

July 29, 1947.

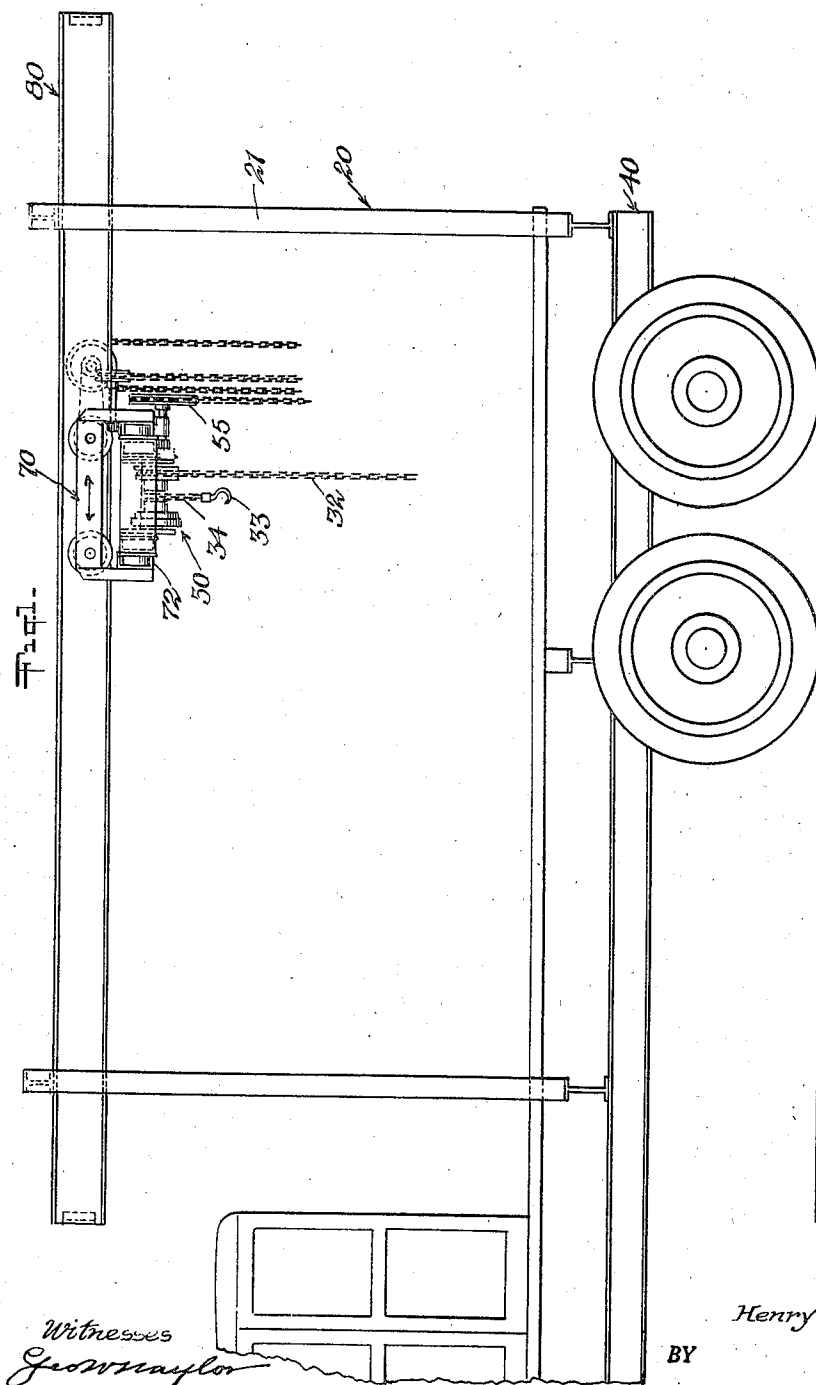
H. PRIESTER

2,424,899

TRUCK HOIST

Filed Oct. 28, 1944

4 Sheets-Sheet 1



INVENTOR.
Henry Priester

BY

Mum, Liddy & Laccum
Attorneys

July 29, 1947.

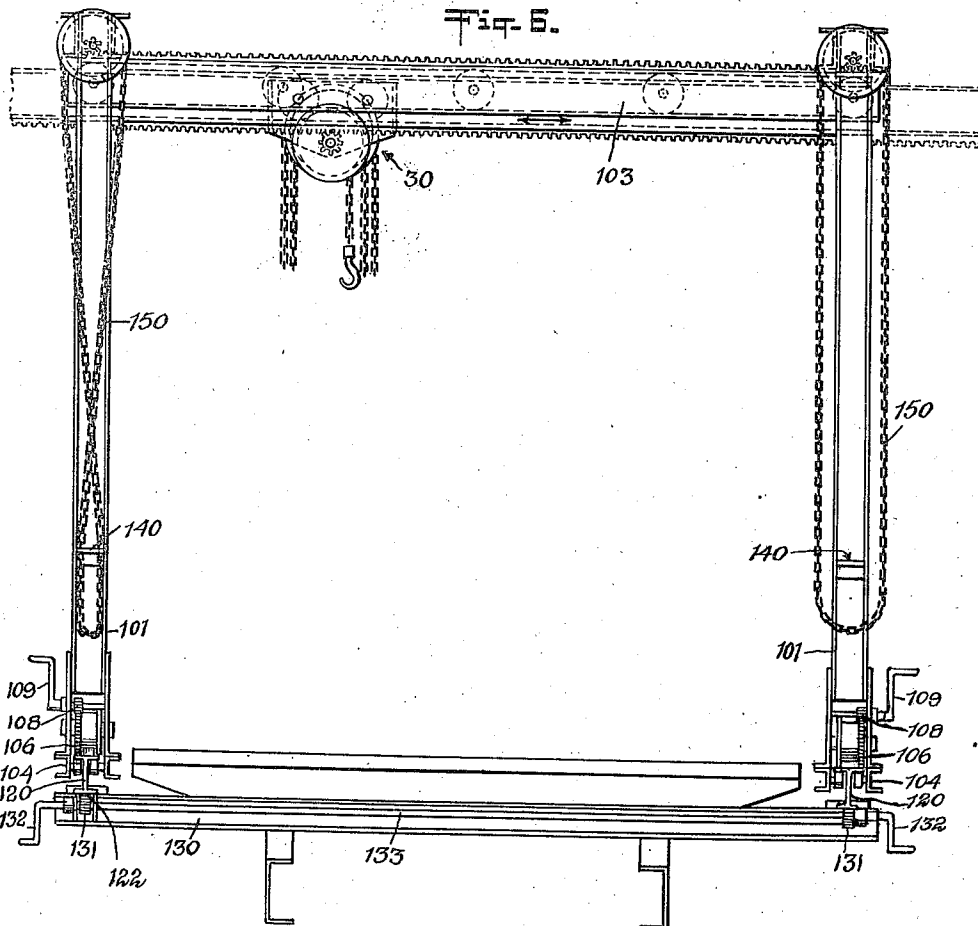
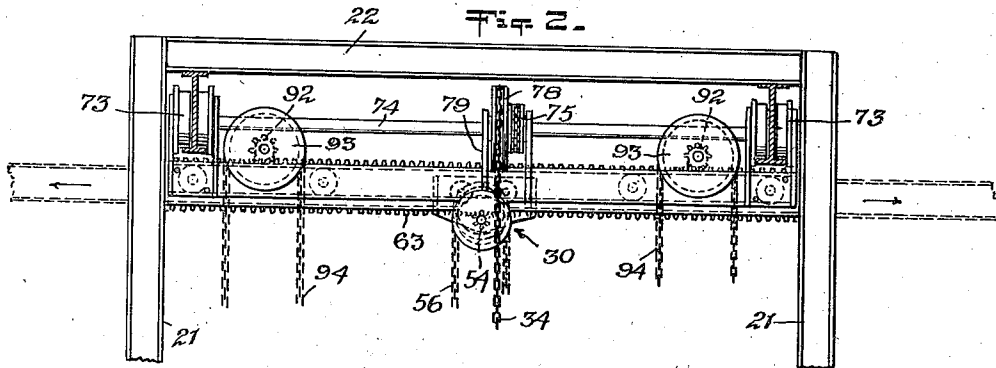
H. PRIESTER

2,424,899

TRUCK HOIST

Filed Oct. 28, 1944

4 Sheets-Sheet 2



Witnesses
George Taylor

INVENTOR.
Henry Priester
BY
Mumm, Liddy & Glaccum
Attorneys

July 29, 1947.

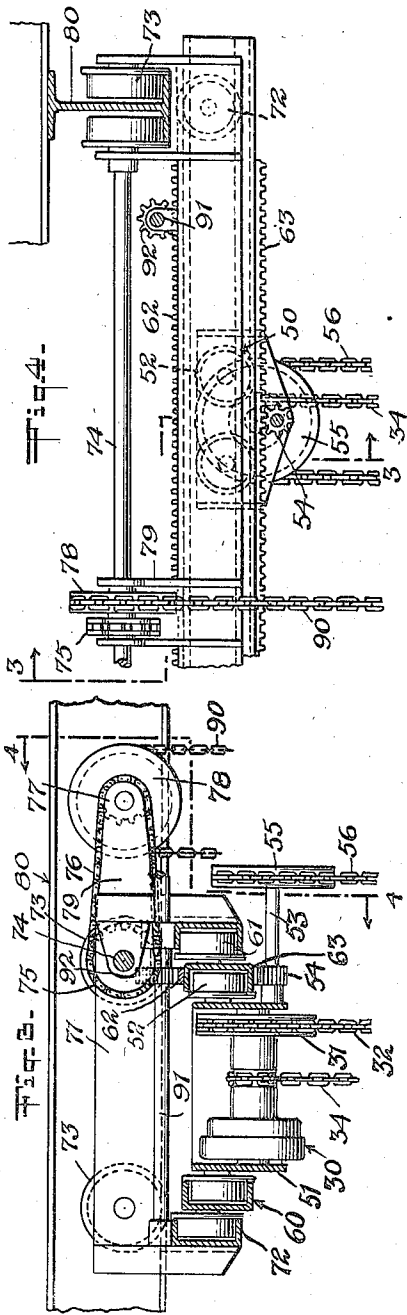
H. PRIESTER

2,424,899

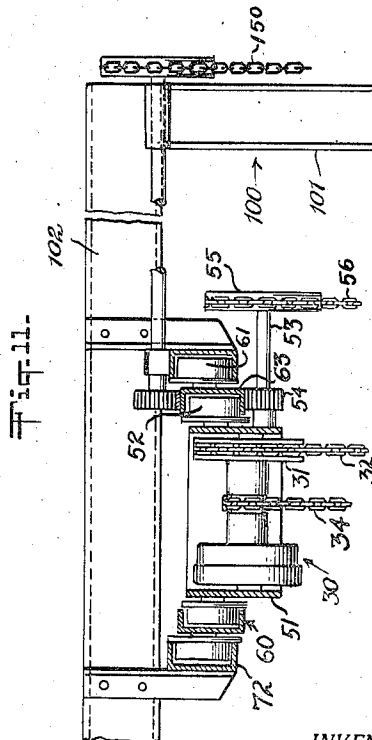
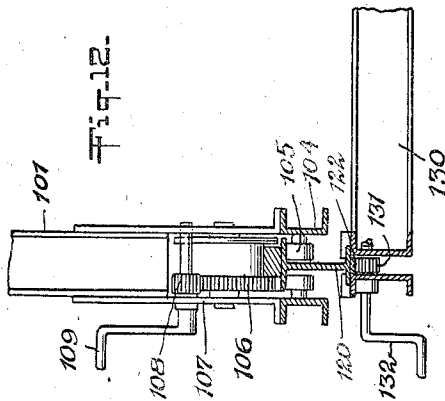
TRUCK HOIST

Filed Oct. 28, 1944

4 Sheets-Sheet 3



Witnesses
J. W. Maylor



INVENTOR.
Henry Priester

BY

Munn, Liddys & Luccum
Attorneys

UNITED STATES PATENT OFFICE

2,424,899

TRUCK HOIST

Henry Priester, Middletown, N. Y.

Application October 28, 1944, Serial No. 560,729

5 Claims. (Cl. 212-15)

1

This invention relates to traveling cranes.

One of the objects of the invention is to provide a traveling crane whose hoist member is movable without, as well as within, the structural confines of the gantry.

Another object is the provision of a truck-mounted traveling crane whose hoist member is movable laterally and longitudinally of the truck, the extent of such movement not being limited to the width and length of the truck chassis or body.

A further object is the provision of a truck-mounted traveling crane having a traveling gantry.

Still another object is the provision of a truck-mounted traveling crane having extensible gantry members to endow the hoist member with an increased sphere of activity.

These and other objects are attained by mechanism illustrated in the accompanying drawing in which

Figure 1 is a side view of one embodiment of the invention, shown mounted on a truck;

Figure 2 is a rear or transverse end view of the operative members of said embodiment;

Figure 3 is a partly sectional side view of the hoist member thereof, being a section on the line 3-3 of Figure 4;

Figure 4 is a section on the line 4-4 of Figure 3;

Figure 5 is a side view of another or modified embodiment of the invention, also shown mounted on a truck;

Figure 6 is a rear or transverse view of the said embodiment;

Figure 7 is a detailed side view of the cranking mechanism of the modified embodiment;

Figure 8 is a detailed view of the clamping mechanism of said modified embodiment;

Figure 9 is a sectional view of one of the chain locking members of said embodiment;

Figure 10 is a perspective view of said chain locking member;

Figure 11 is a partly sectional view of the hoist member of said modified embodiment; and

Figure 12 is a detailed rear view, partly in section, of the cranking mechanism shown in Figure 7.

Although the invention is being described in connection with a motor truck, it may be used, for example, on railroad cars and freight carrying ships and in warehouses.

Referring to Figures 1 to 4 inclusive, the embodiment of traveling crane there shown comprises a gantry 20 and a hoist 30, the gantry

2

being mounted on a motor truck 40 and the hoist being carried by a laterally movable trolley 50, the latter, in turn, rolling on laterally extensible rails 60 which rails in their turn are carried by longitudinally movable trucks 70 mounted on longitudinally extending rails 80.

The gantry 20 comprises four upright columns or posts 21, a pair of cross beams 22 and a pair of longitudinally disposed beams which are T-shaped in cross section and which comprise the aforementioned rails 80.

As can be seen in Figures 1, 3 and 4 a pair of trucks 70 is movably mounted on rails 80, each truck comprising a longitudinally extending frame 71 joined to the frame of the other truck by means of a pair of rails or cross beams 72 which are U-shaped in cross section, and two pairs of wheels 73 rotatably fixed to said frame, and adapted to roll on the lower flanges of rails 80.

A transversely disposed and rotatably mounted axle 74 joins two of the inner wheels of said trucks, said wheels being fixedly mounted thereon. Also fixedly mounted on said axle is a gear wheel 75. A gear chain 76 connects gear wheel 75 to a smaller gear wheel 77 which, in turn, is fixedly connected to a sheave 78 rotatably mounted on a bracket 79 which is affixed to one of the rails 72. An endless chain 90 is looped around sheave 78. It will be seen that when the chain is pulled to cause rotation of the sheave, the axle will also rotate together with the two wheels which are mounted thereon, thus causing longitudinal movement of the trucks and of the entire mechanism carried by the trucks, including the hoist.

A pair of widely spaced, longitudinally extending axles 91 is rotatably fixed to the top portions of cross rails 72. A small gear wheel 92 is affixed to each of said axles 91, said gear wheels being situated immediately above one of the extensible rails 60. A sheave 93 is also affixed to each said axle and an endless chain 94 is carried by each said sheave.

It is apparent from Figure 3 that extensible rails 60 are U shaped in cross section and that wheels 61 which are rotatably fixed to said extensible rails are adapted to roll in the U shaped channels provided by rails 72. It is apparent from Figure 2 that the extensible rail 60 immediately below gear wheels 92 is provided at its top side with upper rack gear 62 and at its bottom side with lower rack gear 63, and that said upper rack gear is engaged by said gear wheels 92.

It is evident, therefore, that when either of said chains 94 is pulled to rotate the sheave 93 on

which it is mounted, corresponding rotation of axle 91 and gear wheel 92 to which said sheave is connected, is effected, thus causing upper rack gear 62 and hence rails 60 and everything which they support, including the hoist, to move transversely of the truck. The desirability of having two widely spaced sets of sheave and gear wheel may be appreciated when it is understood that extensible rail 60 has a range of movement beyond the coverage of only one such set, wherever that set may be located.

Trolley 50 comprises a frame 51 and two pairs of wheels 52 rotatably affixed thereto. It is to this frame that the hoist 30 is attached and by which it is supported. Also affixed to said frame is a rotatable shaft 53 carrying a gear wheel 54 immediately below, and engaging lower rack gear 63, and a sheave 55 on which is mounted an endless chain 56. It may be seen, in Figure 3, that wheels 52 are adapted to roll in extensible rails 60. It becomes evident, therefore, that when the chain 56 is pulled to rotate sheave 55 and hence shaft 53 and gear wheel 54, movement of trolley 50 along rails 60 is effected.

Carried by trolley 50, as heretofore noted, is hoist 30. A typical hoist is shown in the drawing, including a sheave 31, an endless chain 32 mounted on the sheave, and a lifting hook 33 at the end of a lifting chain 34. The hoist may be of any desirable type and construction, manually operated or power driven. The same is true of the mechanism previously described: all of it or any part of it may be manually operated or power driven. The motive power may be independently supplied or it may be derived from the engine of the truck.

Referring now to the embodiment of the invention shown in Figures 5 to 12 inclusive, the hoist and all of its transversely movable apparatus are identical with the corresponding equipment above described.

The difference between the two embodiments lies in the fact that in the previously described embodiment there is longitudinal movement of the hoist relative to the gantry, the latter being in fixed position relative to the truck, whereas in the embodiment of Figures 5 to 12 the hoist is in fixed position relative to the gantry, the gantry being longitudinally movable relative to the truck. The latter embodiment lacks trucks 70 and the apparatus associated therewith.

The gantry 100 of the embodiment of Figures 5 to 12 is smaller longitudinally than the one previously described, and is mounted on wheels 110 which roll on longitudinally extensible rails 120, the latter, in turn, being slidably mounted on fixed longitudinal rails 130 which are affixed to the chassis of the motor truck.

Gantry 100 comprises four upright girder members 101, longitudinal beams 102 and transverse beams 103. The mechanism by which the hoist is supported and by which it is enabled to move transversely of the truck, is affixed to said longitudinal beams 102.

It will be seen in Figure 12 that extensible rails 120 are H shaped in cross section. It will also be seen in said Figure 12 that pairs of brackets 104 are affixed to the lower ends of girders 101 and that rollers 105 which are rotatably affixed thereto, engage the under surface of both upper flanges of said extensible rails thus preventing vertical displacement or tipping of the gantry relative to said extensible rails and hence to the truck proper.

A gear wheel 106 is rotatably fixed to the bot-

tom of each of the rear girders 101 by means of bracket 107. A pinion 108 engaging said gear wheel is also rotatably fixed to said bracket, a crank handle 109 being fixed to said pinion. Turning the crank has the effect of rotating the pinion and hence the gear wheel.

Figure 7 shows that each of the extensible rails 120 is provided with an upper rack gear 121 and a lower rack gear 122, both extending longitudinally thereof. Gear wheel 106 meshes with upper rack gear 121. Hence, when the gear wheel is caused to rotate as aforesaid, the effect is to cause longitudinal movement of the gantry relative to the extensible rails 120 as well as to the truck itself.

A brake shoe or clamp 111 is carried by each of the forward upright girders, being affixed to a bracket 112 thereon. A cam 113 to which a crank handle 114 is affixed, operates the brake shoe causing it to engage or disengage the extensible rail 120 to which it is adjacent.

A pinion 131 is rotatably fixed to each of the fixed longitudinal rails 130 and a crank handle 132 is affixed to said pinion. The latter is positioned to engage lower rack gear 122. When this crank is turned, longitudinal movement of both extensible rails 120 is effected, since pinions 131 are both fixedly mounted on a common shaft 133.

In Figures 9 and 10 is shown a chain lock 140 comprising a short piece of angle iron having a pair of slots 141 formed in its horizontal flange. The slots are adapted to receive a chain link which is inserted edge-wise only. When any one link of a chain is so inserted into the lock, longitudinal movement of the chain is limited to the distance separating the two links to which said link is attached. As shown in Figures 5 and 6, the lock is affixed to two of the upright girders to enable them to engage endless chains 150 which perform the same function as chains 94 of the embodiment first above described.

In the embodiment of Figures 5 to 8 too, the mechanism which causes movement of the hoist and of the gantry and of the rails carrying the gantry may be manually operated or power driven.

The embodiments herein described are only presently preferred embodiments of the invention. Modifications thereof may be had without departing from the broad principles of the invention as hereinafter claimed.

I claim:

1. A traveling crane comprising a self-propelled vehicle, a pair of spaced rails fixed to said vehicle longitudinally thereof, a second pair of longitudinally disposed rails mounted on the first pair for longitudinal movement relative to said first pair, a gantry mounted on said second pair of longitudinal rails for longitudinal movement relative thereto, a pair of spaced rails fixed on said gantry transversely of said vehicle, a second pair of transversely disposed rails mounted on the first pair of transverse rails for movement relative thereto transversely of said vehicle, a trolley mounted on said second pair of transverse rails for movement relative thereto transversely of the vehicle, and a hoist on said trolley.

2. A traveling crane comprising a self-propelled vehicle, a pair of spaced rails fixed to said vehicle longitudinally thereof, a second pair of longitudinally disposed rails mounted on the first pair for longitudinal movement relative to said first pair, a gantry mounted on said second pair of longitudinal rails for longitudinal movement relative thereto, a pair of spaced rails fixed on

5

said gantry transversely of said vehicle, a second pair of transversely disposed rails mounted on the first pair of transverse rails for movement relative thereto transversely of said vehicle, a trolley mounted on said second pair of transverse rails for movement relative thereto transversely of the vehicle, and a hoist on said trolley, said second pair of longitudinal rails being provided with rack gears, said vehicle being provided with crank actuated gear wheels, said gear wheels being in engagement with said rack gears to effect longitudinal movement of said second pair of longitudinal rails relative to said vehicle.

3. A traveling crane comprising a self-propelled vehicle, a pair of spaced rails fixed to said vehicle longitudinally thereof, a second pair of longitudinally disposed rails mounted on the first pair for longitudinal movement relative to said first pair, a gantry mounted on said second pair of longitudinal rails for longitudinal movement relative thereto, a pair of spaced rails fixed on said gantry transversely of said vehicle, a second pair of transversely disposed rails mounted on the first pair of transverse rails for movement relative thereto transversely of said vehicle, a trolley mounted on said second pair of transverse rails for movement relative thereto transversely of the vehicle, and a hoist on said trolley, said second pair of longitudinal rails being provided with rack gears, said gantry being provided with crank actuated gear wheels, said gear wheels being in engagement with said rack gears to effect longitudinal movement of said gantry relative to said second pair of longitudinal rails.

4. A traveling crane comprising a self-propelled vehicle, a pair of spaced rails fixed to said vehicle longitudinally thereof, a second pair of longitudinally disposed rails mounted on the first pair for longitudinal movement relative to said first pair, a gantry mounted on said second pair of longitudinal rails for longitudinal movement relative thereto, a pair of spaced rails fixed on said gantry transversely of said vehicle, a second pair of transversely disposed rails mounted on the first pair of transverse rails for movement relative thereto transversely of said vehicle, a trolley

6

mounted on said second pair of transverse rails for movement relative thereto transversely of the vehicle, and a hoist on said trolley, one of said second pair of transverse rails being provided with a rack gear, a chain controlled sheave rotatably mounted on the trolley, said sheave being geared to said rack gear to effect movement of the trolley relative to said second pair of transverse rails transversely of the vehicle.

5. A traveling crane comprising a self-propelled vehicle, a pair of spaced rails fixed to said vehicle longitudinally thereof, a second pair of longitudinally disposed rails mounted on the first pair for longitudinal movement relative to said first pair, a gantry mounted on said second pair of longitudinal rails for longitudinal movement relative thereto, a pair of spaced rails fixed on said gantry transversely of said vehicle, a second pair of transversely disposed rails mounted on the first pair of transverse rails for movement relative thereto transversely of said vehicle, a trolley mounted on said second pair of transverse rails for movement relative thereto transversely of the vehicle, and a hoist on said trolley, said gantry being provided with chain controlled sheaves, one of said second pair of transverse rails being provided with a rack gear, said sheaves being geared to said rack gear to effect movement of said second pair of transverse rails relative to said gantry transversely of the vehicle.

HENRY PRIESTER.

REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
456,361	Graves	July 21, 1891
510,495	Zetterberg	Dec. 12, 1893
890,151	Marshall	June 9, 1908
910,038	Andrews	Jan. 19, 1909
1,703,153	Knoll	Feb. 26, 1929
1,745,045	Romine	Jan. 28, 1930
2,156,424	Barnard	May 2, 1939
2,177,525	Henderson	Oct. 24, 1939
2,343,014	Langan	Feb. 29, 1944