

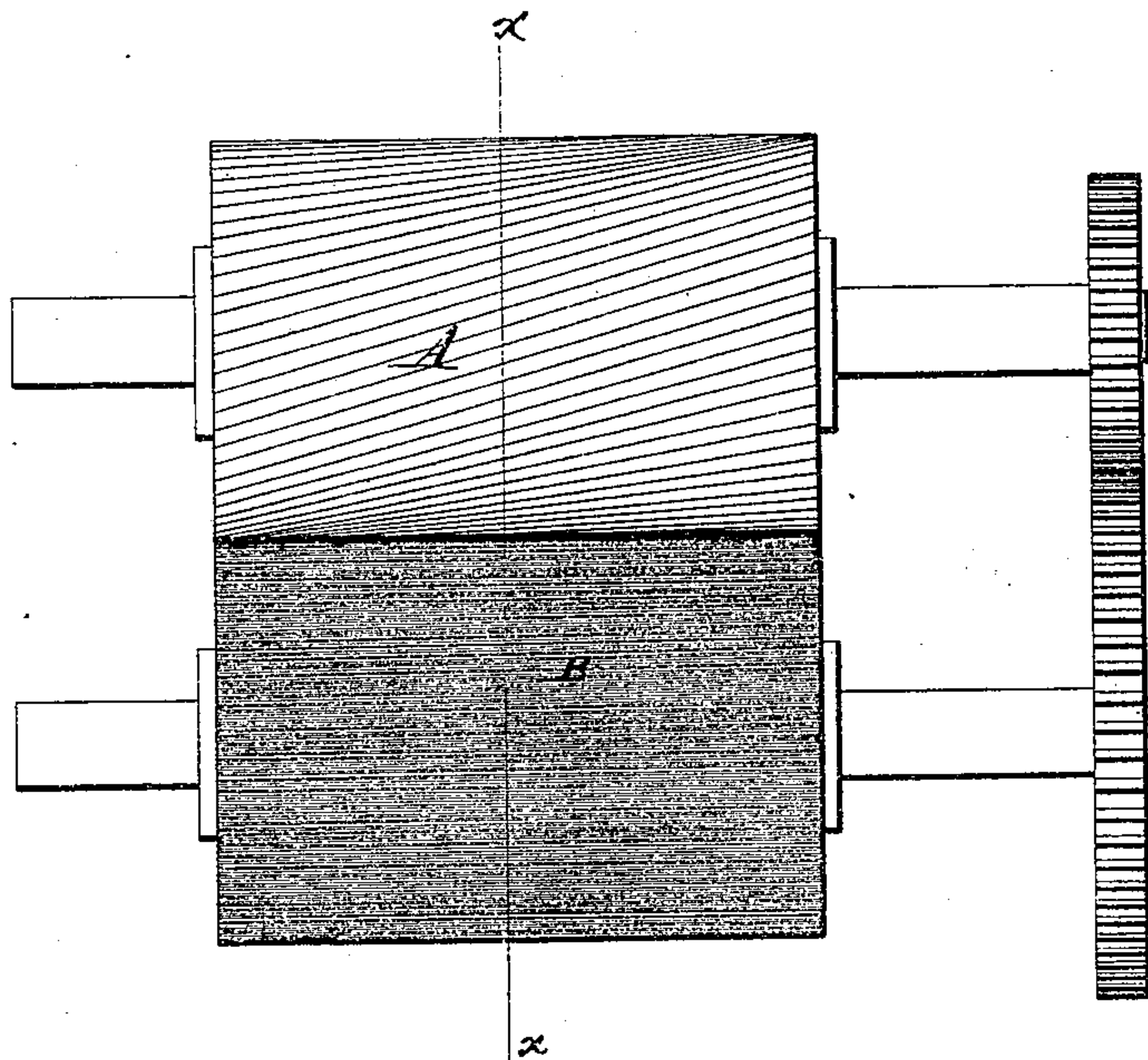
(No Model.)

W. D. GRAY.  
ROLLER GRINDING MILL.

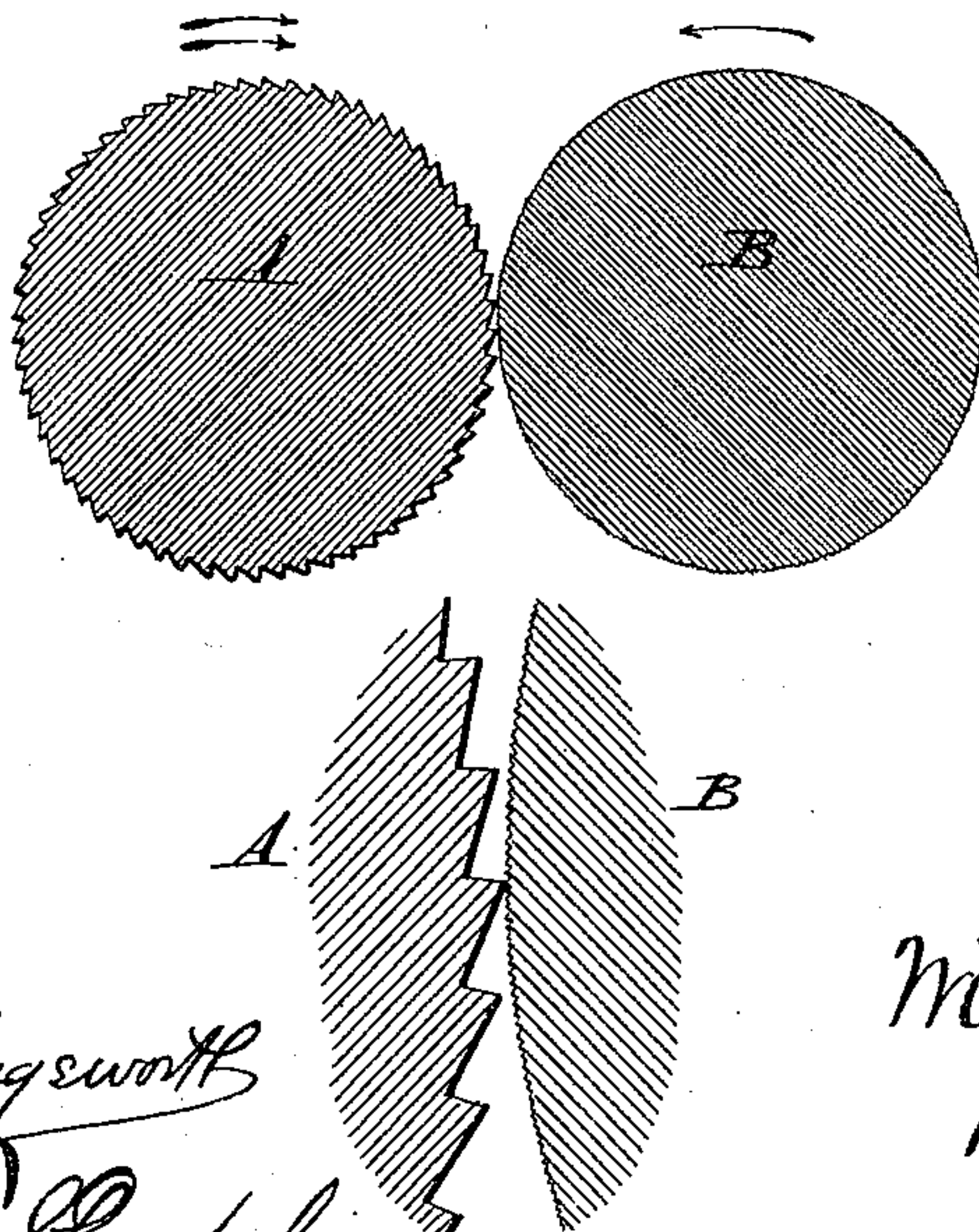
No. 303,369.

Patented Aug. 12, 1884.

*Fig. 1.*



*Fig. 2.*



*Attest.*

*Frederic P. Hollingsworth*

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*Inventor*

*William D. Gray.*

*By his attorney.*

*Philip T. Dodge.*



# UNITED STATES PATENT OFFICE.

WILLIAM DICKSON GRAY, OF MILWAUKEE, WISCONSIN.

## ROLLER GRINDING-MILL.

SPECIFICATION forming part of Letters Patent No. 303,369, dated August 12, 1884.

Application filed May 1, 1883. Renewed April 26, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM D. GRAY, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain Improvements in Roller Grinding-Mills, of which the following is a specification.

My invention relates to that class of grinding-mills employed for reducing grain and grain products which consists of two co-operating rolls arranged parallel with each other in such manner as to reduce the material which is passed between them.

The aim of the present invention is to produce a mill which shall be better adapted than those at present known in the art for the reduction of soft winter-wheat; and to this end the invention consists, essentially, in the combination of a roll having a surface provided with coarse longitudinal flutes or corrugations, with a second roll having a cylindrical surface provided with fine lines or scratches, so called, thereon.

I am aware that grinding-rolls have been provided with teeth and with serrations of various forms; that rolls having scratched surfaces have been combined one with another, and that many combinations of rolls having different surfaces have been employed for carrying out different steps in the reduction of grain products; but in practice I find that the peculiar combination which constitutes the subject of my present invention is especially adapted for the purpose for which it is designed, and that it gives, when used upon soft winter-wheat—results which are not otherwise attainable.

In constructing my mill the rolls are preferably made of chilled iron or other metal presenting a hard surface, the corrugations having preferably a circumferential width of about half an inch each, with the forward or active surface rising at an easy angle toward the rear. The rolls may be mounted in a frame with adjusting devices and with driving and feed mechanisms in any suitable manner, these details being familiar to all persons skilled in the art, and constituting no part of the present invention. The construction represented in any of the numerous patents heretofore granted to me for roller grinding-mills would answer an excellent purpose in this connection.

Referring to the accompanying drawings, Figure 1 represents a top plan view of a pair of rolls constructed and combined in accordance with my present invention. Fig. 2 represents a cross-section of the same on the line *x x*.

The roll A is constructed with a ribbed or corrugated surface, each rib having a length circumferentially of half an inch, more or less, with an easy inclination from its forward to its rear edge, where it drops inward suddenly or abruptly to meet the forward edge of the next rib. The form of these ribs and their width or size may be modified to a limited extent, the essential requirement being that they shall be wide upon the surface, and that their forward surfaces shall not rise so abruptly as to act with a cutting action. The roll B is constructed, in the first instance, with a perfectly smooth cylindrical surface, which is subsequently finished by providing the same with numerous fine lines or scratches, as represented in the drawings, the object being to slightly roughen the surface of the roll without forming thereon clearly-defined teeth or ribs. The surface of this roll will present to the eye the appearance of being practically smooth; but the sense of touch will develop a certain sharpness or roughness of the surface which is found in practice sufficient to retain or retard the material thereon while being subjected to the action of the roll A.

In making use of the machine the driving mechanism will be arranged in such manner as to impart to the ribbed roll A a surface speed considerably greater than that of the roll B. In the drawings I have shown the two rolls connected by gear-wheels to insure a differential surface speed; but, as beforestated, the driving mechanism may be of any approved construction.

The present invention is restricted to those matters and things which are hereinafter claimed, and as to all matters which may be described or shown, but which are not claimed, the right is reserved to make the same the subject of a separate application.

Having thus described my invention, what I claim is—

1. In a roller grinding-mill, the combination of a roll provided with coarse ribs or corrugations, and a co-operating roll having an

otherwise smooth surface, provided with fine scratches or lines thereon.

2. In a roller grinding-mill, the combination of a roll, A, having the coarse ribs or corrugations with a forward surface of easy ascent toward the rear, and a roll, B, having the cylindrical surface provided with fine scratches or corrugations.

3. In a roller grinding-mill, the combination of the roll B, having a substantially-smooth

surface provided with fine scratches or lines thereon, and the roll A, having coarse ribs or corrugations, the second roll, A, being driven at a surface speed greater than the first, as and for the purpose described.

WILLIAM DICKSON GRAY.

Witnesses:

PHILIP T. DODGE,  
HARRY SHIPLEY.