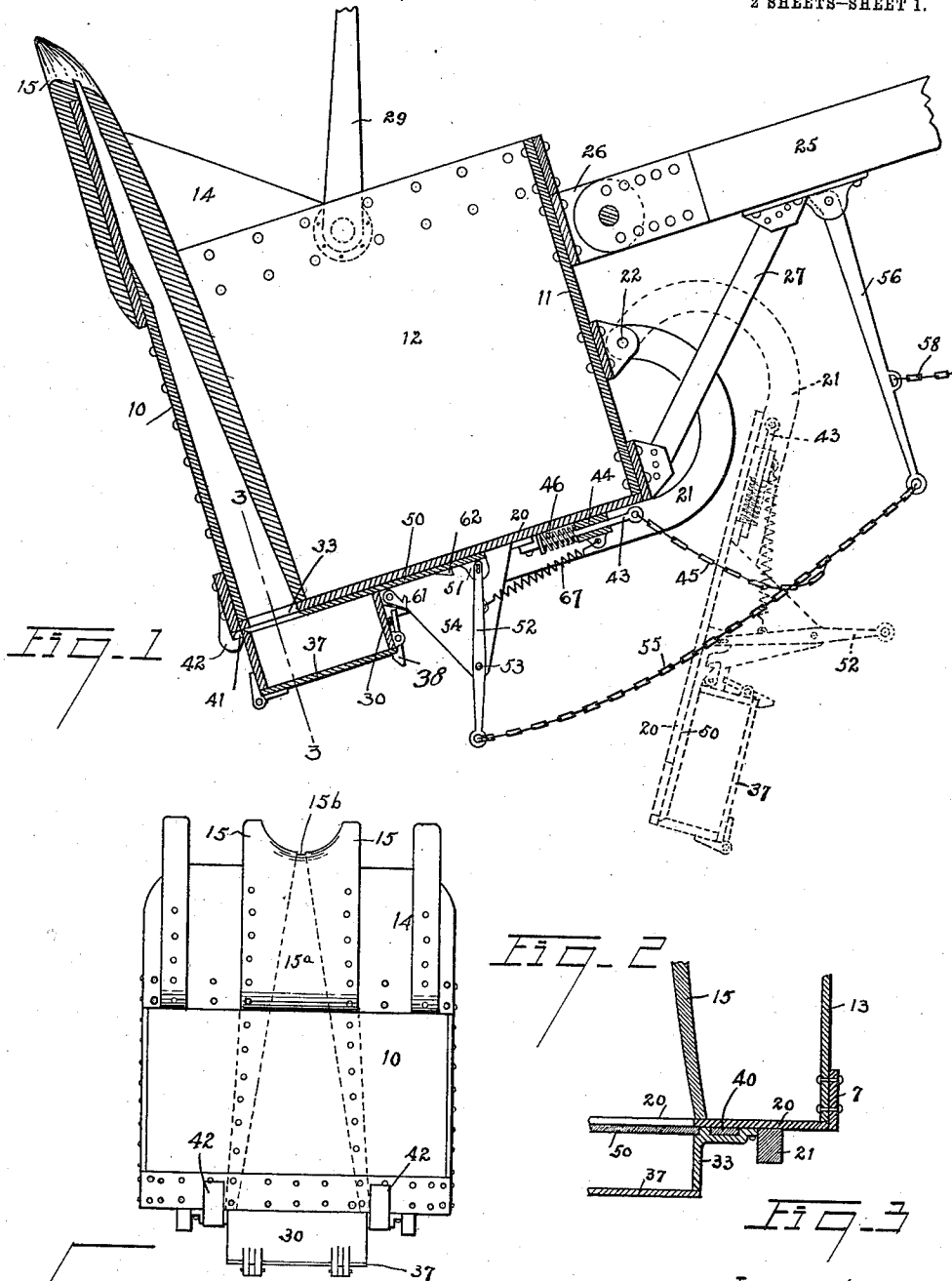


F. S. INGOLDSBY.
AUTOMATIC SAMPLING MECHANISM.
APPLICATION FILED NOV. 1, 1909.

1,024,134.

Patented Apr. 23, 1912.

2 SHEETS—SHEET 1.



Witnesses:

Brennan B. West.
Oliver M. Kappler.

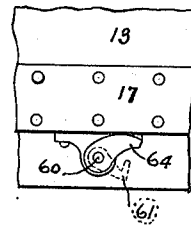
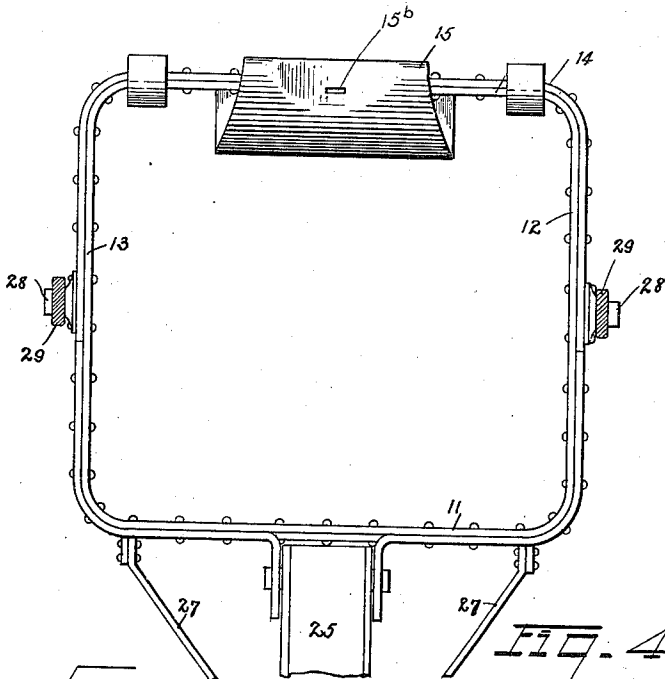
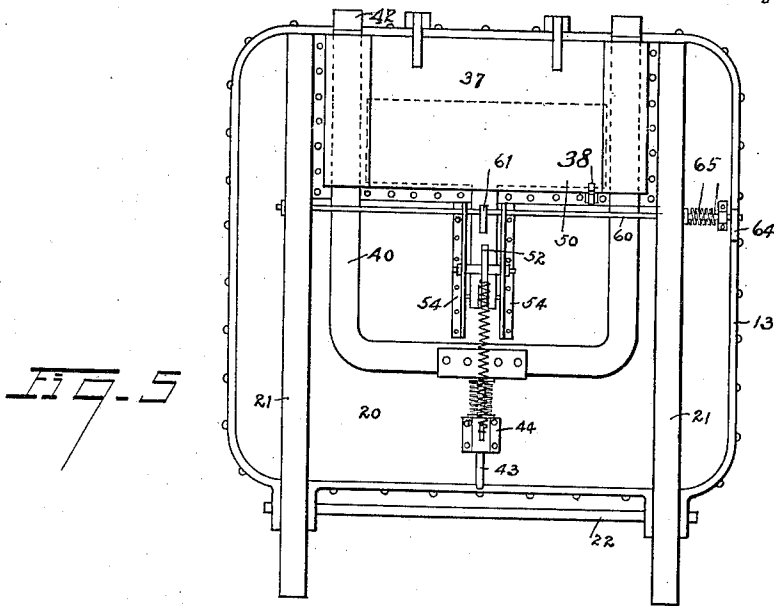
Inventor
Frank S. Ingoldby,
By Baker, Fong & Wheeler,
Attys.

F. S. INGOLDSBY.
 AUTOMATIC SAMPLING MECHANISM.
 APPLICATION FILED NOV. 1, 1909.

1,024,134.

Patented Apr. 23, 1912.

2 SHEETS—SHEET 2.



Witnesses:

Brennan West.
 Oliver M. Kappeler.

Inventor

Frank S. Ingoldby,

By Bates, Fortz & Hull,
 Attys.

UNITED STATES PATENT OFFICE.

FRANK S. INGOLDSBY, OF ST. LOUIS, MISSOURI.

AUTOMATIC SAMPLING MECHANISM.

1,024,134.

Specification of Letters Patent.

Patented Apr. 23, 1912.

Application filed November 1, 1909. Serial No. 525,701.

To all whom it may concern:

Be it known that I, FRANK S. INGOLDSBY, a citizen of the United States, residing at St. Louis, in the State of Missouri, have invented a certain new and useful Improvement in Automatic Sampling Mechanism, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

The object of this invention is to provide a simple and effective means for obtaining samples of material which are being dug or otherwise handled. Heretofore, it has been customary in obtaining samples of material which is being loaded into a car, bin or other holding receptacle, to fill the receptacle with the material and then take samples at random from the top thereof. This not only requires much time and labor in securing the samples, but furthermore, the samples are only from the top of the receptacle and, at most, only fairly represent the contents of the receptacle, and, in some cases, may be very misleading. In handling materials in this manner, steam shovels, clam-shell buckets, various kinds of scoops, etc., are used.

By the use of my invention, a sample is obtained from each shovelful or from each load of whatever loading device is used and this automatically by the operation of the loading device itself and these individual samples accumulating, will give an accurate sample of the whole load which has been placed in the holding receptacle.

It will be apparent that my invention is equally applicable to measuring small quantities of material as well as large and the invention will work with equal certainty when incorporated in connection with a hand scoop as well as when in use with larger material-handling devices.

My invention comprises broadly the combination with a shovel or scoop, of a receptacle carried thereby for receiving a portion of the successive scoop loads.

More specifically, the invention comprises a conduit carried by the scoop from a point adjacent to the cutting edge thereof, a pocket for receiving material passing into such conduit, and means for controlling access to the pocket.

The particular embodiment of the invention in the drawings is also comprised within my invention.

The drawings clearly disclose the invention adapted to the scoop of a steam shovel.

Figure 1 is a sectional side elevation of such embodiment; Fig. 2 is a front elevation of the scoop; Fig. 3 is a detail substantially on the section line 3—3 of Fig. 1; Fig. 4 is a top plan of the scoop with my attachment; Fig. 5 is a bottom plan; Fig. 6 is a detail of the latch for the pocket slide, being a fragment of an outside elevation parallel to Fig. 1.

As shown in the drawings, the scoop proper comprises a front wall 10, a rear wall 11, side walls 12 and 13, an extension 14 on the front and part way back on the two sides, a digging jaw 15 secured to the front wall 10 and the extension 14. These parts may be secured together by rivets, as is well understood. The bottom of the scoop is designated 20. It is shown as carried by a pair of curved bars 21 hinged to the rear wall of the scoop at 22. The scoop body, as shown, is rigidly carried on the forward end of a boom 25 by an ear 26 secured to the scoop and strut braces 27. The side walls of the scoop carry trunnions 28 on which are mounted a bail 29 to which a raising cable may be attached. This much of the construction is of ordinary type, and is selected simply by way of illustration. It is also to be understood that in ordinary constructions some suitable latch is provided for holding the bottom 20 in place and releasing it when it is desired to dump the load.

In my invention I provide a suitable pocket for carrying the samples and a conduit leading thereto from some point adjacent to the cutting edge of the scoop. This pocket may be very conveniently formed by a box 30 secured to the under side of the bottom 20, and the conduit may lead down along the front of the bucket.

In the embodiment of my invention here presented, I have provided the shovel with a cutting jaw 15 which is of solid steel and extends upon the interior of the front wall of the bucket to the bottom thereof. This jaw also has an extension 15^a which is integral with the other part of the jaw and extends in the same general direction but at an angle thereto. This projecting portion 15^a is secured to the front wall of the bucket in the desired manner, as by riveting. The central part of the jaw 15 is cut out to make a semi-circular depression and the jaw is thus pro-

vided with two projecting prongs or teeth. At substantially the center of the jaw, an opening is provided which forms the mouth for a conduit, the walls of which diverge from the mouth to an opening 33 formed in the bottom of the bucket. The particular form of the conduit prevents any clogging of the material within the same.

The result of the above described construction is that every time the bucket is caused to scoop up a load of material a small portion thereof will pass down the conduit into the pocket 30, whereby samples are successively collected in the pocket.

Whenever the bucket is discharged by releasing the bottom thereof, I arrange to close the top of the pocket 30 to prevent the escape of the samples therein. This may be accomplished automatically by the mechanism shown in the drawings, which will now be described.

Slidably mounted on the under side of the bottom 20 is a U-shaped latch 40 having two noses 41 adapted to engage with suitable catches 42 on the front wall of the bucket, whereby the bottom may be held closed. At its rear portion, this latch has secured to it a bar 43 slidably in a bracket 44 on the under side of the bucket. A chain 45 attached to this bar 43 furnishes means for pulling it rearwardly and thus causing the latches to release their hold on the catches 42. A suitable spring 46 surrounding the bar 44 tends to press the latch forward, so that when the bottom is swung into place after discharging the load, the latches meet the inclined face of the catches 42 and slide rearwardly and spring over those catches, holding the bottom in place.

Slidably mounted on the bottom 20 between the arms of the latch 40 is a plate 50 which is adapted to form a cover for the pocket 30. This plate is shown as having a downward ear 51 with which loosely connects the upper end of a lever 52 pivoted at 53 between a pair of plates 54 dependent upon the bottom of the bucket. The lower end of this lever is provided with a chain 55 which is connected with the chain 45 so that they are operated in unison. A convenient form of connection is to have the two chains, after being merged into one, secured to the lower end of a lever 56 pivoted at its upper end to the boom 25 and having secured to it an operating cord or chain 58. The portion 55 of the chain is normally more taut than the portion 45, and it accordingly results that when the chain 58 is pulled the first operation is to cause the slide 50 to move forward and close the top of the pocket 30 and, substantially on the completion of such closure, to withdraw the latch 40 and release the bottom 20.

On the bottom of the bucket is mounted a rock shaft 60 having intermediately a catch

61 extending normally below the point which a lug 62 on the bottom of the slide 50 occupies when that slide is in forward position. On the outer end of this rock shaft is a tappet arm 64 which normally bears against the lower edge of the bucket at one side, as indicated by the side wall 13 and the reinforcing plate 17 along the lower edge thereof in Fig. 6. A suitable spring 65 around the rock shaft 60 tends to turn it in the direction to elevate the catch 61. The result is that as soon as the bottom is freed from the bucket body, the catch 61 is automatically swung upwardly behind the lug 62, holding the slide 50 locked in its forward position. As the bottom is coming into its final position, the tappet arm 64 engages the lower edge of the side and swings the rock shaft 60, withdrawing the catch 61 from the lug 62 and thereupon the spring 67 draws rearwardly the lever 52 and thus draws back the slide 50, uncovering the top of the pocket and connecting that pocket with the conduit through the opening 33.

Whether the bottom is in its closed position or in its open position, as indicated by dotted lines in Fig. 1, it is an easy matter to obtain access to the sample in the pocket 30 by opening the cover 37 which is hinged upon the pocket 30. The cover 37 is held in closed position by means of a pivoted catch 38 which is spring pressed into closed position. The operation of these parts will be obvious.

It will be seen from the above description, that my mechanism does not interfere with the ordinary operation of a steam shovel or scoop, while it provides means for receiving and storing a small sample of each shovelful, so that whenever desired a composite sample may be obtained of the whole load.

While I have shown my automatic sampling mechanism as applied to the scoop of a steam shovel, it is to be understood it is not limited to such embodiment, but may be employed in cooperation with any suitable shoveling, scooping, digging or scraping device, all of which I intend to be covered by the term "scoop."

Having thus described my invention, what I claim is:

1. The combination with a suitable scoop, of a receptacle for samples carried thereby, a conduit leading to the receptacle from a point adjacent to the digging edge of the scoop, and a closure for the receptacle allowing access thereto.

2. The combination with a scooping member, of a conduit leading from a point adjacent to the digging edge of said member, and means for enabling a discharge from the other end of the conduit.

3. The combination with a member having a digging face, of an openable pocket for samples, and a conduit leading thereto

from a point adjacent to the digging edge, and means for controlling discharge from the pocket.

4. The combination of a scoop, a conduit 5 located along its forward face, and a receptacle for the material received in said conduit, and a closure for the receptacle allowing access thereto.

5. The combination of a scoop, a hinged 10 bottom, and a sample receptacle carried by said bottom.

6. The combination of a scoop, a hinged bottom, a sample receptacle carried by said bottom, and a conduit for samples located 15 along the front of the scoop and leading from the digging edge to said receptacle.

7. The combination with a scoop body, of a pocket for samples, and means for discharging the scoop and for automatically 20 closing the pocket.

8. The combination with a scoop, a hinged bottom therefor, a pocket carried by said bottom, a slide for covering said pocket, mechanism for releasing the bottom, and 25 mechanism for moving said slide to cover the pocket.

9. The combination of a scoop body, a hinged bottom, a latch carried by the bottom for holding it to the body or releasing 30 it, a sample receptacle carried by the bottom, and means for automatically covering and uncovering the sample receptacle consequent, respectively upon the releasing and closing of the bottom.

10. The combination of a receptacle having a digging edge, a conduit leading from 35 such digging edge, and a sample pocket for receiving the discharge from such conduit, said conduit flaring from its entrance opening to prevent clogging, and means for closing the pocket and allowing it to be opened 40 at will.

11. The combination of a bucket having a front digging edge, a conduit made with-

in such front, a hinged door for the bottom 45 of the bucket, a pocket carried by said hinged door and adapted to receive the material passing down the conduit, and a door for controlling egress from the pocket.

12. The combination of a bucket having 50 a front digging edge, a conduit made within such front, a hinged bottom for the bucket, a pocket on said bottom adapted to receive the material passing down the conduit, and a slide for closing the entrance to 55 the pocket.

13. The combination of a scoop body, a downwardly extending conduit located along the front wall of such body, a hinged 60 bottom for the body, a sample receptacle carried by the bottom and adapted to receive the discharge from such conduit, means for latching the bottom in place, a slide for covering the upper end of the receptacle when the bottom is down, and 65 means for controlling discharge from the receptacle.

14. The combination of a scoop body having side walls, a front and a back, a downwardly extending conduit located 70 along the front wall of such body, a bottom for the body, bars secured to the bottom and hinged to the rear of the body for carrying the bottom, a sample receptacle carried by the bottom and adapted to receive 75 the discharge from such conduit, means for latching the bottom in place, a slide for covering the upper end of the receptacle when the bottom is down, and a slide in the base of the receptacle for allowing dis- 80 charge therefrom.

In testimony whereof, I hereunto affix my signature in the presence of two witnesses.

FRANK S. INGOLDSBY.

Witnesses:

ALBERT H. BATES,
BRENNAN B. WEST.