Sept. 11, 1962 C. E. JENNINGS, JR 3,053,156

CURB FORMING MACHINE

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FIG. 1

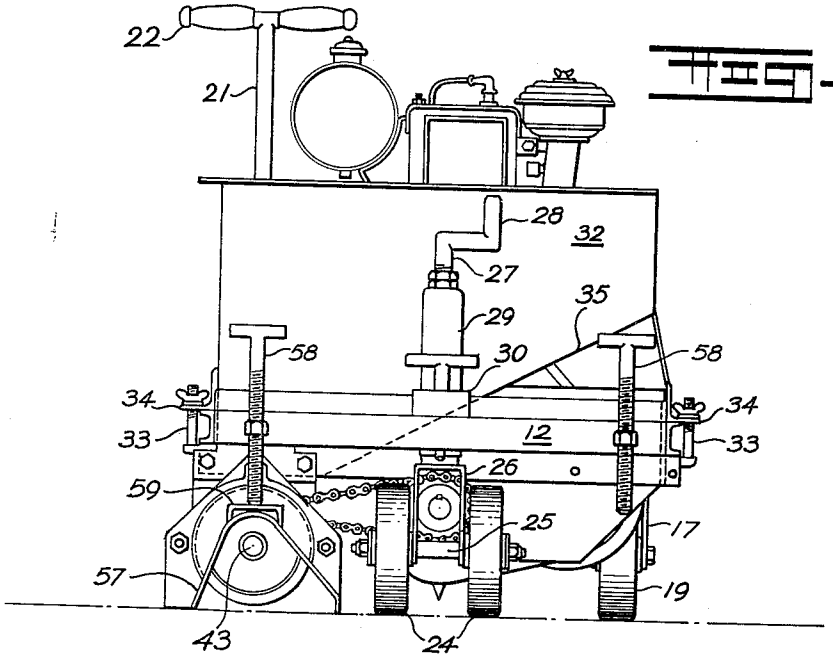
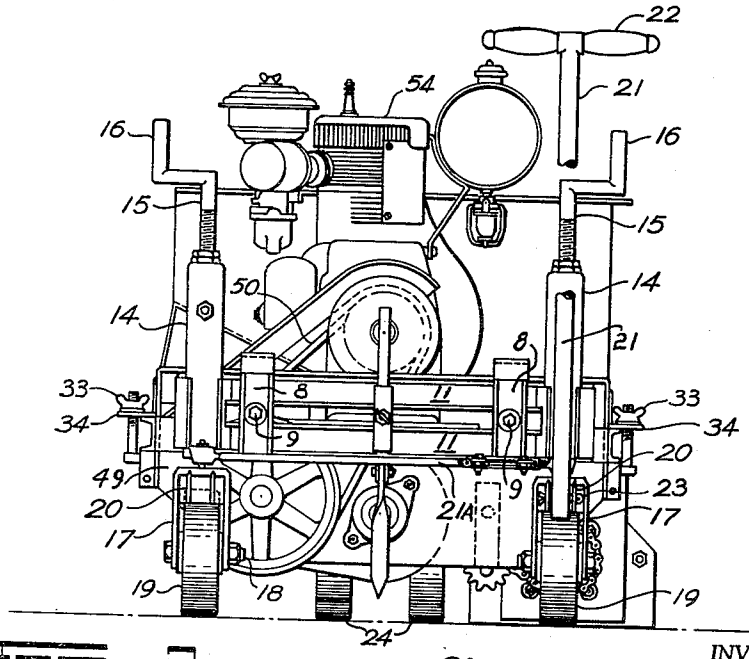


FIG. 2



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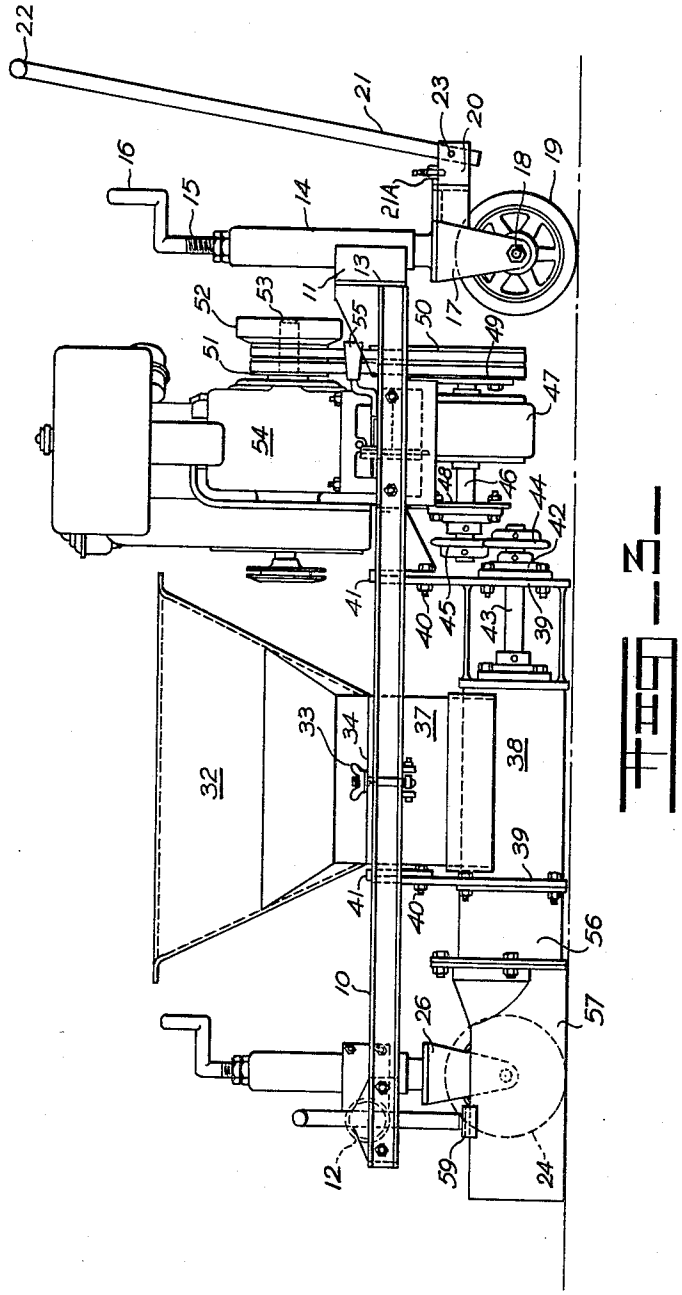


FIG. 2

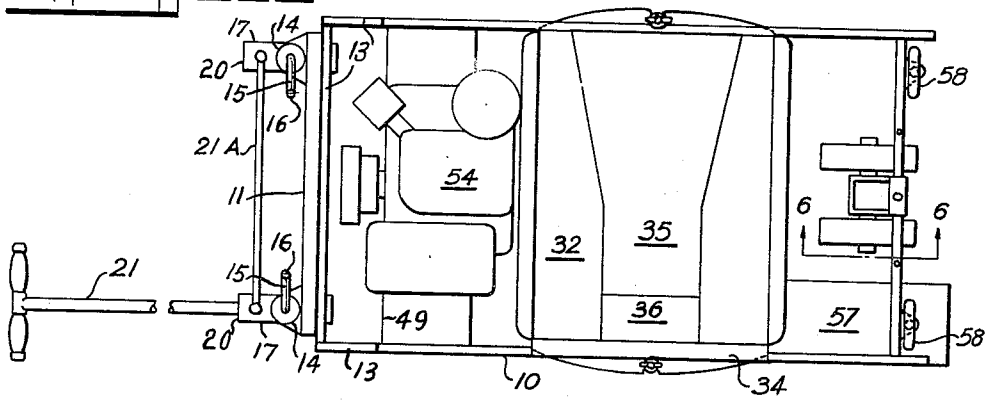
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FIG. 4



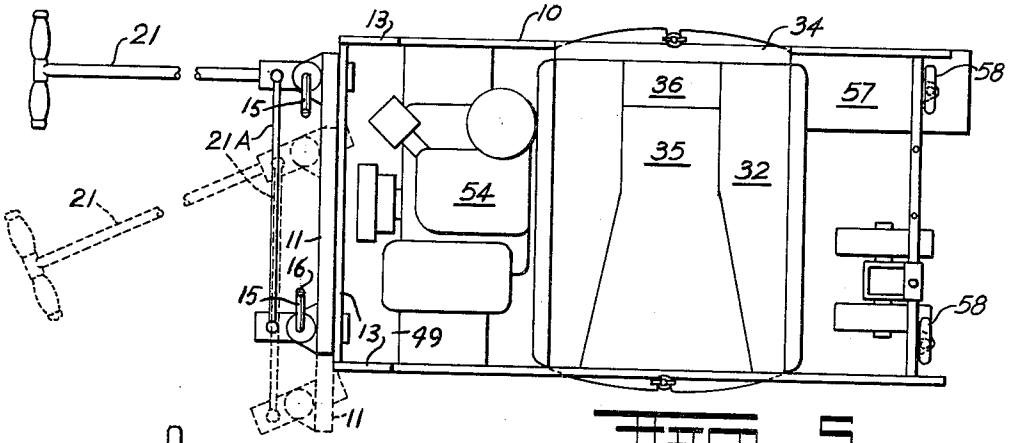
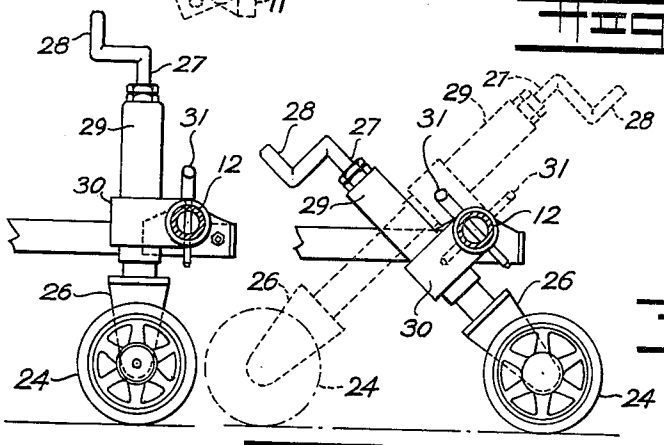


FIG. 5



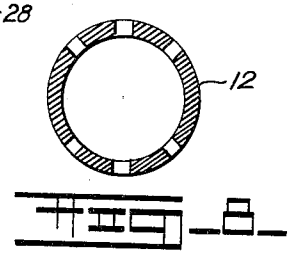


FIG. 8

FIG. 6

FIG. 7

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3,053,156
CURB FORMING MACHINE

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4 Claims. (Cl. 94—46)

This invention relates to a curb building machine.

The principal object of the invention is the provision of a curb building machine which may be easily changed to extrude curbing materials from either the right side or the left side of the machine.

A still further object of the invention is the provision of a curb building machine that is free from vibration and therefore capable of extruding a perfectly shaped curb.

A still further object of the invention is the provision of a curb building machine incorporating means for releasing the extruding screw in the event of foreign material entering the material hopper.

A still further object of the invention is the provision of a curb building machine in which the hopper, the extruding screw and compaction chamber are interchangeable between the right sides and the left side of the machine.

A still further object of the invention is the provision of a curb building machine having sidewardly adjustable wheel assemblies on both the front and rear ends thereof to facilitate positioning the wheels to avoid an asphalt tack coat frequently used on pavements to insure adhesion of the extruded curb.

A still further object of the invention is the provision of a curb forming machine in which the steering lever may be positioned on either side of the machine to facilitate handling of the same.

A still further object of the invention is the provision of a curb building machine having a rear wheel assembly that is adjustable forwardly, backwardly and sidewardly as well as vertically to permit the machine to make a complete circle when traveling on the outside of a circle and extruding on the inside of the circle.

The curb building machine disclosed herein comprises an improvement in the art of curb building machines as heretofore known in that numerous disadvantages existing in the older curb building machines have been eliminated in the new machine. The curb building machines heretofore known have comprised bulky heavy cumbersome devices which could extrude a curb when the machine was operated in a straight line but had considerable difficulty in forming or positioning a curb close to a wall or other object and in forming a curved section of curbing.

The present invention provides a machine that can be readily adapted to extrude the curb on either its right hand or left hand side and which has its supporting wheels so arranged that the machine can be run in a complete circle and extrude a perfect curved curb. The machine also includes means for varying the proportion of weight carried on the wheels and on the extruding and curb forming means and more importantly it permits the hopper as well as the extruding screw and compaction chamber and shaped nozzle of the machine to be moved from right to left side at the option of the operator. The improved curb building machine extrudes bituminous material, such as asphaltic concrete, as well as Portland cement and aggregate material.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being the intention to cover all changes and modifications of the example of the invention herein chosen for purposes of the disclosure, which do not constitute departures from the spirit and scope of the invention.

The invention is illustrated in the accompanying drawing, wherein:

FIGURE 1 is a rear view of the curb building machine.

FIGURE 2 is a front view of the curb building machine with parts broken away.

FIGURE 3 is a side view of the curb building machine shown in FIGURES 1 and 2.

FIGURE 4 is a top plan view with certain parts omitted on a reduced scale of the curb building machine of FIGURES 1, 2 and 3.

FIGURE 5 is a top view with certain parts omitted of the curb building machine with parts thereof transposed from one side to the other, broken lines in FIGURE 5 show an alternate position of the steering mechanism.

FIGURE 6 is an enlarged detail of the rear wheel and support means of the curb building machine taken on line 6—6 of FIGURE 4.

FIGURE 7 is a detail of the rear wheels of the curb building machine showing in solid line; the wheels inclined in one direction and in broken lines; the wheels inclined in the opposite direction.

FIGURE 8 is an enlarged cross section through the wheel supporting shaft shown in FIGURES 6 and 7.

By referring to the drawings and FIGURES 1, 2 and 3 and 4 in particular it will be seen that a curb building machine has been disclosed which comprises a rectangular frame having side rails **10**, **10** transversely positioned front frame members **11**, **11** and a transversely positioned rear frame member **12**. The front frame members **11**, **11** are mounted for side to side movement on angular cross frame members **13**, **13** by bolts **9** and clamping pieces **8** and said frame members **11**, **11** mount a pair of vertically positioned cylinderical members **14**, **14** through which threaded rods **15**, **15** are positioned, the threaded rods **15**, **15** are provided with cranks **16**, **16** on their uppermost ends. The lower ends of the threaded rods **15**, **15** engage telescopically mounted bifurcated sections **17**, **17** which extend below the lowermost ends of the cylindrical members **14**, **14** and engage axles **18**, **18** carrying ground engaging wheels **19**, **19**. Each of the bifurcated lower sections **17**, **17** has a forwardly projecting portion **20**, **20** which are connected together by a tie rod **21A** as best seen in FIGURES 2 and 4 of the drawings. Each of the forwardly projecting portions **20** is also bifurcated and is adapted to receive in a detachable manner a pivoted handle **21**. The handle **21** is provided with a cross piece **22** at its uppermost end. A cotter pin **23**, as best seen in FIGURES 2 and 3 of the drawings, is positioned through the bifurcated forward extensions **20** and the handle **21** to permit the handle **21** to be detached therefrom and removed to the other one of the bifurcated extensions **20** as may be seen by referring to FIGURE 5 of the drawings. The movable mounting of the front frame members **11**, **11** enable the front wheels to be moved to offset position relative to the frame of the machine as shown in broken lines in FIGURE 5, and as is sometimes necessary to avoid running on a "tack" coat on which the curb is positioned.

The opposite or rear end of the machine, having the transverse tubular frame member **12**, is normally supported on a pair of ground engaging wheels **24** which are positioned on an axle **25** which in turn is carried on a bifurcated telescopically mounted member **26** engaged by a secondary vertical threaded shaft **27** which is also provided with a crank **28** at its uppermost end. The telescopically mounted member **26** and the secondary threaded shaft **27** are positioned in a secondary cylinderical member **29** which is secured to a bracket **30**, as best seen in

FIGURES 6 and 7 of the drawings. The bracket 30 has an offset portion including a transverse circular passageway through which the tubular frame member 12 extends. A plurality of openings are formed in the tubular frame member 12 in a circumferential pattern and a pin 31 is positioned through the same and through matching openings in the bracket 30 to position the rear wheels 24 in any one of several positions as illustrated in FIGURES 6 and 7 of the drawings and in which positions the relative position of the wheels 24 with respect to the bracket 30 may be altered by moving the crank 28 which moves the threaded shaft 27 and hence the wheels 24.

The frame is thus supported on ground engaging wheels which are arranged in three units and each of which units is vertically adjustable and one of which units, the pair of wheels 24 is also movable forwardly, backwardly and sidewardly relatively to the rectangular frame of the machine. The sideward movement of the wheels 24 as occasioned by moving their assembly transversely on the tubular frame 12 permits the wheels 24 to be positioned so as to avoid the curb being extruded and be offset a considerable distance therefrom when desired, as when the machine is running on a paved strip and forming a curb alongside thereof.

A hopper 32 is positioned on the side rails 10, 10 of the rectangular frame and normally held in position thereon by a pair of manually operated clamps 33, 33 which are pivoted to the side rails 10, 10 and which clamps 33, 33 movably engage brackets 34, 34 on the opposite sides of the hopper 32. The hopper has a bottom 35 which runs sidewardly and downwardly to a discharge opening 36 at one side thereof, as best seen in FIGURES 1, 3, 4 and 5 of the drawings. The discharge opening 36 of the hopper communicates with a screw housing 38 which in turn is provided with flanged end portions 39, 39 which are attached by removable fasteners 40, 40 to transverse frame members 41, 41 intermediate the ends of the rectangular frame of the curb building machine. The forward flanged end portion 39 carries a journal 42 through which a driven shaft 43 is positioned. A sprocket 44 is positioned on the driven shaft 43. A chain connects sprocket 44 with a secondary sprocket 45 which is positioned on a secondary driven shaft 46 which in turn is part of a gearbox 47 mounted below and between a pair of transverse frame members 48 and 49 secured to the side rails 10, 10 of the machine. Sheaves 50 on the drive shaft of the gearbox 47 are vertically aligned with sheaves 51 on a centrifugal clutch mechanism 52 which is mounted on a drive shaft 53 of an internal combustion engine 54 which is also carried on the transverse frame members 48 and 49 heretofore referred to.

The gearbox 47 is provided with a safety throw out lever 55 as will be understood by those skilled in the art. The shaft 43 heretofore referred to is directly connected with a screw positioned in the screw housing 39 and it will thus be seen that motion from the internal combustion engine 54 is conveyed through the clutch 52 and the gearbox 47 to the shaft 43 which thereby rotates the screw in the screw housing 38 which will move material from the depending portion 37 of the hopper 32 into a compaction chamber 56 in the discharge end of the screw housing 38 and into a nozzle 57 which will shape the material being extruded in desired cross sectional shape.

It will be observed that in the curb building machine shown in FIGURES 1, 2 and 3 and 4 of the drawings the discharge opening 36 of the hopper 32, the compaction screw housing 38 together with the compaction chamber 56 and shaping nozzle 57 are on the left side of the machine and it will be observed that the steering handle 21 is also on the left side of the machine and that the machine may therefore run along on a paved area adjacent the left hand edge thereof and position a properly formed extruded curb immediately adjacent the edge of the paved area which may be alongside a wall, fence or building.

It will occur to those skilled in the art that in many applications of extruded curbing it is more convenient to install the curb with the machine operating in a desired direction. In the curbing machines heretofore known in the art, the curbing has always been extruded from only one side. In the present machine the hopper 32 may be readily detached by opening the clamps 33, 33 and reversed so that the discharge orifice 36 thereof is on the opposite side of the machine as may be seen in FIGURE 5 of the drawings. The compaction screw housing 38 including the compaction chamber 56 and shaping nozzle 57 are removably mounted on the frame of the machine and are easily transferred to the other side of the machine as seen in FIGURE 5 so that formation of curbing at either side of the machine is possible.

The driving mechanism of the compaction screw on the shaft 43 remains the same when the hopper and the compaction screw are reversed as the chain connection between the sprockets 44 and 45 is employed and the sprocket 45 is also moved from one side of the machine to the other as seen in FIGURE 5. It will be observed in FIGURE 5 that the wheels 24 have also been moved transversely.

It will occur to those skilled in the art that the curb building machine disclosed herein is thus capable of convenient and economical use in that it is readily adapted to the conditions encountered on the job and is thereby capable of completing the job quickly and with minimum labor expense.

In FIGURE 1 of the drawings, the shaping nozzle 57 is seen in end elevation and it will be apparent to those skilled in the art that the shape of this nozzle 57 may be varied, as required. Still referring to FIGURE 1 of the drawings it will be seen that a pair of vertically adjustable screws 58, 58 are mounted on the transverse frame member 12 and extend downwardly and below where they are adapted to engage a horizontal bracket 59 on the nozzle 57 so as to hold the same in desired spaced relation to the supporting frame of the curb building machine. By referring to FIGURES 4 and 5 of the drawings, it will be observed that the screws 58, 58 are shown in operative position on the nozzle 57 on the opposite sides of the machine.

The internal combustion engine 54 shown on the machine is not herein described as the same is a conventional gasoline engine as known in the art. It will thus be seen that the curb building machine disclosed herein meets the several objects of the invention and having thus described my invention, what I claim is:

1. A curb building machine comprising a supporting frame, laterally shiftable ground engaging wheels on said frame, rotary drive means on said frame, a hopper having a discharge opening at one side disposed in said frame, said hopper and frame having cooperating clamps on both sides which are selectively connected to secure the hopper with said discharge opening on either side of said frame, screw housing mounting means on both sides of said frame, a screw housing selectively supported by one of said mounting means, mounting elements for detachably securing said screw housing to said housing mounting means so that the screw housing is selectively supported by one of said mounting elements at either side of the frame below said hopper discharge opening, a shaping nozzle secured rearwardly of said screw housing, adjustable extensible members on said frame engaging said shaping nozzle, a shaft journalled axially of said screw housing, a compaction screw on said shaft in said screw housing, and mechanical driving means connecting said shaft with said rotary drive means.

2. The curbing machine set forth in claim 1 and wherein said hopper comprises a body member open at its top and having downwardly inclined oppositely disposed side walls and an inclined bottom wall with said discharge open at one side thereof.

3. The curbing machine set forth in claim 1 and wherein said supporting frame includes a tubular rear frame member disposed transversely thereof, a bracket rotatably and slidably positioned on said tubular rear frame member, clamps for securing said bracket to said tubular member in adjusted position, a cylindrical member secured to said bracket, a member telescopically engaged in said cylindrical member, a yoke and axle on said member, a pair of said ground engaging wheels on said axle and a screw for adjustably positioning said telescopic member in said cylindrical member.

4. A curb building machine comprising a supporting frame including transversely positioned front frame members, vertically disposed cylindrical members secured to said front frame members, members telescopically engaging said cylindrical members and having bifurcated lower end portions said lower end portions having forward extensions, axles and wheels disposed on said lower end portions, adjustment screws in the upper ends of said cylindrical members engaging said members therein for moving said wheels relative to said supporting frame, steering means including a tie rod and steering handle engaging said forward extensions, a transversely positioned tubular frame member on said supporting frame adjacent the opposite end thereof with respect to said front frame members, a bracket rotatably and slidably positioned on said tubular frame member, a secondary cylindrical member secured to said bracket, a secondary member telescopically engaged in said secondary cylindrical member and having a secondary bifurcated lower end, an axle

and wheels carried by said secondary bifurcated lower end, a secondary screw in the uppermost end of said secondary cylindrical member engaging said secondary member therein, a hopper having a discharge opening at one side disposed in said frame, said hopper and frame having cooperating clamps on both sides which are selectively connected to secure the hopper with said discharge opening on either side of said frame, screw housing mounting means on both sides of said frame, a screw housing selectively supported by one of said mounting means, mounting elements for detachably securing said screw housing to said housing mounting means so that the screw housing is selectively supported by one of said mounting elements at either side of the frame below said hopper discharge opening, a shaping nozzle secured rearwardly of said frame engaging said screw housing, adjustable extensible member on said shaping nozzle, a shaft journalled axially of said screw housing, a compaction screw on said shaft in said screw housing, rotary drive means and mechanical driving means connecting said shaft with said rotary drive means.

References Cited in the file of this patent

UNITED STATES PATENTS

1,661,735	Personnet	Mar. 6, 1928
1,851,198	Marcum	Mar. 29, 1932
1,877,577	Palmer	Sept. 13, 1932
2,123,989	Day	July 19, 1938
2,818,790	Canfield	Nov. 15, 1954