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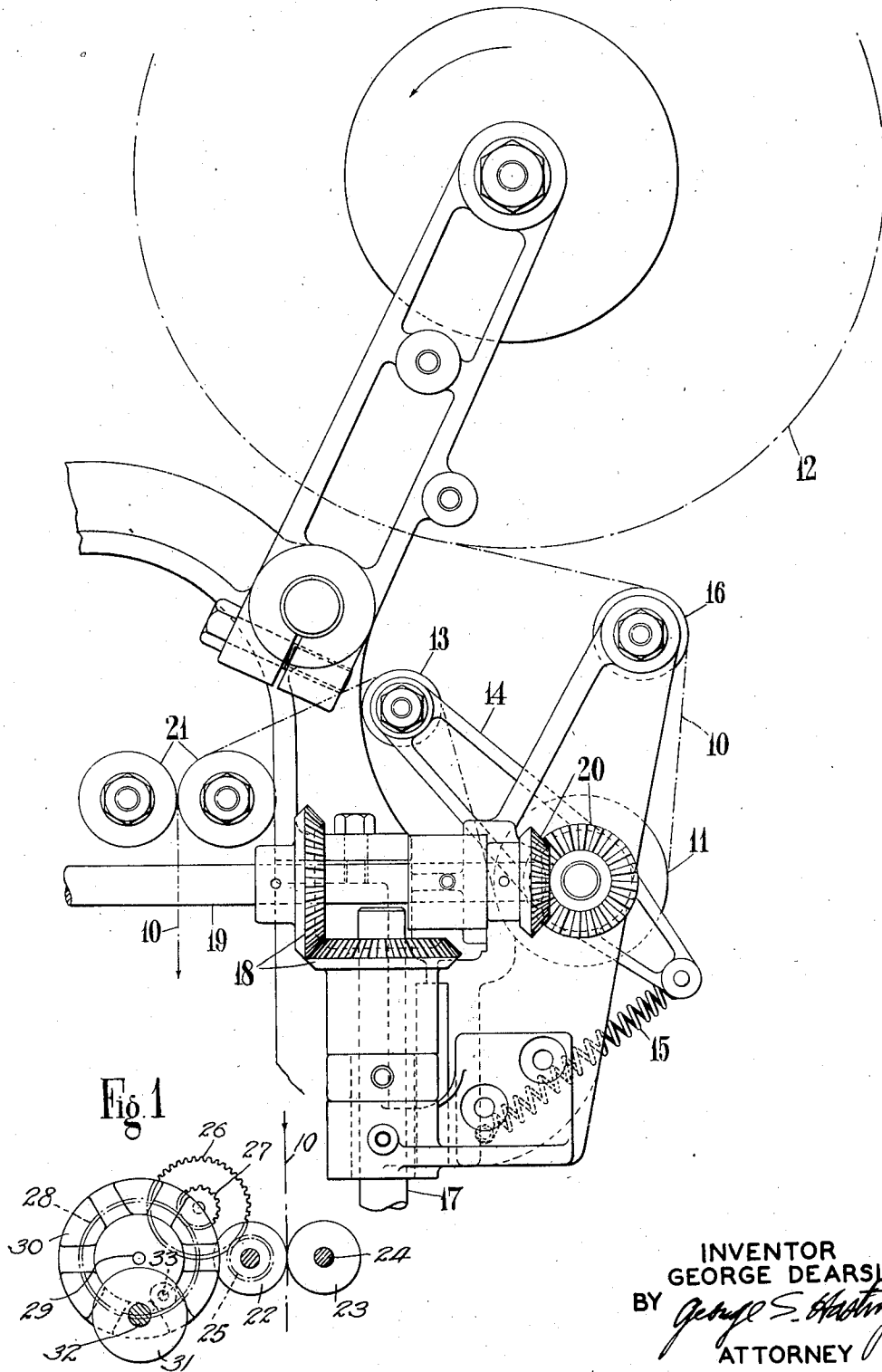
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FEEDING OF WEB MATERIAL TO CIGARETTE TIPPING APPARATUS AND OTHER MACHINES

Filed Dec. 9, 1937

2 Sheets-Sheet 1



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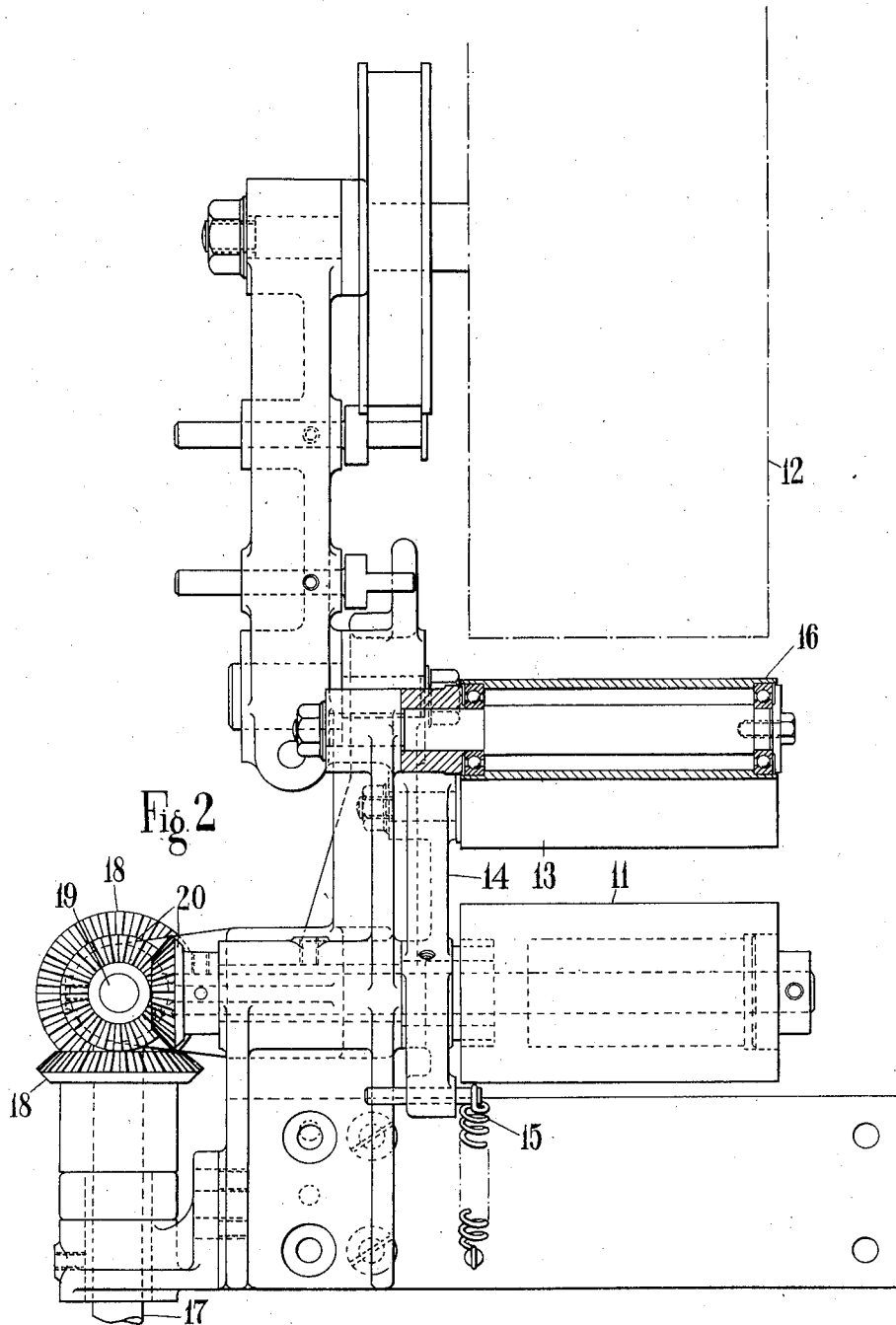
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UNITED STATES PATENT OFFICE

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FEEDING OF WEB MATERIAL TO CIGARETTE TIPPING APPARATUS AND OTHER MACHINES

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2 Claims. (Cl. 271—2.4)

This invention relates to the feeding of web material from a supply or reel and may be utilised for the feeding of web material to machines or mechanism such as those employed in tipping cigarettes with cork, gold or other material, in which sections of the cork or the like are severed from the web and delivered to the running wrapper web or cigarette paper, being applied thereto on spaced adhesive patches.

The invention is particularly useful in web feeding mechanism of the type in which the severing means are carried by a fixed mounting, and in which the web of cork or the like is intermittently fed to the severing means, the severance taking place during rest periods of the feeding device, and the invention will be described as applied to such a mechanism. It is to be understood, however, that the invention is not restricted to the case of an intermittent feed to the severing mechanism but may be applied to continuous feeding arrangements.

The invention consists in means for feeding a web from a reel to a severing device or other mechanism, wherein means are provided intermediate said feeding means and the reel, adapted to apply a slipping friction drive to the web.

According to the present invention the web is led from the supply reel into contact with a fast running roll and then through the intermittent or continuous feeding means, the fast running roll being adapted to provide a slipping friction drive for drawing the web from the supply reel and feeding it to the intermittent or continuous feeding means, whereby strain on the web occasioned by the feed rolls is avoided so that in the case of frail webs breakages are substantially eliminated. In the case of intermittent feed rolls no feeding action will be imparted from the fast running roll during the stationary periods of the feed rolls. Means may be provided for varying the amount of contact between the web and the fast running roll according to the material from which the web is composed.

Further features of the invention will be hereinafter described.

The accompanying drawings illustrate the invention as applied to a foil feeding mechanism as described in British specification No. 465,284, only those parts which are particularly concerned being shown herein.

Figure 1 is a front elevation, while Figure 2 is a side elevation.

In carrying the invention into effect according to one convenient mode as in its application to a foil feed mechanism somewhat of the type de-

scribed in British specification No. 465,284, the web of foil 10 is intermittently fed to the severing means (not shown) by a pair of feed rolls 22, 23 (Fig. 1), of which 22 is driven through a Geneva mechanism as indicated in Fig. 1, the driving member of the Geneva mechanism being designated 31, and the driven member 30, the member 31 being fast on a driving shaft 32 and having an anti-friction stud-roll 33.

The feed roll 22 derives its rotation through gears 25, 26, 27 and 28 from the driven Geneva member 30 which is mounted on a shaft 29. If it is desired to provide for continuous rotation of the feed rolls 22, 23, the Geneva mechanism may be disconnected by removal of a suitable gear of the chain, such as that designated 26, and power may be applied continuously to the shaft 24 by known or other suitable means. On the way to the feed rolls the web passes through a pair of detecting rolls 21. The severing device (not shown) comprises a knife mounted to reciprocate across the path of the web, the reciprocation being caused by a cam or other suitable device.

Intermediate the supply reel and the intermittent feed rolls a continuously driven roll or drum 11 is provided at a position such that the web will engage the surface of the roll over a substantial arc. The roll 11 is adapted to be driven at a high speed and provides a friction drive for the web to draw it from the supply reel 12. The diameter of the fast running roll 11 is conveniently large so that the angular extent of contact of the web with the roll is ample to provide the desired friction drive.

The surface of the roll 11 may be serrated or scored or provided with a suitable covering or coating to provide the desired slipping drive on the web during the driving periods of the intermittent feed rolls.

Between the fast running roll 11 and the feed rolls a tensioning device may be provided engaging the web and comprising, for example, a roll 13 mounted upon a pivoted lever 14 and having a spring 15 for holding it in contact with the web.

Means may also be provided for varying the arcuate contact of the web with the fast running roll 11 so as to vary the driving effect according to the nature of the web. This may be effected by the provision of a guide roll such as 16 over which the web is passed on its way to the fast running roll or drum 11. This guide roll 16 may be mounted for adjustment to vary the arc of contact of the web with the fast running roll. The fast running roll 11 may be utilised for guid-

ing the web by the provision of a flange at one end thereof, said roll being adjustable axially.

The roll 11 is driven from a shaft 17 through bevel gear 18, cross shaft 19 and bevel gear 20.

5 In operation, during the driving period of the intermittent feed rolls, the web 10 is maintained taut and in engagement with the fast running roll or drum 11 and thus a frictional drive is imparted to draw the web from the feed roll or spool 12.
 10 Owing to the nature of the drive, however, slipping occurs between the surface of the roll 11 and the web so that the web 10 is only drawn off from the feed roll 12 in accordance with the forward feed of the intermittent feed rolls. During
 15 the non-driving period of the intermittent feed rolls there is a slackening of the web in the lap between the intermittent feed rolls and the fast running roll so that the latter imparts no driving effect to the web and thus it is not drawn from
 20 the supply reel.

The slackening of the web between the intermittent feed rolls and the roll 11 may however be taken up by the spring controlled lever 14
 25 in which case the web 10 may be continuously drawn from the supply spool.

According to another arrangement the fast running roll 11 may be arranged between a supply reel and a pair of continuously operating feed
 30 rolls. Such an arrangement is particularly suitable when feeding a web of material which is not strong enough to withstand localised stresses set up at the point where it passes through the feed roll where the gripping takes place along a transverse line.
 35

It sometimes happens that frail or delicate materials are broken at this point owing to high stresses on setting the reel in motion when starting the action or even during the feeding.

40 When using a high speed roll 11 the feed rolls when started cause the web to be pulled taut around the contacting arc of the high speed roll so that the latter tends to impart motion to the web by reason of the friction. The feed rolls
 45 thus have only to provide sufficient tension in the web to increase the friction between the web and the high speed roll to such an amount that will set the supply reel in motion. This frictional effort is spread over the whole surface of the web

in contact with the high speed roll 11 thus avoiding sudden change of stress in the web.

As soon as the feed rolls cease to operate the high speed roll will overdrive slightly so that
 5 the tension in the web is reduced to such an extent that the friction is insufficient to draw the web from the reel.

Thus a draw-off means is provided which is brought into operation automatically by the action of the feed rolls.
 10

I claim:

1. Apparatus for feeding web material from a spool to severing mechanism, comprising feed rolls, means for imparting intermittent driving motion to the feed rolls, and a tensioning device
 15 intermediate the spool and feed rolls, said device comprising a drum disposed within, and contiguous to, a bight of said web, means to drive said drum positively at a peripheral speed greater than that of the speed at which said web is
 20 to be delivered to the severing mechanism, and a guide and tensioning roll movable in an arcuate path defining the delivery end of said bight, a carrier lever having an arm in the free end of which said guide and tensioning roll is mount-
 25 ed for movement in said arcuate path, said carrier arm being mounted to oscillate around the axis of said drum, and said roll carrier having another arm, and a spring to bias said last-named arm to move said guide and tensioning
 30 roll against the web, thereby to maintain said bight yieldingly in slip contact with said drum.

2. Apparatus for feeding web material from a source of supply thereof to severing mechanism, said apparatus comprising feed rolls, and draw-
 35 off means including a continuously driven drum disposed intermediate the feed rolls and the source of supply, said drum engaging a lap of the web to provide a friction drive for delivering the web from said source of supply, and means
 40 to drive said drum, at a peripheral speed substantially greater than that of the feed rolls, and wherein a tensioning device for the web is located between the drum and the feed rolls, said device comprising a guide roll for the web, and a
 45 spring-controlled lever having an arm adapted to carry said roll and to press it normally into a bight of said lap.

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