

**IRON-FRAMED THRASHING MACHINES.**

We illustrate herewith an iron-framed thrashing machine, the manufacture of which has been made a specialty by Messrs. Marshall, Sons & Co., of Gainsborough, England, who have turned out, according to *Engineering*, a large number of these machines. Fig. 1 is a side elevation, which shows the framing, stiffened around the edges, and at intervals in the length by plates. It also shows the arrangement of the pulleys for driving the drum, shakers, fan, etc. The other view is of a longitudinal section through the center of the machine, and shows clearly the arrangement of drum, shakers, shoes, barley awners, and fan. The engravings explain the arrangement of the machine thoroughly, and we

and use more metal in the construction of frames for thrashing and similar machines.

[The Telegraphic Journal.]

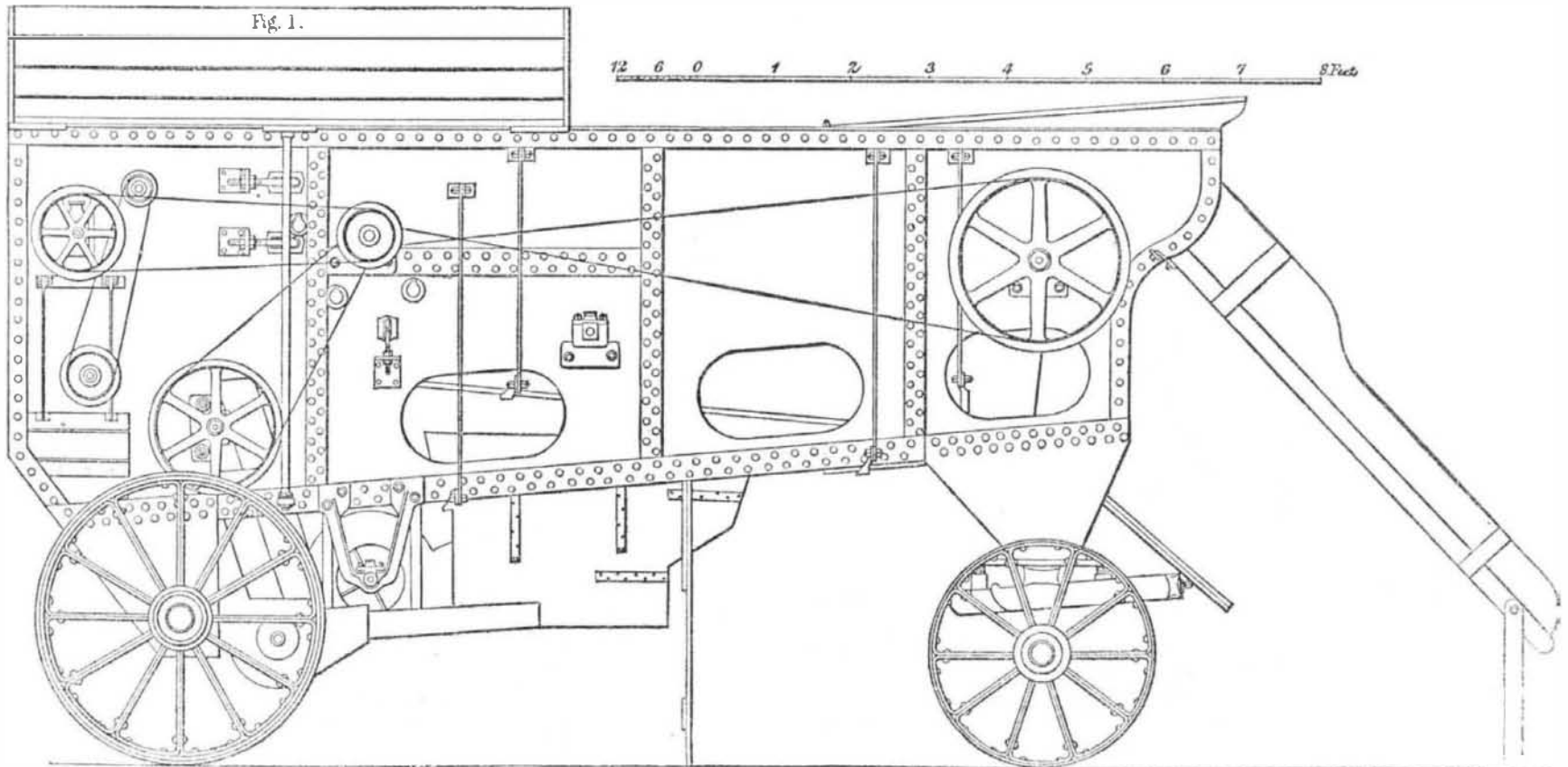
**ELECTRO-DEPOSITION OF METALS.**

BY J. T. SPRAGUE.

[Concluded from page 298.]

The connecting wires should be secured to the objects while under water, unless, which is much better, they can be soldered on before cleaning; it is usually better to have two or three wires to an object, so as to diminish the resistance, and to shift the points of contact occasionally, in order

obtained. If the surface is very large in proportion to the current, the deposit will form in separate crystalline granules, chiefly on the edges and corners, and a deposit formed under these circumstances will develop into a series of nodules capable of easy separation from each other. If the surface is small compared to the current, the deposit will be of a brown color, and have no coherence; this state, also, will begin to show itself first at edges and corners; there the deposit may be quite friable, while a good metal is forming at the middle of the plate. The principles of liquid conduction account for these effects by showing that the current acts in a higher degree at points and edges, just as charge does in static electricity, because at these there can be set up the



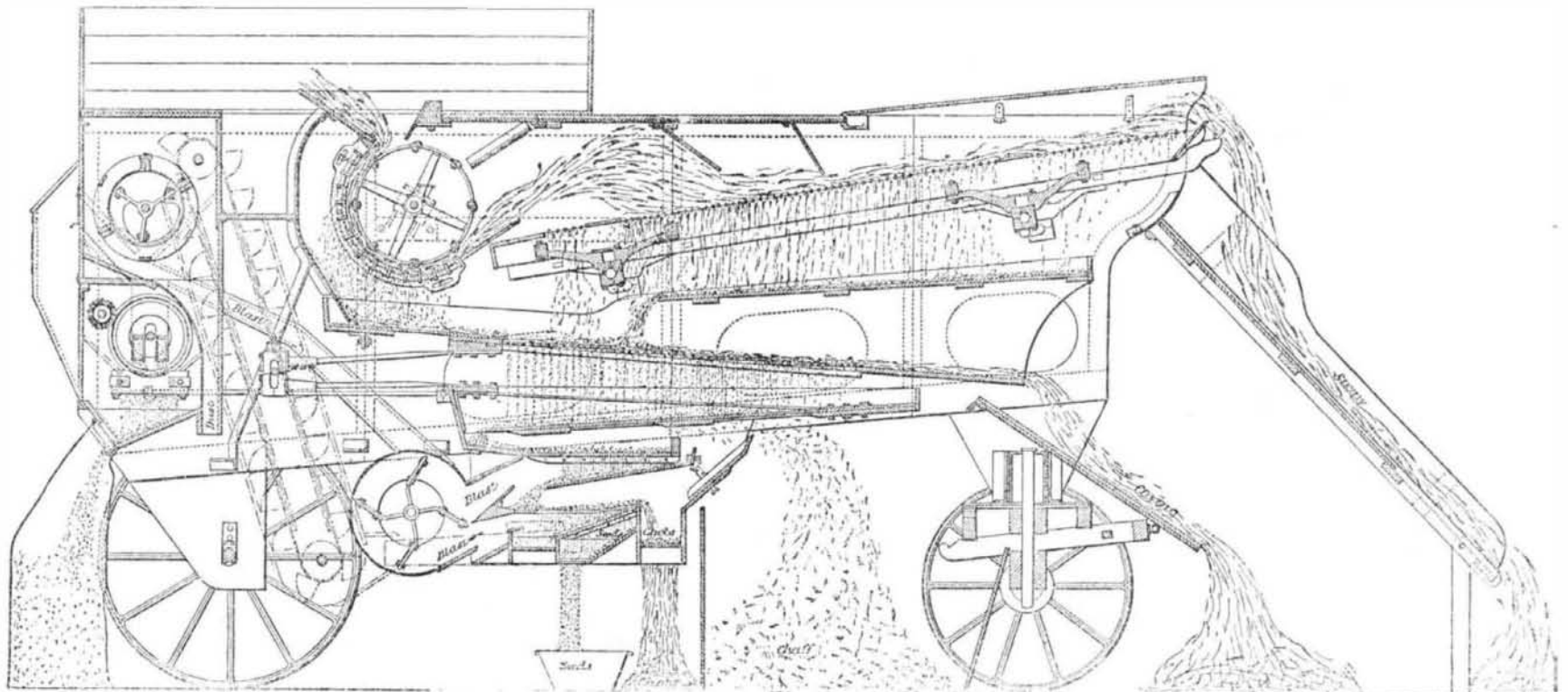
**MARSHALL & CO'S IRON-FRAMED THRASHING MACHINE.**

need not, therefore, attempt any detailed description, but confine ourselves to the special features of this machine, other than the iron framework mentioned above. The drum spindle is of steel, and the fins placed upon it are slotted out, as shown in our second engraving, to receive a number of iron bars, to which the beater plates are attached, this arrangement being found preferable to introducing wood beneath the beaters. The concave at the back of the drum is

to avoid furrows upon the face; it is better also to make the actual contact by short pieces of fine wire attached to a larger conductor not in contact with the object. The general principle to be kept in view is to make the resistance of these connecting arrangements as small as possible, and yet to avoid anything which shall interfere with the contact of the liquid and its free circulation over every part of the surface to be coated.

most numerous lines of polarisation towards the opposing surface. We learn, in fact, that there are two sets of conditions to be attended to.

The first point is the strength of solution. If we pass a strong current in a weak solution we get the brown powder; if, without altering any other condition, we add saturated solution of the metal, the deposit may become good. In every solution there are several different ions present at the elec-



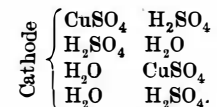
**IRON-FRAMED THRASHING MACHINE-SECTIONAL VIEW.**

entirely of wrought iron. The shakers consist of four boxes, the straw platforms being arranged as shown. They are actuated by two crankshafts, one at each end, connected with the shakers by brackets. The cranks are provided with long bearings, and a collar at each end, over which the top bearing block overlaps, to keep out the dirt. The reciprocating dressing shoes are hung on spring rods, as shown, and are worked by a crankshaft similar to those for the shakers. The whole of the blast employed in the machine is taken from one fan, shown in the second engraving, one part being taken under the middle of the main dressing shoe, and the other thrown upwards to act on the corn as it passes from the cleaner to the screen. The elevators are entirely within the machine, and lift the grain from the reservoir. We may add that a thrashing machine of this type was exhibited by Messrs. Marshall & Co., at Vienna. And we would also state that manufacturers of agricultural machines in this country would do well to take the hint from the English builders

According to the conditions we set up will be the nature of the metal deposited: that is to say, its molecular condition as to cohesion, etc., will depend upon the relations of force to which the deposit is exposed. Color also depends, in great degree, upon the molecular condition of the surface; for instance, gold in very thin films has a greenish tint, owing to the light reflected through it; in a very finely divided state, as when chemically precipitated, it is a dark brown; in its ordinary condition, also, the presence of very small quantities of copper and silver greatly modifies the color. To secure deposits of good quality and appearance, therefore, it is desirable to ascertain those relations of energy which set up the conditions upon which good deposit depends.

If we pass a strong current into a weak solution of copper, the metal deposited will be pulverulent; if, by means of resistances and varying battery power, we pass a fixed current into a solution, but effect the deposit upon a surface of gradually diminished area, a series of instructive results will be

trodes; thus, in the case in point, with a weak solution, only a small part of the cathode can have copper turned towards it; by far the greater portion of its surface must be in contact with the hydrogen of the water or acid; the conditions are, in fact.



Now, if the current (or quantity) is larger than the Cu is equivalent to, of course H<sub>2</sub> is set free, and this will reduce a neighboring atom of copper, but not in contact with the electrode; that is to say, the deposit will consist of detached molecules, and most likely of a compound of copper and hydrogen. This would not occur if the current also were weak, because a weak current means a low tension at the electrode, and hydrogen can be set free only when a certain tension has been reached, sufficient to supply the requisite specific