United States Patent Office

Patent Office

3,281,089
Patented Oct. 25, 1966

3,281,089
CORE BRAKE FOR A WEB DISPENSER
Archie S. Krueger, Norman J. Syl, and Bernard E. Blanchard, all of Green Bay, Wis., assignors to Alwin Mann II, Green Bay Paper Company, Green Bay, Wis., a corporation of Wisconsin
Filed Mar. 22, 1965, Ser. No. 441,468
6 Claims. (Cl. 242—55.5)

This invention relates to a core brake for a web dispenser.

In any device for dispensing webs of paper such as toilet tissue, facial tissue or toweling, it is very desirable to provide some sort of a brake for the roll from which the web is dispensed, the object being to prevent overrun so that the withdrawal of a portion of the web will not impart to the remaining roll such momentum as would lead to ejection of additional unneeded lengths of web material from the roll.

The present invention is not at all concerned either with the dispenser or with the type of web which is to be dispensed. It assumes that the web is wound upon some sort of a core. The invention is concerned with a core-supporting mandrel which includes as a braking means a shoe yieldably interlocked with the mandrel.

In the preferred construction the shoe has side flanges engaged in apertures formed for the purpose in the sides of a cavity provided by the core-supporting portion of the mandrel, the apertures exceeding the dimensions of the flanges to accommodate braking movement of the shoe under bias of a compression spring which is interposed between the shoe and the mandrel.

In the drawings:

FIG. 1 is a view in perspective of a preferred embodiment of the invention comprising an assembly of a mandrel with attached brake shoes.

FIG. 2 is a view in longitudinal vertical section through the mandrel and brake shoe on the line 3—3 of FIG. 1.

FIG. 3 is an enlarged detail view taken in section transversely through the mandrel and brake shoe on the line 4—4 of B of FIG. 2.

FIG. 4 is a detail view in perspective showing a preferred brake shoe construction.

FIG. 5 is a view in longitudinal section through a modified embodiment in which a single brake shoe is capable of serving one long core or two shorter ones.

The mandrel 10 has the preferred form of an inverted channel with a rounded web 12 connecting parallel side flanges 14 and 16 having longitudinal slots 18 and 20 in which the lateral projections of brake shoe means may be interlocked as hereinafter described.

The mounting of the mandrel is not relevant to this particular invention. For purposes of illustration, wall portions 22 and 24 of a dispensing cabinet have been fragmentarily illustrated, these being respectively provided with embossed seats 26 and 28 with which the ends of the mandrel 10 are engaged.

The length of the mandrel between the walls 22 and 24 is preferably sufficient to receive and support the two cores 30 and 32. By way of exemplification, these may be the cores of toilet tissue rolls 34 and 36 respectively. Webs of any other appropriate material may be wound upon the cores for support by the mandrel. Preferably the mandrel has a rib 38 formed transversely upon its top or web portion 12 as a means of spacing the respective cores 30 and 32. However, this rib does not project far enough to interfere with the mounting on the mandrel of a single elongated core such as may be used within a wider web (of toweling, for example).

To keep the rolls from overrunning when portions of web are withdrawn therefrom, brake shoes 40 are respectively engaged with the individual cores. If a longer core is used, it will be engaged by both brake shoes.

The brake shoes 40 are conveniently molded of synthetic resin to provide a rounded bottom wall 42 and upwardly extending side walls 44 and 46. As shown, these fit slidably between the side walls 14 and 16 of the downwardly opening cavity provided by the channelled form of mandrel 10. The side walls of the shoe are flexible enough so that they may be bent inwardly for the introduction of the lateral flanges 48 between the side walls 14 and 16 of the mandrel. When the flanges 48 register with the slots 18 and 20 the flanges will spring outwardly due to the resilience of the synthetic resin, thus interlocking the respective brake shoe 40 with the mandrel.

Each of the brake shoes is biased outwardly of the mandrel cavity by compression springs 50 confined between the mandrel and the brake shoe. Conveniently, each brake shoe may be provided with integral boss portions at 52 which are socketed at 54 to receive the lower ends of the respective springs, thereby positioning each spring. As shown in FIG. 2, the springs 50' acting on the shoe 40, which is at the right in FIG. 2, may be made heavier than the springs 50 so that the roll 36 at the right will meet with greater resistance to its rotation. It is still possible to rotate the roll 36 but because of the greater resistance, the user will tend to draw paper from the roll 34 until the latter is exhausted, the roll 36 being kept in reserve in accordance with the intent of the invention.

The lower wall 42 of each shoe is convex longitudinally as well as transversely. When a core is slipped over the mandrel, it displaces the shoe upwardly within the limits afforded by the relative dimensions of the mandrel and the shoe flanges 48. Thus, with a core in place on the mandrel, the flanges 48 will tent to float intermediate the top and bottom margins bounding the slots 18 and 20 as shown in FIG. 2. With the core removed, the bias of the springs 50 will force the shoe downwardly to the limit permitted by engagement of flanges 48 with the bottom margins of the respective mandrel openings 18 and 20 as shown in FIG. 1 and FIG. 3.

As already noted, it is possible to make an elongated shoe 400 which, as shown in FIG. 5, will extend for a major portion of the length of mandrel 10. The ends of such a shoe will move individually so that the elongated shoe will have braking action on each of two cores sleeved onto the mandrel, or will serve a single elongated core. The single elongated core 400 may correspond in structure (other than length) to the respective shoes 40. However, many of the details herein are given by way of example and not by way of limitation and we do not wish to limit the invention except in the respects noted in the accompanying claims.

We claim:

1. In combination, a core-supporting mandrel having a downwardly opening channel and side walls provided with slots, of a brake shoe projecting downwardly from the channel and having portions engaging the side walls for guidance, projections from said shoe portions which are engaged in the slots of the mandrel side wall, the slots and projections having relative dimensions adequate to permit of relative movement between the shoe and the mandrel, and spring means confined between the mandrel and the shoe for biasing the shoe to a limit of said projections in the slots of the mandrel side wall.

2. The combination with a mandrel having a channel and adapted for the support of a core upon which a
web is wound, said mandrel comprising walls at opposite sides of the channel and provided with slots, of a core-braking shoe disposed in the channel and confined between the side walls of the mandrel and relatively movable with respect to the mandrel in a direction outwardly of the channel, said shoe having lateral projections loosely interlocked in said slots for maintaining the shoe in assembly with the mandrel while accommodating relative movement in said direction, means on the shoe providing sockets, and compression springs in the sockets and operatively seated against the mandrel and constituting means for biasing the shoe in a direction tending to urge it outwardly from the mandrel channel, the interlock of said projections in the side walls of the mandrel limiting the outward movement of the shoe under the bias of the spring.

3. The combination with an elongated mandrel of such length as to be adapted to support a plurality of short cores sleeved on the mandrel end to end and also to support a single long core sleeved on the mandrel, the mandrel comprising a downwardly opening channel and having side walls provided with elongated slots, brake means for engaging a core sleeved on the mandrel to prevent overrun thereof, said brake means comprising a plastic shoe in the channel and having sides engaging the side walls of the mandrel for guidance thereby and having flanges projecting through the side walls of the mandrel and interlocked therewith, the said slots having greater width than the thickness of the flanges whereby to accommodate relative movement of the shoe in a direction outwardly from the mandrel, and spring means confined between the mandrel and the shoe for urging the shoe outwardly from the channel of the mandrel, the bias of the spring means being opposed by engagement of the flanges of the shoe with the lower margins of the slots of the mandrel, the shoe having its lower surface convex in a direction longitudinally of the mandrel whereby the sleeveing of a core on the mandrel will cam the shoe into the channel of the mandrel against the bias of said spring means.

4. A combination according to claim 3 in which the mandrel is provided with a plurality of shoes interlocked therewith as aforesaid and each individually provided with spring means.

5. A combination according to claim 3 in which the mandrel has a single elongated shoe of such length as to be engageable with each of two cores individually sleeved upon the mandrel.

6. A combination according to claim 3 in which the shoe is a molding of synthetic resin provided adjacent each of its ends with a socket, the spring means comprising compression springs positioned at their lower ends within the respective sockets and engaged at their upper ends interiorly with said mandrel.

References Cited by the Examiner
UNITED STATES PATENTS
1,046,474 12/1912 Marcuse 242—55.2

FRANK J. COHEN, Primary Examiner.
LEONARD D. CHRISTIAN, Examiner.