T. H. QUICK.

Machine for Stirring and Dissolving Sugar in Sugar Refineries.

No. 54,597. Patented May 8, 1866.

Fig. 1

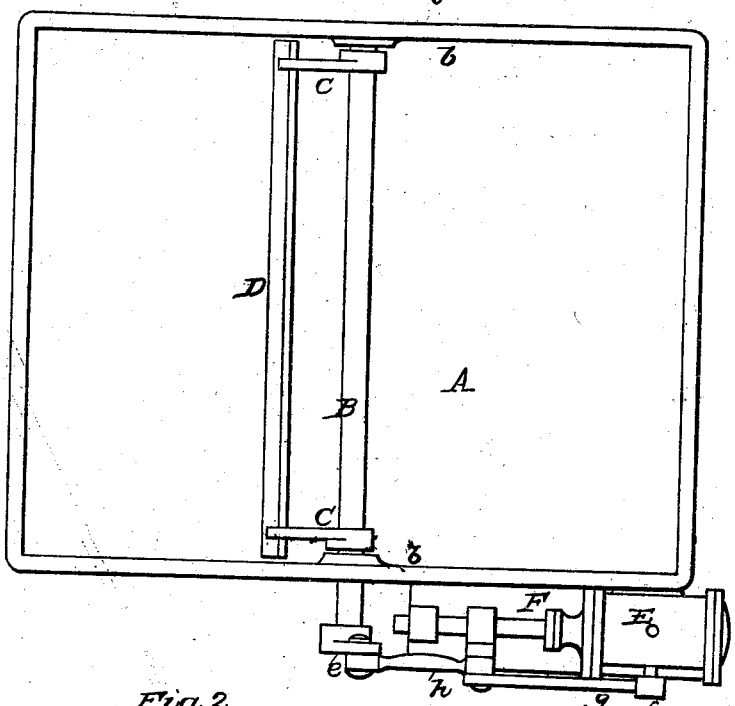
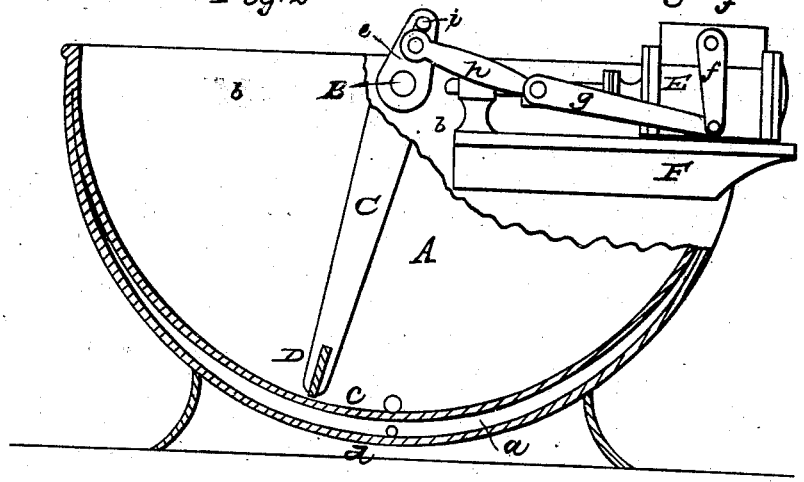


Fig. 2



Witnesses

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THOMAS H. QUICK, OF NEW YORK, N. Y.

IMPROVED MACHINE FOR STIRRING AND DISSOLVING SUGAR IN SUGAR-REFINERIES.

Specification forming part of Letters Patent No. **54,597**, dated May 8, 1866.

To all whom it may concern:

Be it known that I, THOMAS H. QUICK, of the city, county, and State of New York, have invented a new and useful Improvement in Sugar-Agitators; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawings, making a part of this specification, in which—

Figure 1 is a plan or top view. Fig. 2 is a partial longitudinal section.

Similar letters of reference indicate corresponding parts in both drawings.

This invention is designed to supersede the ordinary laborious and expensive mode of agitating or stirring sugar by manual labor during the operation of heating up the same in the refining process; and it consists in a novel combination of a vibrating agitating-blade with the heater and with a suitable engine for operating the said blade, whereby the relative force and speed of the agitating-blade is properly proportioned to the quantity of sugar operated upon, and whereby the sugar may be thoroughly agitated without exposing it to the injurious action of the atmosphere, at the same time that the production of "smear" by the mashing or breaking of the grains of sugar is avoided, and by which, furthermore, a more uniform quality of sugar is obtained than by the usual manner of stirring.

A is the heater, in which the mingled sugar and sirup are placed to be boiled or heated up, and which may be of the ordinary construction, with a steam-space, *a*, between its inner and outer parts, *c d*, as shown in Fig. 2, the sugar being heated by the steam in the said space. The inner part, *c*, of the heater describes the half of a circle concentric with the shaft B, which works at each end in suitable boxes or bearings formed upon the upper edges of the ends *b* of the said heater. Rigidly secured to the shaft B, near each end thereof, is a bar, C, each of the said bars being attached at one end to the shaft B, and situated transversely or at right angles thereto, and of such length that when in the position represented in Fig. 2 their opposite or outer ends extend nearly to the semicircular sides or bottom of the heater. Securely fixed in the said outer ends of these bars C, and extending longitudinally from one to the other, is a flat bar, D, which constitutes the agitating-blade, which stirs the sugar during the operation of the machine, and which, in so doing, has a vibrating or rocking movement, as will be presently fully set forth. Fixed upon one end of the shaft B, outside of the heater A, is a slotted crank, *e*, and contiguous thereto is secured upon the end of the heater A the cylinder E and appurtenances thereof of a steam or other engine, which drives or operates the agitating-blade D. The said cylinder E may be secured to the end of the heater by means of a solid cast-iron bracket, F, or by other suitable means.

When the engine is of the kind shown in the drawings, the reciprocating motion of the piston communicates a swinging or vibrating movement to the arm or crank *f*, which, acting through connecting-rods *g* and *h*, moves the crank *e* to and fro, and consequently rocks or vibrates the blade D within the heater A. Any desired or suitable quantity of the sugar and sirup which it is intended to heat up, being placed in the heater A, is heated by the steam in the steam-space *a* at the same time that the blade D receives a vibrating motion from the engine, as just herein fully explained. The said blade thus moving alternately in opposite directions causes the mingled sugar and sirup to move in currents alternately in opposite directions along the semicircular bottom and sides of the heater A and back over the upper edge of the said blade D toward the center of the heater, and by thus keeping it in motion causes it to be uniformly heated throughout and prevents it from being burned, while, inasmuch as the blade D is not raised up out of the sugar during the stirring operation, the sugar adhering thereto is not exposed to the injurious action of the atmosphere, as would be the case if rotating agitatory blades were employed; and as the grains of sugar are prevented from moving upon each other continually in the same direction the formation of what is technically called "smear" is avoided. Inasmuch as the blade D moves with greater speed and less force as it moves along the sides of the heater than when traversing its bottom, and inasmuch as the greater portion of the sugar settles by its own weight to the bottom of the heater at the center thereof, it follows that the force and speed of the said blade are proportioned to the resistance of the sugar at different portions of its stroke, while by the use of a separate engine to oper-

ate the agitating-blade the increased resistance to the movement of the said blade of a larger quantity of sugar in the heater causes the engine to move more slowly, while the diminished resistance of a smaller quantity enables it to move faster, so that the speed of the engine is, as it were, automatically regulated to meet the requirements of the sugar heated at a time, whereas by operating the agitating-blade from the main engine of the refinery the said blade could only be run at a uniform speed or be arbitrarily adjusted to move at a given rate.

By bringing the pivot by which the rod *h* is connected with the crank *e* inward to the inner end of the slot *i* the shaft B may be turned around to bring the blade D up out of the heater A to allow the said blade and heater to be cleaned. Instead of only one shaft B, with its attached agitating-blade D, two or more such shafts and blades may be employed when desired, the shafts being connected by suitable cranks or arms and connecting-rods, and operating within the heater in substantially the same manner as hereinbefore set forth.

What I claim as new, and desire to secure by Letters Patent, is—

The combination and arrangement of the vibrating agitating-blade D with the heater A and engine E, substantially as herein set forth, for the purpose specified.

THOS. H. QUICK.

Witnesses:

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J. W. COOMBS.