

to, and that possibly they may have been hardened by hammering, as copper is thus known, under repeated percussion, to become hard and tough, so he says This view seems to be also borne out by the fact set forth in the *Scientific American* of March 9th, 1895, page 155, that a 17-inch thick Harveyized armor plate at the U. S. Carnegie works, after being carbonized, was reduced by reheating and rolling to a thickness of 24 inches, subsequent to the surface carbonization process, and found to be toughened, and its internal strains minimized. But that hammering or percussion cannot be effective in all cases, or with all sizes or thicknesses of metal, my informant says, is proved by the fact that he tested a pair of copper cushions, journals, plumbet blocks, or shaft-bearers brought him by the inventor, one of which purported to be tempered, though (says he) Allard himself could not tell which. My machinist says he could see no difference between the two; that Allard then admitted it was not sufficiently tempered, and took it home with him to re-temper and returned with it next day, when the man in charge of the new test, on being asked by Allard how it stood, told him to "take it home and temper it a little more"

Quebec, March 14th, 1895

CITADEL, QUEBEC, 18th November, 1892.

REPORT UPON EXPERIMENTS CARRIED OUT WITH COPPER MODEL GUN, TEMPERED BY THE SECRET PROCESS OF F. ALLARD, LEVIS, QUEBEC.

To Lieut.-Col. C. E. Montizambert, Commandant R. S. Artillery, Quebec:

SIR.—The test at the Citadel, Quebec, of the tempered copper model gun was carried out on the 17th inst. Measures were taken before firing, and found to be as follows:

Length of piece	12	inches.
" of bore	11.50	"
Diameter of bore525	"
Greatest diameter at breech outside ..	1.025	"

Before testing, the gun was carefully gauged at two different points, one and two inches from breech end of powder chamber. The gun was charged with $\frac{1}{4}$ oz. (adv.) sporting powder, and wadded with a plug of wet paper driven well home with a mallet; after firing this charge the gun was examined and gauged at the above-mentioned points, and the diameters were found to be unaltered. The next test was a very severe one, $1\frac{1}{4}$ oz. (adv.) sporting powder being used, leaving only room for a plug of paper, which, as before, was driven hard home, filling the piece to the muzzle. The charge was fired with a piece of Beckford fuse. On examination, after firing, it was found that the gun was without a flaw; expansion, if any, was imperceptible with the instruments at my disposal.

(Sd.) JAS. BARRINGTON, Sergt.-Major.

THE customs authorities have for some time past been considering the best method of insuring uniformity in the collection of duty on architects' plans imported into this country for use in the erection of buildings here, and the Controller has now determined to employ the following schedule. Each set of original drawings or single set of blue prints of same, if brought into Canada as a substitute for the original drawings, 2 per cent. of the estimated cost of the building to be erected thereon. Same, if accompanied by details, 3 per cent. of such estimated cost. Details, or blue print of same, if imported separately, 1 per cent. of the estimated cost of such detail. When additional sets of blue prints of the same set of drawings are imported, such additional sets of blue prints are to be valued for duty at \$5 per set, in addition to the value of the original drawings, or first set of blue prints imported in lieu thereof, as above.

AN INVASION OF OUR RIPARIAN RIGHTS.

EDITOR CANADIAN ENGINEER:

SIR.—You may have noticed in the *Montreal Star* a letter of mine calling the attention of engineers and the public to the fact that Chicago is now building a drainage and maritime canal which will reduce by one-thirtieth the outflow at Niagara, shallow lake St. Peter, and require further expenditure in deepening its channel. Our American cousins, seeing how unconcernedly we look on this, have become emboldened into a \$100,000,000 scheme of one or more canals for business purposes from the lakes to the tide water of the Hudson.

Provision being made for the widening of the Chicago route to the Gulf of Mexico, the 600,000 cubic feet of water per minute which Congress has empowered it to rob us of, may and will within say ten or twenty years, if Chicago's population continues to increase at the same rate, be swollen to three times the quantity, or

10 per cent., equivalent to a decreased depth of 3 ft. in Lake St. Peter. Now if each of the proposed canals, under the scheme just laid before the American Senate, takes another ten per cent., as according to size may be three times that, or nearly all the outpour from Erie into Ontario (18 million cubic ft. per minute), nothing will be left of the St. Lawrence but the drainage of the Ontario valley and the water poured into it by the comparatively small Ottawa, St. Maurice and other tributaries. How can our Dominion Parliament look on or tolerate this spoliation? Canada has the same right to her great lakes as has the United States, and if anything, even a better founded title to them, since their supply is mostly from the north or from Canadian territory, while the opposite side drains towards the South Atlantic, but even if the right of the two nations to these waters be on an equal footing, how can Congress or the United States Senate take upon itself to grant these immense franchises without the consent of our Dominion Parliament?

I am most anxious, sir, to know your views or those of the engineers of Canada in the premises, if you can only draw them out, and let the matter be discussed by our boards of trade, our legislatures, our people.

C. BAILLAIRGE,

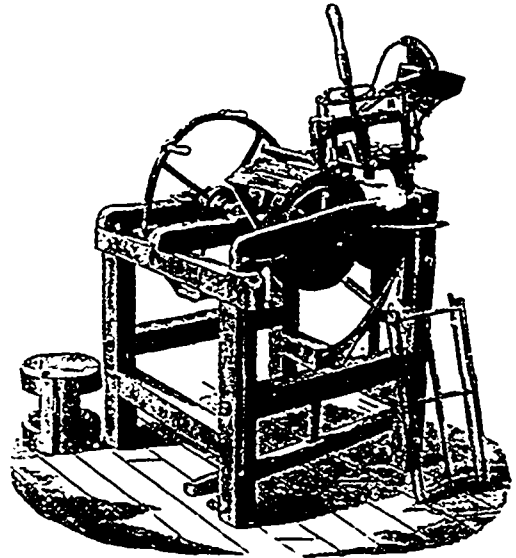
Member Can. Soc. C.E., City Engineer, Quebec.

Quebec, March 3rd, 1895.

NEW CHEESE BOX MAKING MACHINE.

The cut shown herewith represents the Williams Patent Cheese Box Nailer and Binder. This machine fills a long felt want in the cheese industry of Canada. Cheese boxes are so bulky that they cannot be kept in stock, and what is wanted is a machine by means of which boxes can be made quickly when wanted, without the employment of a number of hands.

On this machine the hoops are fed down on to the rotary drum, and held in place by a roller which is worked by a lever, operated by the right foot. The head is placed in a holder and thrown into position by one movement of the right hand (This is not shown in cut, having been added since this was made.)



The drum is revolved by a lever operated by the left hand, and the nailer by another worked by the right. This nailer far surpasses anything of its kind in use. The nails are picked up, passed down a chute, and placed in position on the up stroke of the lever, and driven home on the return. By a rotary saw attachment, designed by Mr. MacMillan, the covers and bottoms are made with great rapidity.

The machine will make any size box used in the Canadian trade, being readily adjusted, and, with one man to operate it, will turn out from 400 to 600 boxes and covers complete in a day of ten hours. The reporter who called to investigate it, and who had never made a cheese box in his life, turned one out in one minute. Though no claim is made for the manufacture of more than the above number per day, it is a fact that on one of these machines 1,000 have been turned out in a day. The machine is compact, well made, and easily shipped or transferred, and its general adoption by the cheese trade—judging by its reception in and around Belleville—is only a matter of a short time.

This machine is built by the Mac Machine Company of Belleville, Ont., for the Williams Cheese Box Machine Company, Ltd., of the same city, who hold the patent right for Canada, and who will be pleased to answer all enquiries relative to the machine.