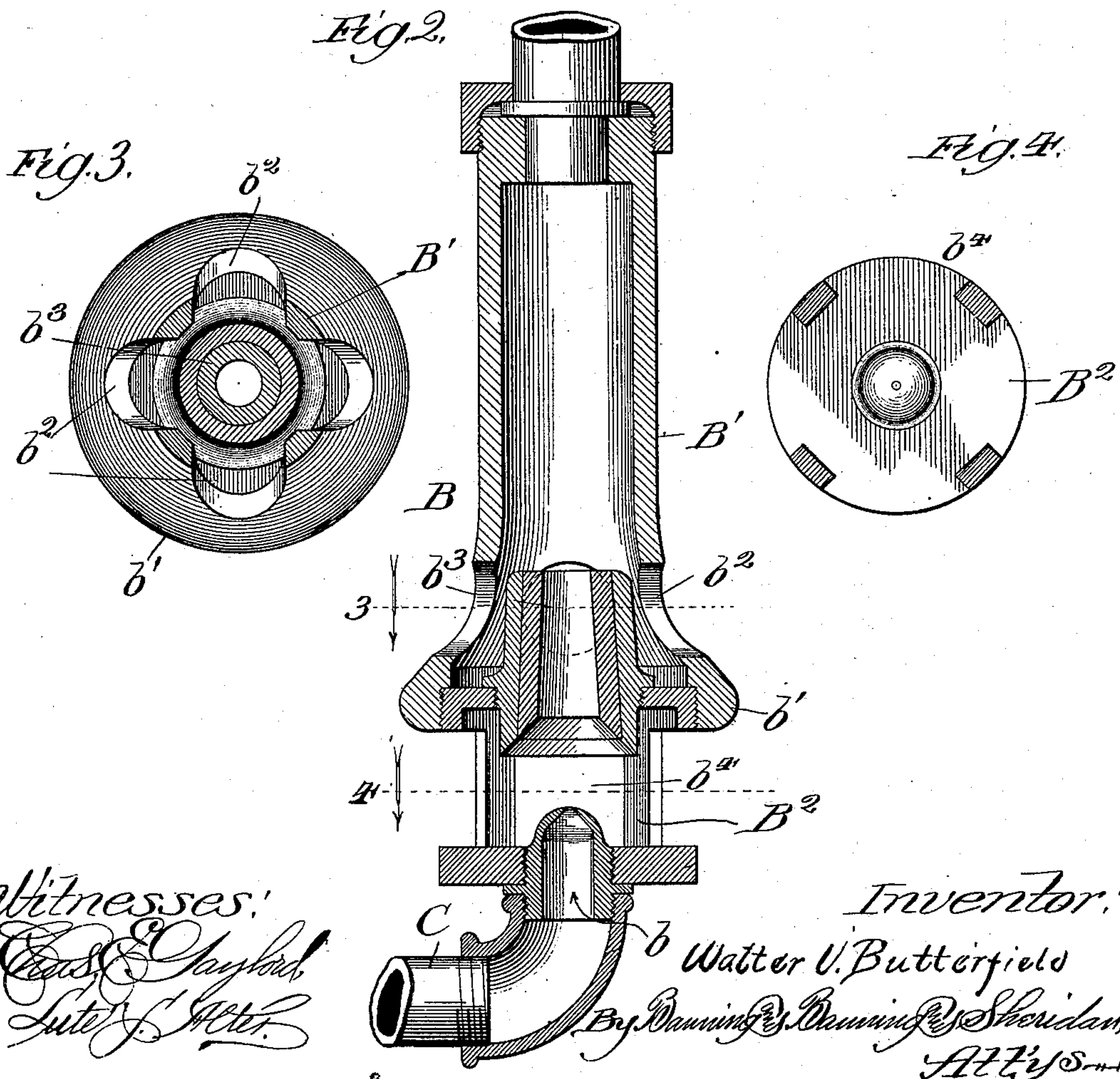
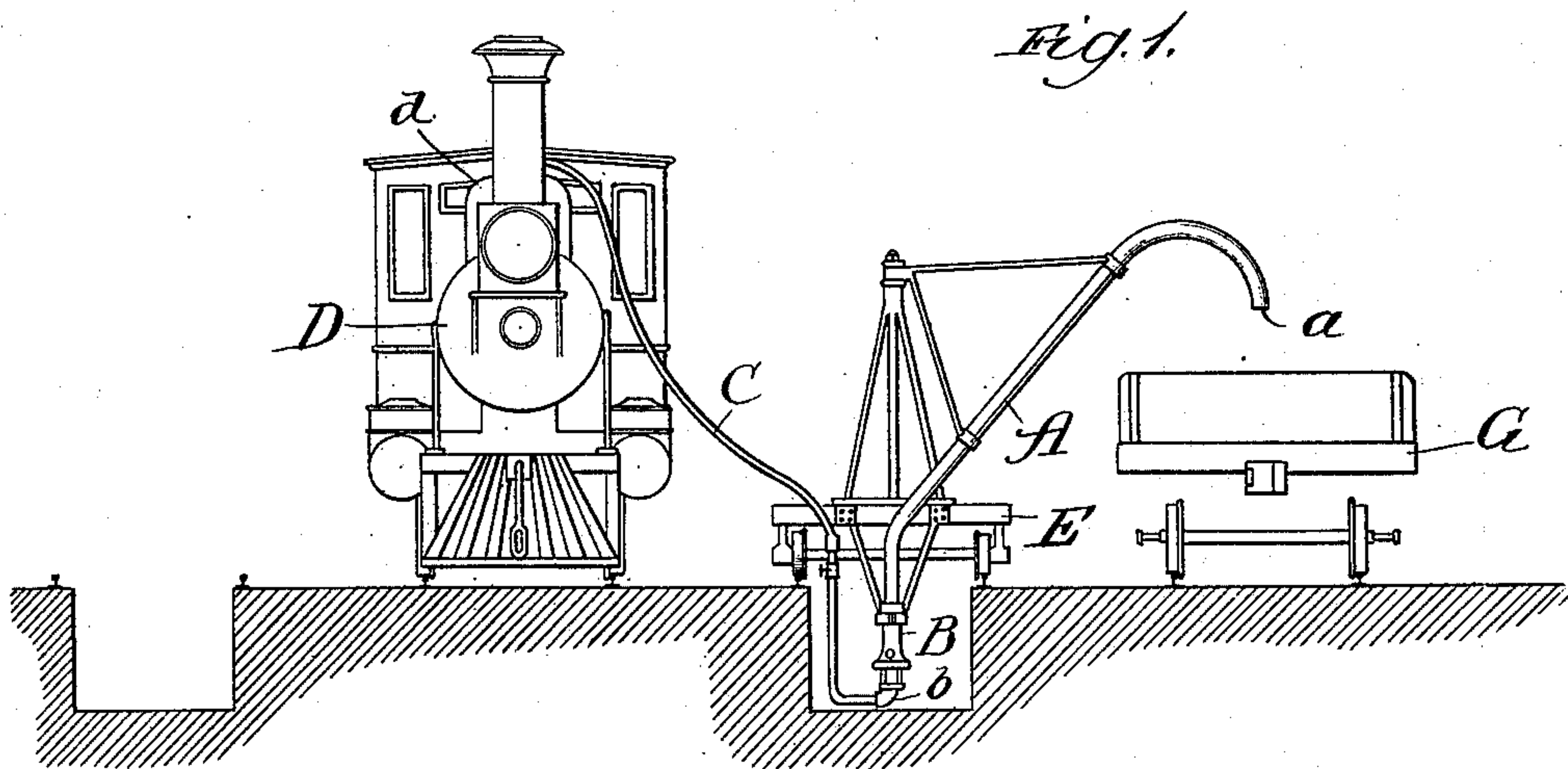


(No Model.)

W. V. BUTTERFIELD.
FLUID PRESSURE ELEVATOR.

No. 596,736.

Patented Jan. 4, 1898.



UNITED STATES PATENT OFFICE.

WALTER V. BUTTERFIELD, OF FREEPORT, ILLINOIS, ASSIGNOR OF ONE-HALF TO JAMES G. BUTTERFIELD, OF SIOUX CITY, IOWA.

FLUID-PRESSURE ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 596,736, dated January 4, 1898.

Application filed December 28, 1896. Serial No. 617,140. (No model.)

To all whom it may concern:

Be it known that I, WALTER V. BUTTERFIELD, a citizen of the United States, residing at Freeport, in the county of Stephenson and State of Illinois, have invented certain new and useful Improvements in Fluid-Pressure Elevators, of which the following is a specification.

The object of my invention is to provide a simple, economical, and efficient elevator adapted to elevate and discharge granulated materials by the use of fluid-pressure; and the invention consists in the features, combinations, and details of construction herein after described and claimed.

In the accompanying drawings, Figure 1 is a front elevation of a complete apparatus embodying my improvements; Fig. 2, an enlarged sectional elevation of the lower portion of the "leg" or injecting-cage; and Figs. 3 and 4, enlarged cross-sectional views taken on lines 3 and 4, respectively, of Fig. 2.

My invention is intended primarily for the purpose of elevating the ashes out of the ash-pits that are located between the rails of a railroad to receive ashes as they are dumped from a locomotive, and has particularly to do with the lifting of materials which are composed of granulated substances varying in size and specific gravity. It is well known to-day that the ashes are removed from the ash-pits of railroads entirely by hand labor, owing to the fact that no economical mechanical means has yet been discovered, which is necessarily expensive and consumes considerable time.

In constructing an apparatus in accordance with my improvements I make what I term a "delivery-pipe" A and provide the lower end thereof with a leg portion B, that contains an injector *b*. This injector is provided with a supply-pipe C, that may be led to any source of fluid-pressure supply. In the drawings I have shown it connected with the steam-dome *d* of a locomotive D for the purpose of using a supply of steam under pressure. I prefer in most instances, especially using the elevator for ashes and cinders, to use steam, for the reason that it not only supplies pressure, but furnishes a certain amount of moisture that dampens the ashes and prevents

their permeating the surrounding atmosphere and also in a measure packs the material together to facilitate its passage through the delivery-pipe.

In the drawings I have shown the mechanism as mounted upon a platform-car E and the educt-opening *a* as arranged over a gondola car G. Further, while I have shown the supply-pipe as connected with the steam-dome of a locomotive, it will be understood that I may connect it, if desired, with a source of compressed air.

In constructing the leg portion B, I make it preferably of a main portion B', having a bell-shaped lower portion *b'*, in which there is preferably arranged a series of lateral openings *b*². This bell-shaped lower portion is provided with an inlet pipe or bushing *b*³, that extends upward into the main portion of the leg to a point about as high as the top of the opening *b*². This inlet-pipe is mounted in a cage B², that is screw-threaded into the bell-shaped portion, the lower portion of which carries the injector *b*, that is connected with the source of fluid-supply. This cage is preferably made so as to have lateral openings *b*⁴ between the injector and the inlet-opening of the main portion, so that when the machine is in operation a certain amount of material may be forced direct by fluid-pressure through the inlet-opening into the main portion. After entering the main portion it creates a partial vacuum and more material, especially of the finer kind, is drawn in through the lateral openings *b*², thereby facilitating the elevating of materials of different specific gravity and of different sizes.

I claim—

1. In a fluid-pressure elevator, the combination of a delivery-pipe, a leg portion B secured to the inlet part of such pipe and provided with an enlarged portion *b'* at the lower end thereof and having a lateral opening *b*² on such lower portion, an inlet-pipe *b*³ arranged in the axial opening of the leg portion and extending inwardly in such leg portion, an injector *b* secured to the cage portion B² in line with the inlet-pipe, and a portion interposed between the inlet-pipe and the injector to provide a space between such parts, substantially as described.

2. In a fluid-pressure elevator, the combination of a delivery-pipe, a leg portion B arranged on the inlet part of such pipe and provided with a set of lateral openings b^2 at the
5 lower end thereof, a cage portion B^2 secured to the leg portion at its axial opening and providing a second set of lateral openings b^4 , an inlet pipe or bushing b^3 in the upper part of the cage extending into the leg portion,

and an injector b in the lower part of the cage 10 portion in line with the inlet-pipe and adapted to be connected with a source of fluid-pressure, substantially as described.

WALTER V. BUTTERFIELD.

Witnesses:

THOMAS B. MCGREGOR,

THOMAS F. SHERIDAN.