

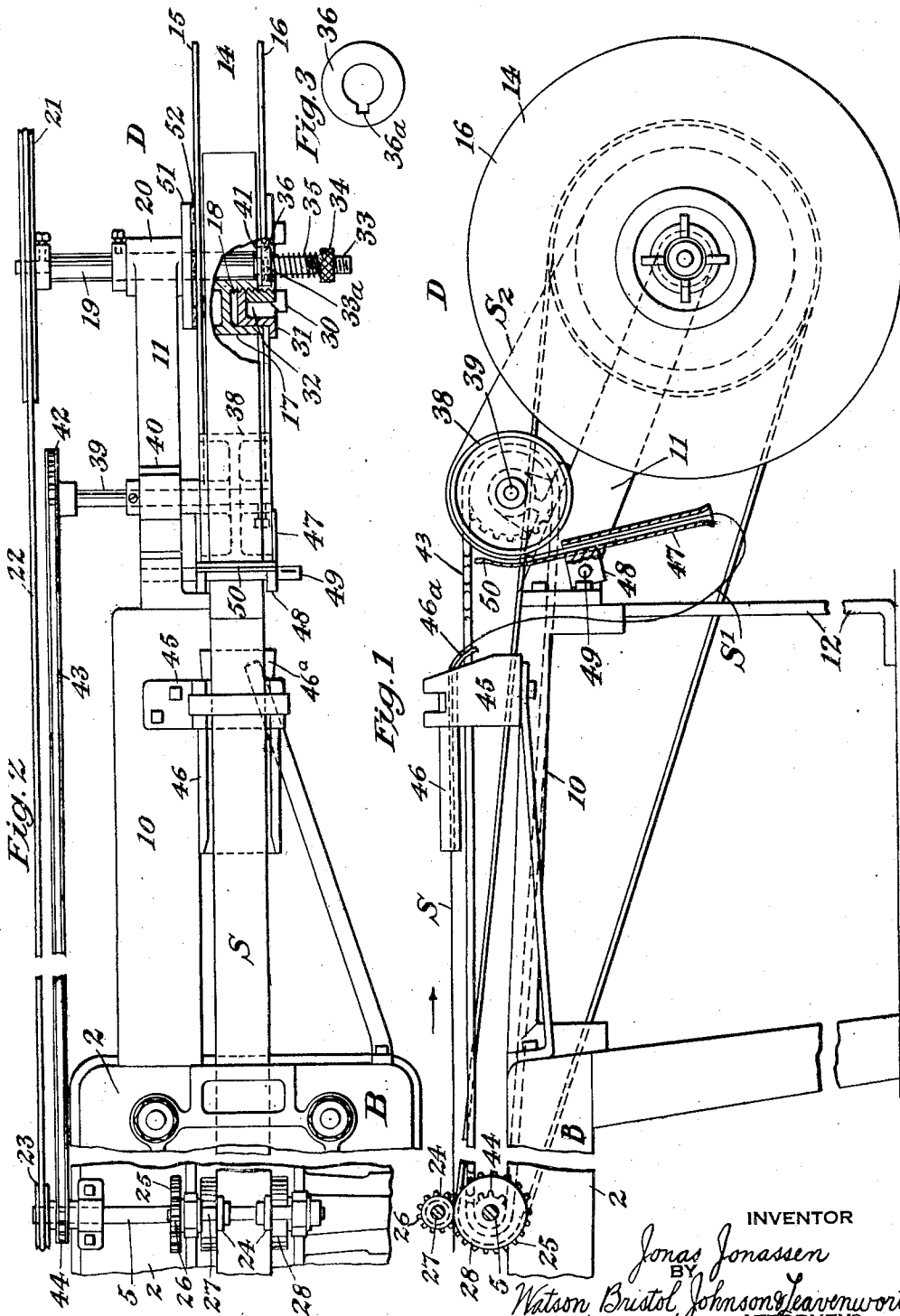
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REELING MECHANISM

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REELING MECHANISM

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Original application April 29, 1933, Serial No. 668,571, now Patent No. 2,083,566, dated June 15, 1937. Divided and this application June 11, 1937, Serial No. 147,652

7 Claims. (Cl. 242—55)

This invention relates to winding or reeling mechanism and more particularly to mechanism for reeling long strips of blanks for various articles such as containers, container covers and the like.

One of the principal objects of the invention is to provide an improved reel for such mechanism and another object is to provide a novel and convenient tension controller or loop controller for this type of apparatus. Another object is to provide such a loop controller which is adapted to maintain the rear part of the winding strip material in a comparatively slackened condition and to maintain the forward portion or that between the loop controller and the reel in a more taut condition.

This application is a divisional application of subject matter divided from my co-pending application, Ser. No. 668,571, filed April 29, 1933, Machines for making material for containers, container covers and the like, now Patent No. 2,083,566, of June 15, 1937, to which reference may be had.

The means I prefer to employ for accomplishing the above objects together with other advantageous features of my invention are illustrated in the drawing accompanying and forming part of this specification and in which—

Figure 1 is a diagrammatic side elevation of my improved reeling mechanism showing parts in section.

Fig. 2 is a diagrammatic plan of the same also showing parts in section, and

Fig. 3 is a detail side elevation of one of the reel collars.

Referring to the drawing, the letter D refers generally to the reeling or winding mechanism and B refers to any suitable mechanism used in conjunction with the reeling mechanism, such as a stamping, embossing or other mechanism.

The reeling or winding mechanism is preferably furnished with longitudinal frame members such as 10 and 11, the latter being preferably secured to the member 10 by suitable bolts and the member 10 being supported by suitable means connected with the floor such as the strut 12. In this instance the member 10 is secured to the forward end of the frame 2 of the mechanism B.

Carried by the right hand portion of the member 11 is the reel 14 which includes two comparatively large disks 15 and 16, the disk 15 being integral with a cylindrical portion or drum 17 having a hub 18 by which it is mounted on the shaft 19, the said shaft 19 being rotatable in the bearing 20 of the frame member 11 and having

suitably secured to it a grooved wheel or pulley 21 by which it is rotated. The wheel 21 is turned by the belt 22 which itself is driven by the grooved wheel 23 secured to the shaft 5 which is journaled on the frame 2.

There is a shaft 27 having feed rollers 24 secured to it and also a gear 26 meshing with a gear 25 secured to the shaft 5. The shaft 5 has a feed drum or roller 28 fastened to it and is turned by suitable power means (not shown) connected with the stamping or other mechanism B used in connection with the reeling mechanism and said means are suitably timed to act with said mechanism B.

The hub 18 of the reel 14 is externally screw threaded and mounted on it is a hand nut 30 which normally holds the flanged member 31 against the disk 16, the said flanged member having a recess 32 in which the hand nut lies. The shaft 19 is reduced in diameter and screw threaded at 33 and on it is a nut 34 which is effective for adjusting the spring 35 coiled around the portion 33. The spring 35 bears against a collar 36 which is slotted at 36a to engage a pin 33a secured in the portion 33 of said shaft 19. The collar 36 bears against the free collar 41 which in turn bears against the hub 18.

There is a drum or wheel 38 secured to a shaft 39 rotatable in a bearing 40 mounted on the frame member 11. The shaft 39 has a sprocket 42 secured to its rearward part and said sprocket is driven by a chain 43 driven by the sprocket 44 on the shaft 5.

On the frame member 10 is secured a bracket 45 which supports the guide member or chute 46 for supporting and guiding the web or strip of material S, which is permitted to pass downwardly at S1 and then to be drawn upward through the flat tube 47 which is mounted by means of its ears 48 on a rod 49 secured transversely on the frame member 11.

The upper part of the flat tube 47 has a resilient device 50 in the form of a slightly bent thin plate or spring leaf or extension and which element normally bears lightly on the drum or wheel 38 and when the strip S is drawn around the drum 38 on rotation of the same, the plate 50 drags on the material S so as to produce a slack portion in the form of the loop S1.

Secured to the shaft 19 is an annular member or face plate 51 having felt pads 52 which bear against the disk 15 so that the reel proper consisting of the plates 15 and 16 and drum 17 is frictionally held between the flanged member 31 and the face plate 51 and consequently the shaft

19 can turn at a slightly greater speed than the reel proper. This being the case the difference in rates will increase as the strip S is reeled and piles up between the disks 15 and 16. Thus it is practicable to reel up any amount of web the reel is capable of holding, with one speed of the wheel 21.

The rod 49 acts as a pivoting means for the tube 47 and spring plate 50 which members will act as one if oscillated on the rod 49 and thus the plate 50 can be made to bear more or less on the blank strip S. The tightness of the fit of the parts will usually be sufficient to hold the plate and tube in any desired position with relation to the wheel 38.

The shaft 5 operates at a constant speed and the shaft 19 operates at a constant speed but more slowly than the shaft 5 due to the larger diameter of the pulley 21. Also the shaft 39 operates at a constant speed but more slowly than the shaft 5 due to the sprocket 42 being of larger diameter than the sprocket 44. The drum 38 is of larger diameter than the sprocket 42 but its surface speed is slightly less than that of the drum 17 when the latter is driven at its slowest speed. Consequently the part of the strip at S2 is always in a taut condition.

The operation of the reeling mechanism is as follows:

The strip of blanks S is fed through the feed drum 28 and rollers 24 to the stamping or other mechanism B. From the mechanism B the strip S passes through the chute 46 and then passes downwardly over the curved portion 46a into a loop S1 and then up into the tube 47. Then upward through said tube under the plate 50, around the wheel or drum 38 to the reel 14.

The peripheral speed of the reel 14, if there were no slippage in the friction drive thereof, would be slightly greater at least than the peripheral speed of the feed rollers 24 and cooperating drum 28. The spring plate 50, however, causes a drag on the strip S, so that the strip S is maintained taut between the reel 14 and drum 38, but given a certain amount of slackness between the drum 38 and feed rollers 24 resulting in the loop S1 which tends to increase or decrease according as the pressure of the plate 50 permits. Slightly oscillating the tube 47 and plate 50 causes the latter to bear more or less on the strip S, so that the size of the loop S1 can be made to vary. Ordinarily the mere closeness of the fit of the ears 48 on the rod will be sufficient to hold the tube 47 in such position that the plate 50 can be given the desired pressure on the strip S, but if desired the ears 48 can be made with suitable clamping means so that the tube 47 can be positively clamped in position.

What I claim is:

1. A loop control embodying a continuously rotary web driving member, a guide tube for the

web extending transversely to the normal direct line of travel of the web to produce a loop therein, and resilient means thereon to press an adjacent part of the web against the rotary driving member.

2. A loop controller embodying a rotary wheel, a guide tube adjacent said wheel extending transversely to the normal direct line of travel of the web to produce a loop therein and having a resilient element at its upper part overhanging the wheel, and means whereby the resilient element can be brought nearer or farther from said wheel.

3. A loop controller embodying a cylindrical rotary member over which a strip of blanks can pass, means to rotate said member, a flat guide tube extending transversely to the normal direct line of travel of the web through which said strip can pass to engage said rotary member, a spring plate joined to the upper part of the guide tube, and pivoting means located below the rotary member whereby the spring plate can be brought nearer to or farther from the blank strip.

4. Web reeling mechanism having in combination therewith means for maintaining a depending loop in the web advancing to the reeling mechanism comprising a rotary feed drum, a depending tubular guide member located in front of said feed drum, and a resilient member to press the web against said roller.

5. In combination, in a reeling mechanism, web feeding means, guide means after the web feeding means, loop controlling means after the guide means and including a rotary drum, a guide element and a spring leaf, both of the last two elements disposed transversely to the length of the mechanism, a rotatable reel, and slippable means to drive the reel.

6. In combination, in a reeling mechanism, a longitudinal guide chute, means for advancing a strip of material along said chute, a pivoted tubular loop controlling member adjacent the delivery end of said chute and arranged transverse to the length of the mechanism, a strip feeding drum above the pivotal axis of said tubular member and cooperative therewith, a reel after said drum, means to rotate the drum, and friction means to rotate the reel at a greater speed than that of the drum and said first mentioned means.

7. In combination, a positive web feeding means, a winding reel, an impositive frictional rotary drive for said reel, and web control means located between the web feed and the winding reel to vary the slippage of said reel drive and maintain a limited amount of slack in the web in advance of said web feeding mechanism comprising a rotary driven drum over which the web travels, and a pivoted guide for the web extending transversely to the normal line of web travel to said drum to divert the web into a loop and cause the web frictionally to engage said drum.

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