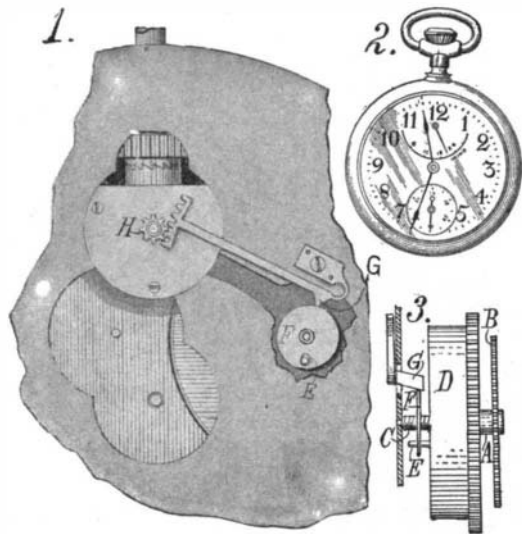


**WINDING INDICATOR FOR WATCHES.**

In watches of the better class, and especially in chronometers, it is quite important to know just to what extent the spring has been wound; for in wind-

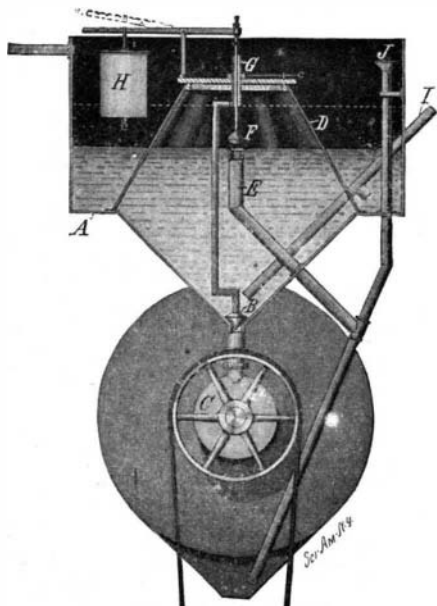


**WINDING INDICATOR FOR WATCHES.**

ing the spring to the limit one is apt to strain the delicate mechanism. Such an indicator has recently been devised which operates in a very simple manner. As shown in Fig. 2 of the accompanying engraving, a small indicating hand is provided on the face of the watch which, as the watch is wound, will move in one direction over a graduated dial and when the watch is running will move in the opposite direction. In Fig. 3 the winding arbor is indicated at A, to which is attached the winding gear B. The arbor A is provided with a reduced extension C. On this extension a disk F is threaded, and the latter is arranged to revolve with the spring barrel D, by reason of the fact that a pin E carried by the barrel passes through an aperture in the disk. The watch is of that type in which the opposite ends of the spring are secured to the barrel and arbor respectively, and both the barrel and arbor rotate in the same direction, the latter during the winding of the watch, and the former when the watch is running. With the arbor A is revolved the disk F, which being prevented from rotating by its connection with the drum D is fed inward in contact with a cam surface on the spring lever G. The latter is provided with a toothed sector which engages the pinion H and moves the indicator hand attached thereto over the winding dial. When the watch is running, the disk E rotates with the barrel, and is thereby threaded outward on the shaft C, permitting the spring lever to return to its normal position, and thereby moving the indicator toward the unwound position. The inventor of this mechanism is Mr. Samuel Kahan, 1061 Park Avenue, New York, N. Y.

**GRAIN-WASHING MACHINE.**

Pictured in the accompanying engraving is a grain-washing machine which is arranged in such a manner that when the machine becomes choked the sound grain is prevented from passing out through the over-

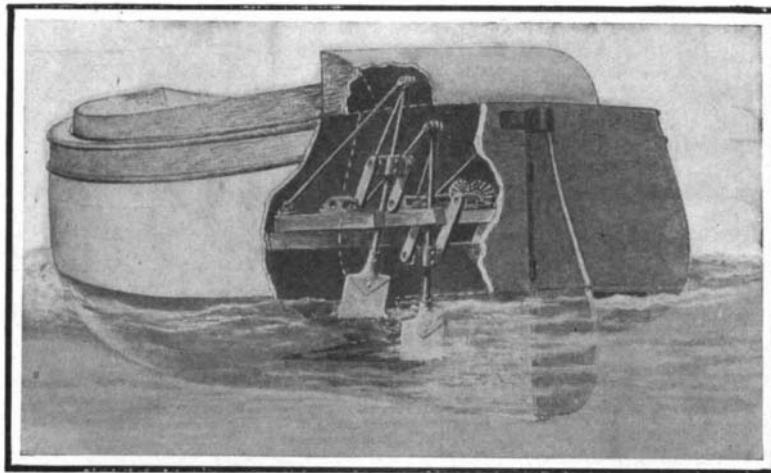


**GRAIN-WASHING MACHINE.**

flow employed for carrying off extraneous matter. The engraving shows the machine in section, the tank being indicated at A. This tank is fed with water from a supply pipe at its upper end and discharges past a grain valve B into the beater C, from which the grain passes to the straining device in the usual manner. A chamber D is provided within the tank A, and the stem of the valve B passes up through this chamber, being formed with a sleeve G at its upper end to receive the rod of a valve F. The latter serves to close the upper end of the discharge pipe E. The valve F is suspended from a lever to the opposite end of which a float H is hung. This float may be adjusted along the lever, in order to regulate the action of the valve. The grain delivery chute is indicated at I, while a secondary overflow pipe is shown at J. In operation the water washes the sound grain through the valve B, but extraneous matter floats to the top of the tank and is carried out through the overflow pipe E. In case the valve B should become choked, the water rising in the tank A will lift the float H, permitting the valve F to close, so as to prevent the sound grain from passing off therethrough. In case the water should rise to a dangerous height it would be carried out through the overflow pipe J. The inventors of this grain-washing machine are Messrs. W. F. Mullaney, C. B. Neuman, and M. Nicholson, of Marshall, Minn.

**NOVEL BOAT-PROPELLING DEVICE.**

An oar-like boat-propelling mechanism has recently been devised which is adapted to permit of propelling a vessel at high speed on shallow waters. The mechanism requires but little power and does away with the long shaft connection between the motor and the propeller. The propelling mechanism is concealed in a well at the stern, this well being open at the bottom, as indicated in the engraving, which is partly broken away to show the mechanism. This well is divided into two compartments. In each compartment a pair of paddles are mounted to operate. The paddles are



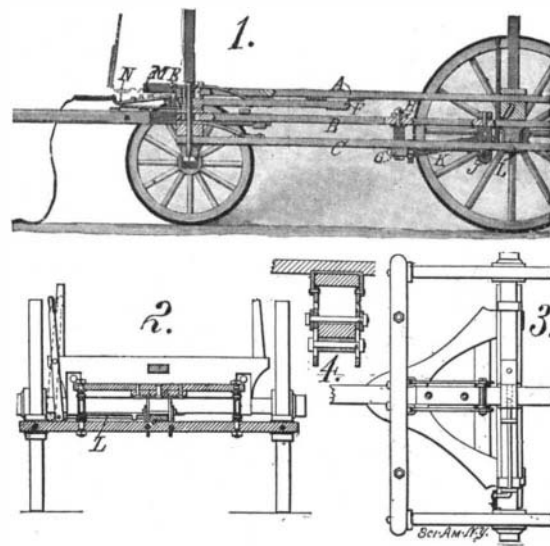
**A PROPELLING MECHANISM FOR SHALLOW-DRAFT BOATS.**

suspended from pairs of levers at their upper end, the lower ends of the levers being pivoted to a framework in the compartment. On each paddle stem a sleeve is mounted which is pivoted between the arms of a crankshaft. The crankshaft is propelled by any suitable engine through bevel gears, and as the cranks revolve each paddle is moved through the water, and by reason of the lever suspension each paddle is lifted out of the water on the return stroke. The return stroke occupies but one-third of the rotation of the crank, so that there are always at least two paddles in active engagement with the water, and at times during each rotation all four of the paddles are in the water together, two beginning and two ending in the water together. Each paddle stem is provided with a number of bolt holes which permit of adjusting its position with respect to the supporting levers, thus regulating the depth to which the paddles will reach in the water. The inventor of this boat-propelling device is Mr. Whiting Arnold, of Murray Hill Hotel, New York.

**BRAKE MECHANISM FOR WAGONS.**

The mechanism which we illustrate in the accompanying engraving provides a very effective brake for wagons which will be operated by any back pressure of the front axle that is greater than that on the rear axle. The wagon is provided with a main reach A, and a second reach B, both of which are secured to the rear bolster, but have a limited sliding movement in the forward bolster. In addition to these two members there is a third reach C, rigidly secured to the forward bolster E, but free to slide in the rear bolster D. The main reach A is formed with an auxiliary part F rigidly secured to the bolster E, but having sliding engagement with the main reach A. This construction serves to strengthen the reach and hold it in alinement while permitting it to move with respect to the bolster E. Secured to the reach B is a cross-bar H from which is suspended the brake beam

G, the latter being provided with the usual brake shoes which bear against the peripheries of the rear wheels. Connected to the brake reach C are a pair of pivoted arms J which are connected by links K to the brake bar G. In operation, when going down hill, the rear wheels will tend to ride forward with respect to the front wheels, carrying the reaches A and B with them, and also the cross-bar H. However, as the brake bar G is held back by its link connection with the arm supported by the brake reach C, the result will be to force the brake shoes against the wheels. When it is desired to disconnect the brake mechanism, a pin L

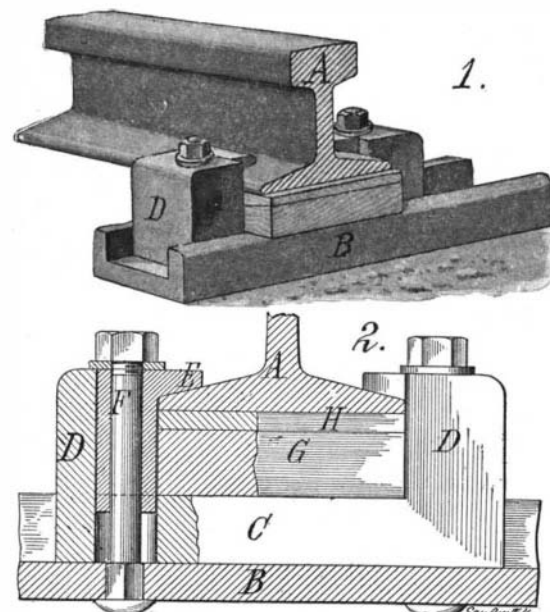


**BRAKE MECHANISM FOR WAGONS.**

is passed through the brake reach C and its support on the rear bolster. If while driving the wagon it is desired to stop the automatic action of the brake, this can be done from the driver's seat by lifting the notched bar N into engagement with the U-shaped bar M. The bar M being connected with the reach A and the bar N with the bolster E the result will be to lock these two parts together and prevent the forward movement of the rear wheels with respect to the forward wheels. Mr. Eben G. Doland, of Starksboro, Vt., has recently secured a patent on this brake mechanism for wagons.

**IMPROVED RAILROAD TIE.**

The accompanying engraving illustrates a railroad tie which may be constructed of metal or concrete, and to which is bolted a rail chair, with lugs fitted in the chair to engage the base of the rail and hold it in place. Between the rail and the chair wedge-shaped blocks of wood are provided which not only serve as cushions for the rail, but also may be used to force the rail into alinement. In the engraving the rail is indicated at A and the tie at B. The chair C is placed under the rail, and is provided with vertical portions at each side. A vertical orifice extends through each side portion and into each orifice a lug E is fitted. The latter is formed with a sleeve which engages the orifice providing a long bearing. The lugs are held in place by means of bolts F which pass through them and the tie B. The wooden wedges referred to above are indicated at G and H. Should it be found that the rail must be raised or lowered, the bolts are loosened and the wedge-shaped members E and H are forced together or apart until the proper adjustment is attained, after which the nuts on the bolts are screwed home and the device is ready for service. The inventors of this improved railroad tie are Messrs. W. Hubbell and A. J. Annis, Siloam Springs, Ark.



**IMPROVED RAILROAD TIE**