

HANDSOME MODEL LOCOMOTIVE.

In his letter accompanying the photograph which we herewith reproduce Mr. Richard H. Kiddle, of Kinsman, Ohio, informs us that this beautiful working model of a locomotive was made by him last winter in his leisure hours. Behind the locomotive is the locomotive builder himself and his four-year-old boy, who "can tell the names of nine-tenths of the different parts of the engine and can tell what most of them are for."

In building the model the construction of a full sized locomotive was followed with considerable attention to detail. It is provided with air pump and main reservoir (not shown in cut) under the cab and between the frames. The engineer's brake-valve reservoir is placed under the cab windows, and if we could look within the cab we should find a steam gage, three gage cocks and drip pipe to carry off the water, a reversing lever and sector, a complete little injector, with its feed pipe and check valves, a whistle lever, bell rope, rod to open cylinder cocks, a rod to open draught in ash pan, and, indeed, every item that goes to make up the complete fittings found in a modern locomotive cab.

The boiler is lagged with Russia iron, except the extension front, which is enameled jet black. The tender is also black enameled, with the letters in gold. The cab roof is made of Russia iron and the cylinders are lagged with the same material. The saddles, which are black enameled to match the extension front, are of cast iron, and the drivers are made of the same material. The engine has a steam brake between the drivers, and there is also a hand brake on the tender. The brake beams are of oak. The pilot is cast and is firmly bolted to a neat walnut cross piece, in each end of which are seen pockets for flags. The pilot is provided with the regulation push-bar.

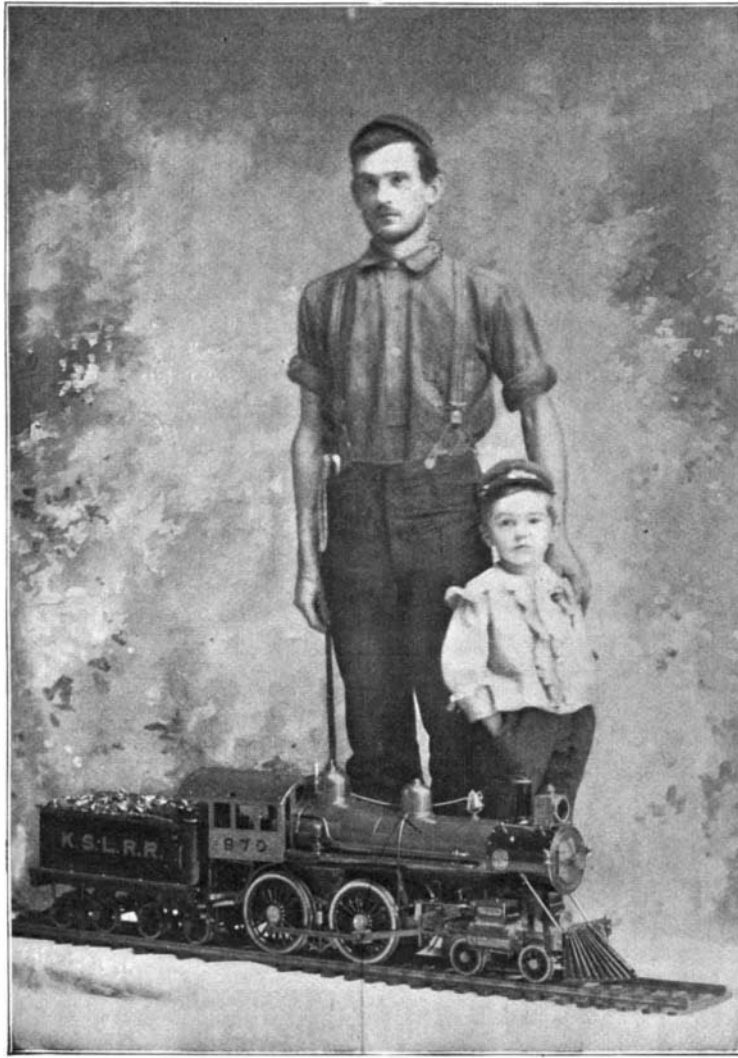
The headlight, which burns wood alcohol, is complete with glass and reflector. The boiler, it should be said, is fired with gasoline or wood alcohol. Note should also be made of the small lamps, or markers, carried on the extension front, and also of the flag pockets on each side of the headlight. The extension front carries a small brass plate with the builder's name and the date.

The boiler is of the wagon-top type. The cylindrical portion was made from a 5-inch boiler flue, and the fire box is built of $\frac{3}{8}$ inch steel plate and strengthened in the regular way with stay bolts. The flues are of bicycle tubing $1\frac{1}{8}$ inch diameter and No. 20 gage. The front head of the boiler, $\frac{1}{4}$ inch in thickness, is riveted and brazed. The tender is as carefully finished as the engine and carries a drawhead and couplings. On the tender are the usual tool boxes with a complete set of tools, and in their proper place are found a coal pick, shovel, poker, etc.

Throughout the engine provision has been made for taking up wear. The side rods are of the solid end type. All wheels are turned with a taper to facilitate rounding the curves. The rails are $\frac{3}{4}$ inch high and are laid on $\frac{1}{2}$ by $\frac{7}{8}$ inch ties. The engine, when blocked up from the track, has been run at a speed of over 1,000 revolutions a minute.

This beautiful little model follows closely the lines of the well known express engines of the New York Central Railroad, of which No. 999

of Empire State Express fame is the best known example. It carries the number 870, by which the engine which is at present hauling that train on the run between New York and Albany is known. The letters on the tender stand for the Kinsman Shortline Railroad, a



MODEL OF EMPIRE STATE EXPRESS LOCOMOTIVE No. 870.

Gage of road, $5\frac{1}{4}$ inches; total weight engine and tender, $126\frac{1}{4}$ pounds; cylinders, $1\frac{1}{8} \times 2\frac{1}{4}$ inches; boiler diameter, 5 inches; steam pressure, 110 pounds.

projected road in which the citizens of Kinsman and the neighboring town of Farndale are interested.

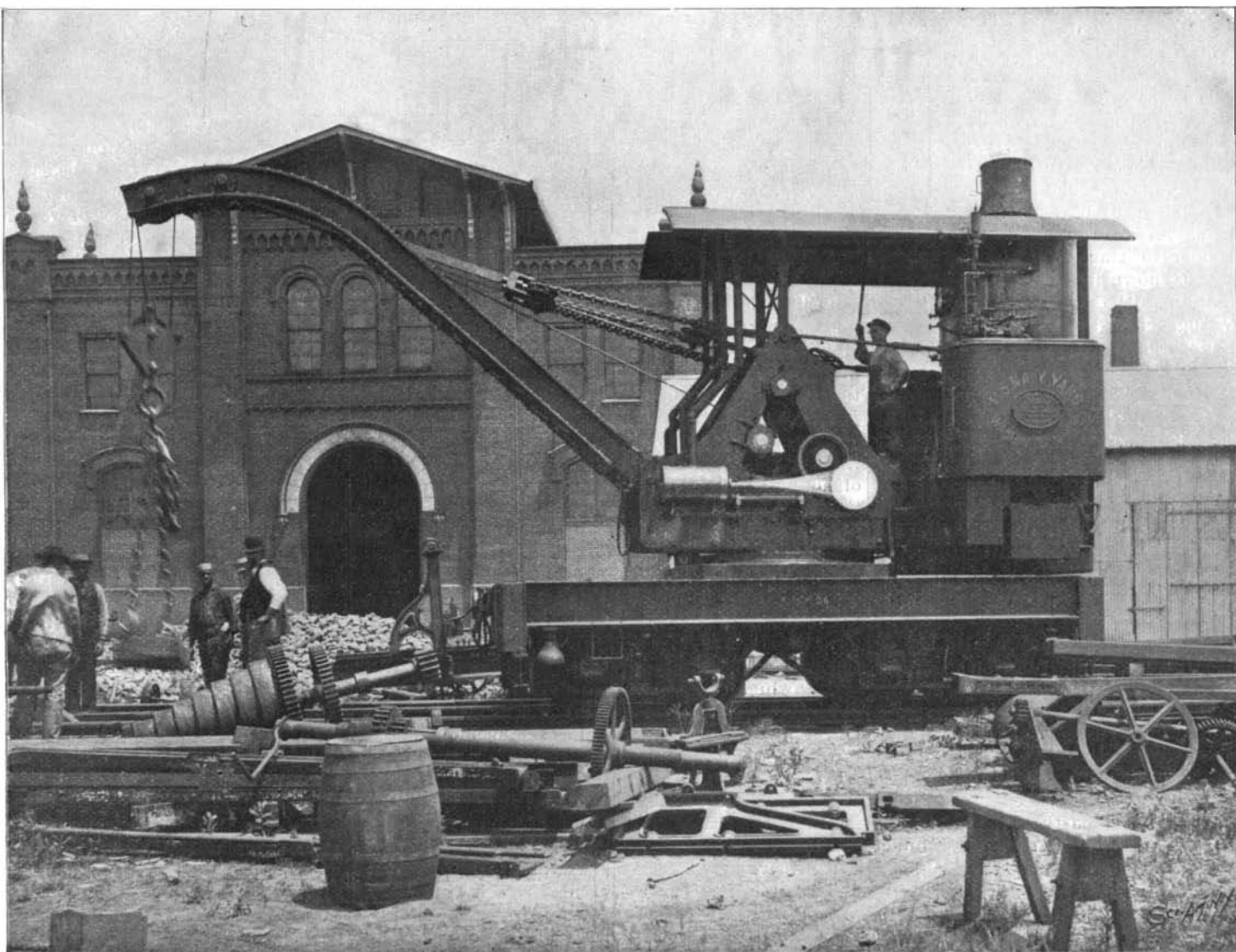
The fact that the builder of the model is not a railroad man and has never worked in a railroad shop is another evidence of the fact that the locomotive is an ever attractive subject for a machinist when he is tempted to put in his spare hours at model building.

A STEAM LOCOMOTIVE CRANE AT THE WASHINGTON NAVY YARD.

Our engraving represents a 15-ton locomotive crane, mounted on an eight wheel car, at the Washington Navy Yard. This crane can handle its load at a radius of 15 feet, and it will lift and carry loads of the above weight in any position of the jib, whether ahead or at right angles to the car. The self-propelling feature which it has, makes it a specially useful adjunct in the work to be done about any large plant where heavy castings or materials are to be handled, loaded and unloaded from cars. The crane is specially useful in the Washington Navy Yard to handle materials of all kinds, such as gun forgings, gun carriages, and all the miscellaneous material used in the manufacture of ordnance. At the Washington Navy Yard there is a system of tracks extending to all the buildings of importance, so that the crane can take material from the cars and transfer it through a system of tracks to the shops where the work is to be done upon it, and when this work is completed the finished material may be removed and loaded onto cars for shipment. The power is obtained from a pair of engines with 8 by 10 inch cylinders, and the combined horse power is about 40. From the engine shaft the motion is communicated through powerful clutches to the countershaft operating the motions of traveling, slewing the crane, hoisting the load, and varying the radius of the jib. All of the motions mentioned are performed by the engine shaft through a spur or bevel gearing.

Inasmuch as it is necessary for the machine to go around curves in the navy yard, the two pairs of central wheels supporting the car have blank treads and the operation of self-propelling is performed by connecting the countershaft by an endless chain belt with the axles of the two pairs of the supporting wheels. The machine is thus able to propel itself, and if necessary one or two loaded cars may be pulled along by it. The levers operating the different motions mentioned above are within easy control of one operator, who stands in the position shown in our engraving. He also fires and controls the boiler, which is 52 inches in diameter and 9 feet high. Through the radius varying mechanism this crane may extend its jib to a radius of 20 feet if desired; the jib may be pulled in so that its radius is contracted to 12 feet. This locomotive crane has been in use for about three years in the Washington Navy Yard. It was manufactured by the Industrial Works, of Bay City, Michigan, to whom we are indebted for the particulars given.

M. ROGER is of the opinion that the artichoke possesses several



A FIFTEEN TON STEAM LOCOMOTIVE CRANE AT THE WASHINGTON NAVY YARD.

a d v a n t a g e o u s q u a l i t i e s a s a m e d i u m f o r b a c t e r i a l c u l t u r e s. A f t e r h a v i n g s t r i p p e d o f f t h e s c a l e s t h e t h i c k p a r t o f t h e a r t i c h o k e i s c u t u p i n t o l i t t l e c u b e s, c a r e b e i n g t a k e n t o p r e s e r v e t h e f i b e r s (f o i n). T h e p i e c e s a r e t h e n p l a c e d i n t u b e s p l u g g e d w i t h d a m p w a d d i n g, t h e f i b e r s b e i n g u p p e r m o s t, s o t h a t t h e c u l t u r e m e d i u m i s r e p r e s e n t e d b y a f l e s h y m a s s s u r m o u n t e d b y a s o r t o f t u f t. W h e n t h e w a d d i n g i s i n s e r t e d, t h e w h o l e i s h e a t e d i n a n o v e n t o 115 C e n t i g r a d e f o r a q u a r t e r o f a n h o u r. I n m a k i n g a n i n o c u l a t i o n t h e g e r m s m u s t b e d e p o s i t e d a t t h e p o i n t o f i n s e r t i o n o f t h e f l o w e r s. — L a n c e t.