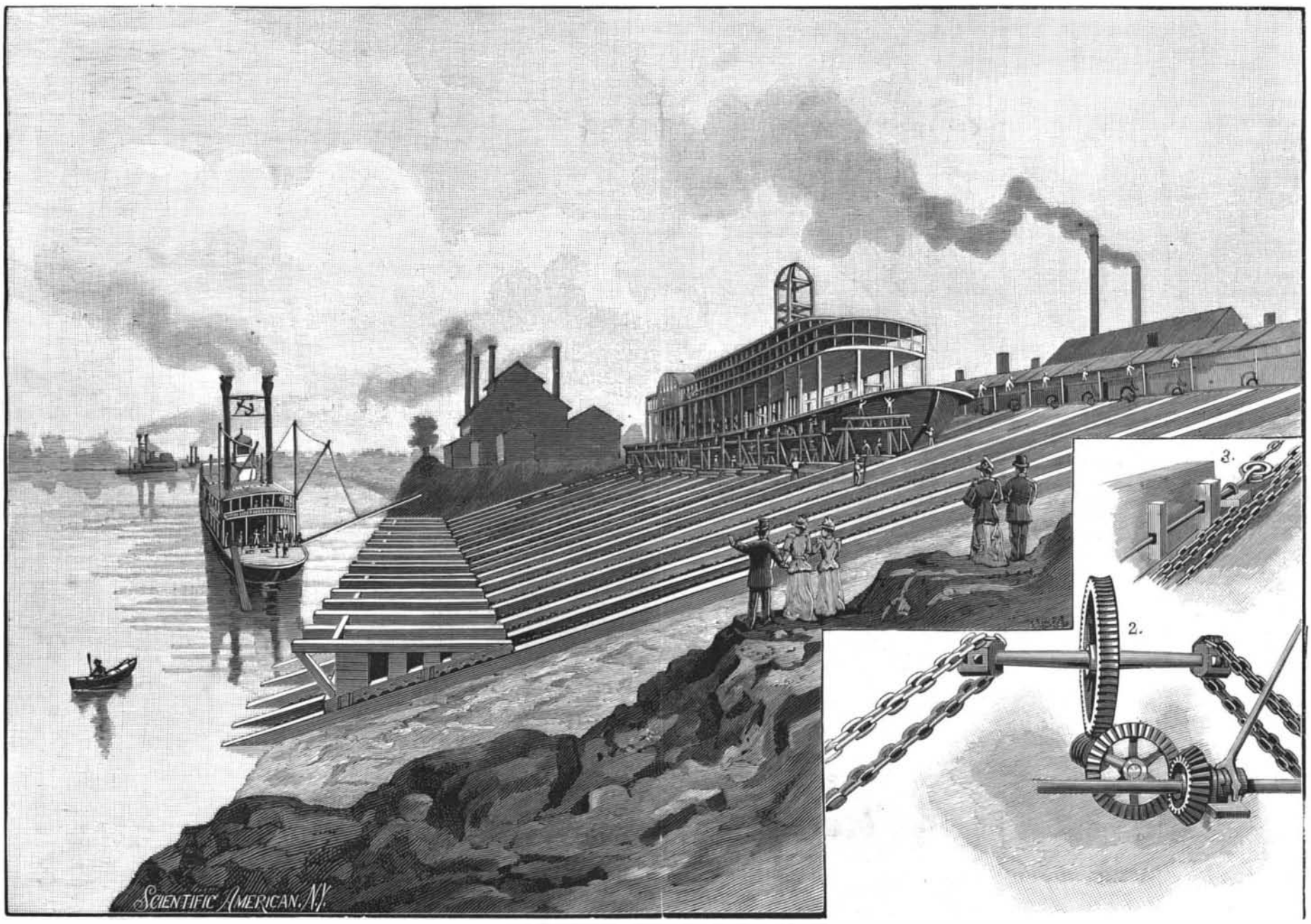
A SECTIONAL SIDE LAUNCH DOCK.

On the west bank of the Mississippi River, seven miles below St. Louis, is the dock shown in the accompanying illustration. The river boats are flat bottomed, and seldom draw over four feet, and the structure is especially well adapted for docking such vessels. Steamboats of 1,000 tons have been raised on the inclines, and boats measuring 360 feet in length, 50 feet in width, and 9 feet depth of hold, have been taken up for repairs. Extending some distance beneath the water are heavy timber ways, shod with iron 8 inches wide, forming tracks with inverted V faces on which move eight cradles, in whose lower timbers are solid iron wheels that run upon the rails, other wheels running on each side of the ways. At the upper ends of the ways is a shaft running the full length of the dock, and opposite each pair of ways and back of the shaft is a countershaft with sprockets on each end, as shown in Fig. 2, the countershaft being revolved by a worm and gear through a pair of bevel gears, one of which runs loose on the main shaft, and is thrown into or out of motion by a clutch connection with the main shaft. Large carrier chains, having links 9 inches long, of 1¼ inch iron, pass over the sprockets and follow the sides of the ways down to and around idler pulleys at the lower ends of the ways, under water, there being a double chain and sprocket for each way. Another chain is passed around the lower end of each cradle, over pulleys which serve as eveners, and the ends of this chain are carried back a suitable distance and hooked on to the large carrier chains, whereby possible inequalities of movement in the large chains will be prevented from exerting twisting strains upon the cradle. As shown in our illustration, vessels may be and are built upon the upper portion of the ways without interfering with the use of the cradles and lower ends of the ways for docking and repairing other vessels, and, on the completion of a new boat, it is only necessary to run the cradles up under the work, properly support the new construction in connection with the cradles, and lower it into the water. Mr. Henry Adkins is the superintendent in charge of this dock, which is owned by the St. Louis Sectional Dock Company.



A SECTIONAL SIDE LAUNCH DOCK.

New Astronomer at Lick.

Professor William J. Hussey, of Standard University, Illinois, will succeed Professor Barnard as astronomer at Lick Observatory. The appointment of Barnard's successor comes within the province of the regents of the university.

The Philosophy of Hoeing.

Few who have had considerable experience in the work of the garden will be disposed to question the utility of the hoe in the production of various crops, however much they may differ in their estimate of the measure of its usefulness. Unlike some other implements, the use of the hoe is not limited to any particular purpose; it is able to render services of a varied character, and some of these services would appear to be not fully appreciated. By some cultivators it is believed to be of value chiefly for the assistance it is enabled to render in the repression of weeds; but valuable as it undoubtedly is for that purpose, it is equally useful as a means by which the soil may be aerated and the moisture conserved. In a season of drought, like the one through which we are now passing, it is of importance to conserve the moisture in the soil as far as possible, and there are two means by which the evaporation from the surface may be checked. One is to mulch with partly decayed manure, refuse straw, or any other vegetable matter in the preliminary stage of decay, and the other the maintenance of a loose surface. We fully appreciate the advantages of liberal mulchings, but in a summer like this but few cultivators can obtain sufficient material with which to mulch the whole, or, indeed, any considerable proportion of the quarters under crop; but all who have a hoe may, by keeping it in constant use, obtain the advantages, but in a lesser degree, to be derived from a coating of vegetable matter. To be in a position to fully appreciate the value of the hoe in conserving moisture it is necessary to take into consideration some of the physical properties of soils and the changes that take place in them under certain conditions. Soils in a moderately fine state of division have the power, by means of capillary attraction, to draw up water from below to the surface, as proved by what takes place when a flower pot filled with soil is placed in a saucer containing two or three inches of water. The water rises to the surface of the soil, and when this becomes hardened from any cause it is acted upon by the full power of the sun, and evaporation proceeds at a very rapid rate. In the process of drying under the influence of the sun strong loams and clays shrink materially, and presently the surface commences to crack, and if the drought continues, the crevices extend two or three feet below the surface. When this is the case the evaporative surface is enormously increased, as the moisture escapes in the form of vapor from the sides of the crevices as well as from the surface, the plants are deprived of much of the moisture with which, under more favorable conditions, they would be supplied, and the roots are injured, some by direct exposure to atmospheric influences, and others by being deprived of the necessary volume of air, the compressed state of the soil consequent on its being dried preventing the air passing readily through it. A layer of loose soil will effectually prevent cracking, and materially assist in checking evaporation, and there is no means by which the surface can be so readily loosened as by the hoe. Much of the time that is taken up in watering crops in some gardens might be more profitably employed in loosening the surface soil, and in seasons like the present the constant use of the hoe should be regarded as not less essential than in seasons when weeds are abundant.—The Gardeners' Magazine.

A New Russian Patent Law Contemplated.

The minister for finances in Russia is at present engaged in preparing a new patent law for the Russian empire. The existing law allows patents for the terms of three, five and ten years only, with no extension after the expiration of the term chosen. The contemplated law provides for the grant of a patent up to twelve years, at a yearly fee extremely low for the first years as compared with the existing outrageously high charges. Statistics show that during the last five years about 291 patents were annually granted, divided as follows:

	Russian subjects and foreigners residing in Russia.	Foreigners residing outside of Russia.
1890	23 per cent.	77 per cent.
1891	19 "	81 "
1892	23 "	77 "
1893	25 "	75 "
1894	24 "	76 "

Thus fully three-fourths of the patents granted were issued to foreigners and only about one-fourth to Russians.

The figures indicate a lack of inventive genius on the part of the Russians.

Razor Sharpener.

It now appears that the razor sharpener described in our issue of June 22 is not a French invention, but is of American origin. It is due to Captain Charles A. Worden, Seventh United States Infantry, and is made by the Worden Machine Company, 26 Cortlandt Street, New York City. The invention has been patented abroad, however, and this accounts for giving the credit of the invention to France instead of this country.