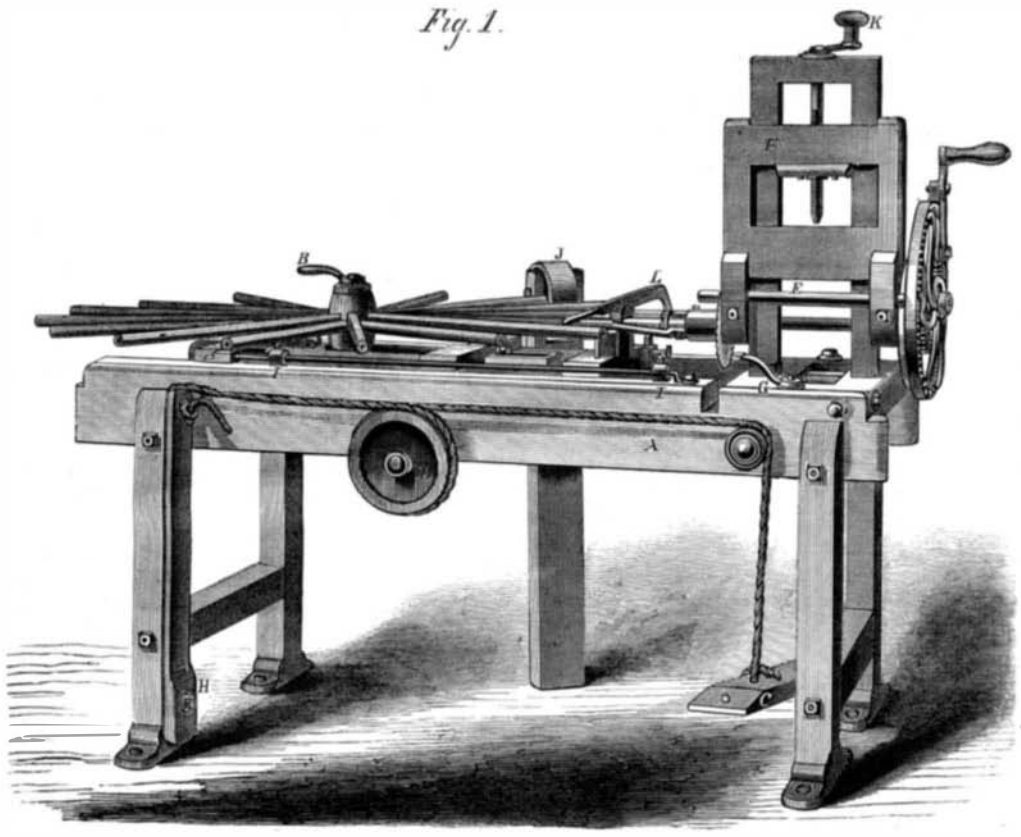
Improved Apparatus for Wheelwrights.

Wheelwrights and carriage makers are gradually rejecting the old system of hand work and bringing machinery into their business. In large manufactories this has been done for years, but even in country concerns, and where the amount of custom is limited, it is found to be profitable to use machinery where muscle has heretofore been employed. The machinery represented in the engravings is just what is needed to enable these small manufacturers to compete with those whose patronage and facilities are very superior; and for them, even, this device may be found advantageous.

Fig. 1 represents a machine for sawing spokes to length and tenoning them The full details of the machine could not be represented in a perspective view, but may be understood by the description. The hub being mortised, and the spokes driven in, the skeleton wheel is secured to a movable sliding table on the frame, A, by a hook bolt secured by the lever nut, B. By means of the treadle, C, and a pinion on the shaft, D, engaging with a rack under the sliding carriage, the spokes are brought in rotation under the circular saw on the arbor, E, and are sawed off to equal lengths; the upright frame, F, carrying the saw and its attendant machinery, is capable of being swung diagonally with the main frame, being secured in the desired position by the screw wrench, G. This is to allow the spokes as they are sawed to swing on their common centers without coming in contact with the face of the saw.

Fig. 1.



LEFEBER'S SPOKE TENONING MACHINE.

The spokes being sawed to length, the hollow auger seen in Figs. 2 and 3, which is secured in the end of the saw mandrel, is lowered to position, the movable carriage being allowed to recede by the weight, H, and the checks, I, on the longitudinal rod, are secured to a point which shall allow the sliding carriage to move just far enough forward to make a tenon of the proper length on each spoke. The pulley, J, is attached to an adjustable frame, which is hinged at one end, and when not in use is swung back against the frame, A. This pulley is designed to carry a belt of sand paper or other polishing material, to be driven by a pulley on a shaft occupying the place of the arbor, E, in the engraving.

The carriage, F, can be raised or lowered by the screw, K, to accommodate the action of the saw or the hollow arbor. The frame, F, can be readily removed, and another substituted carrying two saws, which, by means of a curved and rabbeted carriage placed in front of the sliding table, will bring a felloe to the upright frame, sawing the ends to length, boring the mortises, and, by a rotary planing head, dressing the felloe to size. The lever, L, secures the spokes near their outer ends to a rest, and is held in place by a swing lever acting as a button.

Fig. 2 is an axial section of the hollow auger. A is the stock, B one of the radial wings for receiving the flange of the cutter, C. The space, D, is the hollow for the reception of the tenon after it is formed. Fig. 3 shows a cross section of the auger. The bits of this auger are made so as to secure the greatest strength with the smallest amount of material. They are adjustable by means of set screws, so that the cut may be regulated at will.

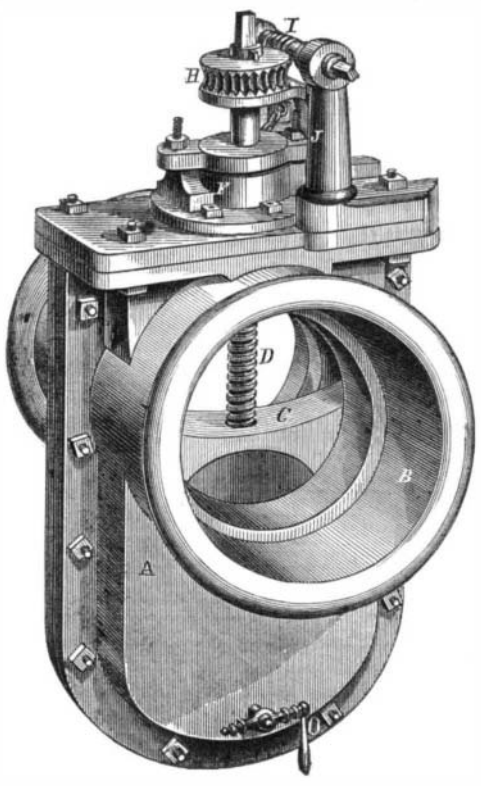
The machine may be driven either by hand, as seen in the engravings, or by power, and is easily and readily adapted to the tenoning of spokes, dressing and mortising of felloes, or to the uses of an ordinary drill and boring machine. It is the subject of two patents, obtained through the Scientific American Patent Agency, dated Sept. 4 and Oct. 2, 1866. For further facts and particulars address James Lefeber, Cambridge City, Ind.

Chemical Ingredients of Celestial Light.

Among all the wonders of science, none is more beautiful than the detection of the atmospheres and mineral elements of celestial bodies, by the analysis of their light. If the vapor of any particular substance is present in a flame, it imparts to the prismatic spectrum of that flame certain characteristic lines of brightness in certain invariable positions. Then, if light from another source be passed through that flame, the spectrum of the transmitted ray will lose color, intercepted as it were, just where the characteristic bright lines of the other spectrum occur, and dark lines will be seen in their place. Such dark lines, taking the places of bright lines characteristic of a variety of known mineral elements, are always to be observed in the spectrum of solar light; whence it is inferred that solar light has passed through an atmosphere containing vapor of such minerals. As it has been settled that our atmosphere does not contain vapors of solid bodies, the deduction is made that these elements must be present in the atmosphere of the sun, and therefore in its mass. The same observations are made, with the same conclusions, upon the stars. Modern philosophers have determined the exact influence of the earth's atmosphere upon the solar and stellar spectra, by experimenting upon the more nearly vertical rays, which pass through the least distance of the earth's vapors, in comparison with the level rays which pass through most of those vapors. M. Jansen, a Belgian philosopher, has proved that the dark band observed in the solar spectrum, when the rays are level to the horizon, consists of a multitude of fine lines, which are always present, but diminish in number and intensity as the ray passes through a less expanse of vapor; and at any hour, the higher the dew-point, the more distinct and numerous are these same dark lines. By this means the influence of foreign atmospheres is accurately discriminated from that of our own, and the cause of the latter is shown to be the moisture or other contents of terrestrial vapor; which again suggests a means of measuring the moisture of the air in regions otherwise inaccessible, and of determining whether watery vapor exists in the atmosphere of the heavenly bodies. The terrestrial dark lines thus discriminated, are found to be ten times more numerous in the red and yellow of the spectrum, and their intermediate tints, than those produced by the mineral vapors of the sun's atmosphere; while in the remainder of the spectrum, the latter class of negative lines greatly predominate. This coincides with the common fact, that red, orange and yellow colors are displayed when the terrestrial vapors are most deeply shown in the horizontal rays of the sun; thereby abstracting much of those colors from the spectrum, and leaving dark lines in their place.

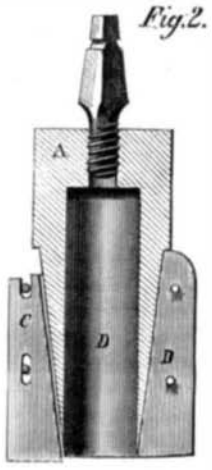
Kearney's Water Valve for Water Supply Pipes, Gas Companies, Steam Engines, etc.

It must be conceded that the water valves or gates at present in use are defective and attended with many serious objections. From their construction they are liable to freeze, and of course to burst. The top of the valve projecting above the body of the pipe, mains, in low grounds particularly, must be dipped in order to gain sufficient earth for protection of the screw and pavement. The seats of the valve being exposed, foreign substances drift into them and prevent the effectual closing of the valve. The opening or shutting a heavy valve is attended with great labor, and when done by inexperienced employees, the pipes often burst from the too sudden and rapid pressure of the water.



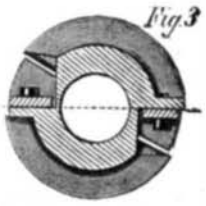
The inventor and patentee of the valve illustrated herewith is a *working* engineer in one of the principal steam water-supply works in this country, and from practical experience thinks he has accomplished the work of producing a very perfect valve. The following letters will fully explain its construction: A, casing of valve; B, flanges of supply pipe; C, valve; D, screw; F, stuffing box; J, pillars supporting worm; H, gear; I, worm; O, cock. The advantages claimed are as follows. From its construction all liability to freezing is avoided. No possibility of foreign substances of any nature preventing the valve closing, and the straight line of the pipe is not discontinued. When the valve is in a state of rest there is no wearing of the screw and nut, to which suspended valves, from the lateral motion of valves by the current, are subject.

Fig. 2.



The cock, O, is intended to draw off or blow out any fine foreign substances which may collect at the bottom of the valve casing, when the valve has been closed any length of time. The upper corners of the valve being square, the valve is guided fairly over the face of the seats, thus preventing fouling and shearing, as in the ordinary form of valve. In first starting or lowering the valve in order to open it, the screw, D, is turned by applying power to worm, I, the latter being thrown in gear by worm wheel, and by this means the valve may be started with facility whatever the pressure of the water in the supply pipe may be, and after the valve is partially lowered and opened, the power may be applied directly to the screw, D, which will, of course, move it with greater speed, the worm, I, being previously thrown out from worm wheel; thus the labor of opening and shutting the valve under great pressure is materially reduced by the combined power, and the danger of bursting the pipes by the too sudden pressure of the water is avoided. Small valves under light pressure do not require the combination, and any other compound gearing can be used. This valve is also well adapted for gas companies, as the screw is nearly on a level with the pipe. We are pleased to learn that the water valve is already in use.

Fig 3



This valve was patented through the Scientific American Patent Agency, Sept. 11, 1866. For further information address the patentee, Wm. Kearney, Belleville, N. J., or Robt. B. Carter, of Griffith & Co., sole agent, No. 24 Cliff street, New York City, where a perfect valve can be seen.

The Meteoric Shower in Turkey.

A correspondent of the *N. Y. Tribune*, writing from Constantinople, alludes to a most beautiful display of meteors observed there on the morning of November 13th and 14th. On the first morning he noticed about 4,000 per hour, the actual number that fell being, of course, much larger. On the 14th, the sky was obscured with clouds, until nearly sunrise; but the display of meteors, between two and three o'clock, was undoubtedly some 10,000 an hour. On both occasions they were of all sizes and colors. Many of them lit up the heavens like a flash of lightning; and in several instances they left trails of light behind them from 5° to 20° in length, which remained some five minutes. Not a few persons were alarmed at this rare and startling phenomenon, believing that the stars were falling from heaven. A great fire occurred in the midst of the display, on one night, and the writer surmises that it might have been originated by a falling meteor.

The grand shower, in this country, of 1833, it may be remembered, was preceded by a display in Europe, of great beauty, the year before; a chance, therefore, seems to exist, that we may yet have an opportunity of witnessing this sublime species of celestial pyrotechnics during the fall of 1867.

A Neat Skate.

Specimens of the McCormick's patent skates have been shown to us which are intended for the Paris Exposition. They are of great beauty, being highly finished, plated, and ornamented with engraving. But the most notable feature in these skates is their lightness and perfect workmanship. The top which attaches to the sole is of sheet steel, recessed at the heel, by "striking up," in the most perfect manner. The corners are turned sharp, and the metal is as smooth and even as though cast in a mold. The patentee informs us he is unable to fill the orders as rapidly as they come in. The skates appear to be perfection both in material and workmanship. The agents are Clark, Wilson & Co., Beekman street, New York City.