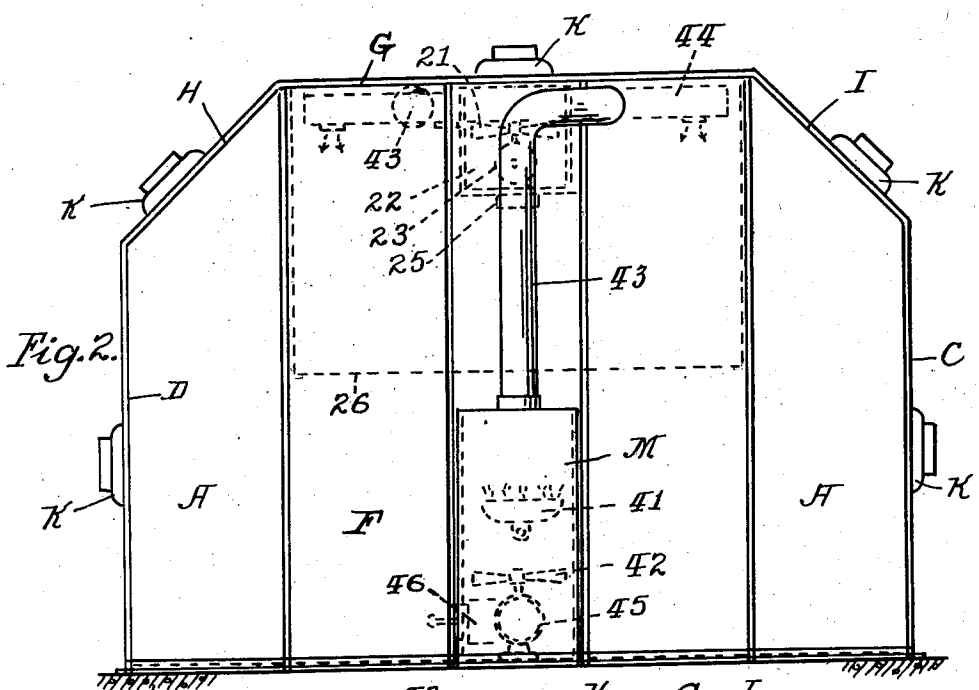
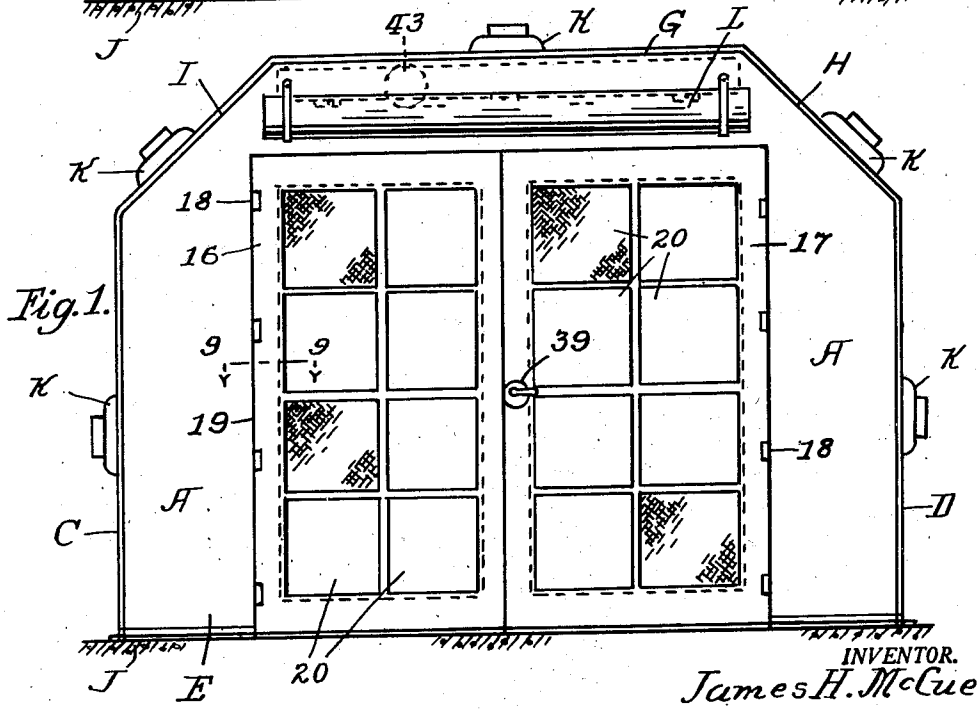
July 13, 1948. J. H. McCUE 2,445,074

SPRAY BOOTH

Filed July 10, 1945 3 Sheets-Sheet 1



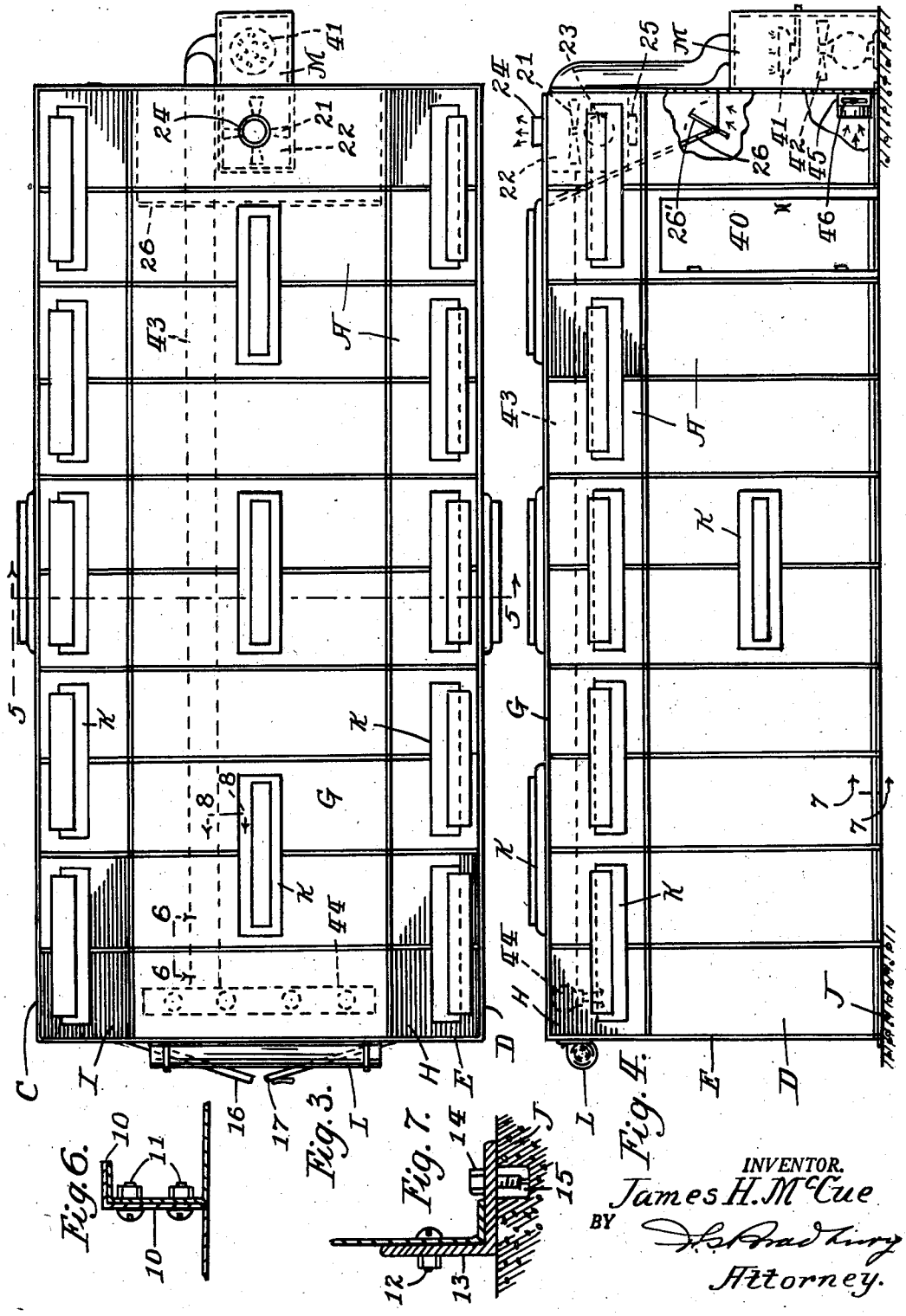


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SPRAY BOOTH

Filed July 10, 1945 3 Sheets-Sheet 3

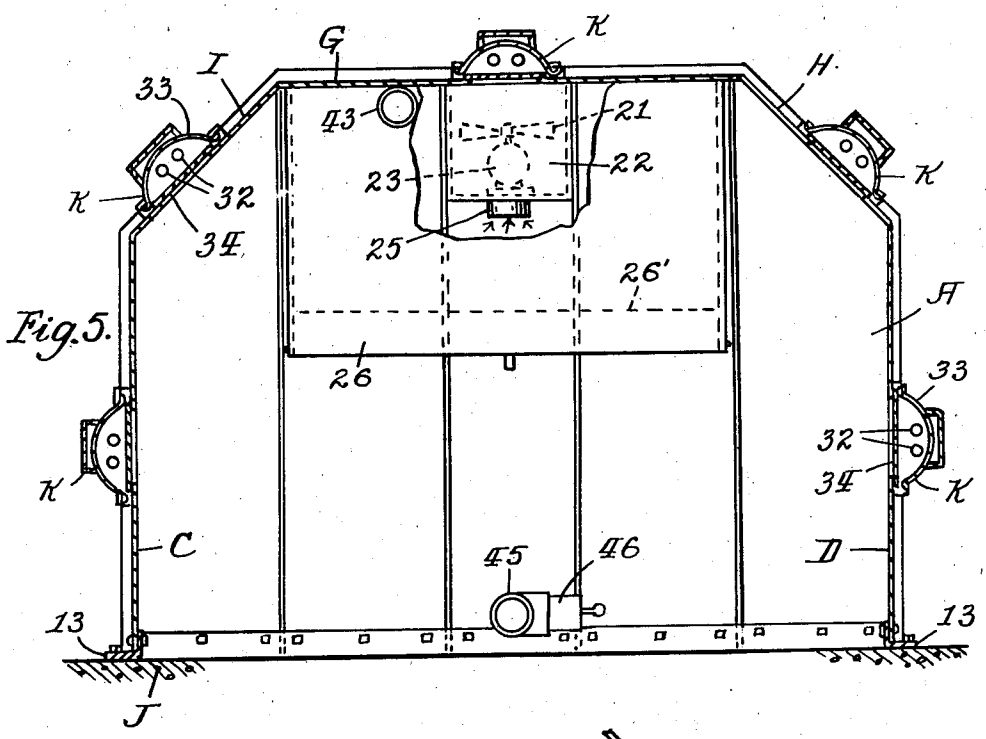


Fig. 5.

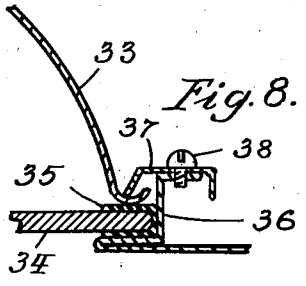


Fig. 8.

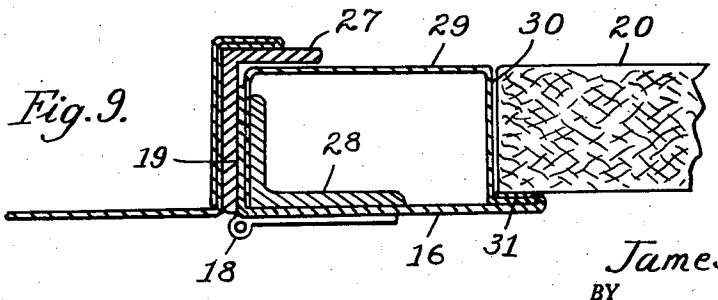


Fig. 9.

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SPRAY BOOTH

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Application July 10, 1945, Serial No. 604,252

3 Claims. (Cl. 91—60)

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My invention relates to improvements in spray booths of that type which is adapted to be employed for painting vehicles, the primary object being to spray a vehicle with paint in a closed chamber through which air is conducted to quickly dry the painted surfaces. A further object is to effectively remove substantially all of the particles of dust from the air which is circulated through the booth so that the painted surfaces are free from blemishes. Another object is to provide illuminating means which is arranged so that the exposed surfaces of a vehicle to be painted are clearly and evenly visible and free from objectionable shadows during the spraying operation. Another object is to provide a prefabricated structure by which the booth can be easily and quickly assembled wherever and whenever it is used. A further object is the production of a convertible construction which is provided with means which can be used whenever desired for heating the atmosphere in the booth so as to reduce time consumed for drying and hardening the freshly painted surfaces. Among still further objects is the production of a spray booth which can be quickly erected or dismantled and which has maximum simplicity and inexpensive construction and is economical and highly effective to operate.

To these ends my invention comprises the features of construction and combination of parts hereinafter set forth and claimed.

In the accompanying drawings forming part of this specification, Fig. 1 is a front elevation of my improved spray booth; Fig. 2 is a rear elevational view; Fig. 3 is a plan looking down upon the spray booth, the view being taken at a slightly reduced scale over that shown in Figs. 1 and 2; Fig. 4 is a side elevational view; Fig. 5 is a cross sectional view taken on the line 5—5 of Fig. 3 and at slightly increased scale; Fig. 6 is a typical section taken on the line 6—6 of Fig. 3; Fig. 7 is a typical section taken on the line 7—7 of Fig. 4; Fig. 8 is a typical section of a detail taken on the line 8—8 of Fig. 3, and at an increased scale; and Fig. 9 is a typical section of a detail taken on the line 9—9 of one of the doors and at increased scale.

My improved spray booth is made in prefabricated sections which can be easily assembled and its parts secured together while at any location. It can be made out of thin sheet metal panels such as A or out of any other suitable material, the joints between sections being angled at 10 to increase strength and rigidity of structure and its edges overlapped and secured together by bolts

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11 or other suitable fastening means in the manner illustrated in Fig. 6. The spray booth is formed with two opposite substantially flat parallel side walls C and D and front and back walls E and F. A ceiling is constructed overhead composed of the upper horizontal portion G which extends longitudinally from front to rear of the structure and is constructed with opposite side walls by the diagonal portions H and I which slope downwardly and outwardly apart.

The spray booth is adapted to be erected on any suitable floor structure, that shown consisting of concrete and being indicated by J in the drawings. The lower edges of the side walls C and D and front and back walls E and F are secured by angle bars 13 to which the lower edges of the sheet material is bolted at 12 (Fig. 7), to reinforce the strength of the structure, said angle bars in turn being secured to the floor by bolts 14 which are threaded in expansion sockets 15 seated in the floor.

The sheet panel work thus produced produces a strong and rigid structure out of a minimum of this sheet material, the diagonal ceiling panels H and I reinforcing the strength both longitudinally and laterally. The front wall E is provided with a door closing means having a pair of doors 16 and 17 which are hinged at 18 so as to swing horizontally outwardly and open or close a doorway 19. The entire structure is adapted to hold a vehicle (not shown), which it is desired to paint by spraying, the latter being moved into or out of the booth through said doorway. Each of the doors is constructed with air filter panels 20 through which air from outside is free to enter the chamber within the booth but in transit is filtered to prevent blemishes from dust upon the freshly painted coat which is sprayed upon the vehicle. A forced draft of air is created through the filter panels and the chamber within the booth by the exhaust fan or blower 21 which is contained in the exhaust chamber 22, the latter being located at the inner end of the booth near the ceiling. The exhaust fan or blower is shown driven by the motor 23 and the exhaust chamber is provided with the exhaust outlet 24 to the outer atmosphere, and with the inlet duct 25 from the chamber within the booth. An equalizing baffle 26 depending from the ceiling at the inner end of the booth, envelops the exhaust chamber and has an open lower end for evenly circulating air and removing paint fumes from a wide area within the booth, said open lower end being closed or regulated by the hand operable shutter 26'.

While the exhaust chamber 22 is shown located in the upper portion of the booth chamber, it will be understood that the location and construction of the forced exhaust draft means may be varied and other means applied for the purpose intended within the spirit of the invention.

The method of constructing the filter panels into the doors 16 and 17 is illustrated in Fig. 9, in which the doorway is framed by the angle member 27 and the door member is framed by the angle member 28. The door is formed by the sheeting 29 which together with one of the leaves of the hinges such as 18 are spot welded or riveted to the angle member 28. The opposite hinge leaf is spot welded or riveted to the angle member 27. The sheet casing is formed with the opening 30 and stop shoulder 31, in which the block of filter material constituting one of the filter panels 20 is seated. The filter panel may be effectively constructed out of spun glass and is renewable from time to time if and when it becomes clogged with material which is filtered from the air. In this manner clean air is circulated through the booth to effectively prevent paint blemishes and to dry the paint coated surfaces. The circulation of the air is concentrated around the vehicle in the booth to apply even drying of the painted surfaces by the diagonal or sloping portions H and I of the ceiling.

It is desirable to evenly illuminate the exposed surfaces of a vehicle which is sprayed in the booth so that the operator may apply an even coat of paint without ripples or unevenness. This is accomplished effectively by substantially evenly distributing longitudinally disposed fluorescent electric lights K, which are made to direct their rays of light upon the exposed top, sides and end surfaces of the vehicle. To accomplish these results a longitudinally arranged series of these lights is arranged directly overhead in the horizontal ceiling G, and in each of the diagonal panels H and I. Also longitudinal fluorescent lights are placed in the median portion of the side walls C and D, all as shown in the drawings. In this manner the light rays cast by the lighting elements are directed vertically and diagonally down and horizontally inwardly upon the vehicle body so as to evenly illuminate all of its surfaces to be painted. Each of the fluorescent lights has suitable longitudinally disposed illuminating elements or tubes 32 (Figs. 5 and 8), which are held in illuminating position in a suitable reflector 33 behind an oblong wire glass face plate 34 within a suitable housing. The face plate has its marginal edges protected by a continuous buffer gasket 35. The reflector and face plate are also retained in a suitable marginal rectangular frame 36, which is incorporated into the sheet structure of the booth body by the marginal clamp member 37. The latter is shown detachably secured in retaining position by screws such as 38, as shown in Fig. 8.

Any desired ordinary type of hand directed portable spraying means (not shown) may be employed in the booth to spray a coat of paint upon the surfaces of a vehicle. In use when a vehicle to be sprayed with paint has been moved into the booth, the doors 16 and 17 are closed and fastened by the door catch 39, the lights are turned on and the air exhaust fan or blower 21 is operated. During this operation and the spraying of the vehicle with paint, the operator has free access to and from the booth through an escape doorway 40. Also the operator is provided with fresh air to prevent ill effects from exposure to paint fumes, the air which is circulated through the booth being thoroughly filtered so as to also prevent any dust collecting upon the freshly painted surfaces and causing any blemishes. During this operation the air is circulated at the proper velocity so as to remove paint fumes and so that the operator may secure a smooth and even coat of paint on the surfaces of the vehicle and prevent what is termed "over spraying." The continued operation of the air exhaust quickly dries the painted surfaces.

When desired my improved spray booth may be provided with a source of heat to hasten the drying operation and harden the painted surfaces but this is entirely optional. In such event a curtain L is lowered in front of the filter panels in the doors 16 and 17, when the latter are closed, to prevent outside air being drawn into the chamber within the booth and a source of heated air from an air chamber M containing a heater 41 and a blower 42 is connected with the chamber in the booth to propel a continuous closed circuit of heated air through the booth. Air from the heating chamber M at the inner end of the booth is driven through duct 43 to the forward end of the upper portion of the booth where it is admitted by the transverse distributer 44. The return of air from the lower portion of the booth enters the heating chamber M through the ingress duct 45. Thus during the air heating operation a continuous circuit of heating medium is maintained, the shutter 26' being closed and the exhaust blower 21 not operated. During the air heating operation a shutter 46 in the ingress duct 45 is opened and during the operation of the exhaust blower 21, said shutter 46 is closed.

In accordance with the patent statutes, I have described the principles of operation of my invention together with the apparatus which I now consider to represent the best embodiment thereof, but I desire to have it understood that the construction shown is only illustrative and that the invention can be carried out by other means and applied to uses other than those set forth within the spirit of the invention and the scope of the following claims.

I claim:

1. A spray booth for a vehicle to be sprayed with paint, having side and end walls and a substantially horizontal ceiling forming a closed chamber, said ceiling being joined laterally to said side walls by downwardly and outwardly sloping lateral side portions to reduce the volume of air contained within said enclosure and reinforce structural strength, door closure means in the forward end wall for admitting a vehicle to be sprayed in said structure, filter means in said door closure means for filtering air which is admitted into said structure, and air exhaust means near the inner end portion of said structure for creating an evenly distributed draft of air longitudinally through said structure to evenly dry the paint which is sprayed upon the vehicle therein, and a closely assembled longitudinal series of lights integral with each of said sloping portions by which the surface of a vehicle in the spray booth is evenly illuminated.

2. A spray booth structure for enclosing a vehicle to be sprayed with liquid, having prefabricated thin side, end and ceiling walls, said ceiling wall being joined laterally to said side walls by downwardly and outwardly sloping portions

to form a longitudinal structure from end to end thereof, door closure means in the forward end wall for admitting a vehicle to be sprayed into said structure, air filter means in said door closure means for freely filtering air admitted into said structure, air exhaust means near the inner end of said structure for creating a draft of evaporating medium through said structure to evenly distribute and dry liquid which is sprayed upon the vehicle therein, and a longitudinal series of closely assembled elongated lights integral with said ceiling, side and sloping portions, said lights being directed by said walls downwardly and inwardly to substantially evenly illuminate the top, sides and ends of the vehicle in said structure.

3. A spray booth structure for enclosing a vehicle to be sprayed with paint, having opposite side walls, opposite end walls, a ceiling and opposite beveled walls connecting said ceiling and side walls, said parts forming a closed spray chamber, door closure means in the forward end wall of said structure for admitting a vehicle to be sprayed into said chamber, air filter panels in said door closure means to admit filtered air into said chamber, a plurality of series of longitudinally disposed elongated lights respectively built into each of said ceiling, side and beveled walls, said lights being directed downwardly and inwardly into said chamber so as to evenly illuminate exposed surfaces of the vehicle therein to be sprayed, means near the upper inner end of said structure for exhausting air from within said structure, and an equalizing baffle extending downwardly from the air exhaust means to exhaust air and paint fumes from the remote inner end portion of the chamber within said structure.

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REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
1,183,397	Newcomb	May 16, 1916
1,203,235	Morriss	Oct. 31, 1916
1,211,325	Lilly	Jan. 2, 1917
1,327,314	Cunliffe	Jan. 6, 1920
1,611,756	Leigh	Dec. 21, 1926
1,697,079	Onsrud	Jan. 1, 1929
1,828,609	Mahon	Oct. 20, 1931
1,887,581	Cowan	Nov. 15, 1932
2,026,080	Ziska	Dec. 31, 1935
2,097,953	Ludwig	Nov. 2, 1937
2,227,481	Bates	Jan. 7, 1941
2,257,516	Roche et al.	Sept. 30, 1941

FOREIGN PATENTS

Number	Country	Date
206,257	Switzerland	Nov. 1, 1939