

## Emplements of Husbandry.

### Stumping Machines.

Few have an adequate idea of the waste of land occasioned by permitting the stumps to remain even on a ten acre field. It is not alone the simple area, or space occupied by the stump that is lost in each case, but there is besides quite a wide margin of land around it within which the plough or other implement cannot enter for the extending roots. Calculating in this way we find that, as a general rule, or, on an average the quantity of land actually useless around each stump measures about four times the size of the stump itself. On very stumpy land we have known as much as a fifth part of the whole practically unavailable.

ing machine viz that consisting of long wooden levers and chains and iron-hooked bars, is familiar to most of our readers. We need not describe it, and perhaps would not have mentioned it at all here, but for the purpose of contrast with the later inventions.

It will be remembered then that in the old machine the entire stress of the pull came upon the chains or iron bars. So long as these stood the strain of course the machine did its work but even then only with a side pull which laid the stump slowly over, i. e. entirely to one side of the hole occasioned by its extraction, and thus necessitated the carrying in a manner of all the earth torn up by the roots back to its original place again. But when the chains and bars failed to withstand the strain upon them and broke—(and how often has this been the case?—the collapse was attended with very great danger indeed to those in attendance, because a blow from one of those fly

out of the ground. This style of stump machine is fast superseding others.

One man and a horse can manage it, whilst in the other it sometimes required six and hardly ever fewer than four men to attend it. Another feature of the machine is that it is raised perpendicularly, and the process may be stopped at any moment *it still retaining its rise*, so that the soil may be gradually struck away from it and permitted simply to fall back into its original place. It is so handy also, compared with the cumbersome nature of the other that it can be moved from stump to stump quite handily. It is manufactured of any size screw. The ordinary 3 inch one which is in most cases quite strong enough may be purchased for about \$75.

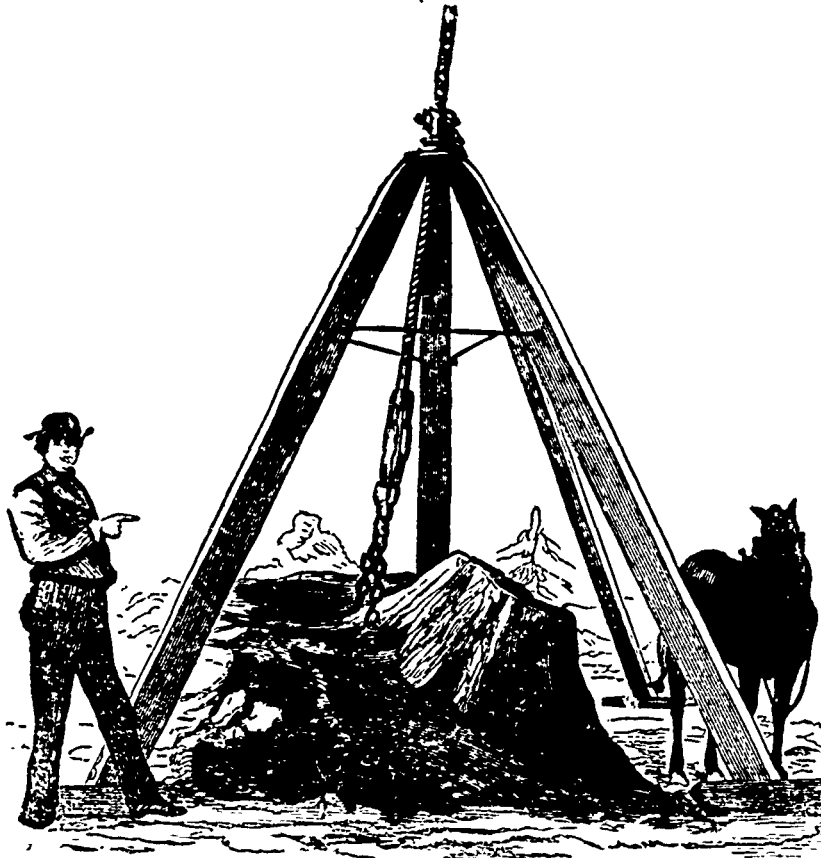
### An Irrigating Roller.

A novelty in the shape of an irrigating-roller has recently been introduced among farm implements; that is a roller, hollow in the middle and closed, perfectly water-tight at both ends. Before starting to roll it is filled with water, and then it is so arranged that by means of a handle at the side of the driver he can throw open in an instant, a row of holes in front or behind or at one or both ends just as he chooses. The object is to water and roll at once and the same time. If this implement had been constructed solely to save labor it would have been successful; in fact, as such it is a success, but unfortunately for the purposes of the farmer it is not practicable. In the first place, an ordinary iron roller is quite heavy enough without the addition of a similar weight of water. The iron itself must be thick enough to be substantial and heavy, and if rendered thin, to counteract the weight of water, then, when empty it would be too light for rolling. In addition to this objection we quite agree with the sensible remarks of a contemporary upon the same machine. It says, after reviewing the implement in general terms.—“Again, the time when a roller is of most value on a farm is not when we care much to irrigate. In the spring of the year we find clover, grass or grain crops somewhat drawn from the ground or loosened by the winter's frost, and we desire to use the roller to press them again into the ground. Every farmer knows that it is an injury to roll the ground when wet, and yet if we wait till the ground is absolutely dry we cannot accomplish the object we desire. So while in some degree wet we roll. No irrigating arrangements will be in order here.

Then it is the custom with some farmers to allow their grain-land to be rather rough in the fall, so that as the grain is drawn a little by winter's frost, the crumbling clods above may in falling cover somewhat the exposed roots. As soon as the winter is over the land must be rolled to make it level. The very first chance that offers for the clods to dry is taken in order that the roller may crush them, and no irrigation plan would for one moment be thought of at this time either. When we plow dry ground in autumn we roll before cross plowing if stumpy; and again roll to pulverize before we harrow, and any watering with it at these times would be out of the question. Indeed there is no time in the whole annual routine of farming operations that we can call to mind that anyone would want to irrigate at the same time that it would be of any benefit to the land to be rolled. We cannot see therefore what is to be gained by this combination. It strikes us as a very expensive roller with no compensating benefits.

We wish however that some one would devise some cheap plan whereby liquid manures might be applied to farm lands. Much valuable matter annually goes to waste—matter which every one of us knows to be valuable—simply because we lose more in the labor necessary to save it than we recover in the profits made. We hoped when we first saw an account of the combined roller that something useful might come of it to this end at any rate; but if we understand the description it does not “fill the bill.”

**FLOWING WATER.**—Water flowing in a body, such as a river, will run sufficiently swift with a fall of one foot per mile. A smaller river will require a fall of two feet per mile. A brook would not keep an open course under four feet per mile, while the water in a small covered drain will require at least a fall of ten feet per mile to set the water in motion.



Stumps, according to their kind and texture, are more or less difficult to get rid of. Pine stumps perhaps rank as amongst the most obstinate of all, and unfortunately it so happens that pine land generally is accounted fully as good if not better for grain-raising than almost any other, and is therefore very desirable soil to purchase. On hardwood lands, there is but little trouble with the stumps. They generally rot away spontaneously in the course of from six to ten years, and in most cases, after that age, they may be easily pushed or knocked over with no other implement necessarily than an axe or maul.

The same, however, cannot be said of the pine. We have seen a stiff old fellow of this tribe as obstinate after twenty years as it ought to be after ten. This quality in the pine arises from the amount of resin (which as our readers are undoubtedly aware is thoroughly antiseptic) contained in its radical fibres as well as in those of the trunk. Age apparently has no effect in overcoming by means of decay the preservative qualities of the resinous element and therefore to get rid of pine stumps within a generation art is requisite, in other words the stumping machine must be introduced. The earliest style of the stumping

pieces was almost certain injury, perhaps death. A large number of deaths, and accidents attended with minor injuries have happened from the use of the old lever stumping machine.

The latter, and we think decidedly better style, of Stumper is that which we illustrate. It is handier than the other in many ways, whilst it is attended by no danger whatever. It consists, as will be seen, of three very strong supports, all meeting at the top, under a very strong wrought-iron plate. Through the centre of this plate a screw-bar, provided with a heavy and strong thread, works. At the lower end of the screw-bar is a hook to catch in any link of the chain in use, whilst above the top iron plate, another powerful iron works nicely on the bar, and in this latter iron is a socket into which fits a lever to which the horse is hitched. All required therefore is to fasten your chain to some available portion of the stump; hook the lower end of the screw-bar into one of the links, or into a double of the chain, and then set your horse in motion. Every circuit he makes with the lever of course the lever iron works just one thread space downwards, i. e. the stump works the rest of that space upwards, and so on until it comes fairly