

May 19, 1964

M. SEIFERT

3,133,466

PHOTO ELECTRIC ROLL LABEL DISPENSER

Filed May 29, 1958

2 Sheets-Sheet 1

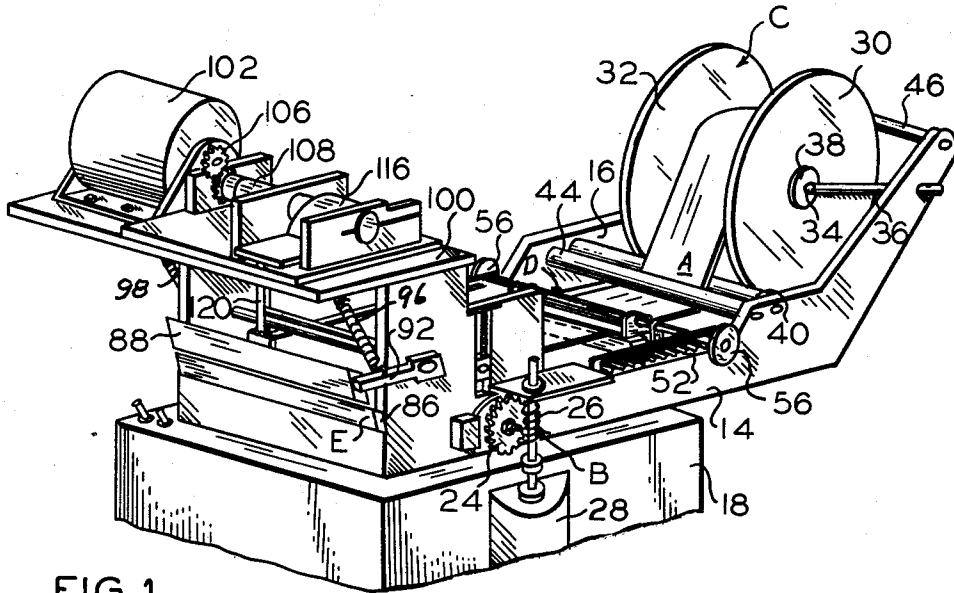


FIG. 1

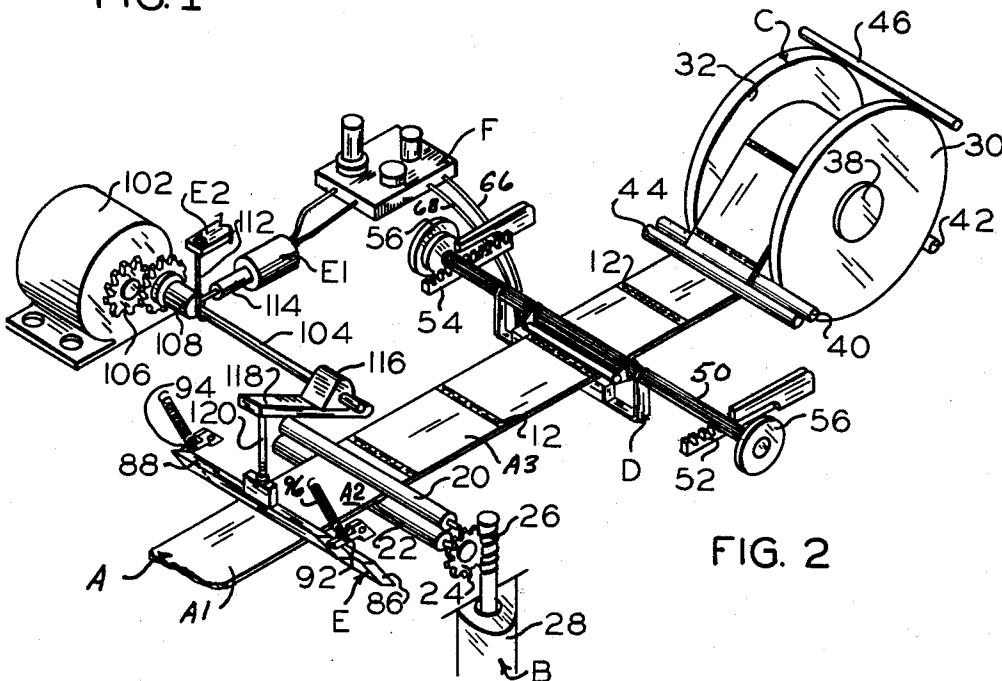


FIG. 2

INVENTOR.
MAURICE SEIFERT

BY

Harry Longman
Anthony R. Allen
ATTORNEYS

May 19, 1964

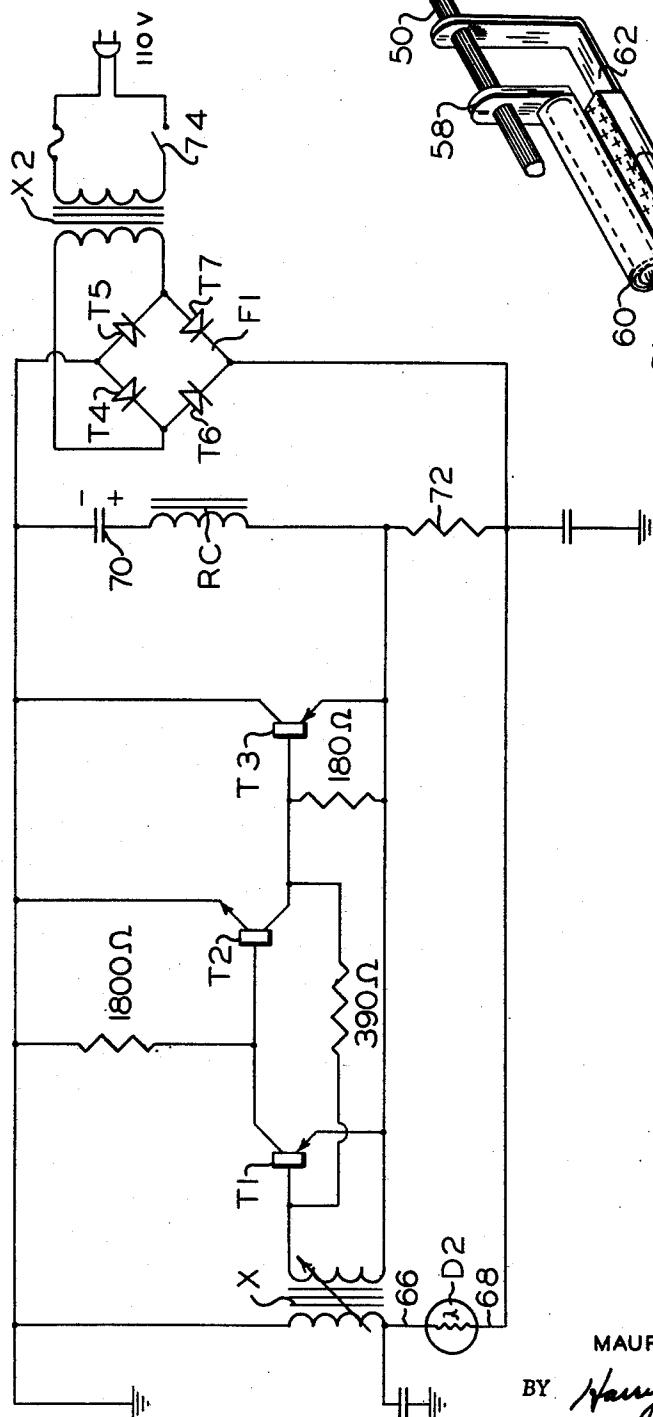
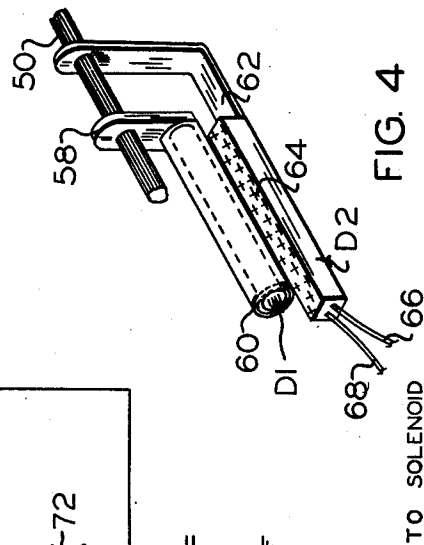
M. SEIFERT

3,133,466

PHOTO ELECTRIC ROLL LABEL DISPENSER

Filed May 29, 1958

2 Sheets-Sheet 2



INVENTOR.
MAURICE SEIFERT

BY *Harry Longsane*
Samuel Nelson
ATTORNEYS

1

3,133,466

PHOTO ELECTRIC ROLL LABEL DISPENSER
Maurice Seifert, Philadelphia, Pa., assignor to Dumatic Industries, Inc., Philadelphia, Pa., a corporation of Pennsylvania

Filed May 29, 1958, Ser. No. 738,748

2 Claims. (Cl. 83-211)

My invention relates to a dispensing machine for roll or strip type labels and more particularly relates to a machine wherein labels are dispensed directly from a roll or continuous strip for application upon an article of commerce, or its package, or container.

Heretofore, roll label dispensing machines have been employed wherein a plurality of holes or apertures are cut or formed in the roll of labels when the printed indicia was placed on the strip, the holes or apertures serving to actuate indexing means within the label machines for severing an individual label from the strip at a subsequent point thereon.

Since roll or strip form labels are printed or stamped with a source, trademark or design configuration or indicia, it was necessary for the cut-off means of the machine to communicate with the configuration or indicia on the strip so that the dispensed labels would be uniformly centered when cut off.

While the indexing or configuration holes of the prior art strips or rolls served to actuate the dispenser machine circuit, the holes naturally intruded upon the edges of the finished label and thereby presented an irregular appearance on the ends thereof. In addition, even though the line of cut was through the center of the registration hole, the contour of the hole was retained in a half moon effect to mar the finished label appearance.

In addition, the prior art devices had no means for continuously adjusting the point of cut-off of the subsequent label, whereby the line of sever could be accurately performed through the center of the registration hole. Moreover, the prior art devices had no means therein which could adjust the cut-off point continually at any period of feeding from the dispensed roll.

It therefore is an object of my invention to provide a roll label dispensing machine wherein no registration holes at all are necessary for indexing the line of cut of individual labels from the strip.

Another object of my invention is to provide a roll label dispensing machine wherein the indexing means may be the printed indicia of the label itself.

Another object of my invention is to provide a roll label dispensing machine wherein individual labels may be severed from the roll accurately and continuously at any period of operation of the machine.

Another object of my invention is to provide a roll label dispensing machine wherein the indexing means is actuated by a photo electrical effect.

Another object of my invention is to provide a photo electric roll label dispenser wherein the length of severed labels to be cut may be easily and rapidly adjusted without stopping the machine.

Another object of my invention is to provide a photo electric roll label dispenser which will automatically sever individual labels from a strip having fluorescent, phosphorescent or self-exciting indexing media thereon.

Another object of my invention is to provide a roll label dispenser wherein the individual labels are severed from the strip with smooth edges.

Another object of my invention is to provide a roll label dispenser wherein the labels may be easily positioned laterally while the dispensing machine is in operation at full speed.

Another object of my invention is to provide a roll label dispenser wherein labels may be cut off at a predetermined

2

position continually and while the machine is in operation at any particular speed.

Another object of my invention is to provide a strip or roll of labels having fluorescent printing thereon for actuation of a photo electric roll label dispenser.

The foregoing objects are achieved by the provision of a roll label dispenser having a support for holding a roll of labels in a continuous strip, automatic means for cutting the label from the strip or roll, fluorescent indicia on the roll of labels at spaced intervals thereon for actuating a photo electric circuit, means to feed the labels continuously into the machine, and photo electric indexing means responsive to the fluorescent indicia in the strip itself for controlling the shear line of the individual labels, and means for longitudinally adjusting the indexing means whereby the line of shear may be continually controlled by manual adjustment of the photo electric indexing means.

Other objects of my invention are to provide an improved device of the character described, that is easily and economically produced, which is sturdy in construction, and which is highly efficient in operation.

With the above and related objects in view, my invention consists in the details of construction and combination of parts as will be more fully understood from the following description when read in conjunction with the accompanying drawings, in which:

FIG. 1 is a perspective view of a photo electric roll label dispenser embodying my invention.

FIG. 2 is a perspective view of the indexing and severing means embodied in my invention.

FIG. 3 is an electric schematic diagram showing the circuit for actuating my photo electric roll label dispenser.

FIG. 4 is a perspective view of the ultraviolet exciting tube for actuating the photo electric cell embodied in my invention.

The gist of the present invention resides primarily in a roll of labels having spaced fluorescent indicia thereon for actuating the cutting means in the dispenser and responsive to excitation by ultraviolet light, a photo electric cell responsive to the excited fluorescent indicia on the labels, an indexing carriage carrying the photo electric cell and ultraviolet excitation means, and a transistor circuit actuated by the photo cell for energizing a solenoid, a solenoid controlling the operation of a guillotine blade for shearing individual labels from the strip.

Referring now in greater detail to the drawings in which similar reference characters refer to similar parts, I show a roll or strip of labels comprising a continuous longitudinal strip of individual labels A1, A2 and A3, each label being defined in the roll between spaced lines of fluorescent printing 12. The line of fluorescent printing may be at any lateral position with respect to the strip of labels A or may be adjacent spaced lines outlining therebetween an individual label, or may be a line or design in the label itself at any position thereon. Since the line of cut of my roll label dispenser may be continuously adjusted, it is only necessary that the spacing between fluorescent indexing lines be consistent and their position may be anywhere with respect to an individual label. There are no indexing or registration holes necessary in the strip of labels A. Trade-mark or design information (not shown) may be printed upon one face of the strip in a conventional manner and repeated at constant intervals along the longitudinal axis of the roll. The trade-mark or design information may be printed simultaneously with the fluorescent indexing indicia. Activation or excitation of the fluorescent indexing indicia by ultraviolet radiation causes the emission of secondary electrons to energize the photo electric cell.

The photo electric roll label dispenser comprises a feed-

ing mechanism, generally designated as B, for delivering the continuous strip of labels A from a supply roll C across an indexing carriage, generally designated as D, whereupon a cutter head E actuated by the indexing carriage D through an amplifier F shears an individual label A1, A2, A3 from the roll or strip A at a point subsequent to the feeding mechanism B.

The roll label dispenser is integrated by a pair of side frames 14 and 16 supported upon a base 18. The feeding mechanism B comprises rollers 20 and 22 rotatably supported between the frames 14 and 16. The lower roller 22 is the driving roller having a pinion gear 24 in intermeshing engagement with a worm drive 26 coupled to a variable speed motor 28 mounted in the base 18. The feeding mechanism B can deliver labels at a linear rate through the dispenser at the rate of 400 labels per minute.

The supply roll C comprises a reel having a pair of end flanges 30 and 32 laterally adjustable upon a core 34. The reel or supply roll C is rotatably supported at its lower periphery upon idler rollers 40 and 42 and the core 34 is resiliently maintained laterally between the flanges 14 and 16 by bracket arms 36 hingedly connected to the frame and having roller bearings 38 in abutment with the ends of the core 34. Guide rollers 44 rotatably supported between the side frames 14 and 16 position the strip of labels A vertically above the base 18 as they pass through the machine. A detachable transverse bar 46 maintains rigidity of the frames 14 and 16 at the rearward portion thereof and permits withdrawing of the supply roll C therefrom when it is desirous to insert a new supply of roll labels thereon. The indexing carriage D comprises a longitudinal fluted pinion gear 50 in intermeshing engagement with frame racks 52 and 54 at the outer portions thereof. The side frames 14 and 16 are slotted above the racks 52 and 54 respectively to maintain the fluted pinion gear 50 in positive intermeshing engagement with the racks. A knurled thumb wheel 56 is fixed upon the pinion gear 50 at each end thereof outside of the frames 14 and 16 to permit longitudinal advancement or retreat of the indexing carriage D within the side frames. As shown in FIGS. 2 and 4 an ultraviolet tubular lamp D1 is mounted upon brackets 58 at each end thereof and the brackets 58 are longitudinally slidable and rotatable upon the pinion gear 50. An ultraviolet filter 60 encompasses the ultraviolet lamp D1 and permits transmission of ultraviolet rays only of a specific frequency or wave length for maximum excitation of the specific photo electric cell utilized. It is also to be noted that the filter 60 is freely rotatable on the lamp D1 thereby acting additionally as an idler roller for guiding the passage of the roll or labels A above the photo cell.

A photo electric cell D2 is mounted upon brackets 62 at each end thereof which are also longitudinally slidable and rotatable upon the fluted pinion gear 50. The photo cell D2 has an elongated rectangular window 64 commensurate with the length of the ultraviolet lamp D1. In the embodiment shown the roll of labels A are imprinted with yellow fluorescent indexing markings 12 and the filter 60 is an ultraviolet illumination, Kodak "G" filter, for specific energizing of the photo cell D2.

Lead wires 66 and 68 extend from photo cell D2 to the sensing amplifier F as shown in the circuit diagram in FIG. 3. The sensing amplifier F comprises a variable transformer X coupled to three (3) transistors T1, T2 and T3, which may be GT82, 2N366 and 2N285 transistors respectively. The final stage of amplification T3 is coupled across a solenoid relay coil RC which is electrically connected to the cutter head solenoid E1. One end of the relay coil RC is connected to a condenser 70 to ground. The other end of the relay coil is coupled to a shunt resistor 72. A rectifier bridge F1 comprising diodes T4, T5, T6 and T7 is mounted across and in parallel with the condenser 70, the relay coil RC,

and the shunt resistor 72 in series respectively and a 110 volt power source is coupled across to adjacent arms of the bridge F1 through a transformer X2. A single pole-single throw switch 74 enables the cutting off or cut in of electric power to the bridge circuit F1.

The sensing amplifier circuit F operates as follows: When the switch 74 is closed power is supplied to the bridge F1 which has no immediate closed circuit to ground because of the interposition of the condenser 70 across the output arms of the bridge. Thus, the condenser 70 will initially only charge up and the plates of the diodes will merely have a positive voltage impressed thereacross without a discharge path. When the photo cell D2 is activated an amplified signal will be impressed across the transformer X1, which signal will be amplified through the transistors T1, T2 and T3. The final stage of amplification T3 is opposite in phase to the polarity already impressed across the condenser 70 thereby causing a direct shunt to current from the bridge F1 through the resistor 72, the relay coil RC, and the condenser 70. The discharge of the condenser 70 will enable a transient current to pass through the relay coil RC and energize the cutter head solenoid E1. An impulse will be conveyed to the indexing carriage D as each fluorescent indicia 12 passes between the ultraviolet lamp D1 and the photo cell D2 causing energizing of the latter.

The cutter head E comprises a lower stationary blade 85 fixed between the side frames 14 and 16 and having an upper cutting edge level with the lower surface of the traveling strips of labels A, and a guillotine blade 88 actuated by the solenoid E1 as a result of impulses transmitted thereto by the indexing head D. It is to be observed that the stationary blade 86 and the guillotine blade 88 are canted with respect to the strip of labels for rapid and positive shearing engagement with the traveling strip of labels. The guillotine blade 88 is supported upon arms 92 and 94 pivotally mounted at the sides of the frames 14 and 16 respectively. Coil springs 96 and 98 are tensioned between the guillotine blade 88 and a head plate 100 which tends to maintain the blades 86 and 88 spaced with respect to each other. A motor 102 is mounted upon the head plate 100 and transmits power to a cam shaft 104 through a gear reducer 108 and friction clutch 108. A friction brake E2 having a spring finger 112 in frictional contact with the cam shaft 104 normally bears against the cam shaft 104 so as to cause the friction clutch 108 to slip thereby maintaining the cam shaft 104 stationary. The spring finger 112 is in articulation with a linkage 114 in the solenoid E1. When the solenoid E1 is energized by impulses from the indexing head D and the sensing amplifier F, the linkage 114 (FIG. 2) will be urged forwardly against the spring finger 112 thereby releasing the brake E2 from the cam shaft 104. When the brake E2 is released the clutch 108 will frictionally engage and cause rotation of the cam shaft 104. Thus, each impulse from the indexing head D2 will energize the solenoid E1 so as to permit one full revolution of the cam shaft 104. An eccentric cardiod cam 116 is fixed upon one end of the cam shaft 104 and is in peripheral engagement with a pivotally mounted driving arm 118. The lower end of the driving arm 118 is coupled to the guillotine blade 88 through a link rod 120. Thus, it is easily seen that with each rotation of the cam shaft 104, the cam 116 will downwardly depress the driving arm 118 so as to cause the guillotine blade 88 to be urged into shearing engagement with the stationary blade 86. Since the cam 116 rotates through one full revolution with each activation thereof, the end of the stroke will result in the opening of the guillotine blade 88 with respect to the stationary blade 86 to permit passage therebetween of the continuously longitudinally travelling strip of labels A. Since the longitudinal spacing between the cutting head E and the indexing head D controls the shear line at which each individual label A1, A2 and A3 are to be cut from the travelling strip, it is easily seen that advancing or re-

5

treating the indexing head by rotation of the fluted pinion gear 50 will advance or retard the shear line of the labels. Thus, the indexing head may be manually adjusted continually during the feeding of the strip of labels to accurately position the ultraviolet lamp D1 and the photo cell D2 together at any particular point and at adjustably constant intervals.

Since no indexing registration holes are in the labels, the sheared individual label will have smooth edges. The fluorescent indexing indicia may demark the end of the label or be a portion of the labels themselves such as a design line, and the position of the shear line may be adjusted at any longitudinal point by manual rotation of the fluted pinion gear 50 in the indexing head D. Since the length of the ultraviolet lamp D1 and the photo cell D2 is greater than the width of any strip of labels to be dispensed, no lateral adjustment is necessary with respect to the indexing head and a continuous, smooth, and efficient operation is easily afforded.

It is also to be observed that the indexing strip 12 may be a phosphorescent ink whereby the secondary emission of electrons will occur after the excitation source (ultraviolet lamp D1) has been removed. Under phosphorescence, the photo cell D2 will be positioned subsequent to the lamp D1 whereby stray excitation of the photo cell by direct or reflected rays from the lamp will be obviated and thereby prevent premature cutting of the labels.

Although my invention has been described in considerable detail, such description is intended as being illustrative, rather than limiting, since the invention may be variously embodied, and the scope of the invention is to be determined as claimed.

I claim:

1. A roll label dispenser comprising a framework, a supply reel on one portion of said framework for rotatably supporting a rolled-up strip of labels with fluorescent areas separating the labels of the strip, a cutting means at the opposite portion of said framework, said framework including a pair of laterally-spaced side walls defining a path of movement for the strip of labels as it unwinds and moves from the supply reel to the cutting means, a rack fixed on at least one of said side walls parallel to said path of movement, an elongated pinion shaft extending transversely across said path of movement and being in meshed engagement with said rack, operating means on said pinion shaft for rotating said pinion shaft relative to said rack, a first bracket mounted on said pinion shaft for slidable adjustment longitudinally thereof, said first bracket having an ultraviolet lamp assembly mounted thereon above said path of movement, a second bracket mounted on said pinion shaft for slidable adjustment longitudinally thereof, said second bracket having a photoelectric cell mounted thereon below said

6

path of movement and in alignment with said ultraviolet lamp assembly, said photoelectric cell being activatable by said ultraviolet lamp assembly when a fluorescent area on said strip passes therebetween, a solenoid on said framework, said ultraviolet lamp assembly being in electrical circuit with said solenoid to actuate said solenoid simultaneously with activation of said photoelectric cell, a drive means, a cam shaft in operative engagement with said drive means through a friction clutch, said clutch being constructed and arranged to slip relative to said drive means when said cam shaft is retained against rotational movement and to drivingly engage said cam shaft with said drive means when said cam shaft is not retained against rotational movement, said cam shaft extending in a transverse plane relative to said path of movement, a spring finger on said framework, said finger being normally spring-biased into frictional engagement with said cam shaft to retain said cam shaft against rotational movement, said spring finger being operatively connected to the plunger of said solenoid, said plunger being movable, when said solenoid is actuated by said photoelectric cell, to move said spring finger out of frictional engagement with said cam shaft, a cam on said cam shaft, said cam being in operative engagement with a reciprocable knife blade assembly, said knife blade assembly including a reciprocable blade extending transversely across said path of movement and constructed and arranged to move through said path of movement in a linear shearing action, said blade being resiliently biased away from said path of movement, and said cam being contoured to act on said knife blade assembly to move said blade in said shearing action through said path of movement during a portion of the rotational movement of said cam shaft.

2. The dispenser of claim 1 wherein said ultraviolet lamp assembly comprises an ultraviolet lamp encompassed by a tubular ultraviolet filter, said filter being rotatable on said first bracket and being positioned to rotatably engage said strip as it moves along said path of movement.

References Cited in the file of this patent

UNITED STATES PATENTS

757,604	Edwards	Apr. 19, 1904
1,090,388	Foote	Mar. 17, 1914
1,130,979	Johnson	Mar. 9, 1915
1,318,320	Frohn	Oct. 7, 1919
1,873,057	Smith	Aug. 23, 1932
2,251,306	Thompson	Aug. 5, 1941
2,360,275	Rau	Oct. 10, 1944
2,637,394	Fey	May 5, 1953
2,765,411	Kerr	Oct. 2, 1956
2,888,570	Toulmin	May 26, 1959