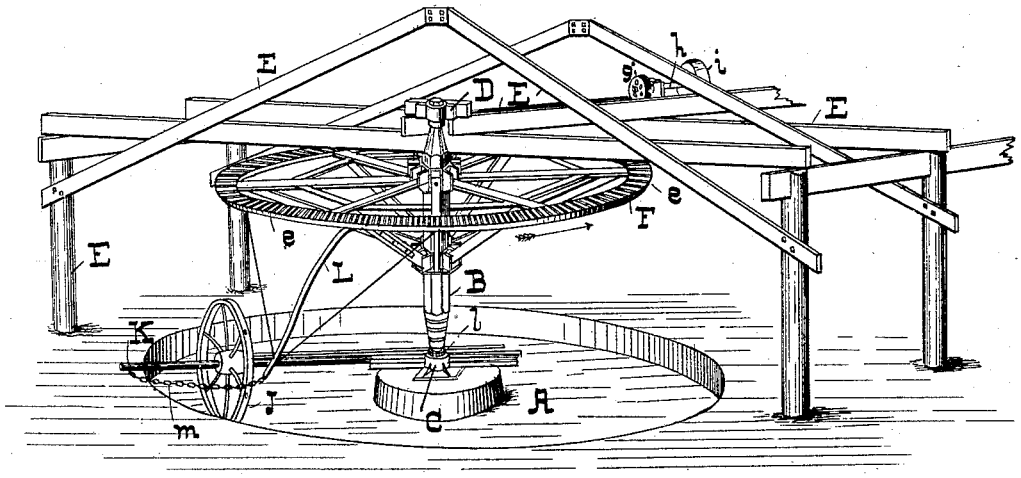
(No Model.)

R. WILLING.

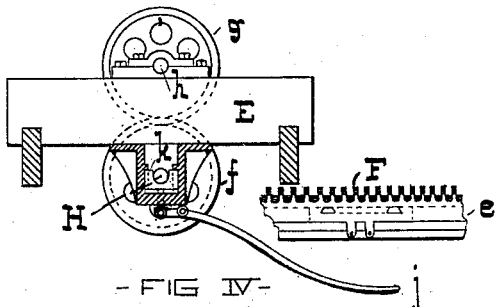
CLAY TEMPERING MILL.

No. 342,277. Patented May 18, 1886.

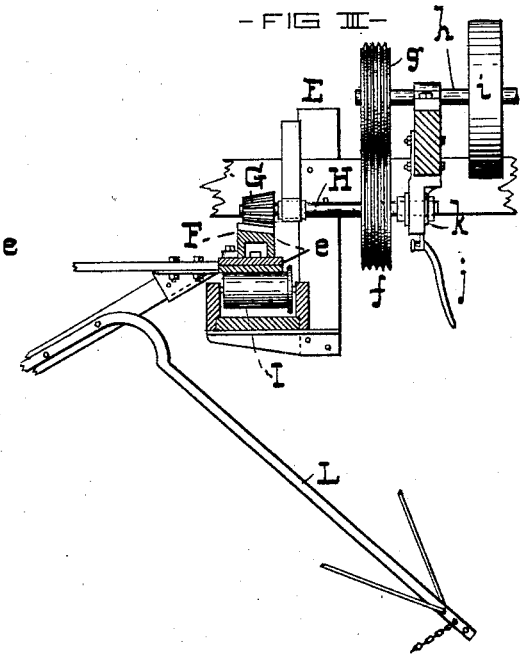
-FIG I-



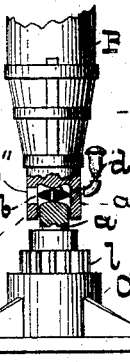
-FIG II-



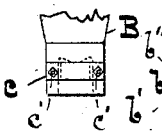
-FIG III-



-FIG IV-



-FIG V-



-FIG VI-

-WITNESSES-

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UNITED STATES PATENT OFFICE.

RUDOLPH WILLING, OF BALTIMORE, ASSIGNOR OF ONE-HALF TO MICHAEL ADAMS, OF HIGHLANDTOWN, MARYLAND.

CLAY-TEMPERING MILL.

SPECIFICATION forming part of Letters Patent No. 342,277, dated May 18, 1886.

Application filed September 14, 1885. Serial No. 177,035. (No model.)

To all whom it may concern:

Be it known that I, RUDOLPH WILLING, of the city of Baltimore and State of Maryland, have invented certain Improvements in Clay-Tempering Mills, of which the following is a specification.

In the drawings forming a part hereof, Figure I is a perspective view of the improved mill. Figs. II, III, IV, V, and VI are details on an enlarged scale.

A is a pit, in which the clay to be tempered is placed. B is the central shaft of the mill, carrying a large overhead beveled gear-wheel, which, together with its driving-pinion, is hereinafter described. The lower end of the shaft B is bored out to fit over a pintle or gudgeon, *a*, which rests in a step, C. (See Fig IV.)

Between the operative lower end of the shaft B, or the recessed central surface thereof, *a'*, and the upper end of the pintle *a*, is interposed a double convex disk, *b*, to reduce friction; and the portion *b'* of the shaft, which is exterior of the pintle, has a hole, *b''*, through which the disk *b* may be inserted to its place or removed without the shaft being lifted entirely off its supporting-pintle. When the disk *b* is in place, the hole *b''* is covered by a plate, *c*, having holding-screws *c'*. (See Figs. V and VI.) An oil-cup, *d*, is used to supply oil to the frictional surfaces. The upper end of the central shaft, B, is confined in a bearing-box, D, fastened to a frame, E, of any suitable construction. F is a beveled gear-wheel secured to near the upper end of the shaft B. This wheel is made in sections, and the rim *e* consists of toothed segments backed by wood rims, which are also in segments and in two thicknesses. A cross-section of the rim of the wheel F, showing the wood segments, is shown in Fig. III. The object in using the wood segments is to give the wheel strength without proportionally increasing its weight, and also to effect a certain elasticity, whereby it is better adapted to receive shocks without injury. It will, of course, be understood that the segments of iron and wood are properly bolted together, and the iron sections at the joints are keyed, as shown in Fig. II, in which figure a portion of the edge of the wheel is shown. The beveled gear F is driven by means of a pinion, G, on a shaft, H. This pinion and its shaft are shown together only in Fig. III, and the shaft in Fig. II, as they are hid by the frame-work E in Fig. I. The shaft H has a friction-wheel, *f*, in gear with another, *g*, on the main driving-shaft *h*, and power is applied to the said driving-shaft by means of a belt (not represented) and a pulley, *i*. (Shown in Figs. I and III.) The friction-wheels *f* and *g* are forced in contact by means of a lever, *j*, attached to a movable box, *k*, in which one end of the shaft H rests. By relaxing the lever *j* the said wheels are slightly separated and the machine stopped.

It will be understood that the friction-wheels *f* and *g* answer the purpose of a safety attachment by preventing a too great strain being applied to the wheel F, as upon the approach of such a contingency one of the said wheels will turn independently of the other until the extra strain is removed.

By referring to Fig. III it will be seen that the rim of the wheel F directly under the pinion G rests on a roller, I, which supports it and keeps the two wheels in proper gear. The employment of the roller I also admits of the wheel F being made lighter than it could safely be used if it had only its own rigidity to prevent its rim being sprung out of gear with the driving-pinion G.

J is the clay-tempering wheel on the horizontal shaft K. This shaft is attached to a pivotal wheel (not shown) near the central shaft, B, and is in gear, by means of a suitable train of wheels, with the wheel *l*. This arrangement is of common construction, and designed to effect a movement of the tempering-wheel J toward and from the center of the pit, as is usual in mills of this class. The outer end of the shaft K is attached by means of a chain, *m*, to a bar, L, bolted to one side of the wheel F. In the rotation of the wheel F in the direction of the arrow the shaft K is dragged around by means of the chain.

The tempering-wheel is of ordinary construction, and needs no description herein. In the clay-tempering operation the pit is filled with clay which is dampened, and as the machine is placed in operation the tempering-wheel describes a spiral line in the pit, and thereby stirs and mixes the entire body of clay, as is well understood.

In the drawings I have shown one pit only;

but it is evident that several can be used and driven from the same shaft.

By attaching the bar L to an arm at a point near to the rim of the wheel F, nearly all strain is removed from the arms of the wheel and the central shaft, and by placing the entire actuating-gearing above or overhead, as shown, carts and wagons may approach the pit in any direction without meeting obstructions. The gearing is also less liable to become clogged with dust than if it were near the ground.

I claim as my invention—

1. In a clay-tempering mill, the central shaft, B, overhead beveled gear-wheel, F, driving-pinion G, bar L, attached to an arm of the wheel F, chain *m*, and shaft K, carrying the tempering-wheel J, all combined substantially as and for the purpose specified.

2. The central shaft, B, having its lower end recessed, so as to produce the surface *a'*, and with the portion *b'*, surrounding the said surface, provided with the hole *b''* and its covering-plate *c*, combined with the step C, pintle *a*, and disk *b*, substantially as and for the purpose specified.

RUDOLPH WILLING.

Witnesses:
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