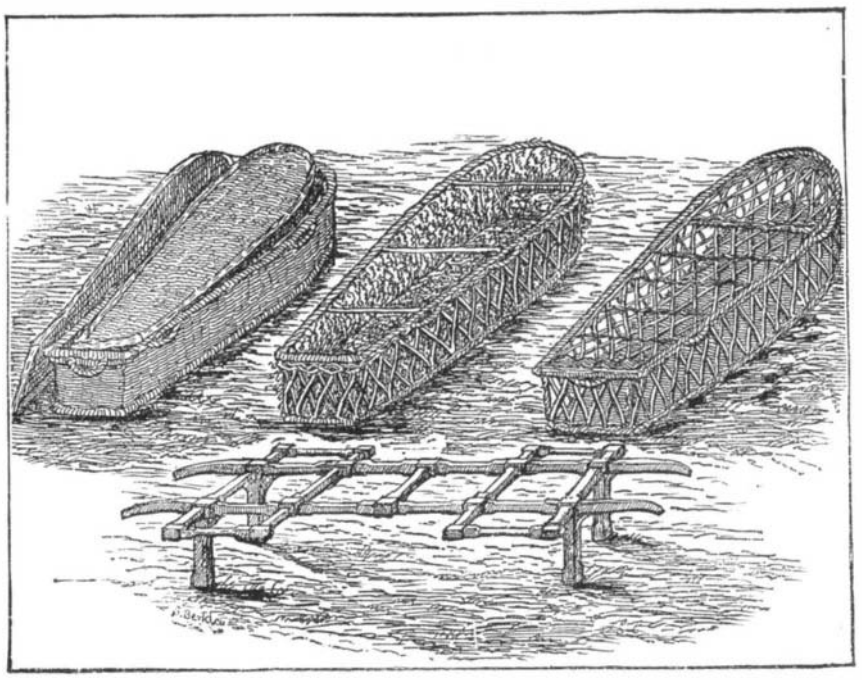
### WICKER COFFINS.

A new use has been developed for the British Duke, a use upon which we are fain to congratulate the British inventor. From his prominent position as an integral portion of the noble and conservative element of the political system of England, the Duke of Sutherland now soars to a loftier hight, and takes rank with the daily journals, and the big hand bills, and the banners carried by small boys as a valuable advertising medium. He recently invited the nobility and gentry of London, to a garden party, not to regale them with the festivities peculiar to such gatherings, but to secure their attention to an improved system of wicker work coffins devised by Mr. Seymour Haden, an illustration of which is given herewith. During two days, everybody accepted His Grace's invitation with alacrity, for everybody does not often get invited to a ducal residence. Everybody read a neatly worded circular, setting forth the varied advantages of the invention, poked in his hand on passing the door, and then everybody, after entering the aristocratic precincts of Stafford House, was permitted to moralize *ad lib.* over a heap of oblong baskets displayed upon the grass.

We do not question for an instant that it is most laudable for the nobility of England to encourage the progress of invention. In so doing they simply follow the example of the rich and enlightened the world over; but it strikes us as extremely ridiculous that a device which in itself possesses but the merest shadow of novelty, and certainly involves no new discovery or principle, should thus be brought into a notoriety through the medium of ducal advertising, which on its merits it could not attain. Even *Punch* makes a little quiet fun out of the affair by putting the question of "Ah—have you seen the coffins yet?" in the mouth of an inane youth who at a party finds himself at a loss for something to say to his fair companion.



THE DUCAL WICKER COFFIN.

So far as basket burials *per se* are concerned, we fail to see any advantage in a basket packed with moss over a deal box with a few holes bored in it, such coffins as thousands of soldiers were buried in during our war or which now are frequently employed to contain the remains of the unfortunates inhumed in the Potter's Field. A simple perforated chest of some thin non-resinous wood, or, better still, of stout pasteboard unsized, would take very little if any longer than a willow basket to decompose, and certainly would be cheaper.

### CASTING STEEL IN ONE TUN INGOTS.

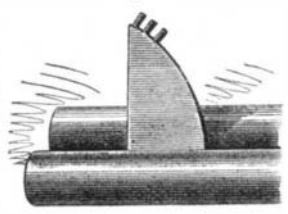
In an article on the progress of our steel industry, which recently appeared in these columns, we took occasion more especially to allude to the advance made in New York State since the exploitation of the Crown Point mine near Lake Champlain. Large quantities of the ore from this deposit, smelted into pig iron, together with iron from other localities, notably Port Henry, Fort Edward, and from the Lake Superior region, aggregating some 100,000 tuns per year, we stated, were shipped to the immense works of the Albany and Rensselaer Iron and Steel Company, in Troy, N. Y., where, by the Bessemer process, the metal is converted into steel, the major portion of which is rolled into rails. The finished material is sold at a price considerably below that of the steel produced by English makers imported hither, but nevertheless it yields to its manufacturers a fair profit. The process of making this steel, which is cast in ingots weighing over a tun each, is exceedingly interesting, both from the improved and novel mechanism employed, and from the scale of magnitude on which the various operations are conducted. A recent visit to the establishment above named afforded us an opportunity to witness the latter, and to gather the facts upon which the following description is based:

Three great cupola furnaces at the Albany and Rensselaer Works receive the masses of pig. Into each of the three fiery caverns fifteen tuns of material are thrown; and in the course of three quarters of an hour, five and a half tuns from each will be melted. For eighteen hours the furnaces are kept in blast. Near by are two reverberatory furnaces in which the spiegeleisen is prepared, ready to be added at the proper time. Leading from the outlets of these, as well as from those of the cupolas, are gutters which convey the liquid metal to the two converters, which are suspended side by side on the massive framework. One of the great vessels, as we enter the building, is swung over on its side with its bent neck just under the gutter; the other is slightly inclined, and workmen are busily putting in new tweers (cylindrical pieces of fire brick perforated with numerous holes and inserted in the bottom, the orifices serving as air passages), and luting about the bottom plate with a paste made of quartz, sand, and clay.

Some one shouts a warning, and we step aside to avoid the heat of a stream of molten metal which comes pouring down the gutter from one of the cupolas. Hissing and shooting forth sheets of flame, it falls into a huge ladle, where it is weighed, and then continues its downward rush between the banks of sand in the gutter, around the bends of the same, and finally tumbles, a miniature cataract, into the mouth of the converter. Over six tuns soon lie bubbling and seething on the deep side of the inclined vessel. Then a sullen roar and a shower of flame and sparks issuing from the open mouth of the latter announces that the blast is turned on, passing, however, only over the surface of the metal. The monster had eaten his fiery meal, but digestion had not yet begun; slowly, however, the huge caldron is turned upright, and then the torrent of flame, augmented, pours into the adjacent chimney. The twenty minutes or thereabouts occupied in the process, we devote to examining the surroundings.

At one end of the immense building is a platform on which is an assemblage of wheels and levers, managed by two or three men, one of whom we are informed is the "blower," the important person upon whom the success of the process depends, for his business it is to watch the flame from the converter and to determine when the blast shall be stopped. Just in front of the two caldrons is a huge crane carrying a ladle. Four other cranes, from the arms of which heavy hooks are suspended, are also located in the building. Each crane consists of an arm on which is a traveling carriage, attached to a vertical shaft some ten inches in diameter, which forms the piston of a large cylinder at the base. Into the various cylinders water is forced by two hydraulic pumps at a pressure of some 350 lbs. to the square inch, and is governed by valves controlled from the platform mentioned at the beginning of this paragraph. The interior of the valve used is so constructed that the water may be sent under the piston and then led from that point to an overflow pipe, so that in one case the piston is raised, and in the other it is allowed to descend. The sensitiveness of the immense crane, with its load, to the merest motion of the valve, and its celerity and certainty of action, are remarkable. From the same platform the converters are manipulated by similar means, water being conducted to sunken cylinders, the pistons of which carry racks, which engage with pinions on the trunnions of the vessels. The blast, which is controlled also from the same point, is supplied at a pressure of 25 pounds to the inch by two horizontal blowing engines, the air cylinders of which are 54 inches in diameter.

*Fig. 2*



The flame from the converter has been growing in intensity and size, until now dazzling in its brilliancy. The blower is watching it carefully. Suddenly it decreases in length, and becomes reddish, and at that instant the blast is stopped, for the decarbonization is complete. Then the caldron slowly turns on its side, and presently another stream of molten metal comes leaping down the gutter and into the open mouth. This is the spiegeleisen, which has meanwhile been measured and melted. It mixes at once with the liquid mass in the vessel. Now the mouth of the latter is turned still lower until it vomits forth a dazzling, blinding jet of liquid steel, into the enormous ladle which the crane has swung into position.

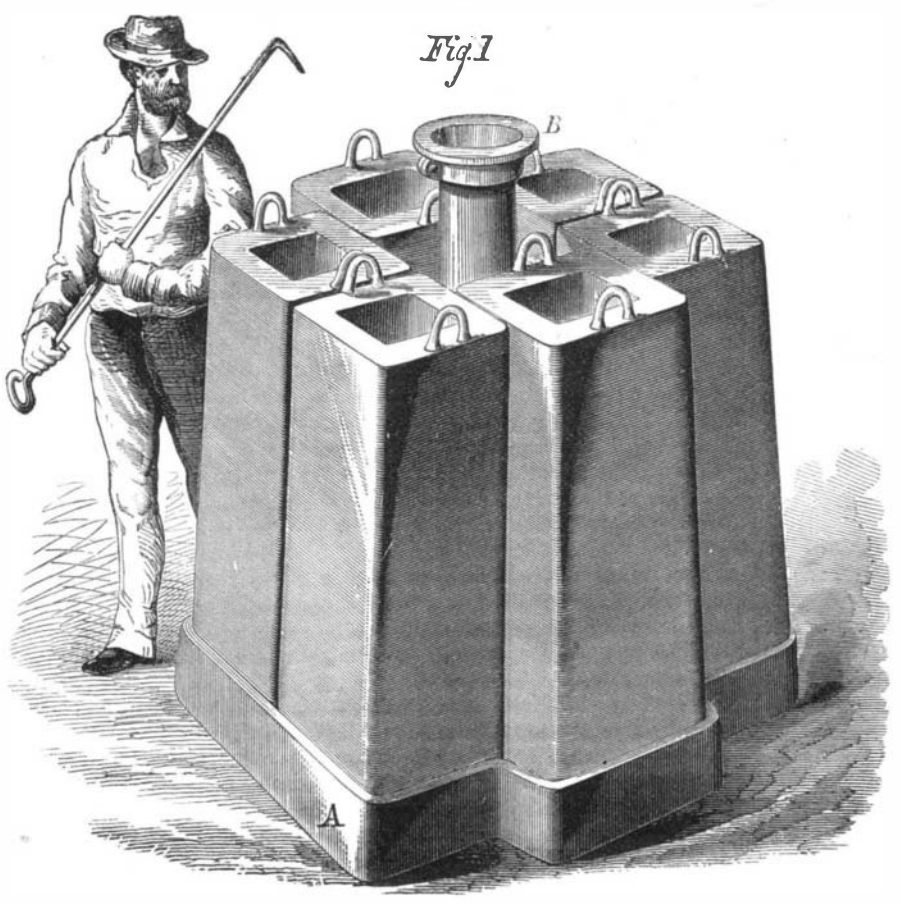
While the above has been in progress the workmen have been busily preparing the molds. Six one tun ingots are to be cast from the contents of the ladle. Each ingot will make three rails. The molds are of iron of the form, and arranged in a nest, as shown in the engraving, Fig. 1. The lower portion, A, consists of a deep platform lined with fire clay and having channels radiating from the center. B is a tube of iron placed over the central opening. Into this the steel is allowed to flow, so that it enters the grooves in the platform and then, escaping through the apertures, rises in the molds disposed above the latter. The tube, B, retains the cinder, and is therefore made somewhat higher than the molds.

As soon as sufficient time has elapsed for cooling, the molds are lifted by a crane, leaving the ingots of steel standing upon the platform. These, still red hot, are at once raised, deposited on a car, and transported to the heating furnaces. Each furnace contains four ingots, which are thus brought to a yellow heat.

The rolls are some 34 inches between centers and are driven by the main engine. Each ingot passes through twenty-one times. The table upon which the work is conducted to the rolls consist of a number of cylinders rotated by suitable gearing driven by a separate small engine. A piece laid upon these cylinders is quickly moved forward. This table is adjustable vertically, and may be raised up or lowered to present the ingot according to the adjustment and position of the rolls. Between the cylinders and moving longitudinally are a number of fingers arranged as shown in Fig. 2. These are actuated by water power, and serve to turn the ingot over as it is drawn to and fro. A similar combination of mechanism is located on the opposite side of the rolls.

It will be observed that there is no hammering, to the absence of which the homogeneous nature of the steel, and also its uniform quality, may be ascribed. The ingot on entering is some thirteen inches square; on emerging from the rolls after one minute and thirty seconds drawing, it is reduced to about six inches. This entire work, formerly involving the labor of eighteen men, is now conducted with ease by a man and two boys.

*Fig. 1*




MOLDS FOR CASTING STEEL.—Fig. 1

### Progress of the Centennial.

The exhibition buildings of the Centennial Exposition are now rapidly progressing; and if the funds requisite for the purpose be forthcoming, they will be completed by the first of next January. The granite work of Machinery Hall is nearly finished, and the roofs are being tinned. The plastering and laying of the floors will shortly be begun. The eastern and western wings of the main edifice are completed, and the entire structure, it is expected, will be up by the 1st of October. The glazing of Horticultural Hall is well under way, and nearly all the flooring is laid. Agricultural Hall will be begun as soon as the machinery building is finished. Laborers are now engaged in grading the grounds and digging out the declivity between the United States building and Machinery Hall in order to form a bed, some four acres in extent, for an artificial lake.

The wrought iron observatory to be erected by a Boston company (it is a pity we could not have had Clarke, Reeves, and Co.'s one thousand foot tower) is slowly rising. This will be 170 feet in hight and is located at Belmont, a point in Fairmount Park some 200 feet above the Schuylkill. The summit of the edifice will be about 100 feet above the highest spire of the Centennial buildings, over which and the city of Phila