

Improved Apparatus for Printing Photographic Vignettes.

In order that the general reader as well as the professional photographer, may understand the nature and use of this ingenious invention, we will state in as plain a manner as the subject will admit, the nature of the difficulty which it is designed to obviate.

In the printing of large vignettes which have no definite border in order to secure the delicately-shaded background which gradually grows lighter as it recedes from the outline of the picture, until it finally fades out altogether, a device usually consisting of cloth or paper painted black on the side toward the blank, to obviate reflection, and having an opening through its center for the transmission of light from the camera, is held by the operator and moved to and fro to intercept the light from the outer parts of the vignette. These outer parts are therefore less acted upon by the light, and are softened off in the manner desired.

The operation is a tedious one, and very trying to the eyes of the operator, as it not unfrequently requires from four to six hours to print a large-sized vignette. It is obvious that a machine capable of moving the screen automatically and in the manner required, would be a very useful improvement, relieving the operator from a most unwelcome task, and enabling him to devote the time required to execute it, to other more agreeable and profitable work.

Our engravings exhibit such an improvement, and upon examination we are satisfied it will prove a valuable addition to photographic apparatus.

The working parts of the machine are inclosed in a wooden case, like the works of a clock. The door of this case has a slide in the center, covering a round opening, which is opened when in use, an opening in the opposite side of the case being provided with a telescopic tube and a slide. The door is shown thrown open in the figure.

In this figure, A is the front plate of the works of an ordinary brass clock, to the axle of the fourth wheel of which is attached the wheel, B. This wheel is shown in detail in Fig. 2. Upon the wheel, B, is attached a plate, C, also shown in detail at Fig. 3.

The plate, C, is of concavo-convex form, or what would be called in common parlance, dished; its concave side being placed next the wheel, B, and held there by the buttons, D, Fig. 2. A tongue, E, Fig. 2, is pivoted to an arm of the wheel, B, and at its opposite end it has a round stud, F, which projects through the curved slot of the plate, C, Fig. 3. The plate, C, also has a hole in its center, which, when C is placed upon B, fits upon the axle of B. It is obvious that when C is thus placed upon B, that partially rotating C, while B is held stationary will carry the stud, F, further from the center or contrariwise, so that anything attached to F, and moved by it will have greater or less motion, according as F is placed further from or nearer to the center of B.

Now, upon the pivot, F, Fig. 1, plays a hole in the end of the bar, G, the opposite end of G being pivoted to a rock-bar, H, pivoted at I, H in its turn imparting motion to another rock-bar, J, pivoted at K, J through the bar, L, imparting motion to M, the latter being a projection from an annular frame, the form of which is shown in the dotted outline on the screen, N, this outline showing the position of the frame behind N. From the top of the annular frame rises another piece of the same form as M at the bottom, and is pivoted to F in common with the bar, G.

It will now be plain that the motion imparted to the wheel, B, will also be communicated to all the parts described in proportion as F is set near to, or away from the center of B by turning the plate, C, on the axis of B.

To the annular frame, shown in dotted outline on the screen or diaphragm, N, are attached supports, O, which serve to hold N firmly to the annular frame and to give N all the motion imparted to the annular frame by the top piece pivoted to F, and the bars and rock-bars, G, H, J, and L. Wings, P, are pivoted upon the screen, N, so that the oval aperture in the center of N, may be reduced to the general contour of the head and shoulders of a figure in a vignette when desired.

A wire support, Q, is loosely pivoted to R and M, which preserves the relative distance between the annular frame and the screen when the apparatus is worked in a horizontal position, as well as when it is in the upright position.

A weight, S, acts through a lever and suspending wire as a counterpoise to the weight of the annular frame and the screen.

It will now be obvious that the revolution of the stud, F, around the center of the wheel, B, will be imparted through the bars and rock-bars, G, H, J, and L, to the annular frame

and the screen, N, all the parts of the latter revolving around a center in the oval aperture through the center of N, the exterior edges of which will intercept the light on the exterior edge of the background of the vignette, and soften it, but without some further provision the machine could not imitate handwork, as it is frequently desirable to soften off the background more at the top than at the bottom, or *vice versa*. In order to do this the pivot which works in the slot in the lower arm of the rock-bar, H, and through which the rock-bar, H, imparts motion to the rock-bar, J, projects from a slide, T, which is adjustable upon the rock-bar, J, being held at any point desired by a spring pawl, U, which engages with a rack

substitute for many of the implements heretofore used for this purpose.

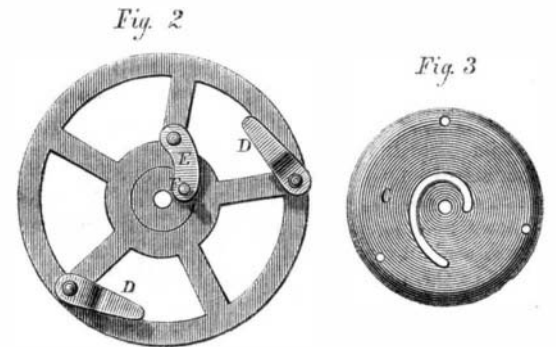
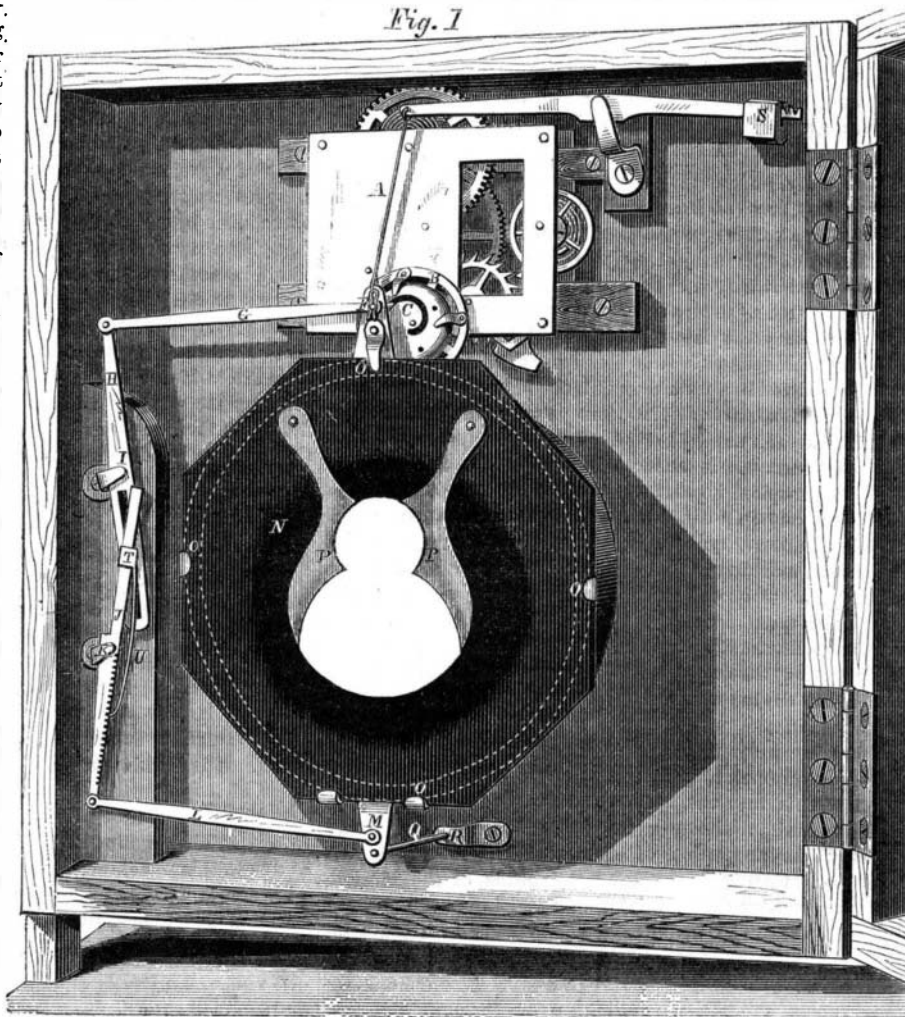
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Steering by Steam.

A correspondent who was present at the occasion of a recent trial of the steam steering apparatus with which the small steamer *North Star*, of Muskegon, has been supplied, writes to the *St. Louis Dispatch* as follows:

The experiment was such a complete and marked success mechanically, and seems in its principle to foreshadow such immense benefits to steam navigation, that it deserves the earnest and instant attention of the public. While the arrangement of the machinery connected therewith is simplicity itself, the result on the motions of a vessel are instantaneous, and as powerful as can be desired. Instead of a cumbersome wheel in the pilot house, a lever like the starter of a locomotive stood up from the floor, which worked either way from side to side by no heavier pressure than could be given by the thumb and finger, but which made the *North Star*, a long, narrow river boat, almost turn on her centre, and then as instantly reverse with the same promptitude of action on a different application. A doubt having been expressed as to whether, by the same machinery, she could be "held" on the same steady course for a length of time, the steersman fixed on a mill chimney two miles distant, and made for it. After getting her from the previous violent swayings into true line, he dropped the bar and let her run for it, until all on board were satisfied of the truth of her course. Where the steam rudder is left there it stays, and no power less than that able to overcome all the steam force of the boilers can shift it till again manipulated by the lever.

Numerous experiments were made in turning, backing, twisting, and all with astonishing results. When standing still the rudder could be put down with such force as to swing the vessel a point or two. I really believe that, had such an



JEAN ELIE RICHARD'S PHOTOGRAPHIC PRINTING APPARATUS.

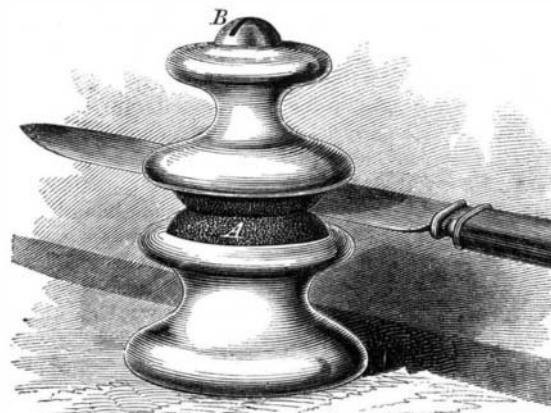
cut on the inner side of the lower part of J. When T is slid up near to the pivot, I, upon which the rock-bar, H, plays, very little motion is imparted to J and through it and the bar, L, to the lower part of the screen, while the motion of the top remains the same as before. When T is made to approach the pivot, K, on which the rock-bar, J, plays, the motion imparted by H to J is greatly increased, so that the bottom of the screen, N, is moved considerably more than the top.

By these ingenious means all the movements required to be made in the printing of a vignette are automatically performed, and with much greater uniformity and accuracy than is possible when they are done by hand. It exhibits great fertility of resource in invention, and its merit eminently consists in the simplicity of the means employed to secure the complicated movements required.

Patented through the Scientific American Patent Agency, August 17, 1869. For further information, address, for two weeks, Jean Elie Richard, patentee, Sweeney's Hotel, New York city, after that time, Columbia, S. C.

IMPLEMENT FOR SHARPENING KNIVES.

Our engraving illustrates a convenient little implement for sharpening knives. The top and bottom pieces are of porcelain, the bottom of the top piece and the top of the bottom piece being recessed to admit the convex emery disks, A.



The two parts are held together by a vertical screw, B. In use the left hand grasps the top, and the bottom is pressed down upon a table. The edge of the knife to be sharpened is then drawn by the right hand through between the emery disks, the convexity of these disks, enabling a strong pressure to be brought to bear upon it, and, as a consequence, a rapid action upon the blade is secured.

Its appearance is tasteful, and it will be found a desirable

apparatus been on the *Milwaukee* and *Lac La Belle*, when they met on the St. Clair flats; even at the late moment when the dire warning note was sounded, collision could have been easily avoided. The whole steam power of the vessels thrown instantaneously (as is possible) upon the taut wire rope rudder lines, it would have swung them so as to merely rub sides, if they touched at all. I have watched with admiration, on the rapids of the St. Lawrence, the old Indian pilot with his half dozen brawny assistants, grouped around the mammoth wheel, as with lightning speed he shot the long sault or plunged the cascades. I have watched his quick, nervous action and word of command so quickly sounded by his assistants, and wondered what our fate would be should these men mistake, even for an instant, larboard for starboard. But with a machine like this the doughty old red-skin could stand in all his native dignity alone, and with one hand, unaided, as lightly as a feather, make the steam power, as prompt as a telegraph, work his wayward and oft-changing will, and swing his steamer as quick as changing a top.

Another beautiful contrivance connected with this, and one as much to be appreciated by the traveling public as the steam rudder by the regular marine, is what the patentees technically term the "life lines." If you will call back to memory almost any marine disaster from burning, either at sea or on our inland waters, you will readily recollect that generally the most painful and terrible portion of the calamity began when the ship lost steerage way and was going adrift—going any and every way before the wind. From the *Henry Clay* on the Hudson, to the *Sea Bird* on Lake Michigan, it has almost ever been the same story; a pilot-house deserted; a vessel unmanageable; refuge within almost easy reach, impossible of attainment by lack of steering power. This apparatus provides continuous communication from stem to stern, by which the vessel can be managed from any part of the deck. When the pilot-house gets "too hot to hold him," the wheelsman can take hold at the next cool spot. If the stern is in flames he can steer from the bow, and *vice versa*, as long as there is a bit of deck left the iron life-line is there, and until it melts the communication is as complete.

INVENTORS who contemplate taking out Letters Patent should read the instructions given in another column, which fully explain the system upon which the proprietors of this journal manage their extensive Soliciting Agency. We are always happy to advise with inventors, and will furnish them all the necessary instructions how to proceed upon application to us, either in person or by letter. Inventors and patentees will find at our office the Official Patent Reports, Decisions, and Claims, which they are at liberty to examine. We shall be glad to afford them every possible facility.