

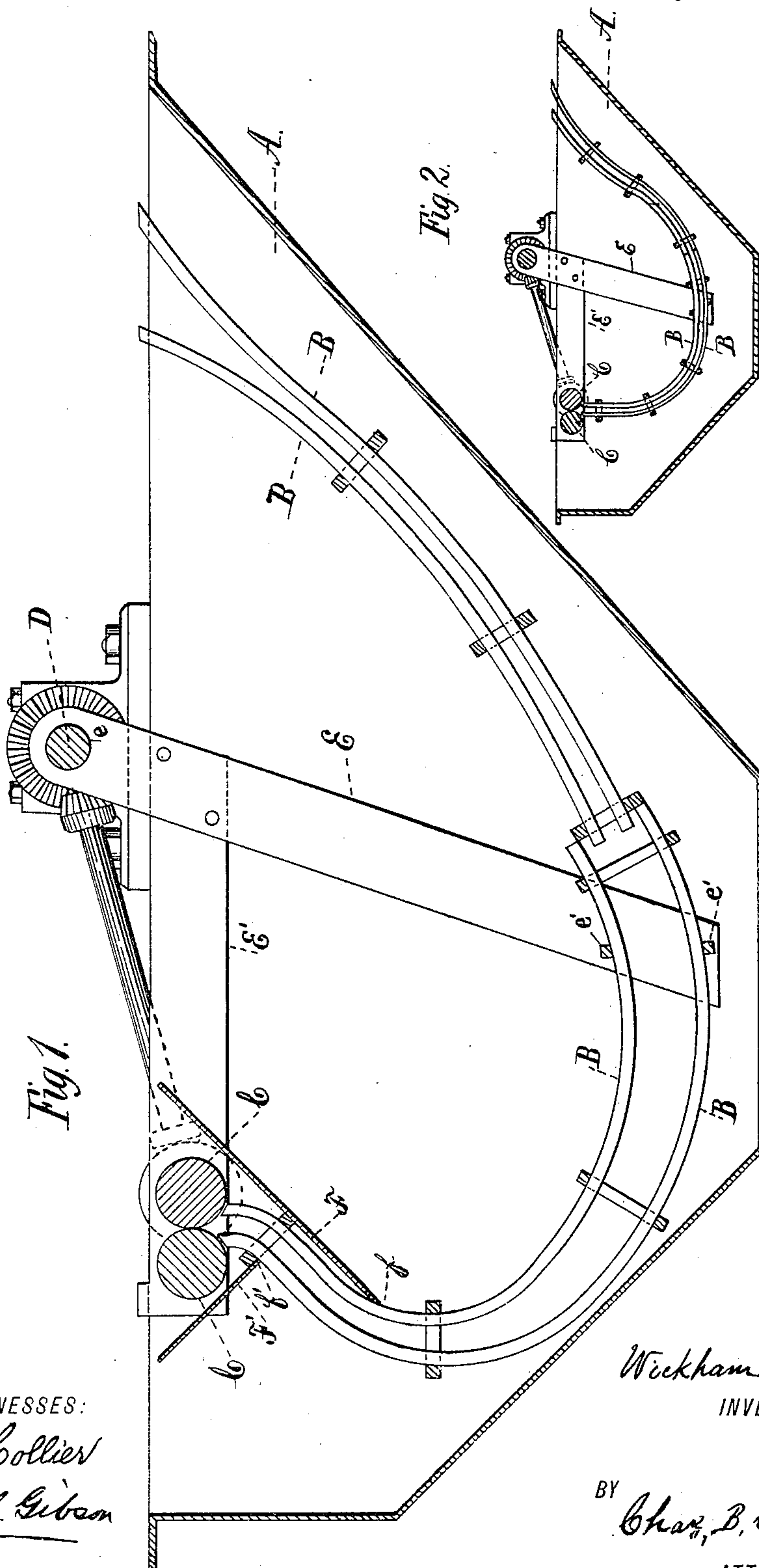
(No Model.)

W. B. SPEAR.

# APPARATUS FOR THE MANUFACTURE OF GALVANIZED IRON.

No. 362,906.

Patented May 10, 1887.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## APPARATUS FOR THE MANUFACTURE OF GALVANIZED IRON.

SPECIFICATION forming part of Letters Patent No. 362,906, dated May 10, 1887.

Application filed September 10, 1886. Serial No. 213,189. (No model.)

*To all whom it may concern:*

Be it known that I, WICKHAM B. SPEAR, of the city and county of Philadelphia, in the State of Pennsylvania, have invented certain  
5 new and useful Improvements in Apparatus for the Manufacture of Galvanized Iron, of which improvements the following is a specification.

The object of my invention is to prevent the  
10 adherence to the sheet of metal in its passage through the galvanizing-tank of chloride of zinc derived from sal-ammoniac, which is usually employed as a flux, and of impurities, to the end of securing a better and more highly  
15 finished product.

In the process of galvanizing sheets of iron, as ordinarily practiced, the sheets, after having been properly cleaned, are passed through a bath of molten zinc or alloy of zinc, the  
20 sheets being fed or propelled through the bath by one or more pairs of feed-rolls, and guided through the tank and between the rolls by guides placed within the tank. The guides as heretofore employed are so constructed as  
25 that the sheets are caused to ascend in a vertical direction from their lowest position in the tank to the delivery-rolls, the result being that chloride of zinc derived from the sal-ammoniac adheres to the sheet and is carried mechanically with it to the delivery-rolls, and is  
30 impressed upon the sheet by them, thus contaminating its surface and depreciating its quality.

My invention consists, first, in a novel construction of the guides which control the passage of the sheet through the tank, and, second, in combining with said guides deflectors to deflect from the sheet the chloride of zinc and impurities.

40 To enable others skilled in the art to practice my invention, I will describe the same with reference to the accompanying drawings, in which—

Figure 1 is a vertical longitudinal central  
45 section through an apparatus for galvanizing iron in accordance with my improvements; and Fig. 2, a vertical longitudinal central section, on a reduced scale, of an apparatus for galvanizing iron, showing the form and construction of the guides as heretofore employed.

Corresponding letters indicate corresponding parts in the respective drawings.

A is the galvanizing-tank, which may be of the shape indicated in the drawings, or of any other convenient shape, and is heated by a  
55 furnace in any ordinary way.

B B are the guides, between which the sheet of iron is placed, and by which its traverse through the zinc bath to the feed and delivery  
60 rolls is controlled.

By reference to Fig. 1, in which my improved form of apparatus is illustrated, it will be seen that the guides B B extend down into the tank and again curve upward, so as to ascend beyond the vertical plane in which the  
65 rolls C C (hereinafter referred to) are located. It will be noticed that the upper portion of said guides curves slightly in a reverse direction, so as to feed the metal to the rolls C C. By curving the guides as above explained the  
70 metal as it passes to the rolls is so curved that the impurities, which are of less specific gravity than the bath, will readily be detached from the sheet and ascend therefrom.

C C are the delivery-rolls, which are constructed of iron or other suitable material, and  
75 are rotated through their connection by beveled gearing to the main drive-shaft D, or in any other suitable or convenient manner.

E E' is a frame, pivotally connected at its  
80 outer end, *e*, to the main drive-shaft, in one of the arms, E', of which the delivery-rolls have their bearings, and to the other arm, E, of which the guides are attached, as shown at *e'*. The pivotal connection with the shaft D of the  
85 frame permits the frame, guides, and delivery-rolls to be withdrawn from the tank when desired.

F F' are deflectors, one of which, F, is attached at its outer end to one of the arms, E',  
90 of the frame, and extends inwardly upon an incline to one of the guides, as shown at *f*. The other of said deflectors, F', is attached at its inner end to one of the ties or braces of the guides, as shown at *f'*.

By referring to Fig. 2, which illustrates the form and construction of guides as heretofore employed, it will be seen, as already stated, that the sheet of metal is conveyed from the lower part of the tank and bath in a vertical  
100



line to the delivery-rolls, the result being, as also already stated, that the flux and impurities which are carried with the sheet have no opportunity to escape, but are carried with it to and through the delivery-rolls.

The deflectors F F' serve to deflect the ascending impurities to such an extent from either side of the plate as to completely prevent any possibility of the impurities contacting with and adhering to the sheet as it leaves the bath.

By extending the guides and carrying the sheet of metal in the tank beyond the vertical plane of the line of contact of the delivery-rolls, as illustrated in Fig. 1, which is one feature of my invention, the flux and impurities, being of lighter specific gravity than the zinc, escape from the sheet of iron, and are deflected by the deflectors F F' from the delivery-rolls and caused to escape upon the surface of the bath.

It is obvious that my improvement can be employed not only in connection with the manufacture of galvanized iron, but with equal advantage in the coating of iron with other metals than zinc, such as tin and lead.

I am aware of the construction disclosed in English Patent No. 3,125 for 1873, and I do not wish to be understood as claiming, broadly, any feature disclosed in said patent. My invention will be readily distinguished from said patented construction and other prior con-

structions, in that I lead the guides to a point beyond the vertical plane occupied by the rolls, after which the guides are curved vertically in a reverse direction to finally present the sheet to the rolls. The advantage of this construction over those referred to is that the sheet being bent back upon itself maintains it more or less under a state of strain or tension, in which condition the impurities, &c., will more readily and effectively pass therefrom.

I claim as my invention and desire to secure by Letters Patent—

1. In an apparatus for coating sheet-iron with zinc and other metals, the combination of the delivery-rolls C C with the curved guides B B, the latter extending to a point beyond the vertical plane of the line of contact of delivery-rolls, and then curved back to present the sheet to the said rolls, substantially as set forth.

2. In an apparatus for coating sheet-iron with zinc and other metals, the combination of the delivery-rolls C C with the curved guides B B, the latter extending to a point beyond the vertical plane of the line of contact of delivery-rolls, and then curved back to present the sheet to said rolls, and two or more deflectors, F F', substantially as set forth.

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Witnesses:

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