M. NELSON.

Gold Washer.

No. 25,667. Patented Oct. 4, 1859.

Fig. 1

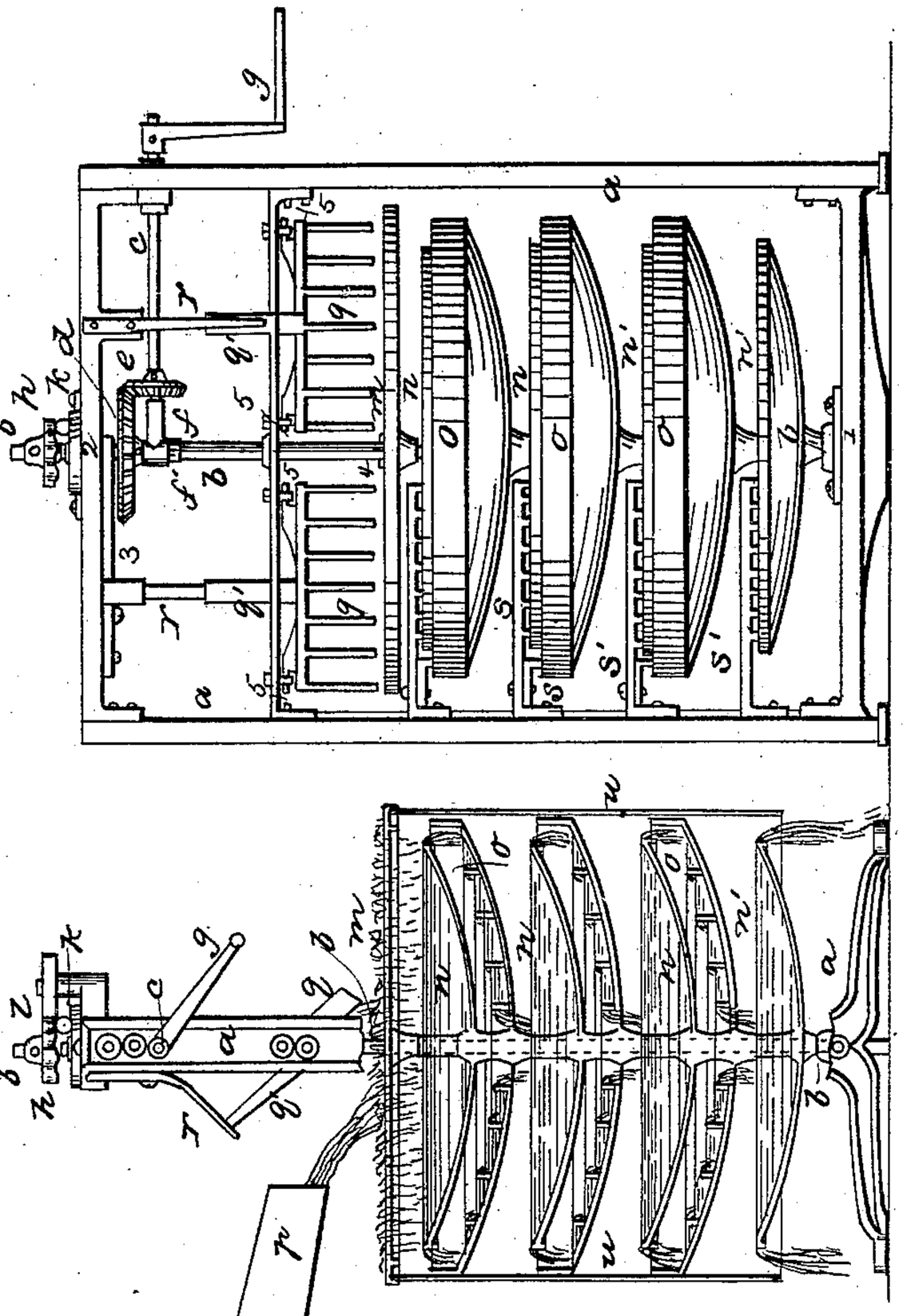


Fig. 2 Sectional View.

Fig. 3

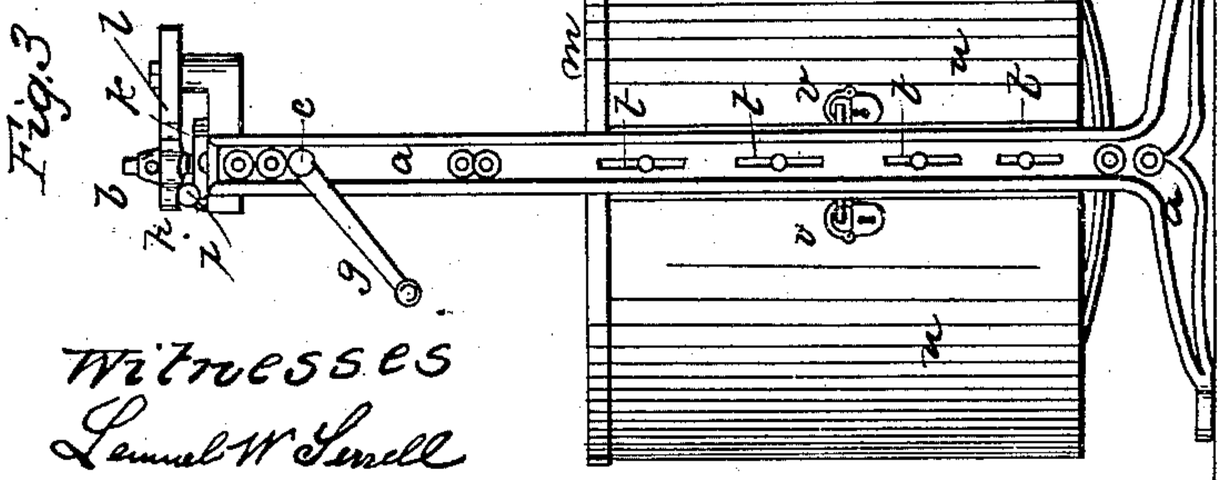


Fig. 5

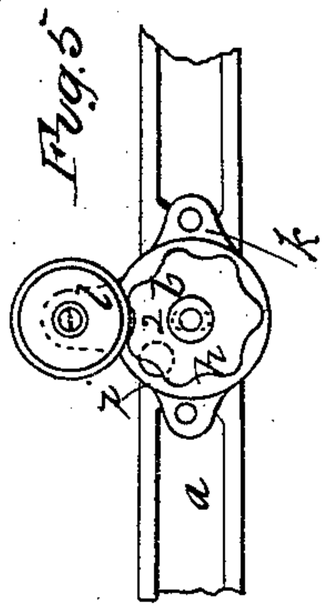


Fig. 4

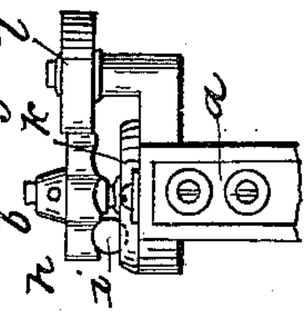
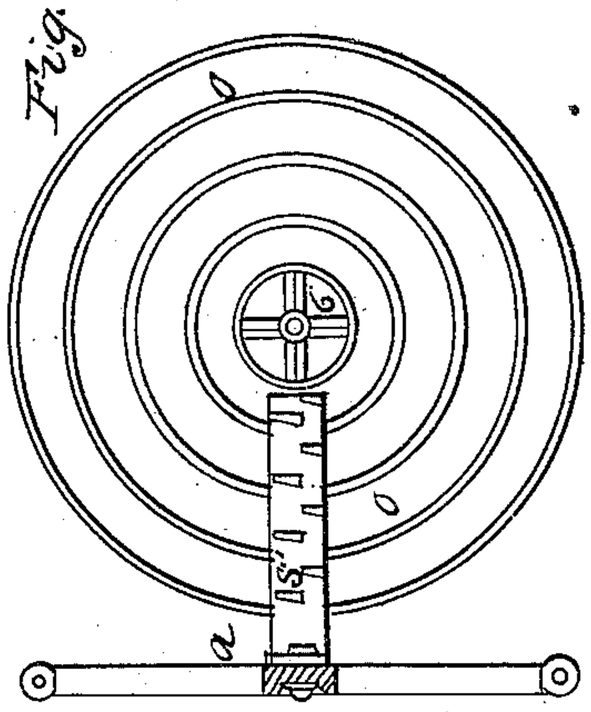


Fig. 6



Witnesses
Samuel W. Sewell
Chas. H. Smith

Inventor
M. Nelson

UNITED STATES PATENT OFFICE.

MORTIMER NELSON, OF NEW YORK, N. Y.

GOLD-WASHER.

Specification of Letters Patent No. 25,667, dated October 4, 1859.

To all whom it may concern:

Be it known that I, MORTIMER NELSON, of the city and State of New York, have invented and made certain new and useful Improvements in Gold-Washing Machinery; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawing, making part of this specification, wherein—

Figure 1, is a side elevation of my machine. Fig. 2, is a side view and partial section at right angles to Fig. 1. Fig. 3, is a side elevation with the inclosing case in place. Fig. 4, is a side view. Fig. 5, is a plan in larger size of the agitating device, and Fig. 6, is a plan of one of the washing pans.

The nature of my invention consists, first, in the combination of a series of concave plain pans, with a series of concave riffled pans, said pans all being arranged on the same vertical shaft, and constructed so that a riffled pan intervenes between every pair of plain pans, and the convex surfaces of the plain pans extend nearly down onto the concave surfaces of the riffled pans and the ore and water pass over the edge of the plain pans onto the riffled pans, and the ore retained by the riffled pans while the water escapes at the center of the riffled pans, all as hereinafter described. By this arrangement, I am enabled, with one machine to accomplish both the washing and concentration or separation of the gold very effectually.

It consists, second, in the arrangement of a horizontal cam wheel ball, horizontal friction roller, two bevel wheels, a rising and falling driving shaft and a collar on the vertical shaft for operation together in the manner hereinafter described. This arrangement gives an up and down and lateral vibratory motion to the washing and concentrating machinery and also insuring the remaining in gear of the gearing by which the machine is operated, while said act is being accomplished.

It consists, third, in the combination of a revolving perforated platform or grating with a non-revolving, but yielding raking device, whereby a separation of large stones and a portion of the foreign matter or while the sand and precious substances are falling onto the pans.

It consists, fourth, in the combination of the stationary case with the revolving perforated platform, raking device and the horizontally revolving pans, whereby the large stones, &c., swept off by the rake are prevented from falling into the pans and injuring them or interfering with their perfect operation. The gold is also guarded during the process of washing and separating.

In the drawing *a*, is a frame of suitable size and oblong shape, in which the shaft *b*, is mounted in the step 1 at the bottom, and 2, at the top. The journal boxes or steps 1, and 2, are so formed as to allow the shaft *b*, to be lifted and also receive a lateral motion at right angles to the main or propelling shaft *c*, to the extent of about one quarter of an inch, the step 2, being slotted transversely of the machine for this purpose: *d*, is a bevel gear wheel on the shaft *b*, taking a bevel gear *e*, on the shaft *c*, and the end of this shaft *c*, revolves in a socket *f*, surrounding the shaft *b*, and resting on a shoulder *f'* of said shaft, so that the wheels *d*, and *e*, are kept in gear, while motion is given to the shaft *b*, as hereafter described; *g* is a crank handle or its equivalent by which the parts are revolved.

h, is a cam having six points more or less, and projections on the under surface corresponding, and *i*, is a ball rolling in a suitable groove in the block *k*, and *l*, is a roller on a fixed stud taking the side of the cam *h*, and 3, is a spring acting against the shaft *b*, to press the cam *h*, against the roller *l*. The operation of this part is that as the shaft *b*, and its pans are rotated the cam *h*, rolls on the ball *i*, and the shaft *b*, and all the parts thereon receive a vertical shaking or jigging motion, at the same time that a horizontal jigging motion is given by the roller *l*, and spring 3.

m, is a horizontal circular perforated platform on the shaft *b*, above the series of pans *n*, *o*, *n*, *o*, *n*, *o*, and *n'*. The bottom pan *n'*, is attached to the shaft *b*, and sustains the others which are held down by a key 4, by the removal of which the pans can be successively lifted for cleaning.

The ore is supplied onto the perforated platform *m*, with water from a spout *p*, and as the platform revolves all except stones (which are removed as hereafter detailed) pass through into the pan *n*, thence from the edge thereof into the pan *o*, over the riffles and out at an opening 6, in the middle, thence into the second pan *n*, and so on through the series to the pan *n'*, and runs

from the edge thereof; each pan is provided with stirrers *s*, and *s'*, that are affixed to the frame *a*, by slots and screws as at *t*, so that by loosening said screw the stirrers can be slid up out of the way in cleaning, and by tightening said screw the previous pan will be sustained on the stirrers and be out of the way.

By the peculiar motion, in connection with the number of concave pans I am enabled to place together, and the extent of collecting space behind the riffles, insures the complete separation of the gold.

The stones are raked off the revolving platform by fingers *q*, set to swing below centers 5, 5, and provided with arms *q'*, taking springs *r*, so that in case of stones or obstructions remaining on the plate *m*, and passing beneath the fingers *q*, they will yield as shown in Fig. 2, and prevent injury to the parts. I protect my pans by means of the case *u*, that is attached by hinges to one side of the frame *a*, and by locks as at *v*, on the other side frame, so that this case will prevent stones or foreign substances getting into the pans, and also prevent injury to the pans, and secure the gold deposited until removed.

By this arrangement of concave pans I am enabled to get larger washing facilities in a given space, because the pans are all nearly the same size and set one into the other, thus occupying but little space vertically, and being adapted to a small head of water.

My machine can be used for washing the sand or ore, or concentrating the washings. In all cases the centrifugal force acting in the riffle pans *o*, checks the velocity of the water carrying a deposit of gold behind the riffles, while the ore and water are thoroughly mixed, and heavier lumps of gold deposited in the pans *u*, particularly in the upper one.

Having thus described my said invention I do not claim a vertical series of pans on a shaft having a revolving and jigging motion, but

What I claim as my invention and desire to secure by Letters Patent, is—

1. The combination of a series of concave plain pans, with a series of concave riffled pans, said pans all being arranged on the same vertical shaft substantially as and for the purposes set forth.

2. The arrangement of a horizontal cam wheel, ball, horizontal friction roller, two bevel wheels, a rising and falling driving shaft and a collar on the vertical shaft for operation together, substantially in the manner and for the purposes set forth.

3. The combination of a revolving perforated platform or grating with a non-revolving, but yielding, raking device, substantially as and for the purposes set forth.

4. The combination of the stationary case with the revolving perforated platform, raking device and the horizontally revolving pans, substantially as and for the purposes set forth.

In witness whereof I have hereunto set my signature this sixth day of September 1859.

M. NELSON.

Witnesses:
LEMUEL W. SERRELL,
CHAS. H. SMITH.