

S. K. BEHREND.  
ORE CONCENTRATOR.  
APPLICATION FILED APR. 21, 1908.

982,785.

Patented Jan. 31, 1911.

2 SHEETS—SHEET 1.

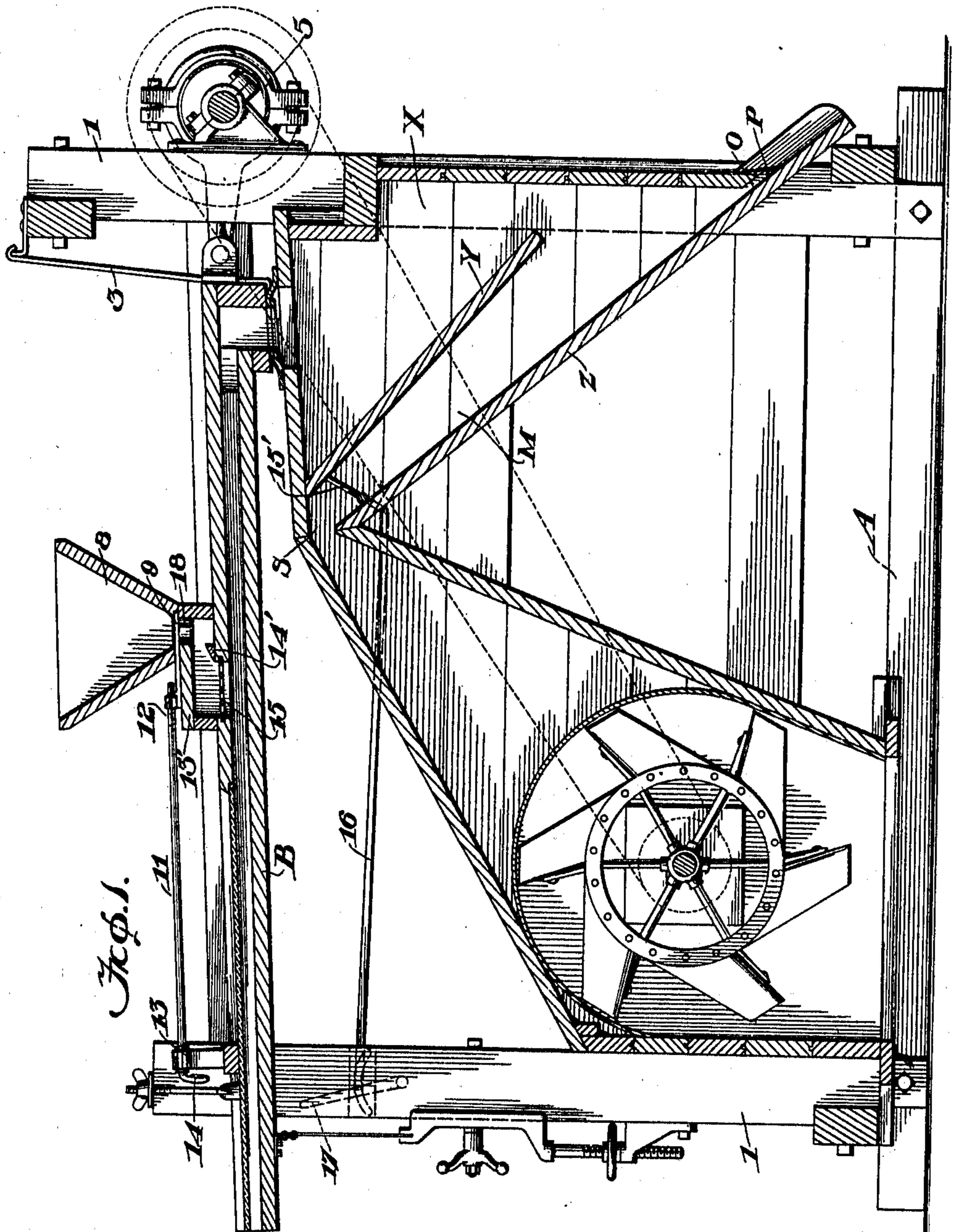


Fig. 1.

Witnesses  
Gloyd W. Patch  
Watts T. Estabrook

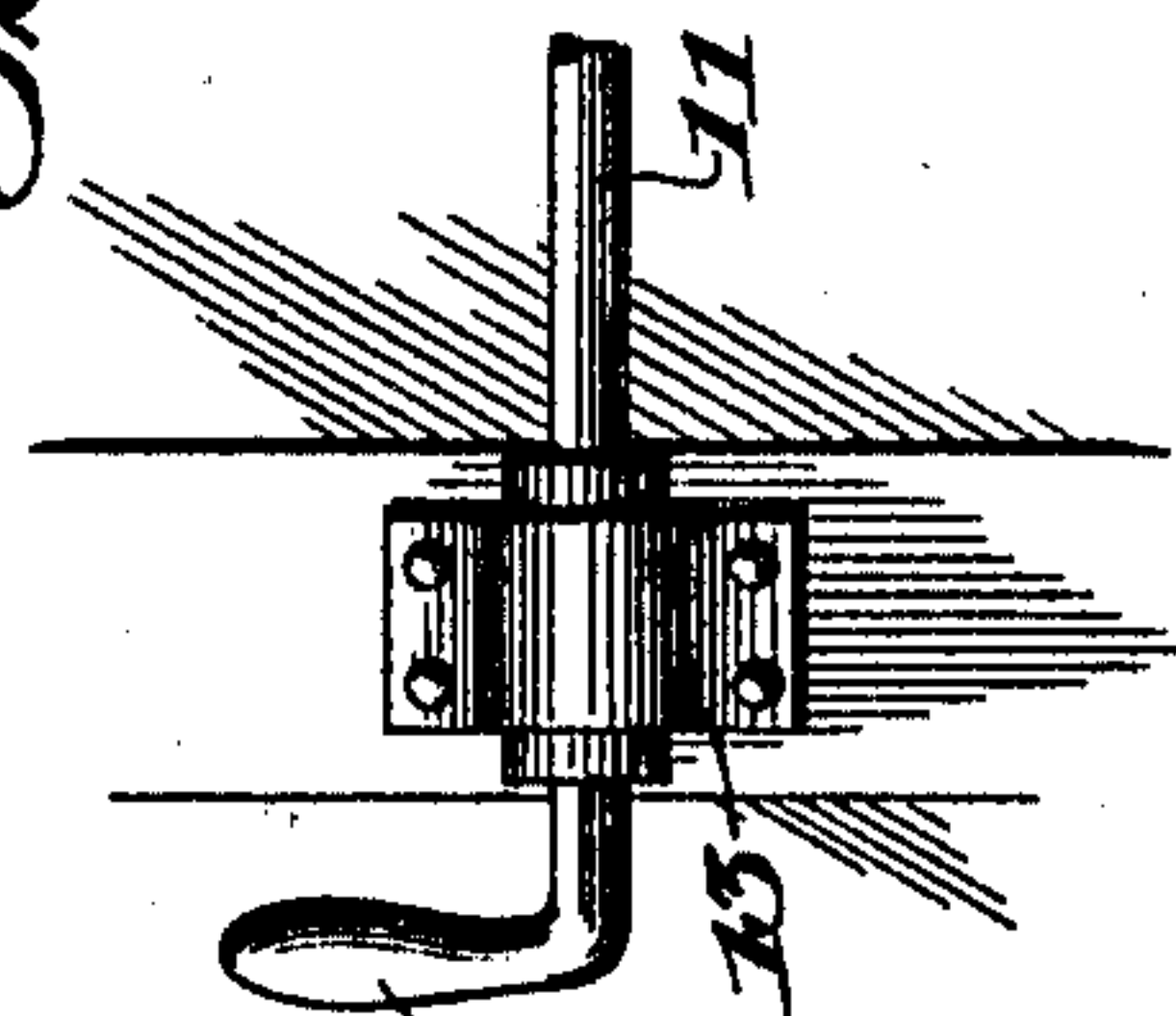
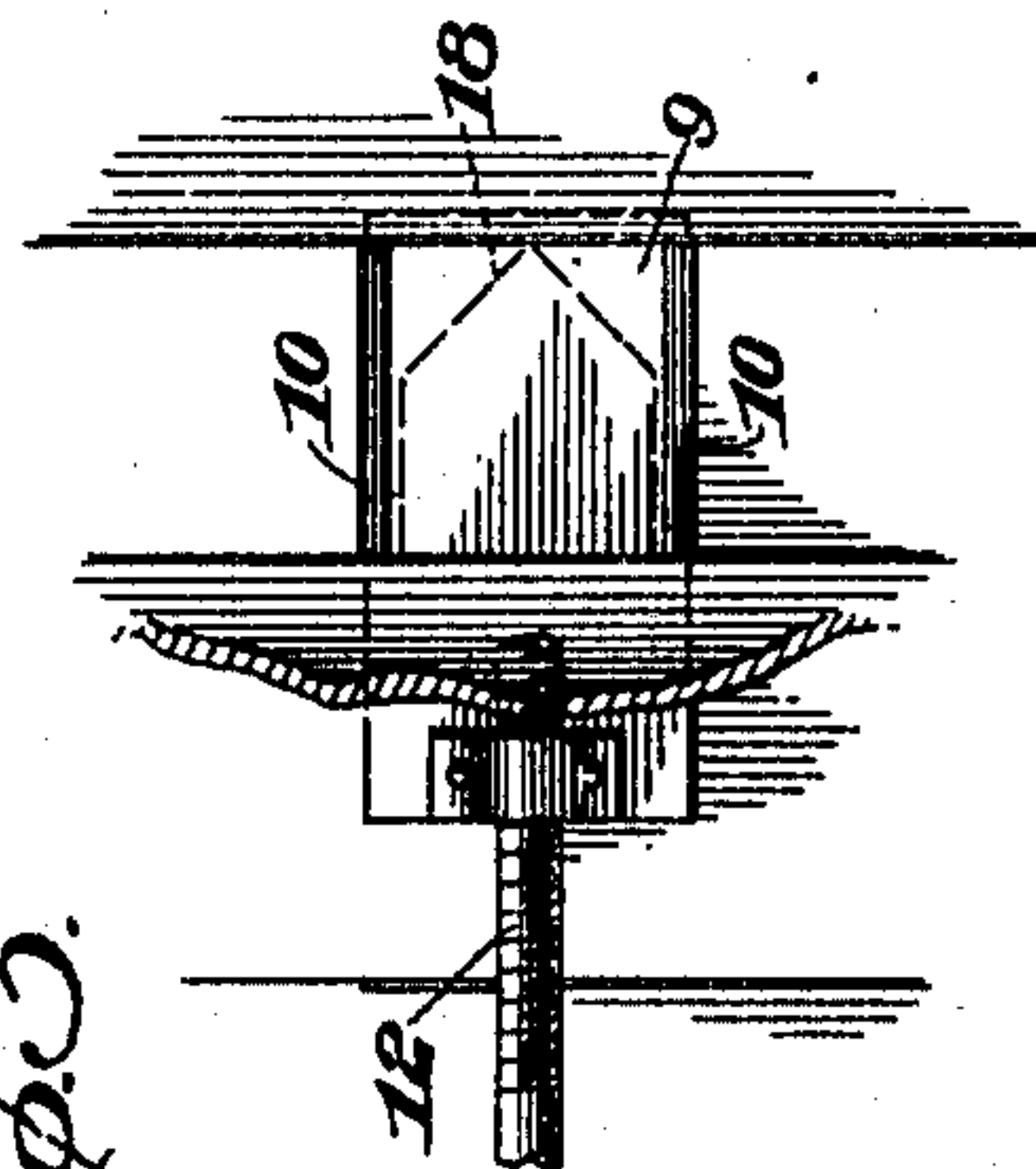
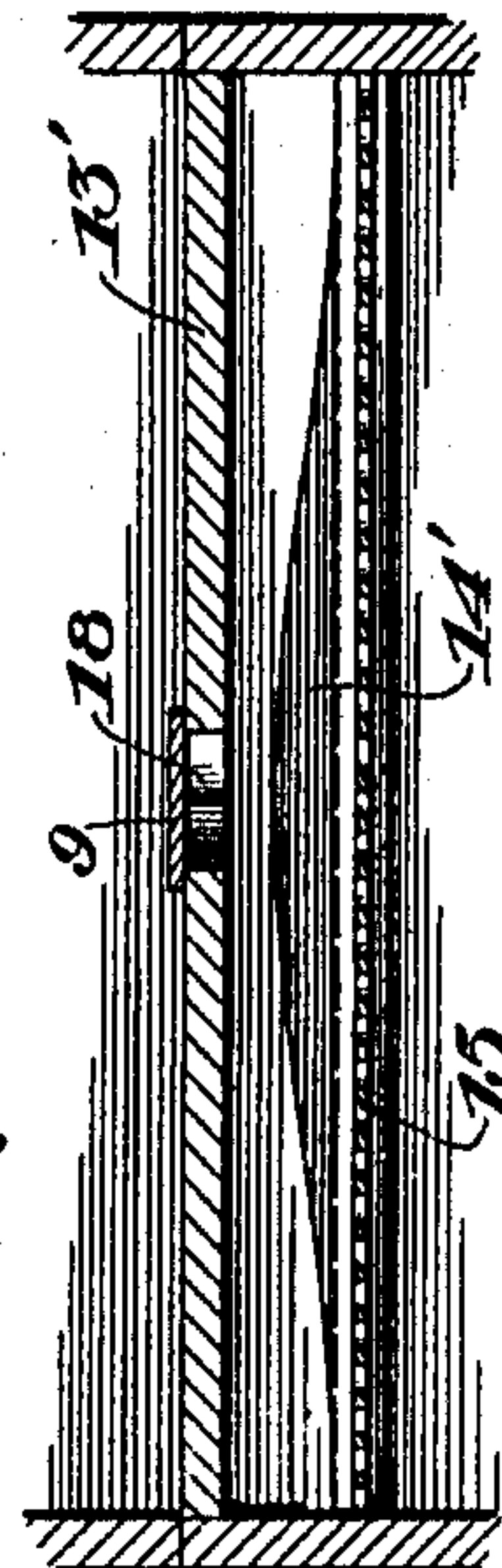
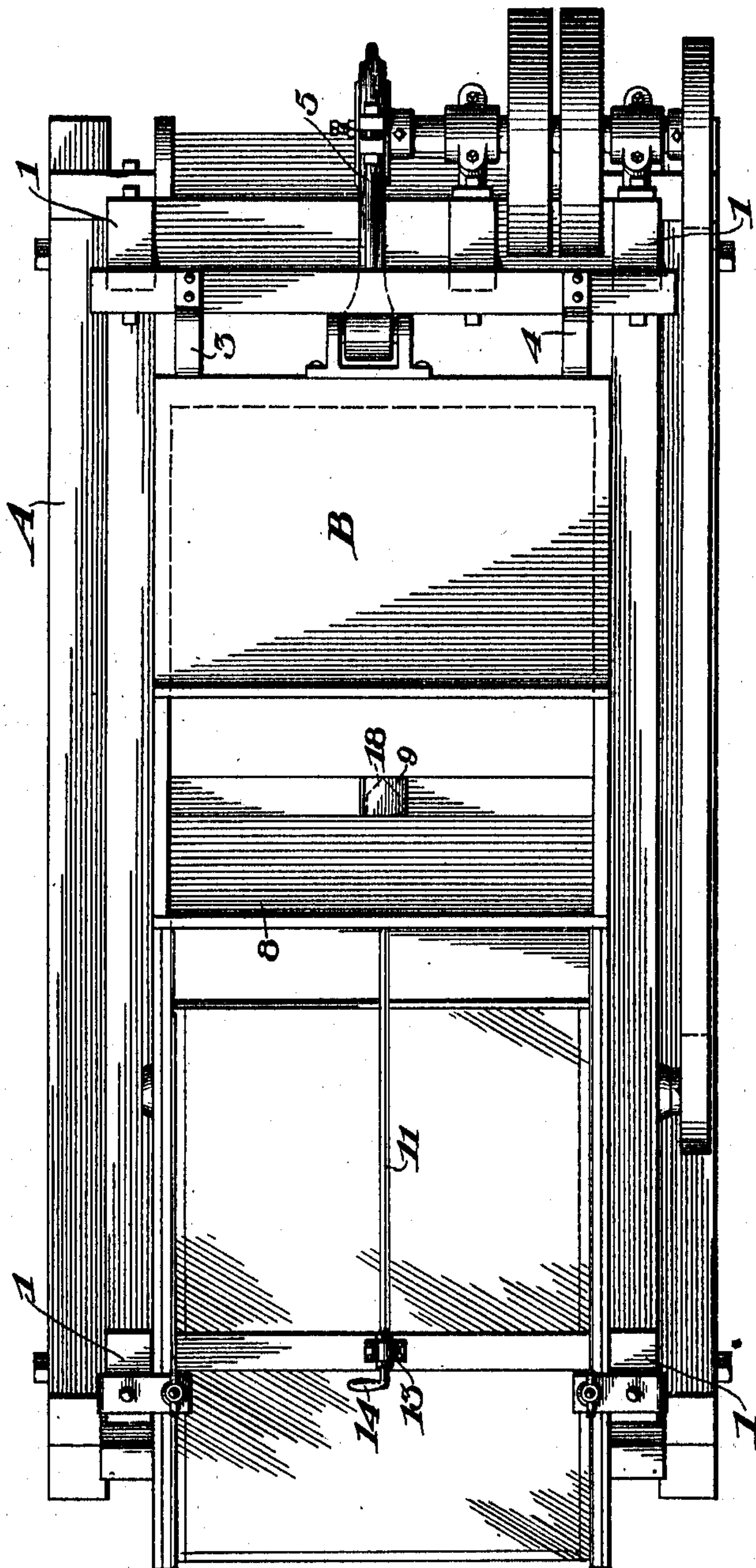
Inventor  
Samuel K. Behrend  
By *Samuel E. Hodge*  
his Attorney.

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Witnesses  
Gloyd W. Patch

Walter T. Estabrook

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By *Amos E. Hodge*  
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# UNITED STATES PATENT OFFICE.

SAMUEL K. BEHREND, OF DENVER, COLORADO.

ORE-CONCENTRATOR.

982,785.

Specification of Letters Patent.

Patented Jan. 31, 1911.

Application filed April 21, 1908. Serial No. 428,402.

*To all whom it may concern:*

Be it known that I, SAMUEL K. BEHREND, a citizen of the United States, residing at Denver, in the county of Denver and State of Colorado, have invented certain new and useful Improvements in Ore-Concentrators, of which the following is a specification.

My invention relates to an improvement in ore concentrators, and more particularly to that variety of concentrators known as dry separators, the purpose of this invention being to provide as near perfect separation as possible by the so-called dry process, which separation is accomplished by the discharge of the material in approximately uniform quantities entirely across the table at or near the center of the table, immediately below which point of discharge the main separation takes place by the uniformly discharged and finely distributed material coming in contact with a rapidly flowing air-current, while the table itself is undergoing a rapid agitation, so that the particles of greatest specific gravity, namely the values are continued onward to the lower end of the table, which preferably inclines a greater or less degree, while the lighter or waste products,—gangue, etc., known as "tailings" work their way upward with the air-current, and are drawn through the suction chambers beneath the table and disposed of.

With the foregoing objects in view, this invention comprises novel features and details of construction, and arrangements of parts which I will proceed to describe more fully hereinafter, and point out in the claims.

In the accompanying drawings:—Figure 1 is a vertical longitudinal section of my improved ore concentrator. Fig. 2 is a plan view. Fig. 3 is a detail. Fig. 4 is a transverse section through the ore box.

A, represents the base, and 1, 1, are uprights erected thereon.

B, indicates the concentrator table. This is preferably supported by means of plates, 3 and 4 at the upper end where it is attached to the reciprocator 5, and it is supported at its lower end by means of a vibrator which rests in adjustable holders for raising and lowering and regulating the inclination of the table. A hopper 8 is located at or near the center of the table for the discharge of the material upon the table at that point. The orifice 18 at the lower end of the hopper is preferably V-shaped or tapered at one

end as for example at the upper end. A gate 9 in the form of a rectangular plate is arranged immediately above this outlet in guides 10, 10, in which it is slidable or adjustable from one end of the machine. This slidable gate 9 is adjustable in any approved manner as for instance by means of a rod 11 which has a screw-thread 12 at the inner end which turns in corresponding threads in the end of the gate. This rod is mounted to turn but not to slide in a bearing 13, and is provided with a crank handle 14 at the outer end by which it is turned to adjust the gate. By sliding the gate outwardly the opening in the lower end of the hopper is opened a greater or less degree, and if a small amount of material is to be fed on to the table, it is correspondingly opened, the angular formation of the discharge orifice in the bottom of the hopper admitting of this variation in feed. Instead of discharging directly upon the surface of the table a box 13' is stationed on the cover of the table in which the ore discharges. This box is provided with a transversely located riffle 14' at a short distance from its upper end, the highest portion of which is at the center, from which it tapers gradually down to nothing at the ends whereby to distribute the ore as near evenly as possible on the screened surface 15 in the lower end of the box so that it discharges as evenly as possible in an area approximately the width of the table whereby the entire volume of ore is subjected to the air currents uniformly as fast as it discharges from the box. By means of this adjustable gate, therefore, the discharge may be regulated with precision to suit the requirements of the particular ore under treatment.

O, is a narrow slit extending entirely across the machine and is normally covered by the strip of light canvas or other suitable material as shown at P, which permits the tailings to pass under it, but at the same time prevents air being drawn into the machine through O.

Y, is an incline to prevent any material from lodging, which might be dropped in compartment X, by the air-current. It will be noticed that the space between the lower edge of incline Y and the surface Z, is much greater than the distance across passage S, thus giving the air-current much less velocity as it enters the wedge-shaped passage M, in its journey to the fan, thereby causing the



air-current to effectually drop the solid particles it has heretofore been carrying with it. This ore passage is controlled by a butterfly valve 15' and a rod 16 extends from the stem of the valve to the end of the machine where it is connected with a hand lever 17 within reach of the operator. In this way, all of the adjustments of the table are within reach of the operator who takes his position at the lower end of the table.

From the foregoing it will be seen that the operator is enabled to control the discharge and distribution of the ore upon the surface of the table according to the ability of the machine to take care of it, and in this way a perfect separation is constantly taking place so that a maximum of values is saved in the separating operation.

More or less slight changes might be resorted to in the form and arrangement of the several parts described without departing from the spirit and scope of the exact construction herein set forth, but:—

Having fully described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In an ore concentrator, the combination with a movable table, said table having a cover thereon, the cover having a screened surface formed therein, and a box stationed on the cover and surrounding the screened space and a portion of the cover above said screened space, of a hopper located on the box and discharging therefrom into the box and upon the unscreened portion of the cover immediately above the screened portion, and a transversely located riffle located immediately above the screened space, the highest portion of which riffle is at its center, from which point it tapers gradually toward the ends whereby to distribute the material dropping from the hopper evenly upon the screened surface.

2. In an ore concentrator, the combination with a movable table, said table having a

cover thereon, the cover having a screened surface formed therein, and a box stationed on the cover and surrounding the screened space, of a hopper located on the box and discharging therefrom into the box immediately above the screened portion, and a transversely located riffle located immediately above the screened space, the highest portion of which riffle is at its center, from which point it tapers gradually toward the ends whereby to distribute the material dropping from the hopper evenly upon the screened surface, and a gate in the bottom of the hopper for regulating the discharge therefrom.

3. In an ore concentrator, the combination with a movable table, said table having a cover thereon, the cover having a screened surface formed therein, and a box stationed on the cover and surrounding the screened space and a portion of the cover above said screened space, of a hopper located on the box and discharging therefrom into the box and upon the unscreened portion of the cover immediately above the screened portion, and a transversely located riffle located immediately above the screened space, the highest portion of which riffle is at its center, from which point it tapers gradually toward the ends whereby to distribute the material dropping from the hopper evenly upon the screened surface, and a gate in the bottom of the hopper for regulating the discharge therefrom, said gate being rectangular in form, and the hopper having an orifice in the bottom which is V-shaped at one end whereby to regulate the size of the orifice by the adjustment of the gate, and means extending from one end of the machine for adjusting and locking the gate.

In testimony whereof I affix my signature in presence of two witnesses.

SAM'L K. BEHREND.

Witnesses:

HERBERT C. EMERY,  
GEO. N. HAMLIN.