No. 680,526. Patented Aug. 13, 1901.

# H. E. T. HAULTAIN.

## SAMPLING APPARATUS.

(Application filed Nov. 22, 1900.)

(No Model.)

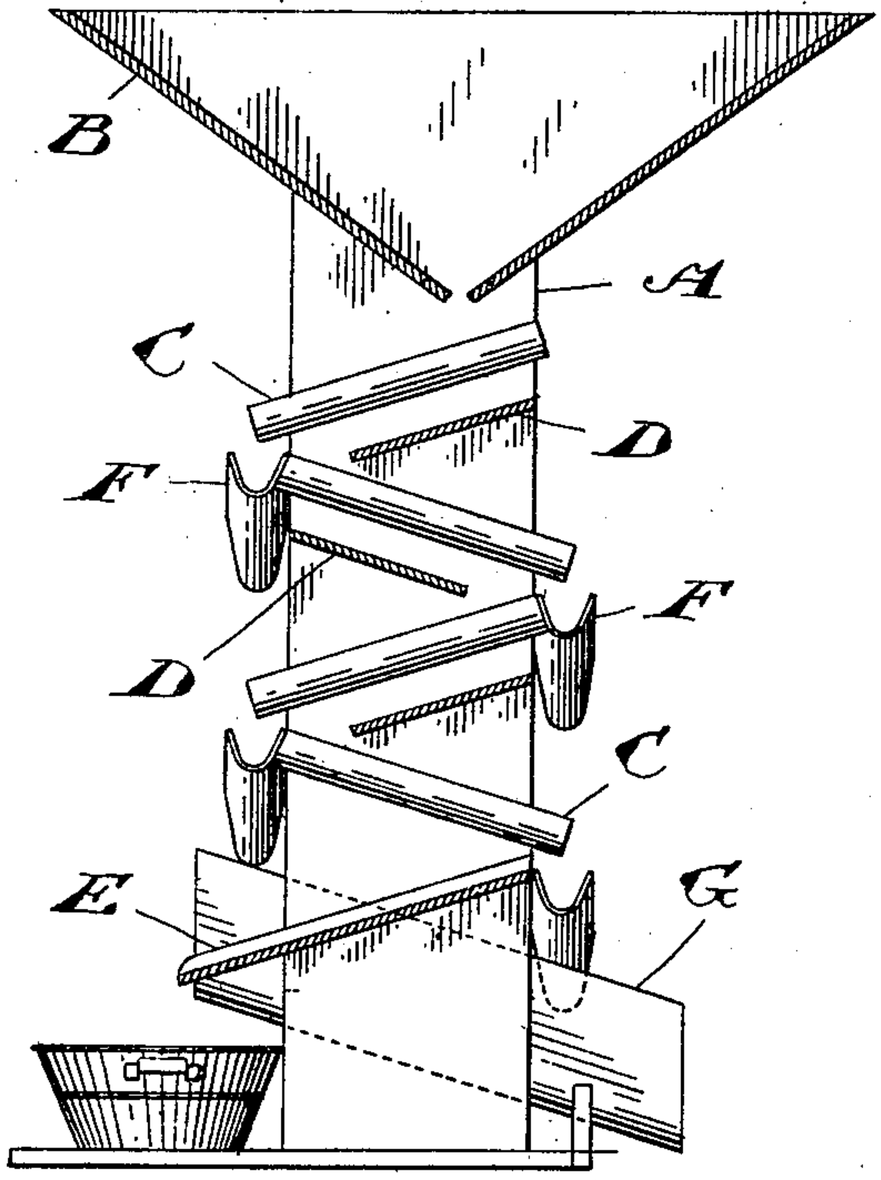


Fig. 1.

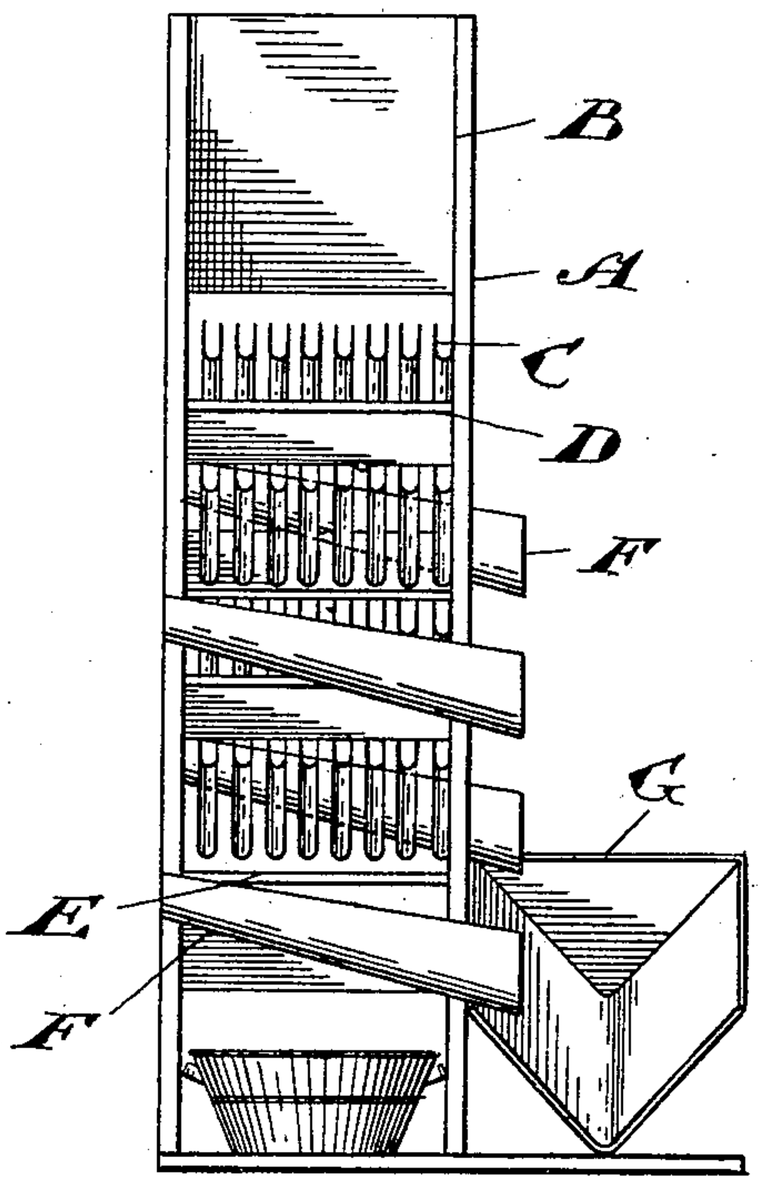


Fig. 2.

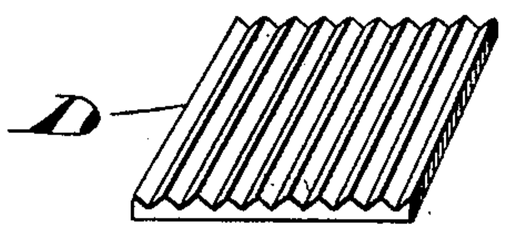


Fig. 3.

Witnesses

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# UNITED STATES PATENT OFFICE.

HERBERT E. T. HAULTAIN, OF SALMO, CANADA.

## SAMPLING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 680,526, dated August 13, 1901.

Application filed November 22, 1900. Serial No. 37,394. (No model.)

*To all whom it may concern:*

Be it known that I, HERBERT E. T. HAULTAIN, of the Yellowstone Mine, Salmo, British Columbia, Canada, have invented certain new and useful Improvements in Sampling Apparatus, of which the following is a specification.

The object of my invention is to devise simple apparatus for obtaining thoroughly representative samples from relatively large quantities of crushed ore or other material; and it consists, essentially, of two or more sets of inclined sampling-troughs and of mixing-boards located between the sets, each designed to receive and mix the material passing between the troughs above it and discharge it upon the set of troughs below near their upper ends, the whole being constructed in detail substantially as hereinafter more specifically described.

Figure 1 is a vertical sectional elevation of the apparatus from front to rear. Fig. 2 is a vertical rear elevation of the apparatus. Fig. 3 is a perspective view of a part of a corrugated mixing-board.

In the drawings like letters of reference indicate corresponding parts in the different figures.

A is the frame of the apparatus, comprising two vertical boards suitably spaced. Secured to the upper end of the frame is the hopper B. Between the sides of the frame are secured two or more sets of sampling-troughs C. These sets consist of a number of U-shaped troughs separated by spaces of the same width as the troughs themselves. Consequently of any material dumped upon the trough half is caught by the troughs and half passed through between them. These sets of sampling-troughs to secure compactness may be alternately inclined in opposite directions, as shown in Fig. 1. Between the sets of troughs are located mixing-boards D, arranged to catch the material passing through the set of sampling-troughs above it and to direct the same upon the set of troughs below near their upper ends. The mixing-boards may be either plain or corrugated in any desired way to facilitate the proper mixing of the material. (For one form of corrugation see Fig. 3.)

The hopper B is arranged to discharge upon the upper set of troughs. Below the lowest set of troughs is located the sample-discharge trough E, arranged to conduct the material falling thereon outside the apparatus, where it may be caught in a suitable receptacle. Below the lower ends of the troughs of each set are located the discharge-troughs F, arranged to catch the material flowing from the troughs and to direct it to one side of the apparatus.

The general discharge-trough G is located below the discharge ends of these discharge-troughs F and catches the material flowing therefrom, so that it may be conveyed away from the apparatus to any suitable place of deposit.

The operation of the apparatus is substantially as follows: The material in either a wet or dry condition is fed into the hopper, whence it flows upon the upper set of sampling-troughs. Half the material is caught by these troughs and is conveyed to the discharge-trough F, belonging to this particular set, and half falls through between the troughs and is caught by the upper mixing-board D. The material becomes mixed upon this board and flows off its lower end upon the second set of sampling-troughs. Again, the material is halved, part going to the discharge-trough belonging to the set and half being caught by the mixing-board below it, so that at each step the material is halved till by the time it has reach the bottom of the apparatus the saved sample forms a sufficiently small fraction of the total material passing through the apparatus.

In the apparatus illustrated four sets of sampling-troughs are shown. Consequently the saved sample forms one-sixteenth of the total material handled. The proportion of the sample to the whole may be readily varied by using a larger or smaller number of sets of sampling-troughs.

The principle of the invention is fully embodied when two sets of troughs and one mixing-board are used.

I find in practice my apparatus is very convenient and accurate, and representative samples may be obtained from large quantities of crushed ore or other material with a very small amount of labor.

When handling dry material, the angles of inclination of the sets of troughs and mixing-

boards may require to be increased. This of course falls within the scope of my invention. If necessary, the apparatus may be constantly jarred or shaken while in operation to facilitate the passage of the finer material through the apparatus.

Although my apparatus is intended primarily for use in sampling crushed ores, yet it would prove equally useful in obtaining samples of grain, cement, or other materials.

What I claim as my invention is—

1. A sampling apparatus comprising two sets of inclined spaced sampling-troughs in combination with a mixing-board located between the sets and adapted to receive material passing between the sampling-troughs of the upper set and discharge it upon the lower set near their upper ends, substantially as and for the purpose specified.

2. A sampling apparatus comprising two sets of inclined spaced sampling-troughs, in combination with a mixing-board located between the sets and adapted to receive material passing between the sampling-troughs of the upper set and discharge it upon the lower set near their upper ends, a discharge-trough located below the lower ends of each set of sampling-troughs; and a sample-discharge trough located below the lower set, substantially as and for the purpose specified.

3. A sampling apparatus comprising two sets of inclined spaced sampling-troughs in combination with a mixing-board located between the sets and adapted to receive material passing between the sampling-troughs of the upper set and discharge it upon the lower set near their upper ends; a discharge-trough located below the lower ends of each set of sampling-troughs both discharge-troughs being adapted to empty at the same side of the apparatus; a general discharge-trough located below the ends of the aforesaid discharge-troughs, and a sample-discharge trough located below the lower set of sampling-troughs, substantially as and for the purpose specified.

4. A sampling apparatus comprising two sets of inclined spaced sampling-troughs, in combination with a mixing-board located between the sets and adapted to receive material passing between the sampling-troughs of the upper set and discharge it upon the lower set near their upper ends, and a hopper arranged to discharge upon the upper set of sampling-troughs, substantially as and for the purpose specified.

5. A sampling apparatus comprising two sets of spaced sampling-troughs inclined in opposite directions in combination with a mixing-board located between the sets and adapted to receive material passing between the sampling-troughs of the upper set and discharge it upon the lower set near their upper ends, substantially as and for the purpose specified.

6. A sampling apparatus comprising two sets of spaced sampling-troughs inclined in opposite directions in combination with a mixing-board located between the sets and adapted to receive material passing between the sampling-troughs of the upper set and discharge it upon the lower set near their upper ends, a discharge-trough located below the lower ends of each set of sampling-troughs; and a sample-discharge trough located below the lower set, substantially as and for the purpose specified.

Salmo, British Columbia, the 13th day of November, 1900.

HERBERT E. T. HAULTAIN.

In presence of—

W. F. HAMILTON,

W. E. H. CARTER.