A Word on Malleable Castings

AND THEIR RELATION TO THE MODERN REAPER AND MOWER.

For many years after the introduction of the Reaper and Mower, great difficulty was experienced in making the several iron working parts of the machinery sufficiently strong to perform their respective functions, without rendering the completed machine too heavy for economical and effective work.

Ordinary grey cast iron was the most suitable material then known for making such portions of the movement as were too intricate to admit of being readily forged, and as a consequence the Reaper and Mower at this stage of its history was comparatively a crude and cumbrous piece of mechanism, heavy of draught, and subject to frequent breakage during its operations in the harvest field. Owing to this disadvantage many inconveniences occurred, and inventors set to work earnestly to remedy this radical defect which was partially accomplished by the substitution of refined malleable iron castings for many of the small grey iron castings, where the strain was severe.

This improvement having given universal satisfaction so far as it went, a determined effort was made by some of the leading firms engaged in this industry, to radically reduce the weight, and at the same time strengthen the machines which they were employed in building. This seeming anomaly was finally attained by the adoption of malleable castings in substitution of cast iron, to an extent that was rendered practicable by the great advancement which had been made in the malleable iron business during the term covered by the developement of the agricultural implement trade. Until this comparatively recent period the manufacturers of malleable iron confined themselves to the production of light work, principally consisting of such goods as could be cast from an ordinary cupola, but owing to the introduction of the reverberating melting furnace, and improved annealing ovens, the largest castings required for the construction of Reapers were successfully turned out.

With a view of placing their machines in the front rank, the MASSEY MANUFACTURING COMPANY were amongst the earliest to avail themselves of the improvements connected with these changes, and now nearly the whole of the metal work contributing to the movement in their machines, is of the best quality of malleable iron procurable, thus ensuring to the farmer the greatest possible maximum of strength, combined with the minimum of lightness, both in weight and strength.

A machine thus constructed of the best materials which can be used in its various parts, whether it be wood, malleable, or wrought iron, and embodying in its design all the improvements which long practical experience and skill can suggest, or capital procure, and control, must eventually find its way into the hands of every enterprising agriculturist in the Dominion of Canada.

As the manufacture of malleable iron castings is a special and interesting branch of the iron trade, it may not be out of place to give a short description of the various processes which the raw or pig metal undergoes before it arrives at its last stage as a finished casting, ready to be fitted by the hand of the machinist.

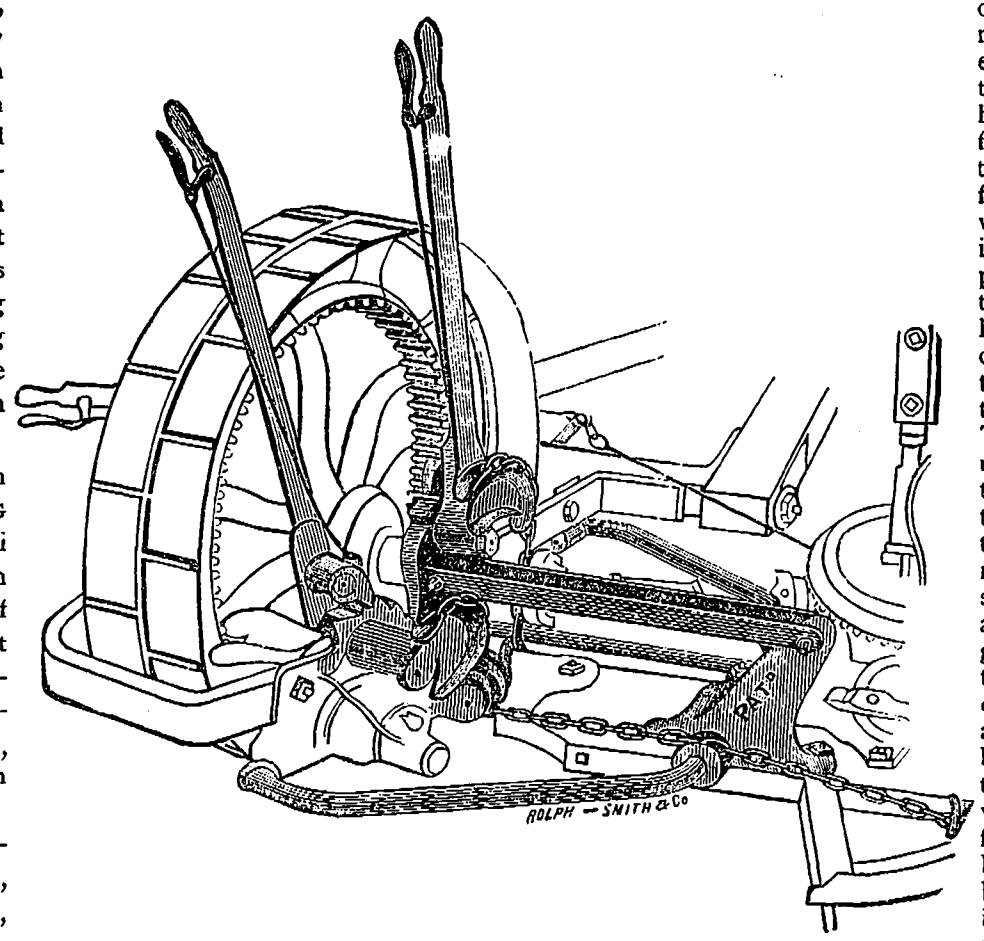
To obtain the best results the pig iron to be treated must be the best cold blast charcoal, and requires to be melted in a horizontal furnace, admitting of the fuel being kept apart from the iron which is being acted upon solely by the flame.

This description of melting furnace enables the operator to thoroughly mix the several brands of iron best suited to the purpose, and to remove by skimming from the surface all the impurities as they arise. When the refined molten metal is ready it is drawn off rapidly, and poured into the moulds awaiting it in the usual manner, where it is allowed to cool. The castings at this stage are called "hard," and if one be broken the fractured surface will be found to present a silvery-white appearance. This arises from its being carbonized highly, and consequently it is granular in its structure and very brittle. After troubling to remove the adhering sand, these castings are carried to the annealing department, in which a long row of large annealing ovens stand conspicuously awaiting their reception when packed.

The packing process consists in the several pieces being neatly arranged in large oblong cast-iron boxes, all the crevices or vacant spaces in the boxes being filled with oxidized iron filings or turnings. These boxes to the number of sixty or more are wheeled into one of the ovens, the front of which is built up, and by means of four exterior fires the whole contents of the oven are raised to a bright red heat, at which temperature they are kept for a period of six or eight days, when the door is removed and the oven allowed to cool for a day preparatory to drawing.

When the castings after thus annealing are emptied out of the boxes the carbon has been eliminated and the iron has changed from a hard granulated, to a soft fibrous condition, capable of being filed, bored or punched with great facility. It can be straightened also when bent, and possesses a resistance equivalent *to five times that of ordinary cast iron.* The silvery whiteness which characterized the "hard" casting has now given place to a different appearance. If an annealed casting be broken the iron (if good) should exhibit a dark grey centre, with a narrow exterior ring of a light steel color to the depth of an eighth of an inch more or less according to the circumference of the article.

MEASURING GRAIN.—Please tell me, through your columns, how to find the number of bushels a wagon-box will contain, or bushels of grain in a bin. I think I have seen it in some paper, but cannot find it.—SUBSCRIBER. [Multiply the inches of length by inches of breath, and this by the inches in depth. Divide the last product by 2150.4 for "struck" bushels and 2748 for heaped bush.]



The new Bail Support and Lever Attachments on the Massey Harvester.

The Old Oaken Bucket.

How dear to the heart are the scenes of my childhood,
When fond recollection presents them to view!
The orchard, the meadow, the deep tangled wildwood,
And every loved spot which my infancy knew;
The wide spreading pond, and the mill which stood by it,
The bridge, and the rock where the cataract fell;
The cot of my father, the dairy house nigh it,
And e'en the rude bucket that hung in the well.
The old oaken bucket, the iron-bound bucket,
The moss covered bucket which hung in the well.

That moss covered vessel I hailed as a treasure;
For often at noon, when returned from the field,
I found it the source of an exquisite pleasure,
The purest and sweetest that nature can yield.
How ardent I seized it, with hands that were glowing!
And quick to the white-pebbled bottom it fell;
Then soon, with the emblem of truth overflowing,
And dripping with coolness, it rose from the well;
The old oaken bucket, the iron-bound bucket,
The moss covered bucket arose from the well.

How sweet from the green mossy brim to receive it,
As poised on the curb it inclined to my lips!
Not a full blushing goblet could tempt me to leave it,
Though filled with the nectar that Jupiter sips,
And now, far removed from the loved situation,
The tear of regret will intrusively swell,
As fancy reverts to my father's plantation,
And sighs for the bucket which hangs in the well;
The old oaken bucket, the iron-bound bucket,
The moss-covered bucket which hangs in the well.

On the street: "I understand that you own a great many houses and small farms in the suburbs." "Yes." "Do you live on any of them?" "No." "Then, you don't raise anything?" "Oh, yes, every spring I raise rents."

Preventable Losses on the Farm.

BY WALDO F. BROWN.

It is a "penny wise and pound foolish" system to breed from scrub stock. There is not a farmer in this section who has not access to a pedigreed Shorthorn bull, by a payment of a small fee of two to five dollars, and yet we find only one animal in ten with Shorthorn blood. It is a common practice to breed to a yearling, and as he is almost sure to get breechy, to sell him for what he will bring the second summer. Many farmers neglect castrating their calves until they are a year old. I think ten per cent. are thus permanently injured, must be classed as stags, and sold at a reduced price. Fully half the calves so stunted never recover.

With many the starving process continues throughout the entire year. They are at first fed an insufficient quantity of skim milk; then in July or August, just at the season when flies are at their worst, and pastures driest, they are weaned, and turned out to shift for themselves, long after the fields yield them a good support. They are wintered without grain, spring finds them poor and hide-bound, and the best grazing season is over before they are fairly thrifty.

The keeping of old cows long past their prime is another thing which largely reduces the profits of the farmer. We have found quite a large per cent. of cows, whose wrinkled horns and general run-down condition, showed that they have long since passed the point of profit. A few years ago these cows would have sold at full prices for beef, now they will sell only for Bologna at 2 cents per pound. Thus cows have, in a majority of cases, been kept, not because they were favorites, or even because they were profitable, but from sheer carelessness and want of forethought. Another fruitful cause of loss to the farmer is attempting to winter more stock than he has feed for. Instead of estimating his resources in the fall, and knowing that he has enough feed even for a hard winter, he gives the matter no thought, and March finds him with the choice of two evils, either to sell stock or buy feed. If he chooses the former, he will for much less than the animals would have brought four months earlier, and if the latter, will usually pay a much higher price for feed than if it had been bought in the autumn. Too often he skrimps the feed, hoping for an early spring, and as soon as he can see the grass growing a shade green around the fence rows, or in some sheltered ravine, turns his stock out to make their own living. This brings one of the most potent causes of unprofitable cattle-raising; namely, short pastures. The farmer who is over-stocked in winter, is almost sure to turn his cattle on his pastures too early in the spring, and this generally results in short pasture all summer, and consequently the stock do not thrive as they ought, and in addition, the land which should be greatly benefitted and enriched, is injured, for the development of the roots in the soil must correspond to that of the tops, and if the latter are constantly cropped short, the roots must be small. The benefit of shade is lost, and the land is trampled by the cattle in their wanderings to fill themselves, so that it is in a far worse condition than if a crop of grain had been grown on it. From all these causes combined, there is a large aggregate of loss, and it is the exception to find a farm on which one or more of them does not exist, and yet without exception, they may be classed as "preventable," if thought and practical common sense are brought to bear in the management.

Immense.

The materials purchased for the construction of our Machines and Horse Rakes this season, are:—

White Ash, Hickory, Oak and other hardwood lumber	1,000,000 ft.
Pig Iron	1,200 tons.
Bar Iron	600 "
Steel	250 "
Malleable Iron	400 "
Brass, Copper, Tin	20 "
Coal and Coke	1,500 "
Moulding Sand	250 "
Paints and Oils	40 "
Varnish (costing over $2 per gal.)	2,500 gals.

To deliver this quantity of raw materials at our factory in Toronto, and afterwards deliver the finished product — in Machines and Horse Rakes — to our customers throughout Canada, from Prince Edward's Island to British Columbia, would require 60 trains of cars, drawn by 60 locomotives, or in all, 1,200 car loads.

How to get along.

Never fool in business matters.
Do not kick every one in your path.
Learn to think and act for yourself.
Keep ahead of, rather than behind, the times.
Always use your own brains rather than those of others.
No man can get rich by sitting around stores and saloons.
A man of honor respects his word as he does his bond.
More miles can be made in one day by going steadily than by stopping.