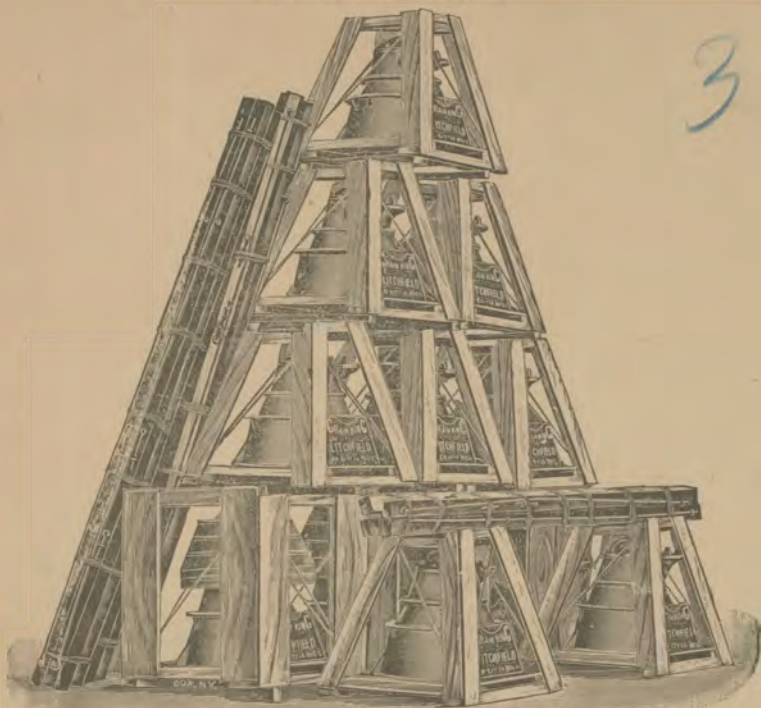


The Grain King

GRINDER



Grain King Grinders as crated for Foreign Shipment

In the GRAIN KING GRINDER we have a light draft, large capacity two horse sweep feed mill, designed to meet the requirements of the farmer, dairyman and feeder.

We build the Grain King in two sizes: The No. 1—an all round farmers' and feeders' machine—is well adapted to handling all kinds and classes of grain. The No. 2 is a larger machine. While using the same burrs and doing, on certain grains, the same work as the No. 1, it is supplied with an additional and improved cob or ear corn crushing device, which gives it about double the capacity of the No. 1 machine on ear corn grinding. This machine is pre-eminently the Cattle Feeders' machine, or it is to be preferred where a large amount of ear corn (cob and all) is to be ground.

CAPACITY being one of the leading features, if not THE leading feature in an up-to-date sweep grinder, has received radical attention in these machines. Our modern burr-construction produces in the Grain King UNGEARED Grinder a machine with much more capacity than any of the GEARED grinders with their highly speeded burrs, heavy draft and short life.

Two Sets of Burrs.

We use two different sets and styles of burrs on these machines. One set of burrs is constructed especially for grinding shelled corn coarse and for handling corn in the ear, grinding cob and all. The other set of burrs is constructed especially for handling all kinds of small grain and for grinding shelled corn fine.

We have found it thoroughly impracticably to attempt to handle both ear corn and small grain with the same burrs. We have tried it and in our thirty years' experience have thoroughly demonstrated that corn on the cob, and the small grains such as wheat, rye, oats, etc., require different treatment and, therefore, can not be handled with the best results if the same burrs are used for both classes of grinding.

DURABILITY is also one of the most essential points in a machine of this character. We think any reasonable, thinking man will be able

to see at a glance that our machine, making but one revolution of the burrs to one of the team, and with no metallic friction, certainly must be much more durable than any machine that revolves twice or three times faster to do the same work (or less than the same work.)

OUR GRINDER BURRS are not only constructed upon scientific principles, but are made of a composition metal, the component parts of which are known only to ourselves and which gives us a metal as hard as glass and as strong as the strongest of iron. We do not use what is known as "hard iron," or as some people express it "white iron," because it is not strong. Our composition metal is just as hard as fire and water will make steel and it has great strength.

SIMPLICITY is in itself a certain guarantee of durability, and no GEARED MACHINE can be as simple in construction as a machine that is NOT GEARED. It is therefore plain to be seen that the GRAIN KING GRINDER, being without extra gearing or contrivances of any kind, must be more durable than the numerous geared grinders with which the market is so plentifully supplied.

THE EXTRA SPEED of the Grain King Grinders is obtained by the new process burrs which we use in these machines. In this point these machines unquestionably excel any other Grinder on the market. This fact being thoroughly demonstrated by a comparison of capacities with the geared style of grinder, manufactured by others in their attempts at large capacities.

We have studiously avoided, in our improvements, the natural tendency toward the geared machine. We did this in view of our large experience in the grinder line, knowing that a SPEEDED or GEARED machine of any kind has not the capacity ACCORDING TO THE AMOUNT OF POWER APPLIED that the same machine has without gearing. We have found it necessary (as other manufacturers have done,) in order to keep up with the growing demand for faster work and better machines, to keep improving our machines year by year in such ways as to enable us to get a machine that would do more work and do it better. But unlike all other manufacturers of feed grinders, we have been able to do this without increasing in any way the draft of our machine or the speed of our burrs.

Other manufacturers have increased the speed of their burrs by gearing them up, and therefore, as a matter of course, their machines will grind faster than before they were geared. We have improved our machines by scientific construction of the grinding surfaces, and have achieved so great a success in this line that we have today in the GRAIN KING MACHINES faster grinders than any of the geared grinders, and at the same time we avoid all the additional draft that is caused by adding to a machine numerous gears and other contrivances for increasing the speed.

Two Kinds of Improvements.

It requires but little ingenuity or skill to take the old fashioned grinding burrs which we and other manufacturers made years ago, and by gearing them up two or three times, largely increase the speed of the machine, and at the same time LARGELY INCREASE the DRAFT of the machine.

It, will, however, be easily understood that it is quite another and a much more difficult matter to increase the grinding capacity of a burr from two to three times by improved construction of the tooth or grinding surfaces. This, however, is what we have done, and that without increasing the speed of the burrs, or the draft of the machine to beyond what is a moderately light draft for the ordinary two horse team.

The capacity of our machine is not limited by any inability on our part to build faster grinding machines. With our late improvements in tooth construction, force-feed, etc., we can build machines that will grind up to almost any capacity desired. However, in building an all-round, all-purpose farmers' machine, its capacity is limited to what we are capable of making it do with TWO ORDINARY HORSES. We aim to build our machines so that the very heaviest grinding can be done with comparatively light draft, and in consequence much of the lighter grinding can be handled easily with one good horse. Hence our efforts have always been to increase by scientific improvements the capacity of our burrs without increasing the draft; and to decrease the draft by lessening or doing away with, as far as possible, all metallic friction.

Shipping Stocks Carried at

Cedar Rapids, Iowa.	Waterloo, Iowa.	Sioux City, Iowa.
Webster City, Iowa.	Des Moines, Iowa.	Kansas City, Mo.
Rockford, Ill.	Toledo, Ohio.	Minneapolis, Minn.
Omaha, Neb.	Peoria, Ill.	New York City, N.Y.

Grain King Grinder, No. 1.



Grain King Grinder, No. 1.

This machine is particularly adapted as an all-round Farmers' and Feeders' grinder, and perhaps has done more to establish the high reputation of the Grain King Line than any of our other machines. Its draft is very light and being adapted to handling successfully a very large variety of grains and other classes of grinding, it has proven a favorite with all our customers.

GUARANTEED CAPACITY:—With the coarse or ear corn burrs, this machine is guaranteed to grind ear corn at from twelve to sixteen weighed bushel per hour, also shelled corn at from twenty to thirty weighed bushels per hour.

With fine or small grain burrs to grind oats or barley mixed with heavier grain, corn, wheat, rye, kaffir corn, peas, beans, rice or other similar grains, mixed or separate at from eight to twelve bushels per hour. We do not guarantee capacity on OATS or BARLEY when ground alone. (These two grains can be ground without being mixed with other heavier grains, but owing to the bearded construction the above capacity will not be guaranteed, particularly so with oats.)

See "Terms of Guarantee" on last page.

Prices:

The Grain King Grinder No. 1, with one set of burrs.....\$29.00

The Grain King Grinder No. 1, with two sets of burrs.....\$32.00

Unless otherwise ordered this machine is shipped with TWO sets of burrs (one fine set and one coarse set.)

Shipping weight of Grinder No. 1, with two sets of burrs.....400 pounds

Shipping weight of Grinder No. 1, with one set of burrs.....350 pounds

We make a discount of \$1.00 on the above machine for cash with order. Prices quoted are F. O. B. Waterloo, Iowa, or any of our transfer points.

"THE SUN NEVER SETS" ON THE GRAIN KING,

IT IS SOLD ON FOUR CONTINENTS

Grain King Grinder, No. 2.



No. 2

Grain King Grinder, No. 2.

This machine is the same machine as Grinder No. 1 except that it has an additional capacity over the No. 1 machine, in grinding ear corn. It uses the same burrs as the No. 1 machine, but is supplied with a much larger hopper and a cob crusher with more than twice the capacity of the crusher used on the No. 1, which gives this machine nearly double the capacity on ear corn grinding. We wish to call especial attention to the fact that, with the greatly increased capacity of this machine over the No. 1 on ear corn, it is still a comparatively light draft machine. While its crusher does more than double the work of the crusher on the No. 1, it is so constructed that the additional draft is barely perceptible on the average team a fact which should not be lost sight of.

GUARANTEED CAPACITY:—With the coarse or ear corn burrs this machine is guaranteed to grind from twenty to thirty weighed bushels of ear or shelled corn per hour, or with the fine or small grain burrs to grind the same capacity given for these burrs with machine No. 1, viz: Oates or barley mixed with other heavier grain, or corn, wheat, rye, kaffir corn peas, beans, rice or other similar grains mixed or separate at from eight to twelve bushels per hour. We do not guarantee capacity on OATS or BARLEY when ground alone.

See "Terms of Guarantee" on last page.

Prices:

The Grain King Grinder No. 2 with one set of burrs.....\$38.00

The Grain King Grinder No. 2 with two sets of burrs.....\$41.00

This grinder is always shipped with the COARSE set of burrs only, unless otherwise ordered.

Shipping weight of Grinder No. 2 with two sets of burrs.....500 pounds

Shipping weight of Grinder No. 2 with one set of burrs.....450 pounds

We make a discount of \$1.00 on the above machines for cash with order. Prices quoted are F. O. B. Waterloo, Iowa, or any of our transfer points.

Analysis of the Grain King Grinder.

The illustration below represents the No. 2 Grain King Grinder.

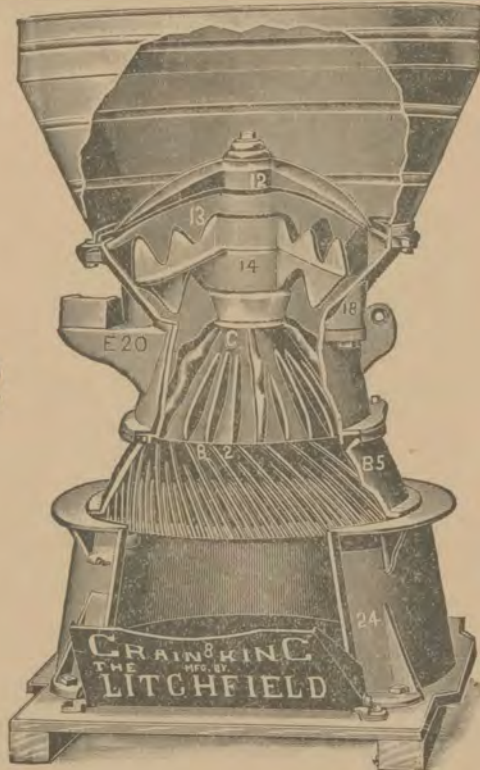
Note that this illustration shows the machine with a section cut out of the outside working part including the hopper so that a definite understanding can be had of the interior construction and working principles.

Note that the feed box, No 24, which is bolted to the wood platform beneath, forms a foundation for the grinder and when the door in front is closed, entirely protects the ground feed from the wind and weather.

The inside cone of this machine, the B2 Burr and the No. C are bolted stationary to the feed box. The No. 14 is held from turning by resting on the extended top of No. C which passes up through the center of the E20. The No. 12 is held from turning by locking to the extended center of the No. 14 which passes up through the No. 13. It will thus be seen that the B2 Burr and No. C above it, also the No. 14 and the No. 12 remain in a stationary position in connection with the foundation of the machine.

The outside working shell of the machine consists of the lower grinding burr B5 and the coarse crushing burr E20, also the shell No. 18 to

No.2



which the hopper is bolted. To this shell, (No. 18), is bolted the four armed crusher, No. 13. The sweep is attached to the E20 and thus as the team passes around the machine the entire outside shell including the burrs, revolves with the team, as also does the No. 13.

Why This Machine is Nearer Frictionless than Any Other Grinder.

The only actual friction to be overcome in this machine is that caused by the lifting of the outside B5 Burr by the grain beneath it owing to its cone shape. The grain pressure between the B2 and B5 Burrs is principally in a lateral direction; only so much lifting strain is exerted as is due to the proportional cone shape or slant. It will be noticed that the entire weight of the whole machine (excepting the inside cone and feed box) including the sweep and contents of the large hopper, a combined weight of from four to five hundred pounds is applied to overcome this lifting strain, often times sufficient to hold the outside burrs down in place without bringing any particular friction at the friction joint. There is no other friction on the machine anywhere except the actual grain friction which is not considered "friction" in a grain grinder.

Our Cob Crusher is Without Friction.

The No. 14 has three arms. The arms on the E20 below and the No. 13 above are four in number. Thus it will be seen that at no time can two arms of the the No. 14 be working at the hardest point. When one arm is doing its hardest duty the other two are at the lightest point in their work, or nearly so. This gives a steady, even pressure without the jerking motion so common to many crushers.

The No. 14 in crushing the ears cuts through, tooth between tooth, in a manner that avoids a friction which would otherwise have to be overcome at some metallic point. Because the pressure is equal both above and below, no friction is caused by holding this in position.

Finally, we would in a general way, call attention to the absence of all friction in this machine except at the joint beneath the No. 14 which joint is formed by steel hardened surfaces and when the machine is fully loaded and under working strain, the bulk of the weight of the machine and the grain as before mentioned, is used to overcome what friction would otherwise be at this point.

This is the only machine where the team takes directly hold of the grain without the powder being carried through numerous friction gears, or a large per cent of the power being wasted to overcome a friction necessary to hold the working parts up to their work against the grain.

Our 5 Year Warranty:

In connection with the capacities guaranteed for these machines elsewhere in this circular:

WE WARRANT EITHER AND BOTH of the above machines against all imperfections or flaws in material and will furnish free of charge any parts giving out through flaws or defects inside of five years from this date.

WE WARRANT THE BURRS in either of the above machines to resist the grain wear and do good work for five years from this date and will furnish free any burrs wearing out from grain action, within the time stated.

These machines are not warranted against accidental breakages, neither will we furnish, to replace, free of charge, burrs that are worn out running the machine empty of grain.

Terms of Warranty:

All tests for capacity under this warranty are based on regular weighed bushels, and grinding sufficiently fine so that no whole kernels will pass through the machine.

* These machines will handle damp and soft grain but we do not guarantee capacities except on good dry grain.

REPAIRS under this guarantee will be furnished free F. O. B. Waterloo, or any of our transfer points where a repair stock is carried.

WE PAY NO FREIGHT on repairs furnished under this warranty. If a defective part is returned to us under claim for free repairs, said pieces will not be accepted by us unless all freight charges have been prepaid by the sender.

We will cheerfully furnish free repairs for any part showing a flaw or defect of sufficient size to cause the breakage. An old crack, however, which shows no paint or other evidence of having existed previous to the mills' leaving this factory will not be considered a flaw. (While in use a burr or casting may be cracked through some accident or misuse not known to the operator and will run for months and sometimes years before it meets sufficient strain to cause the final breakage. We do not hold ourselves responsible for such breakages.)

Our guarantee is limited as above.

The Litchfield Mfg. Co.

WATERLOO, IOWA, U.S.A.