

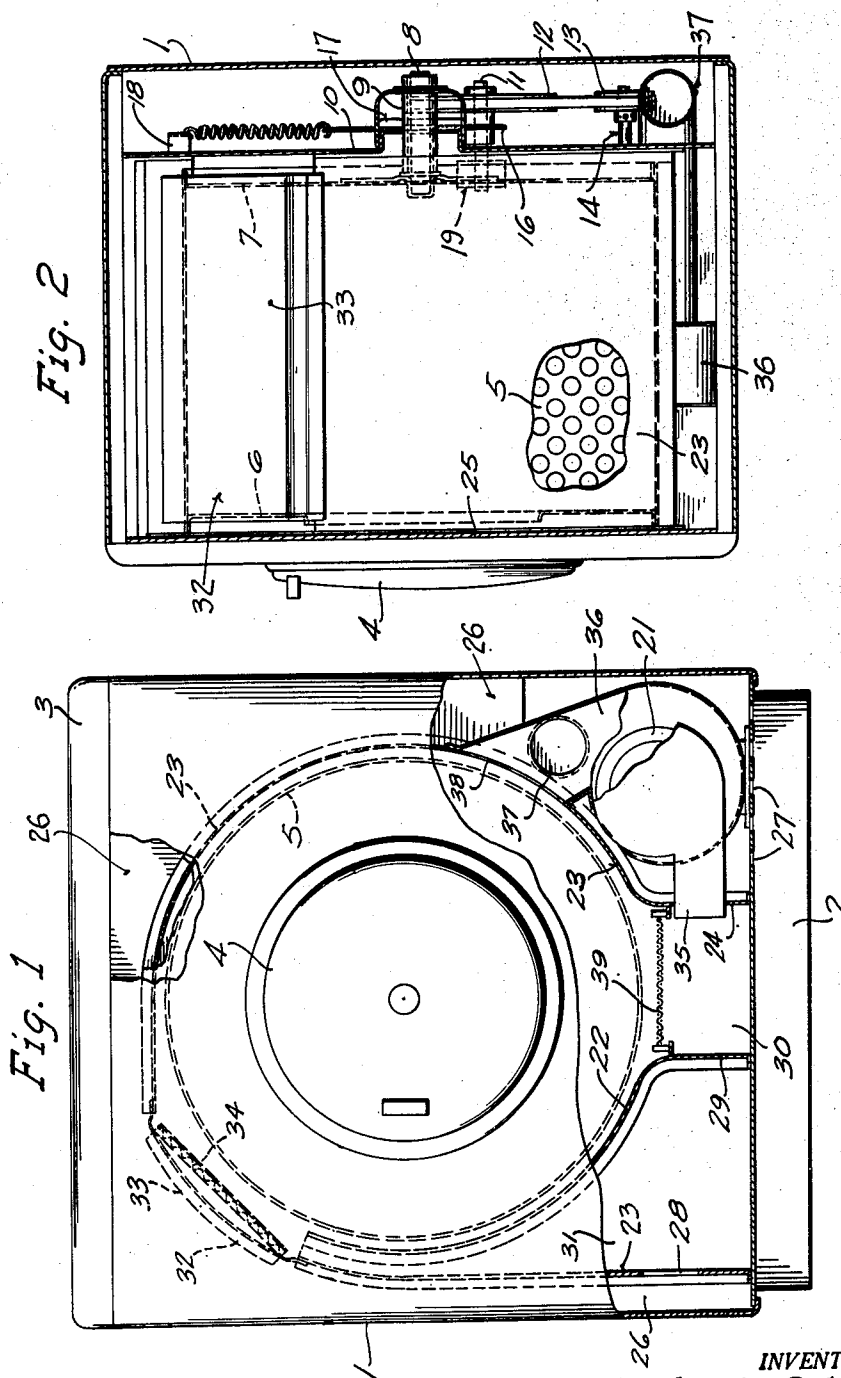
Aug. 2, 1949.

A. POKRAS
CLOTHES DRIER

2,477,820

Filed Nov. 5, 1945

3 Sheets-Sheet 1



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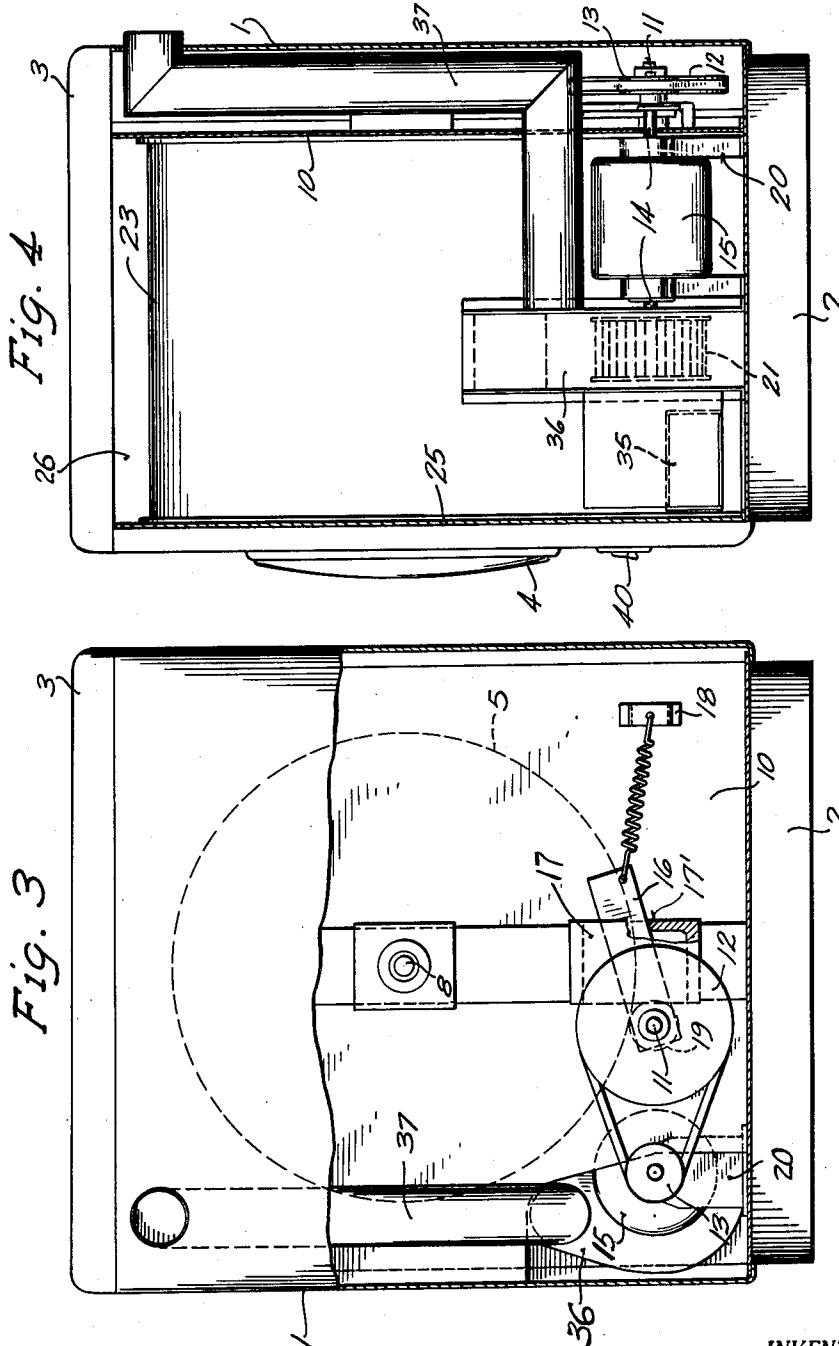
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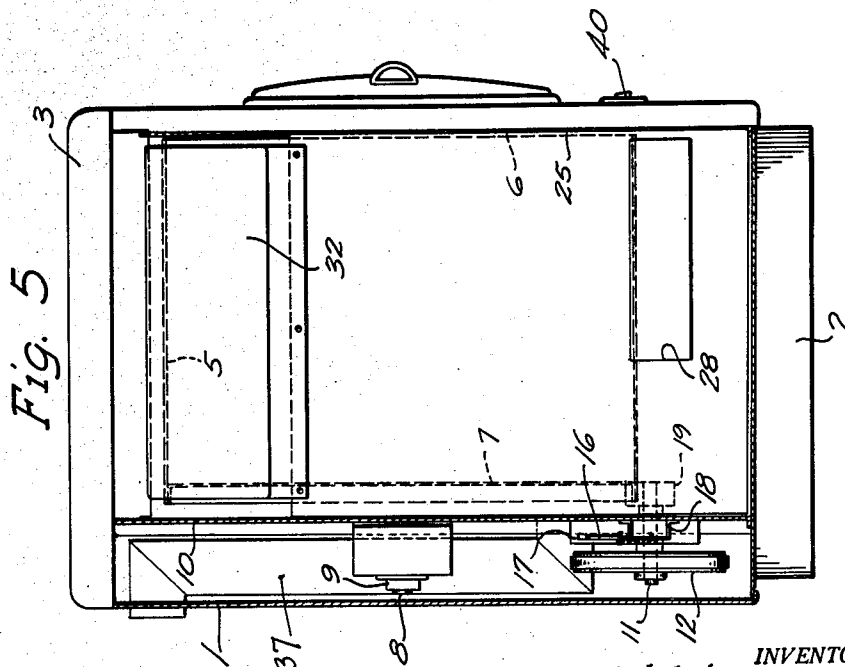
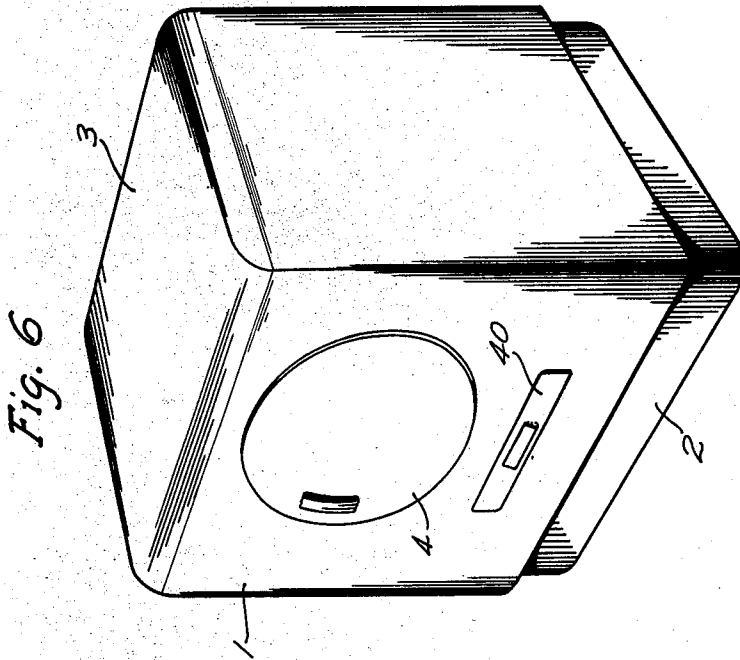
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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

2,477,820

CLOTHES DRIER

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4 Claims. (Cl. 34—131)

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This invention relates to a clothes drier of the type employing a rotary drum for containing the clothes and means for passing drying air there-through during rotation of the drum.

One object of the invention is to eliminate the necessity of a substantial amount of insulation by passing a cool air stream throughout the drier in contact with the outer casing.

Another object is to provide a clothes drier in which freshly heated air and recirculated air are introduced into the drum at different angles to eliminate expensive conduits and improve the efficiency of the drier.

A further object is to introduce recirculated air into the drum at an angle at which the clothes fall into the air stream and are spread apart and loosened for effective drying thereof.

These and other objects of the invention will be clear from the following description of an embodiment of the invention illustrated in the accompanying drawing.

In the drawing:

Figure 1 is a front view of the drier with the front panel partially broken away;

Fig. 2 is a top plan view with the top panel removed;

Fig. 3 is a rear view of the drier with the rear panel partially broken away;

Fig. 4 is a view of the drier from the right side with the side panel removed;

Fig. 5 is a view of the drier from the left side with the panel removed; and

Fig. 6 is a perspective view of the drier.

The construction of the clothes drier may be in general similar to that found in the application of Ernst R. Koppel, Serial No. 607,578, filed July 28, 1945, now Patent No. 2,460,422, dated February 1, 1949, and assigned to the assignee of the present application.

In this construction, as illustrated in the drawings, the housing of the drier comprises the generally square casing 1 formed of front, rear and side panels supported on a base 2 and closed at the top by a removable cover 3. A small door 4 in the front panel of the casing permits access to the inside.

The clothes carrying drum 5 is disposed within the casing and comprises a generally cylindrical perforated metal member substantially closed at the ends by the front plate 6 and the rear plate 7.

A short horizontal shaft 8 has one end suitably secured to the center of rear plate 7 of the drum and the other end is mounted for rotation within bearing 9 suitably secured within the rear end plate 10 of the casing.

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The rear end plate 10 which is spaced inwardly from the rear panel of casing 1 is secured to base 2 and through the shaft 8 supports drum 5 for rotation within the drier.

A floating idler shaft 11 projects through end plate 10 adjacent the lower end thereof and is supported for rotation within suitable bearings. A pulley 12 secured on the outer projecting portion of idler shaft 11 is belt connected to a pulley 13 on drive shaft 14 of the motor 15. The idler shaft 11 is supported in a floating manner by an adjustable plate 16 held by bracket 17. Bracket 17 is located between pulley 12 and end plate 10 and is suitably secured to the latter.

The plate 16 extends diagonally through bracket 17 and pivots on shoulder 17' of the bracket. The idler shaft 11 passes through one end of plate 16 and the other end is spring connected to bracket 18 on the back of end plate 10.

A generally small hard rubber roll 19 is secured to the inner end of idler shaft 11. The roll 19 is in direct frictional contact with drum 5 and is rotated by idler shaft 11 to rotate the drum in a clockwise direction. The plate 16 rocks on the shoulder 17' of bracket 17 to urge roll 19 into frictional engagement with the drum and also takes up slack automatically in the belt between the shaft 11 and motor 15. The bearings in plate 10 supporting shaft 11 have a clearance sufficient to permit the shaft to float therein for radial adjustment thereof by plate 16 and the spring connecting plate 16 to bracket 18.

The motor 15 is mounted on the motor brackets 20 secured to base 2 at the lower right-hand back corner of the drier. The motor 15 drives the drum 5 by its shaft 14 through the speed reducing belt drive described and preferably in a clockwise manner. The motor shaft 14 extends through motor 15 and the front end of the shaft is directly connected to the rotor of the rotary blower 21.

The blower 21 is secured to base 2 at the right-hand front corner of the drier and is employed to suck air into the drier, through the drum and to discharge the air as will be more fully described hereinafter.

The drum 5 is partially surrounded by the inner baffle 22, and the inner baffle 22 and the drum are surrounded by the outer baffle 23.

The outer baffle 23 formed of sheet metal is disposed inside the casing with the ends thereof adjacent the front and rear panels of the casing.

If gas is employed the baffle 23 is formed of only one piece. The baffle 23 shown in the drawings, however, is employed with an electric heating element described hereinafter and is actually formed

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in two separate parts although it operates as a single baffle and is so described.

The left side of baffle 23, as shown in Figure 1, extends straight downwardly and is secured to base 2 at a location only slightly spaced from the side panel. The right side of baffle 23 is curved to the shape of the drum 5 and closely surrounds the right side of the drum. A metal edge flange 24 extends downwardly from the body portion of the baffle closely surrounding drum 5, and is secured to base 2 beneath the drum slightly offset to the right of a line through the center of the drum.

The baffle 23 is closed at the rear by rear end plate 10 and at the front by the front end plate 25 secured to base 2.

The baffle provides the outer air duct 26 between the baffle and casing and extending from the fresh air openings 27 in the bottom of the drier at the lower right side of the casing to the opening 28 in the lower portion of the straight side of baffle 23 at the opposite or left side of the drier. Fresh air openings not shown may also be provided in the lower right side of the casing.

The inner baffle 22 comprises a body portion of the cylindrical shape of the drum and the depending metal edge flange 29. The body portion of baffle 22 closely surrounds the left side of the drier drum and the flange 29 extends downwardly and is secured to base 2 beneath drum 5 slightly offset to the left of a line through the center of the drum. A longitudinal duct 30 is provided beneath drum 5 between flange 29 of the inner baffle and flange 24 of the outer baffle.

The curved body portion of inner baffle 22 is spaced from outer baffle 23 and the upper end of the inner baffle stops at a line substantially removed from the upper end portion of the drum 5.

The inner air duct 31 is provided between the inner and outer baffles and extends from opening 28 in the lower left side of outer baffle 23 upwardly between the baffles and thence over the end of inner baffle 22 and into drum 5.

The heater 32 is secured to the respective parts of the outer baffle 23 immediately adjacent the upper end of baffle 22 and heats air flowing through duct 31 and into drum 5. The heater 32 is preferably a radiant electric heater in which the outer casing 33 is secured to baffle 23 and radiates the heat of the electric element 34 directly into the drum 5 as well as heating the air as it flows by in duct 31 and into the drum. It is also possible to employ a heater unit disposed on base 2 adjacent opening 28 in baffle 23 or heat might be provided in duct 31 from an external source. In both these cases the baffle 23 would be formed of a single piece rather than two pieces as shown.

The longitudinal duct 30 beneath drum 5 is connected to blower 21 by intake conduit 35 and air sucked through the drum and into duct 30 by the blower then flows through intake conduit 35 to recirculating conduit 36.

The recirculating conduit 36 curves upwardly and inwardly to an opening in outer baffle 23 at the lower right side of the cylindrical body portion thereof. The ends of the conduit are suitably secured to baffle 23.

The discharge conduit 37 is secured to recirculating conduit 36 adjacent the joinder of conduit 36 to baffle 23. Conduit 37 extends from conduit 36 horizontally to the back of the drier where it then turns upwardly to the top of the drier and projects out the rear as shown, or out of the top panel. A portion of the air enter-

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ing recirculating conduit 36 is discharged through conduit 37 and another portion is recirculated back into drum 5.

The drum 5 is rotated in a clockwise direction as previously stated and shown in the drawings. The drum 5 may be rotated in a counter-clockwise direction and conduits 35, 36 and 37 would then be located within the drier at a position substantially opposite to the present location thereof.

In any event the recirculated air enters drum 5 through opening 38 at an angle at which the air strikes the clothes as they are falling within the drum. The air spreads the clothes apart and provides drying air underneath the clothes as they tumble in the drum. The recirculated drying air is not reheated prior to entry into the drum and does not mix with the fresh drying air until entry into the drum. The fresh drying air enters the drum at an angle substantially opposite to that of the recirculated air.

Suitable controls, not shown, are provided in the upper rear left corner of the drier to operate the same.

The operation of the drier in service is as follows: wet clothes are deposited in drum 5 through the opening of door 4. The controls are then set. Motor 15 rotates drum 5 clockwise tumbling the wet clothes therein. The blower 21 driven by the motor sucks air into the drier through the opening 27 in the bottom of the casing as shown in the right side of the drawing of Figure 1.

The fresh air flows through the outer duct 26 completely throughout the casing portion of the drier and passes through opening 28 in the lower left side of outer baffle 23 and into the inner duct 31.

Upon entry into duct 31 the fresh air flows upwardly therein past heater 32 and thence into the drum 5.

The blower 21 sucks the air through the drum into duct 30 and thereafter the air flows to the blower through intake conduit 35. The blower then discharges the air into the recirculating conduit 36 which carries a portion of the air back into the drum 5 through opening 38 while another portion of the air exits through discharge conduit 37.

The blower 21 operates and the air flow cycle described continues until the clothes are thoroughly dried at which time the controls turn off the motor 15 and the drier discontinues operation until more wet clothes are placed in the drum and the controls reset.

A lint filtering tray 39 may be disposed in duct 30 to catch lint carried by the air after passing through the drum 5. The tray 39 may be removed through a small door 40 in either the front or back panel of casing 1.

The invention provides a clothes drier in which thick insulation and extensive recirculating conduits are eliminated to decrease the cost of the drier without sacrifice of drying efficiency.

Various embodiments of the invention may be employed within the scope of the accompanying claims.

I claim:

1. A clothes drier comprising a rotary perforate drum disposed on a substantially horizontal axis and adapted to receive clothes to be dried, a casing containing said drum and having its side walls and top and bottom spaced substantially from the drum, a partition extending between the end walls of said casing encircling

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the upper portion of the drum and extending downwardly on opposite sides of the drum to the bottom of the casing, an inlet for air to enter said casing into the chamber between said partition and casing near the lower corner at one side of the drum, an inlet through said partition for admitting air to the inside drum chamber from the space between said partition and casing at the side opposite said first named inlet, a baffle for directing air entering the inner chamber of said partition to enter the drum near the top thereof, means to heat the air entering the drum, an exhaust passage through said casing for discharge of air from the bottom of said drum, and means forcing air through said drum and out said exhaust passage.

2. A clothes drier comprising a rotary perforate drum disposed on a substantially horizontal axis and adapted to receive clothes to be dried, a casing containing said drum and having its side walls and top and bottom spaced substantially from the drum, a partition extending between the end walls of said casing encircling the upper portion of the drum and extending downwardly on opposite sides of the drum to the bottom of the casing, an inlet for air to enter said casing into the chamber between said partition and casing near the lower corner at one side of the drum, an inlet through said partition for admitting air to the inside drum chamber from the space between said partition and casing at the side opposite said first named inlet, a baffle for directing air entering the inner chamber of said partition to enter the drum near the top thereof, a heating unit disposed in said partition to heat the air as it enters the drum, an exhaust passage through said casing for discharge of air from the bottom of said drum and means forcing air through said drum and out through said exhaust passage.

3. A clothes drier comprising a rotary perforate drum disposed on a substantially horizontal axis and adapted to receive clothes to be dried, a casing containing said drum and having its side walls and top and bottom spaced substantially from the drum, a partition extending between the end walls of said casing encircling the upper portion of the drum and extending downwardly on opposite sides of the drum to the bottom of the casing, an inlet for air to enter said casing into the chamber between said partition and casing near the lower corner at one side of the drum, an inlet through said partition for admitting air to the inside drum chamber from the space between said partition and casing at the side opposite said first named inlet, a baffle for directing air entering the inner chamber of said partition to enter

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the drum near the top thereof, means to heat the air entering the drum a suction fan disposed in said casing on the side opposite said baffle and having its inlet connected to a discharge passage from the drum, a recirculation passage for air being discharged from the fan to enter the rotary drum on the downwardly moving side thereof, and a duct leading from said recirculation passage to the outside of said casing to provide for the discharge of air from the drier.

4. A clothes drier comprising a rotary perforate drum disposed on a substantially horizontal axis and adapted to receive clothes to be dried, a casing containing said drum and having its side walls and top and bottom spaced substantially from the drum, a partition extending between the end walls of said casing encircling the upper portion of the drum and extending downwardly on opposite sides of the drum to the bottom of the casing, an inlet for air to enter said casing into the chamber between said partition and casing near the lower corner at one side of the drum, an inlet through said partition for admitting air to the inside drum chamber from the space between said partition and casing at the side opposite said first named inlet, a baffle for directing air entering the inner chamber of said partition to enter the drum near the top thereof, a heating unit disposed in said partition to heat the air as it enters the drum, a suction fan disposed in said casing on the side opposite said baffle and having its inlet connected to a discharge passage from the drum, a recirculation passage for air being discharged from the fan to enter the rotary drum on the downwardly moving side thereof, and a duct leading from said recirculation passage to the outside of said casing to provide for the discharge of air from the drier.

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REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
1,075,382	Roost	Oct. 14, 1913
1,424,994	Cutter	Aug. 8, 1922
1,575,917	Hunt	Mar. 9, 1926
1,593,004	Allinson	July 20, 1926
2,024,459	Lee	Dec. 17, 1935
2,041,318	Berger	May 19, 1936
2,262,186	Lindberger	Nov. 11, 1941
2,314,748	White	Mar. 23, 1943
2,389,433	Hough	Nov. 20, 1945
2,424,737	Brogie	July 29, 1947