June 23, 1936. E. A. LA ROCK 2,045,035

PAPER ROLL PLUG AND SHAFT

Filed March 8, 1935

Fig. 1.

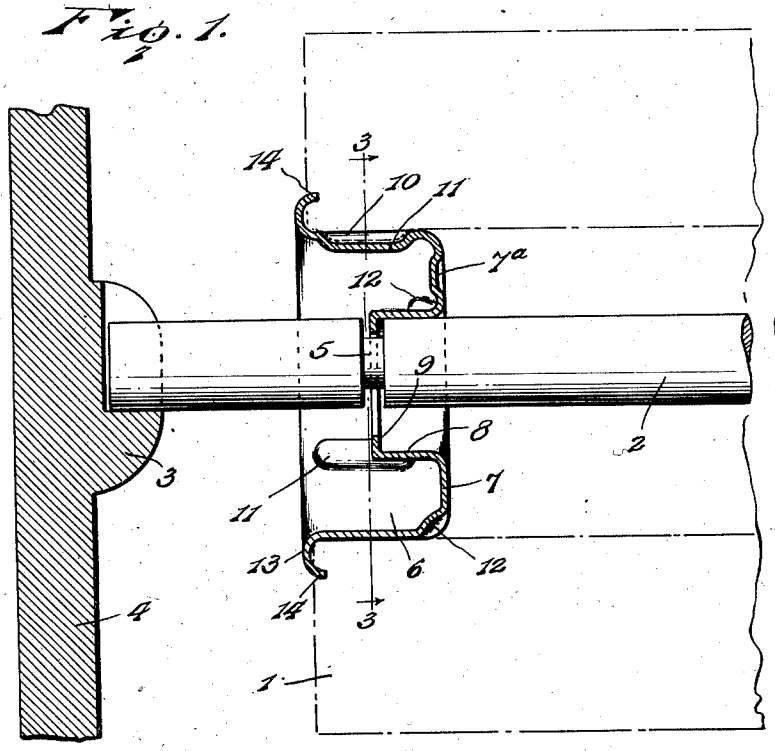


Fig. 1a.

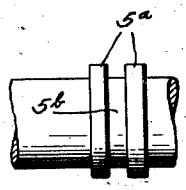


Fig. 2.

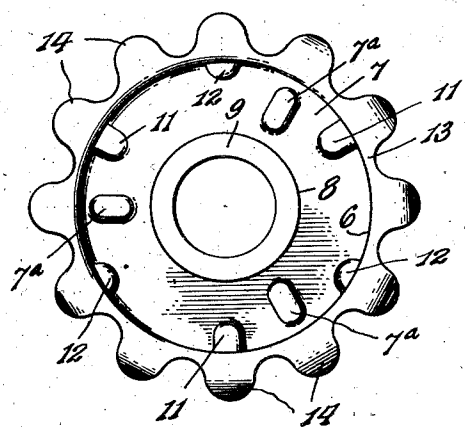
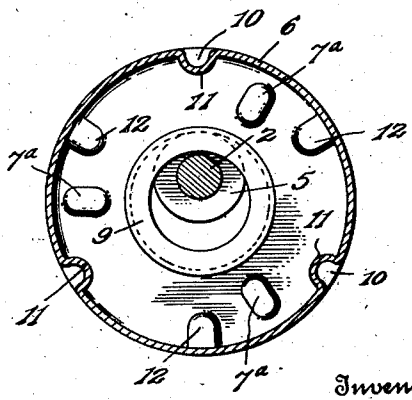


Fig. 3.



Inventor

Edgar A. La Rock.

By Lacey & Lacey, Attorneys

Patented June 23, 1936 2,045,035

UNITED STATES PATENT OFFICE

2,045,035

PAPER ROLL PLUG AND SHAFT

Edgar A. La Rock, Ogdensburg, N. Y.

Application March 8, 1935, Serial No. 10,107

4 Claims. (Cl. 242—68)

This invention relates to an improved paper roll holder, and more particularly to an improved form of plug adapted to be fitted into a roll of wrapping paper or the like and mount the roll of paper for rotary motion about a shaft supported at its ends between brackets.

One object of the invention is to provide a plug which may be formed of sheet metal and will not only fit tightly within the roll of paper but also prevent the roll of paper from shifting longitudinally of the shaft about which it turns.

Another object of the invention is to so form the plug that when one of the improved plugs is fitted into each end of a heavy roll of paper, the shaft may be easily passed longitudinally through the paper roll and plugs to a position in which the plugs may have engagement with the shaft to prevent longitudinal movement of the shaft or roll relative to each other.

Another object of the invention is to provide a plug of this character so formed that its outer end portion is adapted to be forced into the paper roll and prevent the plug from working loose.

The invention is illustrated in the accompanying drawing, wherein

Figure 1 is a sectional view showing a plug of the improved construction applied to one end of a roll of paper and mounting the roll of paper upon a shaft shown in elevation.

Figure 1[a] is a fragmentary view of a modified form of shaft about which the improved plug may be engaged.

Figure 2 is a view in elevation looking at the outer end of the improved plug.

Figure 3 is a sectional view, taken along the line 3—3 of Figure 1.

The roll of paper 1 indicated by dot and dash lines in Figure 1, may be of any length and diameter desired and when in use is supported about a shaft 2, each end of which fits into a socket 3 carried by a bracket 4. The brackets 4 are of a conventional construction such as used for supporting heavy rolls of wrapping paper. The shaft 2 may be formed adjacent each end with a circumferentially extending groove 5 as shown in Figure 1 into which a portion of the improved plug is to engage and prevent the roll of paper from shifting longitudinally of the shaft or the shaft may be formed with spaced shoulders 5[a] as shown in Figure 1[a] defining a groove or seat 5[b] taking the place of the groove 5.

Plugs of a duplicate construction are mounted at opposite ends of the roll of paper and each plug is preferably formed of strong sheet metal, although other materials may be used if found suitable. The improved plug is cup-shaped, as shown clearly in Figure 1, and has an annular wall 6, the inner end of which is integrally united to a head 7 from which extends a neck or collar 8 which projects outwardly and is of such length that it terminates substantially midway the depth of the plug. At its outer end the collar 8 carries an inwardly disposed annular flange 9 which reinforces the neck against radial distortion and splitting and is adapted to engage in the groove 5 of the end portion of the shaft 2 about which the plug fits and by referring to Figure 1 it will be seen that the diameter of the neck or collar 8 and the diameter of the opening defined by the flange 9 is such that the shaft may be freely passed longitudinally through the roll of paper and plugs fitted into opposite ends of the roll until the grooves 5 or seats 5[b] are so disposed with respect to the roll and plugs that the flanges 9 of the two plugs may engage in the grooves. The roll of paper and the plugs may then freely turn about the shaft but will be prevented from sliding along the shaft. Therefore, the projecting end portions of the shaft may be grasped and the heavy roll of paper easily lifted and moved into position for ends of the shaft to engage in sockets of the supporting brackets 4 without danger of the rolls sliding along the shaft and causing the person's hands to be mashed in the roll and its supporting bracket. This will also hold the roll of paper in spaced relation to the supporting brackets when the ends of the shaft are engaged in the sockets 3 and prevent the paper from being torn by contact with the brackets or free rotation of the roll of paper interfered with by frictional engagement by one end of the roll with one of the brackets.

The annular wall of the plug has portions pressed inwardly to form channels or pockets 10 defined by inwardly extending ribs 11, similar ribs 7[a] being formed in the head 7, and at the juncture of the annular wall with the head 7 there have also been provided inwardly pressed portions 12 which are arranged in staggered relation to the ribs 11, as clearly shown in Figures 2 and 3. By forming the plug of resilient sheet metal and providing it with the ribs 11 and 7[a] and depressions 12, it will be greatly strengthened and also permitted to contract somewhat when driven into the center passage of the roll of paper. Therefore, a very tight frictional grip will take place between the roll of paper and the walls of the plugs and also portions of the paper roll may be forced into the pockets 10, as shown in Figure 1, and very ef-

fectively create an interlocking engagement between the core of the paper roll and walls of the plugs to prevent rotation of the plug within the roll of paper. At its outer end, the annular wall of the plug carries an outstanding circumferentially extending flange 13 which is scalloped to form lugs or fingers 14 which are of less length than the width of the flange, and referring to Figure 1 it will be seen that these lugs or fingers are curved so that when the plug is thrust into the core of the paper roll and forced into place, the lugs or fingers will be embedded in ends of the roll of paper and positively prevent circumferential slipping of the plugs or turning of the paper roll about the plugs. When a roll of paper is completely used, the plugs will be freed and can be transferred to another roll. If so desired the plugs may be supplied with the rolls of paper and discarded after the paper has been all used.

Having thus described the invention, what is claimed as new is:

1. In combination with a shaft formed with a circumferentially extending seat, a plug comprising a cup-shaped body having an annular wall and a head at the inner end of the wall formed with an outwardly extending neck, said neck resting upon the shaft and having at its outer end an inwardly disposed annular flange for reinforcing the neck and engaging in the circumferentially extending seat of the shaft, and an outstanding flange at the outer end of the annular wall formed with radially extending fingers of less length than width of the flange and curved longitudinally whereby the fingers may be embedded in the end of a roll when the plug is forced into the roll with the flange bearing against the roll.

2. In combination with a shaft formed with a circumferentially extending seat, a roll supporting plug comprising a cup-shaped body of sheet metal having an annular wall, a head integrally united thereto, and an open ended neck extending inwardly from the head axially of the plug and provided with an inwardly disposed annular flange at its inner end, the neck and an opening defined by the flange being of a diameter to permit the shaft to be slid freely through the plug and the neck rest upon the shaft with the flange engaged in the seat extending circumferentially about the shaft to hold a roll against shifting longitudinally of the shaft while permitting the roll and plug to turn freely about the shaft.

3. In combination with a shaft formed with a circumferentially extending seat, a paper roll supporting plug comprising a cup-shaped body formed of sheet metal and having an annular wall, a head at the inner end of the plug having marginal portions integrally united to the wall and provided with a central opening, a neck integrally united to the head about the central opening thereof and extending through the plug for a portion of the length thereof and at its free end formed with an inwardly disposed circumferentially extending flange for engaging the seat extending circumferentially of the shaft and preventing shifting of the plug longitudinally upon the shaft, the annular wall of the plug having portions pressed inwardly to form longitudinally extending ribs strengthening the wall and defining external pockets, the juncture of the annular wall and head having portions pressed inwardly to form reinforcements disposed in staggered relation to said ribs, and an outstanding flange about the outer end of the annular wall curved radially and formed with fingers adapted to be embedded in an end of a roll when the plug is forced into the core of the roll.

4. As a new article of manufacture, a roll plug for paper supporting shafts comprising a cup shaped body adapted to fit within a paper roll and having a circumscribing wall and a head at one end thereof, the central portion of the head being extended inwardly to form an elongated cylindrical portion of substantially uniform diameter throughout its length and of appreciably less diameter than the circumscribing wall, said cylindrical portion constituting a bearing sleeve adapted to rest for substantially its full length upon the supporting shaft and carrying an internal annular flange disposed at an angle to the longitudinal axis of the bearing sleeve and adapted to fit within a circumferential seat of the shaft.

EDGAR A. LA ROCK.