

Whepley & Storer, 3. Sheets. Sheet 1.

Feed Regulator.

No. 111,593.

Patented Feb. 7, 1877.

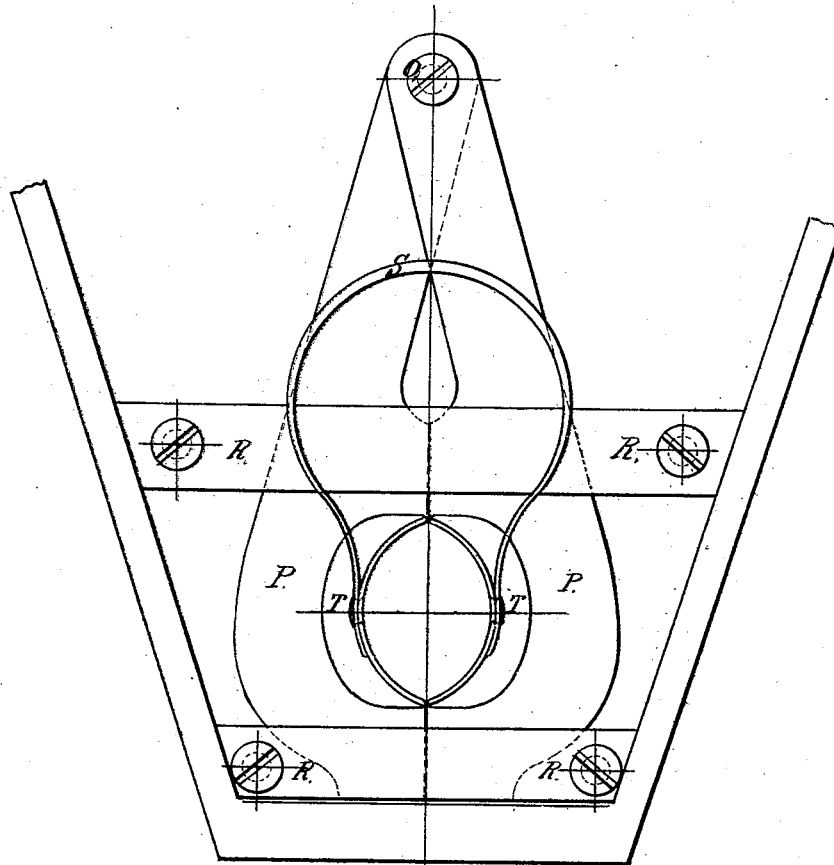


Plate 1.

Scale, Full Size.

Witnesses.
Edward A. Curran.
Charles A. Pickersley.

James D. Whepley
Lucas S. Storer.

Whelpley & Storer,

3, Sheets, Sheet 2.

Feed Regulator

No. 111,593.

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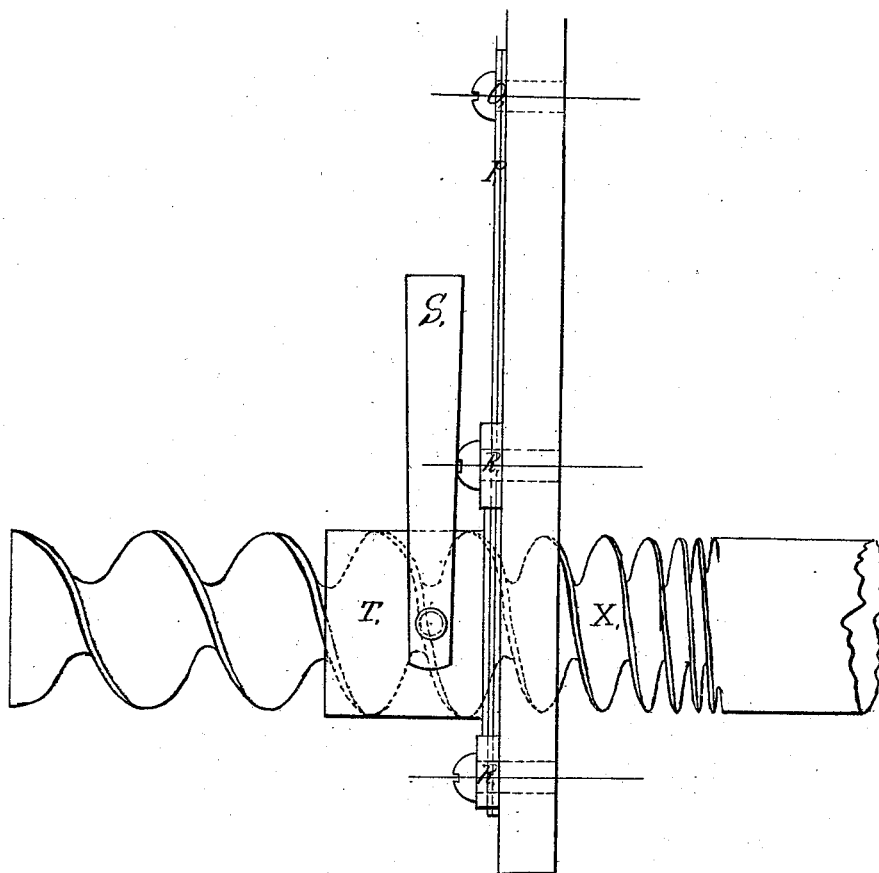


Plate 2,

Scale, Full Size.

Witnessed.
Edward Rouse
Charles McNickerson

Inventors.
James D. Whelpley
Jacob D. Storer

Whelpley & Storer,

3. Sheets, Sheet 3.

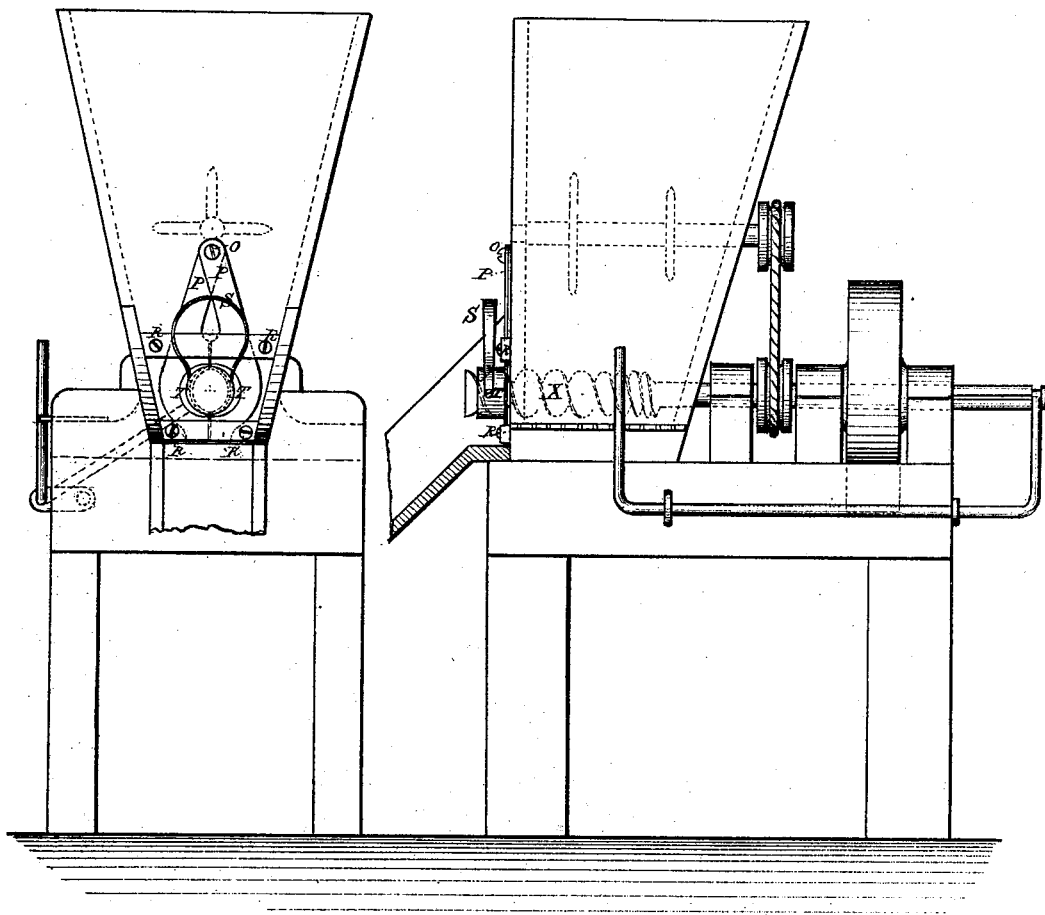
Feed Regulator.

No. 111,593.

Patented Feb. 7. 1871.

Fig. 1.

Fig. 2.



Scale, 3 ins. = 1 foot.

Witnesses:

Edward Renouf.
Charles M. Pickersory

Inventors

James D. Whelpley.
Jacob S. Storer.

UNITED STATES PATENT OFFICE.

JAMES DAVENPORT WHELPLEY AND JACOB JONES STORER, OF BOSTON,
MASSACHUSETTS.

IMPROVEMENT IN APPARATUS FOR DELIVERING GRAIN, ORES, &c., INTO GRINDING-MILLS.

Specification forming part of Letters Patent No. **111,593**, dated February 7, 1871.

To all to whom these presents shall come:

Be it known that we, JAMES DAVENPORT WHELPLEY and JACOB JONES STORER, both of Boston, in the State of Massachusetts, have invented an Improvement in Apparatus for Delivering Grain, Ores, &c., into Grinding or Pulverizing Mills, which the following specification and accompanying drawings sufficiently explain.

This invention is an improvement and modification of that described in our application for which a patent was ordered to issue April 19, 1870, and for which Letters Patent No. 102,997 were issued to us.

By that invention we have secured a variable and regulated feed to grinding-mills by a movable tapering screw in the bottom of the hopper. This we have modified in our present improvement by using, instead of a tapering screw, one with a varying pitch in the thread.

The mechanism for giving a longitudinal adjustment of the screw in the hopper being substantially the same as described in the former application above mentioned need not be further described.

When the screw is drawn back so that the part of the screw shown at T is in the bottom of the hopper, the feed will be rapid; but when that part shown at X is moved into that position the amount of feed will be less in proportion to the number of screw-threads to the foot.

The second part of our invention relates to the device which partially closes the orifice through which the ore or other material is fed from the hopper.

In the former patent the feed-orifice is covered by a perforated elastic diaphragm or rubber flap. In most cases this rubber flap answers our purposes; but in some cases, especially when feeding sharp angular pieces of stone or ore, the flap is easily torn and destroyed.

We have therefore made this device, (shown in Plates 1 and 2,) which consists of two thin plates of steel or other metal, P P, pivoted at O. Each of the plates P has a circular segment less than a semi-circumference cut away, and a lip, T, fastened thereto, so as to project forward an inch or two.

To the projecting lips T T are fastened the

springs S S, the springs being so set that the lips T T embrace the screw; but when the screw forces forward a large lump of any material which would choke the orifice the springs S yield, so that the plates P separate and swing in opposite directions on the pivot O.

As soon as the obstruction has passed the springs press the lips T around the screw.

The springs S may be a strip of steel, a coiled spring, or other suitable device which will press the lips around the screw.

The bands R R are for the purpose of holding the plates or clips P P against the face of the hopper, and to prevent their being thrust outwardly by pressure of the material within.

This device is as applicable to the tapering screw-feed described in our patent allowed April 19, 1870, as to the screw-feed described in the present specification.

The springs S S keep the clips P P and lips T T in contact with the screw, so that the delivery from the hopper is regulated by the size of the threads, while they are sufficiently elastic to permit the necessary retraction or opening of the clips for passage out from the hopper of any chance large pieces of any material.

It will be seen that the purpose of this device is not merely to regulate the feed, but to prevent the stoppage of the screw by the wedging of nails and other accidental fragments between the threads of the screw and the sides of the opening through which it passes.

It is also evident that when the screw is thrust out, and consequently ceases to operate, the springs will bring the two clips together, embracing the neck of the screw and preventing the escape of material.

Sliding doors on either side of the screw-opening, pressed together by springs, will have the same mechanical effect as the clips.

We also propose to substitute at will for the tapering screw described in our patent allowed April 19, 1870, a screw of equal diameter from the shank to the end, and having a diminishing number of threads or spirals to the linear inch in the same direction, X, Fig. 2.

A screw of this kind, commencing, for example, with four or five spirals to the linear inch, the number of threads or spirals diminishing to one at its extremity, the entire length of the screw being eight inches, would deliver

less material as it was thrust farther out through the feed-opening, and more as it was drawn in. This form of screw would be more suitable for fine material, such as sand, its velocity being in all cases constant, as described in our original application for patent of adjustable screw. The shank of such a screw might be made the full size of the screw itself, and in this case the clips or spring-doors would be provided each with a semicircular opening or lip just fitting around the screw or its shank, and would not be made to separate or open in any degree, except by the intervention of some hard material forcing its way through them.

What we claim, and desire to secure by Letters Patent, is—

1. The feed-screw with varying pitch, in combination with the device for giving it a longitudinal adjustment, as set forth.

2. The combination of the screw X, of varying pitch, with the plates P, guides T, and spring S, all constructed and arranged as and for the purpose shown and described.

JAMES D. WHELPLEY.
JACOB J. STORER.

Witnesses:

EDWARD RENOUF,
CHARLES M. NICKERSON.