

May 15, 1962

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3,034,738

PAPER ROLL CARRIER FOR BUSINESS MACHINES

Filed Oct. 8, 1959

FIG. 1

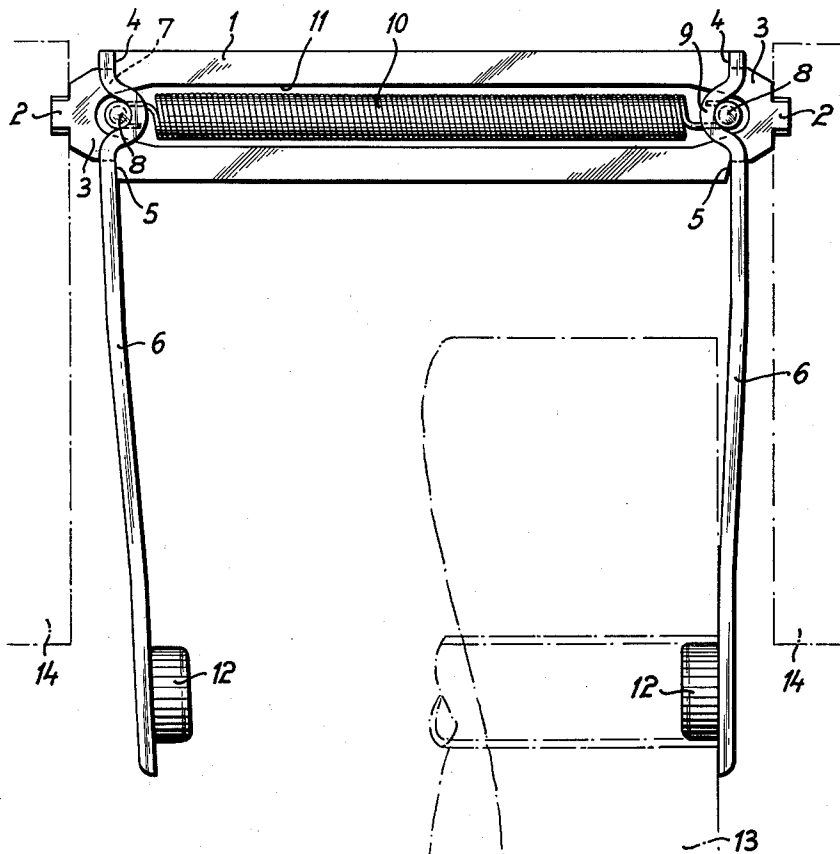
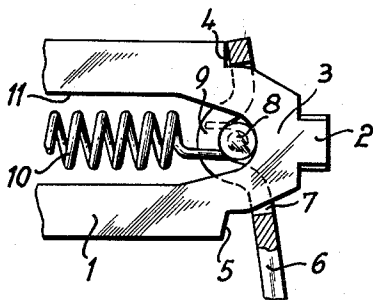


FIG. 2



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Filed Oct. 8, 1959, Ser. No. 845,272

Claims priority, application Germany Oct. 15, 1958

4 Claims. (Cl. 242—55.2)

The present invention relates to a carrier for detachably holding the ends of objects, such as a roll from which a band is unwound. More particularly, the present invention relates to a paper roll carrier for a business machine. Calculating machines, and other business machines, are generally provided with a carrier for a paper roll including two holding arms which can be swiveled between two positions, and can be moved in direction of the paper roll for removing the paper roll.

It is one object of the present invention to improve carrier means serving this purpose, or a related purpose, and to provide a carrier means consisting of simple and inexpensively manufactured parts which can be easily assembled without any tools.

Another object of the present invention is to provide a paper roll carrier for a business machine with holding arms resiliently urged towards each other, but held by suitable abutments in a position permitting an easy insertion of a new paper roll.

Another object of the present invention provides a roll carrier constructed in such a manner as to take up very little space and to have no projecting parts which could interfere with the operation.

With these objects in view, the present invention mainly consists in a carrier means for detachably holding the ends of an object, such as a paper roll which is to be unwound. The carrier means comprises a pair of arms between which the paper roll is turnably held, and which are mounted on an elongated support, which is preferably turnable together with the arms and the paper roll. At least one end portion of the support passes through a cutout in an arm, and is non-circular or includes other means for connecting the arm for turning movement to the support. The support has at least one abutment against which the respective arm is urged by a resilient means preferably located in a recess or slot of the support. In the preferred embodiment of the present invention, both arms are mounted on the end portions of the support, and are urged against transverse abutments of the support by a spring located in a recess or slot of the support and held in no other way so that no tools are required for the assembly.

Preferably, transverse pins pass through the slot in the support crossing the cutouts in the arms and abutting against the arms under the action of the common spring which is connected to the two pins.

In the preferred embodiment of the present invention, the arms have arcuate holding portions in which the transverse pins rest to prevent a displacement of the pins.

The novel features which are considered as characteristic for the invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawings, in which:

FIG. 1 is an elevation illustrating a preferred embodiment of the present invention, showing on the right side a first operational condition, and on the left side a second operational condition; and

FIG. 2 is a fragmentary side view illustrating a detail

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of the embodiment of FIG. 1 in a third operational condition.

Referring now to the drawings, an elongated support 1 has a substantially rectangular cross section, and has two end portions 3 which terminate in journal portions 2. Journal portions 2 are turnably mounted in bearings of a pair of stationary supports 14 which are indicated in dash dot lines in FIG. 1. The journal portions 2 have part-cylindrical surfaces, and flat side faces which are a continuation of the side faces of the elongated support 1.

The end portions 3 are narrower than the center part of support 1, so that two transverse shoulders or abutments 4, 5 are formed on opposite sides of each end portion 3. As best seen in FIG. 2, abutments 4 and 5 are staggered in longitudinal direction of support 1, and abutment 5 is inclined to the axis of support 1 passing through the journal portions 2, and also inclined to the respective other abutment 4.

A pair of holding arm means 6 is provided for turnably supporting a paper roll 13 between a pair of studs 12 located at the free ends of arm means 6. The other ends of arm means 6 have cutouts 7 of rectangular shape which substantially match the rectangular cross section of the end portions 3 adjacent shoulders 4 and 5. Since the end portions 3 taper outwardly, mounting of arms 6 on end portions 3 is a very easy operation.

Due to the fact that cutouts 7 and end portions 3 have non-circular loosely matching cross sections, arms 6 are connected to support 1 for turning movement. However, arms 6 can move on end portions 3 in longitudinal direction of support 1.

Support 1 has a longitudinal recess or slot 11 passing therethrough and extending into the end portions 3 slightly beyond shoulders 4 and 5. Transverse pins 8 are located in the rounded ends of slot 11, and rest on arcuate holding portions 9 of arm means 6. Each arcuate portion 9 includes parts located on opposite sides of support 1 which passes between these parts through a cutout 7, and since portions 9 cross slot 11, a passage for pins 8 is formed when arms 6 abut on shoulders 4 or 5.

A tension spring, shown to be an elongated coil spring 10, is located in recess 11, and has hooked-shaped end portions passing through cutouts 7 and located in annular grooves in transverse pins 8.

Consequently, pins 8 are drawn toward each other, so that arms 6 are urged against abutments 4 and 5, and at the same time secured against said displacement.

When no paper roll 13 is supported on arms 6, corresponding to the illustration of the left side of FIG. 1, spring 10 will pull arms 6 into a position in which arm 6 abuts on both shoulders 4 and 5. Since shoulders 4 and 5 on each side are slightly staggered, and preferably shoulder 5 is inclined, both arms 6 will assume the inclined position illustrated only on the left side of FIG. 1.

When a paper roll is inserted between arms 6, both arms are held in the operational position illustrated only on the right side of FIG. 1. In this position, arm 6 abuts mainly on shoulder 4 and extends substantially perpendicular to the turning axis of support 1.

It will be noted that the released position of arms 6, as shown on the left of FIG. 1, is determined by shoulders 5 in such manner that studs 12 are displaced only a small distance in axial direction as compared with the normal operative position shown on the right side of FIG. 1. This facilitates the insertion of a new paper roll.

When the new paper roll is to be inserted, at least one arm 6 is pulled into the position shown in FIG. 2 in which the free ends of arms 6 are farther spaced from each other. In this position, a paper roll is readily inserted, and upon release of arm 6 it will tend to assume the position shown on the left side of FIG. 1, but will be held by

the paper roll in the position shown on the right side of FIG. 1.

As is clearly shown in FIG. 1, transverse pins 8 are normally in a position spaced from the rounded ends of slot 11. When a paper roll is to be inserted, and arms 6 are spread, the outward movement of arms 6 is limited since pins 8 engage the rounded ends of slot 11, as shown in FIG. 2. Consequently, arms 6 cannot be accidentally turned into an undesired position.

From the above description of a preferred embodiment it will become apparent that the roll carrier of the present invention includes no threadedly connected, riveted, or other permanently connected parts, and that all parts can be manufactured by simple and inexpensive stamping operations. Consequently, the assembly of the device is performed by unskilled workers in a very short time, while nevertheless the assembled device performs all required functions to perfection. The construction includes no elements having sharp projecting corners or edges, particularly since the spring is located in slot 11 and covered by support 1 and by the arcuate portions of arms 6.

It will be understood that each of the elements described above, or two or more together, may also find a useful application in other types of carriers for holding an object differing from the types described above.

While the invention has been illustrated and described as embodied in a paper roll carrier for a business machine, it is not intended to be limited to the details shown, since various modifications and structural changes may be made without departing in any way from the spirit of the present invention.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can by applying current knowledge readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention and, therefore, such adaptations should and are intended to be comprehended within the meaning and range of equivalence of the following claims.

What is claimed as new and desired to be secured by Letters Patent is:

1. Carrier means for detachably holding a roll, comprising, in combination, an elongated support formed with a longitudinal recess and having at each end thereof a transverse abutment and a non-circular end portion projecting beyond said abutment in the longitudinal direction of and in alignment with said support and terminating in a journal portion; a pair of arm means having attaching portions, and free end portions for engaging the ends of the roll, said attaching portions of said arm means being respectively formed with non-circular cutouts matching said non-circular end portions, said non-circular end portions being located in said cutouts so that said arm means are detachably mounted on said support and connected to the same for turning movement therewith, said attaching portions crossing said recess near the ends of the same; a pair of transverse members respectively crossing said ends of said recess and extending between the same and said attaching portions; and resilient means located in said recess and having ends detachably connected to said transverse members, respectively, and for urging the same against said attaching portions, respectively, so that the same are urged against said abutments whereby the carrier means can be easily assembled.

2. In a business machine, in combination, carrier means for turnably supporting a paper roll and comprising, an elongated support having a rectangular cross-section and

being formed with a longitudinal slot, said support having at each end a pair of shoulders, an end portion projecting in the longitudinal direction of and in alignment with said support between and beyond said shoulders, said end portion having a rectangular cross-section, and a journal portion longitudinally projecting from said end portion, each journal portion having a pair of opposite planar faces and a pair of part-circular surfaces, said planar faces and corresponding opposite faces of said elongated support and of said end portions being disposed in a pair of parallel planes; a pair of arm means having opposite free end portions having inwardly projecting studs for engaging the ends of the paper rolls, and attaching portions, each attaching portion being formed with a rectangular cutout, said end portions of said support respectively being located in said cutouts so that said arm means are detachably mounted on said support and connected to the same for turning movement; and resilient means located in said slot and having ends detachably connected to said attaching portions of said arm means for urging the same against said shoulders on said end portions of said support whereby the carrier means can be easily assembled.

3. A carrier means as set forth in claim 2 wherein each pair of shoulders includes an inclined shoulder so that said arm means are urged by said resilient means into a position inclined to said support.

4. In a business machine, in combination, carrier means for turnably supporting a paper roll and comprising an elongated support formed with a longitudinal slot and having a rectangular cross-section, said support having at each end a pair of shoulders, an end portion projecting in the longitudinal direction of and in alignment with said support between and beyond said shoulders, said end portion having a rectangular cross-section, and a journal portion longitudinally projecting from said end portion, each journal portion having a pair of opposite planar faces and a pair of part-circular surfaces, said planar faces and corresponding opposite faces of said elongated support and of said end portions being disposed in a pair of parallel planes; a pair of arm means having opposite free end portions having inwardly projecting studs for engaging the ends of the paper roll, and attaching portions, each attaching portion including an accurate part formed with a rectangular cutout, said end portions of said support respectively being located in said cutouts so that said arm means are detachably mounted on said support and connected to the same for turning movement, said arcuate part crossing said slot in said support near the ends of the same; a pair of transverse pins abutting said arcuate parts and passing through said slot, each pin having a groove located in said slot; and a coil spring located in said slot and having ends located in said grooves and detachably connected to said pins for urging said attaching portions of said arm means against said shoulders on said end portions of said support while said arm means are turnable on said pins whereby all parts of said carrier means are held together by said spring only so that the carrier means can be easily assembled.

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