HOW IT WORKS...

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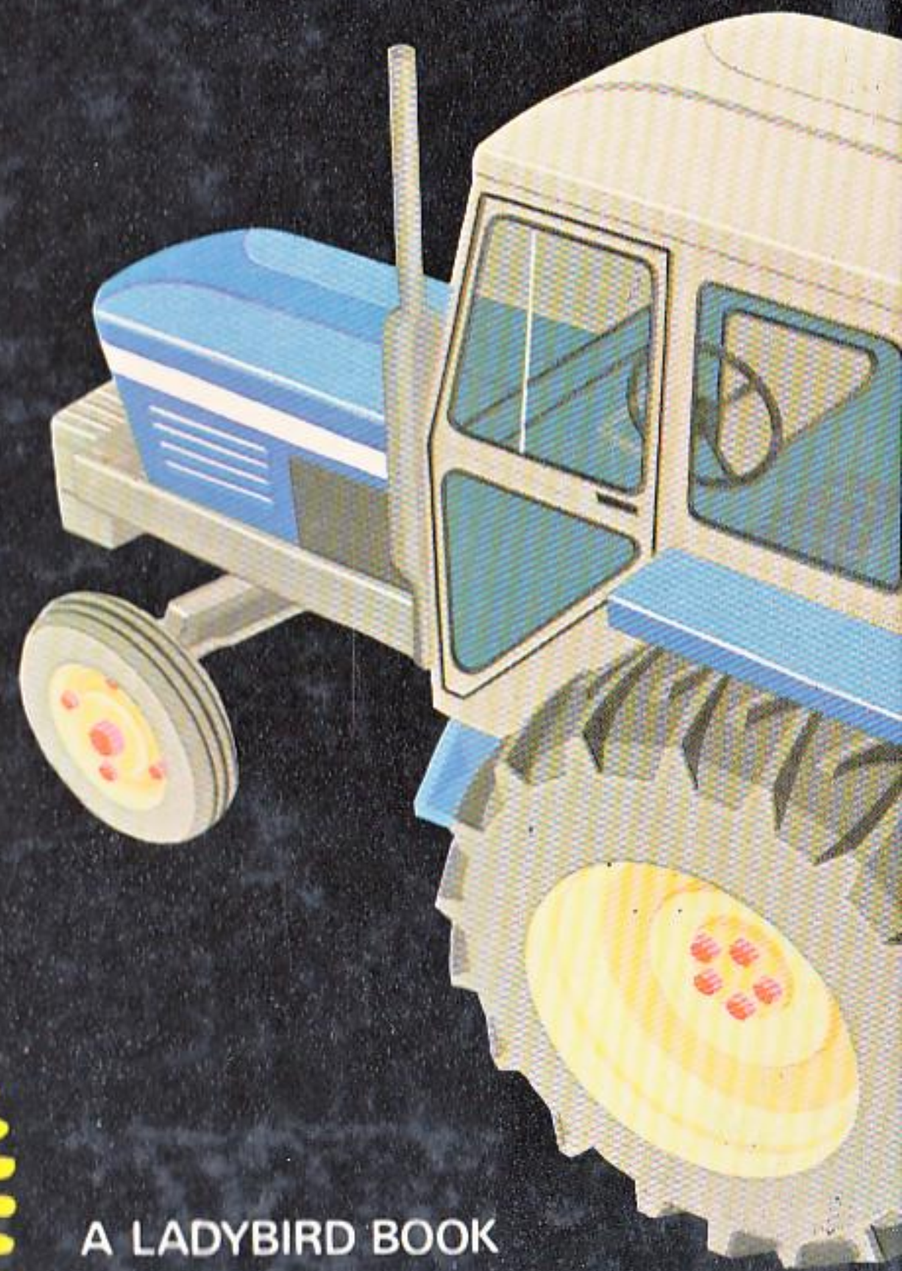
HOW IT WORKS

Farm Machinery

HOW IT WORKS...

FARM MACHINERY



A LADYBIRD BOOK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Most of us are town dwellers with very little experience of what happens in the countryside around us. Yet during the past decade or so a great revolution has been taking place on farms all over the developed world. Tractor power has replaced horse power and machine power has replaced man power. This book tells you about farm machinery and how it works to do the jobs that men and animals have previously done throughout the ages.

Acknowledgment:
The photograph of a self-propelled forage harvester on the front endpaper appears by courtesy of the Royal Agricultural College, Cirencester.

Revised Edition

HOW IT WORKS...
FARM MACHINERY

by DAVID CAREY
with illustrations by
B H ROBINSON
and GERALD WITCOMB MSIAD

Ladybird Books Loughborough

Introduction

The days have long since gone when the majority of people worked on the land and only a small proportion lived in towns. Over the years, village folk have drifted away from the land and into towns where they have been absorbed into the industrial life of the community. As the industrial areas became bigger, more farm land was used for the creation of large housing estates, new factories and even satellite towns. Yet, with fewer workers and less land, farmers were expected to produce more food to feed the ever-growing population.

Part of the problem of getting more from less land and less workers has been solved by the increasing use of farm machinery, which can be operated by fewer hands and which does the various jobs on the farm much more quickly. The modern farmer has to be something of a technician as well as an expert on the land. His job is less arduous and a lot more interesting than it used to be.

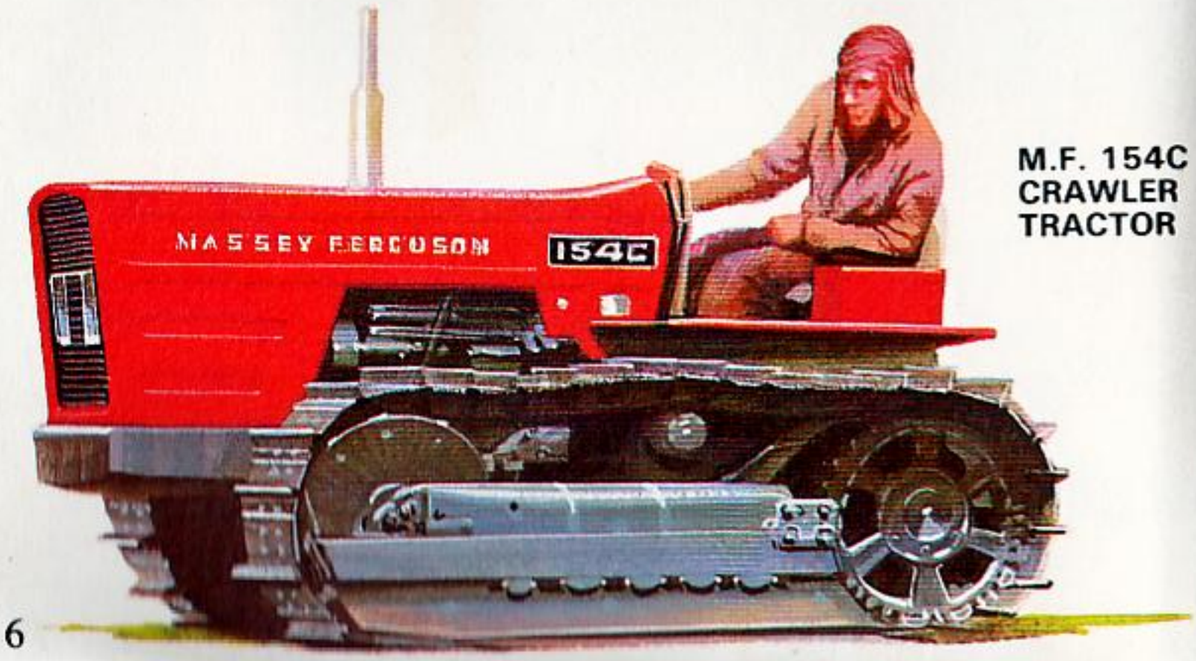
Most types of farm machinery are produced by several manufacturers and therefore vary in details of design. In this book we describe the main kinds of machinery in general use and the principles on which they work. It would not be possible to deal with all the differences between one make and another.

Before the invention of modern farm machinery—the farm labourer and his horse

M.F. 80 LOADER ON
4 WHEEL DRIVE TRACTOR

The Tractor

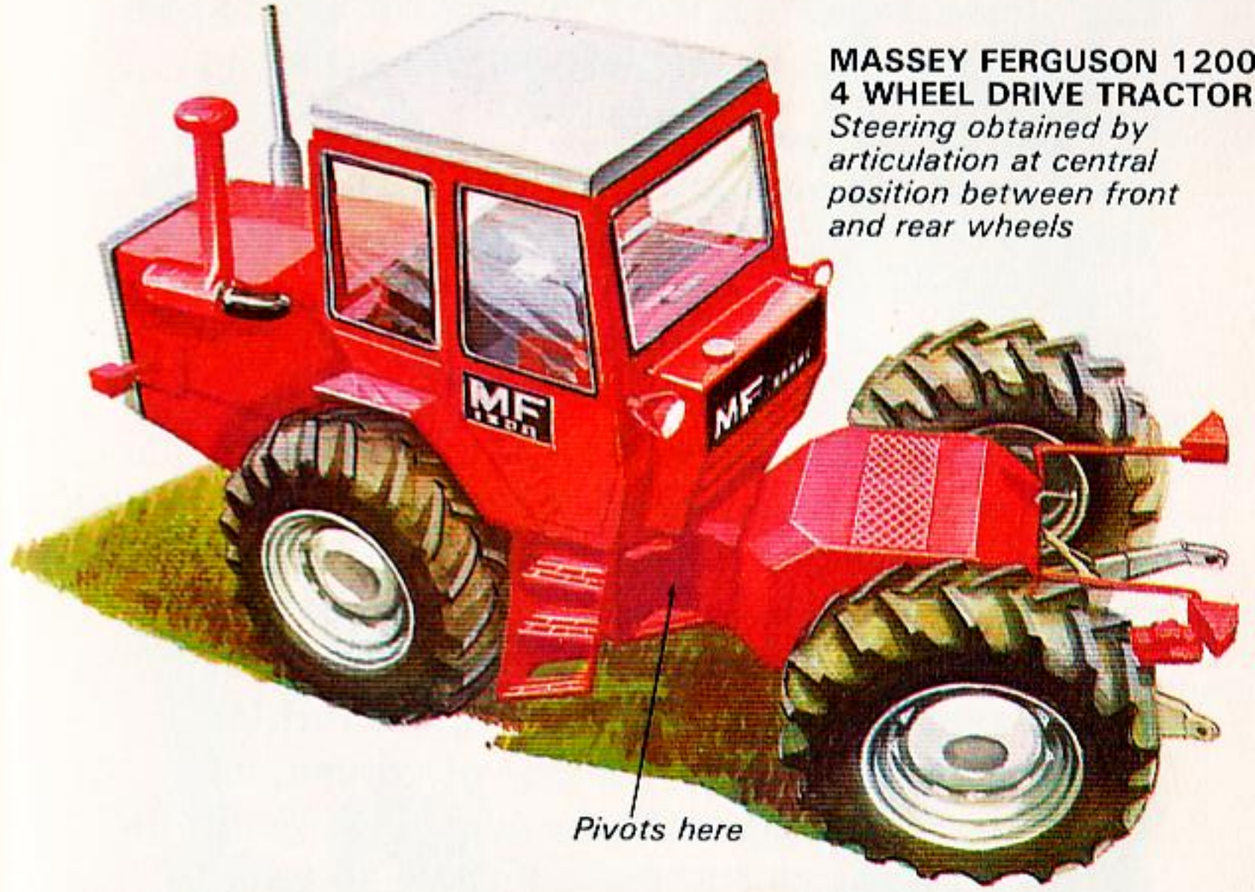
The tractor, more than any other piece of equipment, has made possible the introduction of many machines on the farm. It is the one basic machine from which nearly all the others can be worked. It can tow a trailer or, by means of a power take-off, operate equipment pulled or carried behind it in the field or standing in the yard. Its special design enables it to travel over rough or soft



M.F. 154C
CRAWLER
TRACTOR

ground so that there are very few occasions when it is not able to work.

Many different types and sizes of tractors are in use today, depending on the type and size of farm and the particular jobs the machines are called upon to do. However, the principles on which they work are the same and the descriptions which follow apply to all.



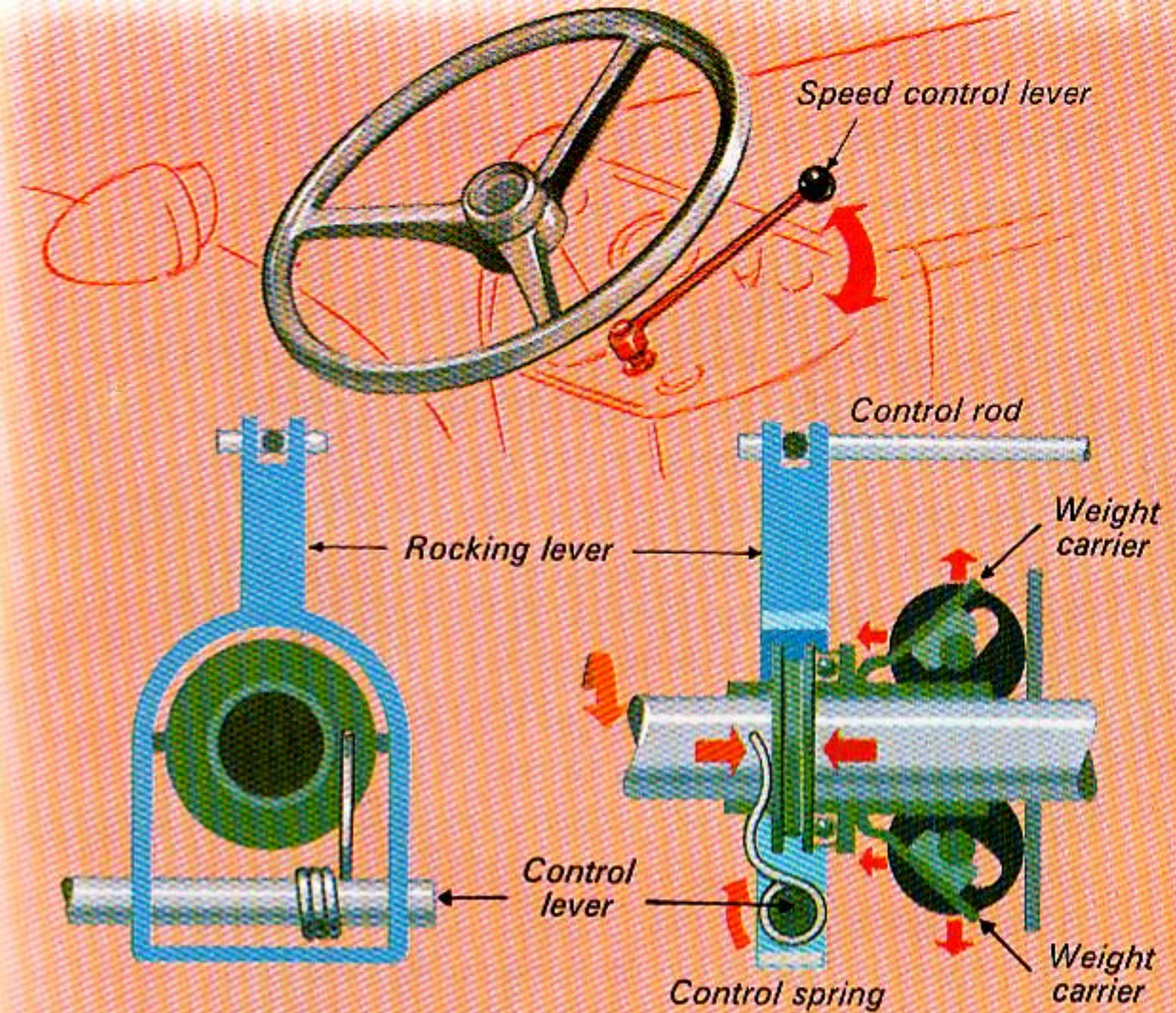
MASSEY FERGUSON 1200
4 WHEEL DRIVE TRACTOR
Steering obtained by articulation at central position between front and rear wheels

All farm tractors manufactured today have diesel engines, and though they are more expensive to buy than those built with petrol and vaporising oil (paraffin) engines a few years ago, they stand up better to the rough, slogging work that tractors have to do.

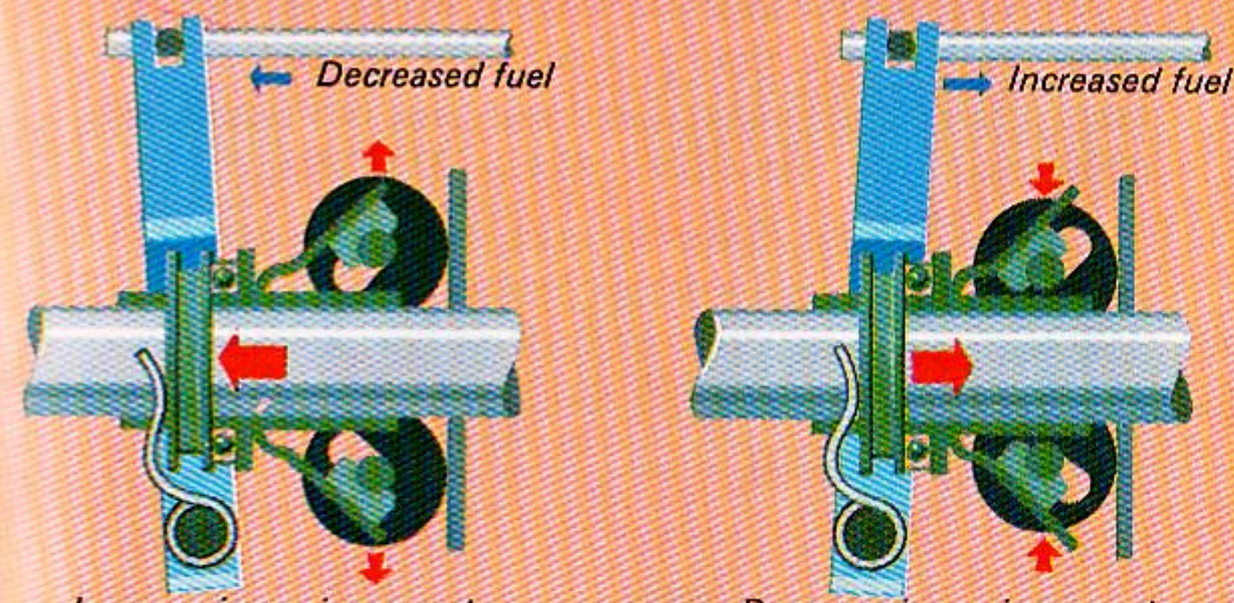
Engine Governors

There is not space in this book to deal in detail with the construction and operation of tractor engines. Readers who are especially interested in this subject will find complete descriptions of the diesel engine in another book in this series, 'How it Works – The Locomotive'. The petrol engine is fully dealt with in 'How it Works – The Motor Car'. Paraffin engines work in a similar way to the petrol engine and, in fact, use petrol for starting purposes.

All tractor engines are fitted with a *governor*. Its purpose is to keep the engine running at an even speed and so save the driver having to make throttle adjustments every time there is a change of ground conditions. For instance, when the tractor is pulling a plough it might go over a patch of soft earth. The plough cuts through it more easily. Without a governor the engine would speed up, making the tractor go faster. In hard ground the plough would meet with greater resistance, slowing down the engine and the tractor. By allowing less fuel into the engine over the easy portions of ground, and increasing the supply when the going is difficult, the governor acts as an automatic throttle adjuster to keep the tractor running at a constant speed whatever the state of the ground.



The speed control lever winds up the control spring and the force exerted on the weight carrier is balanced by the centrifugal force exerted by the weights on the weight carrier, and the rocking lever holds the control rod in position necessary to deliver the correct quantity of fuel.



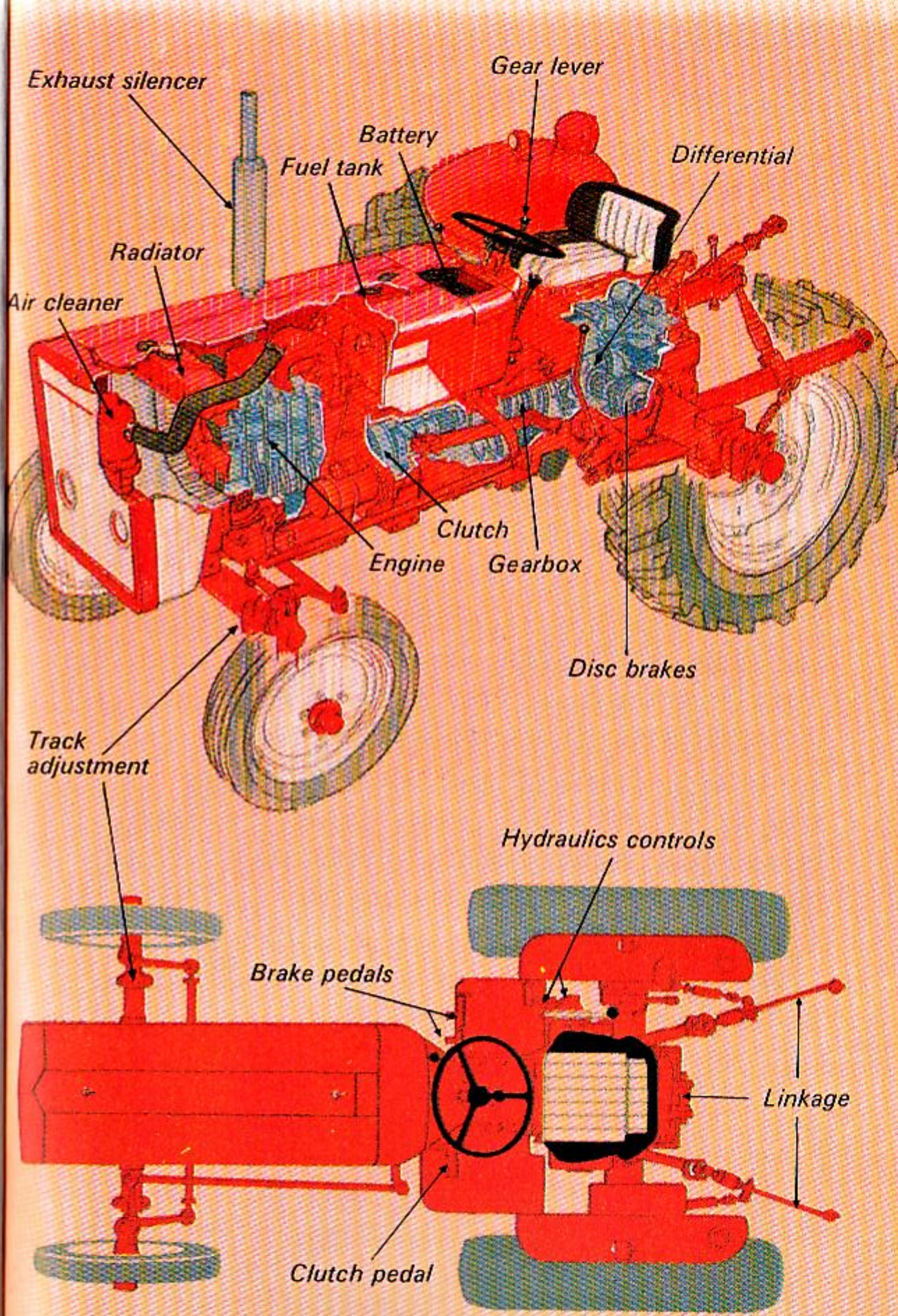
If the engine speed tends to increase or decrease, the centrifugal force of the weights will increase or decrease correspondingly. This change will cause the weight carrier to move and change the position of the control rod, thus decreasing or increasing the amount of fuel delivered and maintaining engine speed at the pre-determined setting.

Transmission, Wheels and Tracks

Power from the engine is transmitted to the big driving wheels of the tractor by means of the transmission system. This consists of the clutch, gearbox and rear-axle differential unit. Briefly, the clutch allows the drive from the engine to the gearbox to be disconnected so that various gears can be engaged. The gearbox contains several pairs of gears, and by selecting certain combinations the driver can match the speed and pulling power of the tractor to the work it has to do. A slow speed with high engine revs. (low gear) is required for working farm implements in rough ground, while faster speeds with lower engine revs. (high gear) is needed for towing light trailers and generally running about the farm. Finally, the differential unit transmits the drive to the rear wheels and allows each wheel to rotate at different speeds so that the tractor can turn corners.

A tractor's transmission system works on the same principles as that of a car, and our more mechanically-minded readers will find full details of its operation in 'How it Works – The Motor Car'.

Because tractors have to work in crops sown in rows, the distance, or track, between the front and rear pairs of wheels can be widened or narrowed so that they run between the rows and not over the crops.



Wheel Grip

Although the big, heavily-treaded, rear tyres of the modern farm tractor can deal with most conditions, there does come a time when the mud is too thick, or the ground too slippery, for them to get a grip. Farm work has to continue whatever the ground conditions, so ways have been developed to overcome this problem.

1. Adhesion, as the grip between tyre and ground is known, depends on weight, and extra weight can be provided by partly filling the tyres with water. A special attachment fitted in place of the air valve allows the water to be pumped in through a hose.

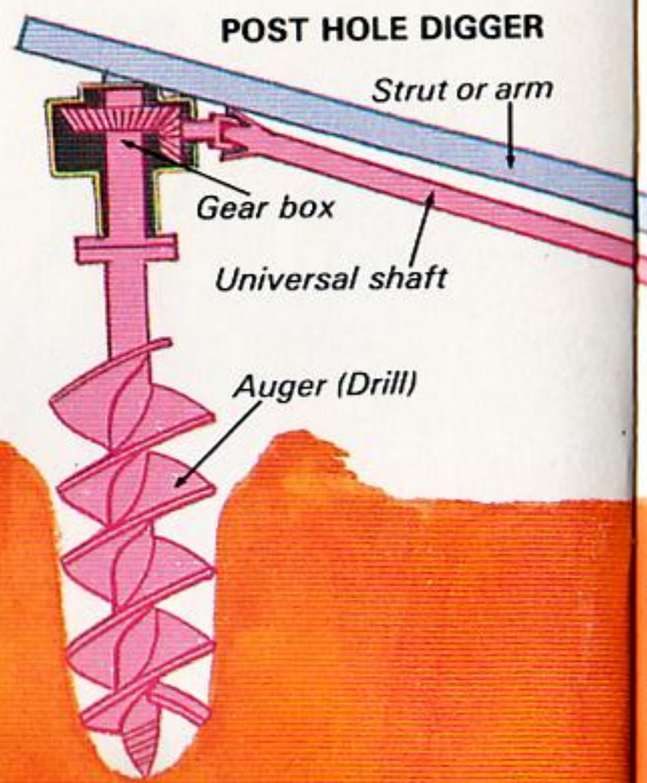
2. Another method is to add weights to the front end of the tractor. The number of weights added depends on the state of the ground and the particular work the tractor is doing.

3. An arrangement of steel links can be fitted around the tyres. These girdles, as they are called, help to give greater grip. Half-tracks, such as those illustrated, are used in some countries.

4. Cage wheels in the form of a metal framework fixed to the wheels will also help adhesion by taking up the drive as the tyres sink into the soft ground.

Power Take-off

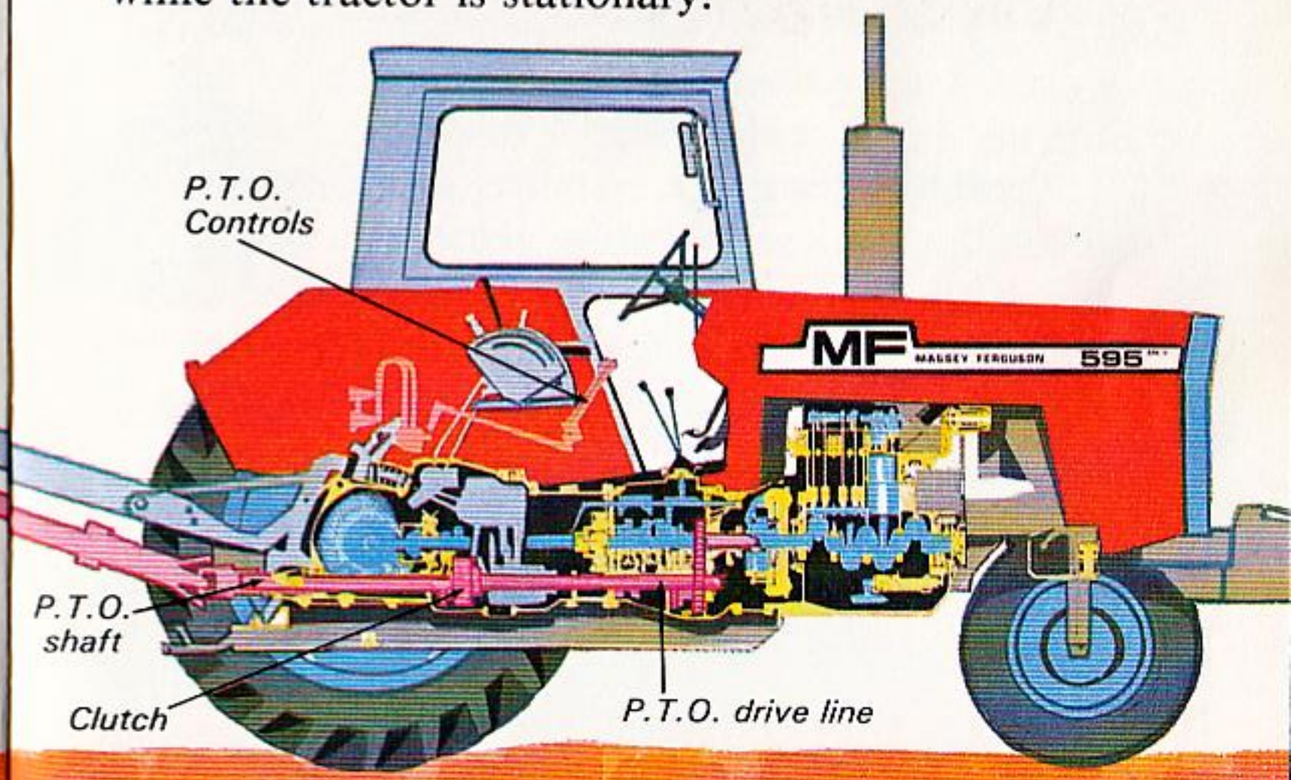
Tractors were originally designed and produced to take the place of horses on the farm and, until recent years, were used most frequently as machines for towing. As the need for farm mechanisation grew, a whole new range of machinery was developed and the tractor has now also become a source of auxiliary power from which many other machines can be driven, using a Power Take-off device, or P.T.O.



The power take-off is driven from the engine via the gearbox and a shaft which extends rearward to the back of the tractor. From there it can be coupled to the machinery to be driven. The power take-off works independently of the tractor's normal transmission system, so that machinery can be operated whilst it is being towed across a field as well as in the standing position.

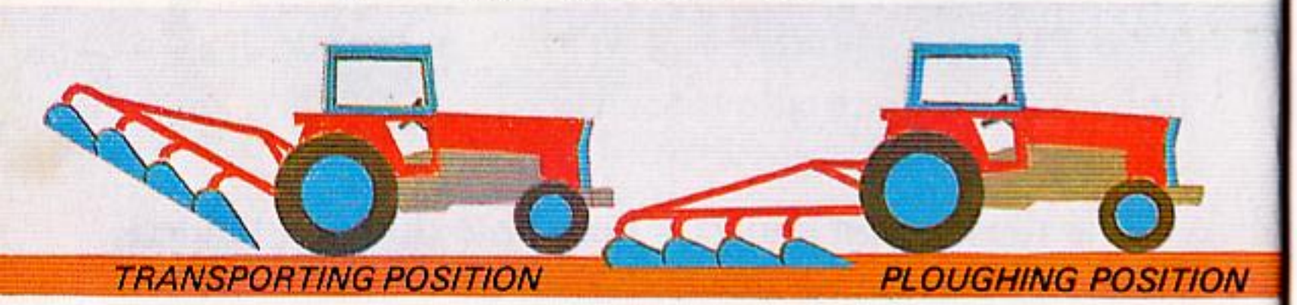
Because the driven machinery cannot always be in direct line behind the tractor, and because the ground is often rough, the P.T.O. shaft has universal joints to allow for variations in the driving angle.

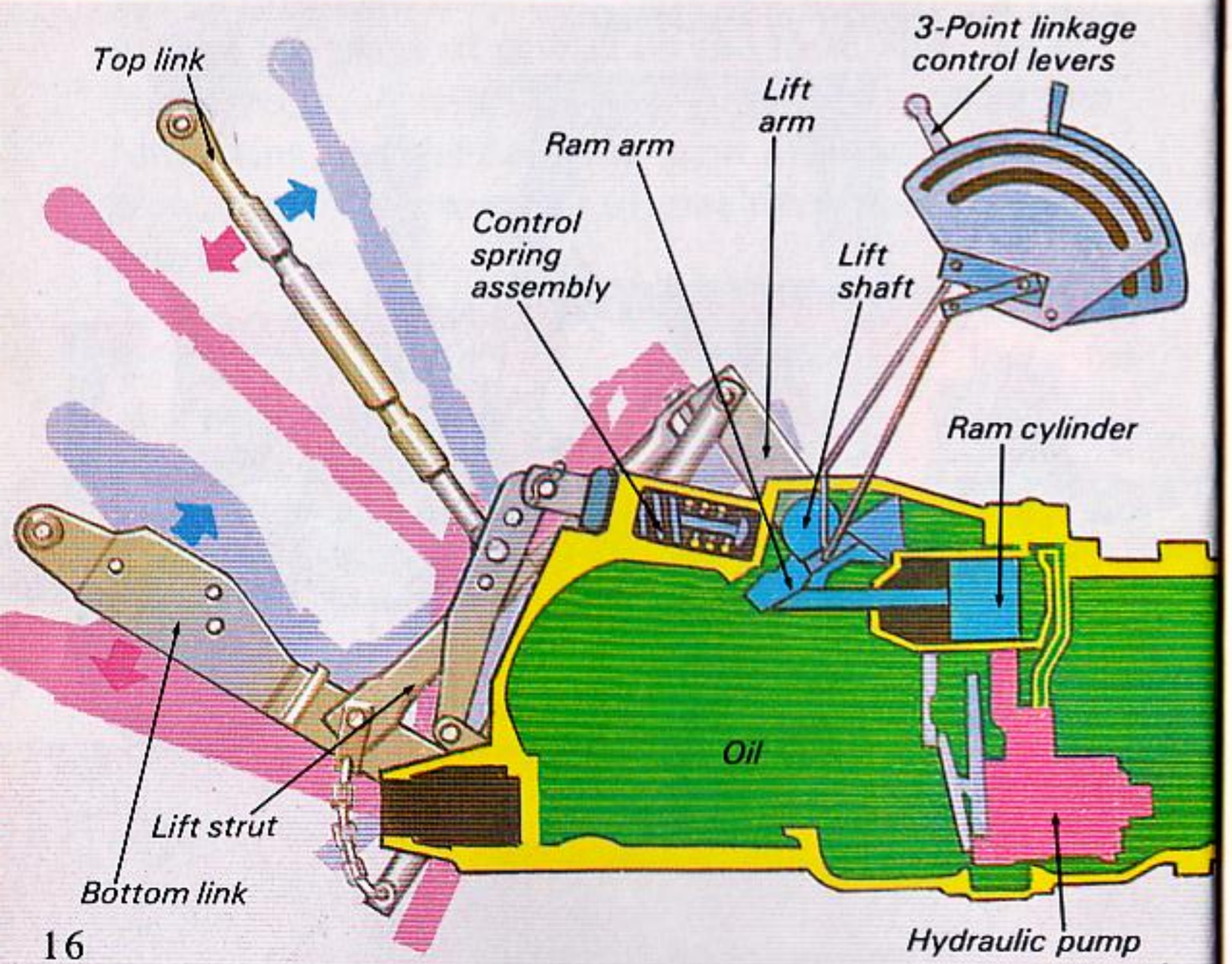
The illustration shows a post hole digger attached to the tractor being driven by the power take-off while the tractor is stationary.

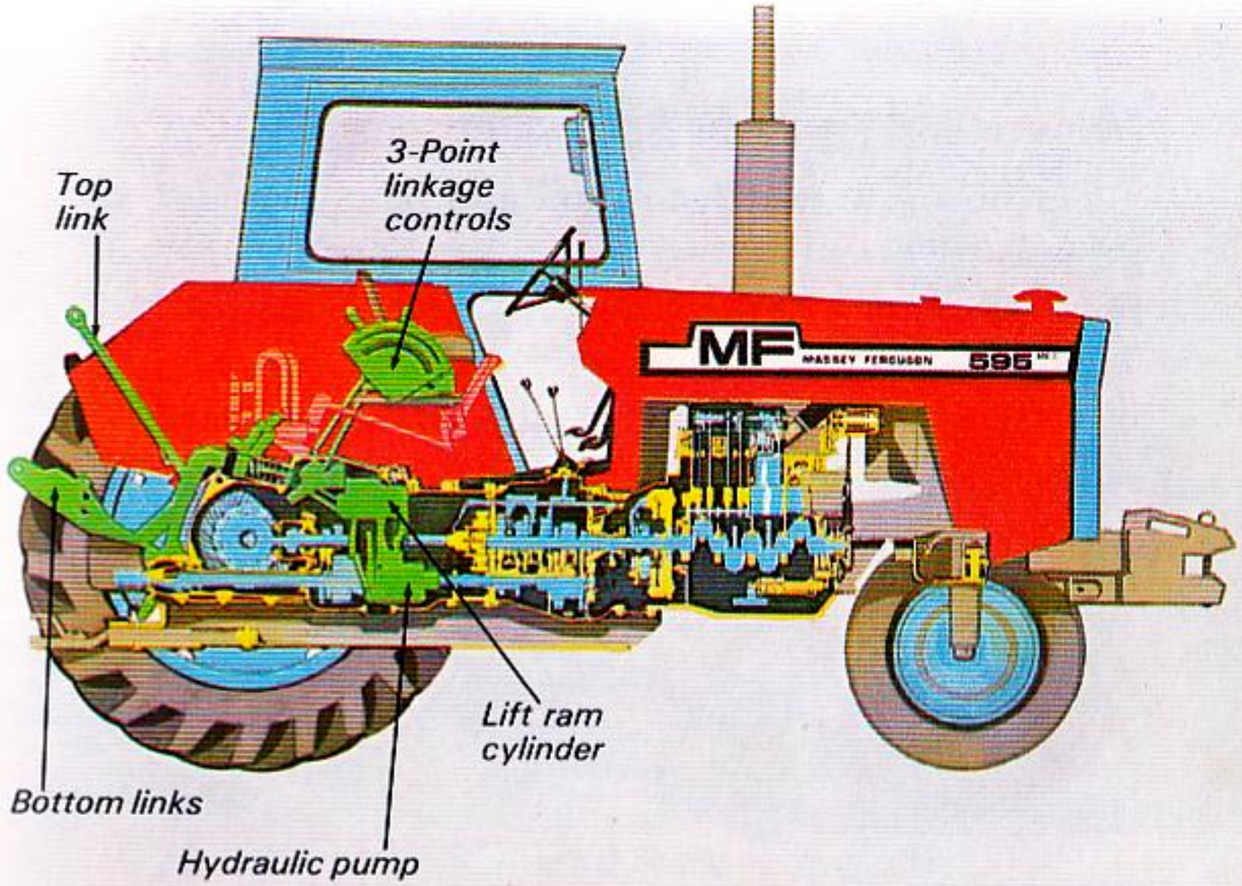


Three-point Hydraulic Lift

Several of the farming implements driven from the power take-off can be carried on the back of the tractor by a hydraulically-operated three-point linkage. A plough, for example, can be lifted off the ground, carried to the field where it is to work, lowered into its working position and the depth of furrow adjusted, all by the driver sitting in his seat and moving the appropriate lever.





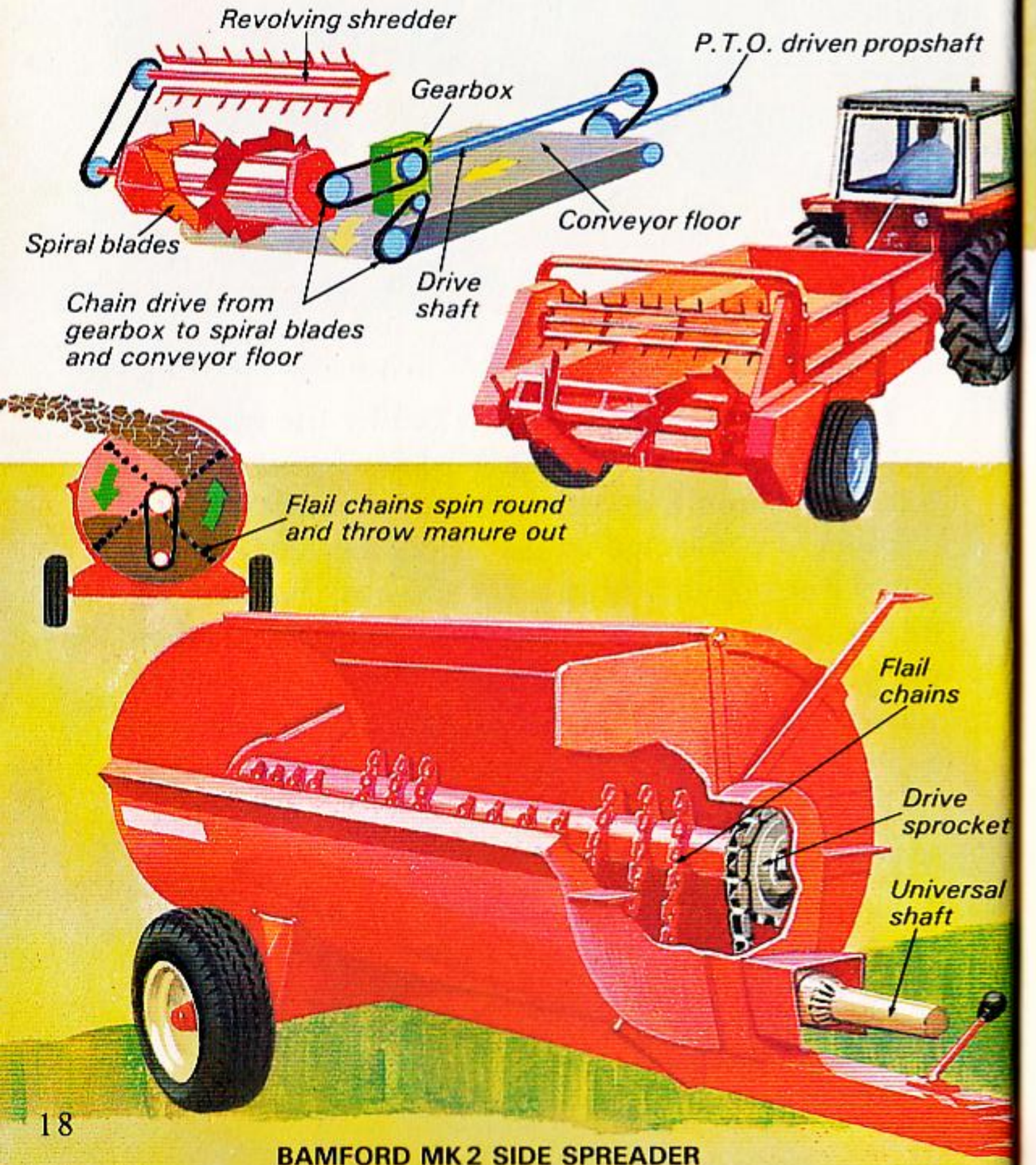


The hydraulic system is worked by the tractor's engine. It consists of a pump which forces oil from a reservoir into a cylinder. A piston inside the cylinder is connected to the lifting arms of the two lower links of the three-point linkage. Pressure of oil on the piston causes the links to lift, and when the pressure is released the links are lowered again. Valves control the flow of oil into and out of the cylinder and enable the implement being carried to be held at the required height.

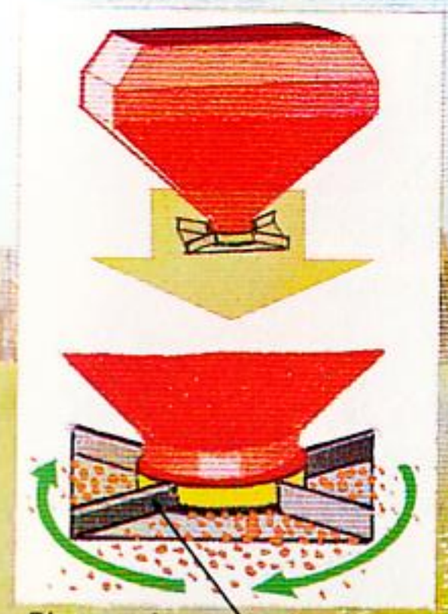
The single upper link restricts the up or down movement of the implement while it is working in the ground. It maintains the correct working depth by reacting to movements of the implement and varying the cylinder oil pressure accordingly.

Manure and Fertilizer Spreading

Fertilizing to enrich the soil and help the crops to grow is an essential part of modern farming and, here again, machinery is available to do the job. There are two main kinds of fertilizer: natural manure, and the artificial kind which is supplied to the farmer in sacks.



BAMFORD MK 2 SIDE SPREADER



M.F. II SPINNER BROADCASTER

Manure is usually spread from a specially designed trailer. The trailer floor has built into it a form of conveyor belt which is driven by the trailer wheels or the power take-off. As the machine is being towed, the conveyor moves the manure to the rear of the trailer, where revolving tines break it up into shreds. These shreds are then brought into contact with revolving blades which fling them out over the field. In this way a large area of ground can be manured in quite a short space of time.

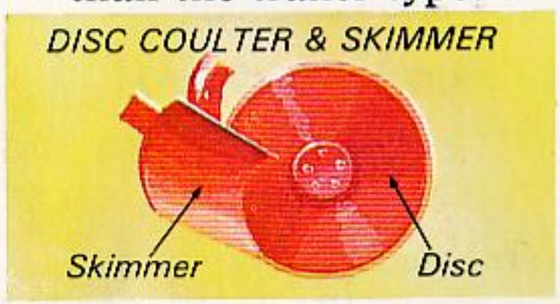
An alternative to this type of manure spreader is the side spreader, which uses flail chains to throw the manure out sideways.

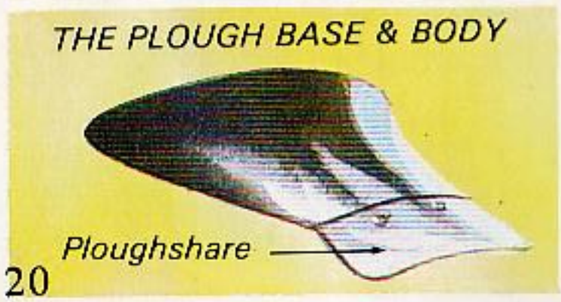
The spreading of artificial fertilizers is done by a different kind of machine. The material is usually in powder or granule form and loaded into a hopper. From there it is metered out onto the spreading mechanism.

The Plough

M.F. REVERSIBLE PLOUGH

Ploughs come in various shapes, types and sizes, but their objects are all the same – to turn the soil over in furrows and leave it exposed to the air. There are trailer ploughs towed behind a tractor, and mounted ploughs carried on the back of a tractor and operated through the three-point linkage. The latter are usually more lightly built than the trailer type.



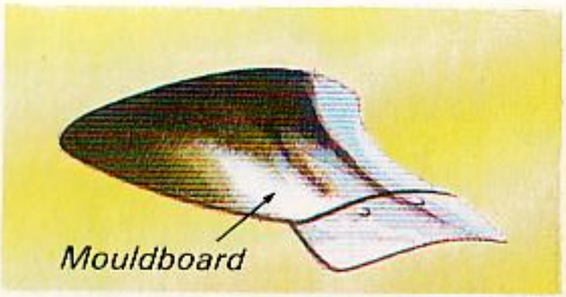


Ploughs consist of four major parts:

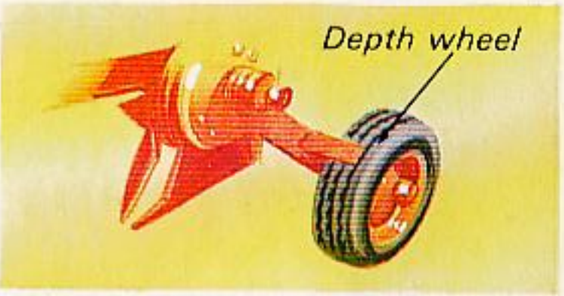
1. The Coulter. *This is really a wheel with a sharp cutting edge. It makes a vertical cut in the soil. There is one to each mouldboard and ploughshare.*

2. The Ploughshare. *Attached to the mouldboard on the main body of the plough, it slices horizontally through the soil.*

3. The Mouldboard. *A curved steel plate with a twist in it which turns the slice of soil over, leaving it upside down and forming the furrow.*

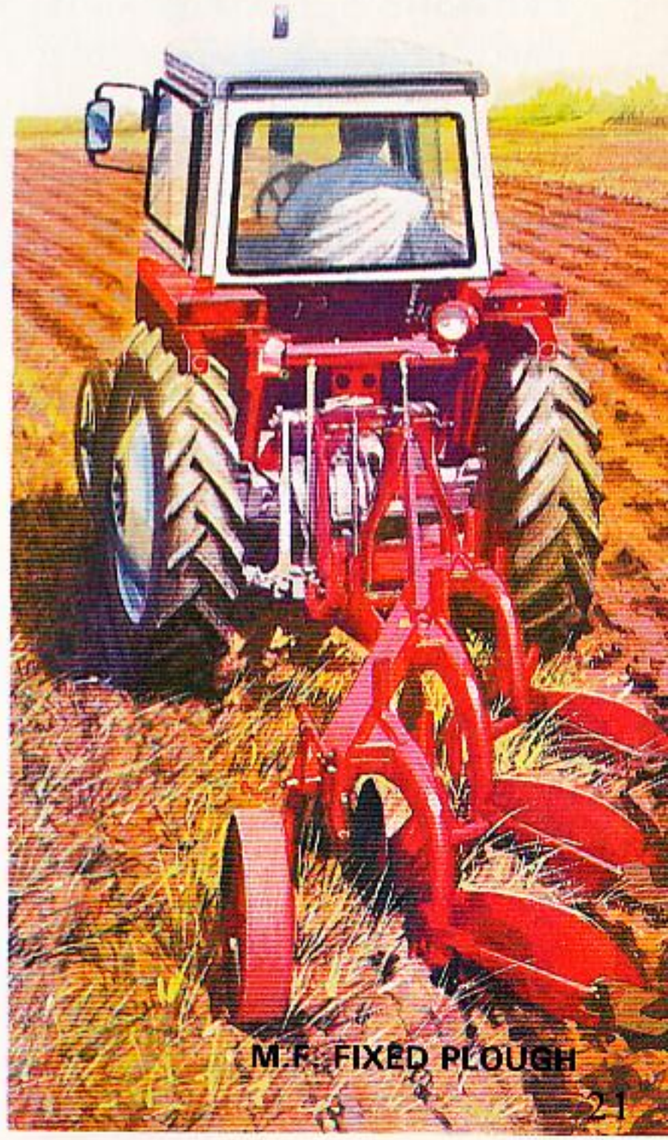


4. A wheel or wheels. *These are adjustable for height, and control the depth of furrow.*



Mouldboards vary in shape according to the ground and the type of furrow wanted. Ley boards have long, gently-curved blades and leave a smooth, unbroken furrow. At the other extreme are the short, deep digger boards which break up the furrow slice.

The reversible plough is really two ploughs, one upside down on the other. When a tractor reaches the end of a furrow, the plough attachment is turned over so that the tractor can run back alongside the furrow just completed. This saves much time.



M.F. FIXED PLOUGH

Cultivating the Land

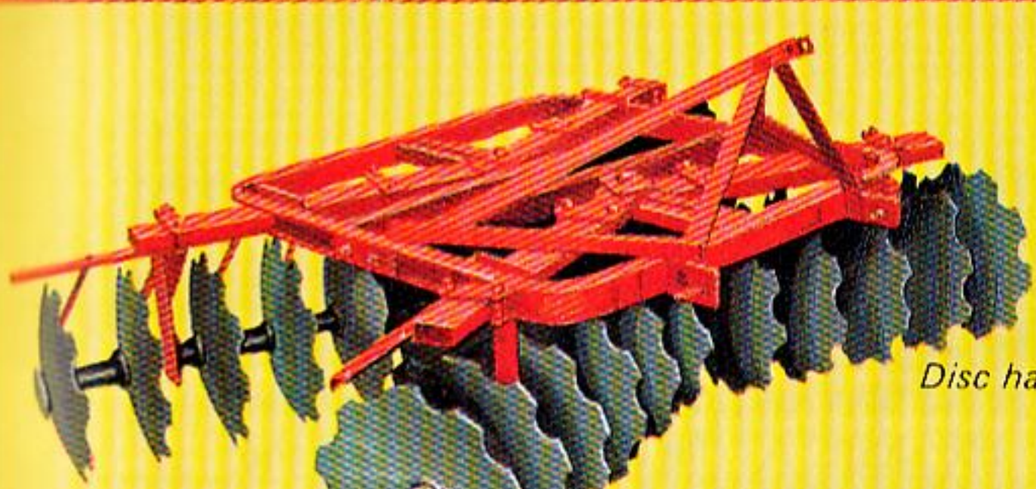
After the land has been ploughed and left open to weather, the clods of earth made by the plough must then be broken up and levelled before the crops can be planted. The machines which do this are known as cultivators and there are several kinds which can be used according to the type of soil and whether it is wet or dry.

Rotary cultivators can be power-driven by the tractor's P.T.O. or simply worked by their own movement over the ground as they are towed behind the tractor. In either case, the action of the cultivator's rotating blades breaks up the lumps of earth and produces a finer surface. There are also non-rotating cultivators consisting of rows of spikes, or tines, which are dragged through the soil to loosen it up.

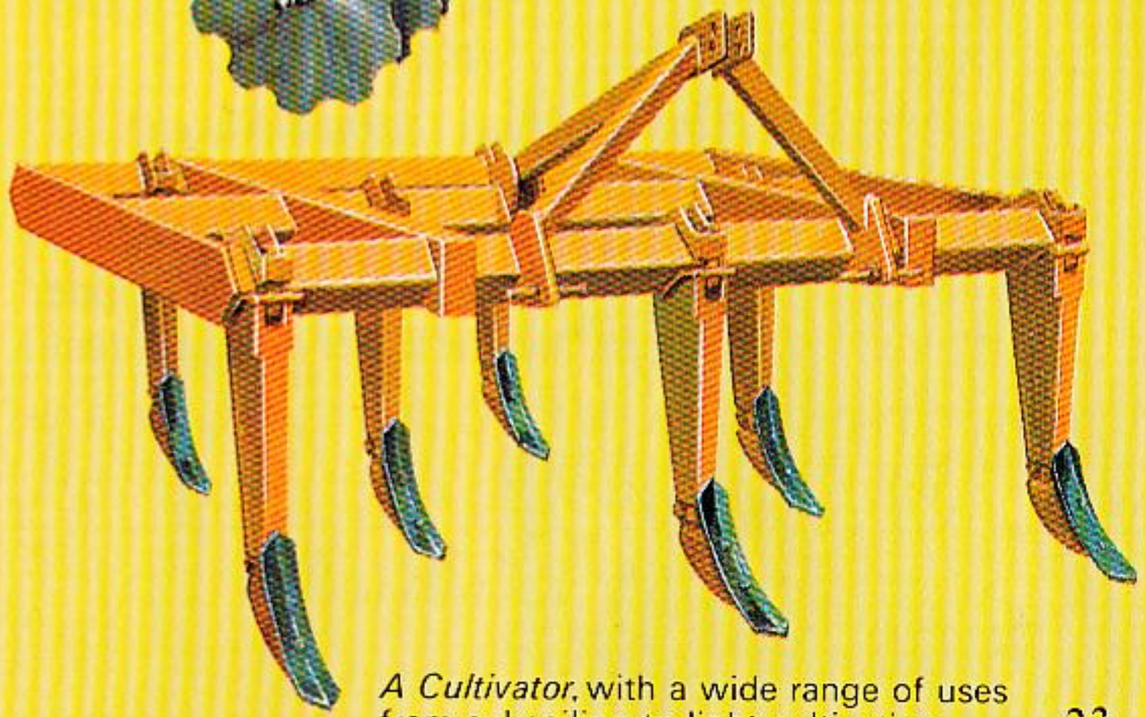
Harrows are also used for cultivating the land. The disc harrow has a series of sharpened discs sometimes mounted in two, sometimes in four rows, or gangs, one behind the other. The front row of discs chops up the soil and at the same time moves it to one side. The next row carries on the chopping and moves the soil back again. Other harrows have tines and work in a way similar to the cultivators.

See also page 40 (The tractor tool-bar).

Preparing seed bed with a rotary cultivator



Disc harrow



A Cultivator, with a wide range of uses from subsoiling to light cultivation.

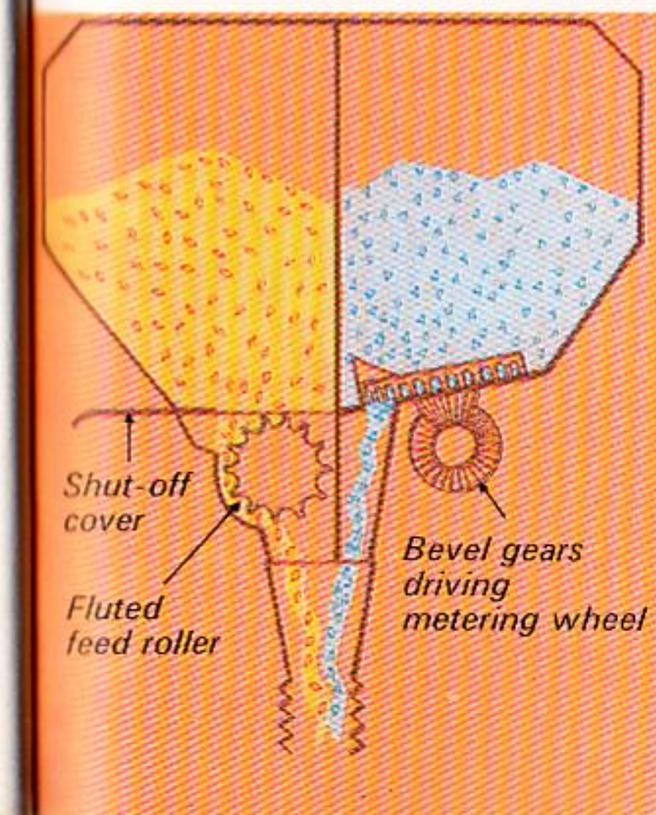
Sowing the Seed

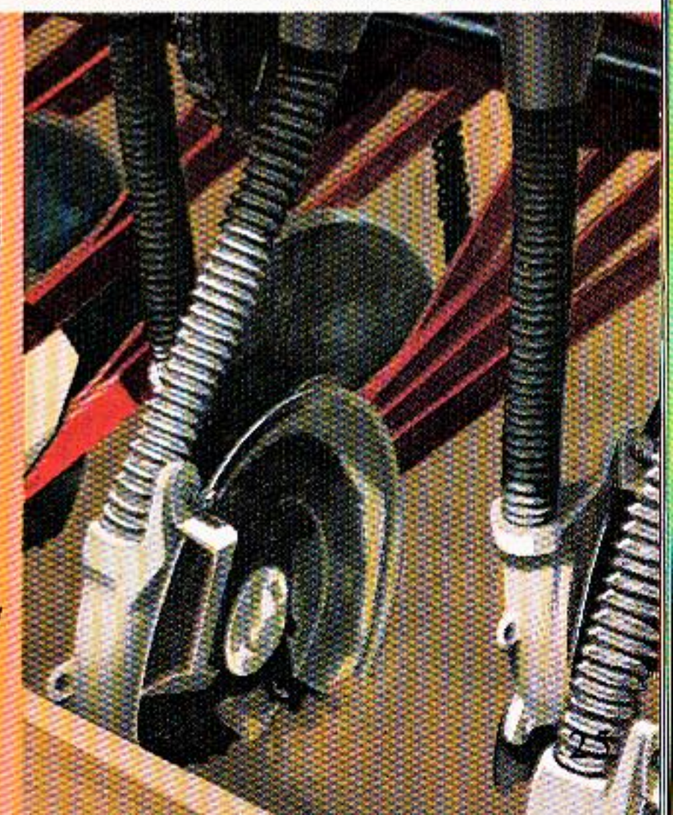
Machines are now used not only for sowing seed but also for the planting of some root crops. Seed-sowing machines are known as drills. Basically they consist of a long box, or hopper, with a land wheel at each end so that it can be towed behind a tractor. Below the hopper is a row of evenly-spaced tubes leading down toward the ground and attached to hoes, shoes or discs, at the lower end. The seed is loaded into the hopper, fed down the tubes from which it drops into grooves cut into the soil by the coulters. It is later covered over by a harrow or a roller.

To make sure that the right amount of seed is fed into the tubes, a metering system is introduced into the hopper and worked by a geared shaft driven by the land wheels. One type of metering unit consists of a large number of tiny cups attached to discs fitted to the shaft. As the discs rotate with the rotating land wheels, the seed is picked up by the cups which then drop it down the tubes.

Another type of meter uses toothed wheels instead of cups, the seed running between the teeth into the tubes. In this design a small amount of fertilizer can be dropped with the seed, the hopper being divided into seed and fertilizer compartments.

(Above) Loading fertilizer into a combined grain and fertilizer drill.
(Below right) Detail of delivery tubes and coulters.





The Combine Harvester

The combine harvester is a mobile threshing machine combined with a reaping mechanism, and it has replaced the reaper and standing threshers which were a common sight on farms years ago.

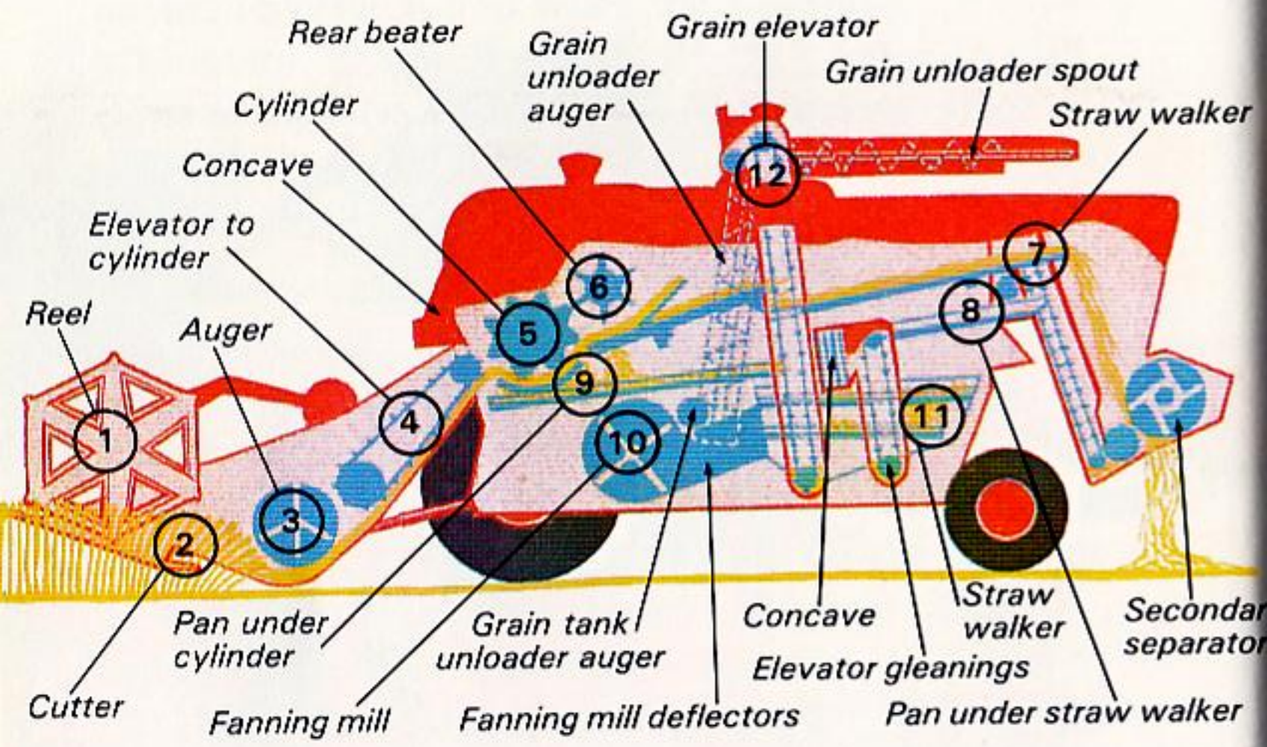
There are three basic kinds of combine, the most interesting being the self-propelled type with its own engine to drive it and work the threshing machinery. Other types rely on the tractor to pull them along, the machinery being worked either through the tractor's power take-off or by a separate engine.

Combines can also be divided into Bagger or Tank models. In Bagger Combines, the threshed grain is put into bags which are sealed by tying and then dropped to the ground through a chute. Most modern machines have grain tanks which can be emptied into a trailer towed alongside the combine, or parked in a suitable place in the field. This type – the Tanker Combine – uses less men and is, therefore, more labour-saving, but it is only suitable for farms with bulk grain storage facilities.

The combine harvester has a cutter bar at the front, rather like a long series of garden shears. This clips off the crop stems near the ground. Revolving wooden or metal arms, slightly reminiscent of a paddle wheel, and known as a reel, push the stems toward the cutter and make sure that they fall on to a moving conveyor belt with their heads all pointing in the same direction.

How the Combine Harvester Works

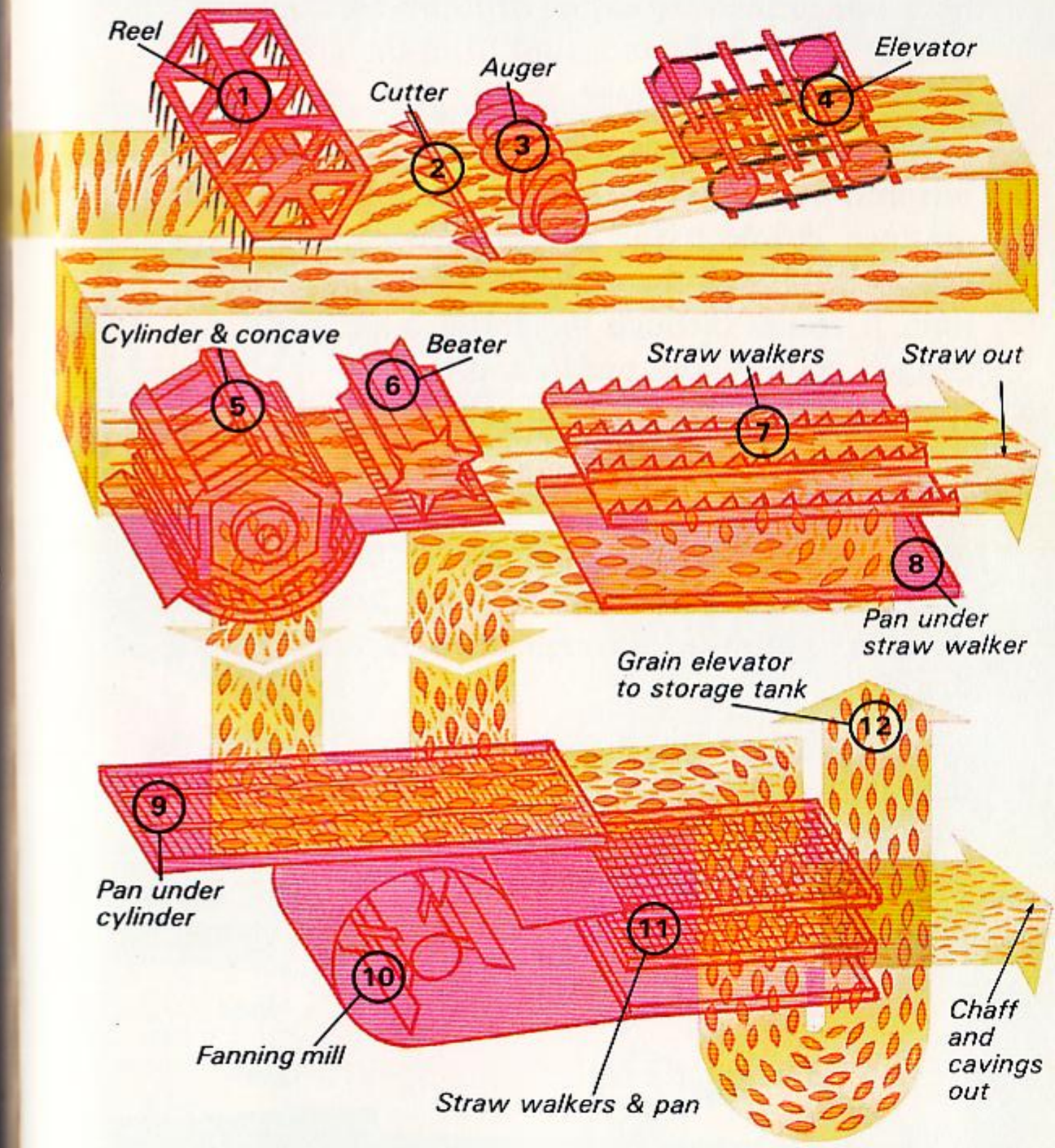
The crops are carried up the conveyor to a drum fitted with beater bars, which is revolving within a concave metal grating. Here most of the grain is separated from the stems. The grain thus separated falls through the concave to a lower grain pan, while the stems – or straw, as it now is – and



remaining grains pass on to a vibrating slatted platform, known as a straw walker. Here the grain is separated from the straw by a tossing action. The straw now passes out of the machine, while the grain, chaff and cavings (small bits of straw) join the originally separated grain in the pan below.

The next stage is a vibrating sieve which detaches the cavings from the mixture and lets them pass out

of the machine. Chaff and grain continue onto another series of sieves. One of these holds the chaff, which is blown out of the thresher by a fan; another separates the grain from the dust and weed seeds which have been mixed up with it. The grain is then graded over screens of different sizes.



Drying the Grain

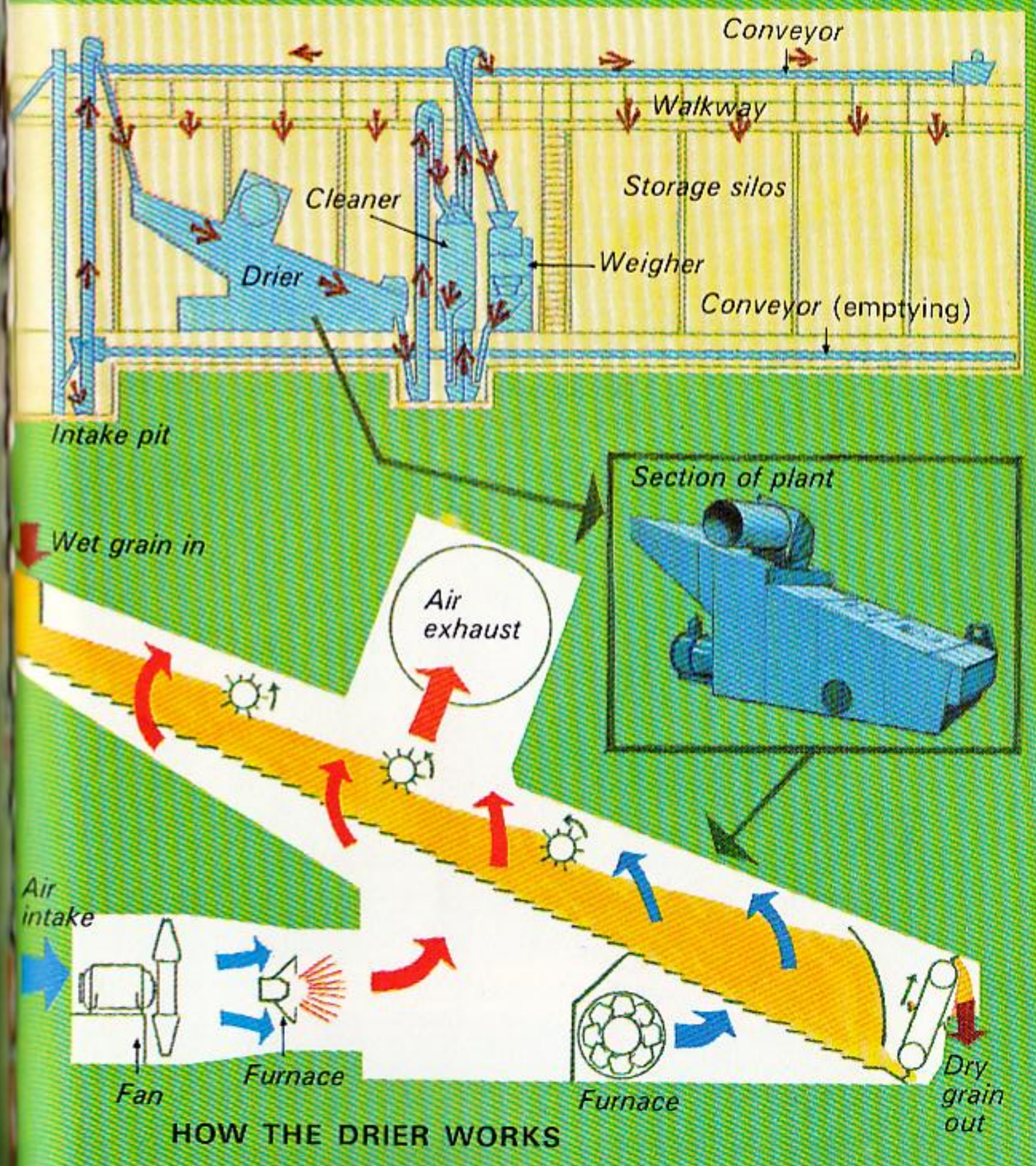
Grain brought in from the fields after harvesting usually contains far too much moisture, even though some drying may have taken place. If it is stored in this damp condition it would be spoiled either by going mouldy or by generating its own heat and fermenting. It is therefore necessary to extract most of the moisture from the grain either before or during storage.

A platform drier is used for grain that has been put into bags. It consists of a concrete floor with gratings let into it and air ducts beneath. Warm air is blown through the ducts by a fan and heater unit. It comes through the gratings and dries the bagged grain placed on the top.

Loose grain can be dried while it is being stored, in a ventilated silo drier. This is a large tank, or silo, with a ventilated floor through which warm air can be directed to the grain above. The lower portion of the stored grain is dried first, the warm air moving upward through the bulk until it is all dry.

In another and more expensive type of drier, the damp grain is passed through a series of drying and cooling tanks before being passed out of the machine for storing or using.

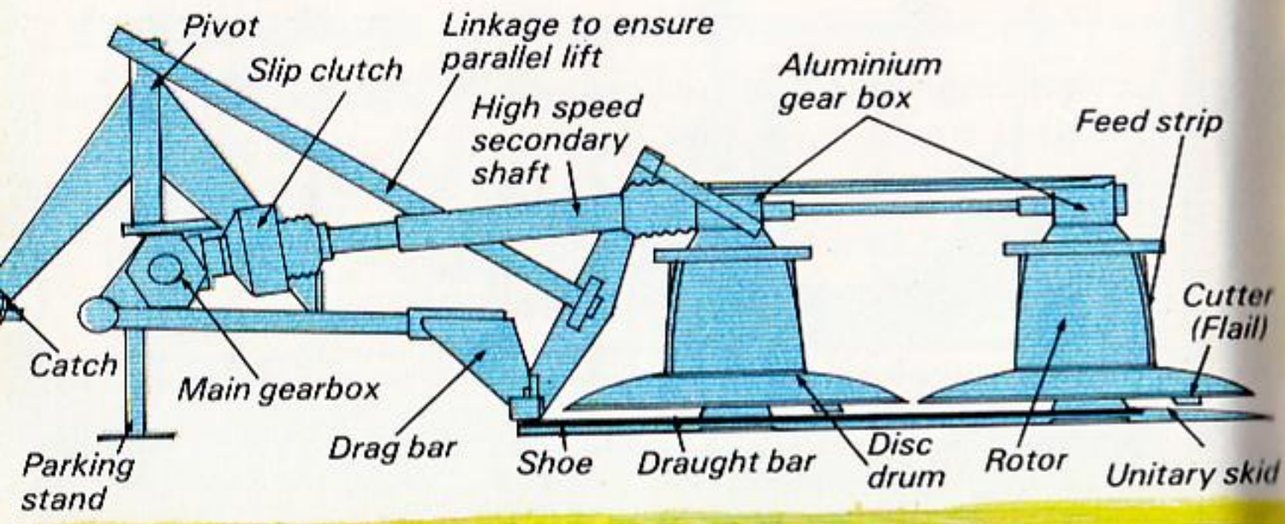
GRAIN DRYING AND STORAGE PLANT

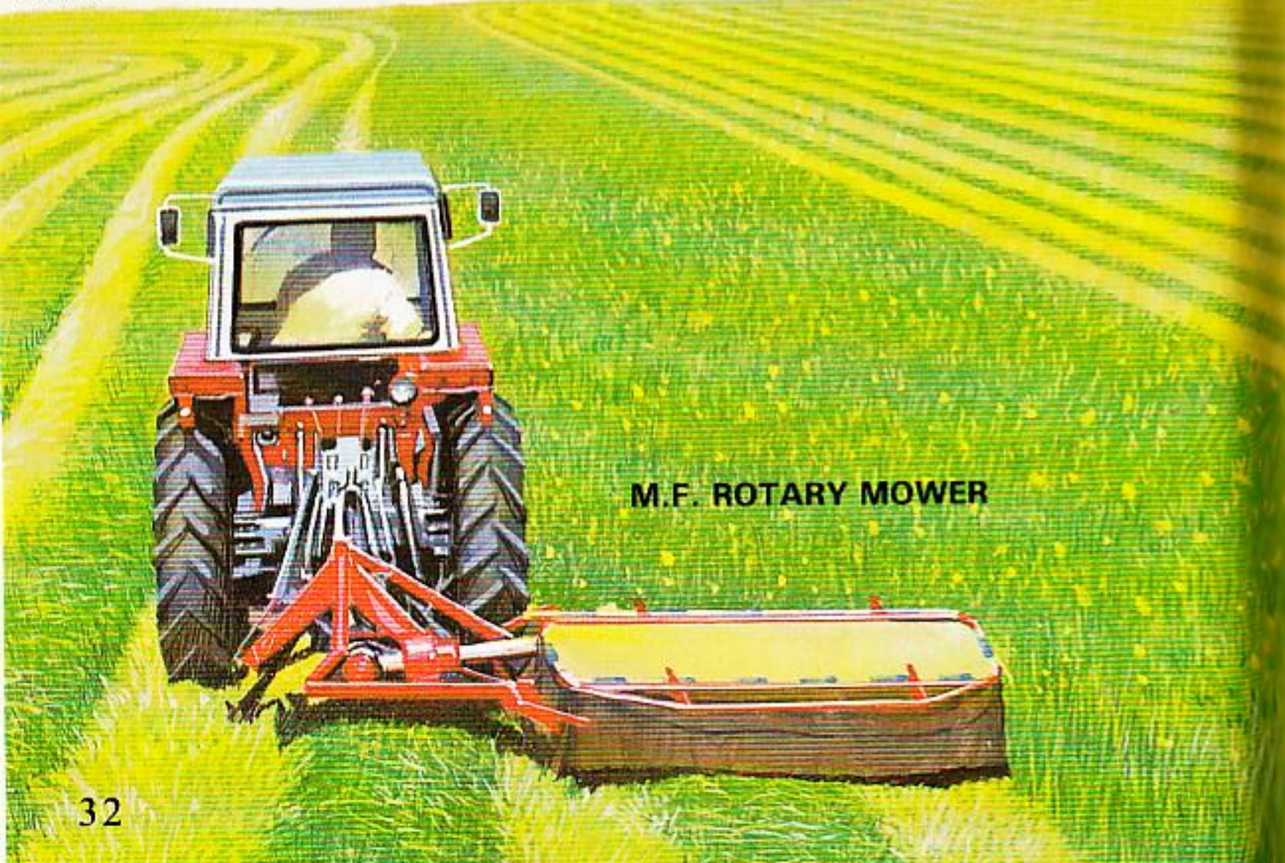


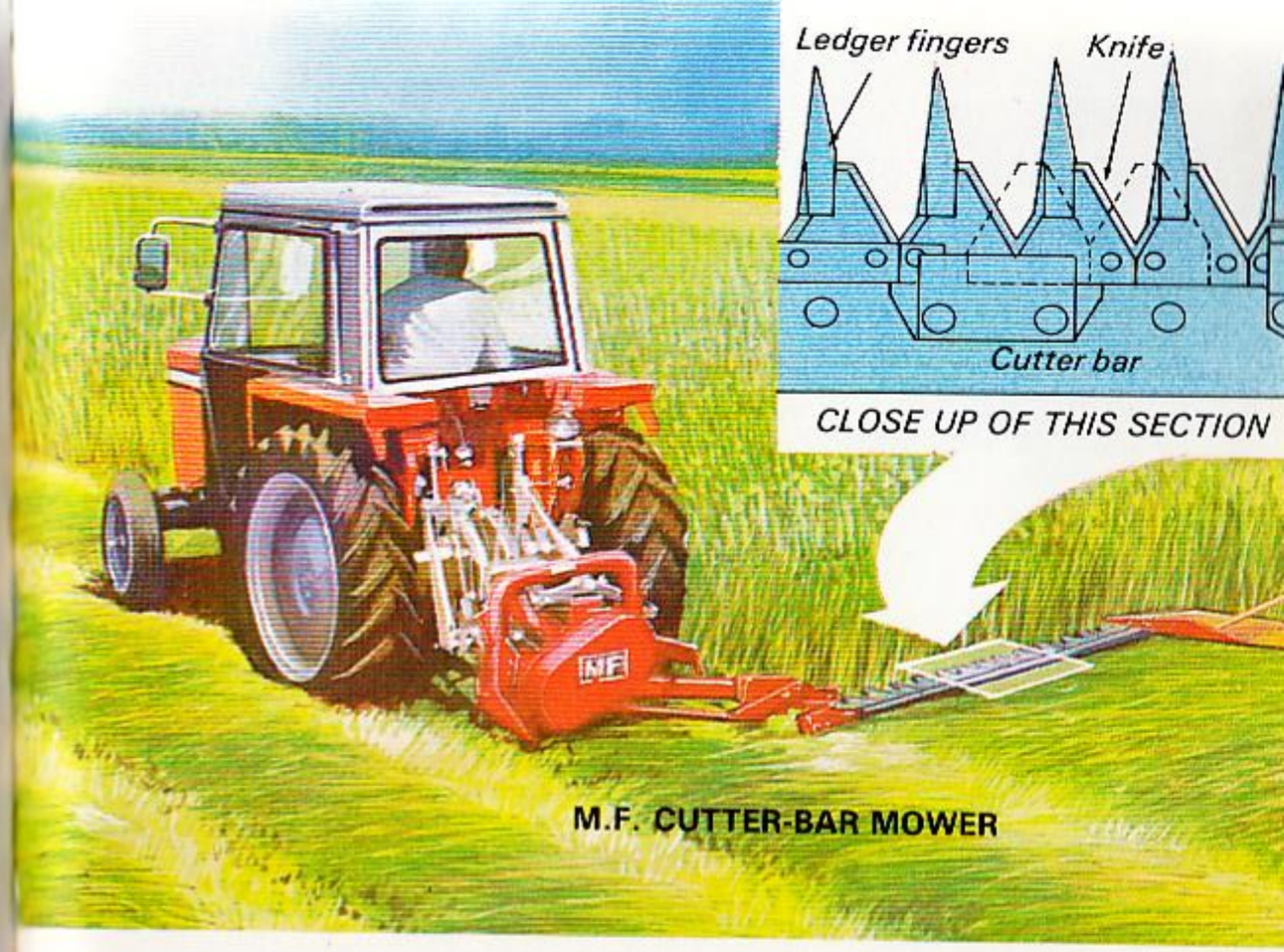
HOW THE DRIER WORKS

Haymaking

Not very many years ago, haymaking was a very popular farming operation in which children and their parents helped to collect the new-mown hay and load it onto horse-drawn carts. The cartloads were taken away and built into haystacks. The same general operations are carried out today – but by machinery. Before the hay can be collected by a





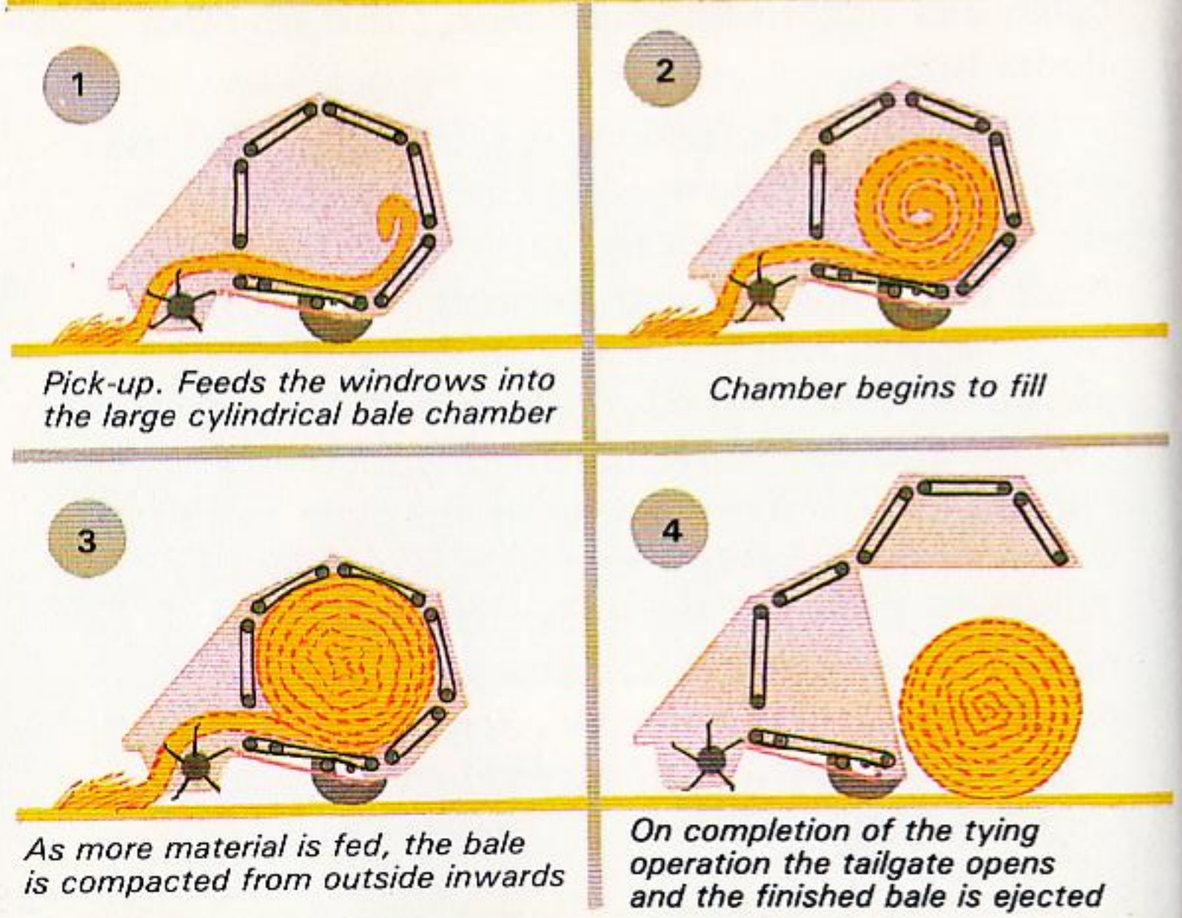


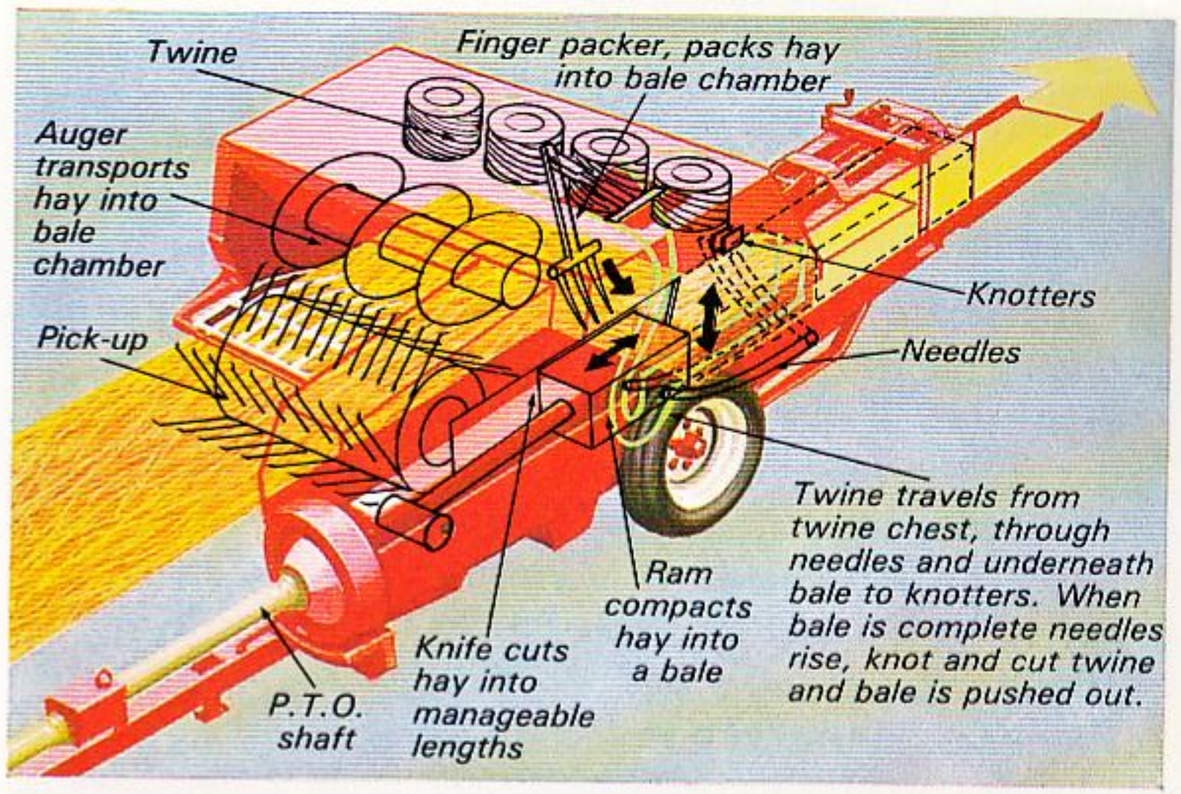
baler, and stacked by an elevator, there are other things to do.

The object of haymaking is to dry grass that has previously been mown so that its moisture content can be reduced. The grass is still often dried in the fields where it is cut, and there are various types of machines which help the process along. The machines are too varied to describe in detail, but they have to do one or more of the following operations: *Tedding* – loosening the grass by lifting it and letting it fall to the ground again. *Swathe-Turning* – a row, or swathe, of mown grass is moved to one side and turned upside-down so that the air can dry the underside. *Spreading* – the grass is spread out over the whole field in a thin layer.

Balers

The object of baling is to collect the hay crop as it lies in the field and pack it into tightly-compressed cubes, or bales, which can be easily transported and stored in stacks. The machine for doing this work is the Baler, the most popular of which is the pick-up, self-tying type.





Briefly, the crop is lifted by a pick-up unit which extends outward from the main body of the machine and faces the direction of travel. Above the pick-up fingers is a revolving auger, which works on the same principle as the revolving part of a kitchen mincer, and conveys the loose hay sideways into the main bale chamber. A knife cuts the hay into manageable portions and a ram, operated by a crank and connecting rod at about 60-80 strokes per minute, compresses the cut portions into the ram chamber. A complete bale is actually made up of a number of slices about three inches thick. Special knotting devices then wrap lengths of twine round each bale and tie it before the bale is ejected onto the ground.

The cylindrical baler shown here is now in common use. The baling operation is faster and the bales more weather-proof, but they are so heavy that they require mechanical handling.

Forage Harvesting

An important job on the farm is the production of animal foodstuffs, or forage.

There are various types of forage machinery, but one of the most commonly used is the Flail Harvester. This is towed behind a tractor and mainly consists of a rotating spindle to which are attached a series of curved, free-swinging flails. It is also provided with a delivery chute. The spindle is driven by the tractor power take-off via a small gearbox and a pulley belt. As the spindle rotates, the flails cut the crop with a thrashing action, forcing it past a metal plate which chops it into smaller pieces. The plate can be adjusted to vary the size of the pieces, as required.

The thrashing action of the flails and the draught of air caused by their speed of rotation are sufficient to push the forage up the delivery chute and out into a waiting trailer.

Forage is usually fed to cattle in the farm buildings during winter months, but can also be taken into the fields or stored in a pit or a tower, known as a silo, where it ferments to produce silage.

Silage pit

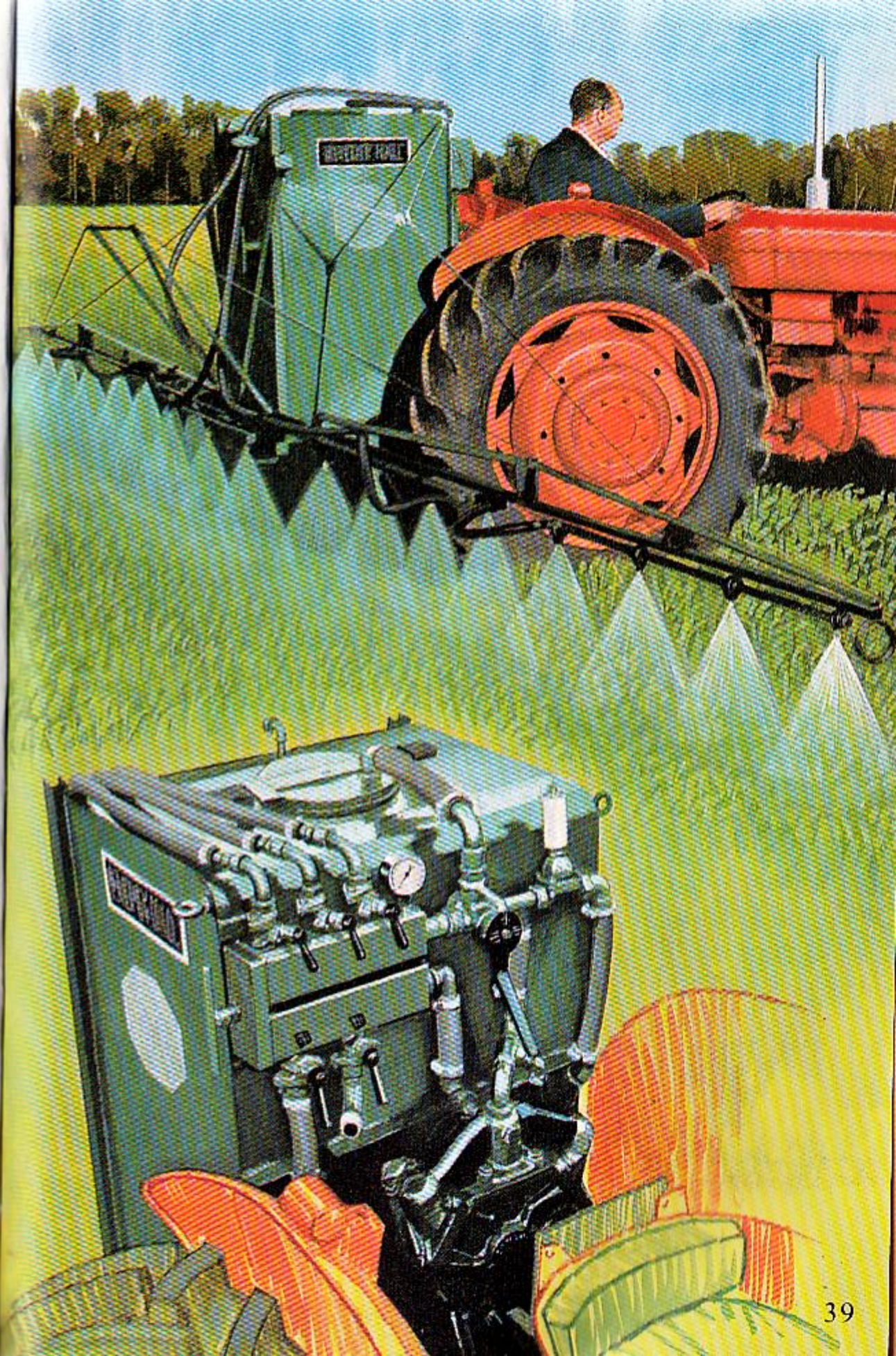
Tower silos

Crop Spraying

Many crops are subject to attack by insects which can cause widespread damage. Weeds are another problem the farmer often has to deal with. In recent years, various chemical substances have been developed and these can be dissolved or dispersed in water and sprayed over the crops. For very large areas, aircraft are sometimes used in the spraying operation, but normally the equipment can be attached to a tractor or trailer.

The chief components of a crop sprayer comprise a liquid storage tank, pump, filters, valves and a row of nozzles fitted to a long boom. Spray material is drawn from the tank by the pump which is driven from the tractor's power take-off. It is then passed through filters and control valves to the nozzles which spray it downward onto the crop. The nozzle boom can be adjusted for height and should always be set so that the cones of spray from each nozzle just meet at the top of the crop. If the boom is too low the spray will miss out parts of the crop, whilst too much height will cause the cones to overlap and so waste valuable spray material.

Tractor speed and nozzle jet pressure are also important factors in the efficient spraying of the crop.



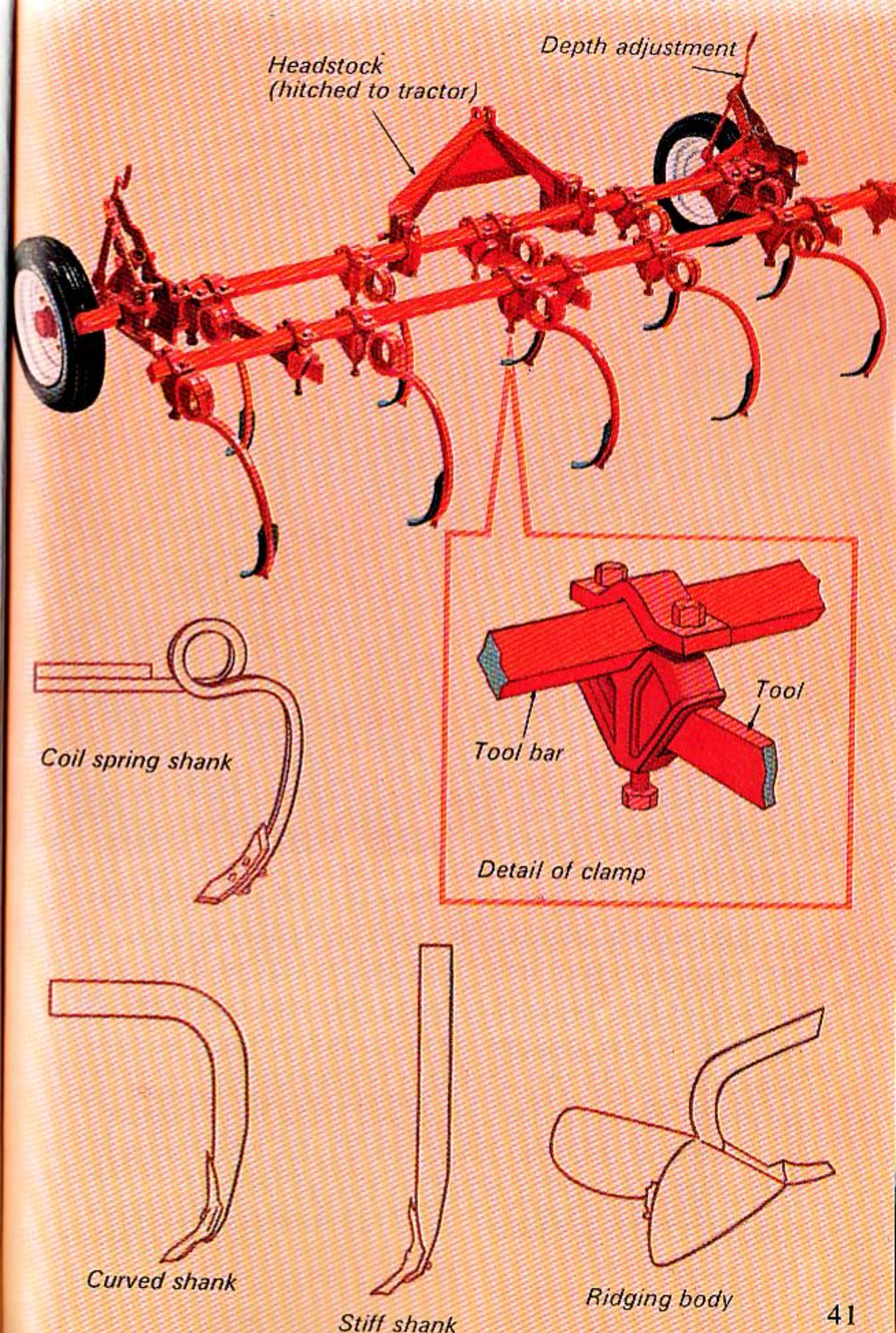
The Tractor Tool Bar

We have seen how the tractor is involved to some degree in nearly every operation we have so far covered. It has still more uses.

Some crops, like potatoes and sugar-beet, have to be planted in widely-spaced rows leaving room between for the use of cultivating, fertilizing and harvesting tools. As the tools have to work several rows at a time, they must be correctly spaced. This is done by means of a Tool Bar, provided with clamps and mounted on the tractor, which allows tools to be spaced to the required row widths.

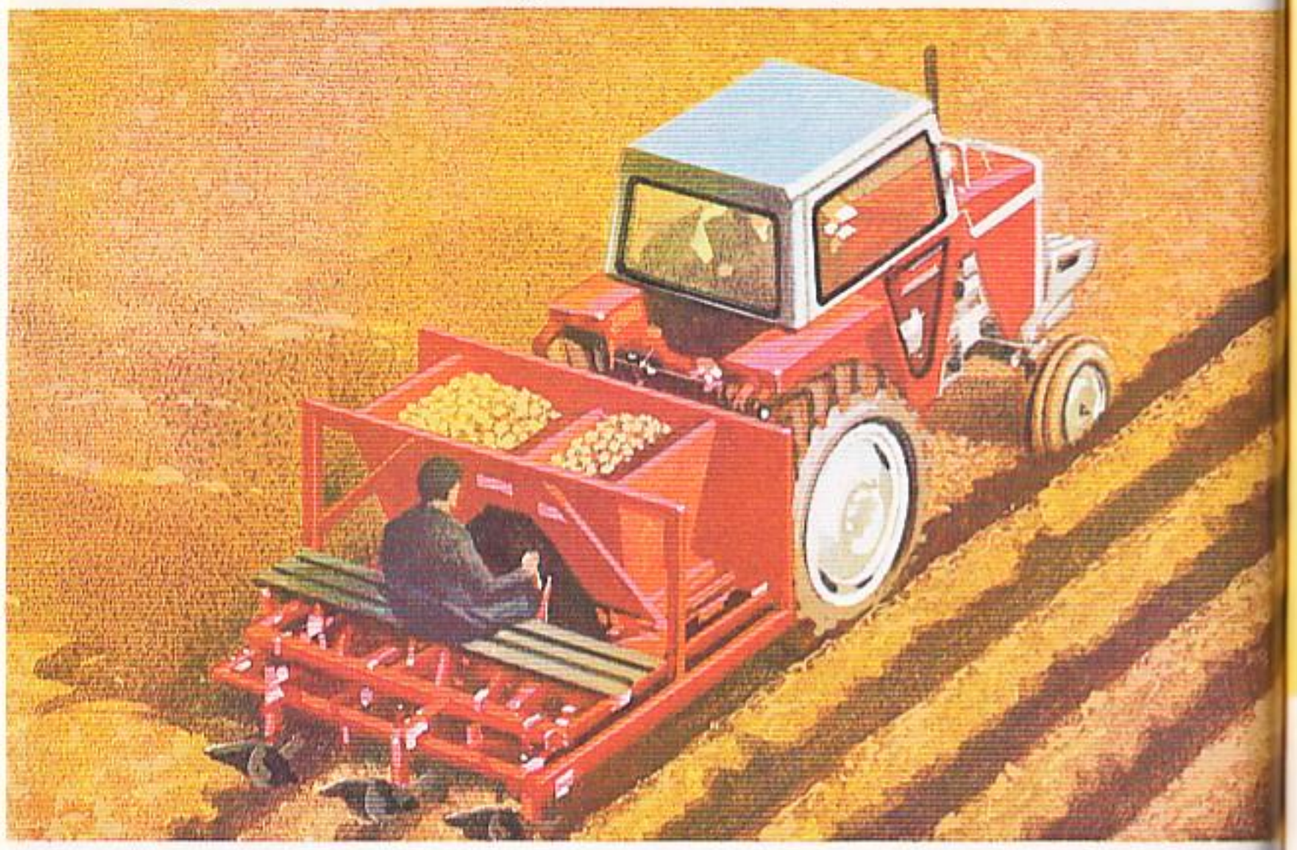
The tool bar can be mounted under the centre of certain types of tractor, at the front or at the back. Each position has its advantages and its drawbacks, but the rear-mounted bar is most often used because, as we know, the tractor has to do a great many jobs and the bar is more easily and quickly fitted or detached from this position.

Tool spacing on the tool bar has to be carefully done to make sure that the tractor wheels and the cultivating implements run *between* the rows of crops and do not damage them.

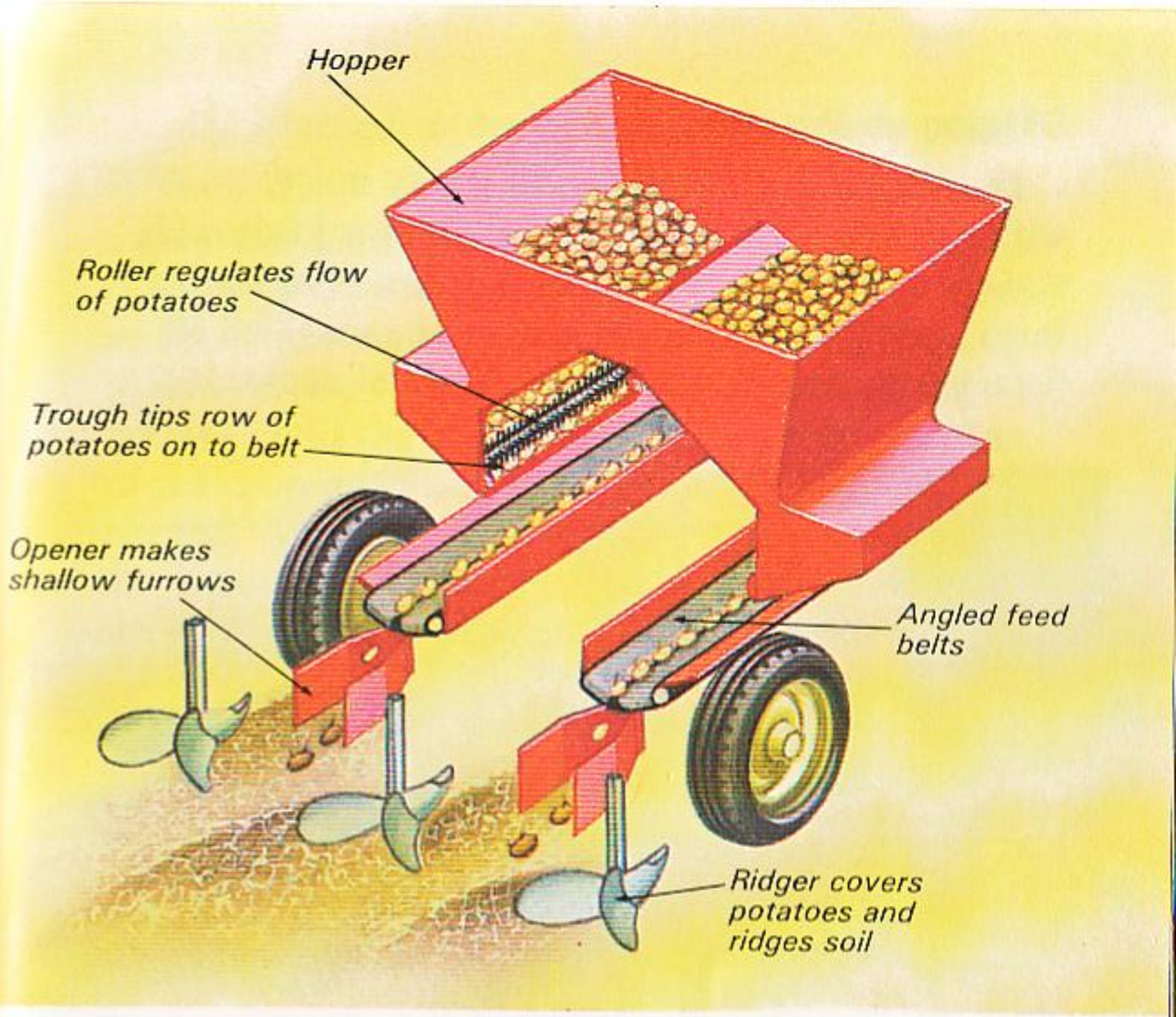


Planting Potatoes

Of all the root crops that are grown, potatoes must be the best known and most widely consumed. For this reason we will take potato planters and diggers as our examples of root crop machinery.



There are three types of potato planting machines:
1. **The manual planter** (worked by hand), is mounted on a tool bar fitted to the rear of a tractor. It has hoppers to carry the seed potatoes, delivery chutes, digging coulters and ridging attachments. As the tractor is driven slowly forward, the potatoes are picked from the hoppers by hand and dropped down the chutes every time a bell rings. The bell is timed to ensure correct spacing of the potatoes. They fall into grooves cut



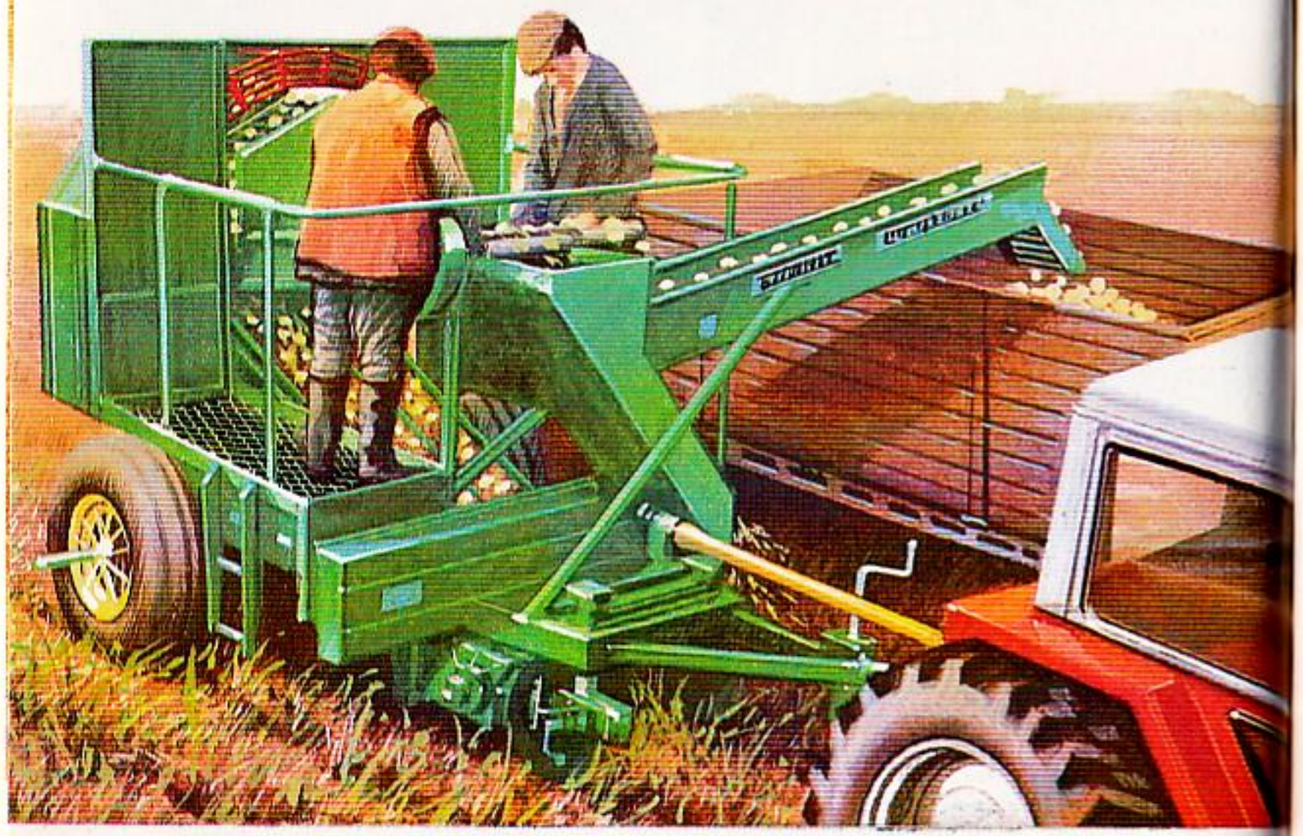
by the coulters and the ridging attachments cover them over.

2. **The manually-assisted planter** puts the potatoes one at a time into little compartments in a vertical, revolving wheel. As the wheel revolves, the potatoes are tipped down the chutes from each compartment in turn. This is easier and quicker than dropping the potatoes down the chutes by hand.

3. **The automatic planter** does the same operation as the other two types but has a device which selects automatically one potato at a time from each hopper and directs it to the appropriate delivery chute.

Digging up Potatoes

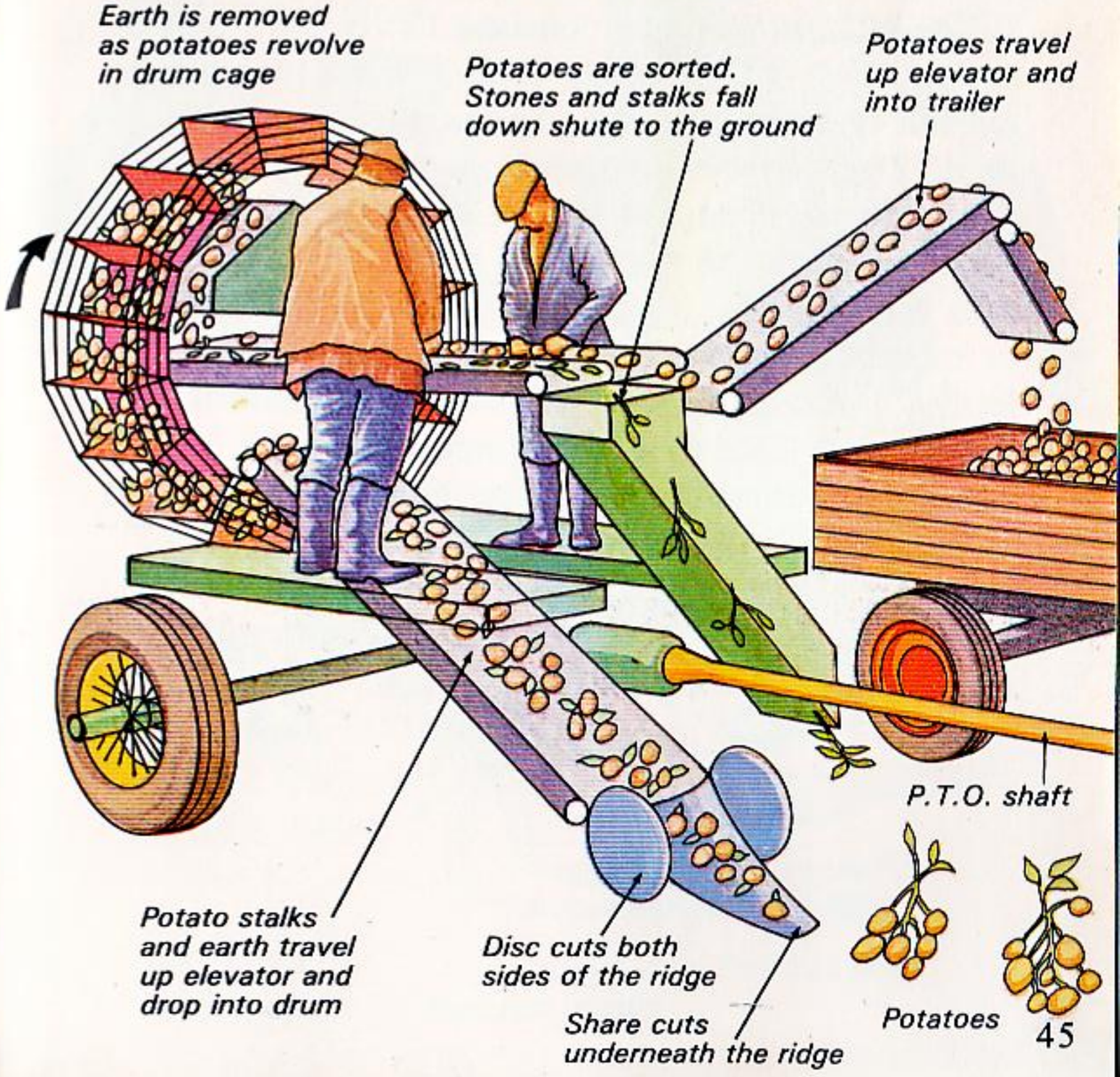
Digging up potatoes is another job that is done with the help of a tractor and there is a fairly wide variety of equipment that can be used. The size of farm, type of soil and the cost of the machine all have an important bearing on the final choice.



A common type of potato digger is known as a Spinner. It is mounted on the tractor's hydraulic linkage and uses a share, or a disc, which digs under the potatoes and loosens the soil around them. A series of long tines make up the actual spinner. This is driven by the tractor's power take-off and as it spins at right-angles to the line of travel, the tines scatter the potatoes to one side ready for collecting by hand. A metal screen is

usually attached to the equipment to prevent the potatoes being scattered too far and wide.

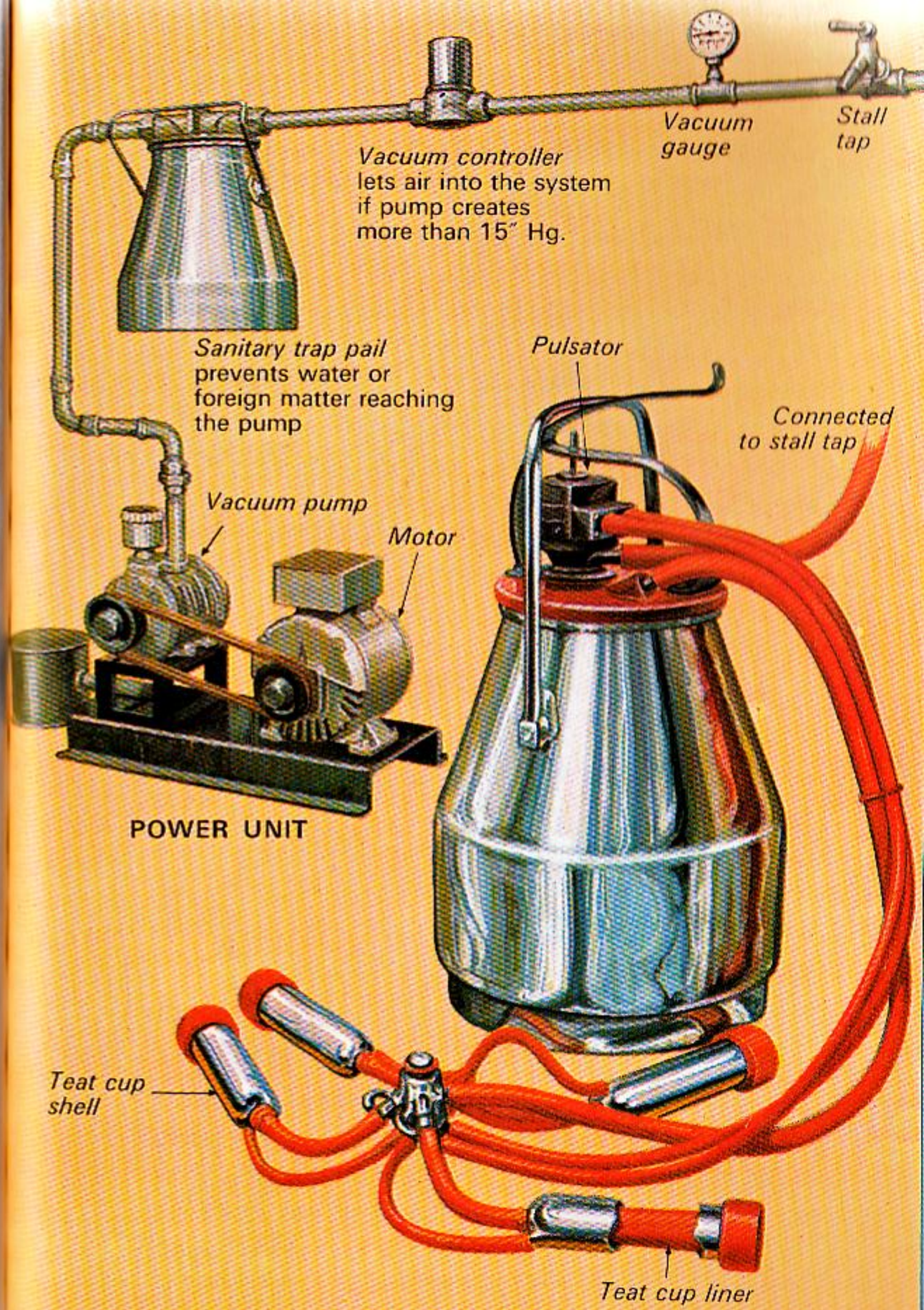
Another kind of machine for harvesting potatoes is the Elevator. In this type the potatoes and loose soil are lifted onto a vibrating elevator belt which shakes off the loose earth before depositing the potatoes into the trailer. This makes the collection of the crop much easier and fewer pickers are needed. A special version – the 'digger elevator', known as a Complete Harvester, delivers the crop through a chute directly into a waiting trailer.



Milking Machines

Except on very small farms with herds of a dozen animals or less, all milking today is done by machines. These are cleverly-designed devices for extracting milk from the cows by a process which resembles as closely as possible the sucking action of a calf. The action actually consists of three separate parts; sucking, squeezing and pulling. The machine reproduces the sucking and squeezing, while the pulling is simply provided by the weight of the equipment hanging from the cow's teats.

The milking machine consists, firstly, of a power supply. This will normally be an electric motor but a small internal combustion engine is sometimes used. Then there is a *vacuum pump* whose object is to remove air from the system, and a *pulsator* which controls the removal of the air and the intake of a fresh supply. It works with a rhythmic pulsing or breathing action, withdrawing air from, or letting it into, the *teat cup assembly* attached to the cow's teats. Each teat cup comprises a metal outer case fitted with an inner rubber liner, there being an airtight joint between the two at the top and bottom of the cup. The space between the rubber liner and metal case forms a chamber with an outlet tube leading to the pulsator.



How the Milking Machine Works

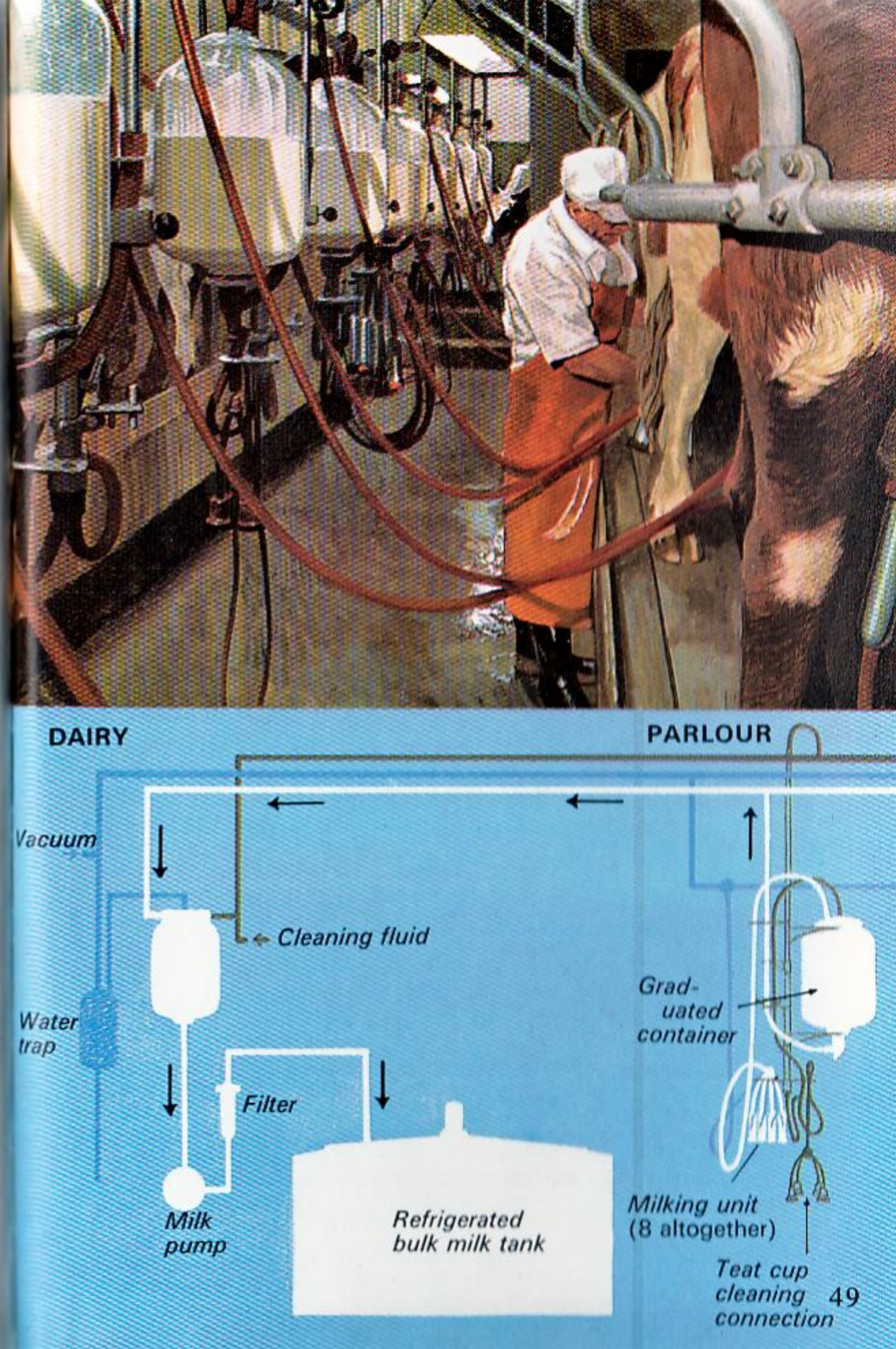
The vacuum pump is set in motion and then the teat cups are attached to the cow's teats.

Suction is applied to the cups by withdrawing air from the cup chamber. This creates a partial vacuum in the cup and produces the sucking action that draws milk from the teat. The milk flows through the connecting tube and into a stainless steel bucket placed on the floor. But constant sucking applied to a cow's teats in this way will cause injury and suffering to the animal, so the suction is rhythmically interrupted by a gentle squeezing motion. This is applied when the pulsator allows more air to enter the teat cup chamber. Because of the vacuum inside the liner, the rubber collapses inwards, puts a light pressure on the cow's teat and so stops the flow of milk.

The alternate sucking and squeezing, or pulsating process continues smoothly and regularly while the milking operation is in progress, producing the milk in a series of squirts each time the suction is applied. The normal rate is between forty and sixty pulsations a minute.

When milking is complete, the bucket is weighed and the milk yield of each cow is noted.

We have described a single milking unit for the sake of simplicity, but on large farms many units can be interconnected by a pipe-line system, which enables several cows to be milked at the same time.



Other Machinery

We have seen how some of the most useful and interesting kinds of farm machinery work. Of course, there are others we have not mentioned, like mixers for mixing animal food, hedge trimmers and mowers, all worked from the tractor's power take-off.

Our study of farm machinery began with the tractor, and during the course of this book you might have thought its uses would have been exhausted. But this is not so, and we end with two more items of equipment which rely on the tractor for their operation.

Apart from the actual growing of crops and the rearing of animals, the farmer can do much important work on his land. He can clear ditches or dig new ones with a Ditching Plough, or excavate a silage pit using an Earth Scoop. He can almost remould his land, removing hummocks and pushing the soil from one place to another by means of a Dozer Blade. In winter he can clear snow by the same means. The tractor provides the transport and the power for both these applications. It is also a fact that a Land-Rover can do many of the jobs a tractor can do, and there are few farms in Britain without at least one.

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