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NEW SERIES.

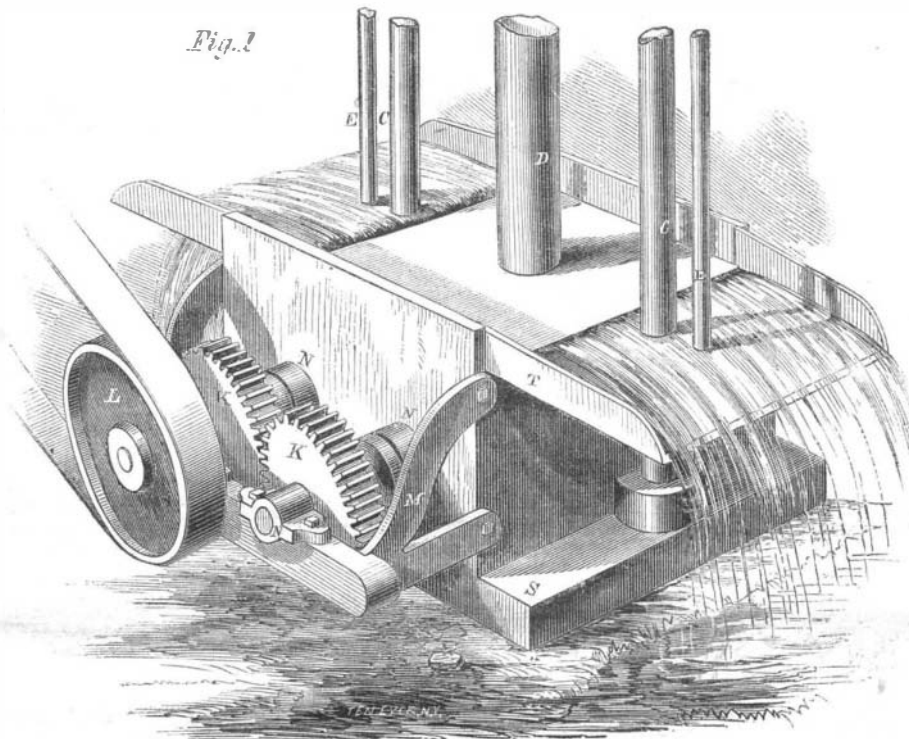
## BARKER'S AMALGAMATOR.

Wherever gold is found on the surface of the earth, it almost invariably occurs in gneiss and other metamorphic rocks, having both a crystalline and stratified structure. The gold is found in the quartz veins which traverse these rocks, and generally in very minute particles. In the immeasurable ages which have passed away since the metamorphic rocks were first deposited in strata at the bottoms of ancient seas, and afterwards crystallized by heat and heaved up into their present position, rivers have been wearing channels in their sloping sides, bearing away the lighter substance to the sea, and leaving the gold mingled with gravel along the river beds. It is this gold, already separated from the quartz, which is obtained by the placer washings. But in some places the quartz, still wedged between the walls of stratified quartz, is sufficiently rich in gold to pay for all the labor of blasting it out, crushing it in mills, and extracting the gold. Much of this gold is in minute sheets so exceedingly thin as to be compared to nothing but a stain in the quartz, and the best way hitherto discovered of separating it from the quartz is to pass the pulverized material through mercury, which has the property of dissolving the gold, or rather as it is technically called, of amalgamating with it. It is found that a considerable portion of the gold will pass away without combining with the mercury, unless the two metals are brought into very close and somewhat continued contact, and various contrivances have been formed for obtaining the best contact to secure the most thorough amalgamation of the gold. The amalgamator illustrated in the accompanying

Fig. 1 C C, which rise to a sufficient height for the head of water to force the mass under the surface of the mercury, and along the channels, F F, to the points, G G, whence it passes between the rollers at H, and is carried over the rollers in a thin sheet under the rubber, B, where it is pressed, rubbed and ground in contact with the mercury,

the paper. It is said that more than 30 stones were used in re-producing Church's painting of Niagara Falls. The great expense of this process adapts it only to high-priced prints.

The object of the improvement of which we find an account in *L'Invention*, is to lessen the expense of this



## BARKER'S IMPROVED AMALGAMATOR.

thus insuring an amalgamation with the very smallest particles of gold. The water and quartz, being lighter than the mercury, rise to the surface and flow out through the spouts, T T, at each side of the machine. For a more thorough washing of the gold from any particles of mud or other foreign substance that may adhere to it, an additional supply of water is introduced through the pipes, E E, and D, which are so arranged as to carry the water under the surface of the mercury and mix it with the pulverized quartz in its passage through the machine.

The patent for this invention was issued, Jan. 18, 1859, and persons desiring further information in relation to it will please address the inventors, John & E. W. Barker, at Baltimore, Md.

## PRINTING IN COLORS.

*L'Invention*, for December, 1859, has an account of an improvement in the art of printing in colors, which it says is applicable to the printing of calico, paper-hangings, and maps, as well as pictures, and which it pronounces of great importance in consequence of the cheapness of the process.

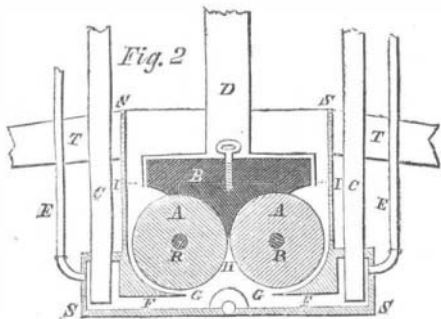
Our readers are aware that very great improvements have been made within a few years in the art of printing in colors by the lithographic process, chromo-lithography as it is called. One firm of lithographers in London have distinguished themselves especially by their improvements in this art. Oil colors are used, and we have seen some of their prints which it was really difficult to distinguish from oil paintings. The process consists in employing a stone of the full size of the print for each color and each shade. To place the paper with great precision on the several stones in succession, small pin points, secured firmly in the stone, project a short distance above its surface and pass through small holes in

process, and the mode in which it is sought to be done is to produce all the colors and shades desired by combinations of the three primitive colors—red, yellow and blue. Our readers are aware that all the colors of the rainbow may be produced by combining these three colors. When a ray of white light passes through a triangular prism of glass, the seven colored rays of which it is composed are bent from their straight course, and as they are bent unequally, they are thus separated from each other. The color which is bent least is the red, and the colors are seen on a screen in this relation:—violet, indigo, blue, green, yellow, red. Now it is found that the red and yellow combined will produce orange, which, it will be seen, is between them in the spectrum. Yellow and blue will produce green, and blue and red will produce indigo and violet. Red, yellow and blue are conse-

quently called the *primitive* colors; the French call them the *mother* colors. The Messrs. Avril, the inventors of the process of which we have spoken, avail themselves of this prolific property of the primitive colors, to reduce the number of stones, or rather of printing plates. This plan was tried many years ago in application to the printing of line-engravings, but owing to the fact that the sheets of paper must be moistened for printing in line, in order that the paper may be soft enough to be pressed into the channels in the metallic plate, it was found impossible to place them with sufficient accuracy on the successive plates. It is consequently necessary, in order to print several colors in succession, upon one sheet of paper to keep the paper dry, and in order to do this, the Messrs. Avril hit upon the plan of reversing the process of line-engraving—printing from the raised surface and producing the lights from depressions as in wood-cuts.

The plan, then, is to engrave a copper plate by cutting away the parts intended for the lights in the picture, leaving the parts for the colors raised—to have three of these plates, one for the red, one for the yellow, and one for the blue—and to so arrange these colors that they will overlie each other in a proper manner to produce the various shades and colors desired.

**NEW GUN.**—Colonel Colt has invented a revolving shot gun. It is said that upon a late trial of this valuable gun, at a distance of 30 yards, it put 175 pellets in a circle of 12 inches diameter, penetrating 75 sheets of ordinary brown paper, the shot used being No. 6 shot, 1½ ounces and 2 drachms of powder to each charge. The gun is a five-shooter.—*New York Tribune*.



engraving has been for some time in operation, at the Rudisill mine in North Carolina, where it has so won the approval of the owners and managers that they recommend it in the strongest manner.

Fig. 1 is a perspective view, and Fig. 2 a vertical section. The rollers, A A, of chilled iron, are made to rotate with slightly different velocities (by means of the pinions, K K, which have a different number of teeth) in an iron chamber, s s s, which is filled with mercury to I I. Resting upon the rollers is the iron rubber, B, the lower surface of which is fashioned to conform to the contour of the rollers. The pulverized quartz and gold are introduced in suspension in water through the pipes,