My invention relates to new and useful improvements in agitators for plaster making kettles and the like.

The normal manufacture of hemi hydrate gypsum plaster requires that powdered gypsum or rock be calcined in a kettle at a temperature of approximately 260° F. and at the same time agitating the plaster so that the moisture, in the form of steam, may be driven from the rock. It is conventional to use a centrally located agitator shaft having an agitator blade upon the lower end thereof adjacent to the base of the kettle and extending outwardly to adjacent the side walls of the kettle. However, this blade is normally situated clear of the base of the kettle and consequently there is a tendency for the powdered gypsum rock to cake on the bottom below the blade and to restrict the rotation of the blades.

It is conventional to extend loops of chain behind the agitator blade but these wear out quickly making it necessary to take the kettle out of production and to cool it down to allow new chains to be fitted.

I have overcome this disadvantage by providing a flexible cable extending between the ends of the blade and a length greater than the length of the blade so that when the blade is rotated, the cable loops behind the blade and holds upon the base of the kettle. By threading a plurality of cast iron blocks or beads upon this cable, said blocks having a polygonal cross section, I find that the base of the kettle is kept clear of the caking layer and the rate of wear is a fraction of that with chains alone. Thus the frequency of renewal, with the consequent taking out of production of the kettle, is greatly reduced.

The principal object and essence of my invention is therefore to provide a device of the character herewithin described which while maintaining the base of a calcining kettle clear has a greatly increased useful life.

Another object of my invention is to provide a device of the character herewithin described which can readily be fitted to existing agitator blades.

Yet another object of my invention is to provide a device of the character herewithin described which contemplates polygonal cross section agitator blades threaded upon a cable thus increasing the useful life of the bottom cleaning device in a plaster kettle.

Still another object of my invention is to provide a device of the character herewithin described which is simple in construction, economical in manufacture, and otherwise well suited to the purpose for which it is designed.

With the foregoing objects in view, and such other objects and advantages as will become apparent to those skilled in the art to which this invention relates as this specification proceeds, my invention consists essentially in the arrangement and construction of parts all as hereinafter more particularly described, reference being had to the accompanying drawings in which:

FIGURE 1 is a sectional view of the base portion of a calcining kettle with my device shown attached to the agitator blade.

FIGURE 2 is a top plan view of FIGURE 1.

FIGURE 3 is an isometric view of one of the agitator blocks or beads.

FIGURE 4 is a fragmentary elevational view showing the agitator removed from the kettle.

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

In the accompanying drawings reference character 10 shows the cylindrical side wall of a conventional calcining kettle having a convexly curved base 11.

A centrally located agitator shaft 12 is adapted to be rotated by a source of power (not illustrated) and secured to the lower end of this shaft is a transversely situated agitator blade 13 curved to complement the curvature of the base 11 of the kettle but it will be appreciated that this blade has to be spaced from the base 11 in order to prevent friction or interference occurring.

A freely floating anchor plate or cruciform 14 is situated below the blade 13 and below the shaft 12 and a flexible cable 15 (preferably of galvanized or stainless steel) extends from adjacent the extremities 16 of the blade 13 to the cruciform 14 to which it is secured. However it is important to appreciate that the length of the cable 15 is greater than the length of the blade 13, so that when the blade 13 is rotated in the direction of arrow 17, the cable 15 drags behind the blade upon the base 11 in a looped configuration as clearly shown in FIGURE 2. A pair of cast iron rings 22 are connected by short chains 15' to the ends of the blade 13 to clean the periphery of the base in conventional manner.

A plurality of agitator blocks or beads 18 manufactured preferably from cast iron are centrally apertured as at 19 and are threaded loosely upon the cable 15 and it is desirable that the cross sectional configuration of these blocks or beads is polygonal so that the corners thereof assist in the breaking up of any caked material upon the base 11. For longest life it has been found that cast iron beads containing 2% of nickel give excellent results. The exact composition of the beads for longest life however, depends upon the impurities of the plaster being calcined and the optimum material for the beads can be determined by experiment.

The beads 18 are thread and rotatable upon the cables 15, closely together in order to semi-stiffen the flexible cable so that it will maintain the curved configuration.

The cruciform 14 in conjunction with the cable 15 and the beads 18 normally remain relatively central upon the base 11 but if a greater resistance is encountered by one end portion of the cable 15 then it can move from side to side within limits once again preventing a build up of caked material adjacent the central portion of the base 11.

The normal life of linked chain commonly used to scrape the bottoms of plaster kettles depends upon a number of factors such as the speed of rotation of the agitator, the material of the bottom of the kettle, the material of the chain and the presence of corroding or abrasive materials in the plaster. In any given application however I have found that nickel-Iron beads on a galvanized cable will outlast conventional chains by a multiple of the normal life of conventional chains.

Since various modifications can be made in my invention as hereinafore described, and many apparently widely different embodiments of same made within the spirit and scope of the claims without departing from such spirit and scope, it is intended that all matter contained in the accompanying specification shall be interpreted as illustrative only and not in a limiting sense.

1. What I claim as my invention is:

The combination of a receptacle having a bottom, and an agitator provided in said receptacle, said agitator comprising a rotatable blade closely spaced from said bottom of the receptacle, an elongated flexible element connected at its ends to the ends of said blade and having a length greater than the blade whereby said flexible element may drag along said bottom when the blade is rotated, and a plurality of polygonal agitator blocks carried by said flexible element, said blocks being formed...
with apertures having said flexible element threaded freely therethrough whereby the blocks are rotatable on said element.

2. The combination as defined in claim 1 together with an anchor plate connected to said flexible element intermediate the ends of the latter, said anchor plate movably resting on the bottom of said receptacle.

3. The combination of a receptacle having a convex bottom, and an agitator provided in said receptacle, said agitator comprising a rotatably mounted curved blade closely spaced from said bottom with its curvature complementary to the convexity of the bottom, an elongated flexible element connected at its ends to the ends of said blade and having a length greater than the blade whereby said flexible element may drag along said bottom when the blade is rotated, an anchor plate connected to said flexible element intermediate the ends of the latter and movably resting on said bottom, and a plurality of polygonal agitator blocks carried by said flexible element at opposite sides of said anchor plate, said blocks being formed with apertures having said flexible element threaded freely therethrough whereby the blocks are rotatable on said element.

References Cited in the file of this patent

UNITED STATES PATENTS

64,614 Wise et al. ------------ May 7, 1867
2,027,756 Tay ---------------- Jan. 14, 1936