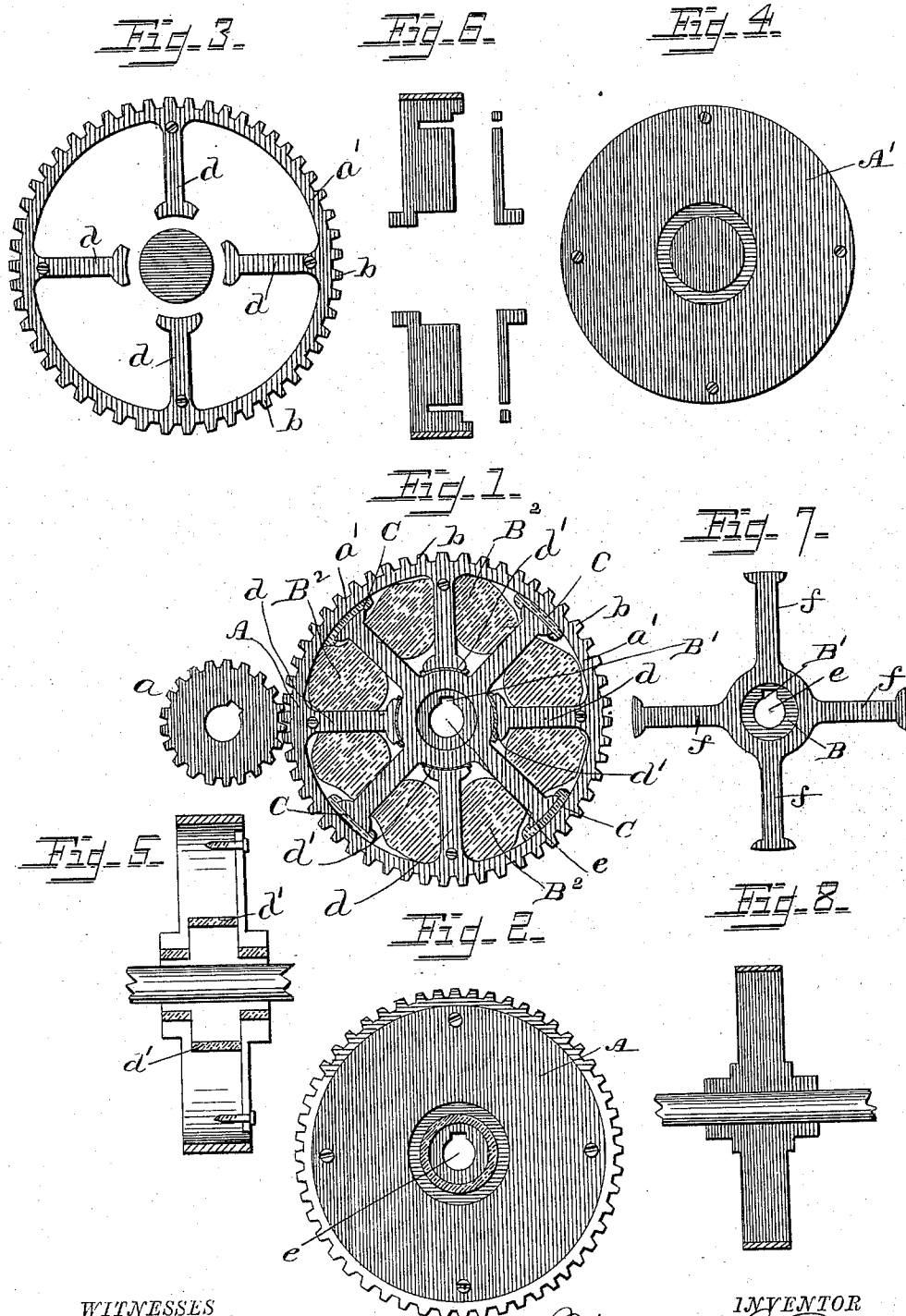


(No Model.)

W. S. BACON.
ROLLER MILL.

No. 309,679.

Patented Dec. 23, 1884.



WITNESSES

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UNITED STATES PATENT OFFICE.

WILLIAM S. BACON, OF TIFFIN, OHIO.

ROLLER-MILL.

SPECIFICATION forming part of Letters Patent No. 309,679, dated December 23, 1884.

Application filed October 28, 1884. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM S. BACON, a citizen of the United States of America, residing at Tiffin, in the county of Seneca and State of Ohio, have invented certain new and useful Improvements in Roller-Mills, of which the following is a specification, reference being had therein to the accompanying drawings.

10 This invention has special reference to roller-mills—that class employing rollers to reduce grain (wheat in particular.)—wherein the rollers have a differential speed, one roller being driven by a pulley arranged on one end
15 of its shaft, while on the opposite end of said shaft is a pinion which gears with a much larger pinion or wheel connected to the shaft of the other roller, which, however, is not for the purpose of driving the latter roller, said
20 latter roller being driven by the frictional contact therewith of the grain, but which serves to restrain the speed of the larger pinion, whereby a sliding or rubbing action upon the grain is obtained, which is necessary to most
25 effectively treat or act upon the grain to secure the best results.

In order to prevent the driving-gear impairing the grinding action of the rollers upon the grain, and to prevent the transmission of irregular motion or concussions that may arise
30 from any source to either roll, and to provide a noiseless, reliable, and durable holding appliance, I cushion the larger wheel of the slower roll upon its shaft, substantially as hereinafter
35 more fully set forth and claimed.

In the accompanying drawings, Figure 1 is a vertical sectional elevation of my invention. Figs. 2, 3, 4, 5, 6, 7, and 8 are detail views thereof.

40 In order to more fully disclose my invention, I will describe its particular application to a roller-mill for the reduction of grain, particularly wheat. Such a mill consists of two rollers, one of which is driven by a pulley on one end of its shaft, while upon the other end
45 of said shaft is secured a pinion, *a*. The other roller is driven by the action or attrition of the grain or wheat or other substance being acted upon by it and its fellow roller, and is geared
50 to its said fellow roller by a larger pinion or wheel, *A*, secured upon the shaft of the latter

roller, upon whose shaft it is cushioned, said wheel gearing with the smaller pinion *a* of the other roller. Upon the shaft of the slower-turning roller I cushion the said wheel *A*, as
55 follows, which comprises a plate or case, *A'*, cast with a rim or flange, *a'*, provided with cogs or teeth *b*, while upon the inside of said disk or plate, uniting with the rim, I cast a number of radial arms or abutments, *d*, in
60 length equal to about half the diameter of the disk and uniting with the rim *a'*. The inner ends of the arms or abutments *d* are cushioned upon the hub of a separate casting (presently described) by pieces or blocks of rubber *d'*,
65 the object of which will appear hereinafter. Through the center of the disk or plate *A'* is the roll-shaft opening *e*, which opening may be larger than the shaft, or not, as desired.

B is a separate casting or hub of circular
70 form, through which is also made an opening for the passage of the shaft of the slower roller, (above referred to,) the said hub being keyed to the shaft by means of a key inserted through the recess *B'*, while the aforesaid
75 cogged disk is loose and supported upon the shaft by an interposed cushion or ring of rubber, *B'*, or other suitable elastic material; or said disk, with its interposed cushion of rubber, may be supported upon the hub *B*. The
80 casting or hub *B* is also provided with radial arms *f f*, between which and the arms of the disk are also fitted elastic or rubber cushions *C C*, the purpose of which, together with that of the cushion *B'* and the cushions *d'*, is to pre-
85 vent noise and concussions and backlash jars, and to assist in protecting the teeth or grooves in the rolls from injury from obstructions—such as nails or other hard and injurious substances—since the cushions permit the wheels
90 thus formed to yield or have more or less movement independently of the roll-shaft, thereby allowing obstructions to run through between the rolls and not be rubbed or ground, but simply pressed.

95 It will be remarked that the teeth of the wheel of the slower-turning roll are not driven by the teeth of the pinion of the faster-turning roller, the latter having for its object to restrain the speed of the larger wheel, but are in frictional contact with the rear sides of the
100 said pinion-teeth; that these springs or cush-

ions reduce wear to the minimum, as the cushions keep the teeth of said gearing in contact, and do not allow them to backlash, and that said wheel of the slower-turning roller primarily receives its motion from said latter roller by the action or attrition of the grain acted upon by the rollers, and takes up the jar of the teeth on each other, while the cushion-rings, including the cushions at the ends of the arms, prevent jar from being transmitted to either roll.

It will be observed that the contour of the elastic cushions C, of whatever material, conforms to the shape of cavity in which they are placed between arms *d* and *f*, and that said cushions, as constructed and arranged, are to have intermediate inner and outer sides, and that in like manner a corresponding recess is provided between the ends of the radial arms *d* and *f*. Thus constructed, the elastic cushions are compressed uniformly between the arms *d* and *f*, and cog-wheel A may thus adapt itself to the backlash without having to first overcome any elastic resistance of the cushions, and hence this mechanism, which is very simple, and comprises but few parts, reduces backlash-friction to the minimum and greatly economizes wear and the requisite motive power.

A further advantage arising from this invention is that should the belt slip off the rim of the driving-pulley the cushions between the ends of the spokes and said rim will yield to the pull of the belt, and thus prevent the pulley from further having rotation until the

machine is stopped, in order to return the belt to its original position upon the pulley.

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

1. In a roller-mill, the combination, with the faster-turning-roll pinion, of the slower-turning-roll wheel cushioned upon the shaft of said latter roll, and with its teeth in frictional contact with the rear sides of the teeth of the faster-turning-roll pinion, substantially as and for the purpose set forth.

2. In a roller-mill, the combination, with a radially-spoked hub or separate casting mounted upon the slower-roll shaft, of the shell or cogged disk, with a central opening and an interposed elastic cushion between it and said shaft or said hub, substantially as shown, and for the purpose described.

3. In a roller-mill, the radially-spoked hub or separate casting mounted upon the slower-roll shaft, in combination with the shell or cogged disk provided with radial spokes, and elastic cushions interposed between said spokes and the rim or flange of said shell or plate and said hub, substantially as shown, and for the purpose described.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM S. BACON.

Witnesses:

JOHN K. ROHN,
W. F. NOBLE.