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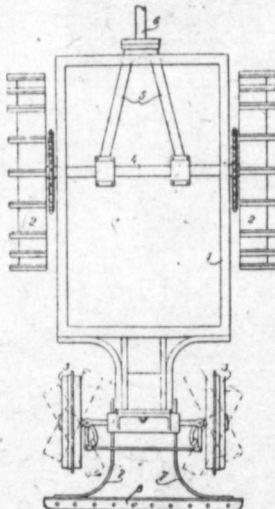
SIMULTANEOUS HARVESTING AND BREAKING UP OF THE STUBBLE WITH A TRACTOR

THE following interesting developments in traction-cultivation are taken from "Le Genie Rural," published in Paris (France). Recent information from civil as well as military sources is to the effect that great strides are being made in France in farm mechanics, and that especially in farm tractors something of a sensational nature may be expected shortly. Necessity knows no law, and necessity is the "Mother of Invention." Needs must lie hard on France in these days.

To hitch a 13-time Massey-Harris cultivator to a binder towed by an Avery tractor, M. Grateaut, of Epernon (Eure-et-Loire), France, uses an iron bar 6 feet 6 inches long bolted on to the shaft of the binder and clamped behind on the binder frame. On the steering device of the cultivator are bolted two flat irons joined by a bolt to the end of the bar projecting from behind the binder. This device is to leave steering free in a vertical direction but to render it rigid horizontally, so as to allow the binder and cultivator to back if required.

M. L. Danchaud, of Levet (Cher), has designed a device similar to that just described and which is also intended to carry out two operations at once. Although less simple than the former, as it requires a special tractor, M. Danchaud's device is said to constitute a great progress in mechanical traction. Instead of towing the binder by a tractor and hitching a stubble breaker behind the binder, the new arrangement makes it possible to attach the binder in front

of the tractor and the stubble breaker behind. Thus the tractor pushes one machine and pulls the other. One man can drive the tractor and supervise the working of two machines. Moreover, as the binder is in front of the tractor, it can cut a greater width as there is no risk that the tractor will pass over the uncut crop.



PLAN OF DANCHAUD TRACTOR

Other machines that work suitably together can be used to replace the binder and stubble breaker (hay mower and hay maker, or one binder in front and another behind the tractor).

In addition the device is well suited to the direct driving of the working parts of agricultural machines in general and specially of binders and reapers by the tractor engine. The appended design gives a plan of the invention. The apparatus includes a frame on which is mounted the engine with the gear, drive and controls.

The frame is mounted on two driving wheels, 2 in front and 2 steering wheels 3 in the rear. In front of the frame two arms 5 are mounted on the axle 4 and carry a shaft 6 for connecting with the machine to be driven or partially or totally supported.

In the rear of the frame, the arched pieces 7 of the steering gear are mounted. These pieces have their end joined to a draw-bar 8 for such agricultural machines as have to be drawn by the tractor.

PRACTICAL LUBRICATION

Points to be Remembered to
Reduce Repair Costs

Why We Lubricate

WITHOUT some form of lubrication machinery would be useless, and in the internal combustion engine especially, progress depends on its efficiency. The petrol engine develops its power at a high speed, generating considerable heat, which is taken into account by the manufacturers when designing their lubrication systems. The purpose of lubricant is to keep the surfaces of any bearings from actually coming into contact, i.e., one metal on another, at the same time to provide a suitable medium on which they can move without friction. As there is always pressure of one surface against the other when they are at work, it is necessary to replace the lubricant as it is gradually forced away. The regularity and effectiveness with which this is done determine the life of the bearings, and that means the life of the vehicle.

Although most modern lubrication systems are as near theoretically perfect as it is possible to get them, their efficiency relies to a great extent on the treatment they receive at the hands of those who handle them. As in most things, there is a right and wrong way of oiling an engine or greasing a shackle bolt. Theory is ably supplied by the books of instructions or the lubrication charts, as the case may be, but care and commonsense are the qualities that make for success in practice.

It is not generally realized that incorrect or insufficient lubrication can considerably reduce the final power obtained at the road wheels; as an example may be mentioned excessively thin oil in the engine, causing loss of compression, or too thick grease in the gear box or back axle. Every time a vehicle is shifted out of its level course by holes or bumps in the road, power is absorbed in the process beyond that required for propelling it in a straight line; thus, by keeping the spring leaves

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