

**WOOD WOOL.**

For some time past there has been found in the market a very interesting product consisting of extremely thin and slender shavings of wood, that are comparable to paper cut for packing, and that go by the name of "wood wool." This product was first introduced into France as a packing material. It weighs about forty or fifty per cent less than the materials generally used for such a purpose. Its beautiful appearance, its fineness, and its extreme cleanness at once brought it into favor with shippers. It was afterward found that the material was well adapted for the manufacture of mattresses, for bedding for cattle, for the filtration of liquids, and for stuffing horse collars, etc., the most suitable species of wood being selected for each of these purposes. Its elasticity causes it to be considered as the best material for bedding, after horse hair; and it is even preferable to any other substance when it is derived from resinous wood, since it does not then absorb moisture.

In workshops, wood wool is tending to replace cotton waste for cleaning machines, and it has likewise found an application on the rolling stock of railways for lubricating car axles. While it has the same property that cotton waste has of absorbing oil, it costs ten times less than that material.

All these advantages explain why the use of it, which is so extensive in America, is rapidly becoming general in Austria and Germany, and is beginning to extend in France.

The accompanying engraving represents a new machine for the manufacture of this interesting product. It consists of a cast iron frame resting upon three supports of the same material, and carrying a driving shaft, which is actuated by two pulleys, fast and loose. To this shaft there is fitted a fly-wheel, one of the spokes of which is provided with a pin that receives one of the extremities of a connecting rod, while the other extremity of the same is connected with the knife carrier. This latter, which also rests upon the iron frame, slides in iron guides, and carries a set of peculiar knives arranged in such a way that the wood is cut in both the backward and forward motions of the knife carrier.

The wood is held upright on the machine by a lever with a counterpoise, and on the sides by a stop at one side and a movable jaw at the other, that permits of introducing blocks of a few fractions of an inch in length. The wood is shoved forward under the knives by means of a click, that causes it to advance the requisite distance at every revolution of the fly-wheel.

The wood used by preference in this machine is Riga fir. The blocks of wood must, at a maximum, be 0.465 millimeter in length, 0.4 millimeter in width, and 0.32 millimeter in thickness, and consequently the most economical and practical thing to do is to purchase commercial fir planks (which are 0.32 millimeter in width and 0.08 in thickness) and cut them to the desired length of 0.465 millimeter. In this way it becomes possible

to operate upon four superposed pieces of wood at once.

It takes a power of about four horses to actuate this machine. The production may reach 1,500 or 1,700 pounds of "wool" per day of ten hours. It is unnecessary to have a special workman to run the machine; any intelligent man can operate it.—*La Nature*.

**PRISMATIC GUNPOWDER.**

From the statements recently made in the House of

tates a considerable outlay, which private manufacturers in England were reluctant to incur, until the form of powder likely to be required was definitely settled by the Government authorities. In the mean time the resources of the Royal Gunpowder Factory at Waltham Abbey were insufficient to meet the demands of the War Department for prismatic "cocoa" powder, and private manufacturers in England not having the necessary appliances for its manufacture, large contracts were entered into with German manufacturers.

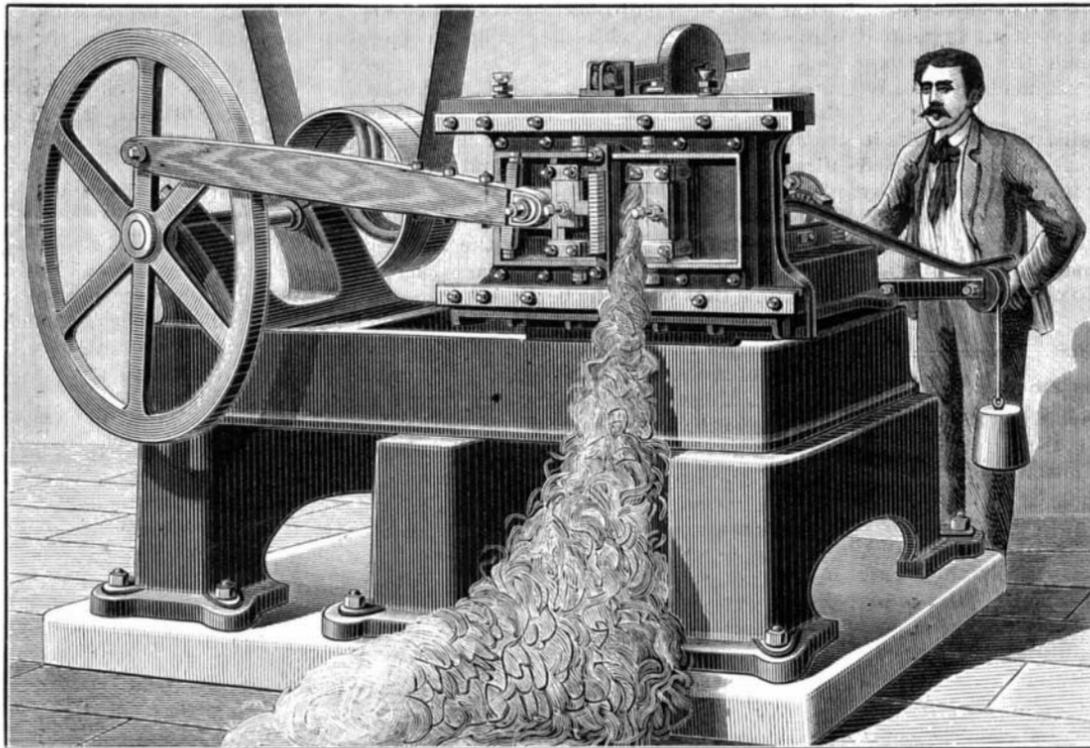
In the mean time, one of our leading firms engaged in gunpowder manufacture had been experimenting with a new form of prismatic powder, and having brought their researches to a satisfactory conclusion, decided to erect a thoroughly efficient plant of the most approved description, in order to manufacture what is now officially known as "Brown X prismatic gunpowder."

The result is the hydraulic press which we illustrate, and which Messrs Taylor & Challen have recently completed, to the order of Messrs Curtis & Harvey. This eminent firm of gunpowder manufacturers have works at Hounslow, Bedford, and Tunbridge, and also in Scotland and in South Wales. It was at the Tunbridge works that the new plant was erected, and it was there that we had an opportunity lately of seeing it in operation.

The accumulator is weighted with cast iron segments, which may readily be put on or removed should the pressure require to be varied. When fully weighted, the pressure is 1,050 lb. per square inch.

Three men are required to work each machine, one to manipulate the valves and two to attend to the charger and remove the prisms of powder as they are produced. The operations are as follows: The various conical hoppers, A, which are contained in the carriage of the charger shown on the left of the engraving, are filled with loose grain powder. The charger is then run forward into the press and locked there. By the movement of two levers, which are shown in position in our engraving, the powder is made to fall from the hoppers into the charging tubes, B, 64 in number. These are set to hold the required quantity of powder, and great care has to be taken to fill them completely, as exact uniformity is one of the most necessary conditions of getting a powder that will pass the very severe tests now demanded by the government authorities.

By the movement of a lever the charging tubes are carried over 64 corresponding phosphor-bronze bushes in the bush block, C. The charges of powder then fall into these bushes, and the charger is withdrawn from the press. The operator at the valves then

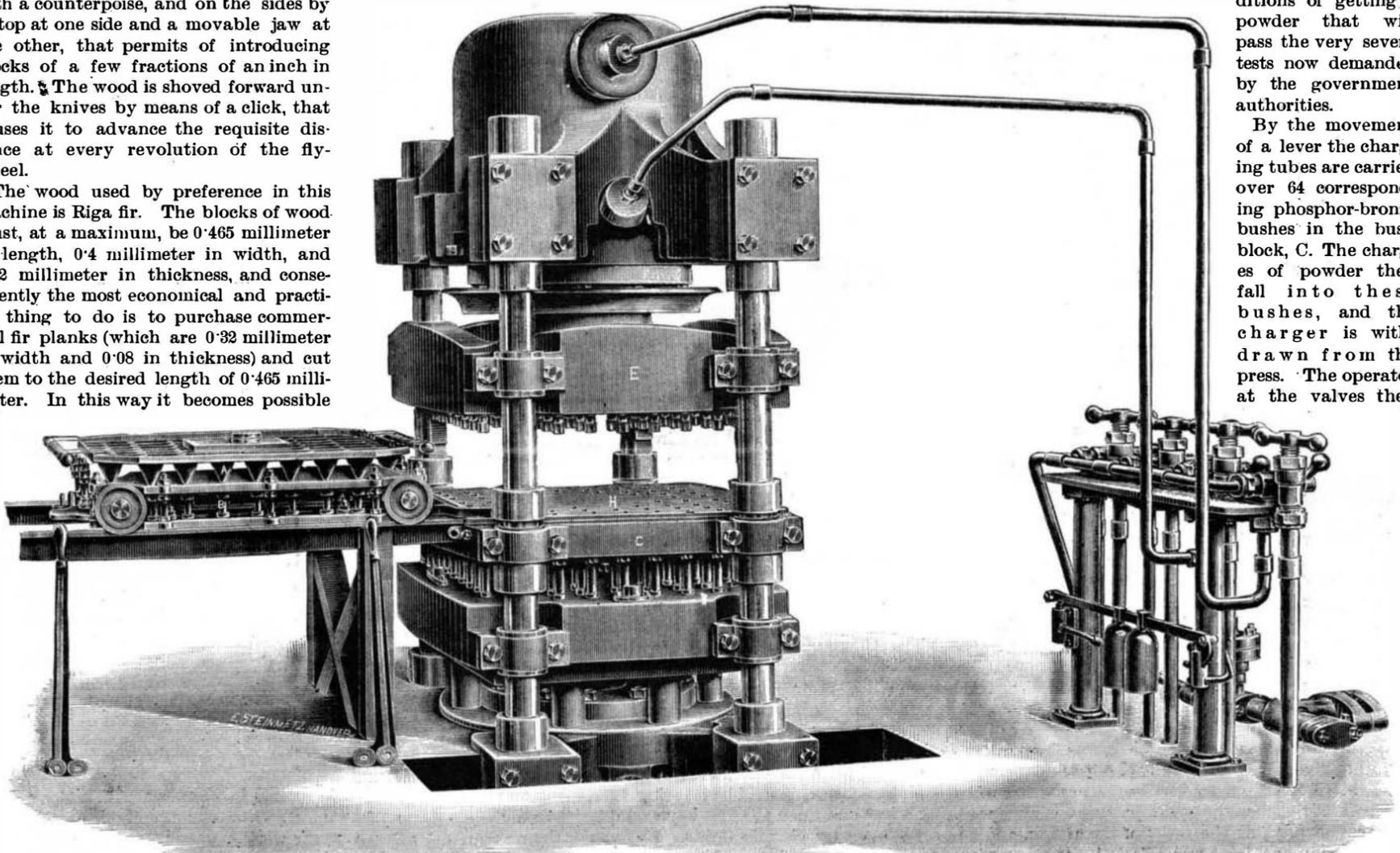


**MACHINE FOR MAKING WOOD WOOL.**

Commons during the debate on the navy estimates, when the Parliamentary Secretary stated that the Nile and Trafalgar would probably be the last heavily armored ships of their class, it would appear that the long contest between guns and armor has resulted in a victory for the aggressive force. To what extent this is due to the weapons themselves, and how far to the powder and projectiles used, it would be hard to determine, but certainly the explosive deserves a large share of the glory of the victory.

The advances made within the last two or three years in the manufacture of gunpowder for heavy ordnance have been very great, and these advances have been due in a great measure to the development of more perfect mechanical devices for the necessary processes.

The hydraulic plant for making prisms necessi-



**PRESS FOR THE MANUFACTURE OF PRISMATIC GUNPOWDER.**