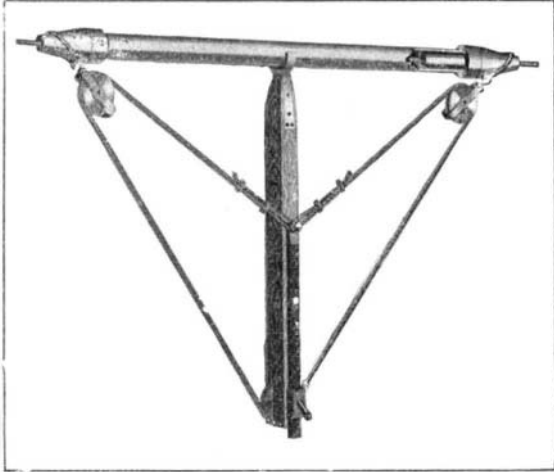


BENDING DEVICE.

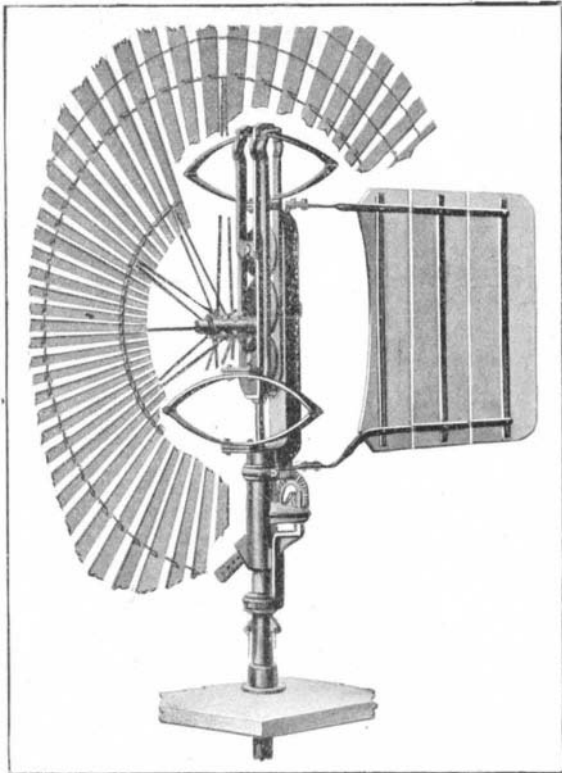
The accompanying illustration shows a portable bending device for bending wrought-iron and steel pipes, such as are used for conveying gas, water, steam, and the like. The bending device is very simple, and can be easily operated, and owing to its portability it will be found very useful for bending pipes along the route of a pipe line. The device comprises a beam, formed at one end with a fork adapted to fit over the pipe which is to be bent. Conical plugs are removably secured to each end of this pipe, and these plugs are engaged by loops, which afford a means for attaching

**BENDING DEVICE.**

a pair of sheaves thereto. The cable passes over these sheaves, and also over a sheave secured to the lower end of the beam. The two ends of this cable are hooked over a horn formed on the upper end of a rack, which is slidably mounted on the beam. At its lower end this rack is held in a frame, which also carries a lever device, by which the rack may be moved downward, exerting a pull on the cable to bend the pipe until the desired curvature has been reached. In our illustration the right-hand end of the pipe is broken away to show the form of the plug used. It will be observed that aside from being formed with a projecting pin, which closely fits into the bore of the pipe, the plug is also provided with a sleeve, which fits snugly over the exterior of the pipe. This prevents the end of the pipe from losing its shape during the bending operation. The inventor of this bending device is Mr. Theodore Damm, care R. H. Smith, 606 Pennsylvania Avenue, West, Warren, Pa.

IMPROVED WINDMILL.

A patent has recently been granted to Mr. J. G. Benster, of 910 Railroad Avenue, Moline, Ill., for a

**IMPROVED WINDMILL.**

windmill of improved construction, which is designed to insure a direct and full transmission of the power developed in the wheel. The construction of the windmill is clearly shown in the accompanying engraving, in which the windwheel is partly broken away to show details. The frame of the windwheel is mounted to rotate on the upper end of a hollow mast. A horizontal stud projects from the frame, and on this the hub of the windwheel rotates. An eccentric disk formed on the inner end of this hub has peripheral engagement at the top and bottom, with friction rollers journaled in a vertically movable yoke. This yoke is secured to the top of the pump rod, which passes down through the hollow mast. Two elliptical

springs hold the friction rollers in engagement with the eccentric, so that when the windwheel rotates, a reciprocating movement is imparted to the pump rod. The vane which holds the wheel to the wind is journaled to the frame of the windwheel, and on the lower hub a segmental bevel gear is formed, which engages a similar gear segment mounted on a stud projecting from the windwheel frame. A weighted arm, which extends from the hub of the latter segment, normally holds these segments in such position that the vane lies at a right angle to the windwheel. Means for throwing the windwheel out of the wind are provided in a segmental spur gear, also formed on the hub of the weighted bevel-gear segment, which engages the teeth of a rack. This rack can be drawn down by means of two depending rods, thus rotating the gear wheels and shifting the vane to idle position; that is, to position parallel with the plane of the windwheel. The wings or sails of the windwheel are formed of wood, and are held in place by two concentric metal rings, which are slotted to receive these wings. The rings are supported by spokes from the central hub. In forming the slots in the rings, the metal is struck up to form flanges, which are bent around the wings and hold them firmly in place. By means of this simple construction it is possible to readily replace an injured wing with a new one whenever desired without taking the rest of the wheel apart.

MAIL BOX FOR RURAL FREE DELIVERY ROUTES.

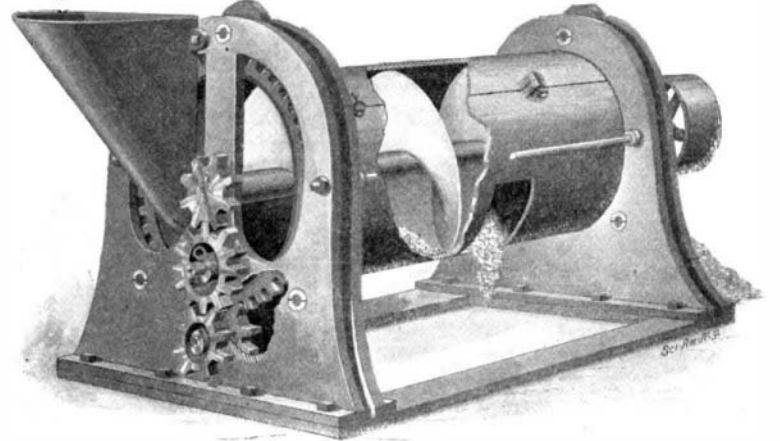
A mail box which is particularly adapted to meet requirements that have arisen in connection with the rural free delivery system has recently been invented by Mr. Howard G. Leffingwell, of Severy, Kan. It will, of course, be understood that in rural delivery systems the mail boxes are placed along the delivery routes, which in many cases are some distance away from the houses of the owners. This box is, therefore, provided with means for automatically indicating to the box owner that mail has been deposited in the box by the postman, and to the postman that mail has been deposited in the box by the owner for collection. As shown in the illustration, a balanced platform is placed in the bottom of the box, and this is connected by a rod to one end of a lever pivoted near the top of this box. The other end of the lever normally lies just below a lug formed on the door of the mail box. When mail is placed in the box, its weight depresses the platform, thereby raising the outer end of the lever, so that it encounters this lug when the door is closed, and the lever is thus bodily pushed backward. The lever, it will be observed, is pivoted to a crank secured to a rod, which at its upper end carries a semaphore, and thus when the lever is forced backward, the rod is turned on its axis, swinging the semaphore to the position which indicates the presence of mail in a box. When the owner opens the door, the semaphore, under action of a spiral spring on the rod, swings back to normal position, and on removal of the mail the platform rises, permitting the outer end of the lever to drop, so that when the door is closed again, the lug will not strike the lever, but will pass over it. When the owner deposits mail in the box, he raises a crank at the side of the mail box. This operates to support the end of the platform, as shown in our small detail view, and prevents it from tilting, under the weight of the mail deposited thereon, so that when the door is closed the semaphore is not set. A signal is secured to the outer end of the crank, so that when raised, it will attract the attention of the postman, and notify him that mail has been deposited in the box for collection.

Transfer of the Bottle Industry.

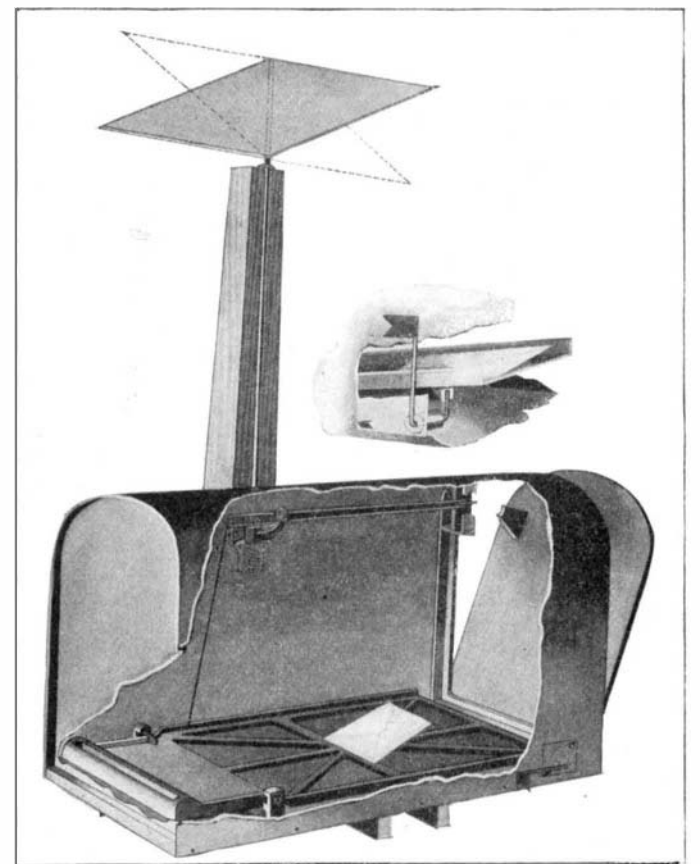
There is every indication that the center of the glass-blowing industry has been shifted from the vicinity of Pittsburg, Pa., to Toledo, Ohio. This is a revolution which has been brought about by the general introduction of the bottle-blowing machinery. The Owens Company, which was organized to exploit valuable patents on machinery of this character, and which has its headquarters in the latter city, has, or is about to acquire the rights of its most formidable rivals, and the prospects are that the bottle-blowing industry of this country will be controlled, at an early date, by this company. The Flint Glass Workers' Association, which has for many years been located in Pittsburg, has moved its offices to Toledo. This necessitated the transferral of about \$150,000, the funds of the association which had been deposited with local institutions.

ORE-SAMPLING MACHINE.

The richness of mineral ores varies so greatly, that in order to make a correct valuation of a quantity of ore, it is necessary that the sample which is to be assayed should represent an average quality of that entire quantity. This average quality is obtained by means of mechanism, which thoroughly mixes the ore and separates a certain percentage of the material, which passes through it for sample. We illustrate herewith an improved ore-sampling machine, which is the invention of Mr. William L. Raht, of 140 West North Temple Street, Salt Lake City, Utah. Many ad-

**ORE-SAMPLING MACHINE.**

vantages are claimed from this machine. It can be easily inspected and cleaned. It does away with elevators, which are hard to clean and expensive to operate. The correctness of the sample is not jeopardized by slipping of belts, and it does not catch the sample while the ore is dropping. This latter advantage is quite important, as it entirely obviates an objection common to some constructions, in which large pieces properly belonging to the sample, strike the edge of the opening and bound off. Mr. Raht's machine consists of a cylinder, which is mounted in roller bearings at each end. A gear ring is secured to one end of the cylinder, and this is connected by a suitable train of gearing with a power-driven screw conveyer, which passes axially through the center of the cylinder. The gearing is so arranged that the conveyer and the cylinder will rotate in opposite directions. These two movements combine to thoroughly mix the ore as it is fed forward by the conveyer. An opening of any suitable size is cut in the wall of the

**MAIL BOX FOR RURAL FREE DELIVERY ROUTES.**

cylinder at the point near the discharge end. Every time this opening is rotated to its lowest position, the material overlying it drops through as a sample, while the remainder passes on and is discharged at the end of the cylinder. It will be observed that by this construction a certain constant percentage of ore, which depends on the size of the opening, will be constantly delivered as sample. One-half of the cylinder, that in which this opening is formed, is removable to permit of cleaning the interior of the machine. This section can also be replaced whenever desired by another containing a smaller or larger opening, thus affording a simple means for changing the percentage of the ore chosen for sample.