

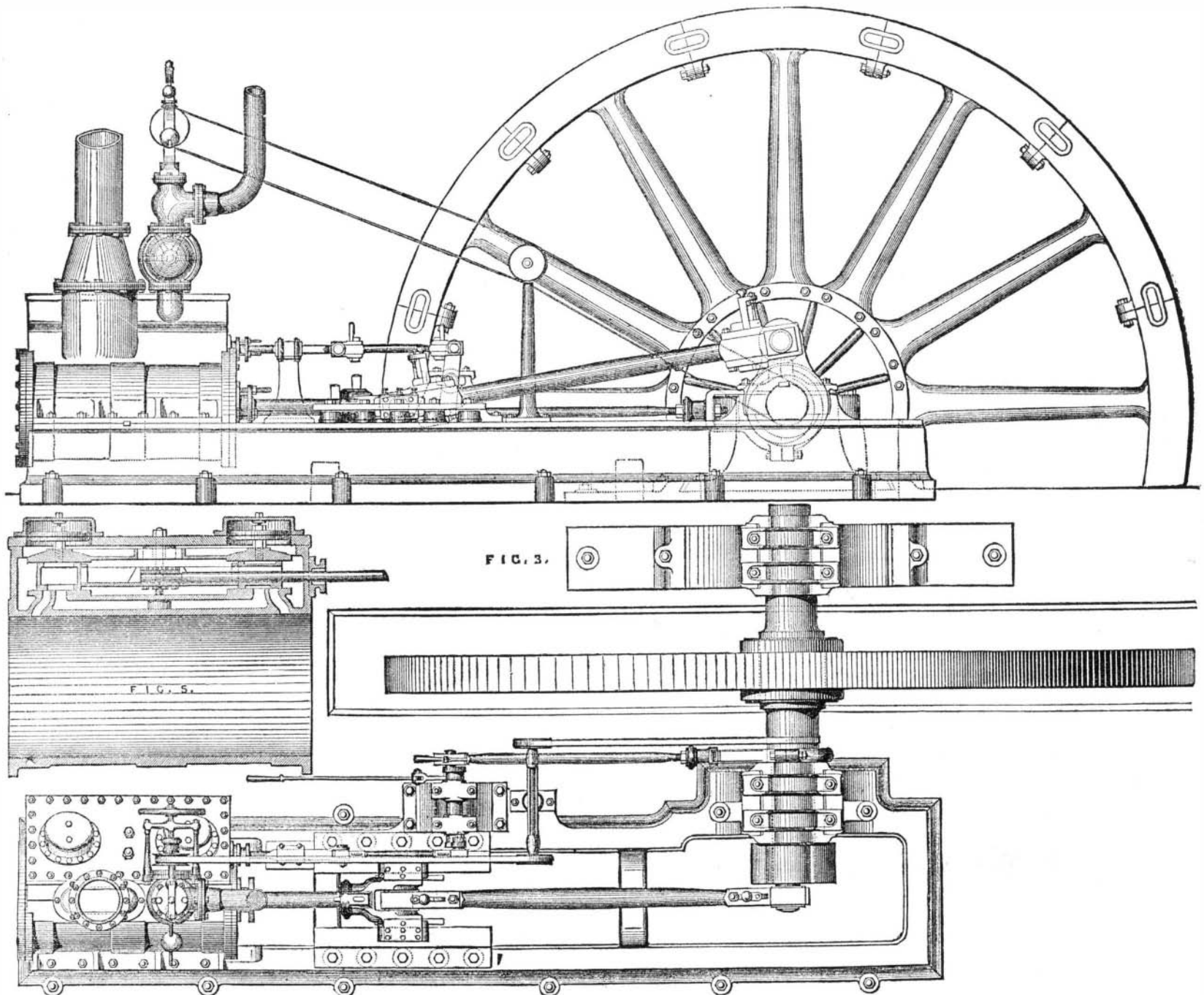
ENGINE FOR BLOOMING MILL USE.

The John Edgar Thomson Steel Works, near Pittsburgh, Pa., have recently been adding very largely to their extensive plant, and among the new machinery is a large and powerful steam engine, which deserves special mention for its excellent construction and the high finish that has been

when not deflected, is one sixteenth of an inch above the outer face of the steam chest lid. Bolting down the bonnet draws the edges of the diaphragm down to the steam chest lid, making the joint and securing the proper seating of the valve. The area of the inside of each bonnet is made equal to the area of the extreme edges of the corresponding valve,

Railway Liability for Freight.

In the case of a railway company that receives freight for transportation over its own and connecting lines, the Supreme Court of the United States holds that such receiving company is not liable for losses that occur on the connecting road, unless the receiving road contracts to be responsible.



BLOOMING MILL ENGINE AT THE THOMSON STEEL WORKS, PA.

put on all its parts. The engine has a 36 inch cylinder with 4 inch stroke, and the fly wheel, which is 25 feet in diameter, weighs 50 tons. The whole engine is of massive proportions, but the only detail of which we need speak here is the slide valve, which is shown in detail by Figs. 4 and 5. This is Hemphill's balanced slide valve, which, as shown, moves between the usual face and a relief plate. The relief plate is prevented from moving with the travel of the valve, by arms extending from its sides interlocking with lugs cast on the side of the steam chests, leaving the plate free to expand from the center towards the ends.

minus the area required to secure a sufficient downward pressure to hold the valve firmly to its face. The relief plate is thus held between two forces, the pressure of the steam downward on an area equal to that of the valve, and the pressure upward on the diaphragm.

The set bolt, shown at the top of each bonnet, is adjusted to leave a space of about one sixteenth of an inch between its point and the point of the diaphragm stem, thus allowing the valve to rise from its seat to allow the escape of water from the cylinder when necessary. Experience has proved that the flexibility of the copper is ample to secure the desired relief on the valve.

The Stevens Institute Commencement.

On the 4th ult., the great hall of the Stevens Institute, Hoboken, N. J., was filled with a large audience on the occasion of the first annual commencement. Governor Bedle presided; and the proceedings having commenced with music and prayer, Professor Morton delivered a pointed and practical address on the objects and scope of the Institute, and the nature and importance of the instruction there afforded. Three theses were read—one on a design for a fifty-ton floating derrick, by Adolph Sorge; another on the theory of the traction of locomotive engines, by James E. Denton; and a third on heating and ventilating, by J. Hector Fezandie.

Professor Thurston delivered an address to the graduates, giving them some sound, common sense advice as to their conduct and life in the world into which they were entering. Governor Bedle followed with an interesting speech, in which he eulogized the late Edwin A. Stevens, and spoke in fitting terms of his liberality and the noble institution on which he bestowed his wealth and his name. Degrees were conferred on eight gentlemen, the three above mentioned, and Messrs. Bachman, Roetzly, Leavitt, Wall, and Yokichi Yamada. Mr. Bachman's thesis was on the subject of flouring mills, Mr. Roetzly's on sugar refining, Mr. Leavitt's on overshot water wheels, Mr. Wall's on wire rolling and drawing; while that of Mr. Yamada, who is a native of Japan, was on a design for a turbine water wheel.

THE luster of morocco leather is restored by varnishing with white of egg.

The receiving road becomes a contractor for the entire route when it fixes a price for the whole distance, and receives the goods for such transport.

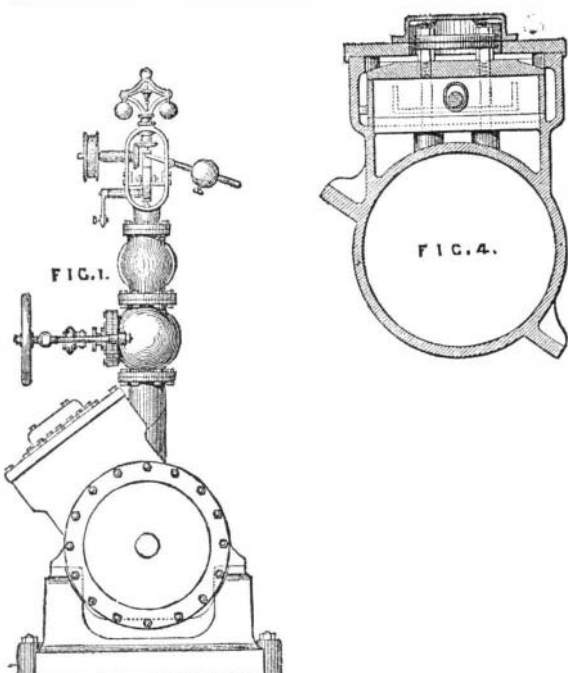
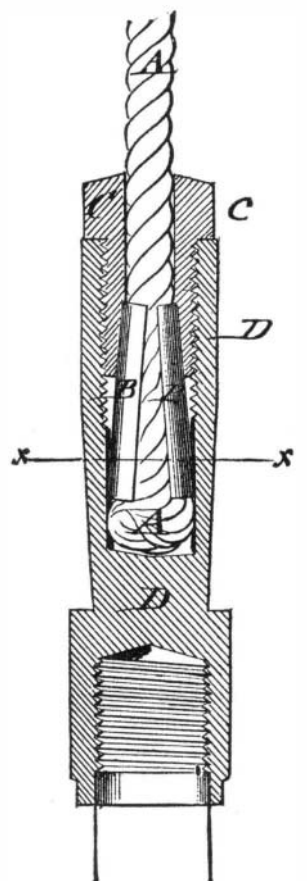
IMPROVED ROPE SOCKET.

This is a convenient rope socket connection, especially adapted to hoisting the shafting in oil wells, though susceptible to many other uses which will readily suggest themselves. The end of the rope, A, is first unlaid; and two sleeve-shaped tapering pieces, B, are applied so as to wedge against the collar, C, which is screwed into the connecting piece, D. This last is similarly attached to the shafting. The piece, D, might be made stationary, in which case the device would be useful in any arrangement in which it is necessary to fasten tightly the end of the rope.

Patented through the Scientific American Patent Agency, October 27, 1874, to Mr. Bowen, of Peachville, Pa.

The Magnetic Curves.

Rev. G. H. Hopkins gives the following method for fixing the curves which steel filings take when under the action of a bar magnet. The filings, having been prepared so as to be as nearly the same size as possible, and that size very minute, are poured into a mortar, and a small quantity of finely powdered resin is added: these are



Near each end a stem is tapped into the relief plate, and on this stem are two disks, as shown. Between these disks is held a copper diaphragm about one sixteenth of an inch thick, covering the hole in the steam chest lid, and secured to the latter by a bonnet or cover. This copper diaphragm,