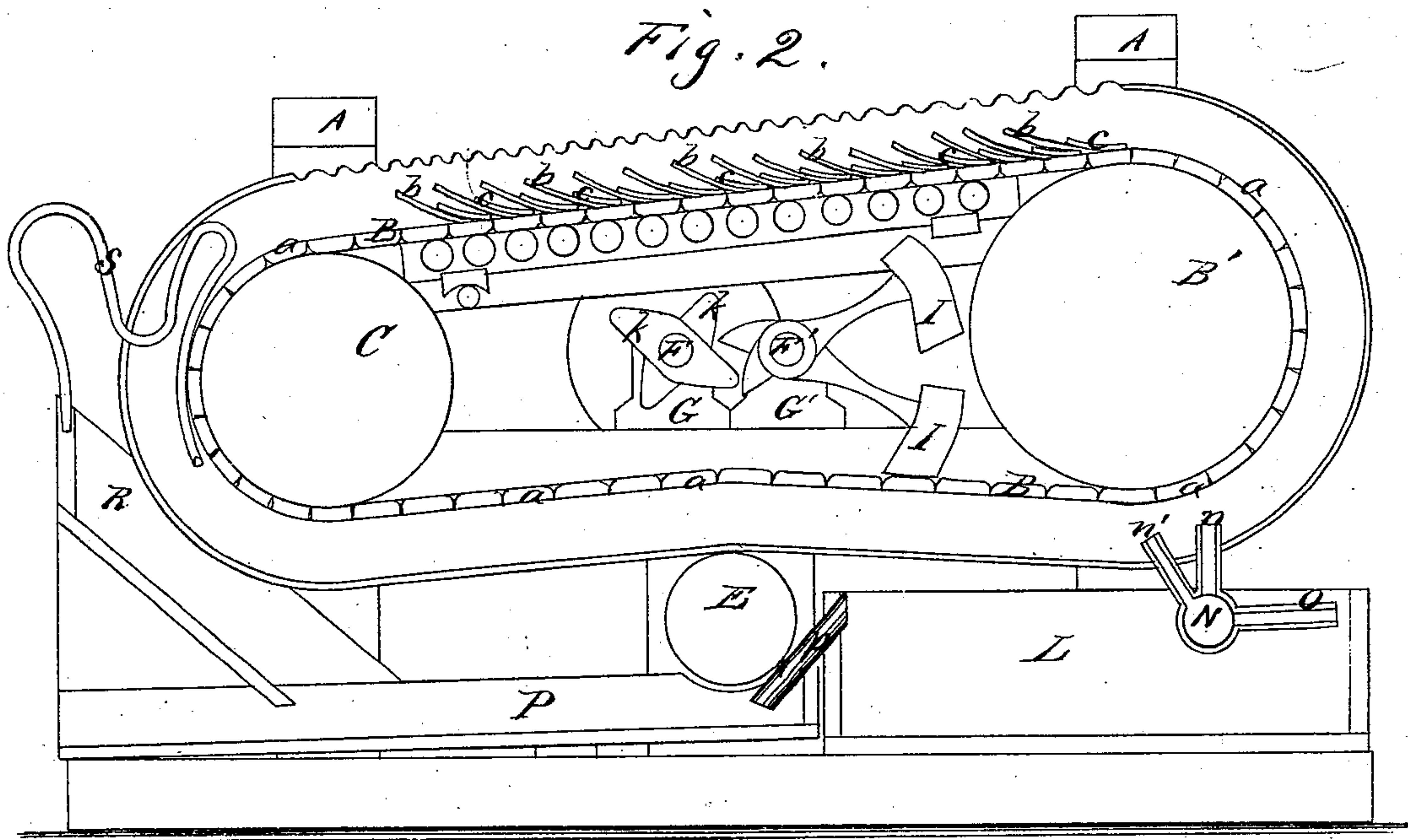
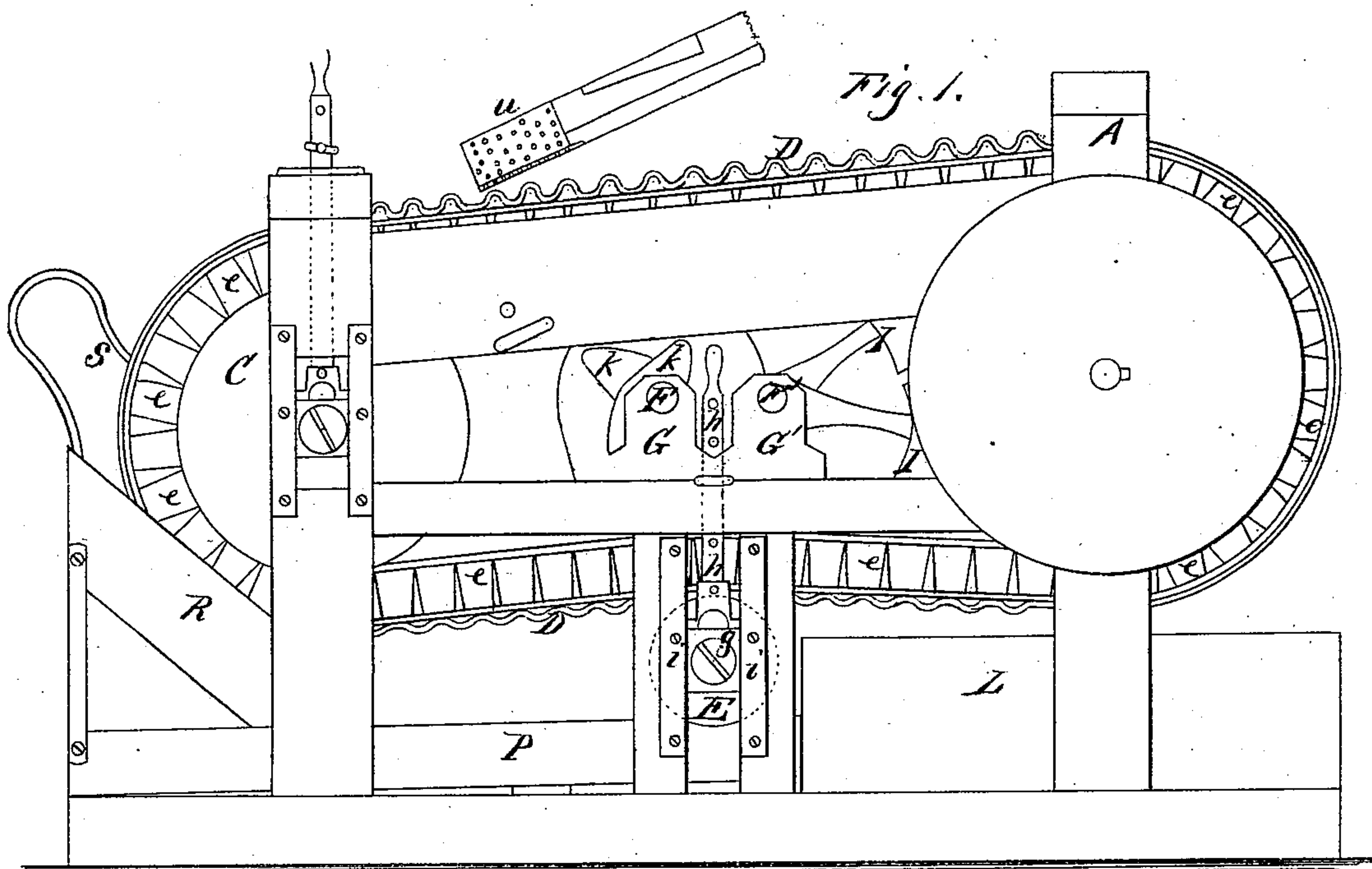


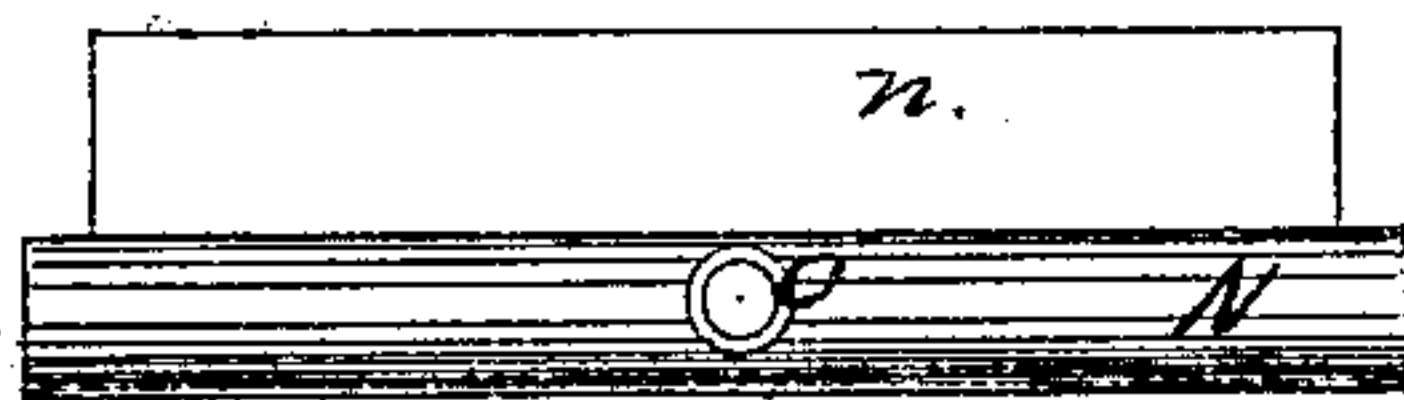
C. D. SMITH.
ENDLESS BLANKET SLUICE.

No. 92,893.

Patented July 20, 1869.



Witnesses,
Geo. H. Strong,
J. L. Boone



Inventor,
Chas. D. Smith
By *[Signature]*
His Attorney

United States Patent Office.

CHARLES D. SMITH, OF DRYTOWN, CALIFORNIA.

Letters Patent No. 92,893, dated July 20, 1869.

IMPROVED ORE-CONCENTRATOR AND ENDLESS SLUICE-BLANKET.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, CHARLES D. SMITH, of Drytown, county of Amador, State of California, have invented an Improved Concentrator; and I do hereby declare the following description and accompanying drawings are sufficient to enable any person skilled in the art or science to which it most nearly appertains, to make and use my said invention or improvements without further invention or experiment.

My invention relates to a new and improved concentrator for separating the richer portions of pulverized ore from the gangue or refuse matter, after it has passed through the mill; and

It consists of an endless belt, covered with strips of blanket, with alternate strips of metal, stretched by two drums, one at each end, supported by a third in the middle.

This belt moves toward the stream of water bearing the ore.

One of the drums is adjustable, so that the belt may be inclined at any angle desired.

The lighter portions of the stuff flow off the lower end, while the heavier are carried over the upper drum, and are washed off by a stream of water, which is brought to bear upon the belt from beneath.

A series of hammers is arranged on the interior of the belt, so as to strike it, and, by means of the jarring produced, cause any of the sulphurets which may have clung to the belt to fall off.

To more fully illustrate my invention, reference is had to the accompanying drawings, forming a part of this specification, of which—

Figure 1 is a side elevation.

Figure 2 is a side sectional elevation.

Similar letters of reference, in each of the figures, indicate like parts.

Inside of a suitable frame, A, I place an endless belt, B, which passes around the drum B', at one end, and around the adjustable drum C at the opposite end.

This belt is intended to be made of ducking, or other suitable material, and the slats *a a* attached to it around the entire belt.

These slats are laid longitudinally with the width of the belt, and are secured to the sides of the moving sluice.

Upon the slats *a a*, I secure narrow strips of blanket, *b b*, which are held to their position by narrow metal plates, *c c*, which overlap the strips of blanket, giving alternate surfaces of blanket and metal.

The metal strips *c c* are amalgamated, and are intended to catch any free gold, amalgam, or quicksilver, that may come in contact with them.

The endless belt is skirted on each side with a series of blocks, *e e*, or other device, which serves to convert

it into a revolving sluice, and thus prevent any of the stuff from falling from the sides.

A strip of corrugated leather, D, or other durable material, is secured on the top of the raised sides, and serves to protect them from wear in passing over the roller E, and give uniformity to expansion about the drums.

The roller E is adjustable by means of the slides *g*, in which its journals work, which are arranged to slide up and down in ways *i i*, and be fixed at any desired point by means of a bar, *h*, and some suitable fastening-device.

This roller bears upon the under part of the endless belt and supports it, preventing it from sagging, in passing from drum to drum, on the lower side, and by moving it up and down, the tension of the belt is regulated.

Between the two drums B and C, and inside the belt, is a shaft, F, bearing in the upper ends of the standards G and carrying at different points along its length cams K.

The shaft F is caused to revolve by a belt which passes from the main driving-wheel, attached to the end of the stationary drum B, by which the belt is revolved, and which passes around a pulley at the end of the shaft F.

As this shaft revolves, the cams are brought in contact with the projecting handles of hammers I I, which are attached to the shaft F, and cause them to rise and fall, striking the belt, and, by the concussion, jarring off any sulphurets which may cling to it.

Directly beneath the stationary drum B is a tank, L, into which the sulphurets are received from the belt.

Across the top of this box is a cylinder or other chamber, N, having on its upper side two longitudinal slots surrounded by flanges, *n n'*, forming orifices opening from the chamber, one, *n*, being vertical, and the other, *n'*, being angular, and standing in the direction in which the belt is moving.

A short pipe, *o*, leads from this chamber toward the front of the tank L, to which a hose is attached, through which a stream of water is forced into the chamber, and is ejected through the longitudinal orifices upon the moving belt, thus washing off the particles of metal and sulphurets from the blankets and plates, and causing them to fall into the tank.

At the rear of the tank L, and near its top, is a discharging-spout, *p*, which carries off the surplus water from the tank and discharges it into an escape-sluice, P.

At the rear of the adjustable drum C is a section, R, of a sluice, which is arranged to stand at an angle, as shown, and catch the water or surplus matter as it falls from the belt, and direct it into the escape-sluice P.

Attached to the upper end of the sectional sluice

R is a metal rod or wire, S, bent so as to bear upon the moving belt, and keep the strips of blanket to their proper position, as shown, thus arranging them for receiving the pulp or tailings at the proper time.

The ore or pulp is fed upon the belt, near its upper end, from a sluice, the lower end of which is represented at fig. 1.

This sluice has secured to its lower end a screen, *u*, by means of which the coarse sulphurets and rock are fed lower down upon the blanket than the fine particles, which will drop through the screen, thus giving to the coarser sulphurets the full head of water, or by attaching a sluice to it connected with another similar machine, the tailings may be graded to any extent deemed necessary.

The operation of my machine is described as follows:

The pitch or incline which it is desired to give the belt is first regulated by means of the adjustable drum C, and the proper tension is given by means of the adjustable roller E.

The ore, pulp, or tailings are fed upon the blanket, near the lower end, the coarser portion, as before stated, falling lower down the incline than the finer particles. The belt is then set in motion. The sulphurets are caught by the strips of blankets and carried up the incline and over the stationary drum, while the gold, amalgam, and quicksilver adhere to the amalgamated plates, and are also carried along with the belt.

In the meanwhile, water is forced through the hose, and into the chamber N, the pressure forcing a continuous wide sheet or stream of water through the longitudinal orifices *n* and *n'*, up against the moving-belt, thus washing off the adhering sulphurets and metals into the tank L.

After passing the sheets of water as ejected through the orifices, the belt passes under the hammers I I, which jar off any of the sulphurets or metals escaping the action of the water, which also fall into the tank.

The belt then passes along, and as it rises over the adjustable roller it comes in contact with the blanket-

adjuster S, which brings the strips back to their proper position, after being disarranged by the stream of water.

The refuse portion of the stuff which falls upon the belt, with the richer portions, falls down the sluice, and is directed, by the section of sluice R, into the escape-slucice P, through which it is conveyed to any desired place.

Having thus described my invention, I do not claim a revolving endless belt, moving at an incline against the stream of water, as this device has frequently been used for the same purpose; but

What I do claim, and desire to secure by Letters Patent, is—

1. The revolving endless belt B, having the sides constructed of the blocks *e e*, so as to form a moving sluice, and having the bottom of this moving sluice covered with alternate strips of blanket, *b b*, and amalgamated metal plates *c c*, each overlapping the other, so as to form a surface for collecting both the sulphurets and gold, quicksilver, and amalgam, in the manner substantially as described.

2. The adjustable roller E, both for the purpose of regulating the tension of the belt and for supporting the belt while passing between the drums B and C, substantially as described.

3. The chamber N, having the elongated orifices *n* and *n'*, and the short hose-pipe *o*, for directing a stream or streams of water upon the belt, substantially as and for the purpose described.

4. The hammers I I, attached to the shaft F', and operated by means of the cams K K, placed on the parallel shaft F, so as to strike the moving belt B, substantially as and for the purpose described.

5. The blanket-adjuster S, arranged so as to bear upon the belt and place the blankets in a proper position to receive the ore, substantially as above described.

In witness whereof, I have hereunto set my hand and seal, this 27th day of January, A. D. 1869.

CHARLES D. SMITH. [L. s.]

Witnesses:

WM. JENNINGS,
B. F. RICHTMYER.