Fig. 23 shows a typical arrangement of the driving gear of a modern conveyor. It will be seen that the motive power is supplied by a shaft running parallel with the length of the conveyor, and this is transmitted by a pair of mitre wheels to a shaft at right angles, and thence through straight teeth cast iron gear wheels to the drum shaft.

Fig. 24 gives a very good idea of the general layout of a band conveyor installation, and shows two bands conveying stone.

The last two illustrations have been supplied by the Jeffrey Manufacturing Company.

The rapid strides that have been made in the manufacture of these conveyors during the last few years is very apparent to all those in any way connected with their use and

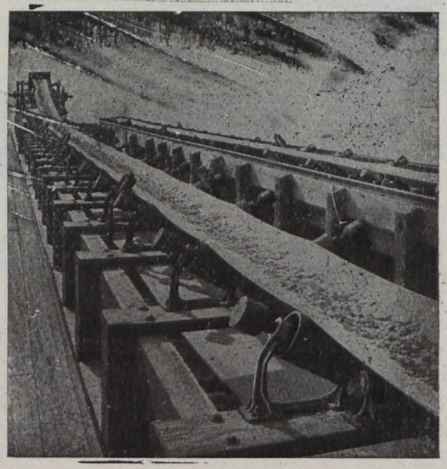

Fig. 24.

with the improvements made and decrease in the cost of manufacture their field of usefulness has been extended into practically every branch of manufacture.

In conclusion, the writer would like to impress upon purchasers of this type of machinery that the great point to aim at is simplicity in general outline and details. Then, after buying a good conveyor, spend a reasonable amount on same for attention, such as oiling, overhauling and cleaning. If this is faithfully carried out the best results will be obtained, both as to efficiency and maintenance.

EXTENSION TO WINDSOR STATION, MONTREAL.

Improvements in train departure and in handling crowds have been under way for some time in the Canadian Pacific Railway depot in this city. Two of the new tracks are now in use and a third track is rapidly nearing completion. The work on the new building is being pushed ahead with all speed and the workmen engaged in demolishing the wall of the old building to prepare for cementing the old with the new are now getting towards the foundation.

GREAT BRITAIN'S CONTRACTORS SUCCESSFULLY COMPETE AGAINST FOREIGNERS.

A firm of British engineers, in competition with Belgian, German and structural firms in the United States has secured the contract for the steel work for a new bridge of the Eastern Bengal state railway over the lower Ganges. The bridge will consist of fifteen main spans weighing thirteen hundred tons each, and will involve the expenditure of one million, one hundred and twenty-five thousand pounds.

BITUMINOUS ROAD SURFACES.

In a paper before the American Society of Civil Engineers, Mr. A. W. Dean takes up the question of superficial coats of bituminous material with or without stone for road surfaces.

Bituminous pavements of various types have been in use for many years, whereas bituminous surfaces are of recent adoption. The early superficial applications of oil were made largely for the purpose of dust prevention on dirt roads, a crude light oil being used, having very little binding quality. The advent of motor-vehicle traffic, however, has led to a very extensive use of bituminous surfaces, not only for the purpose of dust laying, but for the preservation of the roads.

As a natural consequence, many experiments have been tried by road authorities to determine what methods and materials are best adapted to overcome the difficulties encountered, and by producers to determine what quality of bituminous material can be manufactured at a minimum cost to meet the requirements of the road authorities. Being still in the experimental stage, final conclusions regarding methods and materials are obviously impossible. It has been clearly demonstrated, however, that no uniform specification can be adopted defining a material which will produce a good bituminous surface on roads of every type and under every condition of traffic. Experience has shown, for instance, that while a heavy refined tar may be used to advantage on a macadam road, it is of no value as a surface application on an ordinary gravel or dirt road.

For surface treatment of dirt roads, a light oil helps somewhat to preserve the road, in that it prevents the particles composing the surface from blowing away, and assists, to some slight degree, in hardening the surface.

For surface treatment of gravel roads, the best results appear to be obtained by using an asphaltic oil of what might be termed medium viscosity, or by approximating the maximum viscosity that will permit application through an ordinary distributor at a temperature of 50 degrees Fahrenheit.

For surface treatment of broken stone roads, a light or medium oil acts mainly as a dust layer, yet if frequently applied it preserves the road to a very appreciable extent. In determining what bituminous material would be the most economical and advantageous for the preservation by surface treatment of broken stone roads, a knowledge of the traffic over the road is absolutely essential. If the road is subjected to light motor-vehicle traffic and light team traffic, with the motor vehicles predominating, experience has shown that an asphaltic oil, of such viscosity that it requires heating to at least 250 degrees Fahrenheit before application, forms a bituminous surface which withstands the traffic and thoroughly preserves the road for a period of time depending partly on the quality of the material and workmanship and partly on the quantity of traffic.

Chemists do not agree unanimously on definite requirements for bituminous materials to be used for surface applications, and, as this method of treatment of roads is of such recent practice, it is probable that at least two years more must elapse before positive specifications can be drawn. Producers claim that the best oils for the purpose contain 90 per cent. asphalt. Residuum oils placed on roads in Massachusetts early in the season of 1909, still show life, and an indication of durability for a considerable time to come, and this fact would show that, while natural asphalts