A WATER-FEEDING DEVICE FOR GRINDING-WHEELS.

There has recently been patented by George J. Ridley, of Auburn, N. Y., a novel method of feeding water to grinding-wheels, whereby many objections hitherto encountered are overcome.

The grinding-wheel itself is mounted in the usual

RIDLEY'S GRINDING-WHEEL.

manner. Below the grinding-wheel, but not in contact therewith, a water-feeding disk is mounted and partially submerged in a reservoir containing water. The disk and grinding-wheel are driven by a belt running over pulleys on the wheel and disk shafts.

The emery-wheel is covered by a hood, so that no water can be scattered about while the wheel is in operation. The hood extends down and covers the feed disk. A slide is mounted in guides so that it may be inserted between the emery-wheel and the feed-disk.

When the grinding-wheel is rotated, the feed-disk is also rotated, and the water which is lifted from the reservoir will be thrown by centrifugal force against the grinding-wheel. The amount of water thus supplied to the wheel may be regulated by moving the slide in or out.

In this device the feed-wheel is not in contact with the grinding-wheel, but is rotated thereby, with the result that the grinding-wheel is wet only when in use and that the connection between the wheel and disk is not disturbed by uneven wear.

A NEW WAY OF CONSTRUCTING DRAWBRIDGES.

In drawbridges of the swinging and revolving type, as at present constructed, considerable time is lost by the slowness of operation of the draws. In order to overcome this objection, William L. Sampson, of Ocean Grove, N. J., has constructed a drawbridge which consists primarily of movable cantilever spans having inclines, and aprons adapted to be engaged by the inclines and swung into an angular position.

Of the accompanying illustrations, Fig. 1 is a side elevation of the bridge, showing the draw closed; Fig. 2 is a similar view, showing the draw open; Fig. 3 is an enlarged section of the adjacent ends of the spans locked together; and Fig. 4 is an enlarged transverse section of the base of the span locked to the abutment.

The cantilever spans of the bridge are constructed to travel toward and from each other on foundations extending above the water-level. In order to impart this movement to the spans, a rope or chain, passing through a tunnel or conduit in the bed of the river, is connected with the ends of the spans and with a drum on shore driven by suitable machinery.

When the spans are in closed position, their two inner ends abut against each other, and the outer or shore ends abut on the aprons; and since the aprons are in turn hinged to the abutments, a continuous bridge is formed from shore to shore. The aprons at their under sides are provided with wheels normally resting on tracks and adapted to travel up the inclines of the spans. An engineer stationed in a power-house on shore can readily move the spans from the abutments to close the waterway or toward the abutments to open the waterway, in which latter position the aprons will be raised.

In order to lock the spans securely in place when the waterway is closed, and to prevent all lateral movement, the outer trusses are provided with heels extending upon the floors of the opposite spans as shown in Fig. 3. Locking bolts engage the heels and the floors of the spans, and a second set of bolts connected with the first-named bolts engage registering recesses in the timber of adjacent trusses. The bolts are controlled by the engineer through the medium of ropes.

The inner ends of the spans are also adapted to be locked in place when the bridge is closed, and for this purpose, the device shown in Fig. 4 has been devised. The arrangement consists of movable bars on the base of each span, each bar being provided with pintles. Fixed eyes on the side walls of the abutments are adapted to be engaged by the pintles. By means of a rope and operating lever the engineer can simultaneously move the bars in order to shift the pintles in and out of locking engagement with the eyes.

The special advantages of this bridge are the simplicity of its construction and the time saved in opening and closing the draws. Not only is the invention applicable to bridges, but to viaducts and crossings as well.

AN IMPROVED STEAM-BOILER.

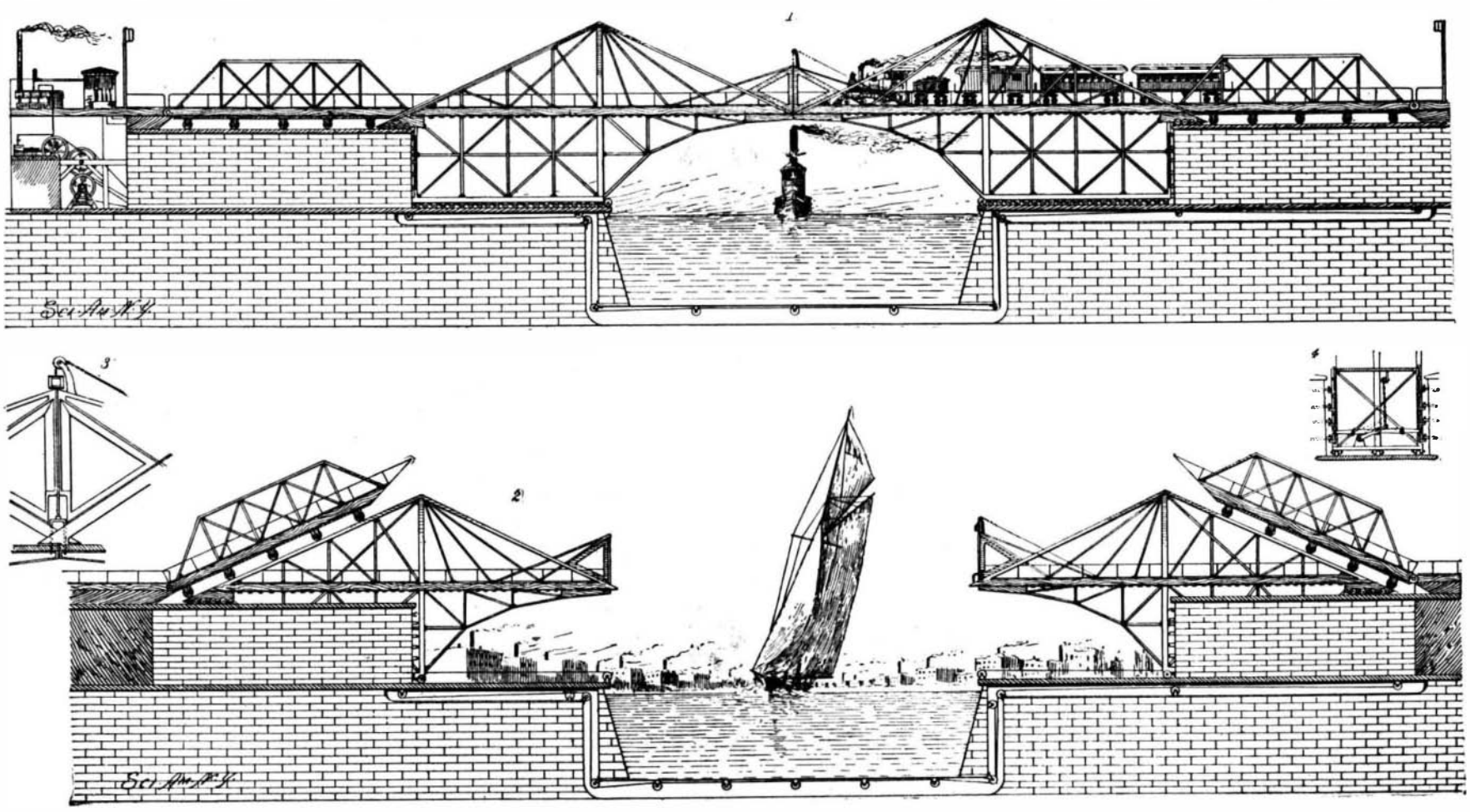
In the accompanying illustration we present a novel steam-boiler in which an inner and outer shell are provided, the inner shell being open at the bottom and designed to collect the steam, and the space between the inner and outer shells being filled with water. When heat is applied to the outer cylinder, the bottomless inner shell will be filled with steam: the air will be exhausted; the space between the cylinders will be filled with water; and the exterior surface of the outer shell will be enveloped by flame or heat. The steam generated within the interior cylinder maintains by its pressure a thin layer of water on the bottom, the

STAUBER'S STEAM-BOILER.

interior cylinder acting somewhat like an inverted bell-jar. When the fire decreases in intensity, the interior cylinder becomes partly filled with water; when the heat is at its maximum temperature, the water is forced out of the interior cylinder. The inventor of this boiler, Benjamin T. Stauber, of Jewell City, Kan., claims for his invention cheapness of construction, a saving of fuel, and ability to raise steam rapidly and to make large reductions of steam without blowing off. By the addition of an air supply pipe, air can be heated in the interior shell, and supplied in the usual manner.

A New Power Scheme for Niagara.

New York and Buffalo men have organized a company for the purpose of developing the great power of the whirlpool rapids by means of a canal which shall be built inside or beneath the tracks of the gorge road. This canal will be 530 feet long and 100 feet wide. It will be capable of furnishing 35,000 horse power at the whirlpool under 45 feet head. It is thought that the cost will be about $2,000,000.



SIDE ELEVATIONS OF SAMPSON'S BRIDGE, SHOWING THE DRAW CLOSED AND OPEN.