

No. 671,670.

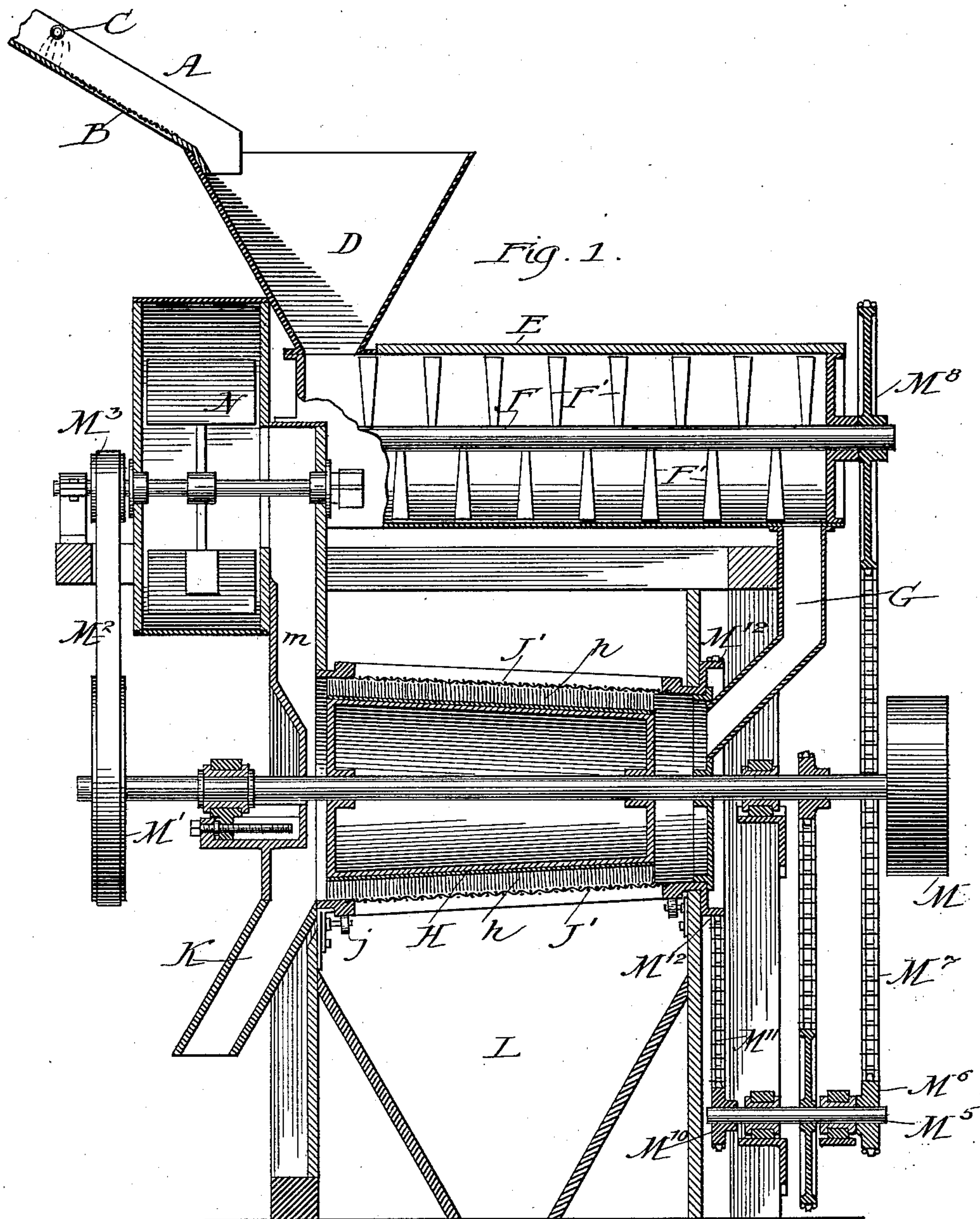
Patented Apr. 9, 1901.

S. D. HOOLE.  
METHOD OF CLEANING WHEAT.

(Application filed Aug. 17, 1900.)

(Specimens.)

2 Sheets—Sheet 1.



Witnesses:

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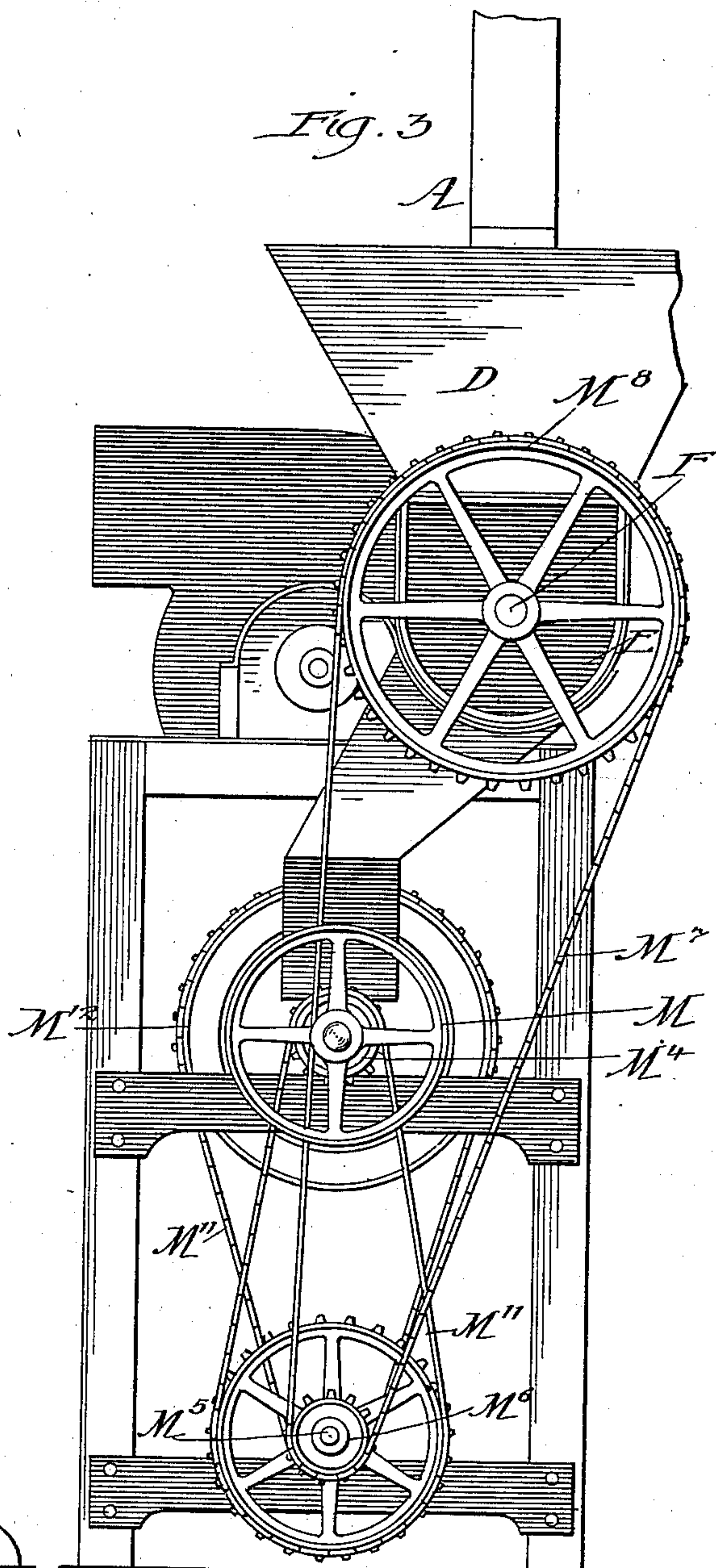
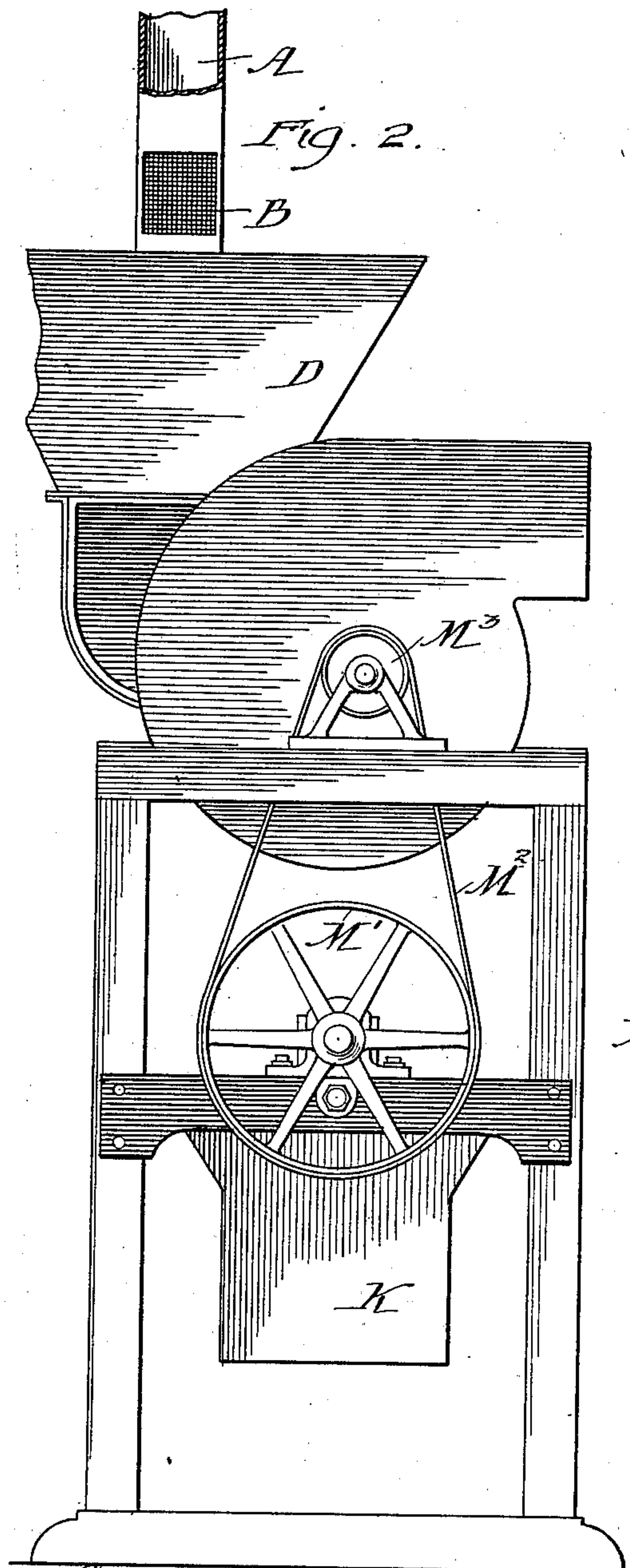
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# UNITED STATES PATENT OFFICE.

SAMUEL D. HOOLE, OF CHICAGO, ILLINOIS, ASSIGNOR TO HIMSELF AND  
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## METHOD OF CLEANING WHEAT.

SPECIFICATION forming part of Letters Patent No. 671,670, dated April 9, 1901.

Application filed August 17, 1900. Serial No. 27,145. (Specimens.)

*To all whom it may concern:*

Be it known that I, SAMUEL D. HOOLE, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Methods of Cleaning Wheat, of which the following is a specification.

This invention relates to the preparation of wheat for grinding by removing the outer covering of the berry and the fuzz or beard, leaving only the innermost skin; and the invention consists in the method for doing this, as more fully hereinafter described and claimed.

In the accompanying drawings, which form a part of this specification, Figure 1 is a vertical longitudinal section of the apparatus for performing the process. Fig. 2 is an end elevation of the same, and Fig. 3 is an end elevation showing the other end of the machine.

Like letters of reference indicate like parts in each of the figures.

I have found that if the dry wheat is first wetted just sufficiently so that the moisture will soak through the outer covering and penetrate to the inner skin, but not through the latter to the flour, the outer covering may be entirely removed, as well as the fuzz or beard, leaving the berry perfectly clean, including the crease of the berry, by rubbing the wheat with a stiff elastic brush made of such material that it will not scratch the said inner skin; and I employ for the brush and find it entirely suitable and satisfactory a material known in the market as "monkey-bast." I do not know what this material is nor where it comes from, beyond this, that it seems to be a sort of wood fiber of a hard, tenacious, and elastic construction, and of reddish-brown and black colors, perhaps a little harder than and not quite so elastic as ordinary whalebone. When the moistened wheat is rubbed with the ends of a mass of such fibrous material, the outer covering and all impurities will be easily and quickly removed from the berry as shreds or flakes and thin fragments and dust, leaving the berry perfectly clean, including the crease of the berry, and in the case of white wheat of a pearly-white color.

In practicing my method I take dry wheat and sprinkle the same with water sufficient

to wet the outside of all the berries thoroughly, then stir the mass to insure an even distribution of the moisture, then at once begin the brushing, as two to five minutes is long enough for the water to penetrate into the covering of the berry as deeply as is required, and then separate the clean berries from the chaff and detritus removed from it, and the cleaned berry is then properly tempered as to moisture and may be ground at once in the usual manner, being exactly in the best condition for grinding, and moreover containing all of its constituents which are of any value as food, the portion removed being utterly valueless as food.

The foregoing general statement may perhaps be easier comprehended and better understood when taken in connection with the apparatus shown in the drawings, which is the best form of apparatus known to me with which to practice my method, and I shall therefore describe said mechanism in connection with the method.

In said drawings, A is a feed-spout for feeding the wheat to the apparatus. This spout may lead directly from a bin or granary where the dry wheat is kept or stored and is shown as being inclined at an angle to the horizon. The bottom of this spout is preferably perforated or made of wire-netting, as at B, and leading into the spout above the netting is a sprinkler-pipe C, from which water sprinkles continually upon the wheat flowing through the spout. A valve (not shown) may regulate the amount of water delivered to the grain. The excess of water beyond what will cling to the grain flows down and out through the netting B. From the spout A the wheat, now with water clinging to the outside of the berries, runs into the receiving hopper or funnel D, which in the example machine illustrated is designed to hold about four bushels. Below the hopper is a stirring-chamber consisting of a cylindrical chamber E, provided with a shaft F, having a series of blades F', arranged to operate as a screw conveyer when the shaft revolves, as it does continuously while the machine is in operation. In the example illustrated this cylindrical chamber is designed to hold about five bushels of wheat, and it is constructed to move the mass of wheat at such rate of speed as to receive at one end and deliver at the other end about



one bushel per minute, which it will be seen would leave the wheat in contact with the moisture and water about four minutes. G is the exit-spout from this stirring-chamber, and it leads to the brush directly. The brush is shown at H. It consists of a tapering circular body provided with the bristles *h*, made preferably on monkey-bast fiber. This tapering circular brush is mounted on and continuously rotated by a shaft and is inclosed in a circular tapering chamber J, the sides of which, J', are formed of wire-netting, and the tip ends of the brush come nearly to said netting. The purpose of making the brush and its chamber of a tapering or conical form is to give opportunity for adjustment for wear as the brush wears out. The shaft carrying the brush is shown as being mounted at one end in a fixed bearing, through which it may slide endwise, and at the other end in a movable bearing which may be adjusted by a screw, there being collars on the shaft at each side of this movable bearing. By turning the screw the conical brush may be set in or out of its conical chamber as it wears. The moist wheat fed into this brush is carried around and around and delivered at the outer end entirely denuded of all of its outer coverings and beard or fuzz down to the inner skin by the action of the elastic wood fiber or monkey-bast. From the brush the cleaned wheat falls into the final spout K, whence, if in proper condition as to moisture, it may be conveyed directly to the grinding-rolls or millstones. The fuzz or beard and the smaller fragments of shell cling to the wire-netting of the brush-chamber and pass through its interstices into the dust-spout L. The larger fragments of coating or shell pass out with the cleaned wheat to the exit of the brush-chamber, where they are caught up by a suction-current through trunk *m*, caused by the air-fan N, and delivered at a separate point. The wire-netting-sided brush-chamber is mounted so that it will revolve also, as well as the brush it contains. In the example illustrated the direction of revolution of the chamber is the same direction as that of the brush, but at a much slower speed, the relative speeds being in this instance as fifteen to two hundred. The purpose of giving a revolving motion to this chamber is to cause its various portions to come one after another underneath, so that the fine material caught in the meshes of the netting may fall out. The construction shown in the drawings, whereby this capacity of revolution is given and the motion imparted to said chamber, consists in a hollow bearing at each end of said chamber, and this may be furnished with small friction-rollers *j*, upon which the weight of the conical chamber rests, and to the smaller end of the cone a rag wheel or gear connected by a chain to the moving mechanism gives the revolving motion required.

The gearing of the machine shown in the

drawings may be traced as follows: M is the driving-pulley, mounted on the main or brush shaft and driving the brush. At the other end this shaft carries a pulley M', connected by a belt M<sup>2</sup> to the shaft M<sup>3</sup> of the fan. Also on this same main shaft is mounted the small rag-pinion M<sup>4</sup>, geared by a chain to the short counter-shaft M<sup>5</sup>, which carries at one end the rag-pinion M<sup>6</sup>, connected by chain M<sup>7</sup> to the rag-wheel M<sup>8</sup> on the shaft F of the stirring-chamber conveyer and carries at the other end the rag-pinion M<sup>10</sup>, connected by the chain M<sup>11</sup> to the rag-wheel M<sup>12</sup> on the revolving brush-chamber.

I claim—

1. The method or process of treating wheat in preparation for grinding the same, which consists in first moistening the wheat with water and permitting the water to remain in contact with the wheat until the outer coverings of the berry, down to the inner skin, have become moist, which will be in a few minutes; second, rubbing the outside coverings from the wheat, including the crease of the berry, down to the inner skin, by contact with a brush-surface formed of elastic material which is adapted to remove all the moistened outer covering and impurities from the berry, but not to penetrate the surface of the innerskin, and, third, separating the removed material from the cleaned berries, substantially as specified.

2. The method or process of treating wheat in preparation for grinding the same, which consists in first moistening the wheat with water and permitting the water to remain in contact with the wheat until the outer coverings of the berry down to the inner skin have become moist, which will be in a few minutes; second rubbing the outside coverings from the wheat including the crease of the berry down to the inner skin by contact with elastic material in the form of a brush composed of "monkey-bast" which will not scratch or destroy said inner skin, and third separating the removed material from the cleaned berries, substantially as specified.

3. The method or process of treating wheat in preparation for grinding the same, which consists in first moistening the wheat with water and permitting the water to remain in contact with the wheat until the outer coverings of the berry down to the inner skin have become moist, which will be in a few minutes; second rubbing the outside coverings from the wheat including the crease of the berry down to the inner skin by contact with elastic material in the form of a brush composed of "monkey-bast" which will not scratch or destroy said inner skin; and third separating the removed material from the cleaned berries, the separation being effected by sifting and an air-blast, substantially as specified.

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Witnesses:

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