W. R. ALLEN.

FEEDING ROLLER.

APPLICATION FILED MAY 22, 1911.

1,086,120.

Patented Feb. 3, 1914.

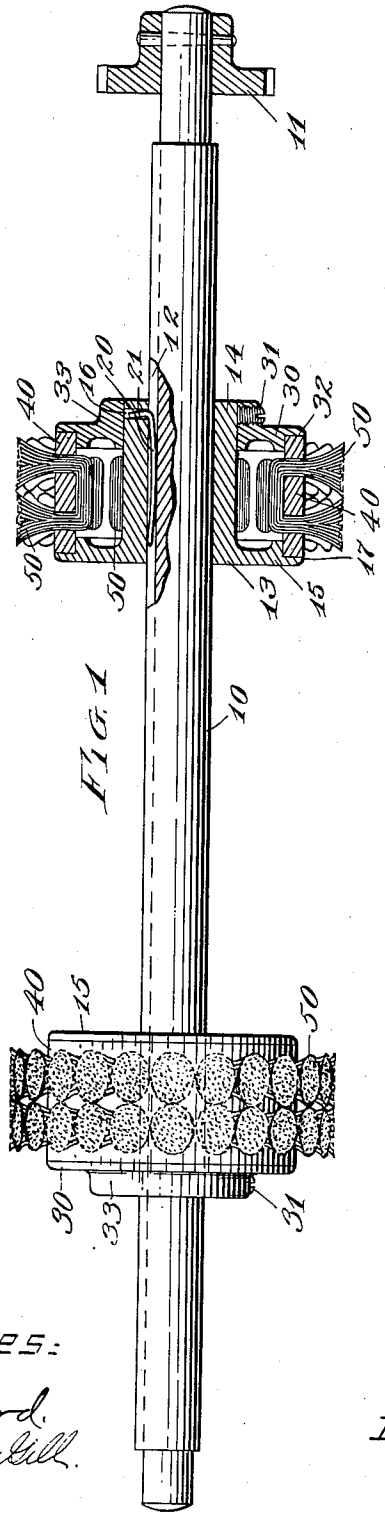


FIG. 4

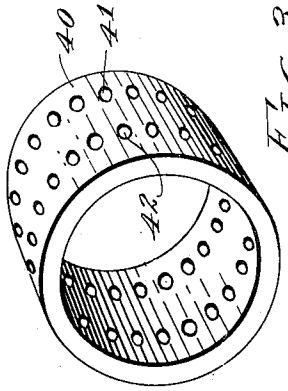


FIG. 3

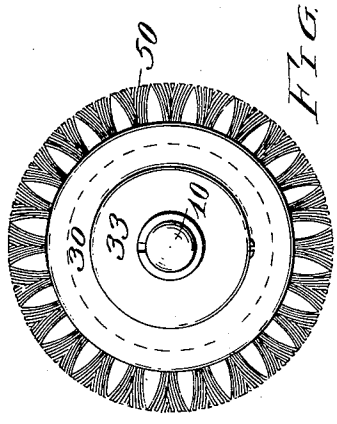


FIG. 2

Witnesses:

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UNITED STATES PATENT OFFICE.

WILLIAM R. ALLEN, OF CLEVELAND, OHIO, ASSIGNOR TO THE AMERICAN MULTIGRAPH COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

FEEDING-ROLLER.

1,086,120. Specification of Letters Patent. Patented Feb. 3, 1914.

Application filed May 22, 1911. Serial No. 628,833.

To all whom it may concern:

Be it known that I, WILLIAM R. ALLEN, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Feeding-Rollers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

The object of this invention is to provide a very effective device for feeding paper, whether in sheets, cards, envelops, etc., to or in any suitable machine.

My feeding device is a roller arranged with gripping fingers which, from their nature, may obtain a very firm hold on the paper. These rollers may be conveniently employed in many different machines, among which may be mentioned paper feeding devices for printing machines, ruling machines, folding machines, envelop sealing machines, machines for feeding inserts for envelops, etc.

My roller is not only very effective in practice, but it is simple and cheap in construction, durable and easily repaired.

My roller comprises a suitable body carrying a projecting finger consisting of strands of soft material, like rubber, which engage the paper and bend to obtain a firm contact therewith.

A more particular embodiment herein shown is also comprised within my invention.

The drawings show my invention in an approved form.

Figure 1 is a side elevation, partly sectional, of a feeding roller having two of my rolls on a shaft; Fig. 2 is an end view of such roller; Fig. 3 is a perspective view of the annular ring which carries the elastic fingers.

As shown in the drawings, 10 represents a suitable shaft, which is adapted to be journaled, as desired, and is shown as having mounted on one end a driving pinion 11. This shaft is also shown as having a longitudinal key-way 12.

13 indicates an annular member mounted on the shaft and having a hub 14 and a projecting annular flange 15. The hub may fit the shaft snugly and still be slidable thereon, and such is the form intended to be illustrated in the drawings. When this annular member is slidable on the shaft it is provided with a suitable key entering the key-way 12. This may very conveniently be a spring 20 having a turned-up end 21 occupying a radial opening 16 in the hub 14. The spring, it will be seen, occupies the key-way and bears with a spring pressure on the bottom thereof. This means effectively holds the roll in position on the shaft against accidental displacement and compels the two to rotate together, while allowing the roll to be shifted longitudinally, as desired.

Mounted on the hub 14 is a disk 30 shown as held to the hub by a set screw 31 passing through a boss 33 on the disk. At its periphery this disk is provided with a rabbet 32, and a similar rabbet 17 is made in the inner peripheral edge of the flange 15. In these two rabbets seats the annular sleeve or rider 40, this member being rigidly held in place by the clamping action of the carrying parts against its ends. Accordingly, the member 13, the disk 30, and the sleeve 40 constitute a roll which is adapted to be driven as a unit by the shaft.

The sleeve 40 is provided with a series of apertures arranged in two sets 41 and 42 about the periphery, the corresponding apertures of the two sets being preferably in longitudinal alinement. Occupying these apertures and extending outwardly from the interior of the roll are the strands 50, which constitute the gripping fingers. These strands are preferably thin, narrow pieces of rubber which extend in a U-shape from the interior of the roll outwardly through the two openings, their intermediate portions lying alongside of the inner face of the sleeve 40. There are enough of the strands for each finger to make the finger fit snugly in the corresponding apertures, so that they will hold their position. In constructing the roll, I find it very convenient to use simply ordinary small rubber bands for making the fingers, one loop of the band being passed outwardly through one of the openings 42 and the other loop through the corresponding opening 41. When a sufficient number of these bands have been thus placed to fill the apertures, the looped ends are cut off squarely to present the flaring fingers shown in Figs. 1 and 2.

The flaring fingers of my feeding roll ob-

tain a very firm hold on the paper by reason of bending backward toward a tangent to the roll and gripping the paper at a number of places. Moreover, by having the individual strands of small dimensions constantly bent back and forth in operation, there is no opportunity for them to harden or for their surface to receive a coating or bloom, which is a characteristic of ordinary rubber rolls. Moreover, the fingers maintain themselves clean by the constant wiping action across the paper and the amount of dust carried by any one finger is small enough so as not to soil the paper. Several of the strands in any finger could become broken without interfering with the effective gripping of the whole finger. Moreover, when the fingers do become worn, it is a very simple proposition to loosen the set screw 31, remove the disk 30 and the ring 40, pull the strands out by their transverse portion and replace them by new rubber bands.

Having thus described my invention, what I claim is:—

1. A feed roller having a plurality of projecting fingers, each finger consisting of a plurality of soft strands of frictional material, and means for rotating the roller.

2. A feed roller having a plurality of projecting fingers, each finger composed of a group of strands of soft rubber.

3. A feed roller having a body portion and soft rubber strands projecting outwardly through two openings in the body portion, such strands being each a continuous member through the two openings and across the intermediate space between them on the inner side of the support.

4. In a feed roller, the combination, of a curved body portion having a plurality of openings through it, and soft rubber strands carried by the body portion and extending in a U-shape through two openings and intermediately lying along the inner face of the body portion, and means for continuously rotating the roller.

5. A feed roller having a plurality of projecting strands of soft rubber grouped together and adapted to bend and engage at many points an article to be fed.

6. In a feed roller, the combination of a curved rotatable body portion having openings, and elastic fingers carried thereby and each composed of a plurality of strands of rubber projecting outwardly through openings in the body portion and held by portions of the rubber within the body portion.

7. A feed roller having a body with a plurality of soft strands of rubber grouped together and projecting therefrom.

8. A feed roller having a body and a plurality of soft strands of rubber projecting radially in a group from the interior of the body.

9. A feed roller having a plurality of radially projecting fingers, each finger being composed of a number of individual strands of soft rubber, and means for continuously rotating the roller.

10. In a device of the character described, the combination, with a shaft having a keyway, of a flanged hub riding thereon, a spring key within the hub engaging the key way and connected with the hub, a disk movably mounted on the hub, a ring carried by the disk and flange, openings through such ring, and elastic fingers each composed of a plurality of U-shaped strands of rubber having their legs projecting outwardly through the openings and their intermediate portions lying alongside the inner face of the ring.

11. As a new article of manufacture, a feed roller having an elastic finger composed of a plurality of projecting strands of rubber with free ends.

12. In a feed roller, the combination, with a body portion, of a removable rider thereon, and elastic fingers carried by said rider, each finger consisting of a plurality of strands of soft frictional material.

In testimony whereof, I hereunto affix my signature in the presence of two witnesses.

WILLIAM R. ALLEN.

Witnesses:

W. DUNLAP,

ALBERT H. BATES.