move the table T along a corridor lined upon opposite sides with superimposed rolls R and move a selected roll from either side of the corridor to perform work on the fabric wound into the rolls R, as schematically shown in Figure 6.

It is believed apparent that the invention is not necessarily confined to the specific use or uses thereof described above, since it may be utilized for any purpose to which it may be suited. Nor is the invention to be necessarily limited to the specific construction illustrated and described, since such construction is only intended to be illustrative of the principles of operation and the means presently devised to carry out said principles, it being considered that the invention comprehends any minor change in construction that may be permitted within the scope of the appended claims.

What is claimed is:

1. A rack for rolls and like articles comprising a main post; an auxiliary post spaced from the main post for disposition of a supported roll therebetween; a horizontally extending spindle hingedly connected at one end to the main post for swinging movement in a horizontal plane; a roll support sleeve mounted on said spindle for rotation and for movement longitudinally of the spindle, said sleeve being constructed to support a roll for rotation and longitudinal movement with the sleeve; means

constructed to support the sleeve at that end thereof remote from the hinge connection of the spindle, in one position to which the spindle is swung; and link means pivotally connected between the main post and sleeve for shifting the sleeve longitudinally of the spindle in a direction away from said hinge connection, responsive to swinging of the spindle to an opposite extreme position.

2. A rack for rolls and like articles comprising a main post; an auxiliary post spaced from said main post, for disposition of a supported roll therebetween; a C-shaped hinge support arm fixedly connected at its opposite ends to said main post; a hinge sleeve rotatably mounted upon the bight portion of said hinge support arm; an elongated, horizontally disposed spindle fixedly secured at one end to said hinge sleeve to swing about the axis of said bight portion on rotation of the hinge sleeve upon the bight portion; a roll support sleeve mounted upon said spindle for rotation and for movement longitudinally of the spindle, said roll support sleeve being constructed to support a roll for rotation with the roll support sleeve and for movement longitudinally of the spindle with the roll support sleeve; housing means on the auxiliary post constructed to receive one end of the roll support sleeve in one position to which the spindle is swung about its pivot axis; and means connected between the main post and the other end of the roll support sleeve for shifting the roll support sleeve longitudinally of the spindle in a direction away from the main post, responsive to swinging movement of the spindle about its hinge axis to a second position.

3. A rack for rolls and like articles comprising a main post; an auxiliary post spaced from said main post, for disposition of a supported roll therebetween; a C-shaped hinge support arm fixedly connected at its opposite ends to said main post; a hinge sleeve rotatably mounted upon the bight portion of said hinge support arm; an elongated, horizontally disposed spindle fixedly secured at one end to said hinge sleeve to swing about the axis of said bight portion on rotation of the hinge sleeve upon the bight portion; a roll support sleeve mounted upon said spindle for rotation and for movement longitudinally of the spindle with the roll support sleeve; housing means on the auxiliary post constructed to receive one end of the roll support sleeve in one position to which the spindle is swung about its pivot axis; and means connected between the main post and the other end of the roll support sleeve for shifting the roll support sleeve longitudinally of the spindle in a direction away from the main post, responsive to swinging movement of the spindle about its hinge axis to a second position, said second position being spaced 90° from the first position.

4. A rack for rolls and the like articles comprising a main post; an auxiliary post spaced from said main post, for disposition of a supported roll therebetween; a C-shaped hinge support arm fixedly connected at its opposite ends to said main post; a hinge sleeve rotatably mounted upon the bight portion of said hinge support arm; an elongated, horizontally disposed spindle fixedly secured at one end to said hinge sleeve to swing about the

axis of said bight portion on rotation of the hinge sleeve upon the bight portion; a roll support sleeve mounted upon said spindle for rotation and for movement longitudinally of the spindle, said roll support sleeve being constructed to support a roll for rotation with the roll support sleeve and for movement longitudinally of the spindle with the roll support sleeve; housing means on the auxiliary post constructed to receive one end of the roll support sleeve in one position to which the spindle is swung about its pivot axis; and means connected between the main post and the other end of the roll support sleeve for shifting the roll supported sleeve longitudinally of the spindle in a direction away from the main post, responsive to swinging movement of the spindle about its hinge axis to a second position, said means comprising a projection extending outwardly from the main post, and a link pivotally connected between said projection and said sleeve.

5. A rack for rolls and like articles comprising a main post; an auxiliary post spaced from said main post, for disposition of a supported roll therebetween; a C-shaped hinge support arm fixedly connected at its opposite ends to said main post; a hinge sleeve rotatably mounted upon the bight portion of said hinge support arm; an elongated, horizontally disposed spindle fixedly secured at one end to said hinge sleeve to swing about the axis of said bight portion on rotation of the hinge sleeve upon the bight portion; a roll support sleeve mounted upon said said spindle for rotation and for movement longitudinally of the spindle, said roll support sleeve being constructed to support a roll for rotation with the roll support sleeve and for movement longitudinally of the spindle with the roll support sleeve; housing means on the auxiliary post constructed to receive one end of the roll support sleeve in one position to which the spindle is swung about its pivot axis; and means connected between the main post and the other end of the roll support sleeve for shifting the roll support sleeve longitudinally of the spindle in a direction away from the main post, responsive to swinging movement of the spindle about its hinge axis to a second position, said means comprising a projection extending outwardly from the main post, and a link pivotally connected between said projection and said sleeve, said means further comprising a shield plate fixed to the sleeve adjacent said other end thereof and adapted to engage one end of a supported roll, a set collar fixedly secured to the sleeve in spaced relation to said shield plate, and a ring between the collar and plate, the roll support sleeve being rotatable in said ring, said ring having a pivotal connection to one end of said link.

References Cited in the file of this patent

UNITED STATES PATENTS

70,260	Potter	Oct. 29, 1867
535,793	Foster	Mar. 12, 1895
1,274,442	Peterson	Aug. 6, 1918

FOREIGN PATENTS

796,091	France	Jan. 17, 1936