United States Patent [19]

Puhahn

[11] **3,825,200**

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[54] **MECHANISM FOR MOUNTING ROLL PAPER**

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Related U.S. Application Data

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[30] **Foreign Application Priority Data**

Aug. 8, 1969 Germany 693902

[52] **U.S. Cl.** **242/57,** 53/64, 242/68.4, 242/71.8, 242/75.4

[51] **Int. Cl.** **B65h 25/06,** B65h 25/32

[58] **Field of Search** 242/68.4, 57, 78.6, 75.4, 242/71.8

[56] **References Cited**

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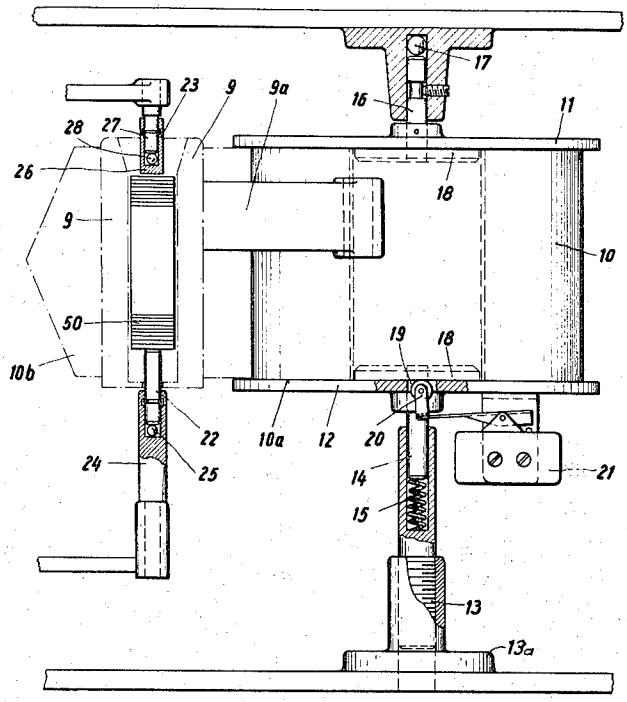
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Attorney, Agent, or Firm—Murray Schaffer

[57] **ABSTRACT**

A money coin counting and wrapping machine having a support for a substantially endless reel of wrapping paper. The support is formed of a pair of spaced disks one of which is rotatable, the other of which is axially movable and non-rotatable and includes spring means to hold the reel pressed against the one disk. Means for sensing the quantity of paper in the reel are mounted on the non-rotatable disk. Also there is provided a support for stack of coins comprising an upper and lower axially aligned rotatable gripping pins cooperatingly arranged to grip the stack there between.

1 Claim, 3 Drawing Figures



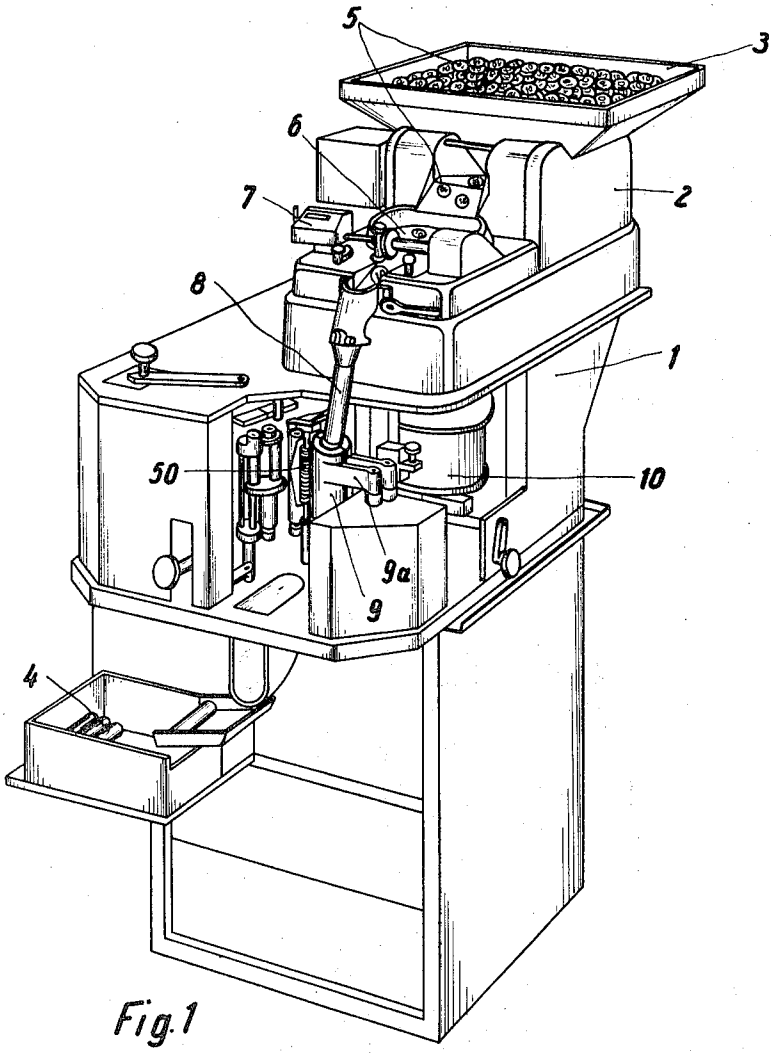


Fig.1

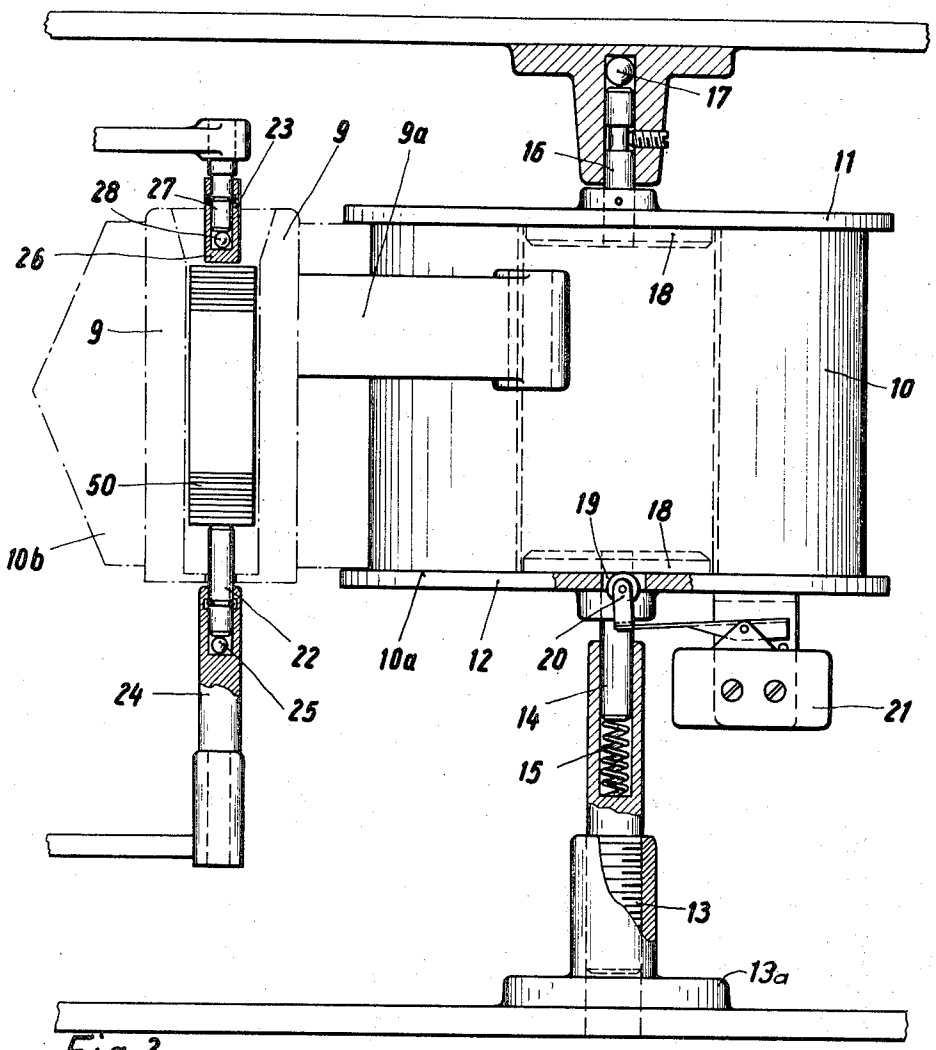

17
23
9
9a
16
11
28
27
26
18
9
10
50
19
18
10b
22
10a
12
20
24
25
14
21
15
13
13a

Fig. 2

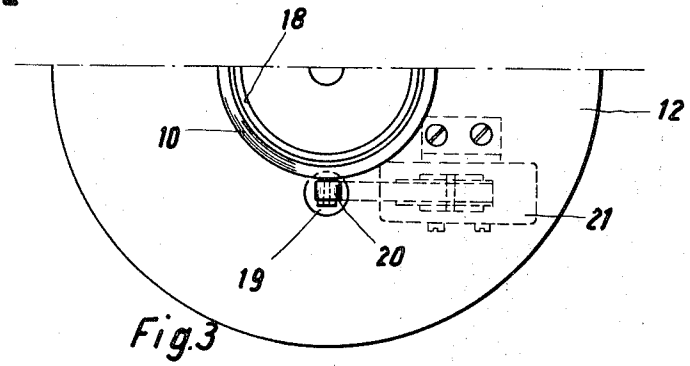

18
12
10
21
19
20

Fig. 3

MECHANISM FOR MOUNTING ROLL PAPER

This is a divisional application of Ser. No. 61,758, filed on Aug. 6, 1970

BACKGROUND OF INVENTION

The present invention relates to money packaging machines and in particular to automatic coin wrapping machines having improved paper reel bearing means and coin column support means.

Automatic coin wrapping machines are well known and in wide use. While such machines have found favorable acceptance for the wrapping of money and similar coinage, the need for improvement is well known. In particular, currently known machines are relatively slow and require almost constant attention to maintain a suitable operational schedule. It is a goal to provide for an increase in performance up to 800 – 1,000 fully wrapped coin rolls per hour.

High performance and functional capability is prevented by inadequate and slow speed paper reel support means. Conventional paper reel supports either permit too free take-off or rotation of the reel causing unnecessary spinning and fouling of the paper, or too much braking by which the reel does not rotate sufficiently so that the paper must be pulled, causing damage to the paper. Additionally, conventional paper reel supports do not maintain the reel in a fixed plane and cause the paper to twist and tear.

Another area causing low performance of known coin wrapping machines lies with means for supporting the stack or column of coins, so that the paper may be wrapped thereabout. Normally such devices are not simple and hold the coins in an awkward manner so that they are not easily rotatable or easily wrapped.

It is accordingly amongst the objects of the present invention to provide an improved, high speed and high performance coin wrapping machine.

It is another object of the present invention to provide a coin wrapping machine having improved paper reel supporting means, and coin supporting means overcoming the defects of the prior art.

The above objects are not inclusive and are in fact supplemented by many other which are enumerated and apparent in the following disclosure.

SUMMARY OF INVENTION

According to the present invention a coin wrapping machine is provided with a support for a substantial endless reel or bobbin of paper comprising an upper rotatable disk and lower non-rotatable disk. The lower disk is supported on a vertical column, fixing the distance between it and the upper reel and which is provided with spring means to normally urge and press the paper reel against the upper disk.

In the preferred form the vertical column is adjustable, as by jack means so that the distance between the disks may be varied to accomodate varying widths of paper webs. Further the supports for the disks are centered and axially aligned, being fixed to the machine frame so as to maintain the disk parallel to each other at all times during the operation.

The upper support for the disks is urged against a bearing ball permitting free rotation while the lower disk is non-rotatable permitting the proper adjustment of free rotation without excessive braking.

In another aspect of the invention the lower disk is provided with a hole in which the contact arm of a switch senses the presence or absence of paper thereon, so that appropriate warning may be given for replacement and/or stopping of the machine.

According to the present invention there is provided a coin wrapping machine having improved means for supporting a column of coins comprising a lower rotating positioning member and an upper rotating positioning member, axially spaced along a common central axis with the coins. The positioning members are cooperatively arranged to grip the stack at its ends and to axially secure the same.

Preferably, the lower positioning member is formed as a pin, set into a socket and resting on a bearing ball and the upper positioning member is formed as a socket fitted over a pin between which a bearing ball is located. The positioning pins are thus freely rotatable at high speeds. It is also preferred that suitable detent means be provided to enable the pin and/or socket to be removably held on their associated socket and/or pin respectively, thus permitting easy removal and replacement with corresponding parts of different lengths.

Full details of the present invention are set forth in the following description and in the accompanying drawings.

BRIEF DESCRIPTION OF DRAWINGS

In the accompanying drawings:

FIG. 1 is a perspective view of coin counting and wrapping machine in which the present invention is employed;

FIG. 2 is a detail view of the paper reel support and coin stack support shown in FIG. 1; and

FIG. 3 is a partial sectioned plan view of the bobbin support shown in FIG. 2.

DESCRIPTION OF INVENTION

In the following description reference is made to the overall configuration and arrangement of a coin counting and wrapping machine and in the figures some detail is shown of such a device. However, only such details as are necessary for an understanding of the present invention are fully shown herein. It will be understood and appreciated that the basic structure of the coin counters and wrappers are well known, and that reference to any number of the published art and commercial devices may be made for such details as are missing herein.

As seen in FIG. 1, the money packaging machine of the present invention comprises a coin wrapping unit, mounted on a suitable frame or base. Mounted on the coin wrapping unit 1 is a coin counter 2, having a tray hopper 3 adapted to contain a plurality of coins 5 which are to be counted, staked and rolled into a cylindrical package 4. Briefly, the coins 5 are caused to pass over a centrifugal separating disk 6 through a counting device 7, downwardly through a cylindrical tube 8 into a stacking unit 9. A predetermined number of coins, depending on their denomination, are delivered and stacked in the unit 9, forming a column 50 about which a piece of paper is pulled and cut from an endless web 10 and is wrapped, to finally form the completed roll 4.

As thus far described, the present device is, in general, conventional in design and function and further

detail, being obvious, are not set forth herein to keep the disclosure brief and concise. Note is, however, made of copending application in the name of Werner Puhahn and Rolf Lampert, Ser. No. 61,757 filed even date herewith, now U.S. Pat. No. 3,650,086 which discloses an apparatus for delivery of coins from the counting device to the stacking unit. The disclosure made therein is incorporated here by reference as if more fully set forth.

The features of the present invention shall be described with greater reference to FIGS. **2** and **3.**

As seen in FIG. **2,** the individual wrappers are cut from a substantially endless web or bobbin **10** mounted between a rotatable upper disk member **11** and non-rotatable disk member **12,** preferably flat and coplanar and arranged in a substantially horizontal position. The lower disk **12** is mounted to be axially movable in a hollow cylindrical bearing support and integral flange **13***a* fixed to the machine frame. The post **13** is externally threaded conforming to the internally threaded bearing support and together form an axially adjustable jack by which the height of the post **13** can be changed to vary the distance between the disk **12** and disk **11** to accommodate varying widths of paper rolls. Fixed to the center of the disk **12** is a bearing shaft **14** which enters into the post **13.** A spring **15** is compressed between the end of the shaft **14** and the interior of the post **13,** to continually bias and urge the disk **11,** thereby causing the paper roll **10** to be clasped therein. The upper disk **11** is also provided with a central bearing shaft **16** axially aligned with the shaft **14** and which enters into a hollow cylindrical post fixed to a suitable interior frame member. A ball bearing **17** is positioned between the end of the bearing shaft **16** and the base of the hollow cylindrical bulb. As seen in FIG. **1,** the upper disk **11** is prevented from axial movement by the cooperation of an axial groove and pin. Similarly, the lower disk may be prevented from rotating by a vertical groove and pin (not shown) forming a keying means.

The bobbin **10** is, furthermor, securely pressed by the lower disk **12** against the upper disk **11** to maintain the bobbin secured therebetween, and the disks in fixed planar relationship with each other. The disk **12,** further, constantly urges the shaft **16** against the bearing ball **17** on which it revolves, assuming uniform rotational speed not withstanding the weight or size of the bobbin. A further advantage is obtained in that the paper is always maintained square and proper when it is cut into the appropriate wrapper size.

The bearing arrangement, just described, makes possible the mounting of the paper roll to accomplish a high performance feeding to the wrapping mechanism, while preventing the paper from running fully free without being excessively braked. Both conditions (i.e. controlled free run and non-excessive braking) must be met to obtain the successful feeding and cutting of the paper. This arrangement is highly sensitive for both conditions.

The disks **11** and **12** are provided with a central hub **18** to accomodate the central support for the paper roll **10.** The lower disk **12** is also provided with a hole **19** adjacent to its hub **18,** exposing the edges **10a** of the inner most coils of the paper. Extending into the hole **19** is the movable arm **20** of a switch **21,** such as a micro-switch. The arm **20** senses the presence or absence of paper on the disks, and trips the switch **21** when the paper is exhausted, indicating the need for replacement, and effecting, by suitable well known electrical or mechanical controls a visual or acoustical alarm and the cessation of machine operation. The position of the hole may be radially adjusted to provide lead time for the exhaustion of the paper before cessation of the machine. As a consequential advantage, only minimal attendance is required to operate the machine. Once the bobbin is loaded it may be left alone without supervision or control. The only manipulation being required is that of loading the machine with paper and/or coins and initiating its operation.

We turn now to a description of the coin support means.

The coin stack **50** is built with a cylindrical form created by a pair of semi-cylindrical shells **9** held resepctively by arms **9***a*. The lower most ends of the shells are provided with ledges on which the lead coin rests and is provided with a central aperature. A pair of opposed gripping and positioning members **22** and **23** are provided which are adapted to enter into the lower and upper end of the cylindrical shells **9** to grasp the completed stack between them and to compress the coins for subsequent rolling. The gripping or positioning pins **22** and **23** are mounted on suitable swinging arms and are provided with means for moving them into the shell **9** and to grasp the coins resiliently in a timed sequence relative to the formation of the stack **50.** After the stack **50** is formed, the shell halves **9** are separated by the sideway movement of the arm **9***a* so that the stacked coins are carried freely between the lower and upper positioning pins **22** and **23** respectively, permitting the paper to be wrapped about it within the paper cut-off and roller mechanism **100***b*.

Reference can be made to the aforemtioned copending application for more details as to the construction of the shell, the carrier arm and the sequential function thereof.

In order that the rolling operation be accomplished swiftly and smoothly the lower gripping pin **22** is built as a rotatable plug which sits within a receiving socket **24** on a suitable bearing ball **25.** The receiving socket **24** is mounted on an arm secured to the frame of the machine. The upper gripping pin is, to the contrary, built as a rotatable socket **26** which is plugged about a bearing pin **27.** A bearing ball **28** is located between the interior of the socket **26** and the pin **27.** Both the pin **22** and the socket **26** together with their respectively associated supporting socket and pin **24** and **27** are provided with mating detent means such as a groove and spring ring washer, so that the two engaging parts may be releaseably secured together although freely rotatable about their common axis. Furthermore, the detent means permits either or both the pin **22** or socket **26** to be replaced with similar structures of different lengths, thereby enabling the machine to handle columns or stacks of differently dimensioned coins.

The above arrangement of axially supporting gripping pin and socket, both of which being freely rotatable, enable the speedly rotation of the coin stack and the speedy rolling of the wrapping paper about the stack. This arrangement further prevents damage to either the upper or lower coin or to the ends of the wrapper paper within which each is wrapped. Visible pressure points on coin or wrapper are also avoided.

The paper cutting and wrapping means are otherwise conventional in nature having knife means for cutting the paper, rolling means for enveloping the paper cylin-

drically about the stack, end folding means for bending the ends of the paper cylindrical and sealing means if required to seal the envelope wrapping. Reference can be made, if desired, to well known prior literature in this field.

Because the present invention is designed to improve and benefit otherwise conventioal money and coin counting and wrapping machines, it may be easily adapted and employed on commercial units now in operation by simple replacement of the appropriate portions. Various and sundry modifications are possible for the devices described and illustrated herein. Accordingly, the foregoing description is intended to be illustrative only of the present invention and not in any manner limiting thereof. Those skilled in this art will be able to apply its teachings readily and obtain the resultant benefits and advantage of greater performance, capability and functional improvement as herein obtained.

What is claimed is:

1. In a coin wrapping machine, mechanism for mounting a substantially endless web of wrapping paper rolled about itself comprising a pair of spaced flat disks between which said web is axially located, one of said disks being rotatably supported, the other of said disks being fixed against rotation and supported for axial movement, said other disk being provided with spring means normally urging said web axially against said one disk, said mechanism including means for sensing the quantity of paper in said web, comprising a contact arm mounted in fixed position with said non-rotatable disk and extending through a hole therein into engagement with the edge of said roll, to sense the absence or presence of said wrapping paper, switch means operable by said contact arm and means responsive to said switch for indicating the condition of said switch and regulating the operation of said machine.

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