

MECHANICAL INVENTIONS.

An improved leather finishing machine has been patented by Mr. Fred B. Batchelder, of East Boston, Mass. The object of this invention is to furnish a machine for applying blacking, paste, blood, stains, or other mixture or dressing to surfaces of leather and other materials, in such a way that the opposite surfaces may be kept practically clean.

A new and improved pitman rod for mowing machines, so constructed that its bearings can be easily adjusted in case they become worn out, has been patented by Mr. David Horn, of Mohecanville, O. The invention consists in a pitman rod with a circular beveled adjustable socket, into which a beveled circular stud on the cutter head of the mowing machine fits at one end, and a beveled aperture into which a beveled sleeve or thimble mounted on a pin of the pitman wheel passes at the other end.

Heretofore balance staffs for watches have been made in one piece with the collet rigidly attached to the staff, and the collet formed with a countersunk end for entering the balance wheel center, the parts being attached firmly by riveting down the countersunk end of the collet. With this construction the work of replacing a broken staff with a new one involves considerable labor and risk of injury to the balance wheel. Mr. George G. Bugbee, of Gonzales, Texas, has invented a balance staff and wheel for watches, so constructed that a broken staff may be replaced with little labor and expense, and without risk of injury to the wheel. The invention consists, first, in attaching the collet permanently to the balance wheel; and, second, in connecting the staff thereto by a wedge or screw joint, by which the staff is rendered adjustable, and may be readily removed.

IMPROVED ROTARY PUMP.

The rotary pump herewith illustrated was designed with a view to obtaining a pump for general use, simple, and easily constructed, requiring the least amount of power to operate it, and which should wear well and be easily and quickly repaired. The general idea of a pump made in this manner is not new. But in the manner of working the floats a new feature is introduced, neither springs nor cams being used to operate them. This action is accomplished by direct water pressure acting through passages or ports, E F, in the face of the pump heads, as shown in dotted lines in the sectional view.

The pump consists of an outer case of two pieces joined on a central line. The upper half is bored cylindrically, having its center coincident with the center of the shaft, while the lower or bed piece is bored from two centers eccentric to the shaft, forming a central cam projection. As the centers are all on the line of the junction of the two parts of the casing, it will be seen that by bolting together two corresponding parts of two pumps much time and labor may be saved in boring out the shells. The inside cylinder, A, fits accurately between the two heads, and contains in this case three slots for movable floats. The heads are made "rights and lefts," in order to have the canals in their faces correspond.

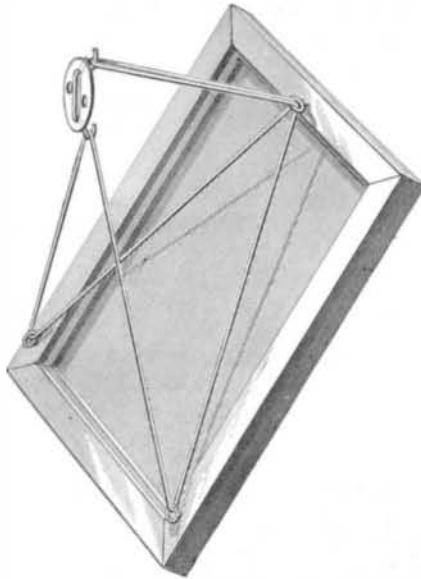
When the pump turns in the direction of the arrow, then H is the inlet and G the outlet, and the space in the cylinder on the outlet side and passage, F, will be under pressure, while none will exist in the inlet side nor in the passage, F. The float, D, is ready to go out into position, and therefore pressure is brought to bear on its inner end, through the passage, E, which pushes it out. After passing the junction line of the two parts of the casing the passage, F, is passed and the slot remains full of water. When the float arrives at the opposite side of the casing it is relieved of lateral pressure. Then the water in the slot empties itself through the passage, E, while the pressure at G pushes in the float. Three slots full of water are thus lost every revolution, otherwise the pump may be termed "positive."

The inventor claims that there is scarcely any wear between floats and upper half of shell, as there is nothing to push them out after passing the horizontal central line; that the pressure in the discharge side keeps the floats clear from the cam at the bottom of the casing. By adjusting the area of canals, E F, by plugs or valves, nearly all wear may be avoided on the cam. An adjustable piece may be used to counteract wear at the lower part of the casing. The passages in the heads serve to lubricate ends of cylinder, A. In large pumps for constant use, and sometimes in the smaller sizes, the floats may be made of wood—rock maple—which is said to last several months under constant usage, and when worn the floats are easily replaced. When wooden floats are used the inventor places a small rubber cushion in the bottom of each slot. This pump works lightly without jarring, and will run in either direction.

Further information may be obtained by addressing the inventor, E. B. Newcomb, Cumberland Mills, Me.

IMPROVED PICTURE HANGER.

The engraving shows an improved hook to be fastened to the wall, and a novel arrangement of the picture cord in relation to the hook and to the frame to be suspended, which admits of placing the frame at any desired angle by simply moving it so that the cord slides through the screw eyes. This arrangement is specially adapted to mirrors, as it ad-

**MARSDEN'S PICTURE HANGER.**

mits of adjusting them to such angles as are most agreeable to the eye, according to the size, height, and distance of the mirror from the user.

This invention was recently patented by Mr. Mark W. Marsden, of Connersville, Pa.

The Manufacture of Spools.

The prevalence of white birch along the St. Francis River above Drummondville, Canada, has made that town an important center for the production of spools. When received at the factories the wood is first sawed into strips about four feet long, and from one inch to an inch and a half square, according to the size of the spools to be made. The wood

Fig. 1

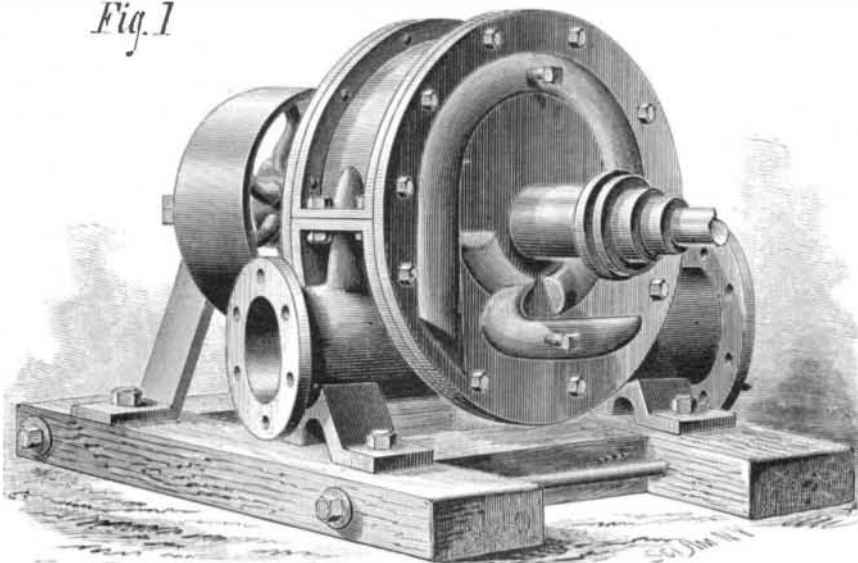
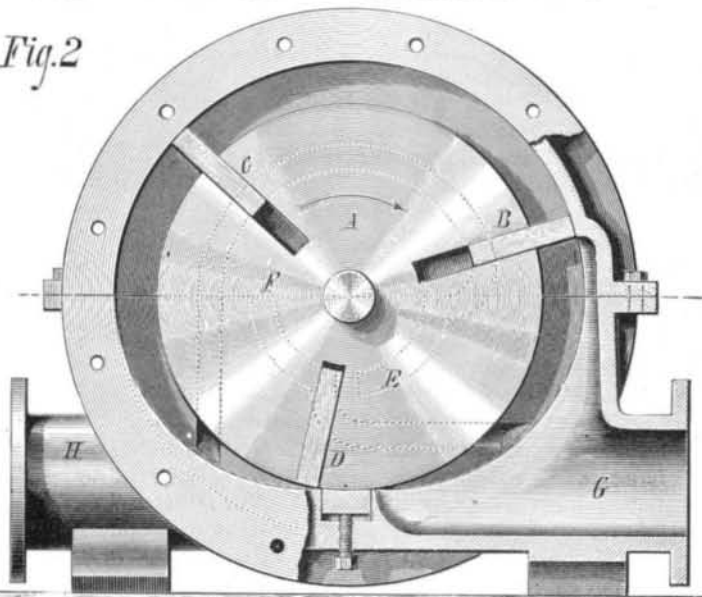


Fig. 2

**NEWCOMB'S ROTARY PUMP.**

is thoroughly dried, then roughly turned, cut into lengths for spools, and bored.

The machines used for this purpose are revolving planers, in the center of which is a revolving gimlet or bit, and immediately to the right a small circular saw with a gauge set to the proper size for the spools. The roughers receive one and a half cents per gross for their work, and experienced

men can turn out about one hundred and thirty gross per day. The round blocks pass from them to the finishers, who place them in machines which give them the shape of spools, and make them quite smooth. The spools are thrown loosely into a large cylinder, which revolves slowly, so that the spools are polished by the constant rubbing upon each other for some time. On being taken out of the cylinder, they are placed in a hopper with an opening at the bottom, through which they pass down a slide for inspection. Here the inspector sits and watches closely to see that no imperfect spools are allowed to pass; and a very small knot or scratch is sufficient to condemn them. They are packed in large boxes, made the proper size, and no additional packing is needed. The packers receive one-quarter cent per gross for packing, and a smart boy who is accustomed to the work can pack about 200 gross per day. One proprietor ships over 2,000,000 spools per month to England, and another firm ships over 1,000,000 spools to Glasgow, Scotland.

Paper from Bagasse.

The conversion of bagasse into paper stock at home is attracting considerable attention in Louisiana. Several parties in the North and West have tested the fiber produced from it by a new process, and speak of it as extremely promising. The chief difficulty at present appears to be in the bleaching process; but that, it is thought, can easily be overcome and the fiber made perfectly white. By converting the bagasse into fiber on the plantations three-fourths of the transportation charges will be saved. Louisiana produces 200,000 hogsheads of sugar a year; and the cane for each hogshead will yield one ton of paper fiber.

ENGINEERING INVENTIONS.

An improved process and apparatus for remelting soap, has been patented by Messrs. William Cornwall, Jr., and Aaron W. Cornwall, of Louisville, Ky. This invention relates to an improved process of remelting scrap soap or broken soap for the purpose of making it into soap of marketable form and quality. The process consists in subjecting the scrap or pieces of soap to the action of dry superheated steam. The mass of scrap is agitated or stirred by revolving arms, while the steam is allowed to enter it at the bottom of the tank or vessel in which it is contained.

A sectional turbine water wheel, so constructed that the sections may be easily put together and will be held firmly in place, has been patented by Mr. William Sims, of Stayton, Oregon. The invention consists in constructing the sections with inner rims having their ends rabbeted, inclined buckets, and outer rims made thicker than the inner rims, to give the inclined buckets a slight twist.

Messrs. John G. McAuley and William West, of Denver, Col., have patented a device for feeding coal dust and other pulverized fuel to smelting or other furnaces. It is an improvement upon that form of feeder in which a falling stream of the pulverized fuel, fed by a spiral conveyer or otherwise, is struck by a blast of air, which at the same time acts as a vehicle for the further transportation of the fuel to the fire chamber, and supplies the necessary admixture of oxygen for its combustion.

Mr. Gordon W. Hall, of Havana, N. Y., has invented a propeller having a hollow portion arranged to turn in the dead water under the stern of the boat and connected by a pipe with a condenser.

Mr. John W. Kramer, of New York city, has patented a portable turn-out or turntable for railways, especially street railways, whereby cars may be shifted from one track to another, or turned end for end, if necessary, when obstructions occur in the line. The invention consists in a frame fitted for being pinned to the ground between the tracks and carrying a pivoted section of rails, which may be turned to coincide with either track to receive the car, and then turned, as desired, to shift the car to the other track.

Mr. George M. Fenley, of Medora, Ind., has invented an improved drift wheel for preventing drifts, rafts, or logs from stowing against bridges, piers, or docks. It consists of a cylinder armored with spikes and vertically pivoted in front of a pier, dock, or similar structure, so that when the drifts or floating logs strike this wheel they rotate the same and slide along.

Mr. Alonzo Jillson, of Racine, Wis., has patented an improvement in traction engines. The invention consists in combining sliding journal boxes, slotted hangers, and adjusting screws with a cross shaft and wheels, the object being to readily throw the drive wheels into or out of gear.

An improved car coupling has been patented by Mr. Sylvester F. Newland, of Waynesfield, O. This invention relates to that class of couplers called "self-couplers," and it consists of a five-pronged spring-actuated coupling pin, which is held and guided between two vertical standards that are fixed on top of the draw head.

An improved hoof parer, patented by Mr. James York,