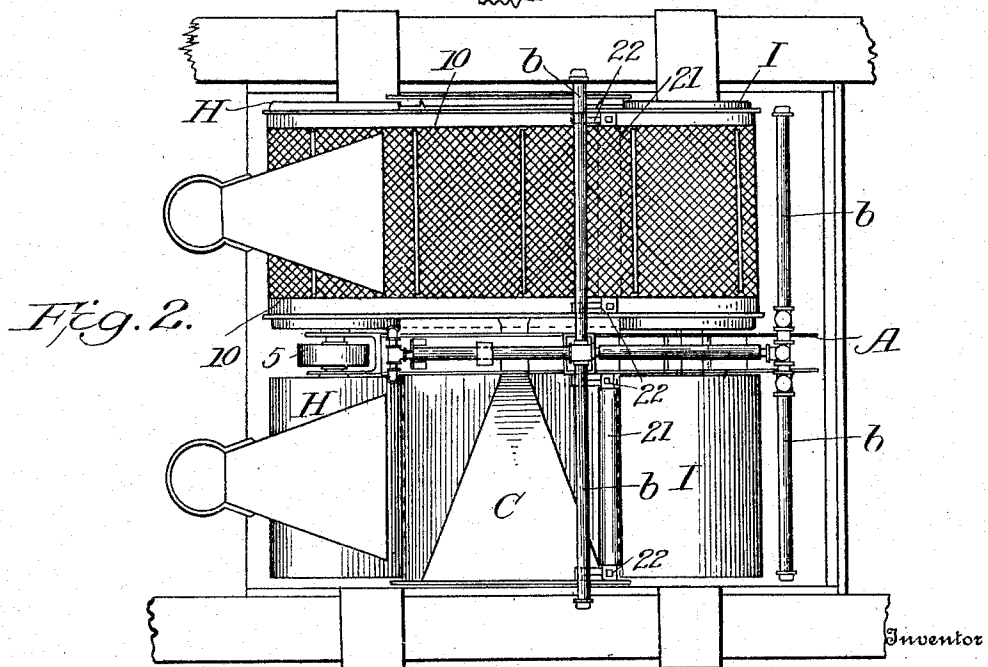
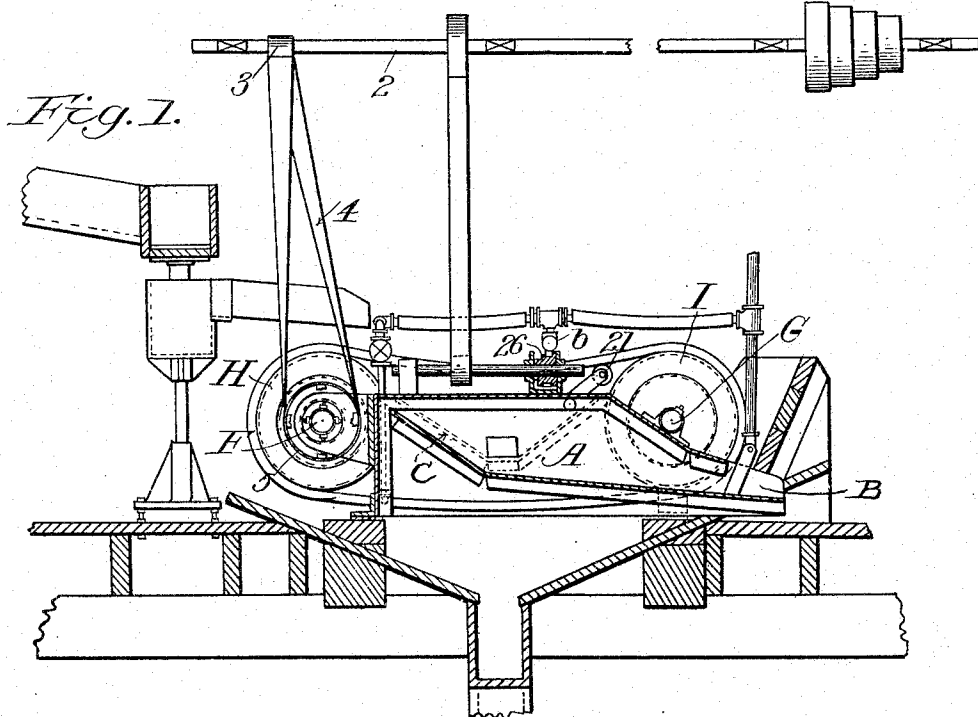


947,331.

2 SHEETS—SHEET 1.



Witnesses

C. H. Mackus.  
A. C. Ernst.

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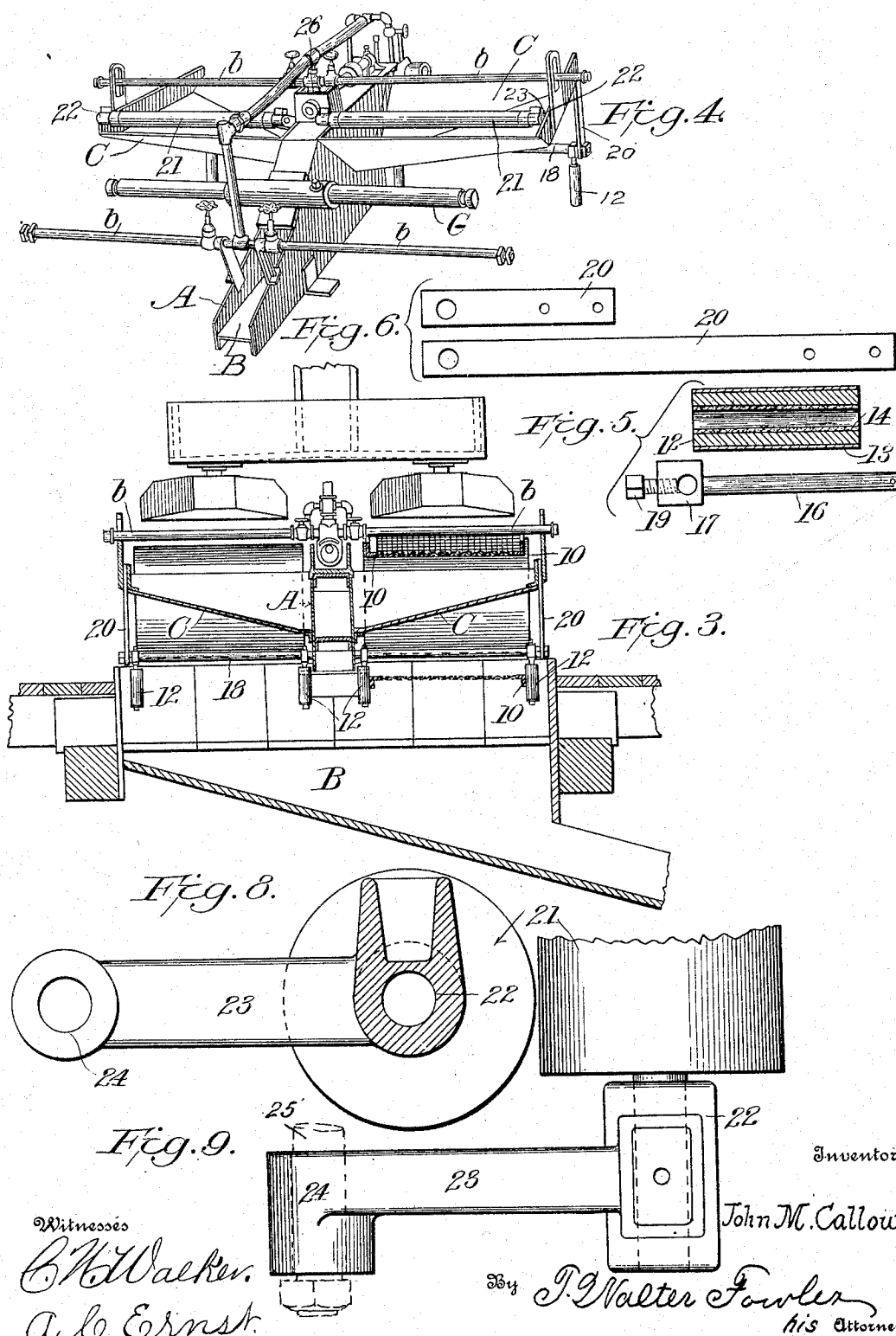
John M. Callow,  
P. Walter Fowler  
his Attorney

J. M. CALLOW.  
 SCREEN SIZING AND SEPARATING MACHINE.  
 APPLICATION FILED JUNE 11, 1908.

947,331.

Patented Jan. 25, 1910.

2 SHEETS—SHEET 2.



Witnesses  
 C. H. Walker.  
 A. C. Ernst.

Inventor  
 John M. Callow  
 By J. G. Walter Fowler  
 His Attorney

# UNITED STATES PATENT OFFICE.

JOHN M. CALLOW, OF SALT LAKE CITY, UTAH.

SCREEN SIZING AND SEPARATING MACHINE.

947,331.

Specification of Letters Patent.

Patented Jan. 25, 1910.

Application filed June 11, 1908. Serial No. 437,865.

*To all whom it may concern:*

Be it known that I, JOHN M. CALLOW, a subject of the King of Great Britain, residing at Salt Lake City, in the county of Salt Lake and State of Utah, have invented certain new and useful Improvements in Screen Sizing and Separating Machines, of which the following is a specification.

This invention relates to certain new and useful improvements in screen sizing and separating machinery, but more particularly to that class of screening machines in which an endless traveling belt or band of screen cloth is used, upon which the separation of the coarse from the fines is effected.

The invention has special reference to the screening of finely divided and wet materials although it may be utilized with any kind of material to which it is found applicable.

The present invention is also an improvement of the machine shown, described and claimed in my former patent No. 864,829 dated September 3, 1907, the object of invention being to improve upon the prior patented construction and to simplify the same and make it more efficient.

With the above and other objects in view, my invention consists of the parts and the constructions and combinations of parts which I will hereinafter describe and claim.

In the accompanying drawings forming part of this specification and in which similar reference characters indicate like parts in the several views, Figure 1 is a side elevation partially in section, of a screen sizing and separating machine embodying my invention, Fig. 2 is a top plan view with one of the belts removed, Fig. 3 is an end view, showing the traveling belt in cross-section. Fig. 4 is a perspective view showing the machine uncovered. Figs. 5, 6, 7, 8 and 9 are details of the roller and its supports.

In the accompanying drawings, the frame A may represent the central main frame of my former patent and is designed to support the principal parts of the machine. This frame is preferably hollow, and has a central gutter B in the lower portion for the discharge of under-size and water. The main frame will also form a support for the under-size hoppers C.

Suitable bearings are provided on the main frame for the head and tail shafts F and G, said shafts extending entirely through the frame and bearings, and projecting sufficiently beyond the same for the

proper mounting and carrying of the head rollers H and tail rollers I.

The construction of the main frame and the mounting of the shafts F and G and their rollers may follow more or less closely the arrangement of the same parts shown in my said former patent; these features form no essential part of the present invention, which latter may be associated with the prior patented construction or may, if desired, be used in connection with any well known and appropriate means for mounting the rollers and shafts.

In practice, I prefer that the head and tail rollers shall be loose on their respective shafts, in which case the means for connecting the rollers to rotate with the shafts may be of the type shown in Fig. 1 of the aforesaid prior patent.

Any well known and suitable means may be employed for driving one of the shafts, say the head shaft F, the means herein shown for illustrative purposes comprising a countershaft 2, having a band pulley 3 from which a belt or band 4 runs to a pulley 5 on the shaft F. It is obvious that other arrangements of driving mechanism may be employed without departing from the spirit of the present invention.

According to the invention shown the machine is duplex in form, there being head and tail rollers at both sides of the central frame. Each side may also represent a single operative machine as it comprises the essential parts of a complete mechanism for sizing and separating coarse from fine material.

As in my aforesaid prior patent, the endless traveling belts or bands are preferably formed of screen cloth of suitable mesh, said belts passing over the head and tail rollers. In my former patent, the head rollers were provided with sprocket teeth to engage and operate the belt, but these sprocket teeth I now dispense with and the belt itself is modified in that instead of using a belt with plain edge, I now provide the belt with a reinforcing rubber edging having an up-standing rubber flange 10 and between which edging the screen cloth is secured. The rubber-flange belts of the present invention take the place of the chains of the former patent mentioned and at the same time constitute a means for confining the material on the belts and prevent said material from slopping over into the under-

size hopper, where of course, it does not belong and where it should not be allowed to discharge. In connection with the flanged belts above mentioned, I also employ special means for guiding the belts, said means comprising suitable vertically-disposed guide rollers 12 arranged on each side of the lower or return run of the belt and adapted to guide the belt and maintain it in its proper position on the head and tail rollers. These guide rollers are engaged by the outer vertical walls or sides of the flanges which bound the edges of the belt and thus accurately guide the belts in their movement. In construction, the guide rollers may be of any suitable character, and as shown in Fig. 5 they may be composed of wood with an exterior covering 13 of sheet metal, and an interior lining 14 of Babbitt metal or like bushing. The guide rollers are loosely mounted on rods or shafts 16 having enlarged heads 17 which are pierced transversely to admit the rod 18 which extends transversely across the machine in the space below the hopper and above the lower run of the belt, said enlarged head of the roller-shafts being also pierced vertically to admit a set-screw 19 whereby the guide rollers are adjustably mounted on the transversely extending supporting rod 18 to suit variations in the width of belts and to compensate for wear of the belt flanges and for other purposes.

Appropriately bolted or otherwise secured to the hopper are pendent bars 20 whose lower ends are pierced to receive the outer threaded ends of the transverse rod 18 nuts or other means being employed to secure the parts together.

Another and an important feature of the present improvements is the employment of a wiping roller 21 arranged in contact with the under side of the upper or working run of the screen belt, said wiping roller being designed to wipe off and effectively remove the water and slime, which is held to the inner surface of the screen cloth by capillary attraction and which otherwise would be carried over the front roller, and instead of falling into the under-size hopper the slimy water would be carried over said front roller and be permitted to mingle with and contaminate the over-size product, which should be free from any contaminating slimes. The wiping roller cures this important objection and in practice it has proved an effective means for clearing the under side of the working surface of the belt of any wet slimes which adhere thereto, and avoiding any danger of contaminating the over-size material.

The wiping roller 21 may be formed of any suitable material; it is provided with end journals or pintles which are mounted in bearings 22 in outer ends of suitable arms

23 whose inner ends are formed with hubs 24 to receive bolts 25 adapted to pass through the vertical sides of the hopper, C, and to be secured by appropriate nuts.

As in my aforesaid prior patent, suitable spray pipes *b* are provided for washing the over-size products on the screen cloth and cleansing them as they pass from the head to the tail end of the machine; and means of suitable character, as the eccentric and yoke 26 may be employed for shaking the spray pipes horizontally from side to side of the machine in order to spray every portion of the over-size, it being understood, and fully explained in my former patent, that the spray-pipes will be suitably hung to permit this movement. Suitable means are also shown for supplying the feed to the machine but these are not described in detail as they form no part of the present improvement, and are substantially like the corresponding construction found in my said former patent.

The operation of machines of this type is well known and need not be set out in detail. The material to be sized and separated is delivered by the feeding devices onto the top surface of the head end of the flange screen-cloth belt and is carried toward the tail end of the machine. The fine material passes through the meshes of the belt and into the under-size hopper to be delivered to launders or other well known receivers; the coarser material is delivered over the tail roller and into the over-size hopper to be conducted into a launder or other well known receiver, and any slimy water adhering to the under-side of the top run of the belt will be removed by the wiping roller and directed into the under-size hopper rather than be permitted to escape past the tail roller to mix with and contaminate the over-size.

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

1. A machine for sizing and separating slimes, consisting of the endless traveling belt-screen, upon which the slimes are deposited, rollers at opposite ends thereof, under-size and over-size hoppers, a roller mounted above the under-size hopper and extending across in contact with the under-side of the upper run of the belt, said roller operating against the belt to remove the wet slimy matter clinging to the under side thereof and to direct said matter into the under-size hopper and thereby prevent said material being carried over with and contaminating the over-size material, and arms secured to the opposite sides of the under-size hopper and having bearings in their outer ends in which the ends of the roller are journaled.

2. An improved screen sizing and sepa-

rating machine comprising an endless traveling belt screen and supporting rollers at the ends thereof, said belt screen having reinforced edges provided with right-angled flanges, rollers substantially vertically disposed and with their axes parallel with the outer sides of said flanges, said rollers being arranged proximate to the lower run of the belt and in the range of travel of said flanges whereby the belt is guided in its movements, a rod passing transversely across the machine, shafts for the rollers having enlarged heads pierced to slidably receive said rod, and means adjustably securing the heads to the rod.

3. In a screen sizing and separating machine, the combination with the endless traveling belt screen, and rollers at opposite ends thereof, said belt having reinforced edges provided with right-angled flanges,

of rollers substantially vertically disposed and arranged proximate to the lower run of the belt and in the range of travel of the belt flanges, and adapted to guide the belt in its travel, shafts upon which the rollers are turnable, a rod extending transversely across the machine above the lower run of the belt and from which rod the roller-shafts are suspended, means for adjustably securing the roller-shafts to the transverse rod, and means for supporting the transverse rod from a fixed part of the machine.

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

JOHN M. CALLOW.

Witnesses:

GEO. M. BACON,  
ERNEST GAYFORD.