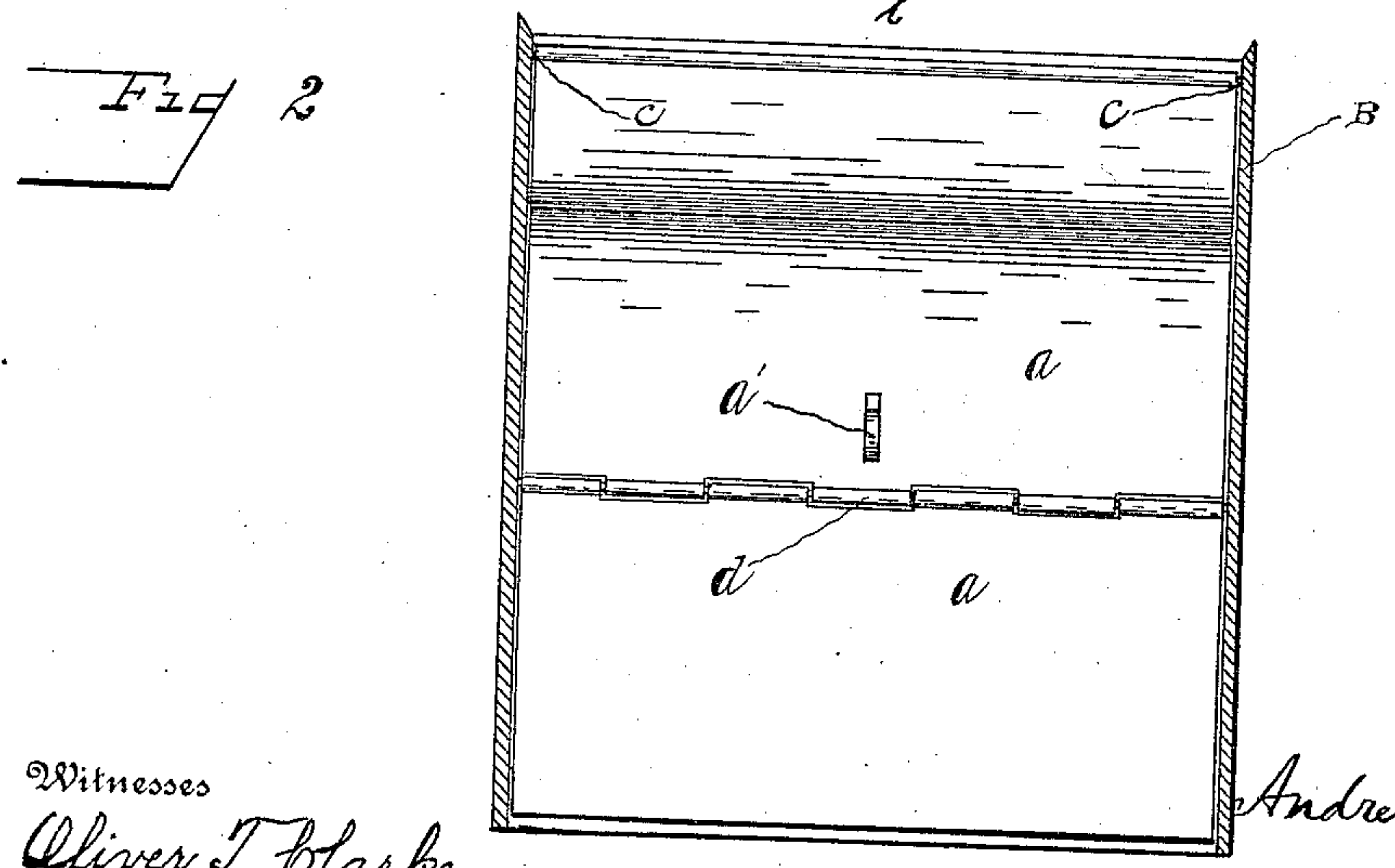
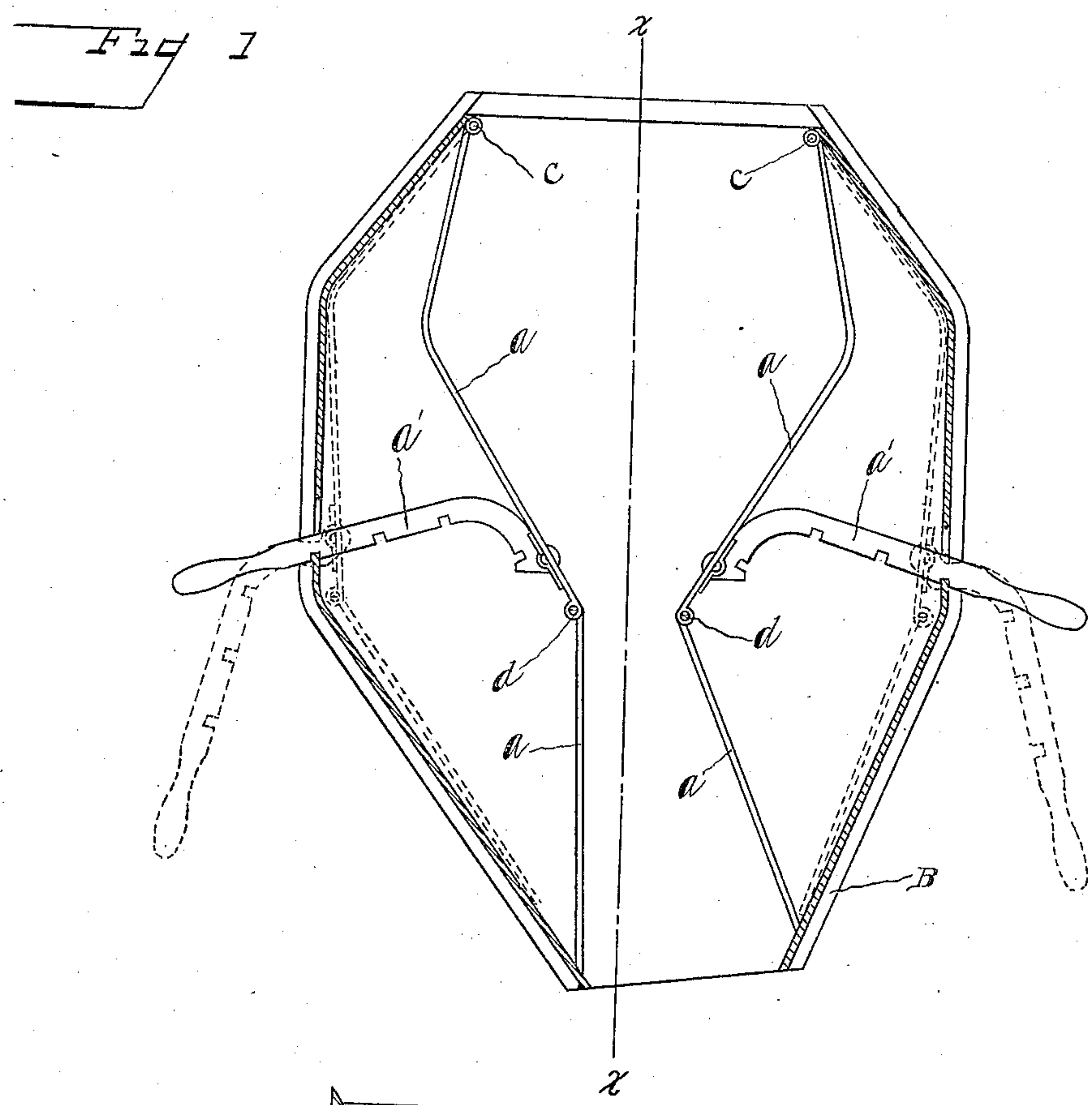


A. SONANDER.
 ADJUSTABLE HOPPER FOR AUTOMATIC WEIGHING MACHINES.
 APPLICATION FILED DEC. 3, 1908.

934,849.

Patented Sept. 21, 1909.



Witnesses
 Oliver T. Clarke.
 Chas. P. Welch

Inventor
 Andrew Sonander

Staley & Borman
 Attorneys

UNITED STATES PATENT OFFICE.

ANDREW SONANDER, OF SPRINGFIELD, OHIO, ASSIGNOR TO THE WINTERS-COLEMAN SCALE COMPANY, OF SPRINGFIELD, OHIO, A CORPORATION OF OHIO.

ADJUSTABLE HOPPER FOR AUTOMATIC WEIGHING-MACHINES.

934,849.

Specification of Letters Patent. Patented Sept. 21, 1909.

Application filed December 3, 1908. Serial No. 465,760.

To all whom it may concern:

Be it known that I, ANDREW SONANDER, a citizen of the United States, residing at Springfield, in the county of Clark and State of Ohio, have invented certain new and useful Improvements in Adjustable Hoppers for Automatic Weighing-Machines, of which the following is a specification.

My invention relates to automatic scales or weighing machines when used to weigh in units of various predetermined weights of various granular or free flowing materials of various densities as in bagging or packaging.

It has been difficult heretofore to accurately weigh small units and large units of the same material and particularly small units of a dense material and larger units of material of lighter density in the same weigh hopper, because of the varying length of the material on the way, frequently called the "column of material in the air", as it is cut off with each weighing or unit, it being now recognized that to secure accuracy this column of material must be of practically uniform minimum length. My invention is calculated to accomplish this whether the unit is of minimum or maximum weigh or column, or whether the material is light or heavy as to density, and to provide an improved hopper so arranged that the material will be properly discharged therefrom.

A preferred form of my invention is illustrated in the accompanying drawings of which—

Figure 1 is a side elevation of a conventional weigh hopper of an automatic scale equipped with my invention. Fig. 2 is a front elevation of one of the curtains comprising part of my invention.

The following is a description of my invention.

It consists of two curtains, *a a*, preferably of sheet steel suspended from weigh hopper, B, at or near the top thereof, as at *c c*, with hinged connections. The hopper, B, is shown (Fig. 1) with its front or left side wall projecting down below the end of the rear wall and this is due to the manner in which the hopper is supported, and from this Fig. 1 it will be seen that the inner conformations of the front and rear walls are somewhat different.

It is to be understood that, in use, the hopper is usually movable up and down and my arrangement of the curtains is such that when the hopper is being filled, the material to be weighed presses the curtains to the position shown in Fig. 1 and their lower portions automatically open when the hopper is dropped and the material is discharged, thereby preventing any material being held between the curtains and side of the hopper. These curtains each consist preferably of two members hinged together at *d*. These members may be bent to conform to the shape of the hopper. The lower member swings free, its lower edge resting against the sides of the hopper, thus permitting any material that may get between the curtains and the hopper to escape at each discharge of a load. Arms *a'* are hinged to each curtain and project through a slot in the hopper. These arms are notched so as to fit over the edge of the hopper which forms the bottom of the slot, or over a plate provided for that purpose, thus holding the arms in place. The hinge points, as shown in Fig. 1, are projected to a position such that gravity will assist to open the lower member of the curtains whenever the material is discharged from the hopper.

In operation, when weighing units approximating the maximum capacity of the hopper, the curtains are drawn back by arms against the sides of the hopper, as indicated by dotted lines in Fig. 1. When units of less than the hopper capacity are to be weighed, the curtains are pushed inwardly, reducing the hopper capacity accordingly so that a lesser unit will fill the hopper to the same level as a maximum unit, thus maintaining approximately a uniform minimum length of column of material in the air.

Having thus described my invention, I claim:

1. In a hopper for weighing machines, the combination of an outer hopper portion, a movable inner portion comprising a plurality of curtains suspended from the upper portion of said hopper, a hinge connecting the upper and lower portions, said hinge points being projected inwardly beyond the vertical plane extending through the suspension points and the extreme lower edges of the hopper.

2. In a hopper for weighing machines, the

combination of an outer curved portion with
a movable inner portion comprising a plu-
rality of curtains suspended at their upper
ends having upper and lower portions
5 hinged together, means for holding said cur-
tains with their hinged points near the cen-
tral part of the hopper and beyond the ver-
tical plane drawn through their respective
suspension points and the extreme lower

portion of the hopper, substantially as speci- 10
fied.

In testimony whereof, I have hereunto set
my hand this 1st day of December, 1908.

ANDREW SONANDER.

Witnesses:

CHAS. I. WELCH,
MARJORIE S. MORROW.