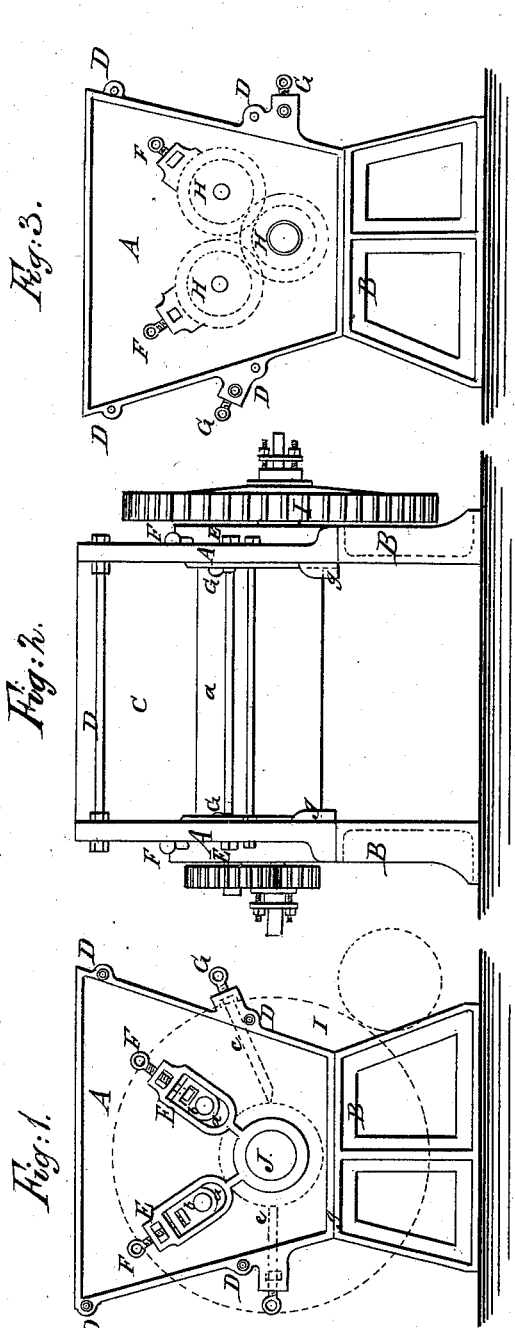
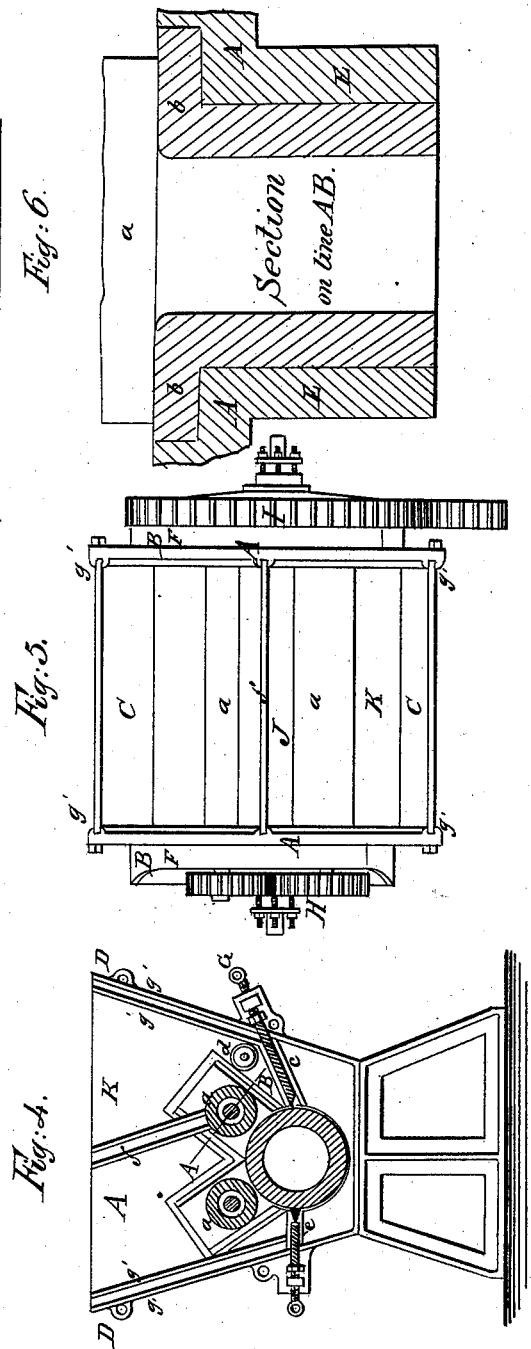


J. HEALD.  
Machine for Grinding and Doughing India-Rubber.  
No. 216,183.      Patented June 3, 1879.



WITNESSES:

*Chas. Nida*  
*C. Sedgwick*



INVENTOR:

BY

*J. Heald*  
*Munroe*

ATTORNEYS.

# UNITED STATES PATENT OFFICE.

JOHN HEALD, OF CHORLEY, COUNTY OF LANCASTER, ASSIGNOR OF ONE-HALF HIS RIGHT TO JOHN LEWIS, OF PRESTON, ENGLAND.

## IMPROVEMENT IN MACHINES FOR GRINDING AND DOUGHING INDIA-RUBBER.

Specification forming part of Letters Patent No. **216,183**, dated June 3, 1879; application filed May 8, 1879; patented in England, October 25, 1876.

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

Be it known that I, JOHN HEALD, of Chorley, in the county of Lancaster, England, have invented a new Improved Machine for Grinding and Doughing India-Rubbers and their compounds, for spreading purposes, likewise suitable for paints and other materials; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, the several figures of which are marked by corresponding letters of reference, and which said drawings constitute part of this specification, and represent, in—

Figure 1, an end view, showing regulating screws and nuts for rollers. Fig. 2 is a side view with the side slide-board, C, removed. Fig. 3 is the other end view of the same, showing gear-wheels for driving-rollers. Fig. 4 is a cross-section, showing positions of rollers, knife, and scraper. Fig. 5 is a plan of the whole machine; Fig. 6, a section of one end of top rollers.

A in Figs. 1, 2, 3, 4, and 5 are side frame-plates of the machine, on which are cast slide-guides *g'*, for holding the slides C in their places. B B in same figures are the head-stocks for carrying the machine. C C are two slides, one fitting onto the knife *c* and the other fitting onto breast-bar *e*. D D D D are stay-bolts, with regulating-nuts. E E are slide-boxes cast on the sides A, with screws F F for regulating the two top rollers *a a*. G G G G are set-screws for regulating the knife *c* and breast-bar *e*. H H H are wheels for driving top rollers *a a*; I I, the main driving-gear. The size of these will be determined by the speed the machine is required to run. Likewise the size of the wheels H will be guided by the relative speed required of the several rollers, which may require changing to suit the various materials to be operated upon. J is the main or central roller. These three rollers are ground together with oil and emery, so as to make them run close, that nothing may pass between them unground.

*a a* in Figs. 1, 2, 4, and 5 are the two top rollers, which may be regulated to any dis-

tance from main or central roller by screws F F, swiveled into sliding blocks *b*.

*c* is a knife in front of the machine, which is set to any distance from the main roller, yet allowing no unground material to pass from hopper to receiver below.

*d* is an agitating-roller, of any convenient size and shape to keep the material from settling or clogging the delivery at the knife-edge of the machine. This knife may be set at any angle.

*e* is a breast plate or bar, in the edge of which is a groove, into which I fit a piece of soft or elastic material, which presses against the main roller at the back of the machine, to allow only the fine-ground portions to pass.

*f* is a partition, forming a complete hopper. *g g* are flanges attached to each side of the supporting-frame, underneath the rollers, so as to act as a chute for conducting the ground material to the receiver below, as shown by Fig. 2.

Having fully described the several parts of my machine and their purposes, I will now proceed to describe its action.

The material designed to be doughed or ground is put into hopper K, and is stirred up by agitator-roller *d*. It then passes onward between first roller *a* and main roller J; thence between second roller *a*, these rollers being set at proper distances from main roller J. The fine or ground portion passes thence between the main roller J and breast bar or plate *e*, clinging to the roller J till it comes to knife *c*, which scrapes it cleanly off into the receiver under the machine.

A stream of cold water or steam may be passed through the roller J, either to keep it cold or to make it warm, as the nature of the material ground may require.

I have now fully described the whole in detail and its action.

I make no claim for individual mechanical actions, nor the adjustable bearings, as I am aware these are not new; but

I claim as my invention—

1. The combination of the agitator *d*, the rollers *a a*, having adjustable bearings, and the hollow roller J with the breast-plate *e* and

the knife *c*, substantially as and for the purpose described.

2. The adjustable breast-plate *e*, provided with a groove in its edge for the reception of soft or elastic material, in combination with the hollow roller *J*, substantially as and for the purpose described.

3. The hopper *K*, consisting of the ends *A*, provided with grooves *g'*, the removable sides

*C*, and the removable portion *f*, substantially as described.

Signed this 2d day of February, 1877.

JOHN HEALD.

In presence of—

NEWTON CRANE,

*United States Consul.*

ARTHUR C. HALL.