July 3, 1951 F. H. THOMPSON ET AL 2,558,800

SAMPLE PACKAGING MACHINE

Filed Dec. 11, 1945 4 Sheets-Sheet 1

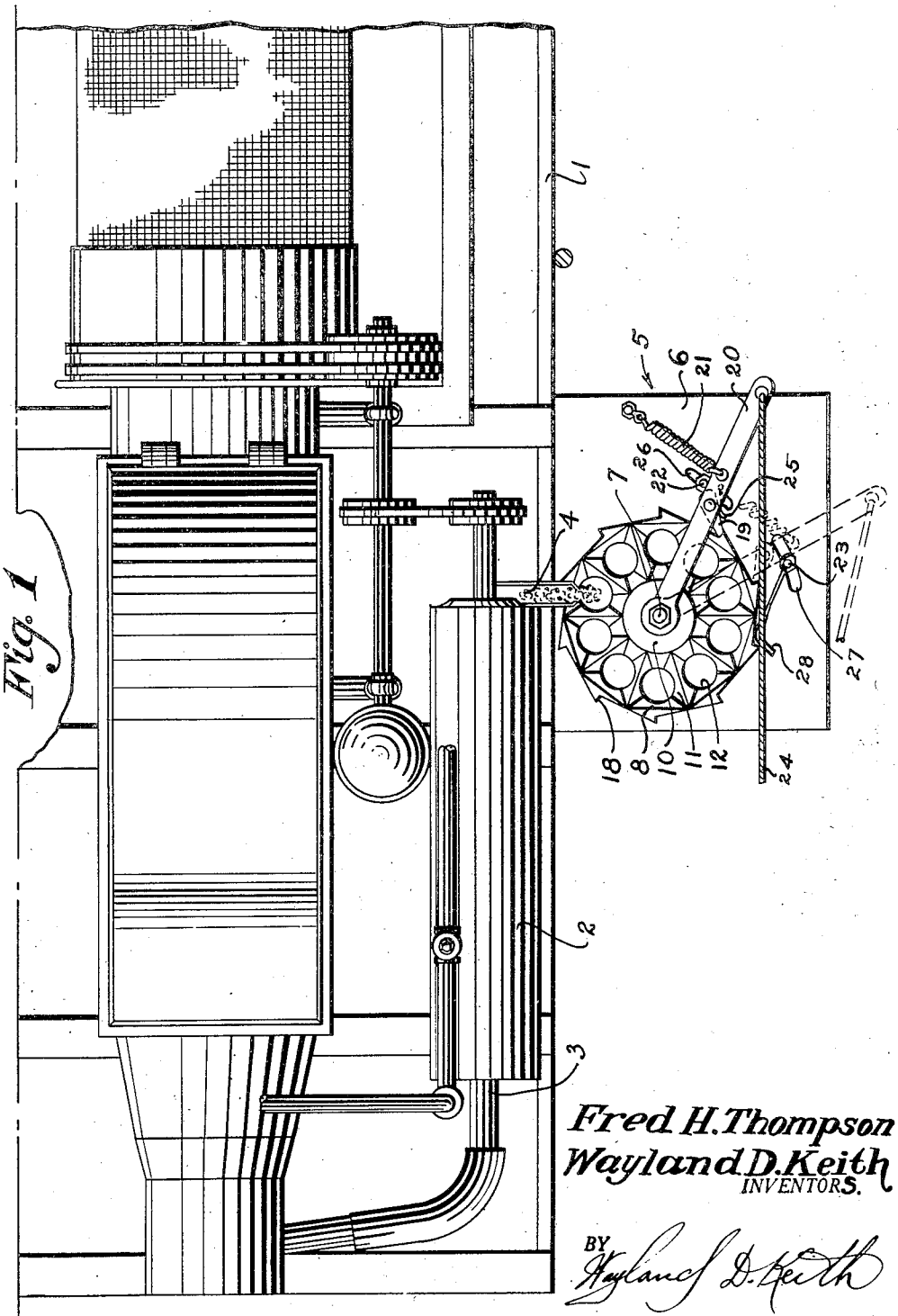


Fig. 1

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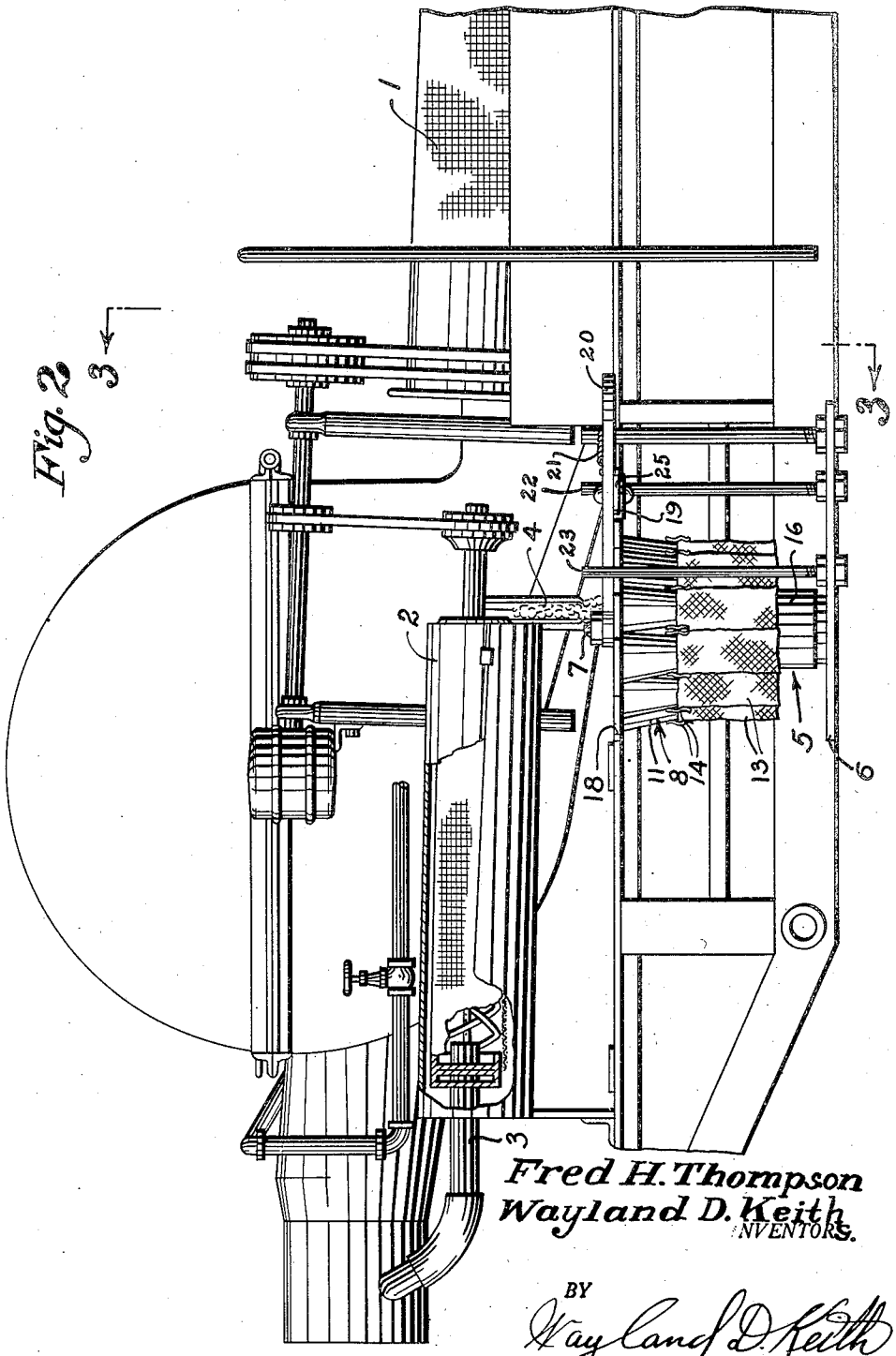
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SAMPLE PACKAGING MACHINE

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Fig. 2



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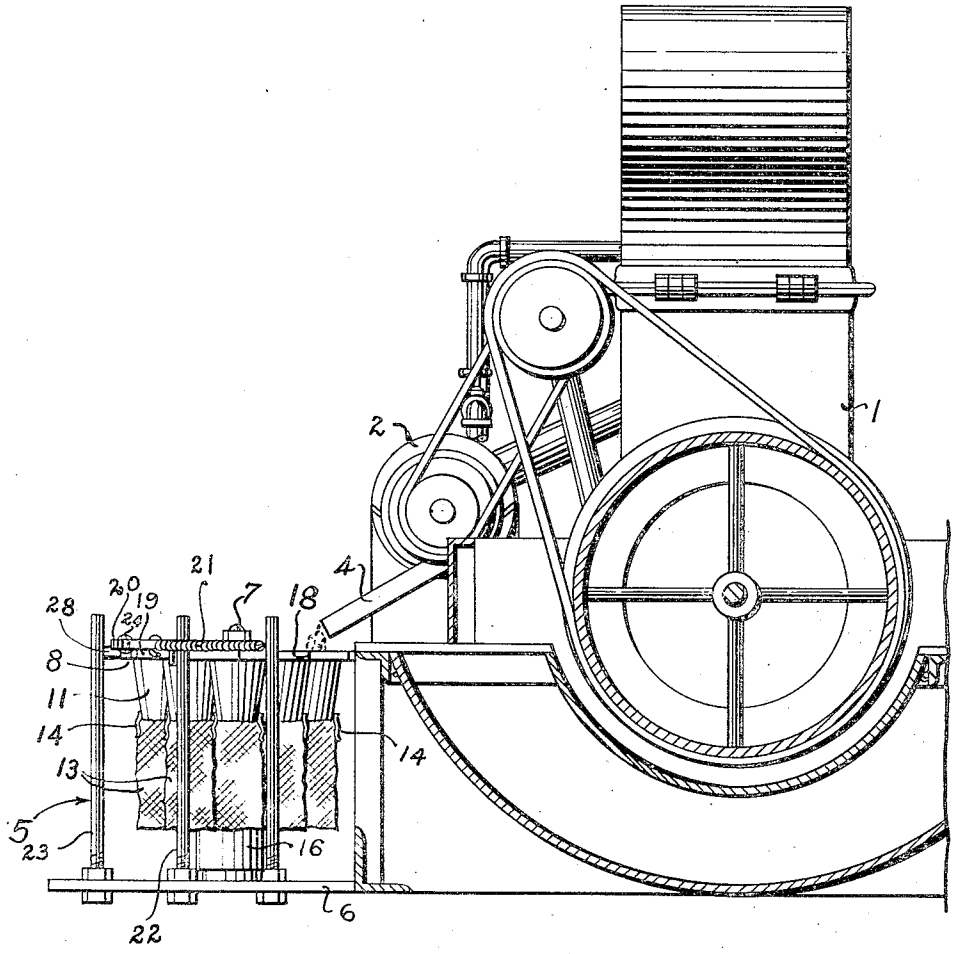
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Fig. 3



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SAMPLE PACKAGING MACHINE

Filed Dec. 11, 1945. 4 Sheets-Sheet 4

Fig. 4

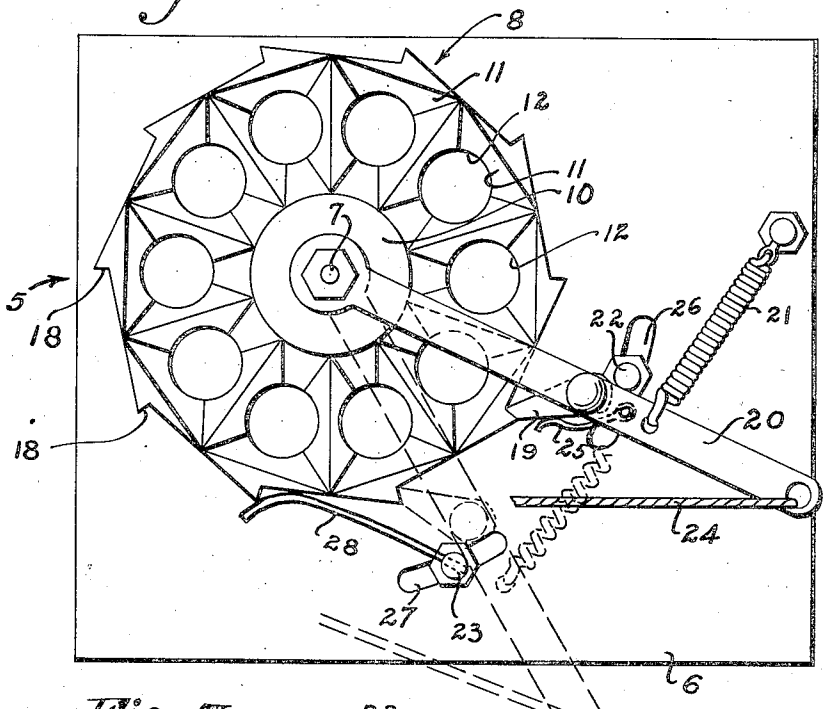
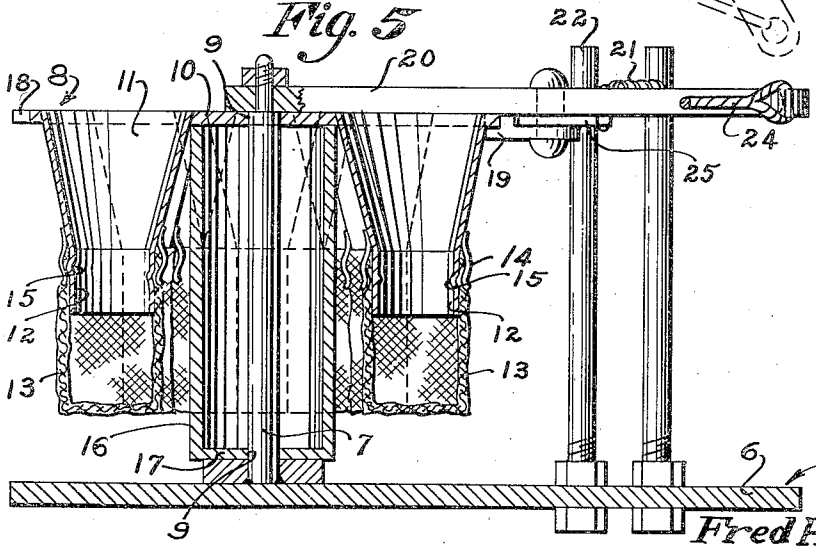


Fig. 5



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UNITED STATES PATENT OFFICE

2,558,800

SAMPLE PACKAGING MACHINE

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4 Claims. (Cl. 226—61)

1

This invention relates to sample packaging devices and more particularly to sample packaging devices to be used with a sample machine such as is used on a rotary drilling rig.

Sample machines from which samples of earth formation were taken from the drilling fluid as it flows from the well during the drilling process have been used heretofore. However, it has been the usual practice to accumulate these samples in a box, which samples were removed from time to time and placed in bags which were marked according to the depth of the well at the beginning of the sample and that when the sample was complete. This manner of packaging samples necessitated leaving the derrick floor, going to the slush pit at any time during the day or night when a sample was to be taken, removing the sample from the box and placing it in a sack and labeling it. Needless to say, the taking of samples at proper intervals and the correct labeling thereof was frequently neglected or carelessly done by inefficient or inexperienced workmen. Samples thus taken and packaged did not give accurate information as to the depth of certain formation or other information to be gained by the proper taking and labeling of samples.

The primary object of the present invention is to provide a sample catching and packaging machine having a multiplicity of sample receiving elements with sample receptacles attached thereto, which machine may be moved into a position to place the sample receiving receptacle in proper position to receive a sample of earth formation, and again moved to bring another of said sample receiving receptacles into receiving position, at the proper time, and which machine may be controlled from the derrick floor.

Another object of this invention is to provide a sample catching and packaging device which is simple in operation and construction, and which may be readily operated with a minimum of time and effort.

The foregoing objects and others that will become apparent as the description proceeds are accomplished as follows:

In the present invention the sample catching and packaging device, journaled for rotary movement about a vertical axis, has a multiplicity of sample receiving openings in the top thereof, which openings may be positioned, one after another, to register with the discharge opening of a sample machine. From each opening depends a chute-like arrangement to which is attached a receptacle, so that earth formation from the sample machine may be directed through the opening, down the chute and into the sample receptacle. When the receptacle is filled, or when the sample machine has discharged formation for a predetermined period of time, the sample catching and packaging device may be moved to place another of the multiple sample receiving openings in position to receive a sample. When all the receptacles have received the desired amount of material, they may be removed from the device, properly labeled and then other receptacles secured in place on the device. In this manner a number of sacks or receptacles can be removed at one time with practically the same effort that was formerly required for the taking and packaging of one sample. Normally samples are required to be taken every ten feet of well drilling, therefore, using a ten unit sample receptacle, a hundred feet of drilling may be accomplished before it is necessary for the sample receiving bags to be changed.

2

This invention is illustrated in the accompanying drawings in which:

Fig. 1 is a top plan view of a conventional type shale separator having a sample machine attached thereto, and with the present invention positioned to receive samples therefrom; with an alternate position of the operating lever shown in dashed outline;

Fig. 2 is a side elevation of a portion of a shale separator showing a sample machine connected thereto and with the samples being directed into the sample catching and packaging device;

Fig. 3 is a sectional view taken on the line 3—3 of Fig. 2, looking in the direction indicated by the arrows;

Fig. 4 is an enlarged top plan view of the invention removed from the machine and showing an alternate position of the operating lever in dashed outline; and

Fig. 5 is a vertical sectional view of the invention showing sample receptacles in place on the depending chutes.

With more detailed reference to the drawing the numeral 1 designates a conventional type of shale separator to which is fitted a sample machine 2 having an inlet 3 and a discharge spout 4.

A sample catching and packaging device generally designated as 5 has a base plate 6, preferably made of plate steel but other suitable material may be used. A vertical post 7 is secured to the base 6 and extends upwardly therefrom to receive a rotatable element 8 which is journaled thereon for rotation. A plate 10 is disposed at the top of the rotatable element 8 and has a series of funnel shaped openings 11 therein which

converge inwardly and downwardly in a chute-like arrangement. The chute 11 preferably has a cylindrical neck 12 at the lower end thereof, which neck 12 receives the sample receptacle 13, such as a sack, which may be secured thereto by means of a spring clip 14 which engages an annular corrugation 15 positioned within the length of the neck portion 12.

It is to be understood that while a sack or bag is usually applied to the neck 12 as a container for the sample, the term is to be construed to cover any suitable form of container such as a box, plastic cylinder or the like.

The rotatable element 8 is supported by the tubular member 16 resting on plate 17.

The outer periphery of the plate 10 is serrated or notched on the edge 18, which notches are adapted to be engaged by a pawl 19 so that the element 8 may be selectively moved step by step, that is, notch by notch, upon the operation of a lever 20 pivotally mounted on post 7.

A spring 21 holds the lever 20 against post 22, as shown in full outline in Figs. 1 and 4. The lever 20 is adapted to work through an arcuate movement between posts 22 and 23 so that the pawl will move the rotatable member 8 to rotate it the proper distance to bring a new receptacle into position beneath the discharge spout 4 of the sample machine. The lever 20 has a cord 24 attached thereto, of a convenient length, and by pulling the cord 24 the lever 20 is actuated to cause pawl 19 to engage one of the notches in the edge 18 of plate 10. A spring 25 urges the pawl 19 inward against notched edge 18 of the plate 10 to hold said pawl in engagement with one of said notches until the lever is again actuated to rotate the plate and cause the pawl to engage another of said notches.

The slots 26 and 27 are provided within the base plate 6 to receive posts 22 and 23 respectively so as to adjust the arcuate movement of the lever 20, and the stopping position of the funnel shaped sample receiving openings 11. A spring 28 is secured to post 23 and is adapted to engage notched edge 18 so as to frictionally hold the member 8 against accidental rotation.

Preparatory to operating the sample catching and packaging device, the base 6 is secured in place and a sample receptacle 13 fitted on each of the necks 12 and secured thereto by means of spring clips 14 in such manner that the receptacle is readily removed but held securely while receiving the sample of earth formation. With a sample receptacle thus secured in place on each neck 12, the device is positioned beneath the discharge spout 4 of the sample machine in such manner that one of the funnel shaped sample receiving elements with the receptacle thereon, will be in position to receive cuttings extracted from the drilling fluid by the sample machine and discharged through spout 4.

The cord 24, attached to the lever 20 extends to the derrick floor within easy reach of the operator and may be pulled at any desired time or at predetermined intervals. The cord 24 may be manually operated so as to rotate a new receptable 12 into position to receive a sample of earth formation.

When the rotatable member has been rotated one revolution so that each sample receptacle 13 is filled, said receptacles may be removed from the device, properly labeled for identification, and other receptacles fitted onto necks 12 and secured in place by spring clips 14 and the operation repeated.

Having thus described the invention what is claimed is:

1. In a sample receiving and packaging machine for use with a sample machine, a base having an upstanding post, a rotatable element journaled on said post for rotation relative thereto, said rotatable element having a multiplicity of sample receiving chutes opening onto the upper surface thereof and each of said chutes having a sample container removably secured to the lower end thereof, said rotatable element having a notched periphery, a pawl for selectively engaging said notches, lever means for actuating said pawl, resilient return means for returning said lever means to starting position, adjusting posts for regulating the rotation of said rotatable member to properly position said sample receiving chutes in alignment with the discharge of said sample machine, means for actuating said lever means from a place remote from the sample receiving machine.

2. In a sample receiving and packaging machine for use with a sample machine, a base having an upstanding post secured thereto, a rotatable element journaled on said post for rotation relative to said base, said rotatable element having a multiplicity of sample receiving openings therein and each of said openings having a depending inwardly converging chute, a sample container secured to the lower end of each chute and spring clip means to removably secure said container to said chute, said rotatable element having a notched periphery, a pawl for selectively engaging said notches, a lever connected to said pivot for moving said rotatable element, adjustment posts for adjusting the rotation of said rotatable element by said lever so as to selectively position each of said sample receiving chutes in position to receive a sample of earth formation from the discharge of said sample machine, means for operating said lever from a point remote from the sample receiving machine, and means for locking said rotatable element until actuated through another arcuate movement by said lever.

3. In a sample packaging machine a base, a member rotatably mounted on an axle on said base for rotation about said axle, said member carrying a plurality of radially and circumferentially spaced depending chutes, said rotatable member having an index means corresponding to each chute, an index engaging means for moving said rotatable member through an arcuate distance to selectively position one of said depending chutes in position to receive a sample to be packaged, said chutes being adapted to removably receive a sample container over the lower end thereof, means remote from said sample packaging machine for actuating said index engaging means to move said rotatable member through said arcuate distance, stop means for selectively limiting the movement of said rotatable member, resilient return means for returning said index engaging means to the starting position.

4. In an earth formation sample receiving and packaging machine for use with a sample machine on a shale separator, a base, a rotatable element journaled on an axle on said base, said rotatable element being rotatable on said axle, said rotatable element having a multiplicity of sample receiving chutes opening onto the upper surface thereof and each of said chutes adapted to have a sample container removably secured over the lower end thereof, said rotatable element having circumferentially spaced notched ele-

ments spaced radially outward from said axle, an element for selectively engaging said notches, a mechanical element for actuating said notch engaging element, resilient return means for returning said mechanical actuating element to the starting position, stops for regulating the rotation of said rotatable member to properly position said sample receiving chutes in alignment with the discharge of said sample machine, means for actuating said mechanical actuating element from a place remote from the sample receiving machine.

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WAYLAND D. KEITH.

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