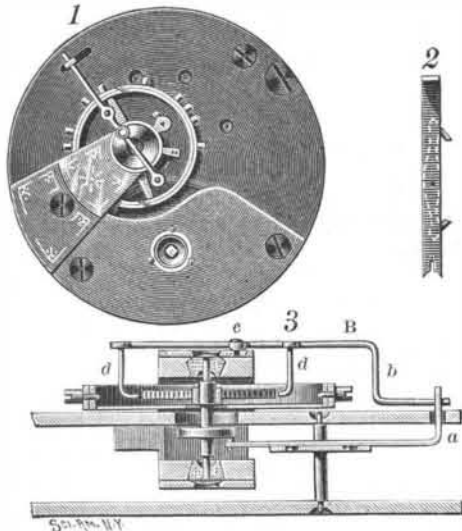


AN IMPROVED BALANCE ESCAPEMENT FOR WATCHES.

The application of a governor to the hair spring and balance wheel of a watch, in the form of a free curb actuated by the pallet or escapement lever, to lessen the effect upon the watch of jar or shock, is illustrated herewith, and has been patented by Mr. Sirius E. Kochenderfer, of Hollidaysburg, Pa. The escapement lever, shown in Fig. 2 (the escapement wheel not being shown), has a forked end in which works the pin on the balance staff roller, and the outer or back end of the



KOCHENDERFER'S BALANCE ESCAPEMENT FOR WATCHES.

lever is extended and bent to form a slotted arm, working through a slot in the top plate, as shown at *a*, in Fig. 3, this arm engaging with a bent arm, *b*, of a vibrating rod or wire, *B*, having its pivot, *c*, a little to one side of the axial line of the balance staff. This vibrating governor, *B*, has inwardly projecting curbs, *d d*, that serve to receive freely but moderately closely in between them the hair spring. This governor is vibrated in common with the escapement lever, by which it is driven, and serves to equalize the motion and adjust to equal motion in any position the watch may be turned. In case of shock or jar the balance wheel is restrained from making lost motion by the curbs of the governor, while the pin on the roller of the balance staff is not liable to work out of timely relation with the fork of the escapement lever, avoiding danger of locking the balance or producing breakage of the pin jewel.

THE AUTOMATIC RUBBER MIXER.

The accompanying illustrations represent a new appliance for the "compounding" of rubber which

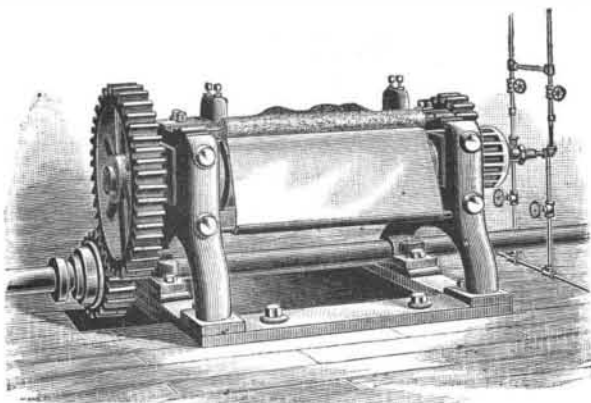


Fig. 1.—THE AUTOMATIC RUBBER MIXER.

promises much in the way of rapid and economical work. The automatic rubber mixer consists of a stout belt of duck covered with rubber, which runs horizontally beneath the mixing rolls, occupying the place usually filled by the "compound box." The upper surface of the belt when in use is drawn against the

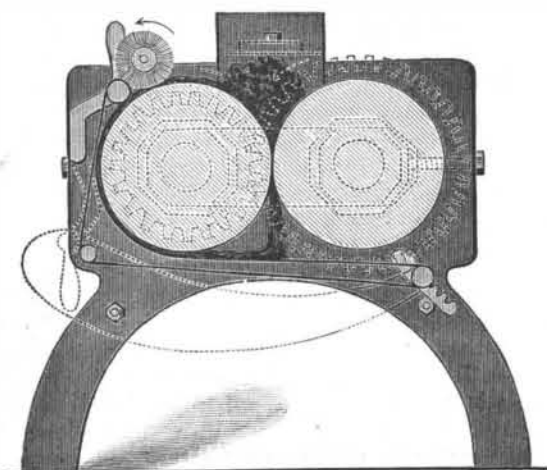


Fig. 2.—THE AUTOMATIC RUBBER MIXER.

face of the "back roll," as shown in black lines in Fig. 2, and is brought up even with its top, where it is held by two strong springs. The turning of the roll sets the belt in motion, which results in the constant and even feeding of anything that drops between the rolls, to the top, for further grinding. When a "batch" is thoroughly mixed the belt can be released and dropped out of the way, as shown in dotted lines, and the rubber refined with as much care as if no belt were there. If, during the mixing, the piece goes over the back roll, the belt springs immediately lengthen out, and the belt goes on with its work of carrying up the compound as easily as before. To prevent the working out of the compound between the ends of the rolls and its loss by dropping over the edge of the belt, a pair of metal guides are attached directly below the rolls, which serve to throw it in toward the center of the belt.

Practical tests with the automatic rubber mixer are said to show that one man can run three or more grinders with it, and deliver one-fourth more work from each. Aside from this, the product is far more homogeneous than when the compound is fed with a hand shovel, and there is less danger of burning sensitive stocks.

Fig. 1 is a perspective view of the mixer attached to a grinding mill, Fig. 2 showing an end view of the same, the belt being drawn up over the back roll and in the act of feeding the compound to the top of the rolls. Both American and foreign patents have been secured upon this invention and a company, known as the Automatic Rubber Mixer Company, No. 38 South Market Street, Boston, Mass., are now building the machines. Models of the mixer, as well as machines in actual use, may be seen, or any other information desired can be obtained by writing to Henry C. Pearson, general manager, at the above address.

Japanese Lacquer for Iron Ships.

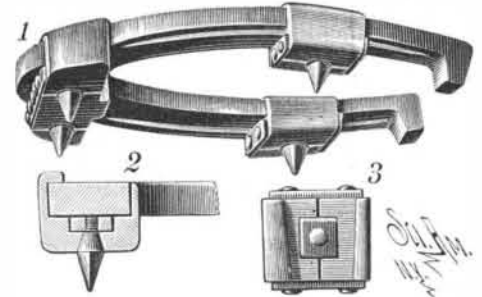
The Japanese Admiralty has finally decided upon coating the bottoms of all their ships with a material closely akin to the lacquer to which we are so much accustomed as a specialty of Japanese furniture work. Although the preparation differs somewhat from that commonly known as Japanese lacquer, the base of it is the same—viz., gum lac, as it is commonly termed. Experiments, which have been long continued by the imperial naval department have resulted in affording proof that the new coating material remains fully efficient for three years, and the report on the subject demonstrates that, although the first cost of the material is three times the amount of that hitherto employed, the number of dockings required will be reduced by its use to the proportion of one to six. A vessel of the Russian Pacific fleet has already been coated with the new preparation, which, the authorities say, completely withstands the fouling influences so common in tropical waters. It occupied the native inventor for many years to overcome the tendency of the lac to harden and crack, but having successfully accomplished this, the finely polished surface of the mixture resists in an almost perfect degree the liability of barnacles to adhere or weeds to grow, while presumably the same high polish must materially reduce the skin friction which is so important an element affecting the speed of iron ships. The dealers in gum lac express the fear lest the demand likely to follow on this novel application of it may rapidly exhaust existing sources of supply.

AN IMPROVED WIRE FENCE.

A wire fence in which the posts are braced and sustained in a novel way, and are laterally adjustable to accommodate the expansion and contraction of the wires, is illustrated herewith, and has been patented by Messrs. Thomas Griffin and William J. Mitchell, of Noblesville, Ind. Each post is anchored in place by a rod looped around a stone or other weight, and secured to the post by a nut, while upon the opposing face of the post is a rack having a central longitudinal aperture and aligning recess, adapted to receive a rack plate and lug secured to one end of a brace, as shown in the small figures, the lower end of the brace resting upon a stone or other suitable block. The brace is held in connection with the post by a lever pivoted to the post by a staple, a rod from one end of the lever extending through the brace, and having its end threaded to receive a nut, the tightening or loosening of which causes the post to incline slightly inward or outward, as may be desired, on account of the expansion or contraction of the wires. These post braces may be used in connection with as many of the intermediate posts as is found desirable, but are designed to be at all times employed in connection with the end posts. That the wires may be properly spaced, they are tied together by spaced vertical clamps or stays, consisting of metal bars pivoted one upon the other at their lower ends, as shown in a small figure, having slots at the desired distance apart, so arranged that when one bar is folded upon the other, the slots in each will register. This stay may be attached to all but the top wire, or may include that also, as shown in the illustration.

A REMOVABLE CALK FOR HORSESHOES.

A device whereby the calk may be securely held in place on a horseshoe, and readily removed therefrom for sharpening, is illustrated herewith, and has been patented by Mr. Thomas B. Mason, of 209 Warren Street, Trenton, N. J. A clamp is employed, shown in section in Fig. 2, having rocking portions connected together by straps and bolts, the toe clamp being formed with three rocking portions, the meeting edges of which are a slight distance apart, and have centrally beveled semicircular recesses, in which the calk is received. The

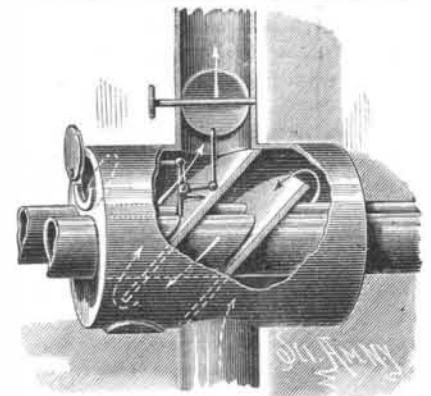


MASON'S REMOVABLE CALK FOR HORSESHOES.

calk has a shoulder which rests in these recesses, its inner end being screw-threaded, to engage a nut resting in an inside recess formed in the two adjacent rocking portions of the clamp, as shown in Fig. 3. As the calk is screwed into the nut, after the latter has been placed in its recess, the adjacent rocking portions of the clamp are forced apart, and cause the clips to be firmly pressed against the horseshoe. The clamps used in attaching the toe calks have a straight clip, which rests against the inner side of the horseshoe, with no projection to injure the horse's foot.

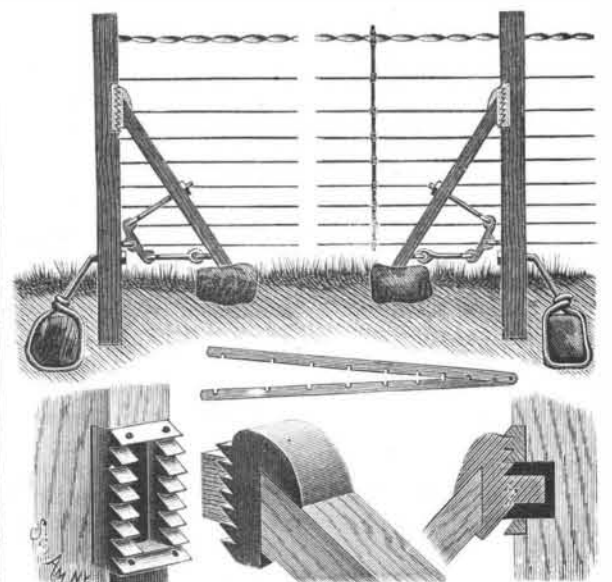
AN IMPROVED HEATING DRUM.

A drum for use in connection with stove pipes, either adjacent to the stove or distant therefrom, to retard the current of heated air in its passage to the chimney, and secure the best radiation of heat, is illustrated



GRAN'S HEATING DRUM.

herewith, and has been patented by Mr. Edward C. Gran, of Jordan, Minn. The heads of the drum have openings in which rest pipes through which the air of the room may freely circulate, the drum being secured to thimbles receiving the ends of sections of a stove pipe. The interior of the drum has inclined partitions, through which extend the lateral pipes, the partitions directing the current of heated air entering from the stove pipe in the lower opening of the drum, as shown by the arrows, around the lateral pipes, to the upper drum opening. There is an opening covered by a slide in the bottom of the drum, from which soot may be removed, and, in order to check the draught through the drum, it has an opening provided with a wire screen and pivoted cover, above the lateral pipes, this opening, which serves also as a ventilator for the room, being adapted to be closed on the inside by a valve connected with the damper. There is no opportunity for the drum



GRIFFIN & MITCHELL'S WIRE FENCE.