

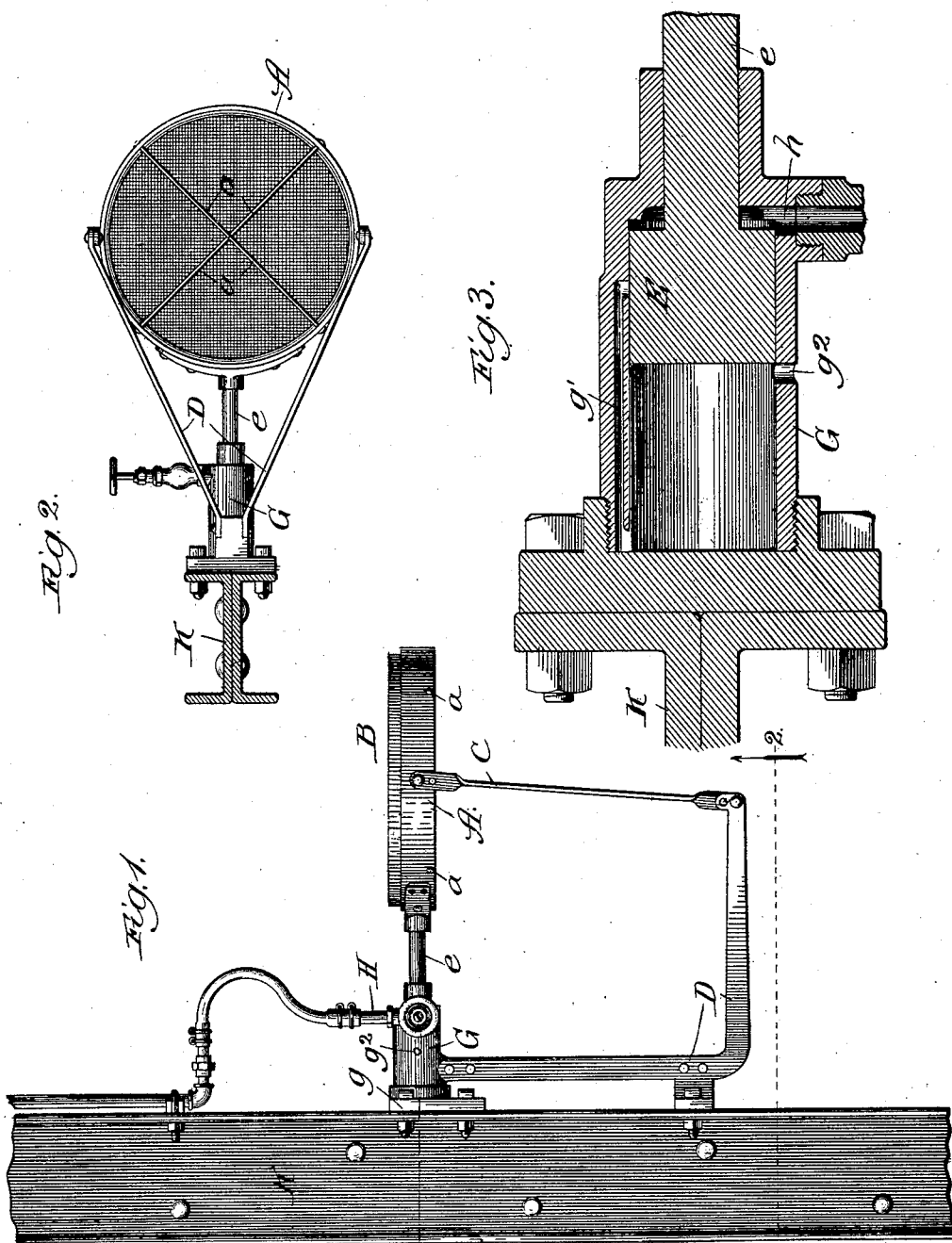
No. 671,764.

Patented Apr. 9, 1901.

E. E. HANNA.
SAND SCREENING MACHINE.

(Application filed Apr. 23, 1900.)

(No Model.)



Witnesses:

Charles Gaylord,
John Enders

Inventor:

Elmer E. Hanna,
By Thomas C. Henderson
Att'y

UNITED STATES PATENT OFFICE.

ELMER E. HANNA, OF CHICAGO, ILLINOIS.

SAND-SCREENING MACHINE.

SPECIFICATION forming part of Letters Patent No. 671,764, dated April 9, 1901.

Application filed April 23, 1900. Serial No. 13,905. (No model.)

To all whom it may concern:

Be it known that I, ELMER E. HANNA, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Sand-Screening Machines, of which the following is a specification.

The object of the invention is to provide a simple, economical, and efficient machine for screening sand; and the invention consists in the features, combinations, and details of construction hereinafter described and claimed.

In the accompanying drawings, Figure 1 is a side elevation of a complete machine constructed in accordance with my improvements shown as attached to an I-beam in position for use; Fig. 2, a plan view of the same, and Fig. 3 an enlarged sectional detail view taken through the operating mechanism.

In the art to which this invention relates it is well known that the screening of sand or similar material for molding purposes in foundries requires considerable labor and as a consequence a loss of considerable time. I have designed my improvements primarily for the purpose of providing a simple and efficient screening device arranged to be operated by mechanisms which are attached directly to the screening device and with the use of a motive fluid, preferably compressed air, all of which will more fully hereinafter appear.

In constructing my improvements I use a screen-holder A of the desired size and shape, preferably formed of a circular band having cross-bars *a* arranged therein and at the bottom portion thereof, upon which an ordinary screen or riddle B may be placed. This screen-holder is supported directly upon one or more spring-arms C, which are secured at the bottom portion to a metallic frame D of the desired size and shape.

To vibrate the screen-holder, a reciprocating piston E is provided, movably mounted in a cylinder G, attached in any desired way to a base *g*. The piston has its rod *e* projecting out from the cylinder and secured directly to the screen-holder, so that during its reciprocations the screen-holder is vibrated back and forth upon its supporting spring-arms.

To furnish power by which to reciprocate

the piston, the cylinder is provided with an inlet-pipe H, leading from some suitable source of compressed air and connecting with an inlet-passage *h* at the front of the piston, so that the air under pressure can enter the cylinder between the piston and cylinder-head and force the piston and screen-holder backwardly. When the piston has traveled a desired portion of its backward motion, the air under pressure passes from the forward end of the cylinder through a by-pass *g'* to the rear end of the cylinder, where it enters between the rear end of the piston and the cylinder-head to counteract the backward motion of the piston and drive it, with the screen-holder, forwardly. The exhaust takes place through the exhaust-opening *g*². By this arrangement it will be seen that the motive fluid acts constantly against the front end of the piston and intermittently on a superior area against the rear end of the piston, and the piston will continue to reciprocate, as above described, until the supply of motive fluid is shut off.

The mechanisms, as shown in the drawings, are attached, preferably, to an I-beam K and can be moved readily from one portion of the shop to another, or the frames can be set in place as desired and the screens or riddles moved from place to place for the operator to screen the sand or other material.

There are many advantages attached to the use of the mechanism above described, and it will be sufficient to state only a few of them. The direct action of the compressed air upon the piston obviates the friction which necessarily accompanies the transmission of power by the ordinary mechanical means now in use. There are few parts to the machine and as a consequence less liability to get out of order, and when out of order it is very economical to repair. The mechanisms are always ready for use and fitted to receive the standard hand-screens in general use by molders, and the change from one size of screen to another can be effected without loss of time. The mechanisms are portable, as the brackets are arranged on posts, as illustrated in the drawings, and may be conveyed from one part of the shop to another.

A novel feature as well as advantage of this invention resides in the fact that the in-

ertia of the parts can be used as one of the sources of its action, as it will be readily seen that the piston is propelled by a very small amount of power, just enough to give an impulse at the start, the spring supporting-arms doing the remainder of the work.

I claim—

1. In a machine of the class described, the combination of a screen-holder, fluid-operated means for reciprocating the same, and a spring connected to said holder, substantially as and for the purpose described.

2. In a machine of the class described, the combination of a screen-holder, supporting spring-arms connected to said holder, a cylinder, and a fluid-operated piston working therein and connected to said screen-holder, substantially as and for the purpose set forth.

3. In a machine of the class described, the combination of a screen-holder in which a screen is replaceably held, spring-arms upon which the screen-holder is yieldingly mounted, a relatively stationary cylinder, and a reciprocating piston mounted in the cylinder and connected directly with the screen-holder, substantially as described.

4. In a machine of the class described, the combination of a screen-holder in which a screen is replaceably held, spring-arms upon which the screen-holder is yieldingly mounted, a relatively stationary cylinder, and a reciprocating piston in the cylinder and con-

nected with the mechanisms above described to operate the same, substantially as described.

5. In a machine of the class described, a screen-holder in which a screen is replaceably held, yielding supports upon which said screen-holder is carried, a relatively stationary cylinder, a piston therein, and a piston-rod constituting a direct immediate connection between the piston and the screen-holder, substantially as described.

6. In a machine of the class described, the combination of a screen-holder in which a screen is replaceably held, a cylinder secured to a support, a piston in said cylinder having a piston-rod immediately and directly connected to said screen-holder, a frame secured to said cylinder, and extending below the same, and spring-arms secured to said frame and supporting said screen-holder, substantially as described.

7. In a machine of the character described, the combination of a screen-holder in which a screen is replaceably held, a cylinder, a fluid-operated piston in said cylinder and connected with said screen-holder, and a spring connected to said holder, substantially as described.

ELMER E. HANNA.

Witnesses:

THOMAS W. CAPEN,
ALBERT J. GATES.