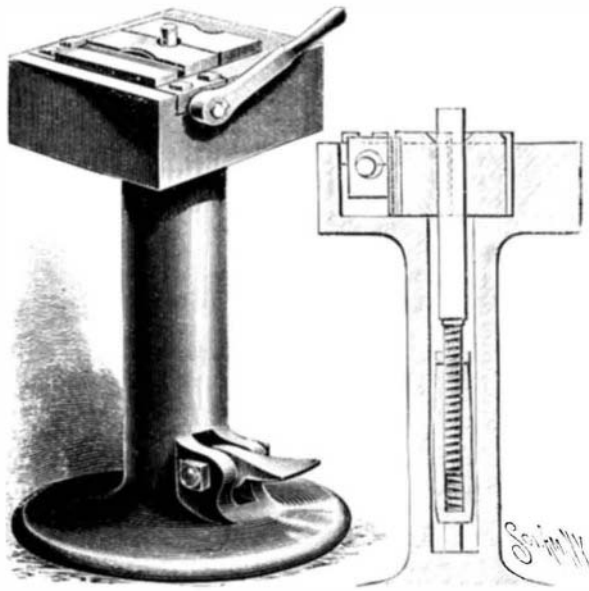


AN IMPROVED BOLT HEADING MACHINE.

The needs of blacksmiths and carriage-smiths have been especially considered in the construction of the simple and durable bolt-heading machine shown in the accompanying illustration, although it is equally applicable for any service where it is desired to head bolts rapidly and nicely. It has been patented by Mr. William H. Betts, of No. 134 Dykeman Street, Brooklyn, N. Y. A box at the upper end of the hollow column, as seen in the sectional view, contains the bolt-holding dies, preferably of steel, and having on opposite sides grooves terminating at one end in a square shoulder and at the opposite end in recesses, so that they are adapted to form either a flat head or a



BETTS' BOLT HEADING MACHINE.

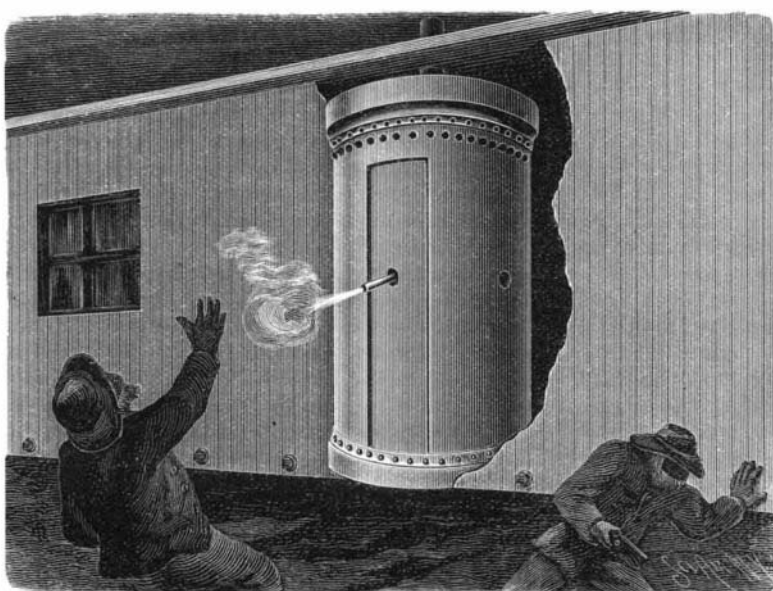
head to fit a countersunk hole. These dies serve as an anvil, and when the bolt projecting through them has its head formed, the end of the bolt is hammered down upon the upper faces of the dies. The bolt extends down and rests upon the head of an ejecting plunger, adjustable to fit bolts of different lengths, the lower end of the plunger resting upon the inner end of a treadle lever. Within the box, at one side of the dies, is a binding block mounted on a cam shaft having a hand lever, by which the shaft may be turned to force the block against the dies to hold them firmly in place. The treadle mechanism is necessary, as the bolt when inserted hot between the dies is inclined to stick.

Tin Salt in Gingerbread.

The attention of the Minister of the Interior has recently been called to the considerable amount of protochloride of tin now used by manufacturers in making gingerbread, the consumption of which in France is considerable. It appears that by the use of this chemical common meal and other ingredients may be used, while the gingerbread will still have the appearance of being of excellent quality. This adulteration has only been going on for some twelve months, but has rapidly developed. The proportion of protochloride of tin used is by no means insignificant. It varies from 500 grammes to 5 kilos. of tin salt to 100 kilos. of flour, producing 200 kilos. of gingerbread. Experiments have shown the chemical in question to be very poisonous. At the last meeting of the Council of Public Hygiene M. A. Riche presented a report of analyses made at the Paris Municipal Laboratory, the most adulterated sample of the bread in question containing 1 per cent of tin. Even if the addition of tin were innocuous, he said he would strongly recommend its prohibition, because it allowed inferior substances to be used in preparing an article of food which is principally consumed by children. M. Riche drew attention to a case of poisoning near Rouen, reported by Dr. Guersant. A servant had carelessly put some chloride of tin in soup instead of ordinary salt. The disagreeable taste prevented some of the family from eating the soup, but those who took only a small quantity showed distinct evidence of poisoning.

A REVOLVING SHIELD FOR CARS.

A metallic turret or shield designed for use in banks, express cars, or any other place liable to attack by robbers or highwaymen, is shown in the accompanying illustration, and has been patented by Mr. John E. Shanafelt, of Lawrence, Kansas. The turret is closed at the top and bottom, and has a door which slides in horizontal ways on its interior. The door and the sides of the turret have sight holes through which a person inside may fire upon an approaching enemy, the sight holes each having vertically sliding blinds which can be opened or closed at will. The top of the turret has a central ventilating draught opening, in which is a tubular journal projecting through the car roof, facilitating the revolving of the turret, which is pivoted centrally upon a stud or pin at the bottom. The mechanism for revolving the turret consists of a gear wheel, with an operating handle, meshing with a toothed wheel, both wheels being mounted upon a framework within the turret, and the toothed wheel extending through a slot in the turret bottom, where it engages a circular rack bar in the floor of the car or room where the turret is set up. Caster rollers may, if desired, be attached to the bottom of the turret as an additional support and to facilitate its turning, or the shield may be built in the corner of a room, to be stationary, and of such shape as may be best fitted for different situations. The construction occupies no more space than an ordinary heating stove, is comparatively inexpensive, and is designed to be readily accessible to an express messenger or other person in charge of valuables in time of danger.



SHANAFELT'S REVOLVING SHIELD FOR CARS.

THE FAMINE IN INDIA.

FRANK VAN ALLEN, MEDICAL MISSIONARY TO MADURA, SOUTH INDIA.

The attention of the whole world is directed to the terrible famine in Russia, consequently it is not generally known that a similar scourge is afflicting India. In this country all the horrors which follow in the wake of starvation occur with fearful regularity every fifteen years, or twice in every generation. The last great famine was in 1876, and it was estimated by the government that 5,000,000 (five million) persons died of starvation and the two diseases that go with it—dysentery and famine fever.

The cycle is completed again. Owing to a partial failure of rains, the fearful calamity of another famine was threatened a year ago. This year the rains have entirely failed; however, the famine is not yet at its height, for there are districts here and there where a slender harvest is possible, which for a few weeks will ameliorate the condition of the people who live in these favored parts. When this small supply of grain is exhausted, the famine, which is already very serious, will grip the whole nation in its withering hand, and

suffering because the blessed rain has been withheld. In many places fodder for cattle is unattainable, and the people are tearing thatches from buildings to feed the famishing animals. In other localities cattle are being killed in great numbers, as their owners are unable to feed them. Also thousands and thousands have died and are dying of starvation. Every effort is made to keep a certain number alive, which must be done at all hazards, for plowing when the next seeding time comes.

How the people are to maintain themselves until the next annual rains is a most serious question, and will doubtless be answered in the usual way—a large part of the population will be supported by the government at the famine camps. There will be a bare existence of many others, and the death of thousands and even millions of people. The better class will have enough to eat, as they will import grain at enormous prices from other countries.

But the matter of food is not the only problem connected with existence. The question of water becomes a pressing one, and is more serious from the wretched religious caste customs; a high-caste man will not drink from a well if a low-caste man has lowered his water pail into it, and so defiled its contents. This really affects the low-caste man, because he is driven away and not allowed to come near these wells, and his own being more shallow have become dry. In this emergency the government comes forward, and as a part of the relief work offers to loan money for the digging of wells. The people avail themselves of this offer, and just now there are being dug in one presidency up ward of 19,000 (nineteen thousand) wells from loans so made by government. This money is loaned on thirty years' time, with interest at three per cent per annum, and often without sufficient security, but is done to relieve the distress of this ill-fated nation.

With all that the English government are doing to alleviate the horrors of the famine, there is much unnecessary suffering, which arises from the peculiarities of the people, particularly the higher castes. For a caste man to eat or drink anything which has been touched by one not of his caste is so degrading that he would rather suffer death. This is a religious matter with him, and there



THE FAMINE IN INDIA—REFUGEES IN A GOVERNMENT CAMP.