

### AN AUTOMATIC DOUBLE CHISEL MORTISING MACHINE.

This engraving represents an automatic double chisel mortising and boring machine, designed for automatically mortising hubs from the smallest sizes up to 11½ inches diameter, cutting the mortises straight or stagger at the rate of 400 hubs per day; it is equally well adapted for cutting mortises of the regular kind in hard or soft wood, from ¼ to ½ inch wide, to 5 inches long, such as required in wagon, carriage, furniture and agricultural implement shops, and when not engaged in mortising, the boring spindles may be utilized as a regular boring machine. The machine is manufactured by the Defiance Machine Works, Defiance, Ohio. It will accomplish several distinct classes of work, hub mortising and regular carpenter mortising in straight work, and general boring for vertical and horizontal work, and it also has the advantage of effecting the several operations more perfectly and six times faster than it can be accomplished with a single chisel machine.

The frame is a heavy casting in one piece, with the driving power at the top. It has two chisel bars arranged side by side upon the front of the column, their axis being on a vertical plane at right angles to the axis of the main shaft, and they are adjustable, to give the mortises desired dish and taper. The horizontal boring spindle is conveniently fitted through the main frame, with a universal chuck for holding the auger, having adjustments to bore holes for straight or stagger mortises, and it is intended for hub work and general boring. In mortising hubs, the attachment, as shown on the floor, is used. It holds the hub at one end in a three-jawed universal chuck, the other end turning in a taper cup; the weight of the operator's foot upon the treadle at the base of the machine instantly starts the chisel bars, and the table carrying the hub is gradually lifted to the chisels, until the full depth of cut is reached, when it remains stationary until the mortise is complete, when it descends, the hub turning one notch of the index plate, ready for the next mortise, and it is again presented to the action of the chisels, and so continued until all of the mortises are finished. The jiggling, spacing, feeding, etc., are entirely automatic in their movements, and all of the adjustments are of the simplest character.

For straight mortising the table on which the timber rests has a screw clamp for holding the work. It has a longitudinal and transverse (right angular) adjustment, for regulating the position of the mortise to be made, and the work is automatically presented to the action of the chisels; 6,000 medium sized mortises in soft wood can be cut in ten hours without a variation in the dimensions of the mortises of 1/1000 inch from a specific measurement. It will make mortises tapering in either direction or parallel, as desired, or tapering at one end and perpendicular to the surface at the other end. No painstaking, difficult and uncertain jiggling of a carriage is required, and no reversing of chisels.

The vertical boring apparatus is contained within an iron case completely covering the gears and so constructed that the center of the auger is always exactly in line with the center of the chisels, so that the object

after being bored has only to be moved horizontally to bring in proper place under the chisels to receive the mortises. The boring spindle has a radial adjustment for boring holes to any angle. The friction drive pulley is 18 inches diameter, 5 inches face, speed 400 rotations per minute.

#### Tears a Safety Valve to Emotion.

Tears have their functional duty to accomplish, like every other fluid of the body, and the lachrymal gland is not placed behind the eye simply to fill space or to give expression to emotion. The chemical properties of tears consist of phosphate of lime and soda, making them very salty, but never bitter. Their action on the eye is very beneficial, and here consists their prescribed duty of the body, washing thoroughly that sensitive organ, which allows no foreign fluid to do the same work. Nothing cleanses the eye like a good, salty shower bath, and medical art has followed nature's law in this respect, advocating the invigorating solution for any distressed condition of the optics. Tears do not weaken the sight, but improve it. They act as a

tonic to the muscular vision, keeping the eye soft and limpid, and it will be noticed that women in whose eyes sympathetic tears gather quickly have brighter, tenderer orbs than others. When the pupils are hard and cold, the world attributes it to one's disposition, which is a mere figure of speech, implying the lack of balmy tears that are to the cornea what salve is to the skin or nourishment to the blood.

The effect of tears on the skin about the eyes, however, is intensely irritating and inflaming. They keep the epidermis in a dark, puffy condition, and in legends only do weeping women preserve the beauty of their great, white lids. The reason some women weep more easily than others, and all more readily than the sterner sex, has not its difference in the strength of the tear gland, but in the possession of a more delicate nerve

powers are undeveloped as the fact that the lachrymal gland was omitted in his optical make-up. So long as this differentiating quality between man and his primeval ancestors persists, we may laugh at the theory of Darwin, so far as it reflects upon our family tree; scorn all innuendoes of "missing links;" and see our handkerchief as the sign and symbol of man's chieftainship in creation.—Philadelphia Times.

#### THE LAUNCH OF THE ARMORED CRUISER BROOKLYN.

On the afternoon of the 2d inst. there was launched from the Cramp's shipyard one of the most perfect and thoroughly up-to-date cruisers of modern times. In the building up of our new navy, the United States government have reaped much benefit from the fact that they were a little late in starting. While other nations have expended large appropriations on ships that were largely in the nature of experiments, we have been in the position of the critical onlooker; and the costly failures of other naval boards have been valuable object lessons to our own as to what to avoid. The outcome of this observation is seen in a class of ships which, while they embody the best features of European practice, are yet marked by the strong originality which ever characterizes American design. The Brooklyn is spoken of as a sister ship to the New York, a ship that was a strong favorite among the naval experts at the late naval review at Kiel. She should be more properly called an enlarged and improved New York, being 14 feet longer and of 1,000 tons more displacement. Her leading features are: Length, 400½ feet; beam, 64.68 feet; normal draught, 24 feet; displacement, 9,271 tons; and calculated speed, 20 knots.

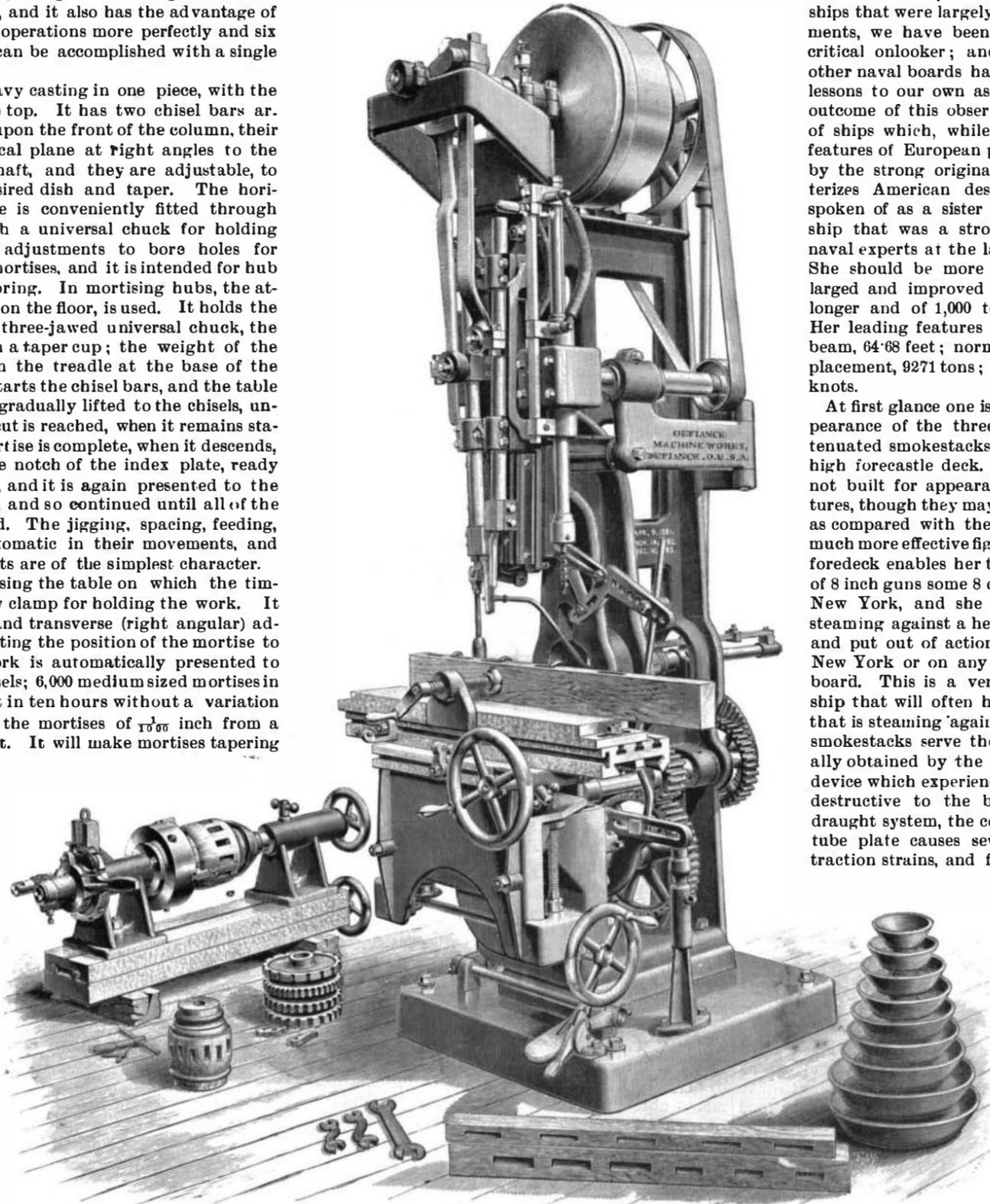
At first glance one is struck with the odd appearance of the three unusually tall and attenuated smokestacks, and the exceptionally high fore-castle deck. Warships, however, are not built for appearance; and these two features, though they may detract from her beauty as compared with the New York, make her a much more effective fighting machine. The high foredeck enables her to carry her forward pair of 8 inch guns some 8 or 10 feet higher than the New York, and she could fight them when steaming against a head sea that would flood and put out of action the same guns on the New York or on any ship with a lower free-board. This is a very valuable feature in a ship that will often have to chase an enemy that is steaming against the wind. The lofty smokestacks serve the purpose which is usually obtained by the use of forced draught, a device which experience has proved to be very destructive to the boilers. In the forced draught system, the cold air impinging on the tube plate causes severe expansion and contraction strains, and frequently starts leakage

at the tube ends. There is no such difficulty attaching to natural draught, and experience in the English mercantile marine has shown that as good results can be obtained by lengthening the smokestacks as by the employment of the forced draught system. The armament will consist of eight 8 inch rifles in barbets of

8 inch steel armor; twelve 5 inch rapid fire guns, protected by 4 inch steel armor; twelve 6 pounder rapid fire guns, and four machine guns. A complete steel protective deck, from 3 inches to 6 inches in thickness, will cover the ship from stem to stern.

The Brooklyn will carry five torpedo tubes, one in the bow and two on either broadside. Her total coal capacity will be 1,753 tons, and her normal capacity at normal displacement, 900 tons. She will have a full speed radius of action of 1,758 knots, and a 10 knot radius of action of 6,088 knots.

The St. Louis is steadily improving on her previous performances in the Atlantic service. She left New York Wednesday, September 25, passing Sandy Hook at 1:30 P.M., and arrived off the Needles, Isle of Wight, at 7:35 A.M. on the following Wednesday, the time of passage being 6 days, 13 hours, 25 minutes. The record is held by the Hamburg-American liner Furst Bismarck, and stands at 6 days, 10 hours, and 35 minutes.



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system. The nerve fibers about the glands vibrate more easily, causing a downpour from the watery sac. Men are not nearly so sensitive to emotion; their sympathetic nature—the term is used in a medical sense—is less developed, and the eye gland is, therefore, protected from shocks. Consequently, a man should thank the formation of his nerve nature when he contemptuously scores tears as a woman's practice. Why facial distortions should be the usual accompaniment to the sobbing of the gentler sex there seems no satisfactory solution. It may be that the nerves, which lead to the muscles as wires to marionettes, twitch and pull them in this fashion while they are at work emptying the tear glands of their contents. That the copious shedding of tears "which breaks the ice-bound fetters of the heart" is a healthy action, all physicians assert. In some cases it is even thought to avert insanity. Even here the reason is scientific, for it is a sign of relaxation of the brain nerves from a tenseness that was congestion. Between man and monkey there is this essential difference of tears. An ape cannot weep, not so much because its emotional