

top of the embankment, or 5 feet above high water level.

At the center of its length, and opposite the shaft 21 leading down to the new aqueduct, a large main gatehouse will be built, from which a short conduit will lead across to connect through this shaft with the new aqueduct below ground. To the south of the main gate house the new aqueduct is continued as a double barrel conduit, each barrel being 11 feet in diameter, and the old aqueduct is carried above these at its former elevation, as shown in Fig. 3. At a point 1,500 feet to the south of the gatehouse one conduit leads into the western and the other into the eastern half of the reservoir. By this arrangement three separate systems of distribution of the water are secured. The reservoir may be filled or the water distributed directly from either the old or the new surface aqueducts, or from the subterranean aqueduct through shaft 21, the operations being all controlled at the main gate house. The construction of the dividing wall of the reservoir is shown in the two cross sections, Figs. 2 and 3, and it will be seen that the arrangement is such as to afford two entirely independent reservoirs, each with its own separate system for feeding and distributing the water.

Six lines of 48 inch pipe will radiate from the main central gate house; two of which will leave the reservoir at Van Cortlandt Avenue to the northwest, two at Sedgewick Avenue to the west, and two at Jerome Avenue to the southeast, one of which will lead to a high service pumping station. A gate house will be built at each point of exit. The main gate house connections will be so arranged that these pipes may be supplied with water from either basin of the reservoir or directly from either the old or new aqueduct. The 48 inch pipes, with the aid of the proposed pumping stations, will serve the annexed district to the north of the Harlem River, and it is also proposed to carry a line from these pipes south across the Harlem River to connect directly with the city mains on Manhattan Island. This would give an independent source of supply in case of any accident to the present aqueducts where they cross the Harlem River.

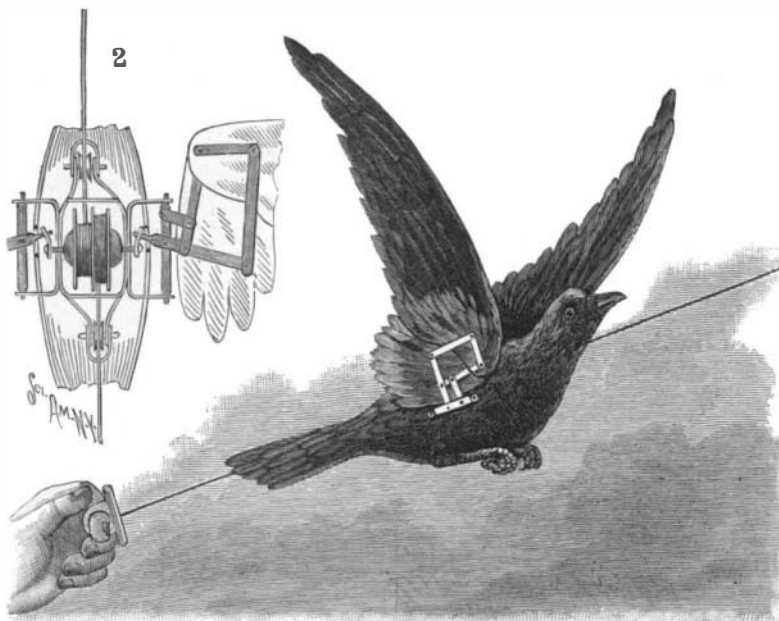
When the Jerome Park reservoir is completed it will form an extensive lake of water over a mile and a quarter in length and more than half a mile in width; and the winding gravel walk on the top of the embankment

will afford a continuous promenade fully three miles long. The contract calls for the completion of the work in 1901. A few years later than this the great Croton dam which is now building at a point a few miles below the old Croton dam will be completed, and the new lake thus formed will hold over 30,000,000,000 gallons. If we add to this the capacity of the various auxiliary storage reservoirs scattered throughout the Croton watershed, and that of the reservoirs at Jerome Park and Central Park, we reach a grand total of 75,000,000,000 gallons as the future available supply of New York City.

The work is being carried out under Mr. A. Fteley as chief engineer. Mr. A. Craven is in charge of construction at Jerome Park, and to these gentlemen, together with Mr. F. S. Cook, assistant engineer, we are indebted for valuable facilities in the preparation of the present article.

A TOY BIRD THAT FLIES.

The naturalness and easy movement of the wings of the little toy bird shown in the accompanying illustration, as the operator pulls gently on the end of the supporting string over which the bird moves, in accordance with the movement of the wings, always attracts observers when this toy is shown on the streets, as it



A TOY BIRD THAT EFFECTIVELY SIMULATES A BIRD FLYING.

has been by numerous venders within a few weeks past. The toy is one of the most recent of the many novelties which are constantly being exhibited by the sidewalk salesmen in the streets of New York and other large cities, and in the construction of some of which a surprising degree of skill and ingenuity are displayed. The cord leading from the aperture below the mouth of the bird is attached at its outer end to a hook in the wall or other support, while its inner portion passes over an idler and around a pulley, to which it is attached. This pulley is a little smaller than another at its side, as shown in Fig. 2, both pulleys being fast on the same shaft, and a cord from the larger pulley passes over an idler and out rearwardly, having at its end a finger piece, on which the operator pulls in manipulating the toy. The cords are wound in opposite directions on their pulleys, so that the unwinding of the cord from and rotating of the larger pulley winds up the cord on the smaller pulley, and causes the bird to move forward on what seems to be only a single length of cord, the backward movement taking place by gravity when the pull on the string is released. The movement of the wings is effected by a crank on each outer end of the pulley shaft, the crank being pivotally connected with an extension of a member of the inner one of two pairs of lazy tongs, and this member having also a pivotal bearing on a cross bar which turns in bearings on the outer side of the toy, just under where the wings are hinged to the body. The larger pair of lazy tongs is pivotally connected to the outer portion of the wing, giving a longer sweep thereto than to the inner portion of the wing, with which the smaller lazy tongs are connected, and the pivotal connection of the lazy tongs with the bearing in the cross bar gives an oscillatory movement to the wings which constitutes a very good simulation of the natural movement of the wings of a bird in flight. A high degree of mechanical skill is shown in the putting together of this little toy.

An electric speed indicator which is designed specially for warships is described in the *Revue Industrielle*. The principle is that a tiny magneto, driven off the main shaft, gives a current which varies with the speed. A galvanometer introduced anywhere in the circuit, therefore, if properly graduated, gives the number of revolutions per minute, and the direction "ahead" or "astern."

RECENTLY PATENTED INVENTIONS.

Electrical.

VALVE GEAR.—William Engberg, St. Joseph, Mich. The gear provided by this patent is more especially designed for use in water supply pipes connecting a pumping station with a distant stand pipe. It is provided with a controlling device comprising an electric circuit containing two relays, an electric magnet for each relay and an armature lever, and two slidable bars adapted to be engaged and locked by the corresponding armature levers, the bars controlling the position of the valve. An alarm is sounded at the pumping station in case the valve is opened or closed accidentally.

AMALGAMATOR.—William Wright, New York City. This invention provides for an amalgamating plate over which the material is adapted to pass, water-distributing tubes being arranged to discharge water over the receiving surface of the plate, the tubes having carbon outlets, and the plate and tubes being in an electric circuit, while mechanism is provided for changing the direction of the current. When the amalgamating surface becomes clogged the current is reversed, in order to loosen the sediment and provide at all times for a clean surface to which the gold shall adhere.

Mechanical.

MOTOR REGULATOR.—John G. Ball, Chester, Ohio. A simple device, adjustable for various purposes, is provided by this invention, and consists of a frame in which is rotatably mounted a wheel having a series of weights secured to its periphery, arranged in such a way that the wheel is overbalanced on one side. An adjustable sweep rod connected to a crank arm or axle of the wheel is adapted to be engaged with mechanism having an attachment to a pump rod or similar device, a spring being adjustably connected to the sweep rod. The device is adapted for use with pumps for wells of different depths, churns of different sizes, and similar machinery where it is designed to operate a rod vertically and at varying rates of speed.

MOULD.—Robert H. Wilson, Boonton, N. J. This improvement consists of two plates having the mould formed in their opposing surfaces, and provided with automatic centering means by which they are made to register by simply sliding the cope upon the mould until stopped by the centering devices. There is also provided a removable and insertible pouring gate and riser, which is made in one piece of a refractory earthy material, and which protects the mould at the points where the heat of the metal is most likely to affect it, also enabling the gate to be easily removed.

JOURNAL BEARING.—Richard M. Melhuish, London, England. This bearing comprises a standard having an opening in which a bearing block is seated to move, a plate holding the bearing block in place, and the bearing block being longitudinally opened in its under side, whereby, when the slightly separated

parts of the bearing block are drawn together to take up the internal wear around the journal, the outer lower edges of the block will be depressed to take up the external wear. The improvement affords a ready means of correcting both the internal and external wear of the bearing block.

MAKING CYCLE GEAR CASES.—Horace W. Dover, Northampton, England. For making gear cases of xylonite, celluloid, etc., this invention provides a finishing tool for bringing the roughly moulded article to its final form. The tool comprises a male die or plunger, a matrix formed of a middle member inclosing the bottom and ends, with two loosely pivoted side members, and means for forcing and holding the die in the matrix, and for closing the sides of the matrix upon the article on the die. The plunger is forced home and the sides of the matrix closed in with the aid of heat, preferably while the tool is immersed in water at a temperature to soften the material, the material being caused to set in the moulded form by cooling the mould in cold water.

Agricultural.

STOCK WATERING DEVICE.—Joseph Seiler, Maple River Junction, Iowa. A device adapted for attachment to a tank, barrel, reservoir, or other source of supply, is provided by this invention, for use in connection with a trough or tank, cutting off the supply from the latter when the water has reached a certain height. It has a T-shaped body, with a plug in its vertical member, the outlet nozzle having a valve adapted to be closed by a trip rod which extends beyond the outlet end and engages a float. When the water in the trough gets below a certain level, the float lifts the valve to allow more water to flow in from the reservoir. The device may also be attached to and used in connection with a hydrant.

SORTING MACHINE FOR PEACHES, ETC.—John P. Wilson, Hamburg, N. J. This machine has carriers adapted to move over the assorting table, but which may be stopped at any point to make sure that the fruit or vegetables are of a size adapted to find an exit. Means are provided for regulating the feed to the assorting table, and the basket, crate, or bag holder occupies at first an inclined position, gradually assuming an upright position as the bag, etc., becomes filled, thereby preventing the bruising of the fruit or vegetables. The carriers may be readily and easily set in motion, and their motion is preferably continuous.

Miscellaneous.

BICYCLE RACK.—George Hirschman, Sr., and George Hirschman, Jr., Morristown, N. J. A portable rack of simple and inexpensive construction, and adapted to support a number of bicycles, has been devised by these inventors. The device comprises vertical and base rack bars pivotally connected together by

means of base blocks, transverse rods serving as stops for the wheels, the base racks being adapted to be held at right and acute angles to the vertical racks, and the whole device being adapted to be folded in comparatively small compass. A wide space between the wheel-supporting bars provides room for the handle bars of the several bicycles.

BICYCLE TIRE.—James C. Cole, London, England. This invention provides a tire made of segments or balls or oblate or flattened spheroids or ovals, preferably made of India rubber and inflated, but with the balls partially lined with a strong textile or inextensible lining. There are flanges or ribs on the balls for their attachment to the wheel, and the lining of the ball is of such width that its extensible part is only about that which may be flattened by contact with the adjacent balls. It is designed that the balls so made shall be extensible only in or about the direction of the circumference of the wheel.

PRESERVING FOODS.—Francois O. Jacob, Paris, France. To preserve solid organic alimentary substances from fermentation and decomposition, this inventor makes use in certain cases of an acid reaction and in others of a basic or neutral reaction. The process is especially designed to facilitate the preservation of meat, fish, fruit, vegetables, etc., and the substances to be preserved are treated with carbonic anhydride and formaldehyde, under pressure, either successively or simultaneously. It is said that meat thus treated can be kept in the open air for more than a month, and is without smell and contains no toxic principle or anything contrary to the hygiene of alimentation.

WINDMILL.—Rudolph Bratka, Minnesota Lake, Minn. The wheel of this windmill is mounted on a vertical axis and turns in a horizontal plane, the blades of the wheel being pivoted on arms radiating from the axis, and swinging from a horizontal to a vertical position as the wheel turns. Each blade is actuated by a spring, and as the spokes or arms move toward or into the wind the force of the springs is overcome and the blades are thrown horizontally, but when the arms pass the line in which the wind is blowing, the springs change the position of the blades, allowing the wind to act with the greatest possible efficiency on the wheel.

CHIMNEY.—Le Roy C. Hedges, Elmwood, Ill. This is a metal-framed chimney which is light, strong, and ornamental, and designed to support and strengthen other portions of the building, while being fireproof, inexpensive, and easy to repair when necessary. The invention comprises a casing in which is a draught flue, brackets on the casing supporting the joists, etc., while there are tiles on the brackets between the casing and the ends of the joists and floor. There are openings near the floor and ceiling of each compartment, and heat radiators through which the products of combustion pass, the chimney being designed to be a fuel saver as well as an effective heat distributor for rooms directly connected with it.

LAMP LIGHTING DEVICE.—Carl F. Bergmann, Jersey City, N. J. For lighting the wicks of bicycle lamps, more particularly, this invention provides a novel attachment which will facilitate the easy and protected ignition of the match, and guide it into contact with the wick to be lighted. A guide tube penetrates the wall of the lamp near its burner, and near the inner end of the tube is a spring-pressed scratching device adapted to ignite an inserted match, the tube being completely closed when the match is withdrawn, and thus preventing air currents from fanning the flame of the lighted wick.

SEWER GAS TRAP.—Henry McEvoy, New York City. This invention provides a simple form of trap that will be sealed automatically by water or by a valve movable into a discharge pipe. This valve is mounted on a tubular arm which extends through the valve, and the tubular arm connects with a water inlet tube designed to communicate with a water supply pipe. The connection of the tubular arm and its valve is such that, as water evaporates from the elbow and bowl, a small amount of water is admitted to replenish the amount evaporated and maintain a liquid seal.

LADDER AND COT.—Leonard G. Fath, Springfield, Mo. This is a combination device to be used by a slight adjustment as a cot, a step ladder, or an extension ladder, a cot surface of woven wire, etc., being discarded when the device is used as a step ladder. The device is made of two principal parts, a step ladder portion and a pair of parallel bars, both the side pieces of the ladder portion and the parallel bars having three pivot holes on each end, one near the middle and one near each end, whereby adjustment as a cot may be effected by means of pivot bolts and link rods.

FIRE EXTINGUISHER.—Arthur H. Durand, Montreal, Canada. This is a portable fire extinguisher which operates by the admixture of an acid with a solution of bicarbonate of soda to generate carbonic acid gas. The invention provides an acid receptacle formed by a contraction of the vessel containing the alkaline solution, and so arranged that the acid can be slowly admitted, and not all at once, the pressure being thus so regulated as to avoid danger of bursting the extinguisher, which sometimes happens from the sudden generation of an enormous volume of carbonic acid gas. A small extinguisher is thus provided which will be perfectly safe and of sure operation, and the machine may be readily recharged at any drug store, as no pieces are broken or out of order after use.

BUSHING AND HOLDER FOR RUBBER GAS BAGS.—John Heavue and Elmer E. Cisco, Brooklyn, N. Y. This invention relates to flexible gas bags temporarily employed for plugging gas mains during repairs, and provides a bushing adapted to be inserted in the opening in the main and a cap for attachment to the bushing to close it, and with means to hold the neck of the gas bag, holding the latter in place when inflated in