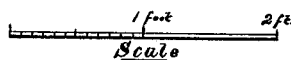
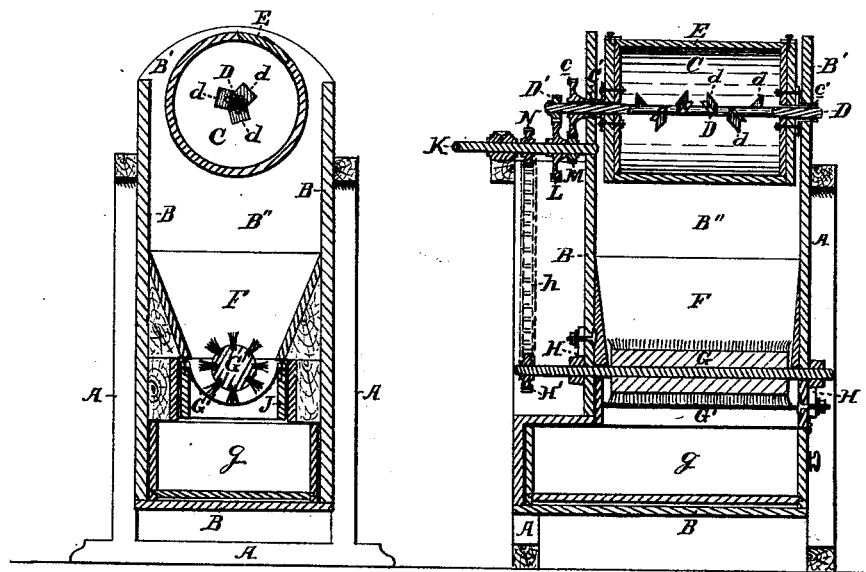
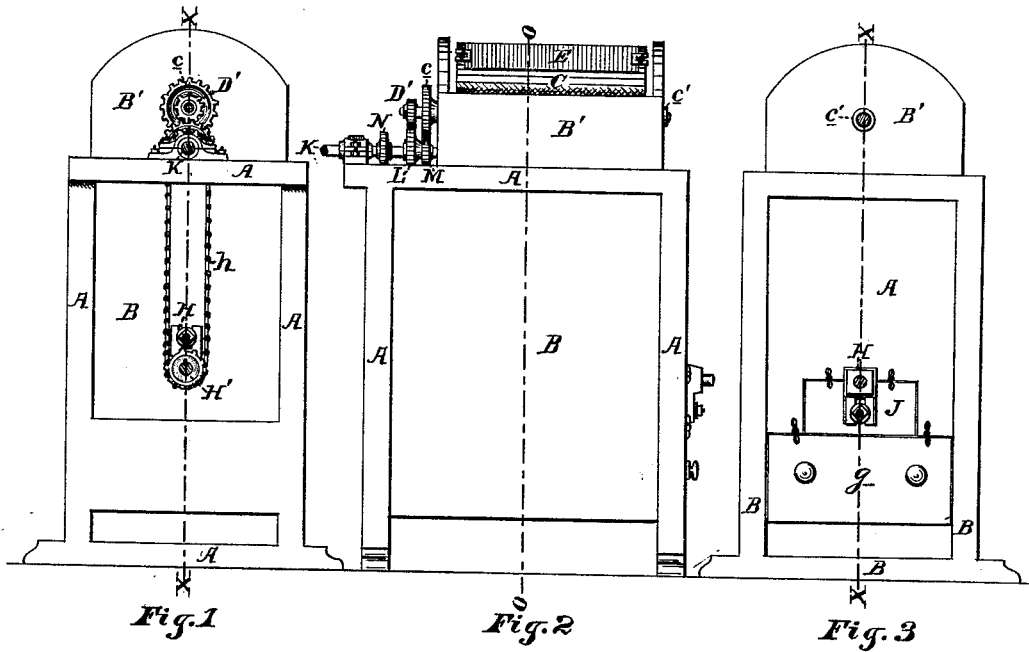


N. BASSETT.  
Machine for Reducing, Mixing, and Sifting.  
No. 221,387. Patented Nov. 11, 1879.



Witnesses:  
Edward C. Ryor  
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# UNITED STATES PATENT OFFICE.

NATHAN BASSETT, OF PHILADELPHIA, PENNSYLVANIA:

## IMPROVEMENT IN MACHINES FOR REDUCING, MIXING, AND SIFTING.

Specification forming part of Letters Patent No. **221,387**, dated November 11, 1879; application filed May 5, 1879.

### *To all whom it may concern:*

Be it known that I, NATHAN BASSETT, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Machines for Reducing, Mixing, and Sifting Various Powdered Substances, of which the following is a specification.

My invention consists in the combination of a mixing and reducing apparatus with that of a sifting device, whereby the whole operation of mixing several ingredients in any proportion, reducing lumps therein, finely sifting and delivering the same to a suitable receptacle for removal, is effected by the one machine and in one operation.

Considerable difficulty has been experienced in the use of powder-mixing machines heretofore in use, by reason of clogging, frequently rendering it necessary to stop the machine, and by reason of variation in the results as to the mixing, as also in the fact that, after reducing and mixing, the contents had to be removed to a separate machine to be sifted—an operation involving a loss of both material and time. To obviate these as well as minor difficulties is the object of my invention.

Figure 1 is a view of the gear end of the machine. Fig. 2 is a view of one side of the machine, showing drum and gearing. Fig. 3 is the reverse or drawer end of the machine. Fig. 4 is a transverse vertical section through the machine on line O O, Fig. 2. Fig. 5 is a longitudinal vertical section through the machine on lines X X, Figs. 1 and 3.

Like letters and figures denote like parts in the several drawings.

A is a suitable frame, to which is built the casing B, forming a box, a portion of which box extends above the frame A, as at B', for the purpose of receiving the drum and its gearing. C is the reducing and mixing drum, receiving its motion by means of a short hollow shaft, *c'*, and gear *c*. The opposite end of this drum rotates upon a like hollow shaft, *c'*, omitting the gear. Passing through the hollow shafts *c'* and *c'* and the drum C is a smaller and solid shaft, D, having its bearings in the hollow shafts *c'* and *c'*, extending beyond the hollow-shaft gear *c*, and having a driving-gear, D', attached to its end. The

hollow-shaft or drum gear *c* being slow (large) and the solid-shaft gear D' being fast (small) in motion, the latter is made to revolve, say, twenty times, more or less, as desired, while the former is making but one revolution.

Inside the drum C and upon the solid shaft D is placed a series—two to twelve, for instance—of radial arms or beaters, *d d d*, being in this size of machine three by three inches, turned at right angle at one end, for the purpose of seating and securing to the shaft D. They are placed upon the shaft in a spiral manner, the spirals being reversed from center to ends of drum, and secured to seat by bolting through the shaft. A section, E, of this drum is removable, to admit of charging and emptying, and is held in position by suitable clamps.

B'' is a clear space between drum C and centering-hopper F. At bottom of hopper F is located a sifting-roller, G, having in its periphery a suitable arrangement of bristles for forcing the contents of the hopper through a sieve, G', down and into the drawer *g*. The sifting-roller G is hung in adjustable bearings H H, and driven by a chain-pulley, H', and chain-band *h*. The sieve G' is secured in a portable manner, being clamped to the sides and ends thereof, to a draw-frame, J, which admits of changing sieves to any desired mesh, as also the free removal of the sifting-roller G. The adjustable hangers or bearings H H admit a close or free adjustment of the roller G with the sieve G'. The drawer *g* is for the mixed and sifted material, and is removable at will. The draw-frame J and drawer *g* are held in place by means of buttons or other suitable fastenings.

The entire apparatus is put in motion and driven by the shaft K, the gears L and M, the chain-pulley N, and chain-band *h*. Power (hand or other) is applied to the outer end of shaft K, and in any suitable and known manner.

It is obvious that the machine may be used separately, either as a mixer or sifter, by the removal, respectively, of the sieve and sifting-roller, or the retention of them and the removal of the mixing-drum. Again, it is equally obvious that there may be material alteration in details throughout without departing from the true spirit of the invention.

The operation of my invention is as follows: The materials to be reduced, lumps broken, &c., mixed, and sifted (the ingredients being in any proportion whatever, as an ounce to one hundred pounds) are placed in the drum G through the opening E, the latter being closed and securely clamped after the drum is charged. Motion is then given to the shaft K, which in turn imparts motion to the drum-gear, and shaft *c* and *c'* rotating the drum slowly, and to the beater-shaft and its gear D and D', rotating the beaters *d d* rapidly. The beaters being placed spirally and in reverse order, at either side of the center of the length of the shaft, when they receive the contents, thrown over them by the slow rotation of the drum, said contents are thrown quickly from right to left, and from left to right, from both ends to center, and from center to ends again, indefinitely, in the operation thoroughly reducing all lumps and mixing the materials in most intimate manner. Five minutes suffice to mix the contents of the drum when the machine is stopped, the lid E removed, and the material dumped to the hopper F below. The drum C is again charged, as before, power applied, and while the second charge in drum C is being reduced and mixed, the first charge is being thoroughly sifted at roller G and sieve G', and passed through to drawer *g* for removal. The operation is repeated until all the material required is prepared.

The machines, according to size, are capable of mixing and sifting from twenty-five to four hundred pounds at a time, in five minutes' operation. The machine shown in the drawings will prepare fifty pounds at a time, every five minutes.

These machines are adapted to the mixing and sifting of baking and other powders, self-raising flour, paints, &c. The reducing apparatus may be arranged below the sifting device, if desired.

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

The combined reducing and mixing and sifting machine herein described, consisting of the frame and casing A B, having revolving drum C, and the beaters *d d d*, (the latter revolving more rapidly than the former,) which are arranged upon the shaft D, as shown and described, centering-hopper F, sifting-roller G, having adjustable bearings H H, removable sieve and frame G' and J, drawer *g*, band and gearing *h C c H' L M N D*, and shaft K, as and for the purposes set forth.

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Witnesses:

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