

The Hanna Stoker

By W. E. BELTER, Road Foreman of Equipment.

THE Hanna Stoker consists of the following parts, namely: a double reversible reciprocating steam engine, a tender crusher hopper with a conveyor worm to carry the coal forward from the tender, a locomotive feed hopper which conveys the coal received from the tender to the elevating worm, a door cabinet containing the high and low pressure blast chambers and distribution wings, a control case used in operating the distribution wings, a gear box and clutch arrangement for disconnecting the tender machinery.

The small steam engine driving the entire mechanism is as above stated a double reversible reciprocating engine. It is very simple in design and easily demonstrated that it is powerful enough for the work demanded from it. The oiling device for it is well designed. The cylinders are lubricated from the lubricator in the cab. The other machinery is incased and is lubricated by what is known as a splash system. In other words the entire working parts are surrounded with oil. This is known as the crank case and is fitted with a pipe to fill it. The only exposed parts on this engine are the valve rods.

The tender hopper and crusher worms are very simple in design. It consists of a hopper so constructed that it will slip into the bottom of the tender. The crusher is made up of a conveyor screw and a series of knives or breakers which prepare the coal from the usual run of mine. The top of the hopper is fitted with slides to give the correct flow of coal into the hopper and are adjustable to meet all conditions.

The locomotive hopper receives the coal from the tender hopper and is fastened to the back head and deck in such a manner that it will accommodate itself to the different boiler expansions. It is also fitted with conveyor worms and discharges the coal

into the elevating worm which leads to the cabinet. This hopper has an opening from the deck of the locomotive which can be used for coal conveyance at such times as the tender hopper may be out of service due to foreign substance being in the fuel thereby stopping the tender conveyor. Right here it will be well to add that the coal is carried between the locomotive proper and the tender by means of a made up steel pipe fitted also with a conveyor worm. This arrangement is a very good design since it eliminated the possibility of any coal being spilled on the right of way.

The door cabinet consists of a cast iron frame attached to the boiler back head over the fire door. Its design is very good since the firing is done through the fire door, which, as most engineers will agree, is the logical place to fire an engine. This cabinet is the place where the coal is finally landed to be burned and since it is that part of the Stoker, which has a vital function to do it is well that it be perfectly understood. This cabinet is fitted with an automatic fire door, thereby making it very easily at all times to open the door. This cabinet also contains the distribution wings which conveys the coal to the double blast chamber and the blast chamber proper. The coal is received at the top of the cabinet from the vertical or elevating worm and descends to a ridge plate which is used to divide it into any ratio to the wings. This is done so that if a boiler requires more coal on one side than the other, it can be easily cared for by the operation of the dividing plate. This is done by simply shifting the plate. The coal is then deposited on the wings and slides down the blast chambers. These wings are in motion and travel a distance of about three inches each side of the center of the door opening. They can, however, be so controlled by the control box (which will be explained later)

that they will travel any distance from the center. This depending on what the needs for correct firing may require. By the operation of these wings a fireman is able to get the distribution he desires from the back corners to the boiler arch. In conjunction with these wings the double blast chambers also play a prominent part. After the coal has left the wings it drops down on a blast chamber fitted with a high and low pressure blast. The high pressure blast is arranged with finger tips and acts as a sort of screener of coal only allowing the larger coal to be hit by the high pressure blasts. This means that the larger coal is sent forward in the fire box while the finer coal drops through these fingers and comes in contact with the low pressure and is likewise deposited in the rear of the fire box. It also follows that as the two different kinds of coal are blown into the fire box the finer coal acts as a sort of blanket for the larger coal, which is a clever arrangement in assisting materially in burning a greater amount of coal in suspension thereby eliminating much stack loss. There is also a feature in the steam blast that must not be overlooked. When the steam is blowing the coal into the box, it is also separated into its component parts, namely, hydrogen and oxygen. The oxygen will further support the combustion and the hydrogen in itself will burn. This also increases the percentage of coal burned in suspension, thereby doing away with much clinker formation, inasmuch as coal burned in the presence of oxygen (pure) will not be found to deposit any clinker. The cabinet is further arranged in its mechanism to facilitate hand firing. The entire cabinet can be cleared of the wings and blast chambers since the wings are so constructed that they will fold back in the cabinet and the blast chamber will hinge out the door, leaving the entire cabinet free. However, in order that even in the case where hand firing is necessary, it is so arranged that the coal can be thrown on the blast chambers with a shovel and distributed in the fire box in exactly the same principle that the Stoker does

it, thereby eliminating the laborious job of trying to pitch the coal the entire distance of the box. It further gives a more even distribution than without it. Regardless of the design or durability of any machine failures will happen, and they are to be expected. However, with the feature of the double blast chamber, much hard work can be overcome since there is nothing in the way of machinery to fail in its make up. It necessarily follows that even in a stoker failure this can be used to a great advantage in the scattering of coal and also eliminating the hard work of getting the coal forward in the fire box.

The control case is located on the fireman's side of the locomotive and is used in controlling and furnishing the travel of the wings in the cabinet. Each wing has its separate control in this box. The travel of each wing is marked on the box in the segment of a circle with holes bored in it which will accommodate the placing of the handles which show the travel of the wings. The travel of this control box is taken by means of an eccentric from the main shaft in the locomotive hopper. It is a ratchet arrangement and the travel is always proportional to the stoker engine travel. This means that at whatever speed the stoker engine may be running a corresponding speed is also maintained in the control box, thereby giving the same speed to the wings. It necessarily means that regardless of what speed the stoker engines is running the distribution of the coal is also in the same ratio.

The gear box is very simple in design and the entire arrangement is floated in oil eliminating any probability of heating so long as it is kept filled with oil. This gear box is used to cut in or out the operation of the tender hopper.

There is a feature of this stoker which is to be greatly considered. In separating the engine and tender, which is very often required at engine houses for one cause or another, no work is needed to disconnect them as the connection is a slip joint arrangement. Simply disconnect the draw

(Continued on page 19)

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EDITORIAL

HIGH COST OF LIVING VERSUS COST OF HIGH LIVING

THE high cost of living is now a by-word with most of us mortals; we talk it, think it, breathe it, and question it. It is the chief topic of discussion over the back-yard fence, in the office, the shop and the church. We talk it up one side and down the other until we have thoroughly convinced ourselves that it is real; that it is a condition beyond our individual power to overcome. We have all placed the blame, some at the door of the profiteer and some of us maintain that it is the natural result of the diminished supply of all the necessities of life. With a great deal of justice have we come to these conclusions, but there is one factor which we are all prone to overlook. We must take stock of ourselves and see if we ourselves, individually, are not directly responsible to a degree, for the present mad rush of prices to the mountain tops.

Summing it all up and listening to all the evidence we must, all of us, admit a share of the guilt. It is not alone the food profiteer, the clothing profiteer, the coal profiteer that should bear the entire responsibility. True there are those among us, and it would seem, many of them, who very eagerly take advantage of a bad situation and run their prices up beyond all reason, but as a whole it must be admitted that the average business man is honest and wants to give an

honest value for an honest dollar, but oftentimes we, the public, won't let him. We insist that he charge us more than a reasonable price for his goods, and if he refuses we won't buy but will simply go to a man who will let us pay more for the same article.

An instance of the present high living mania recently came to the notice of the writer. A certain large department store in St. Louis put on a silk shirt "sale." This sale was advertised in the daily press, and several large counters were given over to the display of these "bargains" at \$8 per each. On the appointed day the "bargain" hungry public made a mad rush for the unheard of bargains in silk shirts at \$8 apiece, resulting in a stampede. On another counter lay an ordinary cotton shirt of good quality but minus the glaring colors and the soft texture. These were also on sale at \$2.00 each, but still the chief center of attraction was at the \$8 counter. A few years ago the opposite would have occurred and the cotton shirt counter would have received the plaudits of the multitudes.

Another instance was recently cited by a St. Louis butcher testifying before a committee in Washington. He told of having lost business because he tried to give the people choice cuts of meat at a reasonable price, whereas his competitor across the street was perfectly willing to let the multitudes pay the fancy price and the competitor got the business. This, of course, tends to create a desire on the part of the merchant to accommodate Mr. Consumer by letting him pay a big price for his goods.

Profiteering and high prices will cease only when the consuming public puts its foot down and agrees to quit profiteering itself. Profiteers exist only because the public encourages profiteering by emptying its purse into the coffers of the profiteer. We will buy a suit of clothes at one store for \$60 and refuse to go across the street and buy the same suit for \$30, consequently the man with the \$30 suit is compelled to raise his price to \$60 to stay in business, and successfully compete with the other man.

The surest and quickest way to reduce the cost of living is for the consuming public to take a hand by refusing to do business with the man who charges two prices for his goods. We should wear cheaper shoes, cheaper clothing; eat cheaper cuts of meat and forego many of the luxuries we now enjoy. Let us bestow honor on the man with a patch on his trousers and who wears cotton shirts and hose, and re-made shoes and the enigma of the high cost of living will fade away into insignificance.

Why rant and puff about a condition that we ourselves support and encourage? Why condemn the profiteer then go directly into his store and pay him more for his goods than these same goods can be obtained elsewhere? Let us analyze ourselves individually and ascertain if we are not guilty and responsible to a large degree, for the existing conditions. If we will do this conscientiously and without prejudice, then take steps to correct our faulty methods, the results will surprise even the most skeptical. After all it isn't the high cost of living that is worrying us half as much as the cost of high living, and this applies to all.

OUR LOYAL SUPPORTERS.

The year just closed has witnessed a great revival of interest of the employes in our magazine. This increased interest is manifest on every hand. The support and co-operation accorded the editor by many of our employes, and the encouragement given him has been largely responsible for any success which might have been attained; and it forms a basis for still greater success during the New Year.

Conclusive evidence that The Frisco-Man, through the efficient support given by the employes, has grown in prestige, is shown in our circulation increases as well as by the interest manifested by those who are not in the habit of contributing to its columns.

It must be remembered that The

Frisco-Man is a magazine by the Frisco employes, of the Frisco employes, and for the Frisco employes. Every employe from track laborer to the highest official is responsible in a measure for its success. Its purposes are the recording of the activities of Frisco people, keeping those of one section informed as to the happenings of the others; to aiding those of each department in their work by publishing articles and data calculated to give them ideas for their advancement; to securing a unison of effort so essential to the efficient operation of our great railroad; and to the advocating of utmost harmony that our association with one another as individuals may be pleasant and our daily tasks be thereby made the easier.

Those of us, both officials and others, who have not taken advantage of the opportunity afforded to spread the idea of Faith, Resolve, Initiative, System, Co-operation and Organization, are urged to do so. Help The Frisco-Man to truly represent our great family of men and women and our great railroad, not only by contributing but by reading it thoroughly.

We have commenced a new year. Let us resolve to be a little more efficient in our respective positions, a little more courteous and considerate of our fellow-workers, and to take pride in the fact that we are connected with one of the great transportation systems; strive to give a transportation service that will do credit to us as a body of men and women, and a real service to the public.

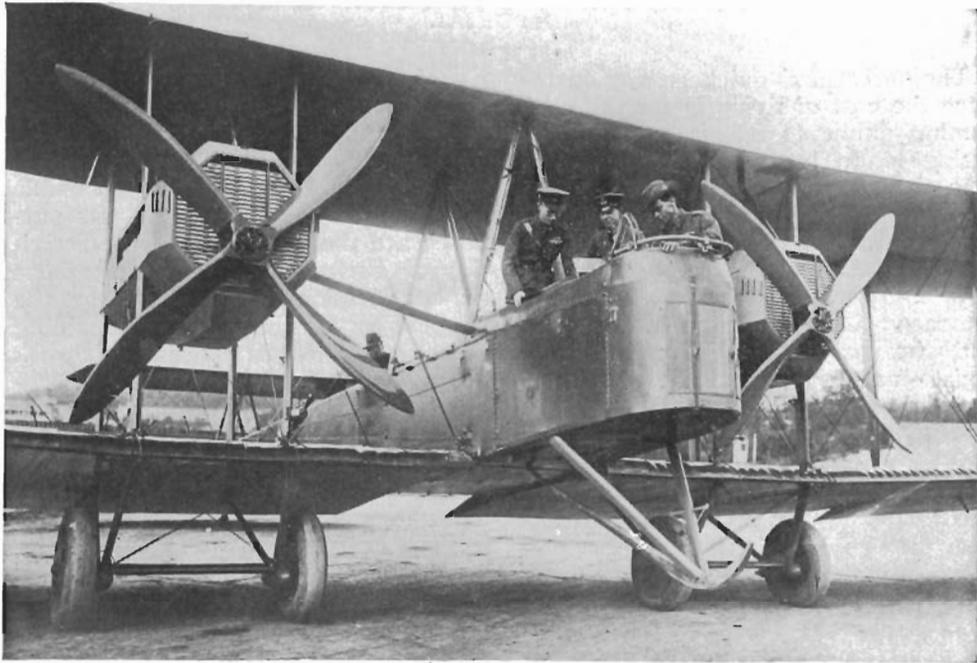
HOLDERS OF LIBERTY BONDS

(Continued from page 13)

temporary 4 per cent coupon bonds will be regarded as good deliveries in the market.

The same situation exists as to the 4 per cent bonds of the first Liberty Loan converted, except that the last coupon on the temporary 4 per cent bonds of that loan is payable on Dec. 15, 1919, and before that date such temporary 4 per cent bonds may be converted into temporary 4½ per cent bonds. It is expected that the permanent 4 per cent and 4½ per cent coupon bonds of the first Liberty Loan converted will also be ready for delivery on approximately March 15, 1920.

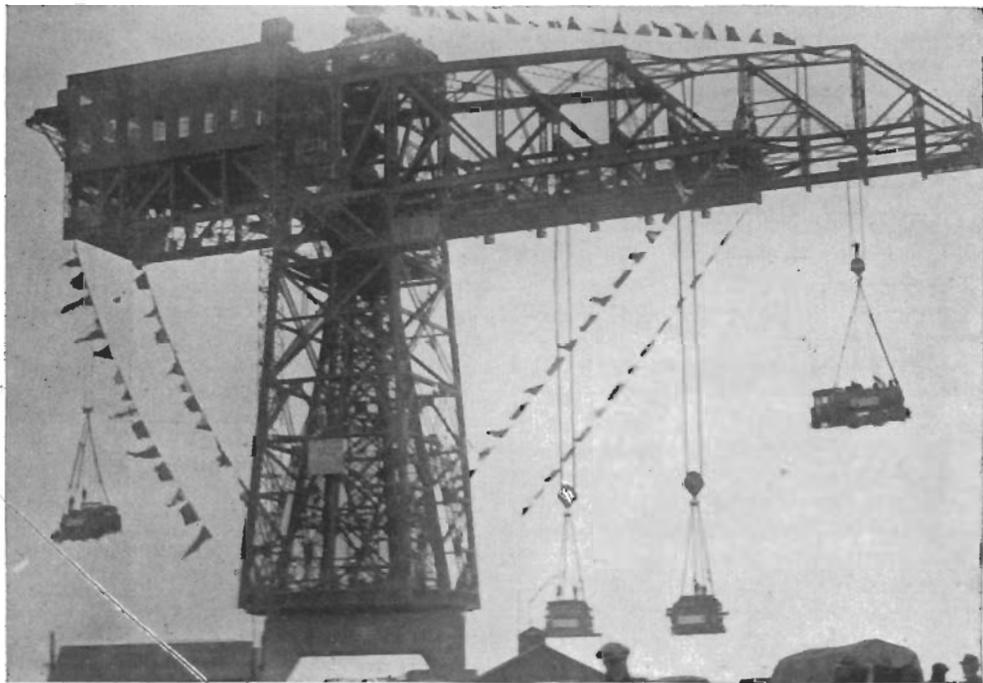
The Treasury counts upon the co-operation
(Continued on page 50)



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PLANE IN WHICH RECORD FLIGHT FROM ENGLAND TO AUSTRALIA WAS MADE.

The Vickers Vimy Rolls Royce in which Capt. Ross and his crew of 3 safely made the flight from England to Australia. The plane is almost identical with the one used by the late Capt. John Alcock on his record-making flight across the Atlantic. On the right is Capt. Ross, Lieut. K. M. Smith and Sergt. Shiers.



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WORLD'S LARGEST SHIPBUILDING CRANE AT LEAGUE ISLAND, PHILADELPHIA NAVY YARD, CHRISTENED.

The largest shipbuilding crane in the world recently completed at the Philadelphia Navy Yard was christened on December 6. The crane is of the stationary pintle cantilever construction and has a working capacity of 350 gross tons. It is electrically operated and will be used for fitting out all types of vessels, chiefly the larger man-of-war. It has a capacity of handling complete gun turrets assembled on the dock and can place them intact on ship-board. This photo shows a locomotive, besides other loads, being raised by the mammoth crane at the christening day ceremony. The great machine is a credit to America's engineering geni.