

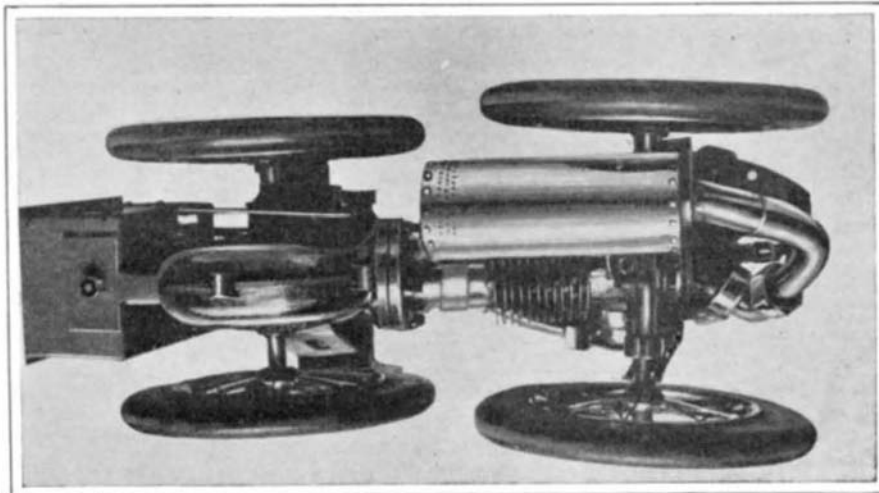
THE MOTOR SKATE—A NEW THOUSAND-LEAGUE BOOT.

BY OUR PARIS CORRESPONDENT.

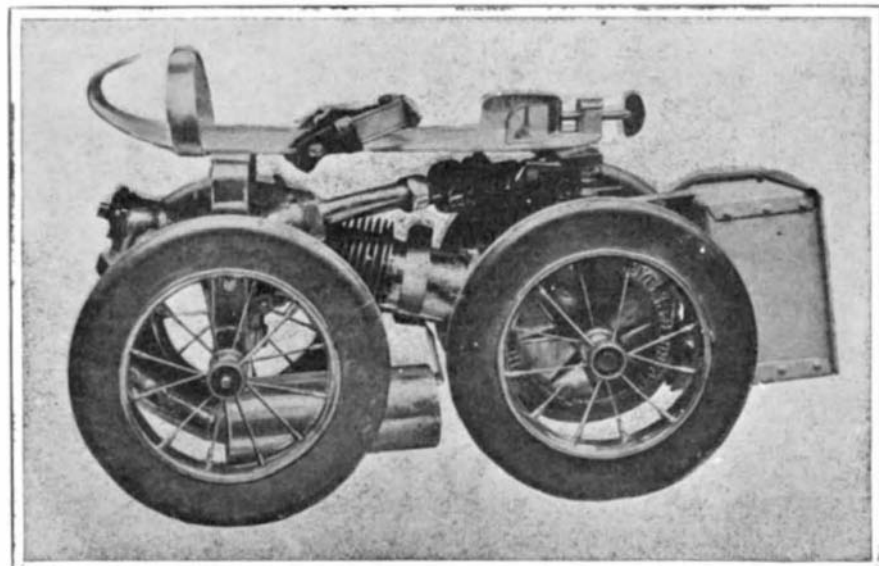
A novel device in the way of an automobile skate driven by a small gasoline motor is the invention of M. Constantini, a well-known constructor of Paris. The new skate consists of a foot-plate which is mounted upon four rubber-tired wheels, while the motor occupies the middle space. Thus the apparatus can be adapted to the foot just as an ordinary roller-skate, the only difference being that the wheels are of a considerably larger diameter. The little device is found to work very well and a person soon learns how to run it. There is no doubt that it will offer a new means of recreation to lovers of sport. It has already attracted considerable attention in Paris, where it has but lately made its appearance. The device consists of two separate parts, first the pair of skates proper, and also the belt worn by the operator and containing a small, flat, gasoline tank. The latter is connected with the carbureter on each skate by a rubber tube which can be readily detached, and near the tank are the valves for controlling the gasoline feed. At first M. Constantini designed the apparatus so as to carry on the belt a small storage battery and spark-coil for the purpose of ignition, and both these are made in a specially small form. But in the most recent type he places both battery and spark-coil in a small metal box with sliding cover, which is fitted upon the back part of the skate against the motor case. The box adds but very little to the size or weight of the skate and lessens the number of connections between it and the belt, so that at present these are reduced to the two tubes for the gasoline.

We give two views of the device, one a side view and the other showing the under side of the skate. The foot-plate is of light and strong steel and is hinged in the middle for steering. Each skate carries a small air-cooled gasoline motor of the usual 4-cycle type such as is used at present on motor bicycles, and it is designed so as to occupy a very small space. Fixed on the motor is a small carbureter; and under the front of the motor, which is mounted in an inclined position, is the cylindrical muffler which a curved pipe connects with the top of the motor cylinder. In the bottom view the muffler has been shifted to one side so as to show the motor. The rear driving wheels of the skate are mounted direct upon the motor crank shaft and thus the motor itself is made to serve as the main support and frame of the skate. The steering wheels in front are mounted on a loose axle which turns about a central pin, and the latter is fixed in a bracket plate which is screwed to the motor cylinder. The wheels carry solid rubber tires which have a somewhat narrow tread combined with a good radial thickness, as this is found to be the best practice. The motor and all the metal parts are nickel-plated, and the skate has as a whole, a neat appearance.

Steering is carried out by working the front part of the plate by the foot. The foot-plate is mounted upon elliptical springs in the front and rear. The foot is held by an adjustable heel-plate which is worked by a screw. A flexible cable connects with the ig-



Under Side of Skate, Showing Battery Box and Motor Crankcase at Left and Flanged Cylinder and Muffler at the Right.



Side View of Skate, Showing the Foot Plate Mounted Above the Motor, Which is Inclined Slightly and the Crankshaft of Which Forms the Rear Axle. The Front Axle Turns for Steering.

MOTOR SKATES, THE LATEST PARISIAN NOVELTY.

Ignition-shifting mechanism and is operated by a handle on the belt. The current can be cut off by a switch.

each developed and withstood a tractive effort of 90 kilogrammes (198.41 pounds) when driven at a speed of from 90 to 100 R. P. M. by a 9-horse-power motor. From this result M. Santos-Dumont infers that the same propellers driven by an 18-horse-power motor will sustain a weight of 180 kilogrammes (396.82 pounds). His entire apparatus, however, will weigh only 160 kilogrammes (352 3/4 pounds) and it will be furnished with a 24-horse-power air-cooled motor weighing 35 kilogrammes (77.16 pounds), or about 3 1/4 pounds to the horse-power.

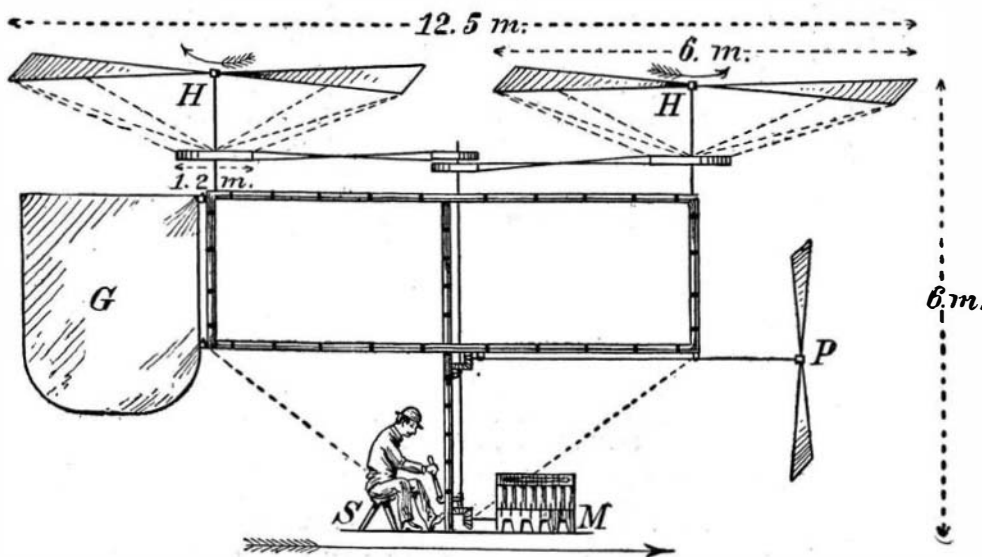
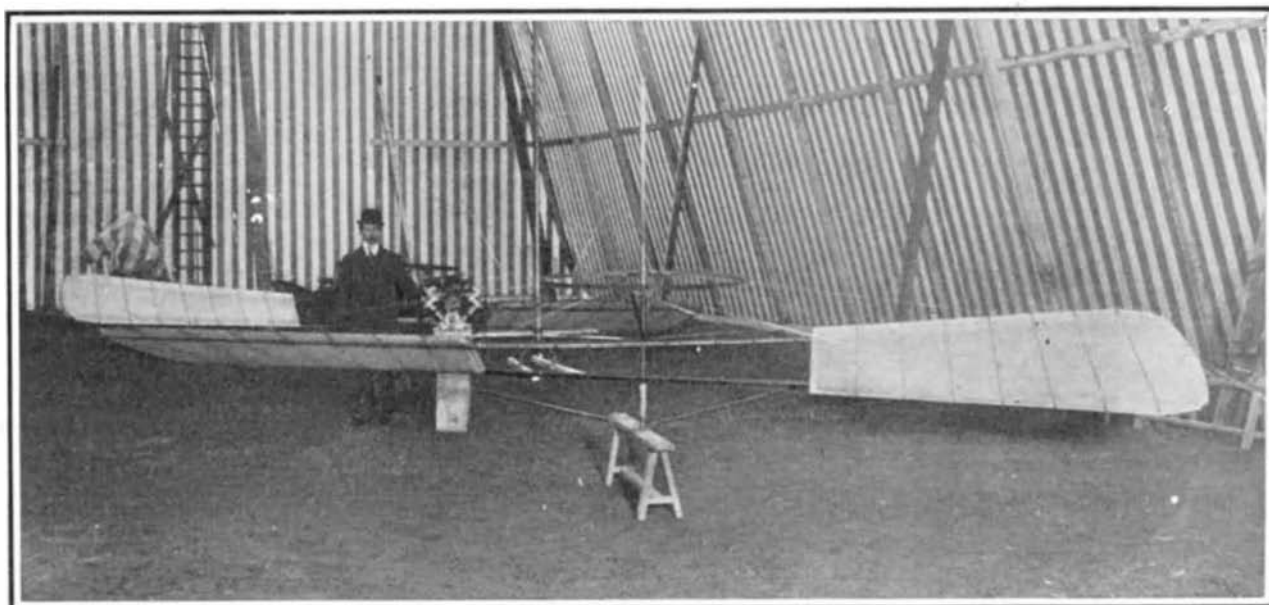


Diagram of Santos-Dumont's Proposed "Helicoptere."

H, H. Lifting propellers. P. Driving propeller. G. Rudder. M. Motor. S. Aeronaut's seat.



SANTOS-DUMONT'S "HELICOPTERE" IN COURSE OF CONSTRUCTION.

The operator puts on the belt and connects the gasoline tube and ignition cable to the skate. He then switches on the current and opens the gasoline feed, pushing the skate with the foot, so as to start the motor. He slows up when desired by shifting the ignition, cutting the current, or lifting the rear wheels from the ground. The skate can be used on a floor or smooth ground, and even upon a good piece of smooth road. A speed of 15 or 20 miles an hour is said to be attainable with it.

THE HELICOPTERE: SANTOS-DUMONT'S LATEST FLYING MACHINE.

BY L. RAMAKERS.

Santos-Dumont has constructed a "flying machine" with which he expects to win the Deutsch-Archdeacon \$10,000 prize for machines "heavier than the air."

According to information furnished by the inventor, this new machine is to be a hélicoptère, or "screw-flyer," that is to say, an apparatus which will raise, support, and propel itself through the air solely by the power of horizontal and vertical propellers.

For the practical realization of this idea, it is necessary to combine minimum weight with maximum power, and therefore the new apparatus has been designed to develop great power with the lightest possible materials. The frame and the rigging, like those of the dirigible balloons of the same inventor, are made entirely of bamboo, silk, and piano wire; and only the motor and the mechanism for the transmission of power are formed, necessarily, of heavier metal parts.

M. Santos-Dumont has succeeded in performing the almost incredible feat of constructing lifting propellers of a diameter of 6 meters (19.68 feet) and a weight of only 9 kilogrammes (19.84 pounds). Although these propellers are made entirely of silk and bamboo, they have been tested and

As may be seen from the accompanying diagram, the hélicoptère is formed of a rectangular frame of bamboo, which carries at its ends the vertical shafts of the upper or lifting propellers, H H. In the middle of the frame is a third vertical axis which, prolonged downward, serves as a support for the motor platform. A driving propeller, P, is attached to the bow of the skeleton craft, and a rudder, G, to the stern. The total length of the apparatus is 12.5 meters (41 feet), the total height 6 meters (19.68 feet).

The motor, M, drives (by bevel gears) a vertical shaft carrying at its upper end two small pulleys which transmit the motion, by belts, to two bicycle wheels, 1.20 meters (3.93 feet) in diameter, mounted horizontally on the shafts of the lifting propellers. One of the belts is