

June 25, 1963

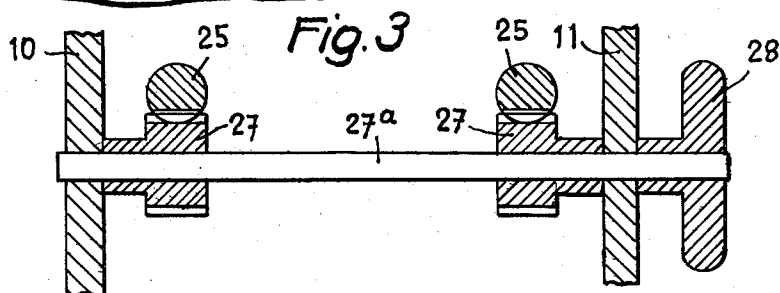
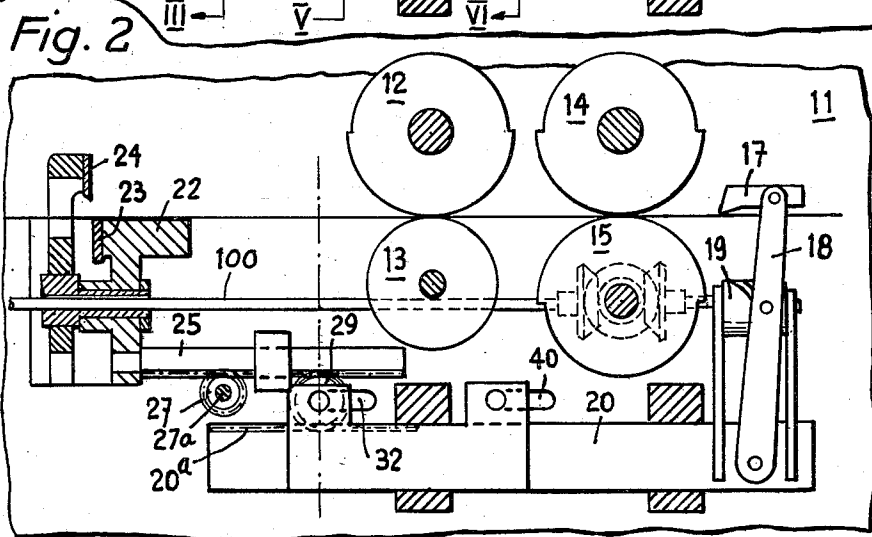
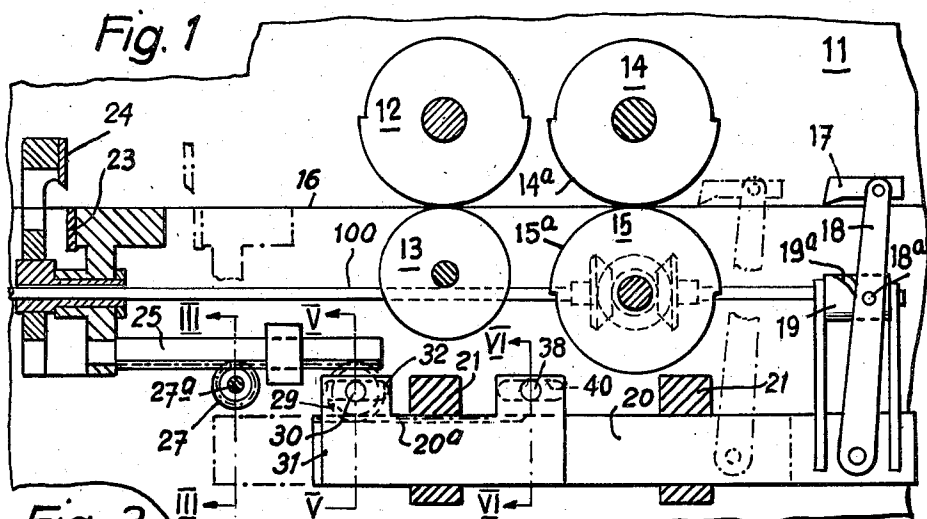
F. HUBER

3,094,925

LABEL PRINTING MACHINES

Filed Oct. 1, 1958

3 Sheets-Sheet 1



INVENTOR:
FRITZ HUBER
BY *Leon M. Strauss*
ATT.

June 25, 1963

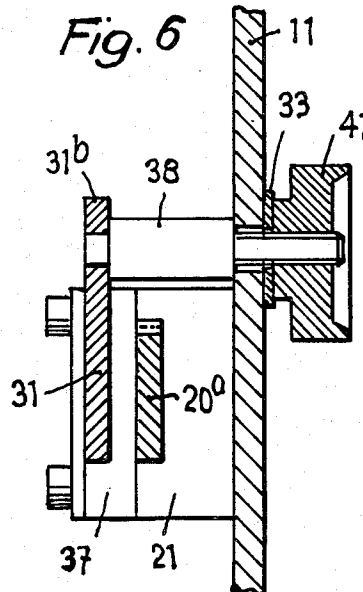
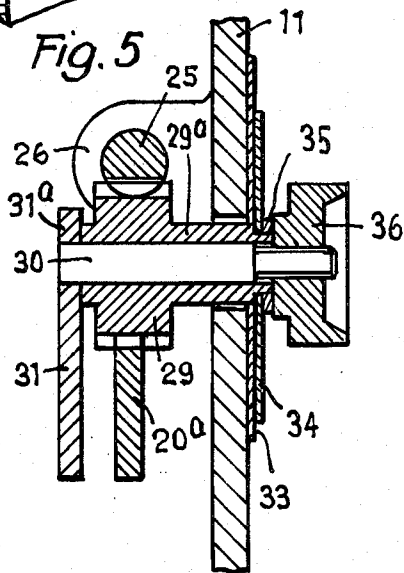
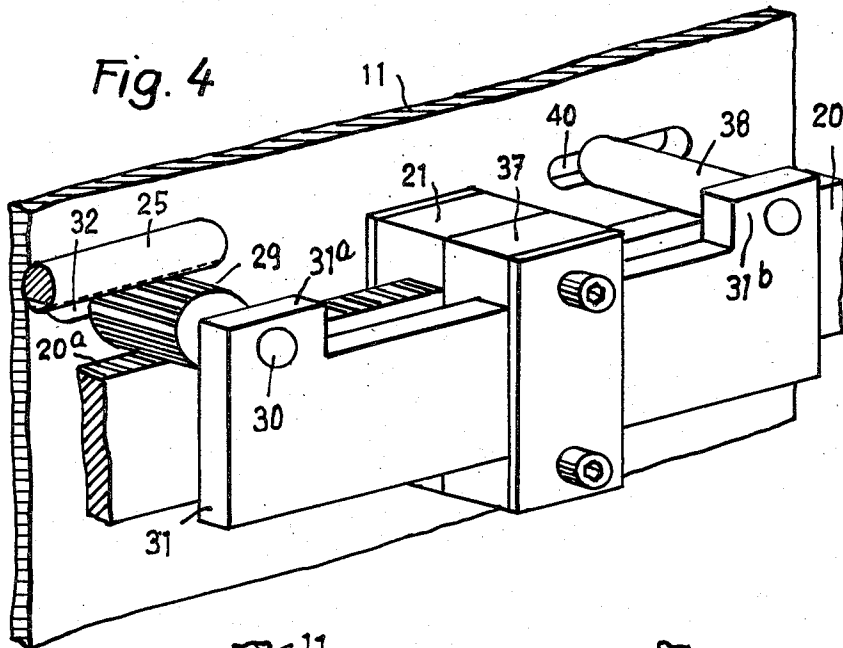
F. HUBER

3,094,925

LABEL PRINTING MACHINES

Filed Oct. 1, 1958

3 Sheets-Sheet 2



INVENTOR:
FRITZ HUBER
By *Leon M. Strauss*
AGT.

June 25, 1963

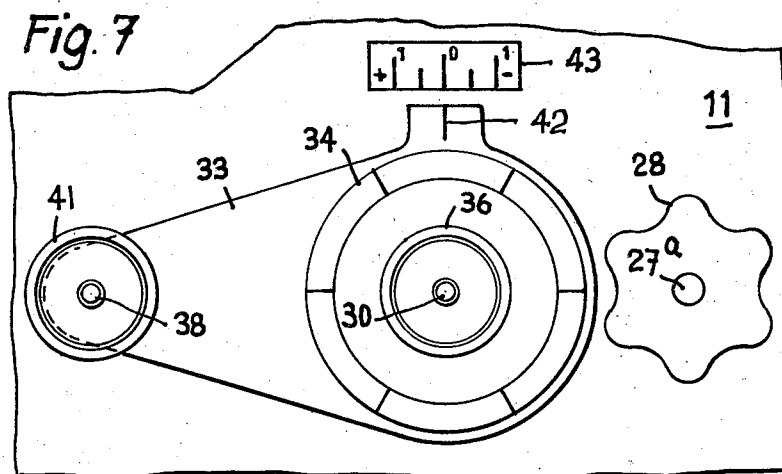
F. HUBER

3,094,925

LABEL PRINTING MACHINES

Filed Oct. 1, 1958

3 Sheets-Sheet 3



INVENTOR:
FRITZ HUBER
BY *Henry M. Strauss*
AGT.

1

3,094,925

LABEL PRINTING MACHINES

Fritz Huber, Basel, Switzerland, assignor to Guhl & Scheibler A.G., Basel, Switzerland, a Swiss company

Filed Oct. 1, 1958, Ser. No. 764,564

Claims priority, application Switzerland Nov. 18, 1957

9 Claims. (Cl. 101-227)

The present invention relates to a label printing machine having for an object the provision of means for simultaneously adjusting rate of feed and impression on printed labels. The construction of this invention features an arrangement comprising an impression cylinder and a backing cylinder, a pair of feed rolls having segment-shaped peripheral portions coacting to feed a preprinted label web formed with transversely aligned perforations intermittently to said cylinders, a correcting device arranged before said feed rolls and having reciprocating teeth in a comblike arrangement, the tips of which teeth engage the transversely aligned perforations of said label web, and a cutting device which is arranged behind said two cylinders to cut off the printed labels in the rhythm of the feed movement of the label web.

It is known that in conventional label printing machine the correcting device serves to compensate any feed variations with respect to the preprinted label web. Moreover, the correcting device is adjustable to vary the impression applied to the label with respect to the matter previously printed thereon. An adjustment of the correcting device involves necessarily a corresponding adjustment of the cutting device. In the previously known label printing machines of this type a separate adjustment of both devices was necessary.

To avoid this and to enable a simultaneous, interdependent adjustment of both devices, they are mounted according to the invention on two horizontally extending slidable carriers, which have common drive means permitting of a displacement of both carriers towards and from each other by equal distances.

In a preferred embodiment of the invention these drive means comprise a rack and pinion gear having one rack carried by one slidable carrier and a second rack correspondingly carried by the other slidable carrier. Both racks mesh with a common pinion, whereby the two slidable carriers are displaced towards or from each other if a displacement is imparted to one of said carriers in order to adjust both devices.

An illustrative embodiment of the invention is shown on the accompanying drawing.

FIGS. 1 and 2 are longitudinal sectional views showing the label printing apparatus.

FIG. 3 is a cross-sectional view taken on line III—III in FIG. 1.

FIG. 4 is a perspective view of a portion of the machine.

FIGS. 5 and 6 are cross-sectional views taken on lines V—V and VI—VI, respectively, of FIG. 1, and

FIG. 7 is a fragmentary elevational view showing the rear portion of the machine.

The label printing machine shown in FIGS. 1 to 6 has two side walls 10 and 11, of which only the rear wall 11 is shown in FIGS. 1 and 2. The shafts of various cylinders or rolls are mounted in these two side walls. 12 is an impression cylinder, 13 the cooperating backing cylinder. 14 and 15 are two coacting feed rolls having each a segment-shaped peripheral portion 14a and 15a, respectively. These two feed rolls are rotated by drive means not shown. A preprinted label web 16 having transversely aligned perforations lies between said segment-shaped peripheral portions 14a and 15a, which rolls cooperate with each other to feed said web intermittently between the two cylinders 12 and 13 in increments

2

corresponding to the distance over which the segment-shaped peripheral portions 14a and 15a contact each other. The impression cylinder 12 provides the desired impression on the labels. Before the pair of feed rollers 14, 15, a correcting device is provided, which has teeth 17 arranged like a comb and reciprocating in the direction of the label web 16 during the operation of the machine. This is effected by a rocker lever 18, which has associated with it a driven cam roll 19 having a cam groove 19a, which is engaged by a pin 18a carried by the rocker lever 18. The teeth 17 engage the transversely aligned perforations and advance the label web 16 by about 2 mm. upon each stroke before the segment-shaped peripheral portions of the feed rolls engage the label web.

The entire correcting device is carried on one end of a horizontally extending slidable carrier or support 20, which is formed by a rail arranged on edge and is slidably mounted in bearing brackets 21 affixed to the side wall 11 (see also FIG. 4). The slidable support 20 is formed as a rack 20a on the upper side of its end portion remote from the correcting device.

Behind the impression cylinder 12 a cutting device is provided, which comprises a lower knife 23, which is affixed to the support 22 for the label web 16, and an upper knife 24, which coacts with the lower knife and is vertically reciprocated by a drive. This cutting device cuts successive labels from the web 16 as the same is fed. The drive connection between the correcting or repositioning device and the reciprocating cutting blade is of conventional structure and is generally indicated by reference numeral 100. The cutting device is carried by the outer end of a slidable support, which comprises two slidable rods 25 (see also FIG. 3), which are slidably mounted in guides 26 carried by the two side walls 10 and 11. These two slidable rods 25 are formed on their underside with teeth each so that they form at the same time racks, each of which is in mesh with a pinion 27. These two pinions 27 are affixed to a common shaft 27a, which is rotatably mounted in the two side walls 10 and 11 and carries a rotary handle 28 on its end extending through the side wall 11. One of the two racks 25 is disposed opposite the rack 20a and forms therewith, and with a pinion 29 in mesh with these two racks, a rack and pinion gear. The pinion 29 is rotatably mounted on a shaft 30, one end of which is affixed to one limb 31a of a U-shaped support 31. As is apparent from FIG. 5 the pinion 29 has a prolonged hub portion 29a extending through a horizontal slot 32 in the side wall 11 and through a corresponding hole in a plate member 33, which is affixed to the outside of the side wall 11 and the purpose of which will be apparent from subsequent explanations. The end portion with which the prolonged hub 29a protrudes beyond the plate member 33 is reduced to form an engaging shoulder and is provided with an external screw thread. In mesh with this external screw thread is a flat nut 35 urging a dial 34 against said engaging shoulder. The outer end of the shaft 30 is also reduced and formed with a screw thread, on which a lock nut 36 is screwed. Tightening of this nut causes a clamping action in an axial direction to lock the pinion 29 and thus to lock the two racks 25 and 20a relative to each other.

FIG. 6 shows locking means which serve to prevent a displacement of the pinion 29 in the guide slot 32. These locking means comprise a pin 38, which is affixed in the limb 31b of the U-shaped support 31 and has a reduced screw-threaded portion extending through a slot 40 in the side wall 11 and through a hole in the plate 33 and carries a lock nut 41. Tightening this nut 41 will cause the shoulder of the pin 38 to engage the side wall 11 so that a displacement of the support 31 and of the pinion 29 is prevented.

To print labels having a predetermined length, the two feed rolls 14, 15 as well as the correcting and cutting devices must be appropriately adjusted. To adjust these two devices the lock nut 41 is tightened first to fix the support 31 in position and with it the shaft 30 of the pinion 29, as mentioned hereinbefore. Now the rotary handle 28 is rotated. The direction of rotation depends on whether the machine is to be set for printing shorter or longer labels. In any case this will cause a displacement of the two racks 25 and 20 towards or from each other by equal distances, depending on the direction of rotation of the rotary handle 28. The adjusting operation is extremely simple because a rotation of the handle 28 will cause the correcting and cutting devices to be adjusted simultaneously and in a predetermined interdependence. The amount of this displacement can be controlled by reference to the dial 34, which rotates with the pinion 29. In FIG. 2 the machine is shown in a condition for printing labels shorter than those which can be printed in the condition of FIG. 1.

Even if the machine is exactly adjusted to a predetermined length of the label the matter printed on the label may not be exactly in the correct position and have to be shifted by a small distance. To this end the lock nut 41 is loosened and the lock nut 36 is tightened. This will lock the pinion 29, as has been explained hereinbefore. A rotation of the rotary handle 28 will now cause a displacement of the rack 25 and also of the rack 20a and the slidable carrier 20 because the locked pinion 29 acts as a driver. Thus, the two sliding carriers 25 and 20 and the devices carried by them are moved in the same direction by equal distances, whereby the position of the matter printed on the label may be shifted as required.

The plate 33 has a mark 42, which facilitates the adjustment of the dial 34 and the reading and adjusting of the above-mentioned shifting of the position of the printed matter relative to the blank printed on the labels. The arrangement of this plate 33 results from the need for a point of reference for a reliable adjustment of the dial 34 irrespective of the position of the dial 34 relative to the side wall 11 because this position may vary in dependence on the position of the support 31. This mark 42 may also be used to facilitate the reading and adjusting of the shifting of the position of the printed matter. The amount of this shifting can be adjusted with the aid of a scale 43 on the side wall.

What is claimed is:

1. In a printing machine including rotatable printing means and means for feeding blanks to said printing means in timed relationship thereto, the improvement comprising a wall structure, a first support movably mounted upon the wall structure, blank positioning means carried on said first support for repositioning said blanks moved by said feed means, said blank positioning means being operable in timed relationship to said printing means and including a movable member arranged to contact each blank and reposition it along the feed path, said movable member being displaceable in respect to said blank feeding means along with said first movable support, a second support movably mounted upon the wall structure, knife means carried on said second support including a blade disposed to reciprocate into the path of feed of said blanks as they are discharged from said printing means to sever said blanks, and control means for selectively shifting said first and second supports relative to each other and relative to said printing means including a lockable rotatable drive member interconnecting said first and second movable supports operable to effect interdependent movement of one of said supports relative to the other when said lockable drive member is rotated, and when locked, to effect combined movement of said first and second supports relative to said printing means, whereby to adjust cutting and feeding to effect operation on various blank sizes.

2. In a printing machine according to claim 1, wherein said blank positioning means includes a lever pivotally mounted on said first support, a drum cam operatively engaging said lever intermediate its length for oscillating said lever, and wherein said movable member is mounted in the end of said lever and is oscillated thereby.

3. A blank repositioning and cutting device for use with means for feeding and operating upon blanks as they are fed through a prescribed path, comprising a first support member adjacent said feed path, means on said first member for repositioning blanks in said feed path including a member movable into said feed path to contact and reposition said blanks, means associated with said repositioning means connectable to said feeding and operating means for moving said movable member in timed relationship thereto, a second support adjacent said feed path, blank severing means on said second support including a knife reciprocable into said feed path to sever said blanks, said knife being connectable to said feeding and operating means for reciprocating said knife in timed relationship thereto, and control means for selectively shifting said first and second supports relatively to each other and relatively to said means for feeding and operating upon said blanks, including a driving connection between said first and second supports permitting interdependent movement of one of said supports relative to the other.

4. A blank repositioning and cutting device according to claim 3, wherein said driving connection is lockable to effect combined movement of said first and second supports relative to said feed path.

5. A blank repositioning and cutting device according to claim 3, wherein said control means includes a rotatable gear and each of said first and second supports have rack portions in engagement therewith.

6. A blank repositioning and cutting device according to claim 5, including means for locking at least one of said first and second supports relative to said blank feed path.

7. A blank repositioning and cutting device according to claim 3, including means for locking said connection.

8. A blank repositioning and cutting device according to claim 7, including handle means for moving at least one of said first and second supports.

9. In a label printing machine, two side walls, rotatable cooperating impression and backing cylinders mounted upon the side walls, feed rolls with segment-shaped portions cooperating with one another so as to intermittently feed a perforated label web between the cylinders through the distance that the segment-shaped portions contact each other, a reciprocable correction device engageable with the label perforations to position the label web, a horizontally-extending support slidably mounted upon said side walls, said corrective device having carried upon said slidable support, said slidable support having rack teeth, a second horizontally-extending support slidably mounted upon said side walls and overlying the first mentioned slidable support, a vertically-reciprocated knife cutting device receiving the label web from the impression cylinder, said cutting device being carried by the second slidable support, said second slidable support having rack teeth, a hand-operated rack pinion means mounted upon the side walls and in mesh with the rack teeth of the second support to effect the horizontal adjustment of the second support and the cutting device, a second rack pinion interconnecting the rack teeth of the respective first and second slidable supports, a third horizontally-extending support slidably mounted upon one of said side walls parallel and adjacent to said first-mentioned slidable support, said latter one side wall having longitudinally-spaced horizontally-elongated slots, said second rack pinion being rotatably carried upon said third slidable support and having a prolonged hub portion extending through one of said horizontally-elongated slots, lock nut means threaded upon

5

the hub portion to lock the pinion to the third slidable support and thereby the first and second slidable rack supports to each other, a locking pin extending from said third slidable support, the other horizontally elongated slot and lock nut means threaded upon said locking pin to lock the third slidable support and the interconnecting pinion against horizontal displacement, whereby to provide for the adjustment of the correcting and cutting device and compensate for any variations in the length of a pre-printed label web.

10 619,883

References Cited in the file of this patent

UNITED STATES PATENTS

1,188,650 Heinrichs ----- June 27, 1916

6

Piepenbring ----- July 17, 1934
Helsel ----- Oct. 29, 1940
Marsh et al. ----- May 12, 1953
Hart et al. ----- Sept. 11, 1956
Di Pascuale ----- Jan. 7, 1958
Allen ----- Feb. 25, 1958
Schlegel et al. ----- Aug. 15, 1961

FOREIGN PATENTS

Great Britain ----- Mar. 16, 1949