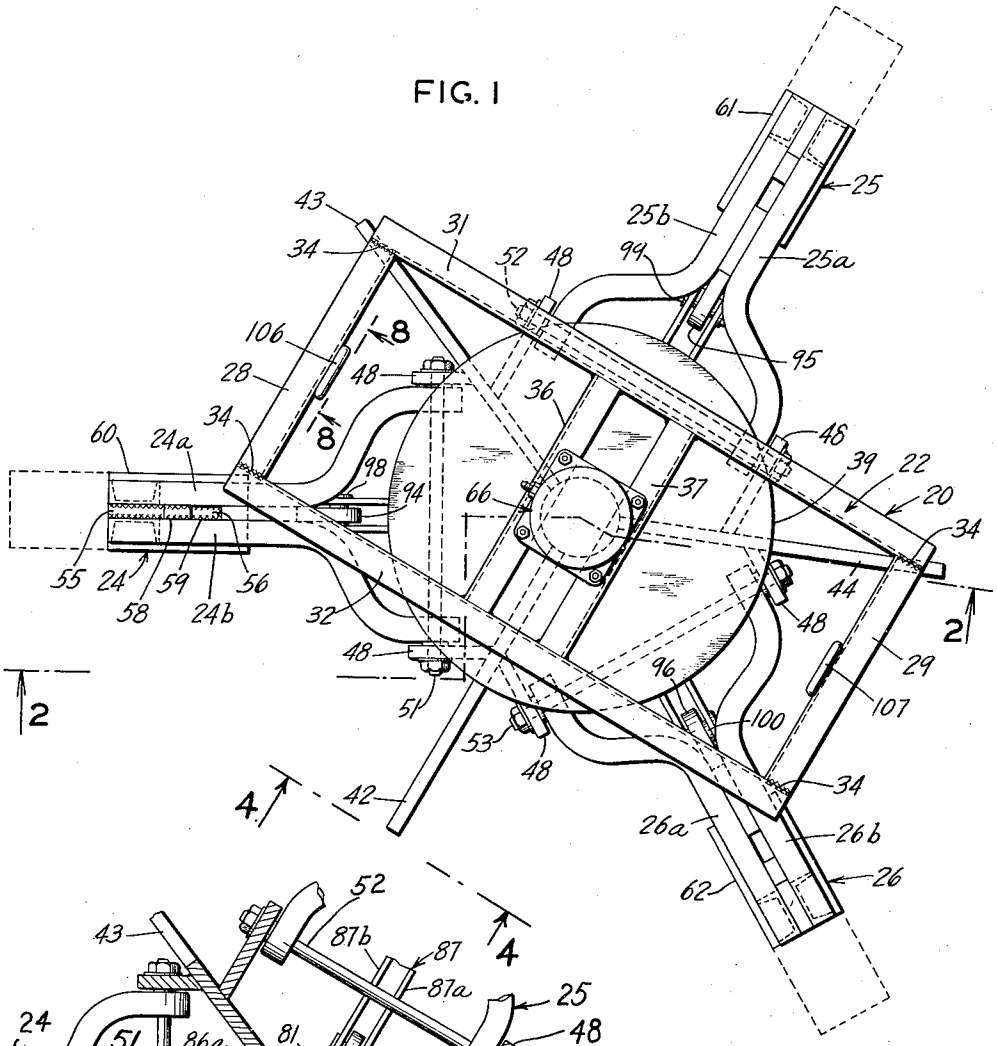
Aug. 11, 1953 W. J. OLSON 2,648,562

GRAB

Filed Jan. 26, 1949 3 Sheets-Sheet 1

FIG. 1



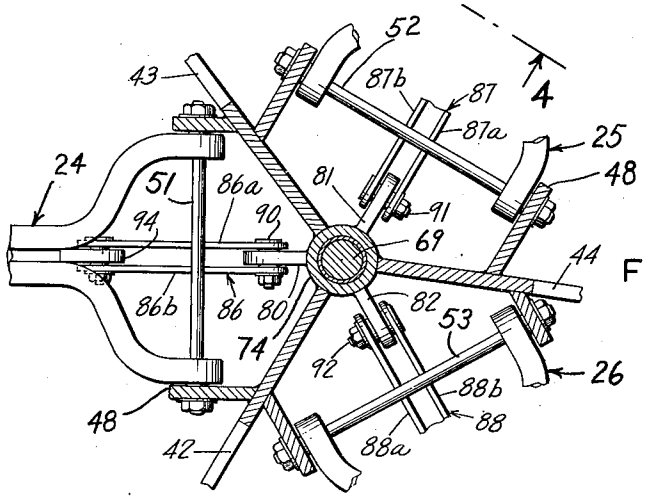


FIG. 3

INVENTOR.
WALTER J. OLSON

BY
Wallace and Cannon

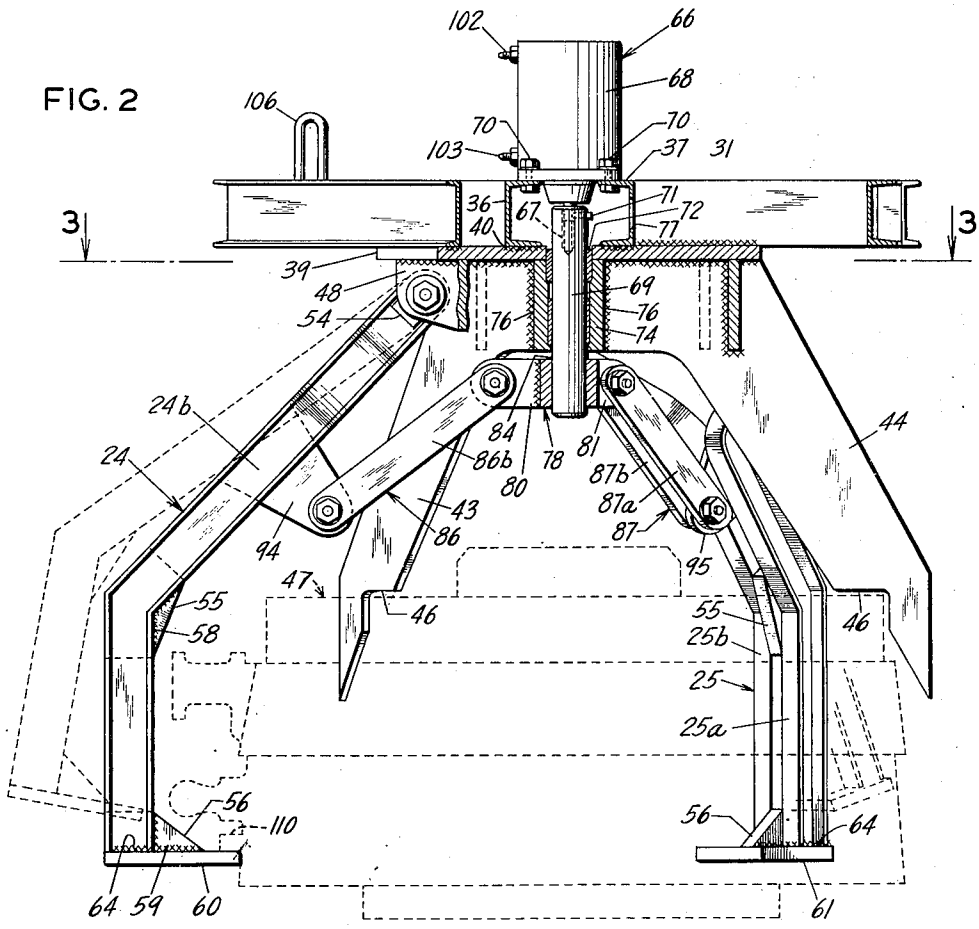
ATTORNEYS

Aug. 11, 1953 W. J. OLSON 2,648,562

GRAB

Filed Jan. 26, 1949 3 Sheets-Sheet 2

FIG. 2



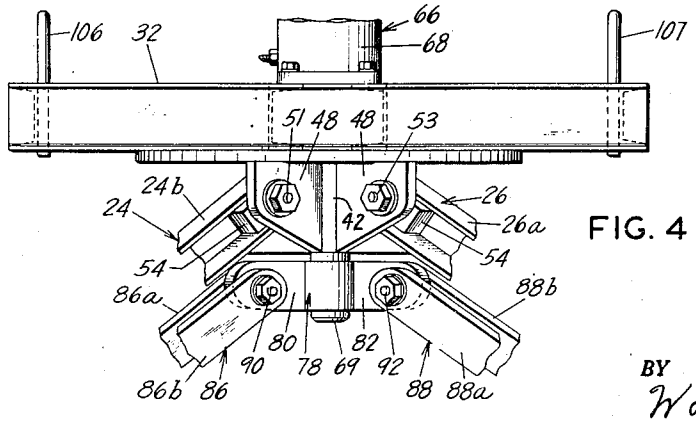


FIG. 4

INVENTOR.
WALTER J. OLSON

BY
Wallace and Cannon

ATTORNEYS

Aug. 11, 1953 W. J. OLSON 2,648,562

GRAB

Filed Jan. 26, 1949 3 Sheets-Sheet 3

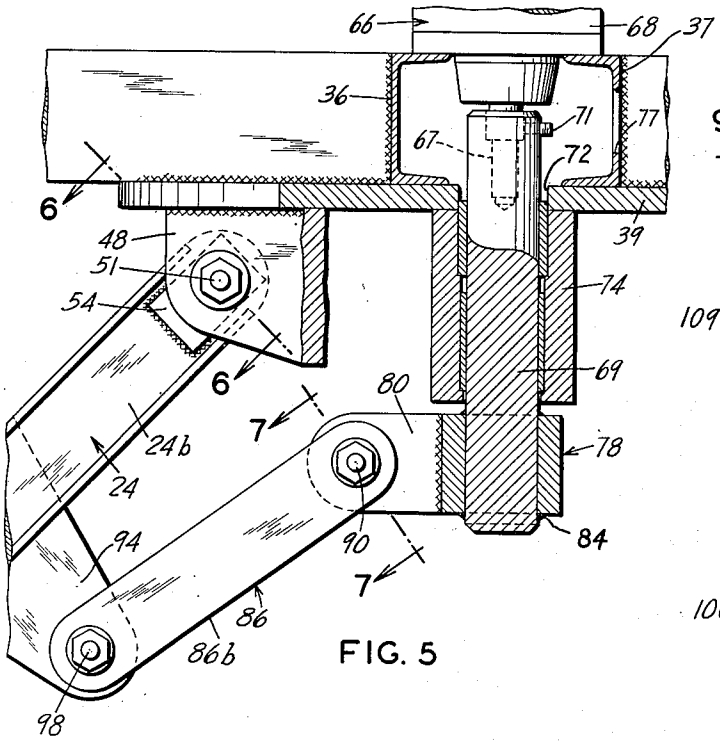


FIG. 5

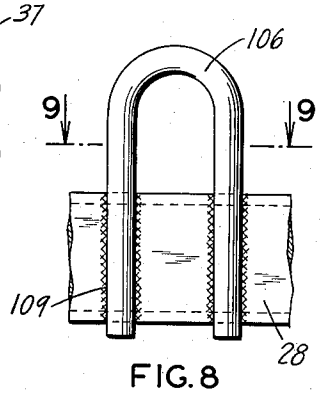


FIG. 8

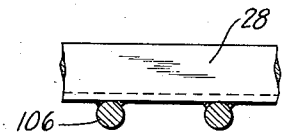


FIG. 9

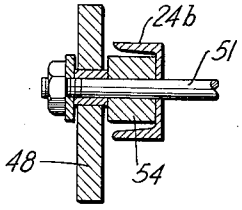


FIG. 6

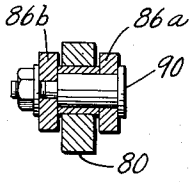


FIG. 7

INVENTOR.
WALTER J. OLSON

BY
Wallace and Cannon

ATTORNEYS

Patented Aug. 11, 1953

2,648,562

UNITED STATES PATENT OFFICE

2,648,562

GRAB

Walter J. Olson, Clifton, N. J., assignor to American Brake Shoe Company, New York, N. Y., a corporation of Delaware

Application January 26, 1949, Serial No. 72,817

3 Claims. (Cl. 294—88)

1

This invention relates to grabs, and more particularly to grabs of the type especially well adapted for use in foundries, or similar places, to pick up and transport wheel molds or other round objects.

Various types of grabs have been heretofore known and used in the art. However, such grabs have had several inherent disadvantages such as, for example, being costly and difficult to manufacture; being difficult and impractical in construction and operation, and the like.

A primary object of my invention is to overcome these disadvantages and to afford a novel grab which may be economically manufactured and is practical and efficient in construction and operation.

Another object of my invention is to enable molds of other than the conventional form, such as, for example, wheel molds, and the like, to be picked up in a novel and expeditious manner.

A further object of my invention is to afford a novel grab having a plurality of spaced, radially projecting arms which are simultaneously engageable with a wheel mold, or a like article of work, in a novel and expeditious manner, and when so engaged with the work are effective to support the same in an efficient, practical manner.

Yet another object of my invention is to afford a grab of the aforementioned type wherein the plurality of work-engaging arms thereof may be positively moved both into and out of work-engaging position by a common means in a novel and expeditious manner.

An object ancillary to the foregoing is to enable a novel grab to be constructed in such a manner that the grappling arms thereof may be moved into and out of work-engaging position by a reciprocating plunger.

Other and further objects of the present invention will be apparent from the following description and claims and are illustrated in the accompanying drawings which, by way of illustration, show a preferred embodiment and the principles thereof and what I now consider to be the best mode in which I have contemplated applying those principles. Other embodiments of the invention embodying the same or equivalent principles may be used and structural changes may be made as desired by those skilled in the art without departing from the present invention and the purview of the appended claims.

In the drawings:

Fig. 1 is a top plan view of a grab embodying the principles of my invention;

Fig. 2 is a sectional view taken substantially along the line 2—2 in Fig. 1;

2

Fig. 3 is a detail sectional view taken substantially along the line 3—3 in Fig. 2;

Fig. 4 is a detail elevational view of the upper portion of the grab looking in the direction of the arrows 4—4 in Fig. 1;

Fig. 5 is an enlarged detail view, somewhat similar to Fig. 2 but with certain parts thereof broken away;

Fig. 6 is a detail sectional view taken substantially along the line 6—6 in Fig. 5;

Fig. 7 is a detail sectional view taken substantially along the line 7—7 in Fig. 5;

Fig. 8 is a detail sectional view taken substantially along the line 8—8 in Fig. 1; and

Fig. 9 is a detail sectional view taken substantially along the line 9—9 in Fig. 8.

The grab 20 shown in the accompanying drawings to illustrate the preferred embodiment of my invention, comprises, in general, a frame 22 on which are pivotally mounted three grappling arms 24, 25 and 26, which are substantially C-shaped, the lower end portions of the grappling arms being adapted to be swung toward and away from each other into and out of work-engaging position, as will be discussed in greater detail presently.

The frame 22 is preferably substantially rectangular in shape and comprises two elongated end members 28 and 29, and two elongated side members 31 and 32, which may be formed of any suitable material such as, for example, channel irons, and are connected together at their ends by suitable means such as welding 34. Two intermediate members 36 and 37 are disposed transversely across the frame 22 between the side members 31 and 32 and welded thereto in spaced relation to each other and in parallel relation to the end members 28 and 29.

A substantially circular-shaped disk 39 is mounted on the lower intermediate surface of the frame 22 and is connected thereto as by welding 40. Three substantially inverted L-shaped guide arms 42, 43 and 44 are welded to the lower surface of the disk 39 and project downwardly and outwardly therefrom, each of the guide arms 42—44 having a notch 46 formed in the lower end portion thereof within which the upper end portion of an article of work, such as a mold 47, may normally be engaged when the article is being supported by the grab 20, as will be discussed in greater detail hereinafter.

Six mounting flanges or supporting flanges 48 are welded to the sides of the guide arms 42—44, each of the flanges 48 projecting outwardly from a respective side of a corresponding one of the

guide arms 42—44 at an acute angle thereto, Fig. 1.

The grappling arms 24, 25 and 26 are bifurcated in form, each comprising two elongated side members 24a and 24b, 25a and 25b, and 26a and 26b, respectively, having outwardly flared upper end portions pivotally mounted between a respective pair of the flanges 48 by suitable means such as bolts 51, 52 and 53, respectively, a suitable spacer block 54, Figs. 2 and 6, being disposed between each of the side members 24a, 24b, 25a, 25b, 26a and 26b, and the adjacent flange 48. The lower end portions of the side members 24a and 24b, 25a and 25b, and 26a and 26b, of the grappling arms 24–26, respectively, are disposed in closely adjacent parallel relation to each other and the side members of each grappling arm 24–26 are connected together by gusset plates 55 and 56 connected thereto by suitable means such as welding 58 and 59, respectively. The grappling arms 24–26 are each pivotally suspended on the bolts or rods 51–53, respectively, and each has work-engaging jaws 60, 61 and 62, respectively, mounted on the lower end portion thereof and projecting radially inwardly therefrom, the jaws 60–62 being formed of suitable means such as sheet metal, and being connected to the lower end portion of the grappling arms such as by welding 64.

Thus, it will be seen that the grappling arms 24–26 are pivotally suspended from flanges 48 projecting from respective pairs of the guide arms 42–44, the grappling arm 24 being suspended between the guide arms 42 and 43; and the grappling arm 26 being suspended between the guide arms 42 and 44, and the grappling arms 24–26 being adapted to be swung toward and away from each other on the rods 51–53, respectively.

A power unit 66 comprising a housing or cylinder 68 in which is reciprocably mounted a piston 67, is mounted on the upper surface of the frame 22, the cylinder 68 being attached to the intermediate arms 36 and 37 thereof by bolts 70. A plunger 69 is mounted on the lower end portion of the piston 67 and is releasably connected thereto by suitable means such as a set screw 71, the plunger 69 projects downwardly from the piston 67 through an opening 72 formed in the center of the disk 39 and is reciprocably mounted in a bushing 74 disposed in axial alignment with the opening 72 between the guide arms 42–44, the bushing 74 being connected to the guide arms 42–44 by welding 76. An opening 77, Figs. 2 and 5, may be provided in the intermediate member 37 directly opposite the lower end portion of the piston 67 to afford ready access to the set screw 71.

A collar member 78 having three outwardly projecting flanges 80, 81 and 82, is mounted on the lower end portion of the plunger 69 and is secured thereto by suitable means such as welding 84. The flanges 80, 81 and 82 are disposed in alignment with the grappling arms 24, 25 and 26, respectively, and are connected thereto by links 86, 87 and 88, the links 86, 87 and 88 each comprising two elongated side members 86a and 86b, 87a and 87b, and 88a and 88b, respectively, having one end portion connected to the flanges 80, 81 and 82, on opposite sides thereof, by bolts 90, 91 and 92, respectively, and being connected at their other ends to ears 94, 95 and 96, projecting from the grappling arms 24, 25 and 26, by bolts 98, 99 and 100, respectively. Thus, it will be seen that, as best shown in Fig. 2, reciprocation of the piston 67 relative to the cylinder 68 of the power unit 66 is effective, through the interconnection of the plunger 69 with the grappling arms 24–26, by the collar 78, the links 86–88, and the ears 94–96, respectively, to swing the grappling arms 24–26 toward and away from each other. The power unit 66 may be any one of several types which are well known to those skilled in the art, but I prefer to use a pneumatically or hydraulically operated power unit 66 wherein the piston 67 may be caused to reciprocate in the cylinder 68, in a manner well known to those skilled in the art, by feeding working fluid such as compressed air, or the like, into and out of, the cylinder 68 through suitable means, such as coupling members 102 and 103 mounted on the opposite end portions of the cylinder 68, Fig. 2.

Suitable lifting means such as, for example, U-shaped members or eyes 106 and 107, Figs. 1, 8 and 9, may be mounted on the opposite end portions of the frame 22 by a suitable means such as welding 109 to afford means whereby the grab 20 may be readily engaged by a suitable lifting member such as the customary hooks on a power hoist, or the like, for the purpose of lifting and transporting the grab.

It will be seen that my novel grab is especially well adapted for supportingly engaging molds, and the like, of other than the conventional forms, such as for example, wheel molds, and the like, the grappling arms 24–26 affording means whereby the mold may be suspended from three points and being adapted to be readily swung toward and away from each other under positive pressure exerted by the power unit 66, the jaws 60–62 being thereby swung into and out of work-engaging position.

In the operation of the grab 20, working fluid such as, for example, air, may be fed into the cylinder 68 through the coupling 102 to thereby cause the plunger 69 to be moved downwardly, as viewed in Fig. 2. Such downward movement of the plunger 69 is effective, through the links 86–88, respectively, to swing the grappling arms 24–26 outwardly toward the positions shown in dotted lines in Fig. 2, so that the grab may be lowered over the article to be engaged thereby. After the grab 20 has thus been lowered over the article to be engaged thereby, working fluid may be fed into the cylinder 68 through the coupling member 103 to thereby move the plunger 69 upwardly, as viewed in Fig. 2, and thereby swing the grappling arms 24–26 into engagement with the article of work disposed therebetween. Usually, projections such as, for example, the lugs 110 formed on the mold 48, are afforded on the article to be raised by the grab 20. However, if no such projections are afforded, the jaws 60 may be disposed beneath the article to be supported or, if necessary, may be merely pressed into firm frictional engagement with the side walls of the article to be supported, the power unit 66 preferably being of the type which, when necessary, is capable of exerting substantial inwardly acting force on the grappling arms 24–26.

The parts of my novel grab 20, and especially the guide arms 42–44 and the grappling arms 24–26, are preferably so constituted and arranged that when the jaws 60–62 are operatively engaged with the article of work to be supported, the upper end portion of the article of work is disposed between the lower end portions of the guide arms 42 and 44 and is engaged with the top wall of the notches 46 therein. In this manner, it will be seen that the article of work is

thus supported in a manner whereby the guide arms 46 and 47 are especially effective to prevent lateral tipping of the article in the grappling arms.

From the foregoing it will be seen that I have afforded a novel grab which is especially well adapted for use in picking up and transporting wheel molds and other molds of round or uncommon shape.

Also, it will be seen that I have afforded a novel grab wherein the grappling arms thereof are operable to be moved in a positive manner in both a work-engaging and work-disengaging direction.

In addition, it will be seen that I have provided a novel grab which is operable in a novel and expeditious manner to firmly and positively support articles of work such as round wheel molds, and the like.

Furthermore, it will be seen that I have afforded a novel grab of the aforementioned type which is efficient in operation and which may be economically produced commercially.

Thus, while I have illustrated and described the preferred embodiment of my invention, it is to be understood that this is capable of variation and modification and I therefore do not wish to be limited to the precise details set forth, but desire to avail myself of such changes and alterations as fall within the purview of the following claims.

I claim:

1. A grab of the type adapted to supportingly engage articles of work to be transported, said grab comprising a supporting frame, a plurality of elongated guide arms suspended from said frame in spaced relation to each other, a plurality of grappling arms pivotally mounted on said guide arms in depending relation to said frame, each of said grappling arms being mounted on a respective pair of said guide arms, and said grappling arms being pivotable on said guide arms toward and away from each other into and out of work-engaging position, and means mounted on said frame and connected to said grappling arms for moving the latter into and out of said work-engaging position, said grappling arms being adapted when in work-engaging position to support an article of work in engagement with one end portion of said guide arms to thereby clamp said work between said guide arms and said grappling arms.

2. A grab of the type adapted to support articles of work to be transported, and to releasably clamp such articles of work therein, said grab comprising a supporting frame, a plurality of grappling arms, means including a plurality of guide arms suspended from said frame for pivotally suspending said grappling arms from said frame, said grappling arms being pivotable on said means into and out of work-engaging position and being adapted when disposed in said work-engaging position to support such an article of work in clamped engagement with said guide arms, a cylinder mounted on said frame, and a plunger reciprocably mounted in said cylinder and projecting between said grappling arms, said plunger being connected to said grappling arms and being operable upon reciprocation in said cylinder to pivot said grappling arms on said means into and out of said work-engaging position.

3. A grab of the type adapted to support articles of work to be transported, and to releasably clamp such articles of work therein, said grab comprising a supporting frame, a plurality of elongated guide arms mounted on and projecting downwardly from said frame in spaced relation to each other, said guide arms having inwardly and downwardly opening notches therein, hanger members mounted on said guide arms, a plurality of grappling arms pivotally mounted on said hanger members and projecting below said guide arms, each grappling arm being pivotally mounted between two adjacent guide arms on hanger members mounted on said two adjacent guide arms, said grappling arms being operable to be pivoted into and out of work-engaging position and being adapted when disposed in work-engaging position to support such an article of work below and between said guide arms and in clamped engagement therewith in said notches, and means reciprocably mounted on said frame and connected to said grappling arms for moving the latter into and out of said work-engaging position.

WALTER J. OLSON.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
344,222	Thomas	June 22, 1886
1,338,023	Leduc	Apr. 27, 1920
1,888,727	Johnson	Nov. 22, 1932
2,061,864	Wells	Nov. 24, 1936
2,087,877	Ralston	July 30, 1937
2,277,235	Kidder	Mar. 24, 1942
2,533,770	Dailey	Dec. 12, 1950