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DEVICE FOR SAMPLING GRAIN AND THE LIKE.

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1,168,486. Patented Jan. 18, 1916.

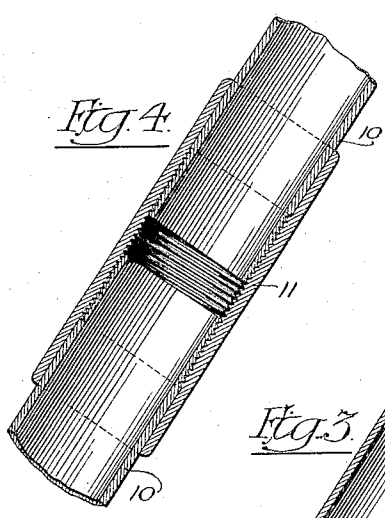


Fig. 4.

Fig. 3.

Fig. 1.

Fig. 2.

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DEVICE FOR SAMPLING GRAIN AND THE LIKE.

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Application filed May 7, 1915. Serial No. 26,549.

To all whom it may concern:

Be it known that I, LEONARD H. DES ISLES, a citizen of the United States, and a resident of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Devices for Sampling Grain and the like, of which the following is a specification.

The improvement relates to samplers for grain and like material, and seeks to provide a simple and effective device for obtaining samples from large bodies of material.

Heretofore it has not been practical to obtain samples from large bodies of grain, such, for example, as contained in the holds of vessels, which are frequently loaded with grain to a depth of thirty feet or more. The present invention provides means for obtaining samples from the most inaccessible portions of such large bodies of material, for example, from the bottom of a vessel loaded with grain, and, in its preferred form, it also provides means for obtaining at the same time samples at intervals throughout the body of grain.

The invention consists in the features of improvement hereinafter set forth, illustrated in the preferred form in the accompanying drawings and more particularly pointed out in the appended claims.

In the drawings, Figure 1 is a view partially broken away and partially in longitudinal section, of the improved sampling device. Fig. 2 is a longitudinal section of one of the sample receptacles. Fig. 3 is a longitudinal section of the end receptacle of the series. Fig. 4 is a longitudinal section of the coupling between the sections of the inclosing pipe.

The improved sampling device comprises a pipe, the walls of which are preferably imperforate, and a sample receptacle inclosed within the pipe and adapted to be forced therewith into a body of grain or the like, and, in the preferred embodiment of the invention, a series of flexibly connected sample receptacles are provided. The inclosing pipe, if of any considerable length, is preferably formed of pipe sections 10 detachably connected at their ends by coupling sleeves 11. These coupling sleeves (see Fig. 4) are provided with threaded portions for engaging the threaded ends of the pipe, and preferably the ends of the coupling sleeve extend beyond the threaded portions thereof and snugly engage the outer faces of the pipe sections to form a strong joint between the same. For sampling a boat-load of grain or the like, an inclosing pipe some thirty feet in length and made up of three or four sections, is provided.

Each sample receptacle 12 is tubular in form and is somewhat smaller than the internal diameter of the pipe 10, so that it can slide freely therethrough. The tubular receptacle is provided with closing end portions 13 and 14, the upper end portion 14 preferably being conical in form to facilitate its passage through the grain. Each receptacle is provided in its side wall and adjacent its upper end with an elongated opening or openings 15 through which the grain or the like may pass into the same. The receptacles shown in Figs. 1 and 2 are provided with a single opening, while that shown in Fig. 3 is provided with two openings.

The several sample receptacles are flexibly connected end to end, preferably by short lengths 16 of small wire cable. The ends of the short flexible pieces 16 extend through axial perforations formed in the ends 13 and 14 of the receptacle and are provided with abutments or knots 17 within the receptacle, these knots being preferably dipped in solder to securely unite the portions thereof. Collars 18, formed of short lengths of wire wound about and soldered to the pieces 16, are preferably provided adjacent the ends of the receptacles as shown to hold the latter in proper spaced relation.

The series of flexibly connected receptacles extends through the pipe 10 and a piece of cable 19, preferably substantially equal in length to the length of the pipe, is connected to the uppermost receptacle of the series. The lower end of the pipe is arranged to engage an abutment that is connected to the lowermost or end receptacle of the series. A pointed or conical prod member is also connected to the end receptacle of the series, and projects beyond the lower end of the inclosing pipe. In the preferred form shown, a conical prod member 20 is rigidly fixed upon the lower end of the end receptacle 12′ and is provided with a shoulder or abutment 21, which is arranged to be engaged by the end of the pipe 10. Preferably, also, the prod member is provided, at the upper end of its conical portion, with a shoulder 22, which is somewhat larger in diameter than the pipe 10.

In operation, the flexibly connected receptacles are threaded through the pipe 10. For sampling a vessel-load of grain, for example, the inclosing pipe is, as stated, preferably about thirty feet in length and composed of three or four sections detachably connected by coupling sleeves 11. In such a sampling device, the receptacles are preferably arranged at intervals of about three feet. The lower end of the pipe engages the shoulder or abutment 21 which is fixed or secured to the lower receptacle 12' of the series, and by means of the pipe the entire series of receptacles are thrust or forced into the body of grain, this operation being facilitated by the conical prod member 20. As the receptacles are forced into the grain, the imperforate wall of the pipe of course closes the receptacle openings 15. When the sampling device is thrust in to the desired extent, as, for example, when the prod member 20 strikes the bottom of the vessel, the pipe 10 is withdrawn, leaving the receptacles in the body of grain. The grain will pack about the projecting shoulder 22 of the prod member and hold the series of connected receptacles in place as the pipe is withdrawn. The withdrawal of the pipe of course uncovers the openings 15 of the receptacles and the latter then fill with grain. The receptacles themselves may then be withdrawn by means of the cable 19 and the short lengths of cable 16, and, as each receptacle is withdrawn, it can be tilted to pour out the contained sample. The emptying of the separate receptacles in this way is rendered possible by the flexible connections between them.

The invention thus provides a simple and effective device by which samples of grain or the like may be obtained at intervals throughout a large body of material.

The cylindrical pipe 10 which incloses the sampling receptacles and which engages the shoulder 21 to thrust the receptacles into the body of grain or the like is of considerable strength so that it will serve to thrust the receptacles into a body of grain of great depth. At the same time it is not of excessive weight and is preferably formed, as described, of detachably connected sections so that it can be readily handled. The pipe of course serves to effectively prevent the entrance of material into the sampling receptacles until the latter have been inserted to the desired depth and the pipe withdrawn. The flexible connection or cable 19 can be conveniently handled to withdraw the sampling receptacles particularly if the latter are withdrawn from any considerable depth.

It is obvious that changes may be made in the details set forth without departure from the essentials of the invention as defined in the claims.

I claim as my invention:—

1. A sampler comprising a series of flexibly connected receptacles having openings therein, and a pipe for inclosing said receptacles and for forcing the same into a body of grain or the like.

2. A sampler comprising a series of tubular receptacles flexibly connected end-to-end and having openings therein, and a pipe for inclosing said receptacles and for forcing the same into a body of grain or the like.

3. A sampler for grain and the like, comprising a series of connected sampling receptacles having openings therein, an abutment connected to the end receptacle of said series, and a pipe inclosing said receptacles and engaging said abutment for forcing the receptacles into the body of grain or the like.

4. A sampler for grain and the like, comprising a series of sample receptacles flexibly connected end-to-end, a pipe for inclosing said receptacles for forcing the same into the body of grain or the like, and a conical prod member connected to the end receptacle of the series and projecting beyond the end of said pipe and provided with a shoulder adapted to be engaged by the grain, or the like, into which the sampler is thrust.

5. A sampler for grain and the like comprising a series of flexibly connected receptacles for receiving samples, a conical prod member connected to the end receptacle of said series, and a pipe inclosing said receptacles and engaging said prod member for forcing the receptacles into the body of grain or the like, the latter having a shoulder larger than said pipe.

6. A sampler for grain and the like, comprising a series of tubular receptacles closed at their ends and provided with openings adjacent their upper ends, flexible connections between the ends of said receptacles, and an inclosing pipe for said sampling receptacles, the end receptacle of the series having an abutment arranged to be engaged by the end of said pipe for forcing the receptacles into the body of grain or the like, and having a conical prod portion projecting beyond the end of said pipe.

7. A sampler for grain and the like, comprising a tubular receptacle having an opening therein, a pipe for inclosing said receptacle and for forcing the same into a body of grain or the like, and a flexible connection coupled to said receptacle for withdrawing the latter from the grain.

8. A sampler for grain or the like, comprising a tubular receptacle having an opening therein, a conical prod member connected to said receptacle, and an imperforate pipe inclosing said receptacle and engaging said prod member, for thrusting the latter and said receptacle into a body of grain.

9. A sampler for grain or the like, comprising a tubular receptacle having an opening therein, a conical prod member connected to said receptacle, a pipe inclosing said receptacle and engaging said prod member for thrusting the same and said receptacle into a body of grain, and a flexible connection coupled to said receptacle for withdrawing the same.

10. A sampler for grain or the like, comprising a tubular sample receptacle provided with an abutment, a pipe comprising detachably connected sections inclosing said receptacle and engaging said abutment for thrusting said receptacle into a body of grain, and a flexible connection coupled to said receptacle for withdrawing the same.

11. A sampler for grain and the like, comprising a tubular sample receptacle, a pipe for inclosing said receptacle and for thrusting the same into a body of grain, and a flexible connection extending through said pipe and coupled to said receptacle for withdrawing the same.

12. A sampler for grain and the like, comprising a tubular sample receptacle, a conical prod member connected to said receptacle, a pipe inclosing said receptacle and engaging said prod member for forcing the latter and said receptacle into a body of grain, and a flexible connection extending through said pipe and coupled to said receptacle for withdrawing the latter from the grain.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."