

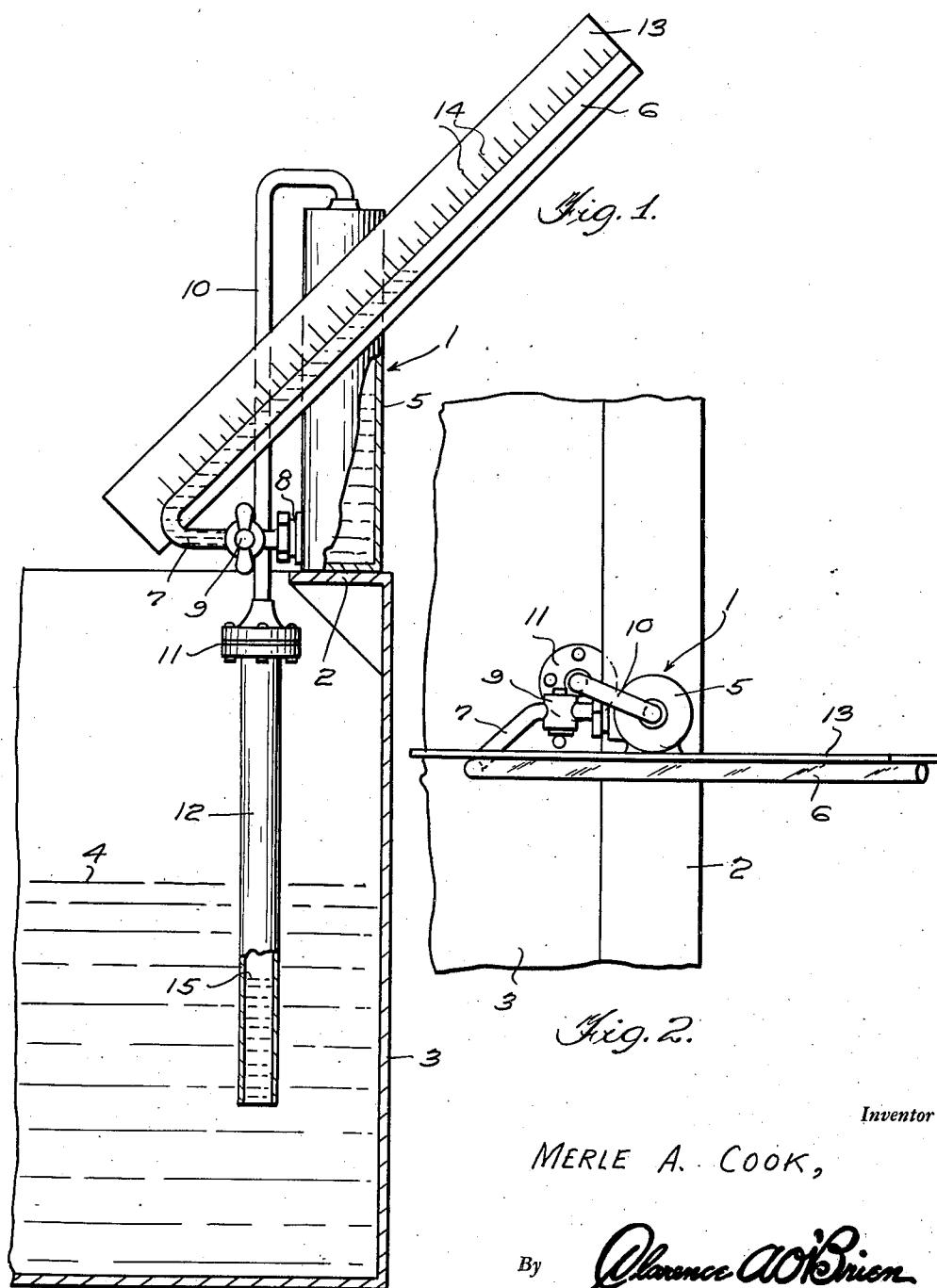
March 28, 1944.

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2,345,180

SPECIFIC GRAVITY INDICATOR

Filed May 13, 1942



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## UNITED STATES PATENT OFFICE

2,345,180

## SPECIFIC GRAVITY INDICATOR

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Application May 13, 1942, Serial No. 442,809

1 Claim. (Cl. 265—44)

The present invention relates to new and useful improvements in specific gravity indicators, particularly for ore mill pulp, although it will be understood, of course, that the device may be used for any other purpose for which it may be found adapted and desirable.

The primary object of the invention is to provide, in a manner as hereinafter set forth, a device of the aforementioned character which is operable by differential pressure and which is adapted to continuously and accurately indicate the specific gravity of the pulp.

Another very important object of the invention is to provide a specific gravity indicator of the character described comprising a novel construction and arrangement whereby accurate reading of the device will be facilitated.

Other objects of the invention are to provide a device for indicating the specific gravity of ore mill pulps which will be comparatively simple in construction, strong, durable, highly efficient and reliable in use, compact, and which may be manufactured at low cost.

All of the foregoing, and still further objects and advantages of the invention will become apparent from a study of the following specification, taken in connection with the accompanying drawing wherein like characters of reference designate corresponding parts throughout the several views, and wherein:

Figure 1 is a view in front elevation of the indicator with portions thereof broken away in section, showing the device in operation on a classifier well.

Figure 2 is a top plan view thereof.

Referring now to the drawing in detail, it will be seen that the embodiment of the invention which has been illustrated comprises what may be considered a U tube which is designated generally by reference numeral 1. The U tube 1 is mounted on a suitable support 2 on a classifier well 3 above the level, which is kept constant, of the pulp in said well, as at 4.

The U tube 1 includes a vertical metallic leg 5 and an indicating leg 6 of comparatively small diameter, the latter being of any suitable transparent material.

The indicating leg 6 extends at an inclination across the front of the leg 5 and terminates in an acutely angled lower end portion 7 which is connected to the lower portion of the leg 5 by means including a packing 8. Interposed in the horizontally extending lower portion 7 of the leg 6 is a valve 9, the purpose of which will be pres-

ently set forth. The leg 6 is open to the atmosphere at its upper end.

A vertical pressure pipe 10 parallels the leg 5 and communicates therewith at the top thereof. Connected by a suitable coupling 11 to the lower end of the pipe 10 and depending therefrom is a comparatively large tube 12. The lower portion of the tube 12 is immersed in the pulp 4, said tube being open at its lower end for the reception of said pulp.

Associated with the transparent indicating tube 6 is a chart 13 having appropriate calibrations 14 thereon.

It is thought that the operation of the device will be readily apparent from a consideration of the foregoing. Briefly, if the well 3 contains clear water when the device is mounted thereon, the level of the fluid in the leg 5 of the U tube 1 will fall and the level of said fluid in the leg 6 will rise. The level of the fluid in the transparent leg 6 is marked on the chart 13. Now, if there are solids in suspension in the classifier well 3, a pulp is had. These solids raise the specific gravity in proportion to said solids. As the specific gravity of the pulp rises, the level of said pulp in the tube 12, as at 15, also rises. In this manner the pressure in the leg 5 is increased, displacing some of the fluid therein, the fluid thus displaced entering the leg 6 and, of course, raising the level therein. The rise of the level of the fluid in the tube 6 is proportional to the rise in the specific gravity of the pulp. It will thus be seen that the specific gravity of the pulp may be readily and accurately ascertained at any time by simply consulting the chart 13. The valve 9 retards the flow of the fluid into the leg 6 in a manner to prevent pulsations in said leg due to surging of the pulp in the well 3. Variations of the level of the fluid in the leg 5 cause greater variations of the level in the tube 6, the difference being in proportion to the difference in the diameter or capacity of the two legs. A comparatively long movement of the level of the fluid in the leg 6 is also brought about by the inclination of said leg. This greatly facilitates accurate reading of the device.

It is believed that the many advantages of a specific gravity indicator constructed in accordance with the present invention will be readily understood, and although a preferred embodiment of the device is as illustrated and described, it is to be understood that changes in the details of construction and in the combination and arrangement of parts may be resorted to which will fall within the scope of the invention as claimed.

What is claimed is:

A specific gravity indicator comprising a U-tube embodying an elongated vertical leg of relatively large diameter and having end walls, and an indicating leg in the form of a transparent tube of relatively smaller diameter, the bottom end wall of the vertical leg being flat to solidly rest upon a horizontal support, the indicating leg having a straight long upper portion extending at an inclination entirely across and beyond opposite sides of the vertical leg and a straight shorter horizontal lower end portion extending toward and connected with the lower portion of the vertical leg to communicate with the latter at the adjacent side thereof, the upper end of said indicating leg being open, a control

5 valve in said horizontal lower end portion of the indicating leg, a chart associated with said indicating leg and having calibrations at different points along the length of said inclined long upper portion of said indicating leg, and a straight, vertical pressure pipe parallel with and adjacent one side of said vertical leg and depending a substantial distance below the U-tube, said pressure pipe including a pipe of relatively small diameter having a laterally directed upper end communicating with the vertical leg at the top of the latter, and a tube of relatively larger diameter coupled to the lower end of said pipe and having an open lower end.

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