

A. SMITH.  
MEANS FOR FILLING BUCKETS, &c., FROM HOPPERS.  
APPLICATION FILED APR. 28, 1909.

969,988.

Patented Sept. 13, 1910.

2 SHEETS—SHEET 1.

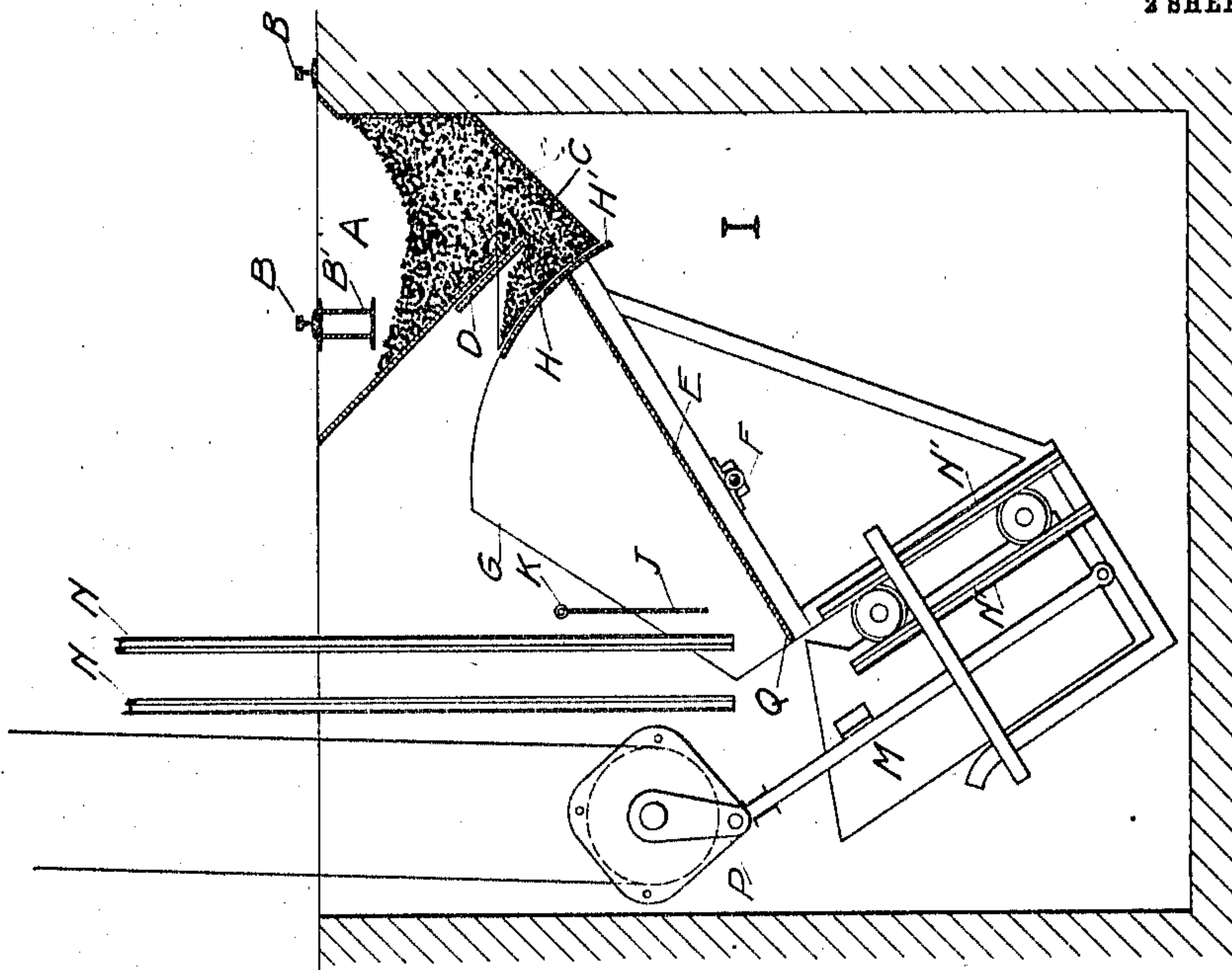


Fig. 2.

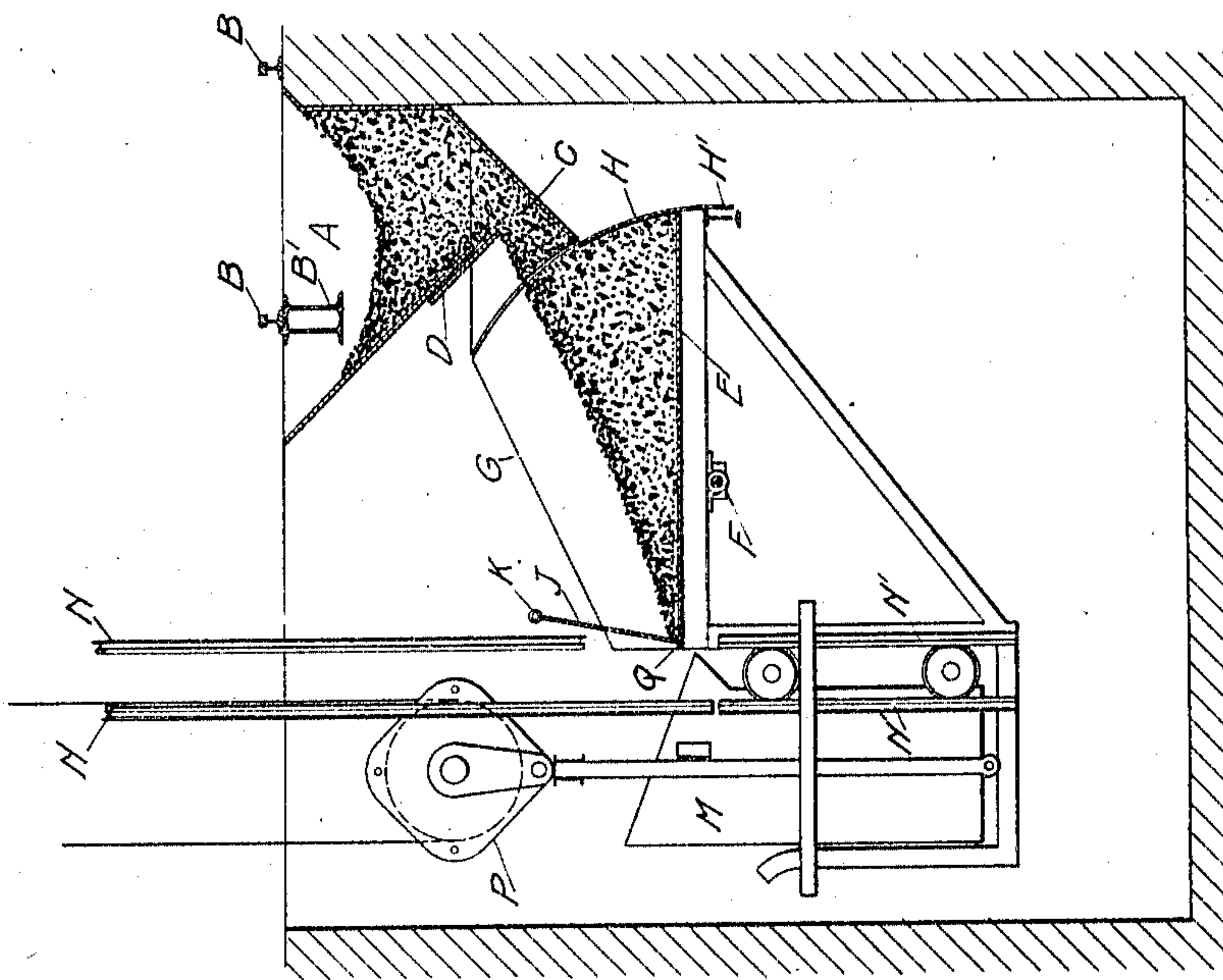


Fig. 1.

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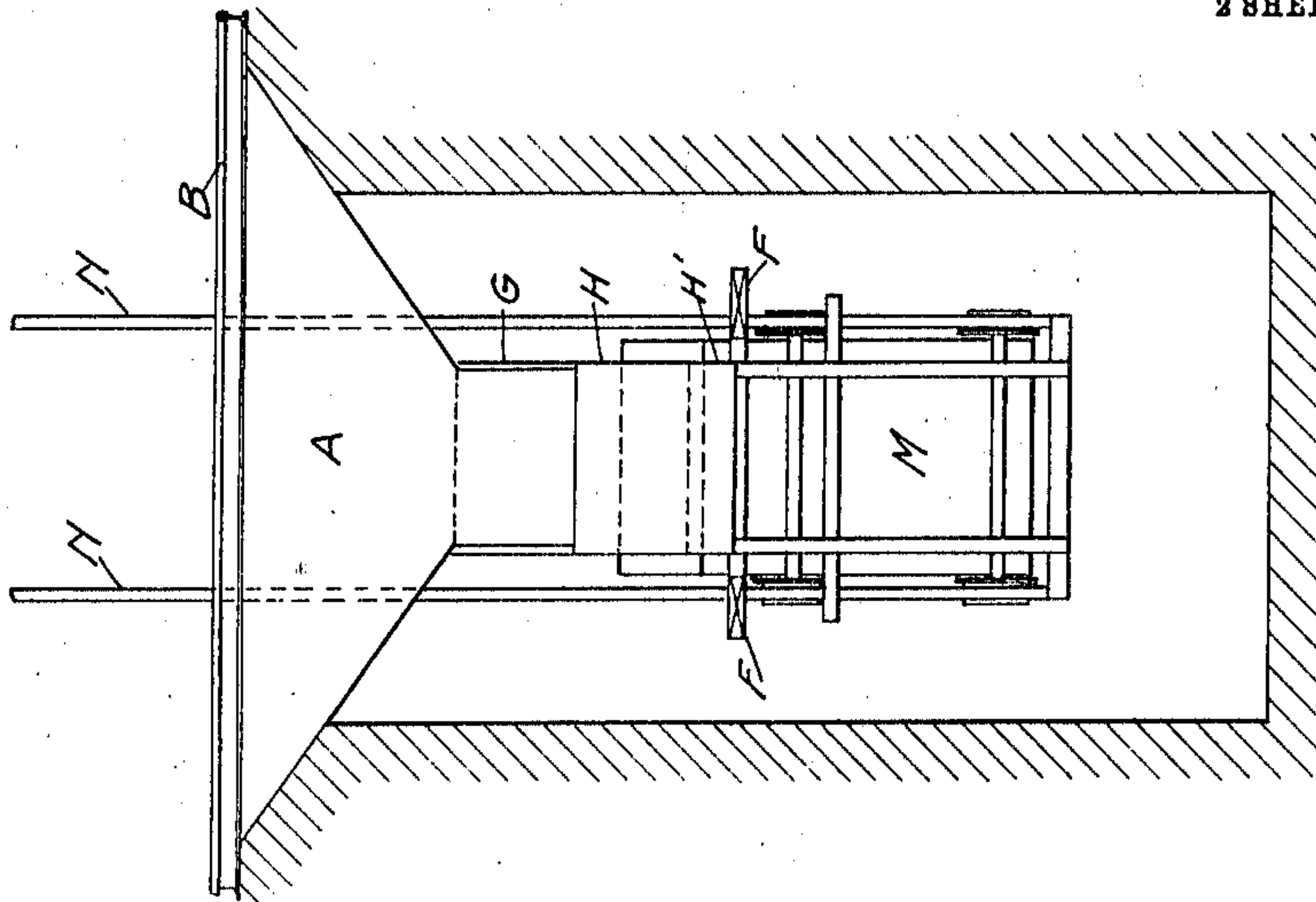


Fig. 3.

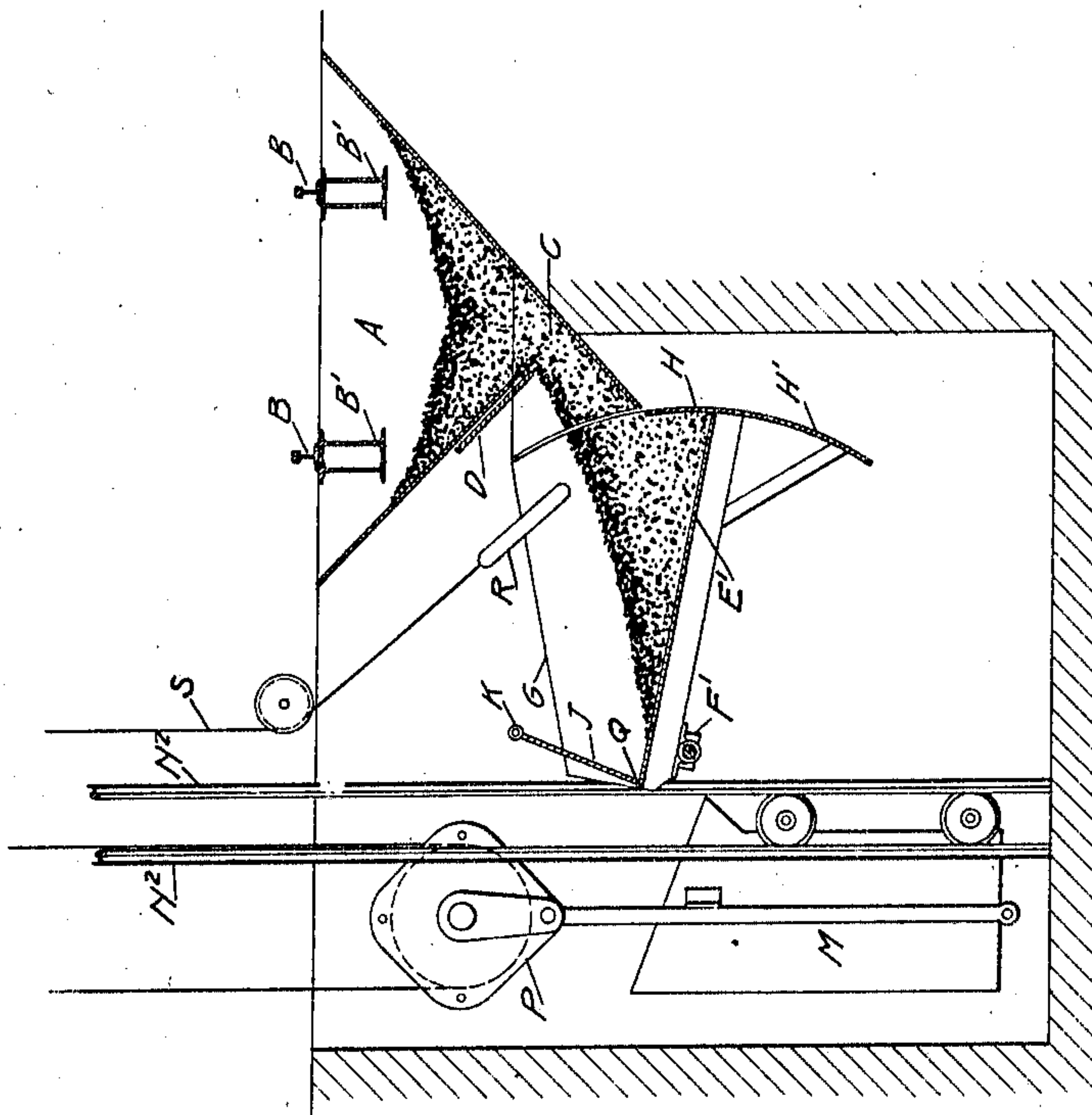


Fig. 4.

WITNESSES:

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# UNITED STATES PATENT OFFICE.

AUGUSTUS SMITH, OF NORTH PLAINFIELD, NEW JERSEY, ASSIGNOR TO BERGEN POINT IRON WORKS, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

MEANS FOR FILLING BUCKETS, &c., FROM HOPPERS.

969,988.

Specification of Letters Patent. Patented Sept. 13, 1910.

Application filed April 28, 1909. Serial No. 492,687.

To all whom it may concern:

Be it known that I, AUGUSTUS SMITH, a citizen of the United States of America, and residing in the city of North Plainfield, in the county of Union and State of New Jersey, have invented a certain new and Improved Means for Filling Buckets, &c., from a Hopper, of which the following is a specification.

My invention consists of a combination gate and filler, capable of being operated by machinery, which will at required intervals load a bucket or skip with a given quantity of coal or other granular materials, from a pocket or hopper, without spilling or overflowing, and without requiring the attention of an operator. During the operation of filling the skip or bucket, it may be necessary to cut off the flow of granular material from the hopper or pocket, and this may conveniently be done by a suitable formation of the filler itself, though this is not an essential part of my invention. The filler can be built in different ways, and in the accompanying drawings I have shown two constructions.

In the drawings I have shown my invention in connection with a hopper supposed to be built under a railroad track to be filled with coal from drop bottom cars, which hopper is arranged to feed coal onto the automatic filler, and this filler is arranged to discharge its contents in turn into a bucket which is afterward hoisted vertically. The type of bucket or method of removing it when loaded has of course nothing to do with the invention of the filler.

Figure 1 is a vertical section showing a filler mounted on a horizontal axis, which is to be tilted by the weight of the bucket to be filled so as to cause the contents of the filler to slide into the bucket; Fig. 2 is a similar view showing the filler and bucket tilted; Fig. 3 is a side elevation of the mechanism, as in Fig. 1; Fig. 4 is a vertical section of a modification showing a filler arranged to be revolved around a horizontal axis by some extraneous force, so as to discharge its contents into the bucket or other measure to be loaded, which latter remains at rest during the revolution of the filler.

In Figs. 1, 2 and 3, A is the track hopper and B, B are the rails supported on suitable track girders B<sup>1</sup>. The hopper has an opening C, the size of which can be regu-

lated by a slide D. The floor of the hopper is constructed at an angle so that the material dumped into it will flow down by gravity through the opening C onto a pan or filler E mounted on a horizontal axis F. This pan has side walls G and a back H, so that when the granular material has an angle of repose a definite quantity will flow onto the pan through the gate of the hopper C, depending on the adjustment of the slide D. A light pendent swinging door or baffle plate J mounted on a shaft K may be provided at the discharge end of the pan or filler so as to prevent lumps, which may acquire a velocity in dropping out of the hopper into the pan, from shooting over the pan before the latter is tilted to its dumping position.

M is a skip bucket arranged to travel between vertical rails or guides N, N, when lifted by the pulley block P.

N<sup>1</sup>, N<sup>1</sup> are continuations of the rails N, N, rigidly attached to a frame forming part of the pan or filler.

The position of the axis F of the tilting pan E is so taken that whether the pan is empty or filled it will remain in the position shown by the full lines. The position of the skip track N, N, is so taken with respect to the axis F that the weight of the skip bucket, if allowed to rest on the frame work forming part of the filler, will cause the latter to revolve to the position shown in Fig. 2, even when the pan is loaded. The position of the skip bucket with respect to the feed edge Q of the pan E, when the skip bucket rests on the pan framework, is so taken that as the pan revolves, all the material on it will slide off over the edge Q into the skip bucket M without any spill. The size of the skip bucket M is so taken with respect to the size of the pan that the charge of the pan, which is regulated to great nicety by the slide gate D, cannot over-fill it. As the pan or filler revolves, the baffle J hanging freely on the shaft K swings away from the dumping edge Q, so as not to obstruct the flow of material into the bucket M. The back H of the pan or filler E has a cylindrical form with the axis F as a center, so that as the filler revolves the back H forms an undercut gate stopping the flow of material from the hopper A. The cylindrical back of the filler may be continued below the floor of the filler as shown at H<sup>1</sup>, so that when tilted to the re-



quired angle, the flow of material from the hopper will still be cut off and not allowed to drop under the filler.

In the modification shown in Fig. 4, the axis  $F^1$  of the pan  $E^1$  is placed near the dumping edge. In this case the rails  $N^2$  would be continued to the bottom of the travel of the skip bucket, which latter would remain at rest during the tilting of the pan or filler. Some lifting force has to be provided for tilting the pan up to discharge its contents and this may conveniently consist of the bail  $R$  and hoisting rope  $S$ . The hoisting mechanism connected with  $S$  can be interlocked with the hoisting mechanism for operating the skip bucket, so that the tilting of the pan or filler follows consecutively after the arrival of the skip bucket in the position suitable for filling, as shown in the figure. In this case the return of the filler to its original position precedes the return of the skip bucket for the next load. The operation of the cylindrical cut-off gate of the filler, the adjustment of the charge in the filler and the operation of the swinging baffle  $J$  are identically the same as in Figs. 1, 2 and 3.

I claim as my invention—

1. The combination of a hopper to contain granular materials with a tilting pan to receive a definite quantity of materials from said hopper, the pan having a transverse axis, and a cylindrically shaped back, to form a cut off gate from said hopper when the pan is tilted about said axis, and a pendent swinging baffle plate to prevent the escape of materials while the pan is being loaded, substantially as described.

2. The combination of a hopper to con-

tain granular materials with a tilting pan having an axis of rotation with a cylindrically shaped back, which forms the cut off gate from the hopper during revolution of said pan, and a suitable framework to hold the receptacle to be filled, said framework being rigidly attached to the tilting pan, whereby when the weight of the receptacle to be loaded is applied to the framework attached to the pan, said weight will cause the pan to revolve about its axis and discharge its contents into the receptacle to be filled, substantially as described.

3. The combination of a hopper to contain granular materials with a tilting pan to receive a definite quantity of materials from the hopper, and having an axis of rotation with a cylindrically shaped back formed from said axis of revolution as a center, to cut off the flow of material from the hopper during the process of tilting said pan and a pendent swinging baffle plate to prevent the premature discharge of the materials from the filler, and a hoisting means for the receptacle to be filled, as above described.

4. The combination of a hopper with outlet gate, a receptacle to be loaded and a tilting pan, and a framework rigidly attached to the pan, which is revolved by virtue of the weight of the receptacle to be loaded coming to rest on the framework attached to said pan.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses.

AUGUSTUS SMITH.

Witnesses:

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