

small pulleys, and as for very high speeds the belt should be light and thin as possible, some means of getting greater adhesion between the belt and pulley are required. To draw the belt very tight will not answer, as that means both straining the belt and putting a great pressure on the bearings next to the pulleys. To use a tightening pulley to increase the "arc of contact" is an awkward and troublesome expedient, as most who try it will find, even at low speed of belt, and one that causes friction and frequently destroys the belt. One of the best means of increasing the friction is to cover the iron pulley with some substance which will cause a greater friction between the surfaces of the belt and pulley. Wooden pulleys are sometimes used, but as they are apt to split, or get out of truth, they are not so reliable.

A very good plan is to make an endless band of rubber belting, and draw it tightly over the pulley; the friction between it and the pulley being round the whole circle of the pulley, will always be greater than can well be got between the driving belt and the new face of pulley made by the rubber.

Another plan, and one often much more convenient, is to cover the pulley with leather. A good way to do this is to bore a number of holes around the circumference of the pulley, and drive hard wood wedges into these, then tack on any old belting or strips of leather of nearly uniform thickness. Having done this, put the pulley in a lathe and turn up the leather face carefully but with a rough surface, and then cement or glue on another coating of new leather all in one piece; if possible, the joint had better be scarfed, and wooden pins may be driven through the leather, so as to fasten the whole together. This method has been successfully done even with large pulleys. In one instance, where a belt 22 inches wide was running on a pulley about 40 inches diameter and required a tightening pulley to prevent it from slipping and had frequently broken, the pulley was covered with leather in the manner described with the result that the tightening pulley was dispensed with, and a new belt gave no further trouble, and drove the machinery without any appreciable slip. The original belt had only been in use a few months, but was found quite brittle from overstraining, and broke short off across its whole width, the elasticity apparently being all exhausted.

It may appear a little troublesome to cover the pulleys, but once well done it is a permanent job and makes a great improvement in the wear and tear of the belt.

RAW MATERIAL.

That manufactured articles should pay duty, while raw materials should be admitted free, is a general principle in the protective system. To lay down the principle in a general way is easy enough, but the difficulty begins when we attempt to define what is raw material and what is a manufactured article. One of the latest contributions towards the solution of the difficulty is a letter from Mr. D. C. Robbins, of New York, to the *Tribune*, from which we make the following extract:—

"No line of division in the classification of commodities is more accurately and definitely drawn than the term 'Matières,' in the French list of commodities, as attached to their customs dues. The French divide all commodities into

two great classes, as 'matieres,' or matters, or raw materials, if you please, and fabrications or manufactures. To any one at all acquainted with this list, or of ordinary intelligence, an examination of this law for five minutes in the light of the French list will so instruct him as to enable him to tell without a moment's consideration the precise status of every commodity that may be suggested.

"As an example, take pig iron. What is pig iron? Is it a pig? or is it iron? or is it a combination of both? It is simply crude iron in a certain form to which the name 'pig' has been applied to describe the form. Now, if the pig form was the form to be used, it would be a manufactured article, as a wooden pen-holder, being made to be used as a holder for the pen, is a manufactured article; the wood only being crude material. Pig iron is a crude article, and I could furnish at a day's notice a list of every commodity in the market, so divided into the three great classes of raw materials, chemical preparations, and manufactured articles, that there could be no mistake or dispute in regard to any commodity in either list.

"Will you allow me to say as modestly as I can, that nothing surprises me more than the want of intelligence which seems to prevail in regard to the classification of commodities, and the limitations which should be assigned to the protective principle. We are really yet in the presence of the A. B. C. of all this matter."

THE ASSASSINATIONS IN DUBLIN.

The terrible tragedy of Saturday last in Dublin is not among any of those classes of events which naturally come under review in the *CANADIAN MANUFACTURER*, yet we cannot refrain from putting on record our abhorrence of the dastardly deed of butchering in cold blood two distinguished men; one of whom had just been appointed to the control of Irish affairs for the express purpose of carrying out a policy of conciliation. A double murder, attended with circumstances of peculiar atrocity, is the reply to the offer of the olive branch by the Government. We can scarcely on the instant realize the full consequences of what has happened. Pending recovery of the public mind from the shock, many voices are now hushed to whispers that will shortly speak out with burning indignation. As yet we are too near the event to judge of its real magnitude and probable serious consequences.

A LAW AGAINST CHINESE IMMIGRATION.

Some weeks ago the American Congress passed a bill practically prohibiting Chinese immigration for twenty years. President Arthur vetoed it on the ground that it contained enactments which would violate the existing treaty with China. But public opinion both in and out of Congress was strong in favor of stopping the Chinese invasion in some way or other, and the House by a large majority promptly suspended the rules to bring in a new bill, the term during which Chinese immigration should be prohibited being reduced from twenty years to ten. The new bill passed both Houses as quickly as parliamentary formalities would permit, and has been signed by the President, who very wisely refrained from attempting another veto. Consequences gravely affecting ourselves may now be looked for. The Chinese, shut out of California, will swarm like bees into British Columbia; and the Americans will at our expense rid themselves of an increasing and dangerous nuisance.