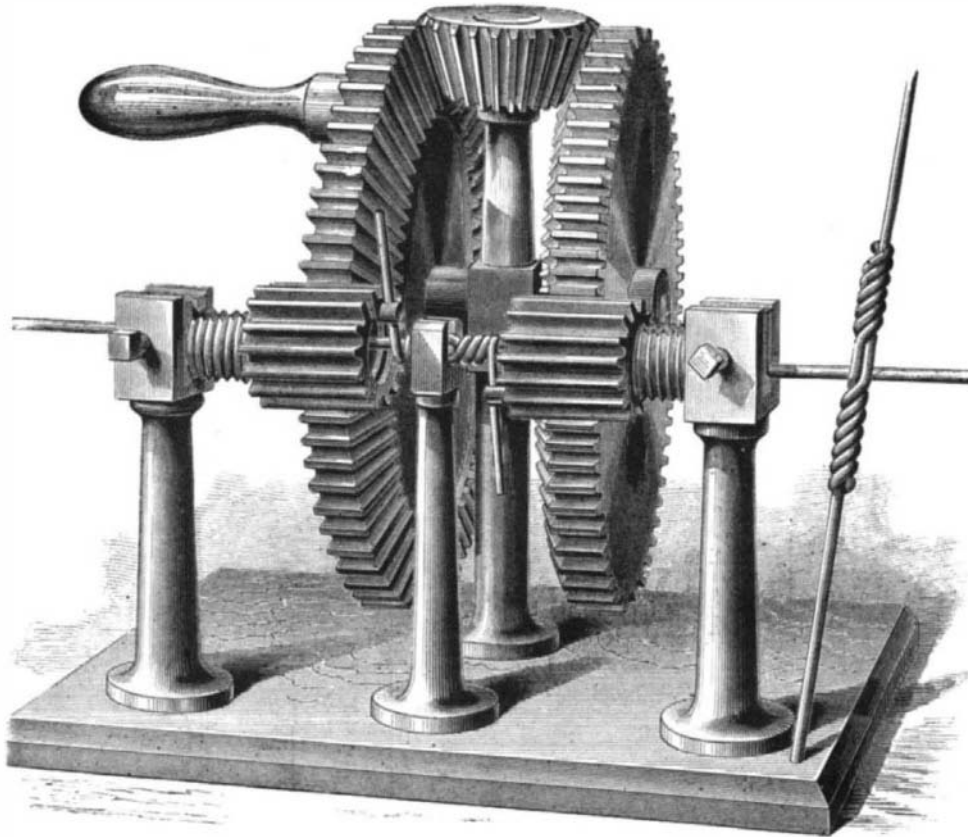


**TELEGRAPH WIRE JOINTER.**

The engraving shows a simple and compact machine for quickly joining the ends of telegraph wires. Two standards fixed opposite each other on the base support two horizontal screws extending inward toward each other. A groove, extending the whole length of each screw, is cut through its upper face as far as the axis for receiving the ends of the wires that are to be jointed. Upon each screw there is a pinion also slotted to admit the wire and provided with a stud on its inner end. These two pinions are engaged by two spur wheels turning loosely on the same axis and having beveled cogs formed on their adjoining faces.

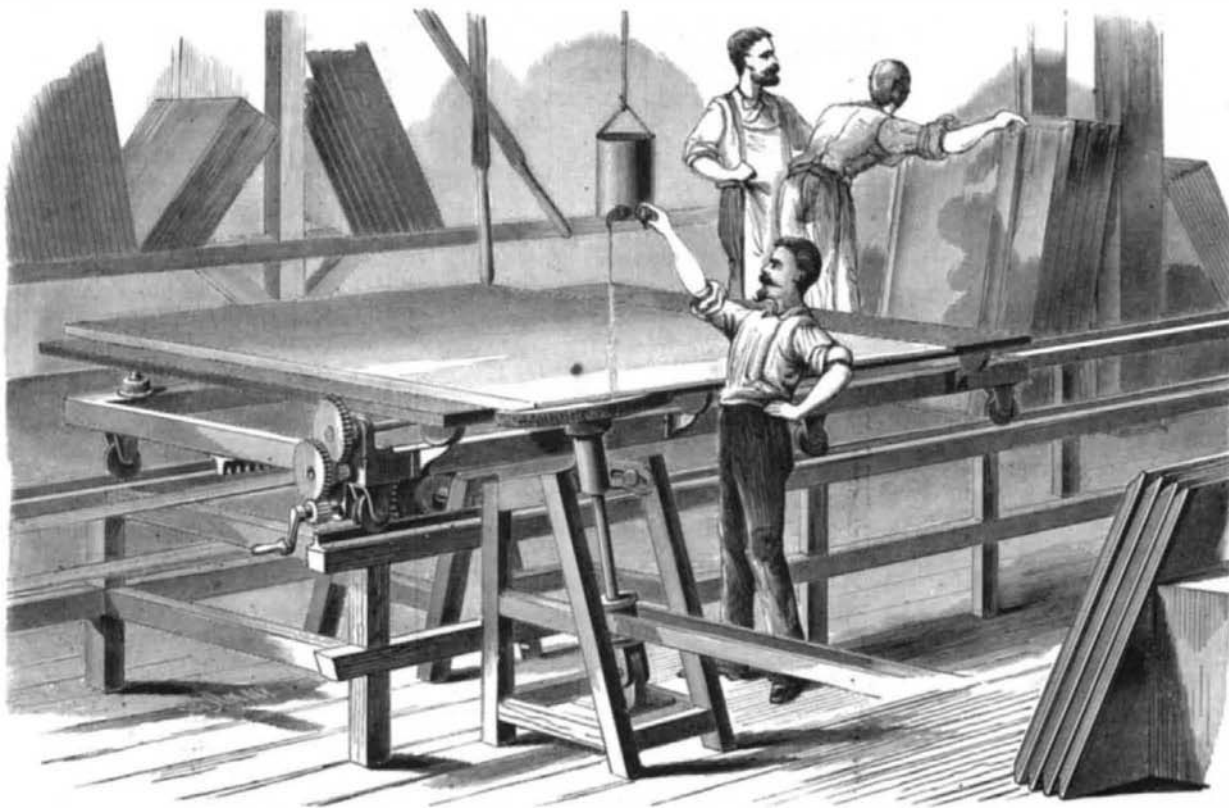
The beveled portions of these wheels mesh into a bevel wheel supported on a bearing between them, so that when one wheel is revolved in one direction the other will move in the reverse direction. This results in turning the pinions in opposite directions and twisting the ends of the wire one around the other in opposite directions.

The wires to be jointed have their extremities bent at right angles. They are then laid in the slots of the screws through the slots of the pinions, which, acting as nuts, are run in opposite directions toward the standard. The bent end of each of the wires takes against the stud which projects from the inner end of the opposite pinion, and so that the wires overlap each other within a slot in the top of the standard placed between the two screws. The drive wheels are then turned by means of the handle, revolving the pinions in opposite directions, so that they move from each other. By this means the ends of the wires are twisted about each other in exact imitation of hand-jointing, as shown in the view of the section resting on the machine. This invention has been patented by Messrs. F. and J. A. Crich, the former of Johnstown, Pa., the latter of Naugatuck, Conn.

**TELEGRAPH WIRE JOINTER.****PLATE-GLASS BEVELING MACHINE.**

The engraving represents an improved machine for beveling and polishing the edges of plate glass. It is capable of making a bevel of any width or inclination, and it does it very rapidly and perfectly. The table upon which the glass plate to be beveled is placed, is supported upon a series of eccentric wheels mounted on a shaft passing along that edge of the table adjoining the grinding wheel. These eccentrics can be rotated gradually by means of geared wheels so as to raise or lower that edge of the table; the opposite edge of the table resting upon ball-and-socket joints. The grinding wheel of iron is mounted on a shaft which rests in a swiveled bearing which permits of the inclination of the shaft to the desired bevel.

The table on which the glass plate rests is movable lengthwise along a track which is double the length of the table. After placing the glass plate upon the table, the eccentric shaft is rotated until the longest radius of the eccentrics extend upward. The grinding wheel shaft is inclined more or less until the inclination of the wheel is the same as the angle of the desired bevel. If a very flat bevel is desired, the grinding wheel and its shaft are but slightly inclined; but if a steeper bevel is required, the inclination of the grinding wheel will be increased. The grinding-wheel having been adjusted, the power is applied, and the table-moving mechanism is made so that the motion of the table is reversed at the end of each trip of the table. The edge of the glass plate is drawn over the grinding disk, to which is applied the abrading or polishing material. After a certain time the edge of the plate will have been ground off to such an extent that the grinding wheel cannot attack or abrade it; the eccentric shaft is then rotated more or less, as may be necessary, adjusting the front edge of the table and of the glass plate resting on it, as may be required. This invention was recently patented by Mr. Dominique Durand, of Mamaroneck, N. Y.

**DURAND'S PLATE-GLASS BEVELING MACHINE.**

the evolution of carbonic acid and the formation of acetic acid. A study of the chemical properties of the substance has led the above-named observers to the conclusion that lignin is derived from cellulose by chemical modification. A remarkable circumstance in connection with the physical nature of the black substance in question is that it dries to a hard mass, resembling cannel coal, with which it has been compared, and similar results of chlorination and nitration have been obtained. This evidence goes in further support of the opinion that coal is not carbonaceous in any more special sense than alcohol, but is rather, as supposed by Balzer, composed of a series of C, O, H, N bodies, which are genetically if not homologously related. It is suggested

**NEW INVENTIONS.**

An improved telegraph key has been patented by Mr. Addison E. Peterman, of Handsborough, Miss. This invention consists in a spring lever key of novel construction and arrangement, the object being to obtain uniform tension

with ease in working, and to avoid the objections that exist to the use of a lever and separate spring.

Mr. George Andrews, of Bellows Falls, Vt., has patented an improved and durable belt to be used on all machines that employ narrow or round belts. The invention consists of a belt formed of a core of some strong material, preferably catgut, wound with strong wire.

Mr. Nicholas B. Dennis, of Singapore, Straits Settlements, British India, has patented an improved oil can tip. The object of this invention is to prevent waste from oil cans in oiling machinery; and the invention consists in a spring actuated tip applied to an oil can tube for closing the outlet.

An improvement in the manufacture of paper, patented by Messrs. Nicholas G. Richardson, of Tyaquin Monivea, County of Galway, and William Smith, of Golden Bridge Mills, county of Dublin, Ireland, consists in the employment of a new vegetable substance combined with other substances now used in the manufacture; or such vegetable substance can be used alone to make from it, by the aid of the usual appliances or apparatus, a pulp from which the paper is made. The vegetable substance used is *Molinia caerulea*, otherwise *Melica caerulea*, commonly known as "melicgrass." This grass is converted into pulp or half-stuff, and the same can be, by the usual appliances or apparatus, converted into paper, or such substance as may be combined with any of the substances usually employed in the manufacture of paper.

Mr. Henry G. Dennis, of New Bedford, Mass., has patented an improved bell joint for coupling pipes. The invention consists in a rabbeted collar mounted on the end of a pipe and resting against an annular bead near the end of the same, which pipe is swaged out to receive the contracted end of the other pipe, upon which molten lead is poured through an aperture in the top of the collar to fill the space

between the inner surface of the collar and the pipes, a clay roll having been previously placed against the open end of the collar.

An improved process of distilling alcohol has been patented by Mr. Charles W. Lawrence, of New York city. The process consists in charging the still with spirit-producing material and powdered charcoal in about the proportions set forth, then stirring and heating the mass by steam, as shown, whereby the operations of distilling and rectifying are accomplished at one operation, the empyreumatic oil being retained by the charcoal in the still.

Mr. Henry Wilson, of Stockton-on-Tees, County of Durham, England, has patented an improved apparatus for blowing, cooling, purifying, and otherwise tempering air. This invention consists in certain novel features in the construction and arrangement of air pumps, suction and blowing engines, and devices combined therewith, for cooling, purifying, heating, and otherwise tempering air or gas.

Mr. Patrick Shea, of South Boston, Mass., has patented an improved ironing board clamp, for securing an ironing board upon and above the top of an ordinary table, also in providing a support for the flat iron. The invention consists of a frame composed of two horizontal parallel bars, whose inner ends are respectively secured in the upper and lower edges of a block, which, with the bars, is designed to rest upon the table top to support the ironing board, said bars having their outer ends secured in the vertical slot of a head block

that has a flange projecting inward at right angles from each end.

Mouth-pieces or holders for cigars and cigarettes have heretofore been made from glass by a moulding process, which leaves the articles thin at the mouth-piece, where they are most liable to be broken. Mr. Adolph Demuth, of Brooklyn, N. Y., has patented a glass mouth-piece for cigars and cigarettes with an extra thickness of material at the mouth part, where most required.