

OIL ENGINE WITH DIRECT-CONNECTED GENERATOR.

For many years Europe was ahead of this country in its use of gas and oil engines, while we led the world in the development of electricity and the construction and use of electric machinery. To-day, however, there is a growing appreciation of the economic merits and wide range of application of the formertypes of motive power, and the firms which were early in the field in the design and construction of gas and oil engines have their hands full in keeping pace with the demand. The merits of the gas engine are well understood, and the same advantages of low first cost, ease of application and handling, and cleanliness, render the oil engine an ideal prime mover where small units of power are required, while the cost of operation is greatly reduced.

We herewith illustrate a Mietz & Weiss engine which consumes the ordinary kerosene of commerce. These engines are made in eight sizes ranging from 1 up to 20 horse power. The 1 horse power engine weighs 600 pounds and covers 30x36 inches of floor space, while the 20 horse power engine calls for 60x90 inches and weighs 6,500 pounds. The engine illustrated is of 4 horse power and is direct-connected to a generator which is mounted upon a common base, and has a capacity of forty 16 candle-power incandescent lamps. As the engine is of the two-cycle type, with an explosion at each revolution, it is susceptible of a more perfect regulation than the four-cycle engine. The crank shaft is entirely inclosed, with a view to excluding dust and dirt, and particular attention is paid to lubrication, a special oil reservoir being provided at the right side of the engine frame, from which the oil is drawn by the partial vacuum formed, during each revolution, in both crank chamber and cylinder, and fed to the crank pin and cylinder, the main bearings being taken care of by automatic ring oilers. The kerosene, which is carried in a closed copper tank firmly screwed to the cylinder, has a capacity of ten hours' run. The consumption is about three-quarters of a pint per horse power hour.

The oil is fed from the tank to the cylinder by a small oil pump, operated by an eccentric on the main shaft, an injection of oil taking place at each revolution. The place of the throttle in a gas engine is taken by a little hinged finger on the plunger of the oil pump. When it is desired to stop the engine, the latch is thrown up, clear of the follower, and the pump is thereby thrown out of operation. The amount of oil fed to the cylinder is controlled by a simple and effective governor.

The direct connecting of a generator to an oil engine calls for a certain measure of elasticity in the coupling, although, as already explained, the fact that an impulse is given at each revolution secures a very even running in these engines. In the coupling the power is transmitted through three studs provided with rubber rings which are of sufficient strength to carry more than the required load, and serve to absorb all shock and ease the strains due to sudden variations of load, or to the irregularity in the alinement of the engine and dynamo. The engines are built by August Mietz, 128-132 Mott St., New York city.

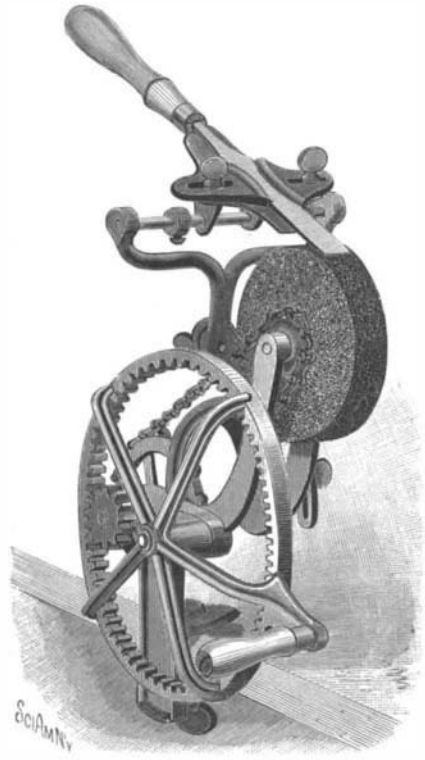
The Extermination of Gulls.

The feather hunters are rapidly exterminating the small herring gulls at the east end of Long Island Sound and the islands beyond. The herring gull used to be very common in that region, but the feather hunters have killed or driven away most of them. When Agassiz had his summer school on Penikese Island there used to be a large colony of these birds, but afterward the feather hunters began their work, and according to The Evening Post, a woman who visited the island last summer saw hundreds of dead birds with their wings torn

away and many wingless birds still alive fed by their mates. The larger gulls are not killed by the feather hunters as their wings are too large to be worn on hats. It is to be hoped that such cruel bird hunters, if caught, will be severely punished.

AN INGENIOUS TOOL-GRINDING MACHINE.

A patent has been granted to Mr. Arie Van Dillenbeck, of 261 Hamilton Street, Albany, N. Y., for a tool-



DILLENBECK'S TOOL-GRINDING MACHINE.

grinding machine, the novel features of which are found in the means provided for adjusting the table so that tools of various kinds can be sharpened with any desired bevel.

The machine, as our engraving shows, is supported by a standard, the base of which is clamped to a shelf or bench. The standard has an arch at its upper end and is provided with a rearwardly-extending horizontal arm at one side and with forwardly and upwardly projecting arms at the other side. A stone is mounted in the fork formed by forwardly and upwardly projecting arms and is connected by a chain and sprocket gear with a shaft mounted in the rearwardly projecting arm at the upper end of the standard and turned by an internal pinion meshing with a driving-wheel journaled in the horizontal arm at the base of the fork. By turning the driving-wheel the stone will be rapidly rotated.

The tool-holding table slides on a rod held between the arms of a fork, the shank of which is connected by a universal joint with a bar which is pivoted to one

side of the arch and which can be swung to raise or lower its outer end (and hence the table) and can be locked in adjusted position. Upon the table tool-holding clamps with under-cut bodies are mounted; these clamps can be adjusted to receive tools having short or long cutting edges, such as chisels, drawknives, and the like. In sharpening a tool, the table is moved back and forth on its rod so as to sharpen all parts of the edge uniformly, collars being provided which limit the movement of the table and prevent the tool from leaving the stone. By reason of the pivoted bar and the universal mounting of the table fork, the table can be raised or lowered to accommodate thick and thin tools, or moved to or from the stone to bring more or less edge of the tool on the grinding surface to produce a greater or lesser bevel. The machine can be driven with one hand, and the table manipulated with the other. As soon as the hand is removed from the table the weight of tool-handle will cause the table to drop back and carry the tool away from the stone.

Reinforcing Platinum Prints.

It is sometimes difficult, if one has not had considerable practice in the exposure of platinotype paper, to obtain a satisfactory result upon the first trials. It often happens that the prints which have been judged to be sufficiently exposed give only gray tones upon development. The reinforcing bath given in the following formula enables one to strengthen the tones:

SOLUTION A.

Saturated solution gallic acid.....	50 c. c.
Saturated solution nitrate silver.....	2 c. c.
Acetic acid, glacial.....	10 drops.
Water.....	50 c. c.

SOLUTION B.

Chloroplatinite potassium.....	1 gramme.
Phosphoric acid.....	15 c. c.
Water.....	600 c. c.

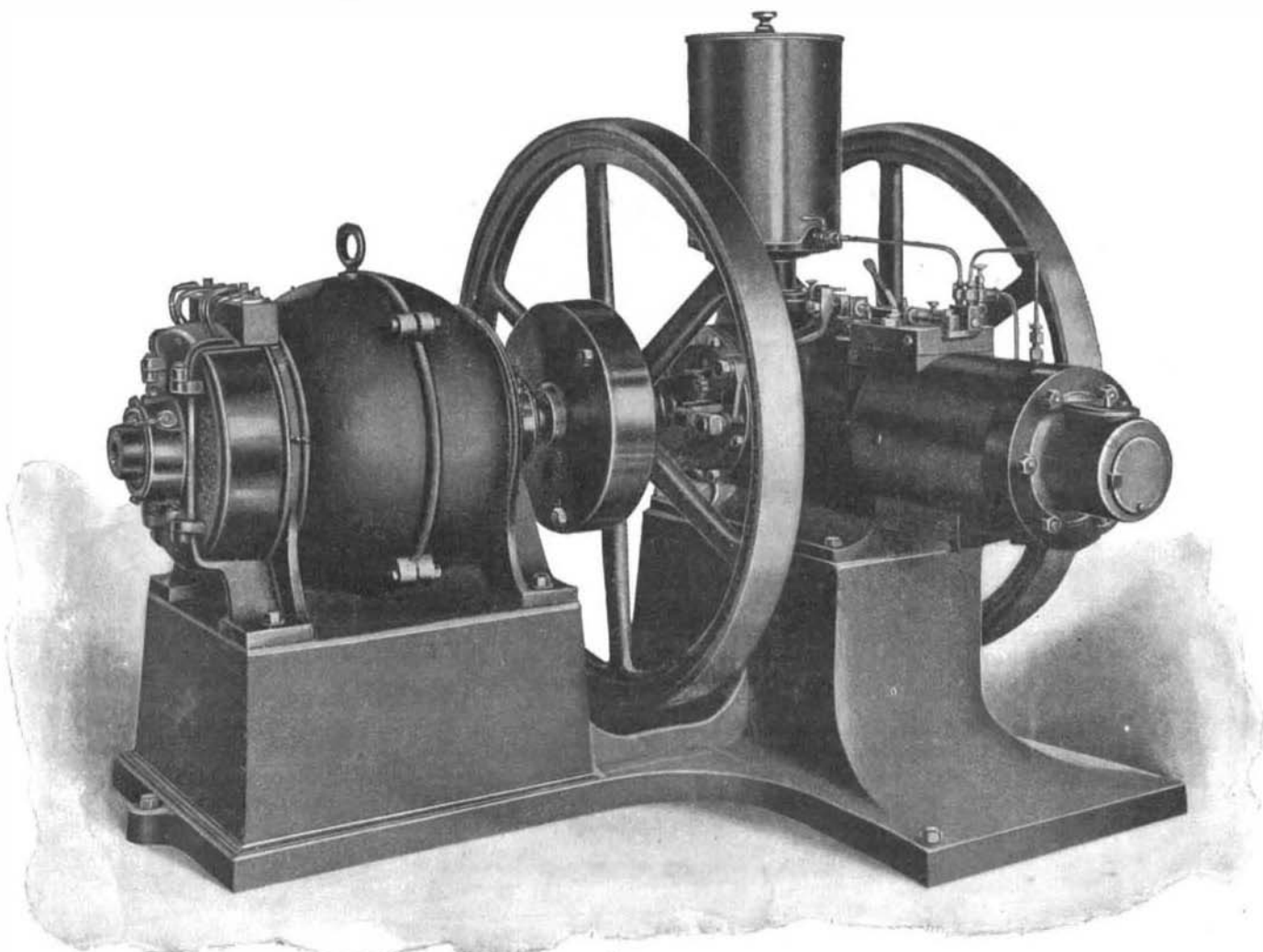
The prints are plunged into pure water, then into Solution A until the desired reinforcement is obtained. During this time they should be constantly agitated. They are then washed in three changes of water to which a small proportion of acetic acid has been added, and are toned in Solution B until a good black is obtained. The prints are finally washed as usual.

A Gigantic Map.

One of the most interesting exhibits which will be sent from the United States to Paris will be a huge map of New York city, which is now in progress of construction under the chief topographical engineer of the Board of Public Improvements. It measures 28 x 24 feet and is on a scale of 600 feet to the inch, and includes all the boroughs of the great city and considerable of the adjoining territory. Twelve draughtsmen are now working on the map indoors and there is a field force of eight men working outside. The map shows all the trees, parks, piers, ferries and railway lines; displays contour lines and elevations of every point in the city, and more than 1,000 square miles of the territory are embraced, and all buildings of any importance

whatever are indicated. In each corner will be a pen and ink drawing 12 x 18 inches showing some notable view of the city, and around the edge are to be smaller sketches of various public buildings. A hard wood platform and bronze brackets and railings make up the mounting of the map. In connection with it there will be exhibited a copy of a relief map in the Museum at Albany showing Manhattan Island in 1776 and also two charts of the city as it looked in 1641 and 1800. The four maps will form an opportunity for the study of the city's growth during the past 300 years.

THE Chicago drainage canal was opened on January 2, with no ceremonies.



DIRECT-CONNECTED KEROSENE ENGINE AND GENERATOR.