

CHAPTER X.

ARTICLE 89.

APPLICATION OF THE FOREGOING MACHINES IN THE PROCESS OF MANUFACTURING WHEAT INTO SUPERFINE FLOUR.

PLATE VIII. is not meant to show the plan of a mill, but merely the application and use of the foregoing machines.

The grain is emptied from the wagon into the spout I, which is set in the wall, and conveys it into the scale 2, that is made to hold 10, 20, 30, or 60 bushels, at pleasure.

There should, for the convenience of counting, be weights of 60 lbs. each divided into 30, 15, and $7\frac{1}{2}$ lbs.; then each large weight would show a bushel of wheat, and the smaller ones, halves, pecks, &c., which any one could count with ease.

When the wheat is weighed, draw the gate at the bottom of the scale, and let it run into the garner 3; at the bottom of which there is a gate to let it into the elevator 4—5, which raises it to 5; the crane spout is to be turned over the great store garner 6, which communicates from floor to floor, to garner 7, over the stones 8, which may be intended for shelling or rubbing the wheat, before it is ground, to take off all dust that sticks to the grain, or to break smut, fly-eaten grain, lumps of dust, &c. As it is rubbed, it runs into 3 again; in its passage it goes through a current of wind, blowing into the tight room 9, having only the spout a, through the lower floor, for the wind to escape; all the chaff will settle in the room, but most of the dust will pass out with the wind at a. The wheat again runs into the elevator at 4, and the crane spout, at 5, is turned over the screen hoppers 10 or 11, and the grain lodged there, out of which it runs into the rolling screen 12, and descends through the current of wind made by the fan 13; the clean heavy grain descends, by 14, into the conveyer 15—16, which con-

veys it into all the garnerers over the stones 7—17—18, and these regularly supply the stones 8—19—20, keeping always an equal quantity in the hoppers, which will cause them to feed regularly; as it is ground, the meal falls to the conveyer 21—22, which collects it to the meal elevator at 23, and it is raised to 24, whence it gently runs down the spout to the hopper-boy at 25, which spreads and cools it sufficiently, and gathers it into the bolting hoppers, both of which it attends regularly; as it passes through the superfine cloths 26, the superfine flour falls into the packing chest 28, which is on the second floor. If the flour is to be loaded on wagons, it should be packed on this floor, that it may conveniently be rolled into them; but if the flour is to be put on board a vessel, it will be more convenient to pack on the lower floor, out of chest 29, and thence roll it into the vessel at 30. The shorts and bran should be kept on the second floor, that they may be conveyed by spouts into the vessel's hold, to save labour.

The rubbings which fall from the tail of the 1st reel 26, are guided into the head of the 2d reel 27; which is in the same chest, near the floor, to save both room and machinery. On the head of this reel is 6 or 7 feet of fine cloth, for tail flour; and next to it the middling stuff, &c.

The tail flour which falls from the tail of the 1st reel 26, and head of the 2d reel 27, and requires to be bolted over again, is guided by a spout, as shown by dotted line 21—22, into the conveyer 22—23, to be hoisted again with the ground meal; a little bran may be let in with it, to keep the cloth open in warm weather;—but if there be not a fall sufficient for the tail flour to run into the lower conveyer, there may be one set to convey it into the elevator, as 31—32. There is a little regulating board, turning on the joint x, under the tail of the first reels, to guide more or less with the tail flour.

The middlings, as they fall, are conveyed into the eye of either pair of mill-stones by the conveyer 31—32, and ground over with the wheat; this is the best way of grinding them, because the grain keeps them from being

killed; there is no time lost in doing it, and they are regularly mixed with the flour. There is a sliding board set slanting, to guide the middlings over the conveyer, that the miller may take only such part, for grinding over, as he shall judge fit; a little regulating board stands between the tail flour and middlings, to guide more or less into the stones, or elevator.

The light grains of wheat, screenings, &c., after being blown by the fan 13, fall into the screenings garner 32; the chaff is driven farther on, and settles in the chaff-room 33; the greater part of the dust will be carried out with the wind through the wall. For the theory of fanning wheat, see Art. 83.*

To clean the Screenings.

Draw the little gate 34, and let them into the elevator at 4, to be elevated into garner 10; then draw gate 10, and shut 11 and 34, and let them pass through the rolling screen 12 and fan 13, and as they fall at 14, guide them down a spout (shown by dotted lines) into the elevator at 4, and elevate them into the screen-hopper 11; then draw gate 11, shut 10, and let them take the same course over again, and return into the garner 10, &c. as often as necessary; when cleaned, guide them into the stones to be ground.

The screenings of the screenings are now in garner 32, which may be cleaned as before, and an inferior quality of meal made out of them.

By these means the wheat may be effectually separated from the seed of weeds, &c., and these saved for food for cattle.

This completes the whole process from the wagon to the wagon again, without manual labour, except in packing the flour and rolling it in.

* The bolting reels may all be set in a line connected by jointed gudgeons, supported by bearers. The meal, as it leaves the tail of one reel, may be introduced into the head of the other, by an elevator bucket, fixed on the head of the reel, open at the side next the centre, so that it will dip up the meal, and, as it passes over the centre, drop it in. This improvement was made by Mr. Jonathan Elliott; and by it, in many cases, many wheels and shafts, and much room may be saved.

ARTICLE 90.

OF ELEVATING GRAIN FROM SHIPS.

If the grain come to the mill by ships, No. 35, and require to be measured at the mill, then a conveyer, 35—4, may be set in motion by the great cog-wheel, and may be under or above the lower floor, as may best suit the height of the floor above high water. This conveyer must have a joint, as 36, in the middle, to give the end that lies on the side of the ship, liberty to rise and lower with the tide. The wheat, as measured, is poured into the hopper at 35, and is conveyed into the elevator at 4; which conveyer will so rub the grain as to answer the end of rubbing stones. And, in order to blow away the dust, when rubbed off, before it enters the elevator, part of the wind made by the fan 13, may be brought down by a spout, 13—36, and, when it enters the case of the conveyer, it will pass each way, and blow out the dust at 37 and 4.

In some instances, a short elevator may be used, with the centre of the upper pulley, 38, fixed immoveably, the other end resting on the deck, but so much aslant as to give the vessel liberty to raise and lower, the elevator will then slide a little on the deck. The case of the lower strap of this elevator must be considerably crooked, to prevent the points of the bucket from wearing by rubbing in their descent. The wheat, as measured, is poured into a hopper, which lets it in at the bottom of the pulley.

But if the grain is not to be measured at the mill, then fix the elevator 35—39, to take it out of the hold, and elevate it through any conveniently situated door. The upper pulley is fixed in a gate that plays up and down in circular rabbets, to raise and lower to suit the tide and depth of the hold, and to reach the wheat. 40 is a draft of the gate, and manner of hanging the elevator in it. (See particular description thereof, in the latter part of Article 95.)

This gate is hung by a stout rope, passing over a strong

