IMPROVED CABLE-CONVEYING APPARATUS.

The cable carrier shown in the picture has been proved in practice to effect a saving equal to the labor of 15 to 20 men in the construction of a 12 ft. sewer. The 1½ in. wire cable which carries the large and small carriage blocks is about 375 ft. in length, and its ends are anchored 5 ft. in the ground to a piece of 12 × 12 timber 8 ft. in length called the dead man. The cable and machinery attached to it is then raised from the ground by means of two 25 ft. wooden supports placed 60 ft. from each end of the anchor. The supports are made of 6 × 8 timber, and are 10 ft. in width at the bottom, tapering up to 3 ft. at the top. The working distance between these supports is 225 ft. The large wire cable is made of seven ¼ in. strands, and the latter are each made of sixteen ⅛ in. wires. The cable when braced up has a fall in the center of about 3 ft. The upper trolley wheels of the large and small carriage blocks rest on top of the large cable, and the lower wheels of the small carriage blocks support the small ¾ in. cable, which raises and lowers the dirt bucket.

The framework of the large carriage block, shown in one of the small views, is about 2 ft. square and 2½ in. in width. It is made of ¼ in. wrought iron, and contains three 10 in. trolley wheels, the upper two

will run back and forth 2 tons of dirt and stone at a time. The machinery weighs about 10 tons, and the total cost of the plant is about $3,000. Our illustrations were recently made from the apparatus when at work in Jersey City, N. J.

Printing Tints.

Mr. E. E. Wright gives in *Typo* (N. Z.) the following hints on the subject of tints—their method of use and their harmonies. By the term "tint" is understood a considerable surface of color applied to the paper as a ground work to the whole or portion of the job, to bring out some prominent feature in the design.

Tints may be divided into two classes : 1. Warm, such as salmon, orange, or reddish purple. 2. Cool, such as drab, gray, etc. Where a considerable portion of the job is to be tinted, and bright colors are to be used for the lettering, it is always safest to use a tint in which the primary colors do not appear. For instance, drab, gray, or slate produce a very good effect when used with almost any shade of red or green; but should the lettering be of black, blue, or any cold dark color, the tints should be warm—say orange, pink or lavender.

To obtain the greatest advantage from the use of any

Tint work is at present so very little used in typography in these colonies that few offices keep a stock of tint inks on hand; but with the assistance of flake-white, or even of ordinary varnish, and the colored inks to be found in every well furnished office, excellent tints can be produced. In working tints it is only necessary to keep enough color on the rollers to give a solid impression. If too much is used, the colors of the next impression will be rough and ragged.

Green is one of the most serviceable of tints. It is a secondary color, a combination of blue and yellow, and tints may be prepared either by diluting a green ink or combining blues and yellows in various proportions. By the latter method an endless variety of tints may be produced, from brilliant emerald to those uncertain but beautiful shades which are neither blue nor green.

Drab is a cold tint, and is generally used for shadows. White, with a very little black, and perhaps a minute quantity of blue, will produce this color.

Blue is a useful tint, and may be diluted with white to any extent required. With the addition of a little yellow the peculiar tint known as " peacock blue " may be obtained.

Browns may be made from brown inks or in a great

SECTIONAL VIEW OF CARRIAGE BLOCK.   *BACK CABLE SUPPORT.*
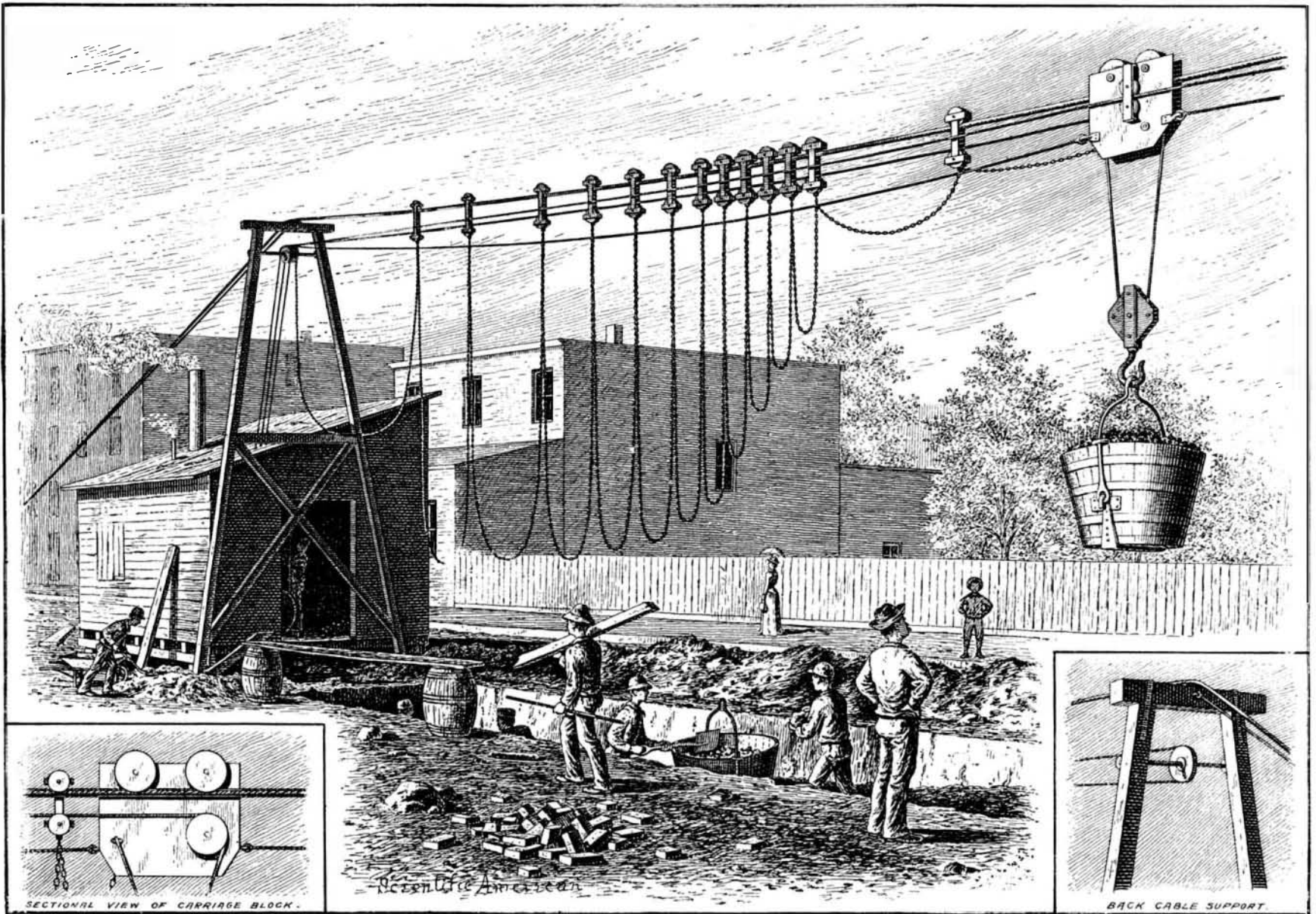
IMPROVED CABLE CARRIER FOR TRENCH DIGGINGS.

resting on the large cable, while the small cable passes over the other and down through a 10 in. fall block which holds the bucket, and up into the carriage block, where it is connected to the lower corner of the framework. The small carriage blocks are about 1 ft. in height and contain two 4 in. trolley wheels 1½ in. in thickness. The blocks are connected together by means of ¼ in. chains ranging from 6 to 16 ft. in length.

As the large carriage block rolls along the cable, the small blocks follow as the chains straighten out. A small cable connected to each lower end of one of the sides of the large carriage block passes around a 12 in. sheave wheel at the top of one of the large cable supports and back again to the sheave wheels on the other support and down into the engine house, where it is connected to a drum working in the manner of an endless cable.

The dirt bucket is drawn back and forth by a Lidgerwood 20 horse power engine with 60 lb. of steam. Connected to the engine is a gypsy and an ordinary drum. The gypsy is used for carrying and the ordinary drum for raising and lowering the buckets. Both drums are worked with levers. The buckets each hold 10 sq. ft. or about 1,200 lb. A bucket can be raised, carried 225 ft., dumped, and brought back again in about half a minute. The machine carries the dirt and stone away, keeping the weight off from the sides of the excavation, and the refilling is speedily effected. The buckets

tint, its margin or edge must be clearly defined by a positive color, and where two tints meet, they should be divided by a darker line, which gives a finish to the job.

The tints most generally used, and which give a pleasing appearance to the work, are drab, blue, brown, lilac, pink, lemon, and green; but with a little study an endless number of tints and shades can be produced. In working more than one tint in a job care must be taken that the colors are in harmony, and that they are not too strong. The following, in pairs or triplets, produce a good effect : Blue and pink ; pink and green ; sage-green and brownish yellow, or buff ; buff and greenish blue ; buff and lavender ; pink, sky-blue, and pea-green (this is a combination that looks well, but requires careful working) ; buff and light blue ; buff, pink, and sky-blue, etc. These colors are for tints only, not for lettering. The choice of tints should be regulated by the positive colors used in the job, and some practice is required before the appearance of the finished work can be judged before the whole of the colors are brought together. One way by which some idea may be gained beforehand is to obtain sheets of paper of the primary colors, cut them into strips of suitable length and width, take a full sheet of tinted paper, and place the primaries on it, one or two at a time, and repeat the experiment with various tints. By this means, or by the use of water colors, the compositor or machinist can obtain a very good idea of the effect to be produced.

variety of ways by combinations of red and black with yellow or orange.

Lilac, lavender, and violet may be made by mixing red, blue, and white in various proportions.

Pink is produced by mixing white and rosine. For a permanent color use carmine.

The unlimited variety of tints and shades to be produced by combinations of colors in various proportions is illustrated in the case of dress fabrics, and many of the choicest fashionable tints could be imitated by the art printer, who would find it to his advantage to experiment in that direction. All tints dry lighter than they appear when freshly printed, and should therefore be worked slightly darker than they are intended to be. Wherever possible they should be tested in juxtaposition with the colors used in the text of the job.

A Successful Inventor.

It is not every inventor who is so fortunate as Mr. Louis Brennan. The Admiralty have paid the last installment of £16,000 to this gentleman, who has received much more than £110,000, which the government is supposed to have paid for his torpedo. Eight years ago he was paid a retaining fee of £5,000, and engaged for three years at a salary of £2,000 a year and expenses, in return for which he was to devote all his time to the development and improvement of the torpedo, and when that term was over he received for some years a salary of £1,500.—*The Practical Engineer.*