

SCREW PLATES FOR PIPE.

The particular superiority of this screw plate over others lies in its having its dies ready for use in their holders without the trouble and delay of changing and setting them. They are as simple in use as solid dies and at the same time they are readily ground when dull; are capable of being adjusted so as to take irregular sized fittings, etc., and are of the very highest



"LIGHTNING" SCREW PLATES FOR PIPE.

quality as to material and finish. They are manufactured by the Wiley & Russell Manufacturing Company, of Greenfield, Mass.

A SWEDISH SLED—THE SPARKSTOTTING.

The *sparkstotting* is an exceedingly light sled that the inhabitants of Norrland, a province situated at the north of Sweden, employ during the winter as a means of locomotion. The use of it now extends throughout entire Sweden, where races upon this original vehicle constitute one of the most highly appreciated sports of winter. Among other people of the North, in Russia, Scotland, Germany, this sport is entirely unknown—a fact that is somewhat extraordinary, seeing that the *sparkstotting* can be employed in all countries in which the rigors of winter permit of the use of ordinary sleds.

The *sparkstotting* is constructed entirely of Norway spruce. It is straight, of elongated form and weighs no more than 30 pounds. It consists of two runners, curved upward in front, and 6½ feet in length. To each of the runners is fixed an upright that serves both as a point of support and a tiller. The entire affair is connected by two or three cross-pieces, one of which supports a light seat placed at

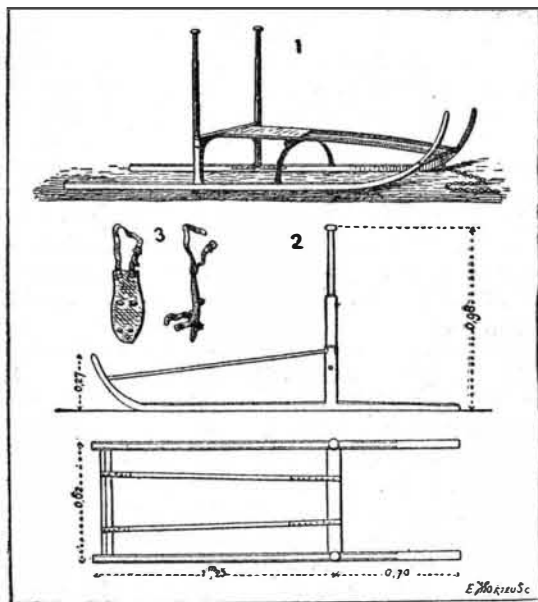


Fig. 1.—THE SPARKSTOTTING OF SWEDEN.

1. General view. 2. The *Sparkstotting* of Norway—section and plan.
3. Shoe calks.



Fig. 2.—METHOD OF USING THE SPARKSTOTTING.

12 inches above the surface. Fig. 1, No. 1, represents a type of *sparkstotting* in use in Norrland.

It differs perceptibly from the Vesterbotten type, in which the runners, which are much shorter, are not shod with iron, but are well greased or impregnated with boiling tar. The lightest and best type for racing is the one manufactured at Umea in Norway. The dimensions are given in No. 2 of Fig. 1. In order to push the *sparkstotting*, the racer, bearing with both hands upon the extremities of the uprights, places his left foot upon the runner to the left, and then, with the right foot, strikes the ground at regular intervals, so as to propel the sled forward (Fig. 2). If the snow is very hard and the racer is not provided with spiked shoes, it is necessary for him to fix steel calks to the soles (Fig. 1, No. 3). In recent times a horizontal bar, breast high, has been placed between the uprights. This modification renders the steering easier, and, besides, permits of governing with a single hand. Upon a level route the *sparkstotting* reaches a pretty good speed without great effort. An experienced racer, when the snow is in good condition, can easily attain the speed of a horse on a trot. In ascents, it is necessary to push the *sparkstotting* or to drag it, but this does not cause much fatigue, seeing its lightness and the feeble surface in contact with the snow.

With this sled it is possible to run very long races, provided the snow is sufficiently compact. It is stated that an experienced racer made the distance that separates Tornea from Pitea in 24 hours, and which is estimated at 21 Swedish leagues (125 miles). A groom who had been sent by his master to look for a horse traveled from Umea to Sundswall (180 miles) in three days, his sled being loaded with a valise.

The *sparkstotting* is the favorite vehicle of the laborers and peasants of Norrland, since it permits them to get over the ground quickly and cheaply. It is to the population of the north of Sweden what the horse is to the Cossack and Arab.

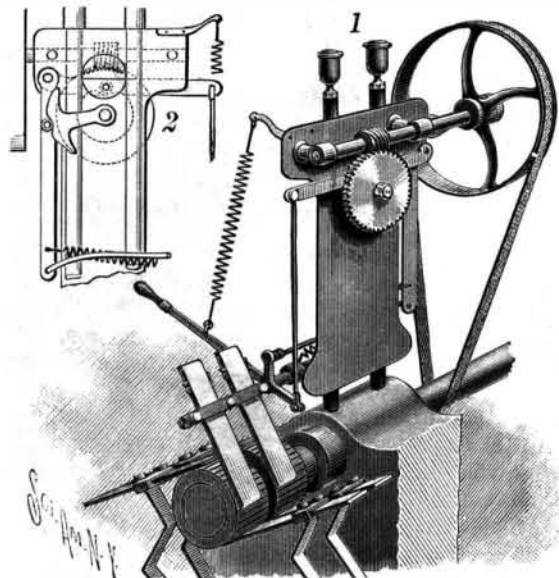
In certain regiments of the Swedish army an endeavor has been made to employ this sled for scouting service. Each of the soldiers sent upon a reconnaissance is provided with a *sparkstotting*, upon which he places his gun and equipment. It appears that the experiments have given satisfactory results.

At Stockholm and in southern Sweden the *sparkstotting* is considered rather as a sporting instrument, the use of which is tending to become more and more widespread among the young people. Why might not this new sport be tried in those departments of France in which snow covers the roads for several months and entirely prevents bicycle racing? Why, when winter has arrived and their machines have been stored away, might not our young bicyclists adopt this light sled with which it is so pleasant to run over frozen roads? It is not difficult to learn how to use it, and no falls are to be feared. Moreover, a detail that has its importance, this "winter bicycle," as the Swedes call it, has the advantage of being cheap and easily constructed.—*La Nature*.

A LUBRICATOR AND WIPER FOR THE COMMUTATORS OF DYNAMOS.

This improvement is applicable to any electric motor, wiping the commutators with a swab and applying just the little oil necessary as frequently as desired, after the same manner as a swab would be applied by hand. It has been patented by Mr. Lindley Fawcett, of Eureka, Cal. Fig. 1 shows the application of the improvement, Fig. 2 showing a portion of the apparatus in section. Extending upward from the box in which the armature shaft is journaled are the usual oil tubes, on which is held a plate supporting a portion of the apparatus. Projecting from one side of this plate, and parallel with the armature shaft, is a stationary shaft on which is a loose sleeve carrying a swab holder, provided with parallel plates or slats of wood, over each of which a cover of suitable absorbent fabric is secured by means of an adjustable bail or clamping frame. Endless canvas strips may be used for such covers, the strips being moved on the slats as portions are worn, until almost the entire surface of the cloth is worn out. Clamped to one end of the sleeve is a handle lever, normally held by a spring in such position as to keep the swabs in contact with the commutators, while an opposite extension of the lever is connected with a pitman pivoted at its upper end to a horizontal lever. This lever at its other end is pivoted on a stud, and the lever has a roller which rolls on a cam on a short transverse shaft, giving an up and down movement to the pitman, in combination with the spring connected to the handle lever, and correspondingly raising and lowering the swabs, for the application of the oil at the proper intervals. To move the swabs laterally, a crank arm carrying a two-winged cam, as shown in the sectional view, is secured on the transverse shaft, this cam contacting with a roller on a swinging lever whose lower end is connected by a pitman with an arm on the swab-holding sleeve, a spring combining with the cam motion to move the sleeve in and out, at each

revolution of the shaft, so that every portion of the commutators will be touched by the swabs. The transverse shaft is driven by a worm wheel meshing with a screw on a horizontal shaft on whose outer end is a pulley connected by a belt with the armature shaft, although other speed-reducing gear may be employed as desired. When the swabs are to be changed, or other work done on the holder, the handle lever is



FAWCETT'S LUBRICATOR FOR COMMUTATOR.

depressed, and may readily be fastened down with a cord. The inventor of this apparatus has for years had charge of electric light works, and the improvement was devised by him to prevent the cutting of the commutators and wearing of the brushes, for which it is said to work admirably.

A NOVEL method of street lamp lighting is being introduced by the Cutter-Hammer Manufacturing Company, of Chicago. Each lamp post is fitted with two sal-ammoniac batteries, and a spark coil placed in an iron box at the foot of the lamp. In the lantern a miniature gas holder of about 2 cubic inches capacity is pivoted on a hinge and held down by weights. Directly over this is an automatic gas lighter, of the ordinary pattern, connected with the cells aforementioned by wires. To light the lamps of a city it is only necessary to open a valve connecting one of the large gas holders of the works with the mains. This causes a rise of pressure in the mains, in consequence of which the miniature holders, fitted in each lantern, rise about ½ inch against a platinum stop, and complete the battery circuit, thus putting the automatic lighter in action and lighting the lamp.

BRAKE FOR CHILDREN'S CARRIAGES.

This is a simple form of brake, applicable to any style of carriage that is pushed along by means of the handle bar at the rear. The improvement has been patented by Mr. Frederick O. Boës, of No. 1591 First Avenue, New York City. It consists of a bar adapted for engagement with the tires of the rear wheels, the bar being roughened or covered with leather or other suitable material at the places of contact, and being attached to the handle bars by short pivoted links. This pivotal connection is such that when the brake bar is in its lower position it rests



BOËS' BRAKE FOR CHILDREN'S CARRIAGES.

against the wheel tires, as shown in full lines in Fig. 2, being removed from contact therewith when not required for use by being thrown upward, as indicated by the dotted lines. The bar is held in either of the two positions in which it may be placed by a spring extending centrally from the bar to the back of the carriage.

The Tasmanian Exhibition of 1894-1895.

Far in the antipodes, in Hobart, Tasmania, under the auspices of the Tasmanian government, is to be opened an international exhibition of arts and industries. The colony of Tasmania has a population of 150,000, and the neighboring colonies contributing to the affair make a total of over 4,000,000 of inhabitants. The site for the buildings, about eleven acres in extent, has been granted by the government.

The period for the exhibition comprises the Tasmanian summer, some six months, from November, 1894, being chosen. The ground plan of the buildings shows an irregular triangle, containing one main building with a long exhibition building, forming a perimeter for the triangle, and with two cross buildings running across it at right angles to each other. The entire arrangement is novel and apparently excellently well adapted for an exhibition whose purpose is to exhibit things, and not to form a world's playground.

After the great Chicago Fair everything of this nature seems dwarfed. But placed under a powerful and influential directorate, with the full sanction of the colonial government and with a simple and easily understood code of regulations already in official print, there is every reason to believe that the dwellers on the other side of the line will make their exhibition a grand success. One hundred and fifty-six classes, in twenty-four groups, are organized as the division of exhibits.

The idea is to make the occasion of direct utility for those desiring to purchase supplies. It seems obvious that for the manufacturers of the United States an excellent opportunity is afforded to extend their market by exhibiting their products here. A small charge for space is made, and the rules affecting exhibitors seem excellently conceived and well designed to secure fairness and satisfaction.

The firm of Wolt-

mann, Keith & Co., No. 11 Wall Street, New York, represent the exhibition, and intending exhibitors should apply to them for full details and particulars.

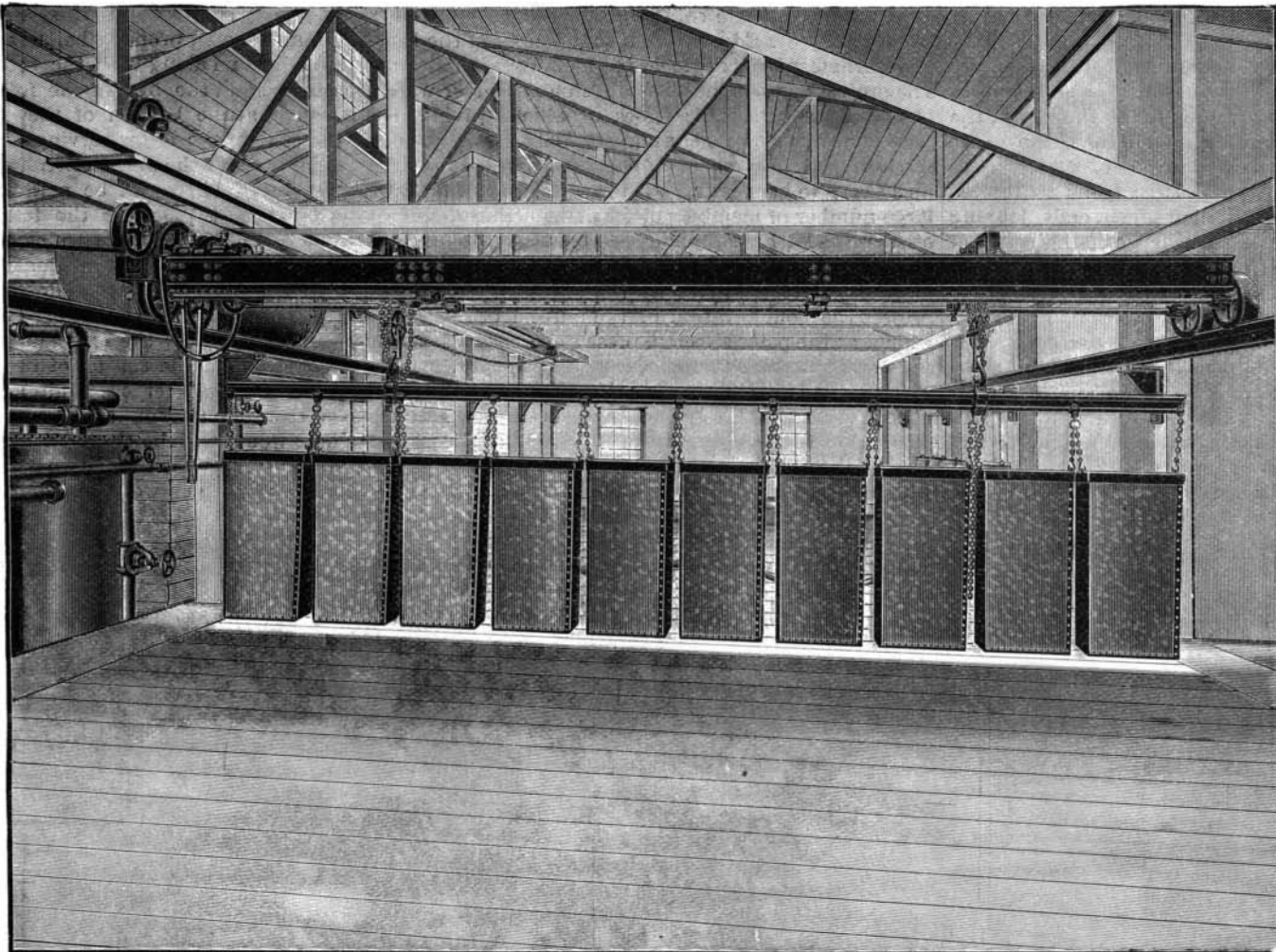
A NEEDLE passes through eighty operations before it is perfectly made.

A LARGE PHILADELPHIA ICE MAKING PLANT.

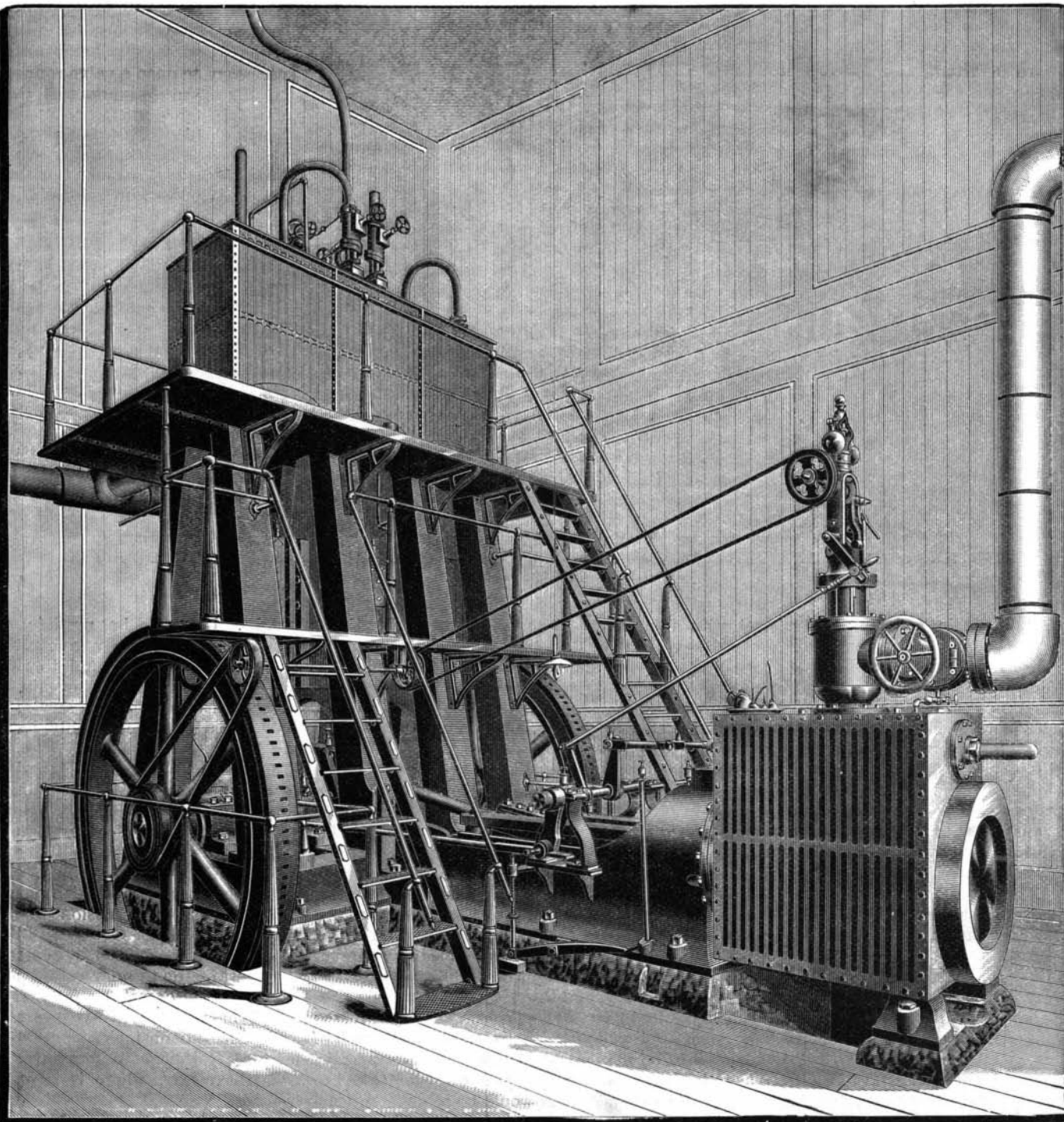
The Knickerbocker Ice Company, of Philadelphia, for many years engaged in the business of harvesting, delivering, and shipping ice, and owning large houses on the Hudson River and in Maine for the storage of naturally frozen ice, has recently established in Philadelphia a large plant for making ice artificially.

The company had previously taken up the production of artificial ice, having had several plants therefor in continuous operation for sufficient length of time to make it certain that the business had passed the experimental stage; but this new establishment is the largest and most important of them all, having a capacity of sixty tons of ice daily. The company has sought to make this plant a model one for the production of artificial ice, sparing no expense in obtaining the best mechanical contrivances and facilities, that the cost of manufacture might thereby be reduced to a minimum. The work was executed by the York Manufacturing Company, Limited, of York, Pa., under the direction of Mr. Stuart St. Clair, of that company.

The compressor of this plant, shown in one of our illustrations, is the St. Clair compound, having two low pressure or evacuating cylinders 18 by 30 inches, vertical and single acting. The duty of these cylinders is simply that of evacuation and compressing at low tension, maintaining nearly a constant temperature in the cylinders, thereby saving the large percentage of loss that accrues from highly heated cylinder walls. These low pressure cylinders and the receiver of same are water jacketed. The high pressure or delivery cylinder is 15 by 30 inches, and its duty is to simply deliver the partially compressed gas to the condenser. This cylinder works under nearly constant temperature, and is also water jacketed, the temperature of the gas at no point in the delivery ranging



SIXTY-TON ICE MAKING PLANT PHILADELPHIA—POWER CRANE IN POSITION HOISTING 3000 POUNDS OF ICE.



SIXTY-TON ICE MAKING PLANT, PHILADELPHIA—THE ST. CLAIR COMPOUND COMPRESSOR.