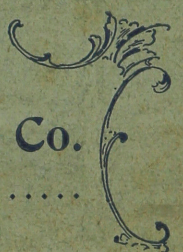
.....Special...Catalogue...and

.....Price...List...of...

Spray Pumps...



R. McDougall & Co.

.....GALT, ONTARIO.....

...1896=97...

1896=97

Spray Pumps and Nozzles

For Every Service

Special Catalogue AND Price List

R. McDOUGALL & Co.

. . . Manufacturers of . . .

All Classes of IRON and BRASS PUMPS

GALT, Ontario

OUR OBJECT.

The subject of spraying fruit trees and small fruits has been so thoroughly discussed and written up in all its details and different phases in fruit growing Periodicals and Agricultural Journals, coupled with the fact that every fruit growing district has its own Experimental Station, Agricultural Society or College, from which documents and bulletins are issued free to its residents on application, giving results of its experiments in different formulas for all kinds of insects and trees in the most approved and scientific manner, containing complete information, describing the different insects, the formula to use and how and when to apply it, thus establishing the fact that **spraying does pay and is necessary to insure crops.**

The next questions are: What are the best methods of spraying and who manufactures the best Spray-Pumps and Nozzles.

To assist the Public in arriving at a speedy and satisfactory solution of the problem, we offer in the following pages a few general remarks concerning the fungus diseases and fungicides, insects and insecticides, and complete descriptions of the best spraying outfits in the market, together with a "spraying calendar," describing the best remedies and the methods of preparing and applying them.

FUNGUS DISEASES OF PLANTS.

Nearly every plant is subject to the attacks of microscopic foes known as Fungi. These are plants also, differing from those upon which they live in that they are not able to obtain their food from the soil and air. Hence they must find it elsewhere, and to utilize it they must find it already prepared. Thus, while our crops are drawing from the air and soil the necessary elements for their food, the fungus parasites are stealing this food for their own use. As a result the parts attacked are diseased, and such diseases we designate by the names of blight, rot, mildew, etc.

On account of the microscopic size of many fungi and the fact that only their effects are seen, many erroneous ideas prevail in regard to them. Thus, our grapes may be apparently healthy, a rain comes, and in the short space of two or three days half of the fruit will be rotten. The grape-grower immediately concludes that the rot was due to the weather, and in this he is partially right, for the weather plays an important part in the matter. If, however, with seeing power magnified two or three hundred fold, he could have examined the fruit before the rain, he would have found upon it thousands of spores, or "seed," of the rot fungus. These spores, or "seed," might have fallen on the fruit days before; in any case, they would certainly be found there, only waiting the proper conditions of moisture and heat to germinate, enter the tissues of the fruit and produce rot. All fungi are provided with spores, by means of which they are rapidly propagated. These spores in some cases live over winter in the old leaves and fruit; in others they hibernate in the soil under the bark and in similar places. Scientific investigations have shown that many of the fungi pass through several stages before reaching maturity. It is important to be familiar with every possible detail bearing on this question, to wage a successful war against these foes. Our suggestions are based upon a knowledge of the life history of each fungus. Thus in the treatment of black-rot of the grape, it is advised to make the first treatment when the leaves are one-third grown. Painstaking laboratory investigations have shown that at this time the spores from the old grapes which rotted the previous year are everywhere in the air, and the object of spraying is to destroy them before they can infect the leaves.

The treatments are preventive, not curative; therefore, we cannot too strongly urge the importance of beginning the work in time.

INSECTS AFFECTING PLANTS.

In the case of insects we have something more tangible to deal with, and most people know that the principal damage is done by these foes in an attempt to obtain their food. To save our crops from destruction we must either kill or drive away their enemy, which can only be done after a careful study of their habits.

FUNGICIDES.

This term is used to designate all substances known to prevent, check or retard the development of fungi. There are already a large number of these substances, and more are being discovered every day. For our purpose it will suffice to describe only the more important solutions, powders, etc., leaving out entirely all those that have not been thoroughly tested. The fungicides now most generally used in Canada are : Bordeaux mixture, ammoniacal solution of copper carbonate and copper sulphate solution.

INSECTICIDES.

Insecticides are the substances used for the destruction of insects. As in the case of fungicides, thousands of preparations have from time to time been recommended for work of this kind. The really valuable ones, however, can be counted on one's fingers. They are as follows: Paris green, London purple, kerosene emulsion and hellebore.

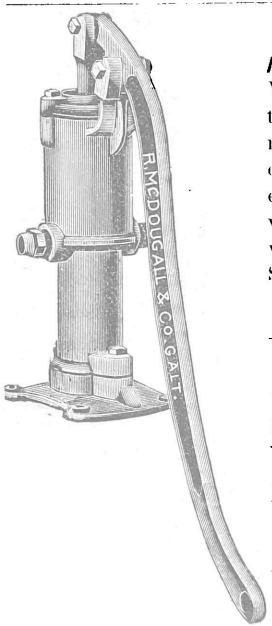


Fig. 201.

Fig. 201 represents our ***STAR DOUBLE ACTING SPRAY PUMP*** with Brass Lined Cylinder, Brass Chamber and Plunger and Brass Valve Seat. The upper differential plunger has one-half the displacement of the lower working plunger which insures uniform discharge and pressure at nozzle. Pump has large air chamber reservoir and is capable of giving effective service. As shown in engraving, it has new style Base adapted for either head or side of barrel. It has double discharges cut for $\frac{3}{4}$" pipe, but when ordered without hose or nozzles we plug one opening and fit the other with brass bushing and $\frac{1}{2}$ inch coupling for hose. We also supply Brass Suction Strainer.

FIG. 201, SIZES, PRICES, ETC.

Pump only.	Dia. Cyl. $2\frac{1}{2}$" Pipe.	Suction 1" Pipe.	Double Discharge $\frac{1}{2}$" Hose.	Brass Lined. — — $0.00.
OUTFIT A For Single Spray.	Fig. 201 with $2\frac{1}{2}$ feet of 1" pipe, Brass Strainer, and one lead of 10 ft., $\frac{1}{2}$" discharge hose, with McGowan or other spray nozzle.			$13.00.
OUTFIT B For Double Spray.	Fig. 201 with $2\frac{1}{2}$ ft. of 1" pipe, Brass Strainer and two leads of 10 ft. each, $\frac{1}{2}$" discharge hose, with McGowan or other spray nozzles.			$16.00.
OUTFIT C Single Spray and Agitator.	Fig. 201 with $2\frac{1}{2}$ ft. of 1" pipe, Brass Strainer, one lead of 10 ft. $\frac{1}{2}$" discharge hose, with McGowan or other spray nozzle, and 4 ft. iron pipe or hose for agitator returning to barrel.			$14.50.

All Spray Pumps are Brass Lined and have Brass Plungers, Piston Rods and Valves.

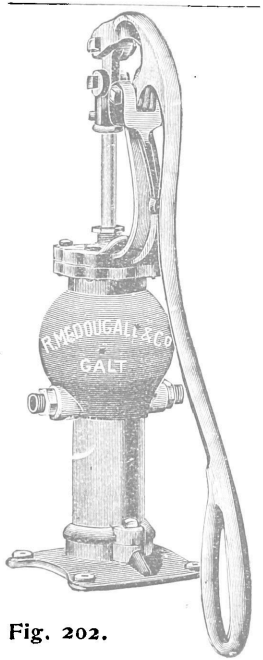


Fig. 202.

Fig. 202 represents another of our Standard Spray Pumps, having Brass Lined Cylinder, Brass Plunger and Piston Rod, and Brass Valve Seats. It is designed as a substantial, easy working Pump, and has all the requirements of an article which will prove satisfactory to the user. We use our new and improved Base on this, as well as our other Spray Pumps, and the base will fit on either the end or side of barrel. The same agitating apparatus may also be used as specified previously. We can confidently recommend this Pump.

PUMP ONLY	DIA. CYL. 3 INCH.	SUCTION, 1¼ IN. PIPE.	DOUBLE DISCHARGE ½ IN. HOSE.	BRASS LINED. $10.00
OUTFIT A FOR SINGLE SPRAY.	Fig. 202 with 2½ ft. of 1¼ in. pipe, Brass Strainer, and one lead of 10 ft., ½ in. discharge hose, with McGowan or other spray nozzle.			14.00
OUTFIT B FOR DOUBLE SPRAY.	Fig. 202 with 2½ ft. of 1¼ in. pipe, Brass Strainer, and two leads of 10 ft. each, ½ in. discharge hose, with McGowan or other spray nozzles.			17.00
OUTFIT C SINGLE SPRAY AND AGITATOR.	Fig. 201 with 2½ ft. of 1¼ in. pipe, Brass Strainer, one lead of 10 ft., ½ in. discharge hose, with McGowan or other spray nozzle, and 4 ft. iron pipe or hose for agitator, returning to barrel.			15.50

All Spray Pumps are Brass Lined and have Brass Plungers, Piston Rods, Valves and Valve Seats.

Fig. 203.

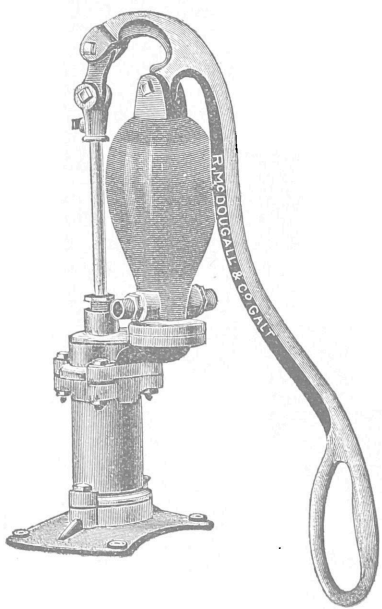


Fig. 203 represents one of our well known Spray Pumps with our improved base which is common to all our Pumps. This Pump is also Brass Lined, has Brass Plunger, Piston Rod and Valve Seats. It is fitted substantially as our other lines and from the popularity of this article in past seasons together with the improvements now made we look forward to a renewal of the confidence of users of spraying outfits.

PUMP ONLY	DIAM. CYL. 3"	SUCTION 1¼" PIPE.	DOUBLE DISCHARGE ½" HOSE.	BRASS LINED. $10.00
OUTFIT A FOR SINGLE SPRAY.	Fig. 203 with 2½' of 1¼" pipe, Brass Strainer and 1 Lead of 10', ½" Discharge Hose with McGowan or other Spray Nozzle.			14.00
OUTFIT B FOR DOUBLE SPRAY.	Fig. 203 with 2½' of 1¼" pipe Brass Strainer, and two Leads of 10' each, ½" Discharge Hose with McGowan or other Spray Nozzles.			17.00
OUTFIT C SINGLE SPRAY AND AGITATOR	Fig. 203 with 2½' of 1¼" pipe, Brass Strainer, one Lead of 10', ½" Discharge Hose, with McGowan or other Spray Nozzle, and 4' Iron Pipe or Hose for agitator, returning to barrel.			15.50

All Spray Pumps are Brass Lined and have Brass Plungers, Piston Rods, Valves, and Valve Seats.

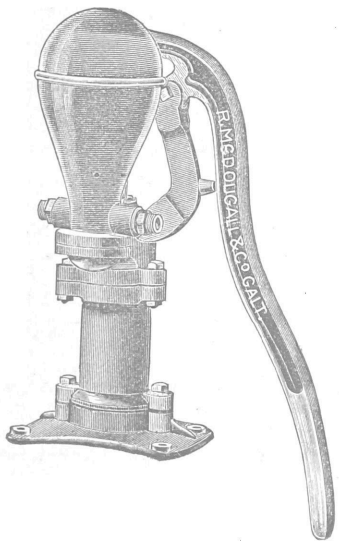


FIG. 204.

Fig. 204 represents another of our Spray Pumps with our improved Base, etc. We have reason to believe that there are more of this class of pumps in use at the present time than all others combined It has large air chamber capaci y, is low down, and with our present equipment of Brass Lined Cylinder, Brass Plunger, Piston Rod and Valve Seats, it must continue to occupy the same position in the market as it has done heretofore. This Pump is equipped with our Improved Base, for use either on head or side of barrel, and agitating attachment is made exactly the same as on other styles already described.

PUMP ONLY.	DIAM. CYL. 3 INCH.	SUCTION, 1¼ IN. PIPE.	DOUBLE DISCHARGE, ½ IN. HOSE.	BRASS LINED. $10.00
OUTFIT A FOR SINGLE SPRAY.	Fig. 204 with 2½ ft. of 1¼ in. pipe, Brass Strainer, and one lead of 10 ft., ½ in. discharge hose, with McGowan or other spray nozzle.			14.00
OUTFIT B FOR DOUBLE SPRAY.	Fig. 204 with 2½ ft. of 1¼ in. pipe, Brass Strainer, and two leads of 10 ft. each, ½ in. discharge hose, with McGowan or other spray nozzle.			17.00
OUTFIT C SINGLE SPRAY AND AGITATOR.	Fig. 204 with 2½ ft. of 1¼ in. pipe, Brass Strainer, one lead of 10 ft., ½ in. discharge hose with McGowan or other spray nozzle, and 4 ft. iron pipe or hose for agitator, returning to barrel.			15.50

All Spray Pumps are Brass Lined and have Brass Plungers, Piston Rods, Valves and Valve Seats.

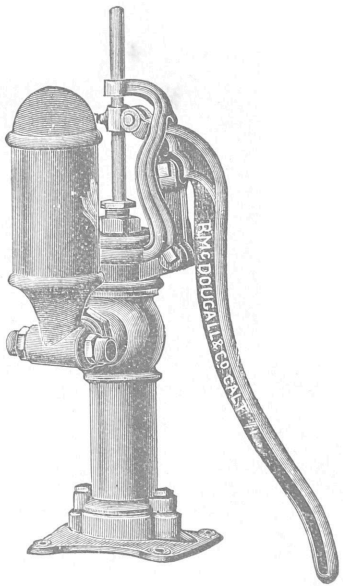


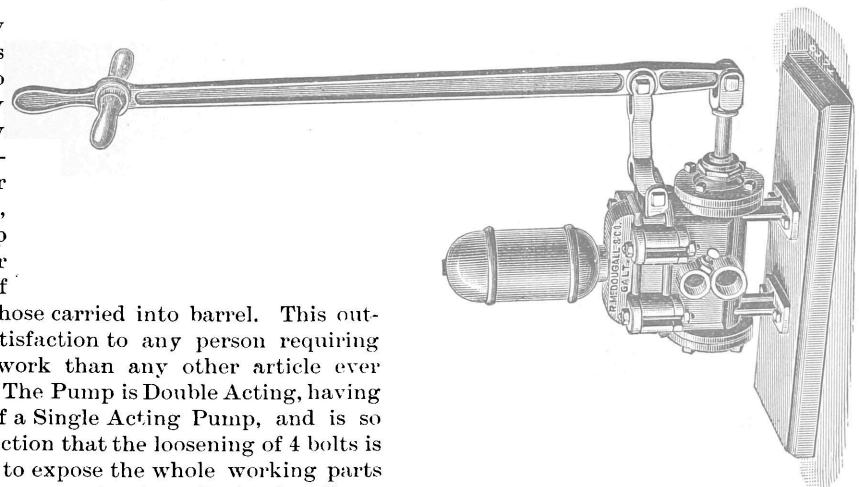
FIG. 205.

Fig. 205 shows our smallest and lightest Spray Pump, but one which is very effective and will prove of sufficient capacity for a great many fruit growers. It has large air chamber capacity, and is fitted with our improved Base The cylinder is Brass lined, Valve Seats Brass, as well as Plunger and Piston Rod of same metal. It is fitted with double discharge, the same as our other Spray Pumps, and when pump only is ordered, we plug one side and fit the other with brass bushing and coupling for ½ inch hose. One side of discharge may be used as an agitator by carrying pipe or hose back into the barrel. Brass Suction Strainer is also supplied with the pump.

PUMP ONLY.	DIAM. CYL. 2½ INCH.	SUCTION, 1 IN. PIPE.	DOUBLE DISCHARGE, ½ IN. HOSE.	BRASS LINED. $9.00
OUTFIT A FOR SINGLE SPRAY.	Fig. 205 with 2½ ft. of 1 in pipe, Brass Strainer, and one lead of 10 ft., ½ in. discharge hose, with McGowan or other spray nozzle.			13.00
OUTFIT B FOR DOUBLE SPRAY.	Fig. 205 with 2½ ft. of 1 in. pipe, Brass Strainer and two leads of 10 ft. each, ½ in. discharge hose, with McGowan or other spray nozzle.			16.00
OUTFIT C SINGLE SPRAY AND AGITATOR.	Fig. 205 with 2½ ft. of 1 in. pipe, Brass Strainer, one lead of 10 ft., ½ in. discharge hose, with McGowan or other spray nozzle, and 4 ft. iron pipe, or hose for agitator returning to barrel.			14.00

All Spray Pumps are Brass Lined and have Brass Plungers, Piston Rods, Valves and Valve Seats.

"ACTIVE," HORIZONTAL DOUBLE ACTING.

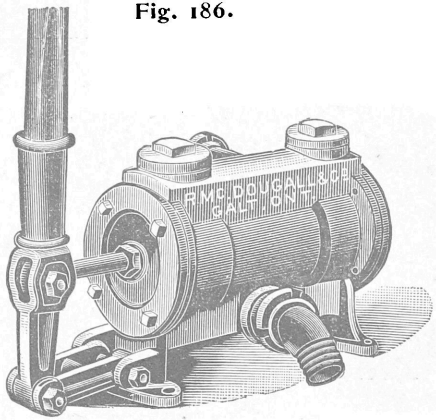


In order to show prospective buyers that we are able to furnish a Spray Pump equal to any occasion, we herewith present our **"Active"** Pump, Fig. 185. This pump can be bolted or screwed to bottom of wagon, and suction hose carried into barrel. This outfit will give more satisfaction to any person requiring the maximum of work than any other article ever offered heretofore. The Pump is Double Acting, having twice the capacity of a Single Acting Pump, and is so simple in its construction that the loosening of 4 bolts is all that is necessary to expose the whole working parts to view for repair or examination. It is also Brass Lined with Brass Piston Rods, etc.

FIG. 185—SIZE AND PRICE.

Diameter of Cyl.,	Double Suction,	Double Discharge,	Iron Brass Lined.	All Brass.
3 inches.	**1¼ inches.**	**1 inch.**	**$20.00.**	**$45.00.**

Fig. 186.



Thresher Double Acting Tank Pump.

Fig 186, Horizontal Double-Acting Tank Pump has a capacity of two Single Acting Pumps of same diameter and stroke, or about 1 to 1½ barrels per minute. In the cylinder are grouped the iron leather faced poppet valves resting on brass valve seats, thus obviating a common fault in leather valves which often grow stiff and useless from disuse, and iron valves which will rust fast to iron valve seats. The discharge valves above are accessible through ports or hand holes, closed with neat plugs, while the suction valves below may be exposed by removing either cylinder head.

The solid piston is double crimped packed and the piston rod of polished steel works through a brass stuffing box. The water ways are large and direct, insuring an easy working and efficient pump. We fit regularly as specified below for 2 inch suction hose and 2 inch open discharge, or 1 inch discharge hose, by means of a coupling which we furnish. The pump is also supplied with a wooden lever or handle, of suitable length, which may be unshipped for convenience.

FIG. 186, SIZE, PRICE, ETC.

PUMP ONLY WITH STRAINER.	DIAM. OF CYLINDER, 5 INCHES.	STROKE, 5 INCHES.	SUCTION, 2 INCH HOSE.	DISCHARGE, 1 OR 2 INCH HOSE.	PRICE, $18.00
OUTFIT A.	Fig. 186 with 15 feet of 2 inch Spiral Wire Suction Hose, 12½ feet 1 inch 3 Ply Discharge Hose, Couplings, Suction Basket and Nozzle, all complete,				$40.00.
OUTFIT B.	Fig. 186 with 20 ft. of 2 in. Spiral Wire Suction Hose, 12½ ft. 1 inch. 3 Ply Discharge Hose, Couplings, Suction Basket and Nozzle, all complete,				$45.00.

THE TORRENT . . . .

TWO-CYLINDER THRESHER TANK PUMP.

The annexed cut illustrates a valuable new Pump especially adapted for the use of thresher men in filling their wagon tanks quickly with water for the purpose of supplying the steam engine boiler. This pump may also be used as a bilge and deck pump on small vessels, or in any place where it is desired to remove water from. It is durable and simple in construction, and is one of the easiest working pumps ever made. We furnish Fig. 147 complete with suction and discharge hose couplings, also with suction strainer, and it is also furnished in outfits as described below. It may be used to discharge upwards through 2 inch pipe by screwing the tight cap on end of spout in place of hose coupling.

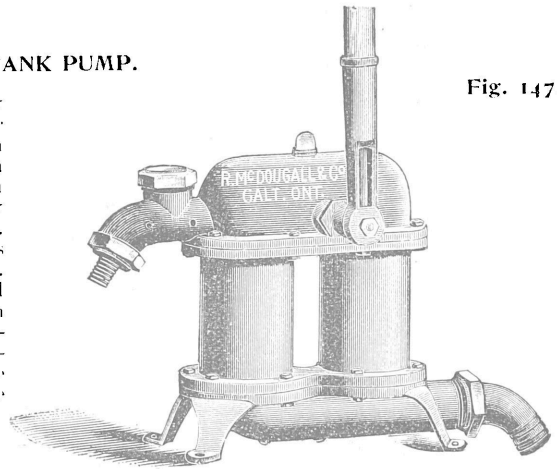


Fig. 147.

FIG. 147—SIZE AND PRICE.

Pump only with Strainer.	Diameter of Cylinder. 4½ inches.	Suction. 2 inch hose.	Discharge. 2 inch opening. | 1 inch hose.	Stroke. 4 inch.	Price. **$16.00.**
OUTFIT A.	Fig. 186 with 15 feet of 2 inch Spiral Wire Suction Hose, 12½ feet 1 inch 3 ply Discharge Hose, Couplings, Suction Basket and Nozzle, all complete.				**$40.00.**
OUTFIT B.	Fig. 186 with 20 ft. of 2 in. Spiral Wire Suction Hose, 12½ ft. 1 inch 3 ply Discharge Hose, Couplings, Suction Basket and Nozzle, all complete.				**$45.00.**

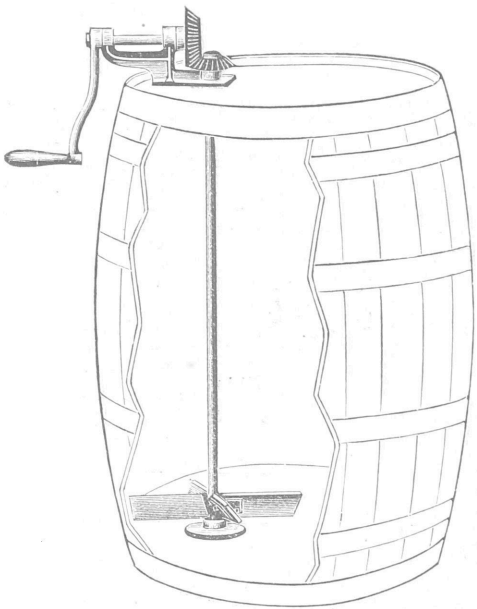


Fig. 209.

ROTARY AGITATOR.

The only practical means of keeping the mixture in solution.

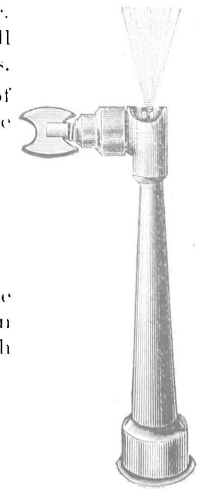
Fig. 209 represents our new Rotary Agitator for the purpose of thoroughly mixing and keeping the different compounds in perfect solution. It will be seen that power is transmitted through a small pair of bevel gears to a paddle wheel, comprising four arms, set at such an angle that as the wheel revolves the liquid is carried around and upward in the barrel to ensure thorough agitation of the entire contents of the barrel. The operation is not dependent upon but is independent of the pump, and in passing from one row of trees to another, when it is not required to operate the pump used in the same barrel, the agitator can be employed to thoroughly agitate the spraying liquid in the barrel. The intention is to place the agitator to the left of the pump where it can be conveniently operated with the left hand. This forms the most satisfactory, and in conjunction with the return hose into the barrel, the only perfect solution of the difficulty of keeping the compounds properly mixed. An outfit composed of one of our Spray Pumps and this Agitator is certain to give better results than any other.

Price (complete without barrel).....$5.00.

Spray Nozzles for Orchard, Field and Vineyard.

The selection of Spray Nozzles suitable for the class of spraying to be done, is second only to the question of Pumps. In fact, the spray nozzle should be selected according to the conditions, as whether wanted for orchard, field service or vineyards. In young orchards, the small trees can be more easily reached, and a spray nozzle which shall give a very fine, mist-like spray, is the most economical to use. This applies, as well, to spraying grape vines, berry bushes, etc. In old orchards, the spraying of large trees calls for a spray nozzle which shall give a coarser discharge and at the same time can be thrown to greater distances.

We have made a special study of Spray Nozzles, and from a large number of patterns offer the following, which our own practical experiments have proved the best for general service.



THE McGOWAN.

Fig. 206.

The McGowan Nozzle, as shown with screw adjustment, is without doubt the **LEADER,** and is the article recommended by all experts for the proper distribution of the different solutions. It is easily graduated and throws a flat spray, which may be reduced to a perfect mist.

THIS IS THE NOZZLE,

Price, cut for ¼ inch pipe or ½ inch hose, $1.25.

"MASSON" SPRAY NOZZLE.

Fig. 207.

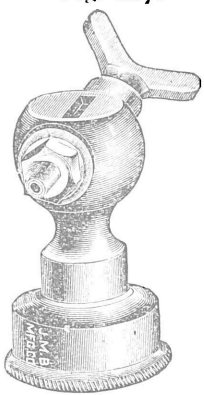


Fig. 207, "Masson" Spray Nozzle, is a good, all-round nozzle. It can be graduated to give a very fine spray for close work, such as vines and bushes, and also to give effective discharge for spraying young trees. Nozzle can be cleaned by simply turning plug across the opening. It is the most economical nozzle made.

Price, cut for ¼ inch pipe, also for ½ inch hose, $1.00.

The "Vermorel" Spray Nozzle.

Fig 208.

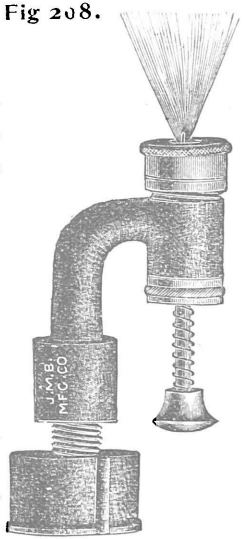
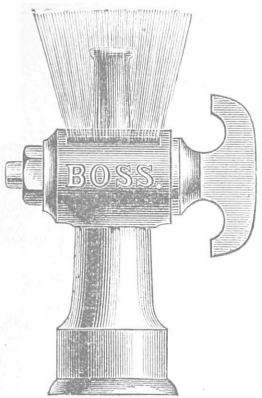


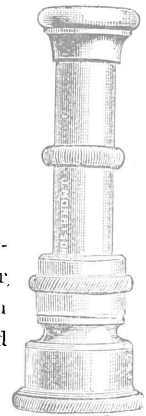
Fig. 208, The "Vermorel" Spray Nozzle with Degorger is best adapted for close range spraying, such as vines, bushes, etc. It is arranged with stuffing box, so that in cleaning, the liquid cannot wet the operator. The adjustment of spray is fixed by the openings in two caps, which we furnish with each nozzle. One of these caps will give fine, and the other a coarse spray.

Price, cut for ¼ inch pipe or ½ inch hose, $1.00.



THE "BOSS" AND "GEM."

These nozzles are principally adapted for sprinkling purposes, and are not practical for spraying, being too coarse for the latter work. They form an important addition to a spraying apparatus, as by their use the pumps may be applied to other purposes, such as watering lawns, plants, etc.


GEM.

NOTE.

We make Pumps for all classes of work, and those illustrated here are designed for Spray purposes only. They may prove useful in other places, but if you are interested in other lines of pumps

SEE OUR GENERAL CATALOGUE.

SPRAYING CALENDAR.

PLANT.	1st Application.	2nd Application.	3rd Application.
Apple. Apple spot fungus, codling moth, bud moth.	**Copper Sulphate.** Before buds start. *(Important.)*	**Bordeaux.** Just before blossoms open. *(Important.)*	**Bordeaux.** *Paris Green.*—Soon after blossoms fall. *(Important)*
Cherry. Rot, leaf diseases and injurious insects.	**Bordeaux.** Before flower buds open. *Kerosene Emulsion* for aphis.	**Bordeaux.** *Paris Green.*—When fruit has set. *(Important.)*	**Bordeaux.** *Paris Green.* — 10-15 days later. *(Important.)*
Grape. Mildew, rot, leaf eating insects.	**Copper Sulphate.** Before buds start.	**Bordeaux.** *Paris Green.*—When first leaves are half grown.	**Bordeaux.** When fruit has set.
Peach Apricot. Rot, leaf-curl, curculio.	**Copper Sulphate.** *Paris Green.*—Before buds Start.	**Bordeaux.** 3 lbs. copper sulphate. 3 lbs. lime. 50 gallons water. *Paris Green* (4 oz.)—Jus. before blossom.	**Bordeaux.** *Paris Green.*—Soon after fruit has set.
Pear. Scab, leaf blight, codling moth.	**Copper Sulphate.** Before buds start. *(Important.)*	**Bordeaux.** Just before blossoms open. *(Important.)*	**Bordeaux.** *Paris Green.*—Soon after blossoms fall. *(Important.)*
Plum. Rot, shot-hole fungus, curculio.	**Copper Sulphate.** *Paris Green*—Before buds open.	**Bordeaux.** *Paris Green.*—Soon after blossoms have fallen. *(Important.)*	**Bordeaux.** *Paris Green.*—10-12 days later.
Currant. Fungus diseases, "currant worm."	**Paris Green.** When worms appear.	**Hellebore.** When fruit is fully formed.	**Bordeaux.** After fruit is picked.
Gooseberry. Mildew, "currant worms."	**Bordeaux.** *Paris Green.*—As soon as leaves expand.	**Hellebore. Bordeaux.** 10-15 days later.	**Ammoniacal Copper Carbonate.** 10-15days later.
Raspberry, Blackberry, Dewberry. Anthracnose, rust.	**Copper Sulphate.** Before buds burst.	**Bordeaux.** 10-15 days later.	**Bordeaux,** After old canes are cut out.
Strawberry. Rust.	**Bordeaux.** After first blossoms have fallen.	**Bordeaux.** After picking season.	**Bordeaux.** 10-15 days later.
Bean. Anthracnose.	**Copper Sulphate,** ½ oz. to 1 gal. water. Soak 1 hour.	**Bordeaux.** When rough leaves appear.	**Bordeaux.** 8-12 days later.
Potato. Scab, rot, insects.	**Corrosive Sublimate.** 2 oz. to 16 gals. water. Soak 1½ hours.	**Paris Green.** For Col. pot. beetle. *Bordeaux* for flea beetle.	**Bordeaux.** From 1st August till end of season, 2 weeks apart.
Tomato. Rot, Blight.	**Bordeaux.** First appearance of rot.	**Bordeaux.** When necessary.	**Bordeaux.** Same.

SPRAYING CALENDAR.

4th Application.	5th Application.	6th Application.
Bordeaux. *Paris Green.* — 10-15 days later.	**Bordeaux.** 10-15 days later if spot disease is severe.	
Ammoniacal Copper Carbonate. 10-15 days later. *(Important.)*		
Bordeaux. 10-15 days later.	**Bordeaux.** 10-15 days later. If disease persists.	**Ammoniacal Copper Carbonate.** If disease persists.
Bordeaux. *Paris Green.*– 8-12 days later.	**Bordeaux.** 8-12 days later. If rot is prevalent.	**Ammoniacal Copper Carbonate.** 10-15 days later if rot is prevalent.
Bordeaux. *Paris Green*—10-12 days later.	**Bordeaux.** 10-15 days later.	
Bordeaux. *Paris Green.* — 10-15 days later.	**Ammoniacal Copper Carbonate.** 10-15 days later if rot is prevalent.	**Ammoniacal Copper Carbonate.** 10-20 days later if rot is prevalent.
Bordeaux. 10-15 days later.		

FUNGICIDES.

Copper Sulphate Solution.

Copper sulphate	1 lb.
Water	25 galls.

For use *only before the bud open.* It is ready for use as soon as dissolved in the water.

Bordeaux Mixture.

Copper Sulphate	4 lbs.
Quick lime	4 "
Paris green (for leaf eating insects)	4 oz.
Water (1 barrel)	40-50 galls.

To prevent Potato rot 6 lbs. of copper sulphate is used instead of 4.

Ammoniacal Copper Carbonate.

Copper carbonate	5 oz.
Ammonia	2 qts.
Water (1 barrel)	40-50 galls.

For use late in the season when Bordeaux mixture may stain the fruit. It is also best adapted for green-house spraying.

INSECTICIDES.

Kerosene Emulsion.

Kerosene (coal oil)	2 galls.
Rain water	1 "
Soap	½ lb.

To be diluted before use with 9 parts of water. For sucking insects.

Paris Green and Water.

Paris green	1 lb.
Lime (fresh)	1 "
Water	200 galls.

For insects which eat foliage.

REFORMER BOOK AND JOB
ROOMS,
GALT, ONTARIO.