April 1, 1952 W. A. ROFFEY ET AL 2,591,199

APPARATUS FOR FEEDING LABELS OR BLANKS

Filed Sept. 19, 1949

3 Sheets-Sheet 1

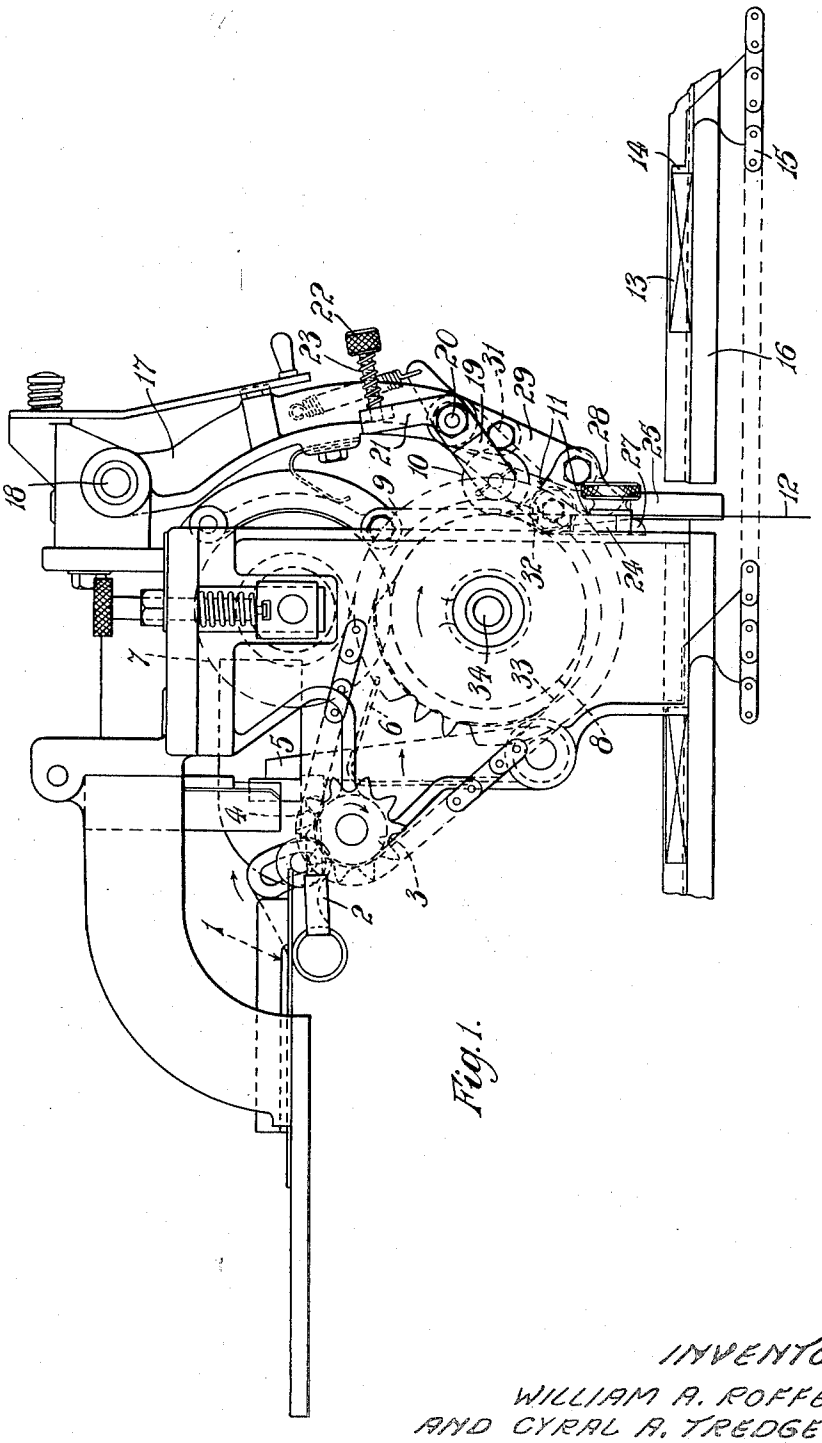


Fig. 1.

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Filed Sept. 19, 1949 3 Sheets-Sheet 2

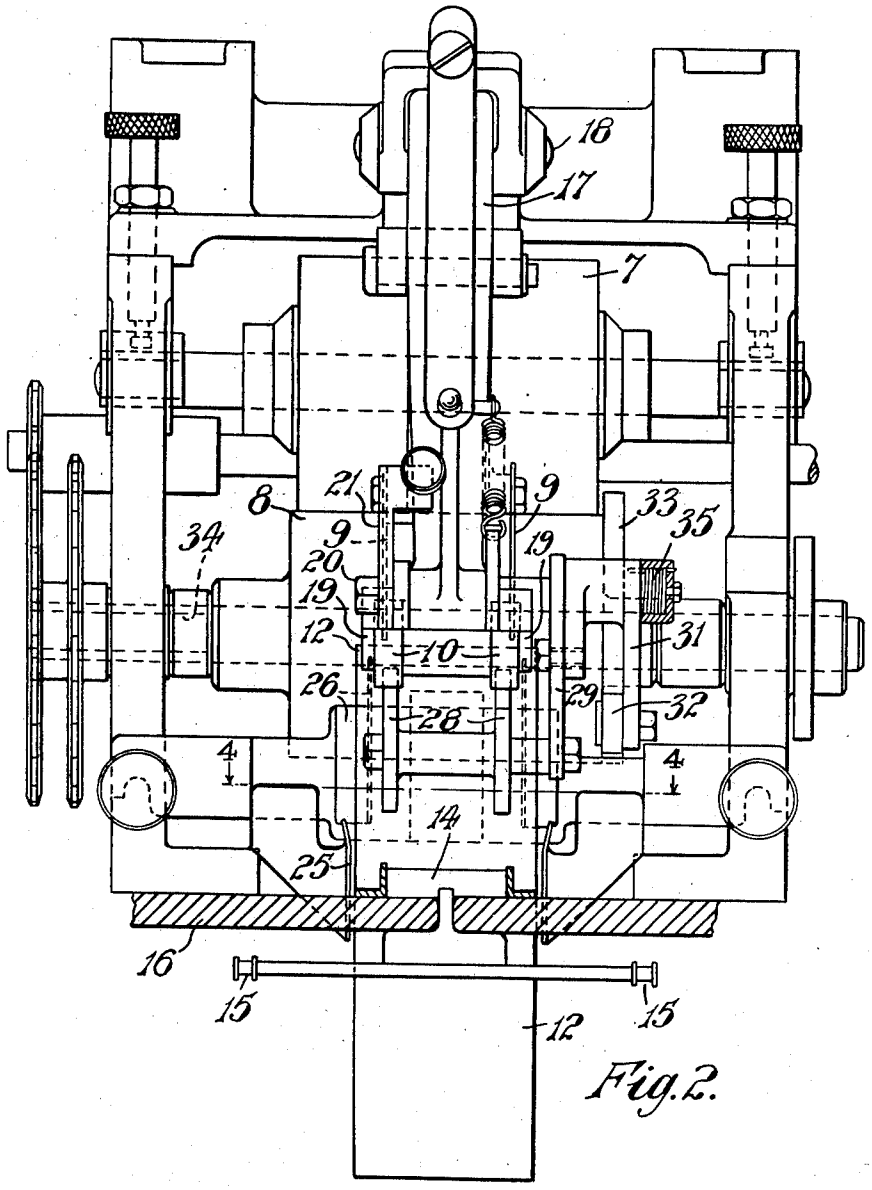


Fig. 2.

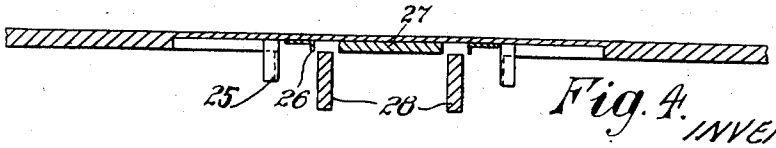


Fig. 4.

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3 Sheets-Sheet 3

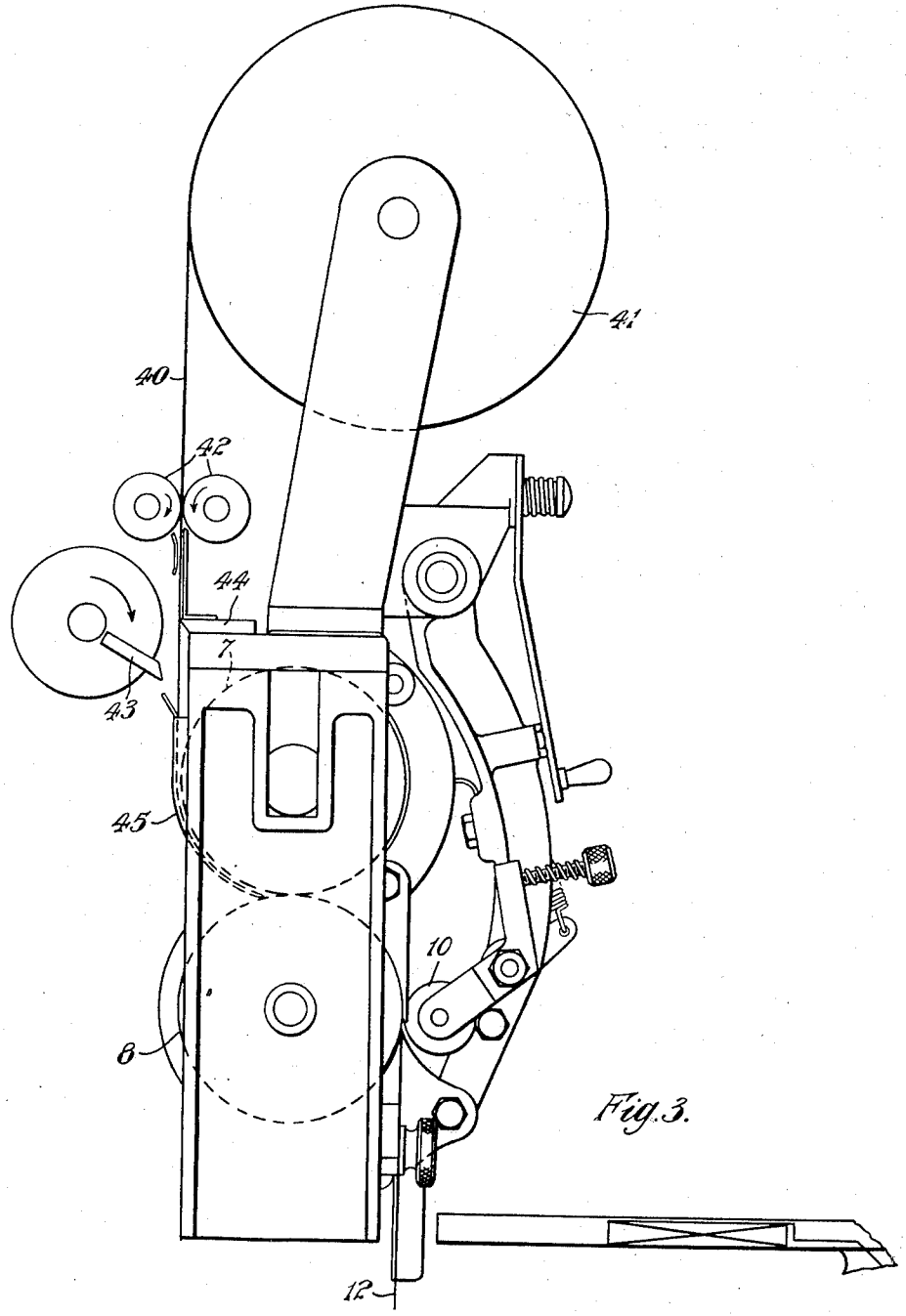


Fig. 3.

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UNITED STATES PATENT OFFICE

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APPARATUS FOR FEEDING LABELS OR BLANKS

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Application September 19, 1949, Serial No. 116,492
In Great Britain October 1, 1948

2 Claims. (Cl. 53—155)

1

This invention concerns improvements in or relating to apparatus for feeding labels or blanks to packing, wrapping, printing and other machines. The invention is mainly intended for use with feeds of the type in which cut blanks are fed from a pile but it is also suitable for use with reel feed apparatus.

An object of the invention is to provide apparatus of the kind referred to in which a label or blank on being fed out of the feed rollers of the apparatus is held in a definite position so that in any subsequent operations the blank is in perfect register with the devices performing such operations. For example where printed blanks are to be fed in a wrapping machine of the kind in which the blanks intersect the path of the articles to be wrapped, which move along on a conveyor, it is essential that a blank shall be disposed in exact position across the article path so that the folding lines of the folded blank register with the printing or printed panels of the blank.

According to the invention there is provided apparatus of the kind referred to comprising a pair of feed rollers and a gripper or the like on the exit side of the rollers adapted to receive the blank as it emerges from the feed rollers and hold it in a position which is fixed relatively to the fixed parts of the apparatus and from which it may be removed by any other devices which are thus enabled to engage the blank in exact register with the leading and trailing edges thereof.

The gripper may be a friction gripper through which the blank is fed by the feed rollers and so arranged that the friction between blank and gripper is sufficient to ensure that the blank is instantly arrested as its rear end moves out of the bite of the feed rollers. The gripper may be adjustable to enable the friction to be varied and may be opened by mechanical means, such as a cam, so that a blank may be fed into the gripper while the latter is open and gripped towards the end of its movement and later removed from the gripper by a further device, the gripper releasing the blank as soon as said device has securely engaged the blank so that removal is effected without undue force or drag which might impair the register or mark the blank.

The feed rollers, or one of them, may be adjustable so that the point of delivery of the blank therefrom may be varied with respect to the position of the gripper. Conveniently, the pressure roller of the pair may be adjustable, as by pivotally mounting the roller, in which case the pressure roller (and the location of the bite of the rollers) may be adjusted while the apparatus is in operation. In this way register may be secured with respect to a printed line running transversely to the direction of movement of the blank as sometimes it is desired to register with respect to a printed panel of the blank rather than with respect to an edge.

2

The invention will be more fully described with reference to the accompanying drawings in which:

Figure 1 is a side elevation showing the application to a known type of wrapping machine.

Figure 2 is an end elevation of Figure 1, partly in section.

Figure 3 is a side elevation of a modified form of the apparatus, and

Figure 4 is a section on the line 4—4 of Figure 2.

Referring to Figures 1 and 2 of the drawings the blanks (not shown) are stacked in a pile on a table 1 and the lowest blank is drawn down at its leading edge by an oscillating sucker 2 on to a rotating roller 3. A small co-operating roller 4 is supported on an oscillating arm 5 and moves into contact with the upper surface of the blank as soon as the latter is drawn down on to the roller 3. These suction feeds are well known and numerous descriptions are available in patent specifications so further detail appears unnecessary. The blank is forwarded by the rollers 3 and 4 down a guide 6 between two large rollers 7 and 8 which feed it onwards and perform creasing and like operations on it meanwhile. Guides 9 prevent the blank from leaving the roller 8 so the blank bends and runs beneath a small pressure roller 10 from which it passes into a friction gripper 11 which exerts sufficient friction on the blank to cause it to stay still immediately its trailing end emerges from the bite of the rollers 8 and 10. The blank is thus positioned vertically as shown in Figure 1 where it is marked with the reference 12. In this way it is accurately positioned and an article 13 carried by a pusher 14 mounted on a chain conveyor 15 running along a bed 16 can engage the blank for the usual folding operations to take place in exact register with printing or the like on the blank.

It is desired to vary the radial position of the bite of the rollers 8 and 10 with respect to the axis of the roller 8 and this is effected by the construction about to be described and best seen in Figure 2. The roller 10 and associated parts are attached to the apparatus by a lever 17 which is pivoted at 18 the roller 10 being attached to the lever 17 by a short arm 19.

The point of attachment of the arm 19 to the lever 17 is formed as a pivot 20 so that the roller

10 can be swung about this pivot whereby it is possible to vary the radial position of the bite of the rollers with respect to the axis of the roller 8. In this way the point of contact, and thus the discharge position of the blank, can be raised or lowered with respect to the surface of the machine bed 16. The adjustment of the roller 10 is provided by making the arm 19 as a bell crank lever with the other arm 21 extending along the lever 17 and fitting it with an adjusting screw 22 engaging a surface on the lever 17 so that by turning the screw in or out, the roller 10 pivots about the end of the lever 17. A spring 23 cooperates with the screw to secure movement of the roller arm when the screw is being unscrewed.

A guide 24 for the blank has a pair of angle guides 25 fitted to it which define the path of the blank edges said guides extending down below the machine bed and terminating at their upper ends between the level of the bed and the bite of the rollers. Above these guides another pair of angle guides 26 extend up to the periphery of the roller 88 these guides being spaced apart so that they are each about ¼'' inside the corresponding lower guide. Between the upper guides is fixed a block 27 of friction material (e. g. vulcanised fibre) whose surface forms a rubbing face for engaging the inner surface of the blank. The block is about an inch narrower than the space between the angle guides 26 and in each of the intervening spaces is located a brass friction bar 28 which engages the outer surface of the blank. The two bars are fixed to an arm 29 which is pivoted on the same axis as the pivot 20 to the frame of the apparatus and has attached to its pivot a lever 31 having a cam roller 32 at its free end.

A cam 33 fixed to the spindle 34 of the roller 8 moves the friction bars 28 towards and away from the blank at each revolution. The pivot of the arm 29 carrying the bars 28 comprises an adjustable torsion spring 35 whereby the bars may be urged towards the blank to cause more or less pressure thereon when the bars are in blank engaging position. By these devices the cross section of the blank is bent to a more or less wavy form so that longitudinally it is rigid enough for effective lengthwise feeding and it is frictionally gripped with sufficient pressure to ensure that instantly it completely emerges from the rollers 8 and 10 it becomes motionless with its horizontal edges definitely positioned with respect to the level of the surface of the bed.

Thus as an article 13 is carried along by a pusher 14 of the conveyor the blank is folded around it, the folding lines across the blank being precisely where they are desired. If the register is not correct, or it is desired to vary it so that for example a printed panel is exactly central with the base of the finished packet it is only necessary to turn the adjusting screw 22 a trifle to adjust the register. The cam 33 opens the gripper to receive the blank which is engaged by

the gripper near the end of the blank movement and the cam releases the blank from the gripper as soon as the blank is firmly engaged by the article so that it cannot lose its register.

The invention may also be applied to reel feeds where the web is usually cut just after it is engaged by the article as the timing of the web feeding is rather difficult and it might be more convenient to cut the web, and handle the cut blank in the manner described above.

An arrangement of this nature is briefly indicated in Figure 3 where a web 40 is fed from a reel 41 by pulling rollers 42 and cut by a rotary knife 43 and fixed knife 44 after its leading end has been guided by a guide 45 into the grip of the rollers 7 and 8. The remainder of the apparatus is the same as above described with reference to Figures 1 and 2, so the description does not need to be repeated.

What we claim as our invention and desire to secure by Letters Patent is:

1. Blank feeding apparatus for use in wrapping machines of the type in which blanks are successively fed into a position intersecting the path of advance of a series of articles to be wrapped, comprising, in combination, a pair of coacting feed rollers for engaging and forwarding successive blanks, devices at the exit side of said rollers for frictionally gripping each blank so forwarded to arrest the blank in the position to which it has been forwarded by said rollers, and means supporting one of said feed rollers for circumferential adjustment about the axis of the coacting roller and toward or away from said gripping devices, whereby the arrested position of the blank may be adjusted to exact registry with the advancing article.

2. Blank feeding apparatus for use in wrapping machines of the type in which blanks are successively fed into a position intersecting the path of advance of a series of articles to be wrapped, comprising, in combination, a pair of coacting feed rollers for engaging and forwarding successive blanks, devices at the exit side of said rollers for frictionally gripping each blank so forwarded to arrest the blank in the position to which it has been forwarded by said rollers, and means supporting at least one of said feed rollers for adjustment toward or away from said gripping devices, whereby the arrested position of the blank may be adjusted to exact registry with the advancing article.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,397,190	Malhoit	Mar. 26, 1946