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(54) **COFFEE VENDING MACHINE FILTER PAPER SUPPORT**

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(58) **Field of Search** **99/289 T, 289 R, 99/279; 242/423, 596.3, 598.1, 598.4**

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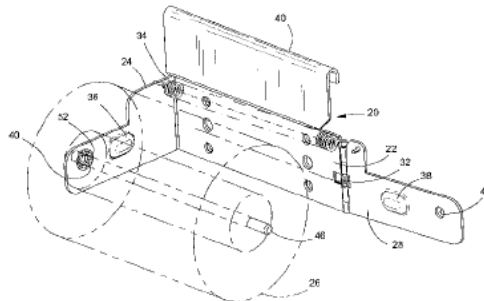
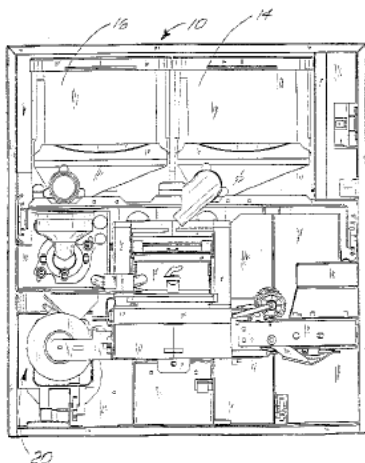
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(57) **ABSTRACT**

A filter paper roll support apparatus for a coffee vending machine, having a fixed arm and a pivotable arm spaced from the fixed arm for supporting opposite ends of a support roll on which the paper roll is mounted for rotation. The pivotable arm is hinged and spring biased towards the fixed arm. A spacing element is formed in each of the arms to engage the opposite sides of a roll of filter paper to keep it from rubbing on the main bodies of the arms.

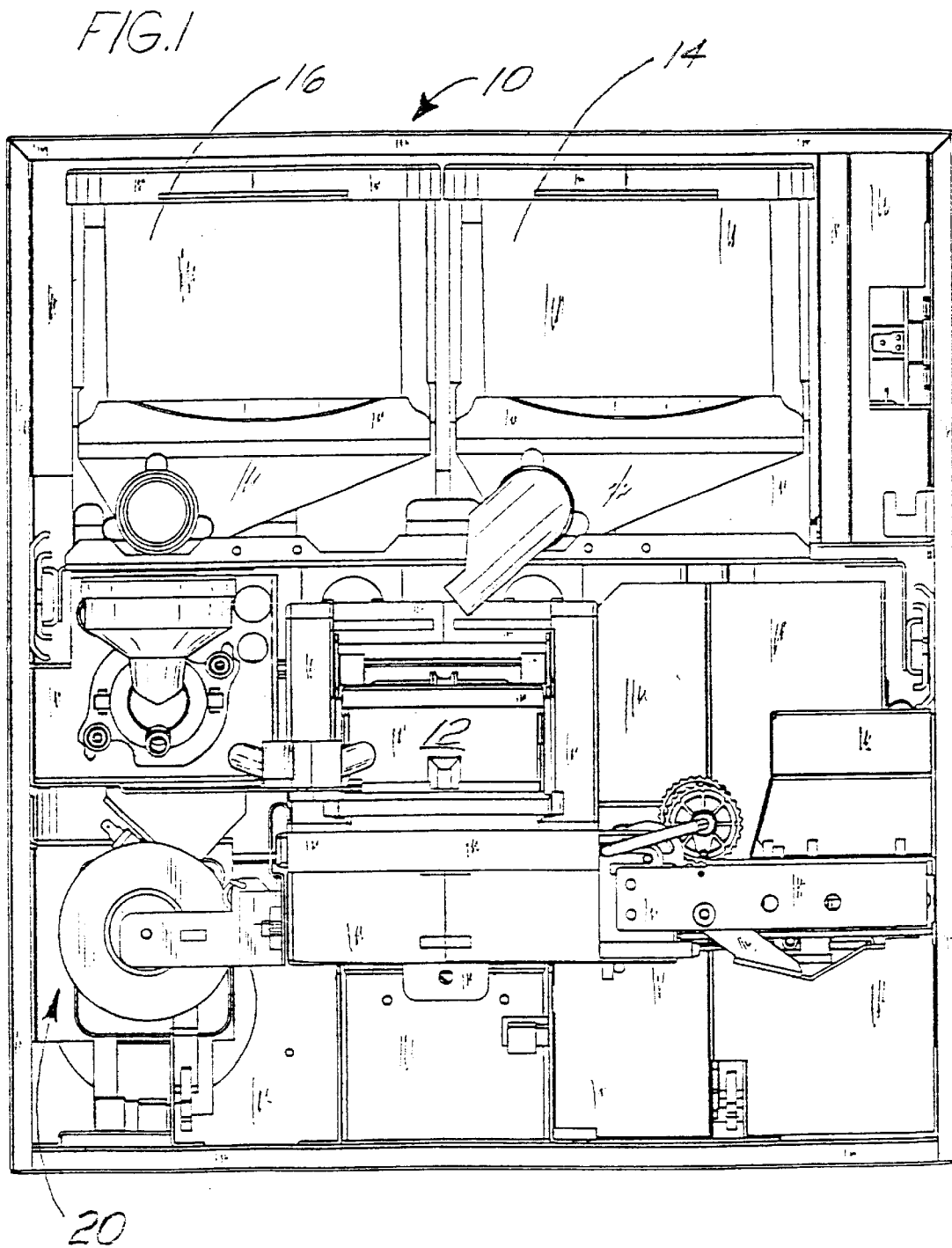
5 Claims, 5 Drawing Sheets



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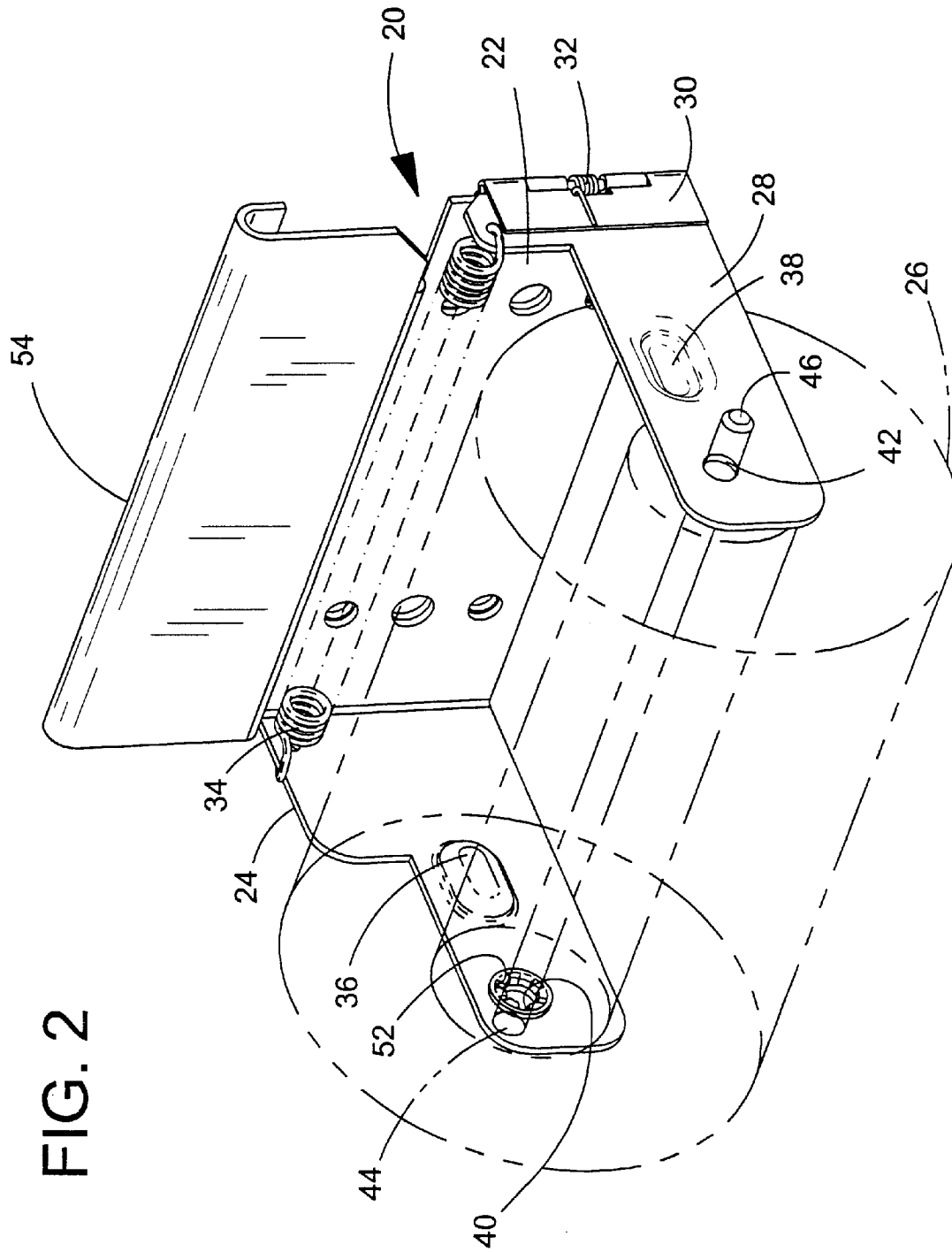


FIG. 2

FIG. 3

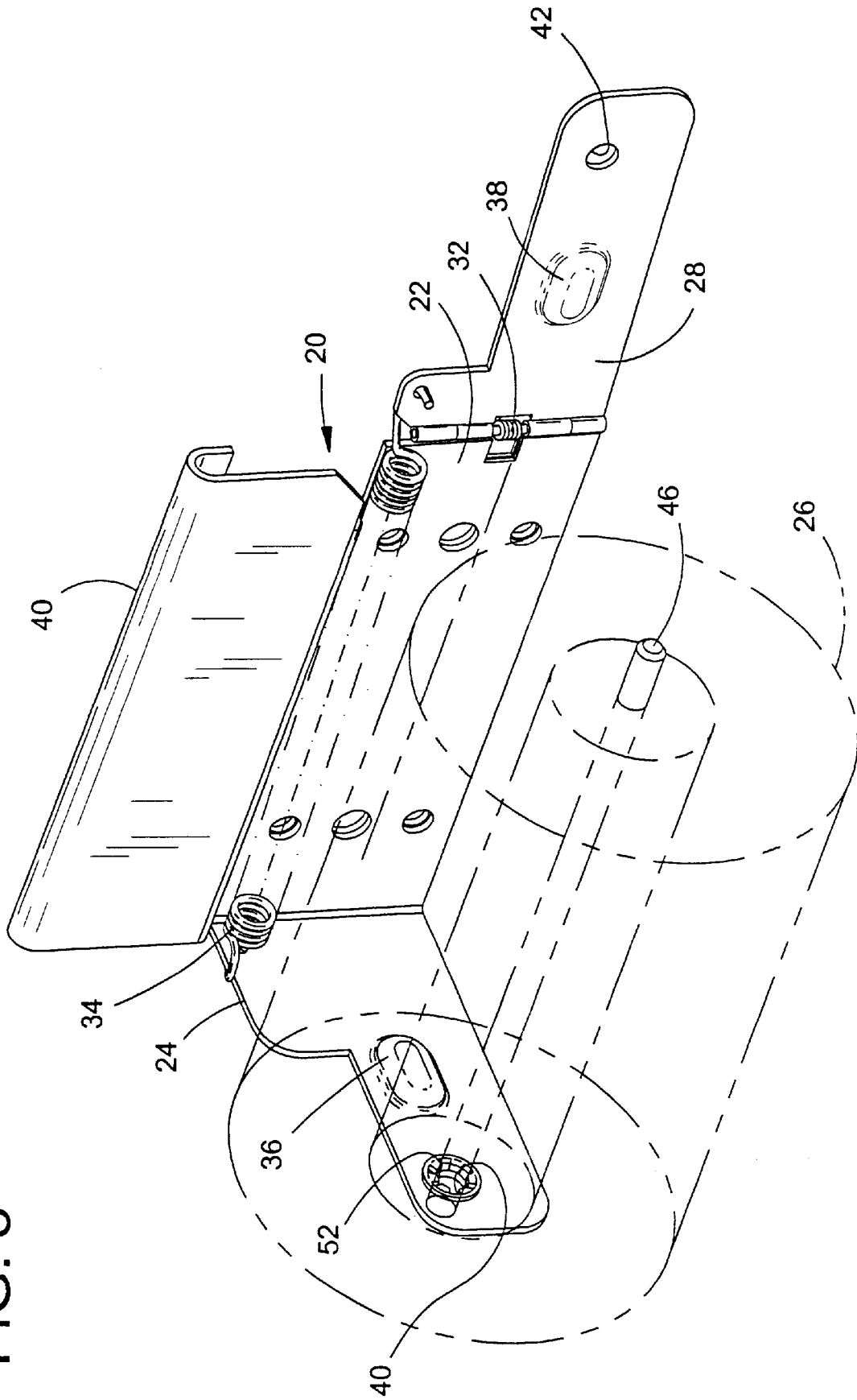


FIG. 4

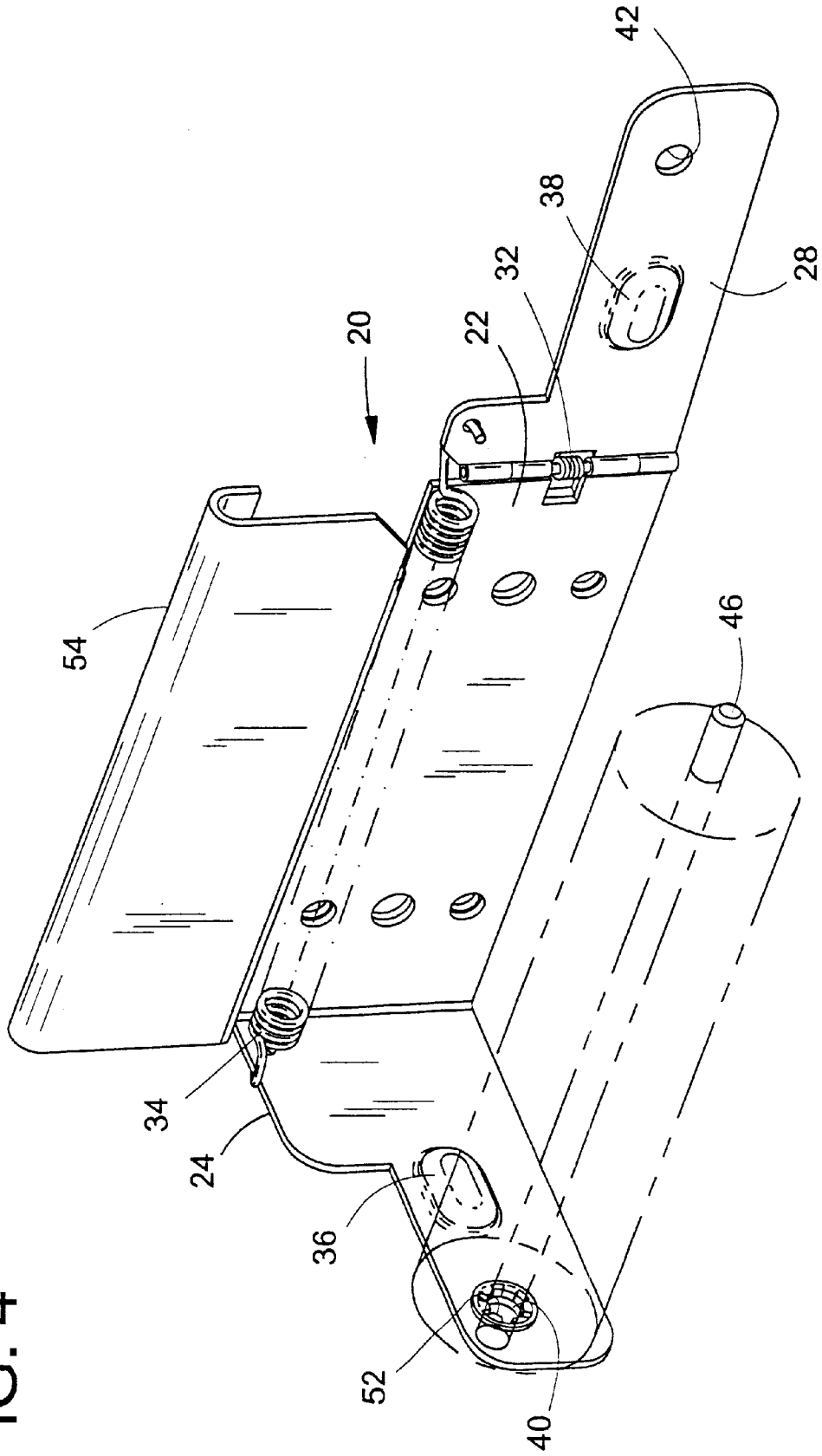
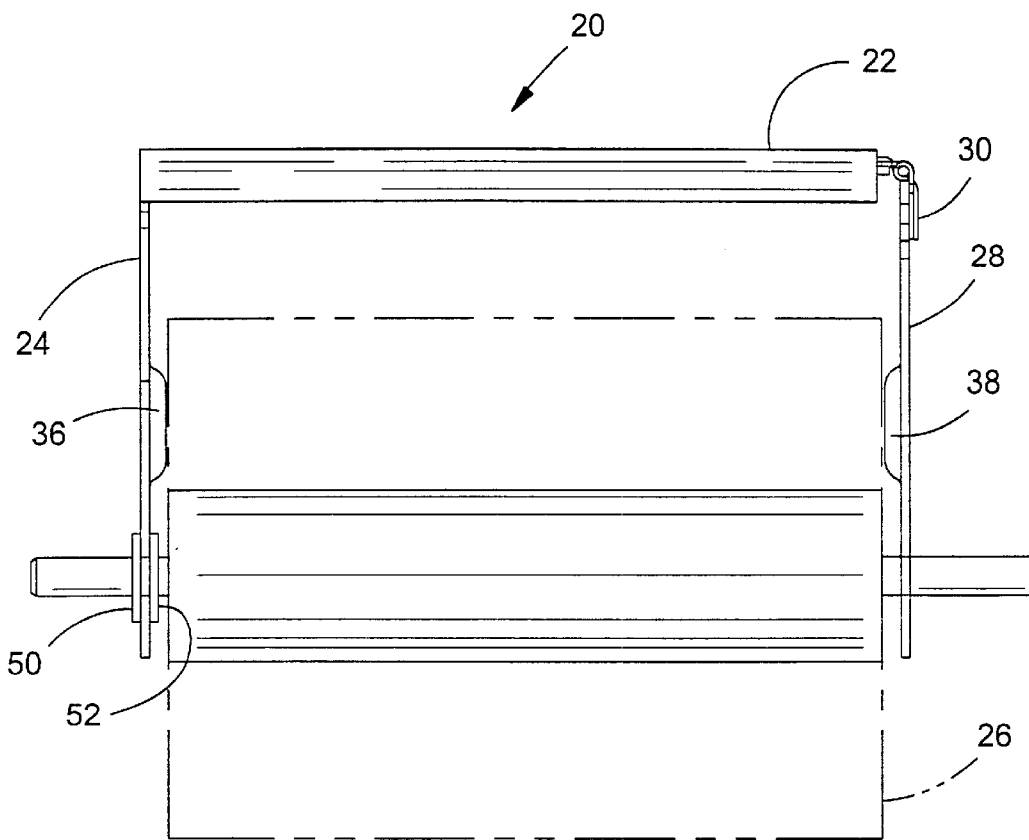


FIG. 5



COFFEE VENDING MACHINE FILTER PAPER SUPPORT

BACKGROUND OF THE INVENTION

The present invention relates to coffee vending machines and, more particularly, to a support apparatus for a roll of filter paper used in the brewing process of such a machine. Coffee vending machines designed to brew a single cup of coffee at a time and dispense it into a cup at a cup station generally utilize a brewing system that has a split brewing chamber that is opened between brewing cycles to dispose of coffee grounds utilized to brew coffee in the preceding brewing cycle. Typically, a roll of filter paper is supported along one side of the brewing chamber and the paper is unwound from the roll and drawn through the brewing chamber by a drive mechanism when the brewing chamber is opened. The used paper and coffee grounds supported by the paper is moved into a receptacle and a new clean section of filter paper unwound from the roll is moved into the brewing chamber which is then closed for a new brewing cycle.

Such coffee vending machines are regularly serviced by personnel who clean the machines, replace used ingredients and, when needed, replace the used roll of filter paper with a new roll. Ease of service is an important aspect with the design of any such coffee machine since the longer it takes to service the machine the more expensive it is to maintain. Particularly table top versions of such coffee vending machines are very compact internally and provide little space to maneuver within for servicing. In the past, the filter paper roll has been suspended from a pair of fixed arms with open slots in the top of the arms which support the roll by pins on a support roll extending through the roll of filter paper. To insert and remove the roll of paper and its support roll, it was necessary to lift the pins out of the slots and maneuver the roll through limited space in the machine. This has proven to be difficult and time consuming for service personnel.

SUMMARY OF THE INVENTION

The present invention overcomes the above described difficulties and disadvantages associated with prior art filter paper support apparatus in coffee vending machines by providing an apparatus that is more easily accessed and allows quick and easy withdraw and insertion of a paper roll in the machine. This is accomplished by providing a filter paper roll mounting apparatus for use in a coffee vending machine, comprising a mounting bracket; a first paper roll support arm rigidly fixed to and extending perpendicular from a first end of the mounting bracket and having an opening for receiving a first end of a support pin for a roll of paper; a second paper roll support arm hinged to and extending from a second end of the mounting bracket spaced from the fixed arm and having an opening for receiving a second end of the support pin for the roll of paper so that the roll of paper is supported for rotation between the fixed and hinged arms, the hinged arm being pivotable from a position for supporting the second end of the pin and a position which allows the pin and roll to be removed from or inserted into the apparatus. In its preferred form the apparatus utilizes a spring to urge the hinged arm toward the fixed arm to hold the roll of paper between them during use. Also, it preferably has a fastener engaging the first end of the paper roll support pin securing the support pin to the fixed support arm so as to prevent removal of the pin from the fixed support arm, and a spacing element on each of the fixed and hinged arms

engageable with opposite sides of the roll of paper mounted between the arms to keep the roll of paper from engaging the remainder of the arms.

Other objects and features will be in part apparent and in part pointed out hereinafter.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a front elevational view of a table top coffee vending machine with the front service door removed and with the preferred embodiment of the apparatus of the present invention mounted therein;

FIG. 2 is a pictorial view of the preferred form of the filter paper roll mounting apparatus of the present invention with a roll of paper and a support roll for the roll of paper shown in phantom;

FIG. 3 is a view similar to FIG. 2 with the hinged arm shown rotated outwardly;

FIG. 4 is a view similar to FIG. 3 with the roll of filter paper removed; and

FIG. 5 is a top plan view of the preferred form of filter paper roll mounting apparatus.

Corresponding reference characters indicate corresponding parts throughout the drawings.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

A table top coffee vending machine **10** is shown generally in FIG. 1 with its front service door removed to make the internal components visible. Such machines typically include a coffee brewing chamber **12** which is supplied with ground coffee from a storage canister **14** and a condiment storage container **16** typically containing creamer or sugar. The filter paper roll support apparatus **20** of the present invention is secured by bolts or the like to the frame of the machine **10** adjacent the brewing chamber **12**. As seen in FIG. 2, the filter paper support apparatus **20** includes a mounting bracket **22** with which it is secured to the frame of the machine **10**. Formed integral with or fixed to one end of bracket **22** is a fixed arm **24** for supporting one end of a roll of filter paper **26**, shown in phantom. Pivotaly mounted at an opposite end of bracket **22** is another arm **28** for supporting the other end of a roll of filter paper **26**. Arm **28** is connected to mounting bracket **22** with a hinge **30** which has its hinge plates welded or other wise secured to the mounting bracket **22** and arm **28** so that the arm can be pivoted between the position shown in FIG. 2, for supporting the roll of filter paper **26**, and the position shown in FIG. 3, where the filter paper can be removed from the support apparatus **20**. In the preferred embodiment, a hinge spring **32** is used to urge or bias the arm **28** toward the fixed arm **24** to assist in keeping the arm **28** in position to support the paper roll **26** for use. Other means could be used in place of the hinge spring to hold the arm **28** in a position perpendicular to the mounting bracket during use and allow it to be moved out of the way for removal of paper roll **26**. In addition, a supplemental tensioning spring **34** can be provided to assist in holding the hinged arm **28** in position to support the paper roll **26** during use.

Both the fixed arm **24** and hinged arm **28** have a spacing element **36** and **38**, respectively, which are raised ridges embossed in the sheet metal arms that engage opposite sides of paper roll **26** to keep it centered between the arms and to tension the paper as it unwinds thus providing a uniform resistance which assists the filter paper tracking through the brewer assembly. Each arm **24** and **28** is also provided with

an opening **40** and **42**, respectively, in the form of a hole formed in the arms to support pins **44** and **46**, respectively, which are secured to a support roll **48**, shown in phantom. Pins **44** and **46** can be the opposite ends of a support rod, shown in phantom, or could be individual pins formed in or secured to the support roll **48**. Openings **40** and **42** are only slightly larger in diameter than pins **44** and **46** to provide some clearance so the pins are free to rotate within the openings. Preferably, a pair of fasteners in the form of friction washers **50** and **52** (FIG. **5**) hold the pin **44** in its location in opening **40** when hinged arm **28** is rotated to its position shown in FIG. **3** for removal of the spent paper roll **26** from support roll **48**. This is done so that no parts are removed from the paper support apparatus which might be lost or misplaced during the paper roll changing process. When the hinged arm **28** is in this position the paper roll **26** can be removed from the support roll **48** so that these parts are left in position as shown in FIG. **4**.

Referring again to the mounting bracket **22**, as shown in FIG. **1**, it preferably is provided with a curved upper edge **54** which provides a paper support and guide adjacent the brewing chamber to provide a smooth transition from the bracket to the brewing chamber for the paper being unwound from paper roll **26**.

In view of the above, it will be seen that the several objects of the invention are achieved and other advantageous results attained.

As various changes could be made in the above constructions, without departing from the scope of the invention, it is intended that all matter contained in the above description and shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

What is claimed is:

1. A filter paper roll mounting apparatus for use in a coffee vending machine, the coffee vending machine having a coffee brewer, the apparatus comprising:

- a mounting bracket;
 - a first paper roll support arm rigidly fixed to and extending perpendicular from a first end of a mounting bracket and having an opening for receiving a first end of a support pin for a roll of paper; and
 - a second paper roll support arm hinged to and extending from a second end of the mounting bracket spaced from the fixed arm and having an opening for receiving a second end of the support pin for the roll of paper so that roll of paper is supported for rotation between the fixed and hinged arms, the hinged arm being pivotable form a position for supporting the second end of the pin and a position which allows the pin and roll to be removed from or inserted into the apparatus; and
- the mounting bracket disposed adjacent to the coffee brewer, such that the roll of paper is may be fed into the coffee brewer.
- 2.** The apparatus of claim **1**, including:
a spring urging the hinged arm towards the fixed arm.
- 3.** The apparatus of claim **1**, including:
a fastener engaging the first end of the paper roll support pin securing the support pin to the fixed support arm so as to prevent removal of the pin from the fixed support arm.
- 4.** The apparatus of claim **1**, including:
the first and second arms each having a spacing and tensioning element engageable with opposite sides of the roll of paper mounted between the arms.
- 5.** The apparatus of claim **1**, including:
the mounting bracket having an upper curved paper guide portion disposed adjacent the coffee brewer for supporting the paper as it enters the brewer.

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