

MOORE'S PULLEY-BLOCK.

(See page 341.)

We annex illustrations of one of Moore's 7½-ton pulley blocks, constructed by Messrs. Head, Wrightson & Co., of Stockton-on-Tees, and with which two men can lift a load of 8 tons. Figs. 1 and 2 represent front and side views respectively of the apparatus, Fig. 3, showing the internal gearing, which is 20 in. outside diameter. In these blocks two revolving discs are mounted face to face upon a shaft. The meeting face of each disc is dished out, and the periphery of each dished recess is formed into an internal toothed wheel. One disc has a tooth less in number than the other, but both have the same pitch diameter. When the discs are mounted on the shaft the space formed by the meeting of the two recesses is occupied by a pinion of smaller pitch diameter than that of the internal discs wheels. This pinion is mounted loose upon an eccentric forged in one with the shaft passing through the discs, and is carried round by the revolution of the shaft and eccentric. In revolving, the pinion rolls round the periphery of the internal wheels, and in one complete orbit the faces of the two discs move a distance equal to the pitch of one of the disc teeth, owing to the gradual displacement of the odd tooth. A chain wheel is cast on the back of each disc, and from the cross-head and hook to which the weight to be lifted is attached two chains, pass, one to the right side and one to the left side of either disc chain wheel. The loose ends pass over and are connected at a convenient distance below the block, forming a loop, which rises as the weight is lowered, and *vice-versa*. The eccentric shaft is made to revolve by a hand chain wheel keyed to it, the wheel being worked by an endless hand chain, and the machine is supported in a frame with a suspending hook at the top, to attach to a beam or other means of support. The differential power is obtained by the gradual displacement of the odd tooth in the revolution of the pinion. The discs are perfectly free to move either way round in the frame, but the weight coming half on the right side and half on the left, perfectly balances the block and keeps the lifting chain plumb and fair under the centre of the block. One advantage of this system amongst many which it possesses, is that the weight cannot run down when left suspended.

IMPROVED PORTABLE STEAM-ENGINE.

(See page 345.)

The Erie City Iron Works, of Erie, Pa., manufacture a portable steam-engine, of which we give a representation in the adjoining engraving. It is made of various dimensions, in eight different sizes, from 6 to 30 horse-power, the cylinders being 6 by 6 to 12 by 15 inches, and making from 200 to 140 revolutions per minute. The diameters of the pulleys vary from 24 to 72 inches, while the diameters of the tubular fire-box boilers range from 26 to 42 inches, and the tube are from 54 to 108 inches long. The weight, when complete, is 2,800 pounds for the smallest and 13,000 pounds for the largest size, and we are satisfied that for neatness of design, simplicity, durability, and ease of management they cannot be surpassed. The manufacturers do not claim numerous patents or new inventions, but have succeeded in building a simple durable, and efficient engine, capable of doing as much work, with the same size cylinder, as any engine built in this country.

It is well-known that the rated horse-power in these and all other manufacturers' lists is arbitrary, but the real power is determined by the size and strength of the engine and the capacity of the boiler for generating steam. If the boiler is too small a great waste of fuel is made in forcing the fires, and the supply of steam is insufficient and irregular. This is a fact to which we have called special attention in our series of articles on the "Theory of Steam Engineering," and we advise all those intending to buy engines to compare prices and capacities of different lists, and to look carefully to the specifications of the boilers. These boilers are all tested, inspected, and insured for one year by the Hartford Steam-Boiler Inspection and Insurance Co., and the policy of insurance made payable to the purchaser of the engine. This is a new feature in the trade that cannot fail to commend itself to all purchasers.

The boilers are tested with hydraulic pressure of 150 pounds to the square inch, afterward fired up, and the engines run until known to be perfect and complete in all their parts. They are supplied with smoke-pipe, governor, heater, pump, steam-gauge whistle, safety-valve, gauge-cocks, and oil-cups.

For the convenience of the trade, a branch house has been established at Charlotte, N. C., under the management of Mr. Wm. C. Morgan.

EXPENDITURE ON THE UNPAVED FOOTPATHS IN CAMBERWELL.

The Camberwell Vestry are about to expend the sum of 11,000*l.* in paving and kerbing the public footpaths within the parish, and at a meeting of the Vestry held last week, the subject was discussed at great length, on a recommendation by the General Purposes Committee that the sum in question be expended at once. Mr. Dresser Rogers, in moving the adoption of the recommendation, made some statements as to the extent of these footpaths, remarking that there were 108 miles of them within the parish, and that of these 108 miles 45 miles had been tar paved, 33 miles York paved, and 30 miles gravelled. With reference to streets, he stated that 149 had been taken to under the 105th section of the Act, and that in addition to those 149 new streets, there were at the present time 25 new streets being proceeded with. The length of these new streets was 17 miles, and the work had been done at an approximate cost of 23,000*l.* What they had done was to pave as quickly as possible the poorer neighbourhoods, where fever and illness might have arisen from a want of paving and kerbing the footpaths throughout the parish, he observed that they knew the work was an important one, and that the sooner it could be proceeded with the better it would be. Camberwell was now in a good position. He remarked that some five years ago there were some 2,000 empty houses in the parish, whereas now, with the exception of passing tenants, there was scarcely an empty house in the entire parish. All this meant a large amount of rates, and it meant, too, that great improvements had taken place in the parish generally. The recommendation was ultimately carried unanimously, and the works are to be immediately proceeded with. 5,000*l.* of the amount required are to be borrowed, and repaid in ten annual instalments.—*The Builder.*

Worthy the attention of our City Council.—Ed.

HOW TO GET CLEAR SKY IN OUTDOOR NEGATIVES.

Since my early days in photography I have examined photographic journals many times to find something that would throw light on this subject. Most architectural photographs have their skies worked out mechanically. The leading photographic writers urge strong objections against this practice; but when cloud effects cannot be obtained I am of the opinion that a clear blank sky is better than a uniformly dark one, which generally tends to make prints look flat.

This subject has been my special study for a year past. Experience has led me to the following conclusion: If the sky appear uniformly dark blue to our eyes, or if there be any haze in the atmosphere, it will surely come out dark in the prints; on the other hand, if it be light blue, or if there are white clouds of any kind, it will act strongly on the negative, and the result is a clear, if not a perfectly white, sky in the photograph. Hence it is advisable not to attempt architecture in hazy days, unless you are going to paint out the sky. Another thing tends to help the getting of clear skies. Use as little acid as possible in your silver, and expose while the sun is obscured by a white cloud, which will remove harsh contrasts; and if the negatives lack intensity they certainly will gather some if you dry them in the sun before fixing. Try it.

In architectural photography swing-backs (both ways) are indispensable, yet there are still a few who have never used a swing-back camera-box. If you are troubled with the building taking pyramidal inclinations when the camera is inclined either upwards or downwards an adjustment of the vertical swing will at once correct it. The lateral swing will help in getting the distance into focus with the foreground without necessitating the use of a small stop. Especially is this the case when you have to take street scenes, when it is impossible to take those parts *near* the instrument into focus with those receding with a non-swing-back box.

GREEN.—ON WOOL, OR SILK, WITH OAK BARK.—Make a strong yellow dye of yellow oak and hickory bark in equal quantities. Add the extract of indigo, or chemic, 1 tablespoon at a time, until you get the shade of color desired.