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VICTOR BICYCLES.

It is a well established fact that manufacturing cannot be carried on successfully in these days of high pressure without the utmost regard for system, not only in carrying forward the actual process of manufacture, but also in the construction and arrangement of the plant by which the work is accomplished, so that every motion of the mechanic or the machine counts in the production of the finished article, and no energy is uselessly expended. In fact, a modern manufactory is nothing but a huge machine, consisting partly of iron and steel and partly of brain and muscle, into which are poured the materials, and out of which are taken the finished products without a single retrograde movement in the progress of the article toward completion.

Such works as these are ideal, but we have them; they belong to our country and our time. We know of no finer example of such

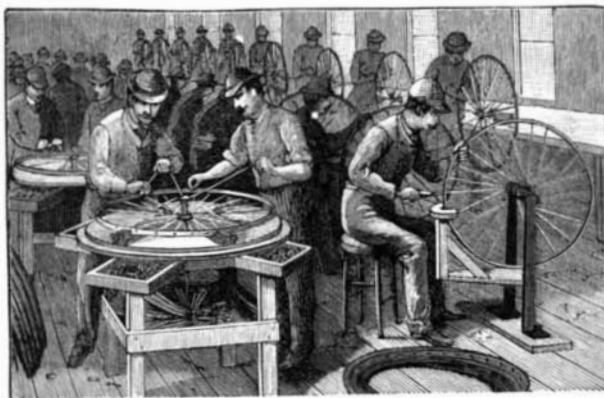


GENERAL VIEW OF THE WORKS AT CHICOPEE FALLS MASS.

works than the factory of the Overman Wheel Company, of Chicopee Falls, Mass., the manufacturers of the Victor bicycles, everywhere well known for elegance of design and excellence of material and workmanship. Before proceeding to describe the works in which these machines are made, it is, perhaps, well to revert to the machine itself.

Several varieties of bicycles are made at this establishment, but we have selected one as a type, which is known as model "C." This machine is of the kind now commonly known as the "Safety," both

wheels being of approximately the same diameter. The machine has a very rigid frame of diamond shape; the rear or driving wheel is furnished with what is known as the Victor cushion tire, which is shown in section in one of the smaller engravings. This tire is a simple arch of rubber extending from edge to edge of the rim. Its side walls are held



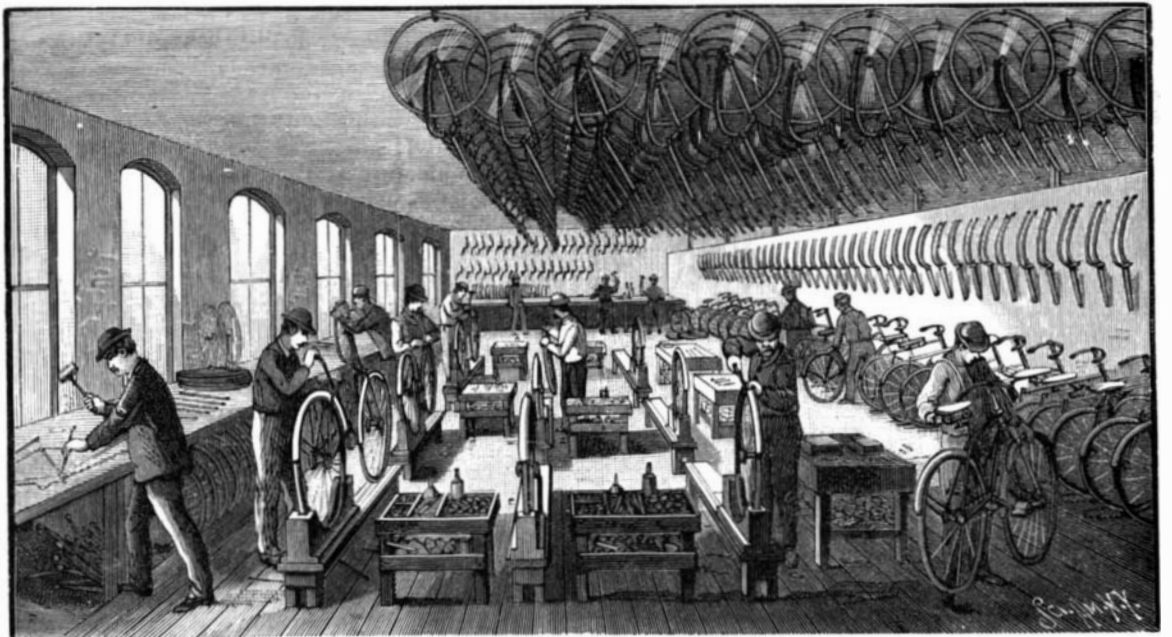
WHEEL MAKING.



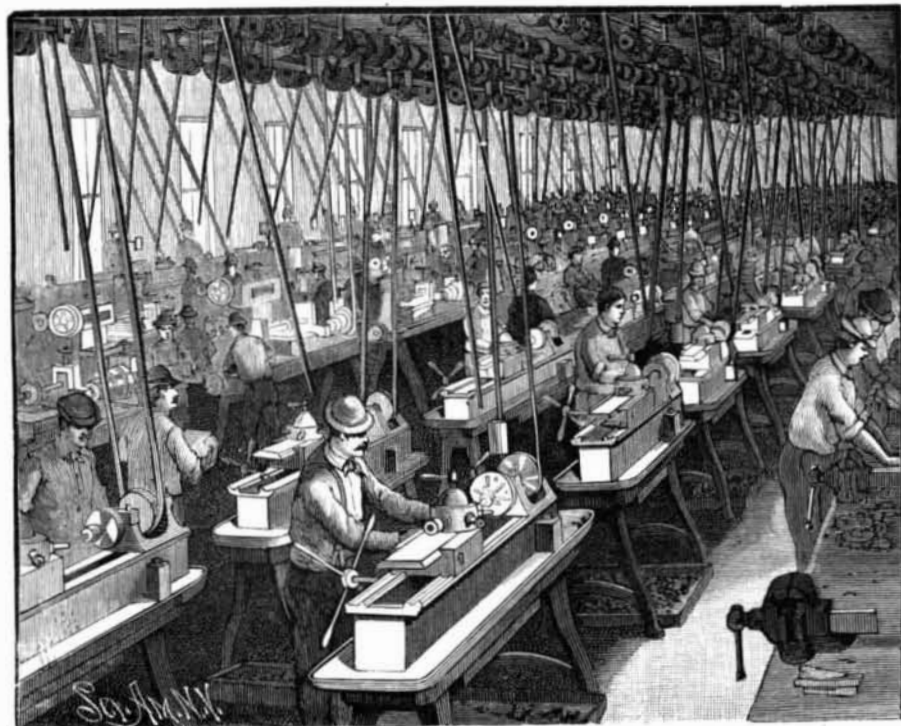
IN THE NICKEL PLATING ROOM.



PRESIDENT'S PRIVATE OFFICE.



ASSEMBLING THE VICTOR BICYCLES.



SCREW MACHINE ROOM.



DROP FORGING SHOP.

THE MANUFACTURE OF BICYCLES—WORKS OF THE OVERMAN WHEEL CO.

VICTOR BICYCLES.

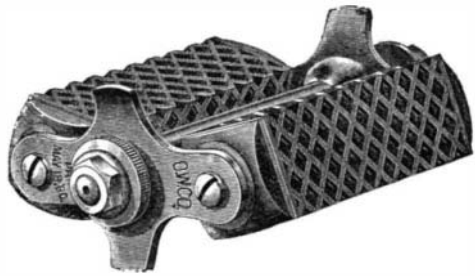
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against spreading by side flanges having rounded edges which the tire covers and protects. The base of the tire rests on a horizontal rim bed which aids materially in giving lateral stiffness to the tire and strength to the hollow rim. With this construction the rubber displaces inwardly under pressure, and the movement of the rubber is almost entirely in a radial direction, a fact which accounts for the great elasticity of the Victor cushion tire.

The elasticity of the forward part of the machine is secured by the device known as the Victor spring fork, which has proved itself in actual use a device of great value. This, taken in connection with the cushion tire, insures as smooth and steady an action as could be desired. The machine is provided throughout with the finest ball bearings, and the pedals are made on a new plan original with the Overman Wheel Co. Being rectangular in section, they automatically adjust themselves to the curve of the boot and give a good bearing to the sole of the foot.

In describing such work it is natural to begin with the history of the company, but we will omit matter that is purely historical, and refer only to the concern in its present state.

The Overman Wheel Company now occupies two extensive buildings, which lie upon opposite sides of the street, and are connected by a bridge. The first of these buildings, while in process of construction, was supposed to be large enough to meet the demands of the business for many years, but before the structure



THE VICTOR SQUARE RUBBER PEDAL.

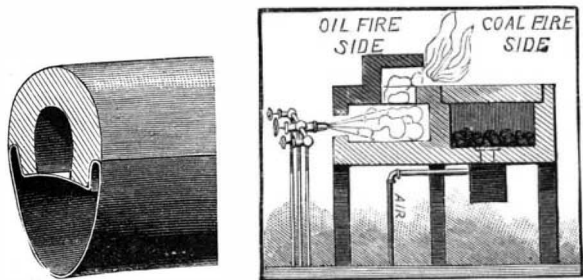
was completed it was determined that the works must be doubled, and, as a consequence, a second building was planned and proceeded with as rapidly as possible. These buildings are made of brick, with granite trimmings; the piers between the walls which support the floors are brick, with granite binders and iron caps. The floors are made of heavy matched pine plank, having a thickness of $2\frac{1}{2}$ inches, covered with diagonal pine flooring, on the top of which is placed a floor of hard maple. The ceilings and timbers are covered



THE VICTOR SPRING FORK.

with asbestos and tin, thus rendering the wooden portions practically fireproof.

The success of this concern is due in no small degree to Mr. Overman's genius in planning, building, and equipping his own shop, everything of this character being done under his own eye. The growth of the business has been such that at the present time both of these extensive buildings, with all the machinery and appliances contained in them, are scarcely able to



THE CUSHION TIRE. COAL AND FUEL OIL FORGE.

keep up with the demands of the business, even when the work is carried on night and day, as is the case during the busy season. Each of these buildings is provided with a pair of 100 h. p. engines and boilers to match, and the works are so constructed that all the



THE VICTOR BICYCLE.

machinery in both buildings may be driven by either set of engines.

The machinery employed in doing the work is the best that money can purchase or that genius can devise. As soon as the necessity for a machine for a given purpose develops itself, the machine is purchased or constructed and set at work as soon as possible. We are informed that everything which is used in the construction of the Victor machines, with the exception of the rubber tires, is made on the premises by day labor. No contract labor is allowed, and, as a rule, no work-

man under twenty years of age is employed, it having been found by experience that boys are apt to be not sufficiently alive to the importance of always doing their best work to justify their employment. All the workmen here employed are skilled mechanics who are proud of their work, and not only stand high as mechanics, but as citizens, as the Overman Wheel Company will not employ an individual who disgraces himself, whether in the works or out. As the machines are made entirely of steel, it is obvious that drop forging must enter largely into the process of construction. In one of our engravings is shown a view in the drop forging shop where the steel parts are forged preparatory to being shaped in milling machines and lathes. The forges in the drop forging shop are constructed double throughout, for the purpose of adapting them to the use of liquid or solid fuel. Crude petroleum is the standard fuel for heating the steel. It is atomized and blown into the forges by air under pressure. The petroleum for this purpose is taken through a private pipe line from tank cars at the railway, and stored in an underground reservoir having a capacity of several car loads. Petroleum is used under the boilers and in the hardening furnaces, and all these furnaces are so arranged that should the supply of petroleum fail, even temporarily, the coal furnaces may be immediately started and work will proceed without interruption. Besides the petroleum heating furnaces there are gas blowpipes, and furnaces supplied with gas from a private plant.

As the parts of the machines are held together mainly by screws, screw threads and nuts, a great deal of fine machinery is required to accomplish this part of the work. This is contained in the screw machine room, shown in one of our engravings. Most of the parts of the machine are carefully nickel plated in preference to japanning, or any other finish. A large force is employed in the nickel plating department, which forms the subject of one of our engravings. After plating, the parts are conveyed to the buffing room, a corner of which is illustrated.

The parts of the wheels are put together and the wheels are carefully trued and adjusted in a department devoted to that purpose, and one of the floors is used for assembling the parts of the machine. After assembling, the machines are all tested. Before the construction of the new building the machines were tested on the road, but the uncertainty of the weather made it necessary to provide a place under shelter, therefore the upper story of the new building was provided with a floor especially prepared for this purpose, the floor having pavements representing all kinds of roads, so that the behavior of the wheels on the different roads could be readily studied.

The tools used in the different depart-

ments of the establishment are kept in a fireproof vault in charge of competent attendants. They are made in triplicate and given out according to a regular system.

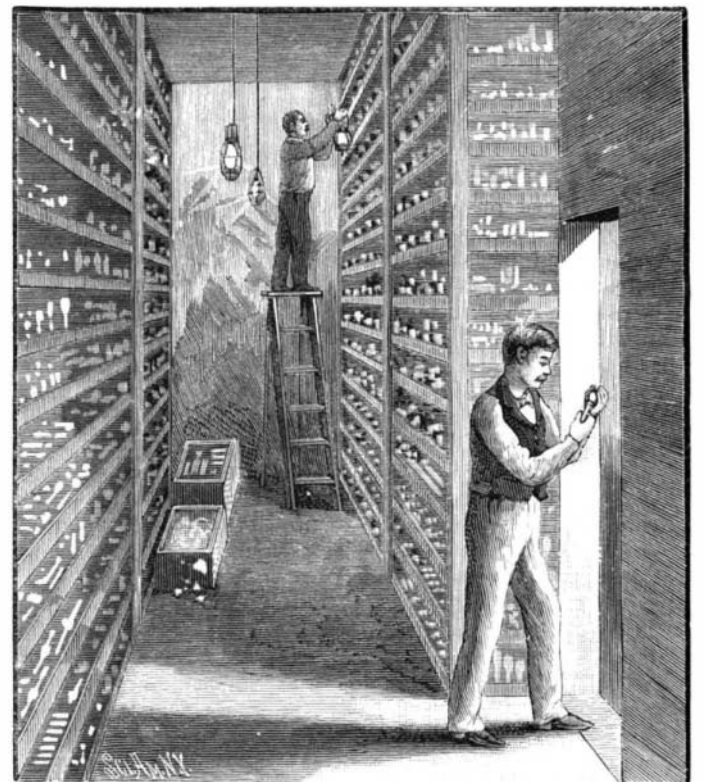
The illumination of the building is accomplished by an electric light plant having a capacity for one thousand 16 candle power lamps. The protection against fire is very complete, the works having a water tower on the roof, an underground reservoir with a capacity of 30,000 gallons, and a standpipe from the city works on every floor.

The works employ six hundred men at the present time, and we are informed that this number will soon be increased to one thousand.

The office from which this great activity is controlled is shown in one of the smaller engravings. Here the ruling genius presides. So far as possible every department is made to report itself through the medium of an electrical apparatus at the office. The pressure of the steam in the boilers, the temperature of the japanning ovens, the level of the water in the water reservoir, are all made to report automatically at the office. Here, also, is the master clock which controls the secondary clocks throughout the entire establishment, and connected

with this clock is an engineer's signal for blowing the whistle, the signals for the closing of the gates, etc.

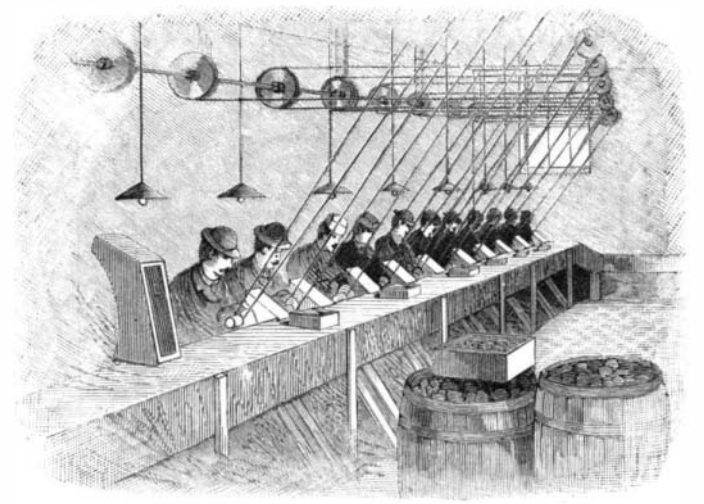
The capital stock of the Overman Wheel Company is \$250,000, with a surplus of a like amount. The president of the company is A. H. Overman; treasurer, E. S. White; directors, A. H. Overman, of Springfield; George D. Seymour, New Haven; Charles E. Mitchell, Washington; and Luther White, of Chicopee. Branch houses have been established at Boston, Mass., Washington, Denver, and San Francisco, where customers



TOOL VAULT.

can make precisely the same business arrangements as at the home office.

It is recommended for the prevention of baldness that the hair be kept pretty closely cropped, and that the head be bathed frequently in salt water and lubricated occasionally with a very small quantity of vaseline. Two teaspoonfuls of salt to a pint of water will make a tonic of the proper strength, and with this the head should be bathed three times a week.—*Med. Rec.*



A CORNER OF BUFFING ROOM.