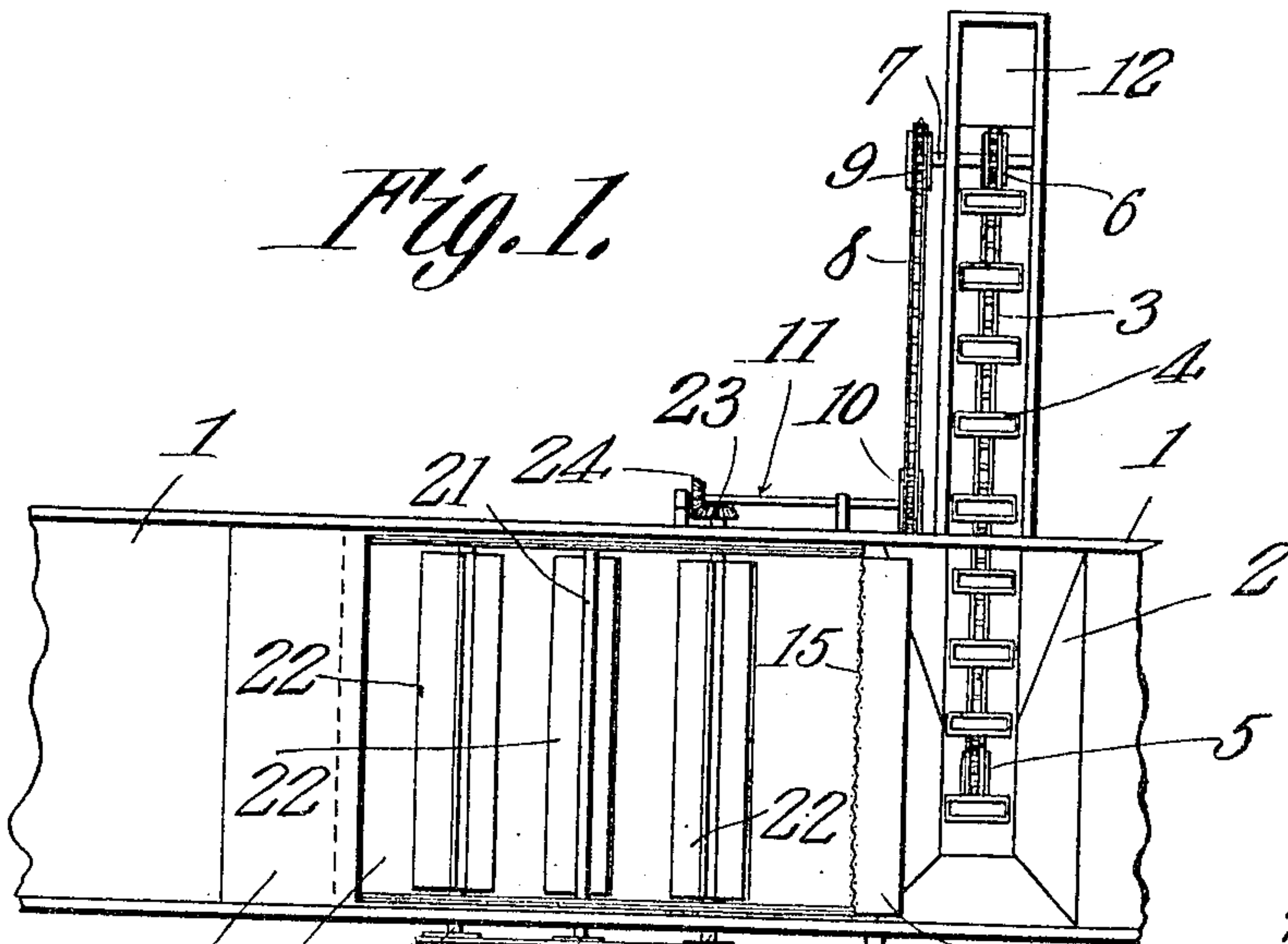


F. B. ROBERTS.  
MACHINE FOR SAVING GOLD.  
APPLICATION FILED JAN. 14, 1909.

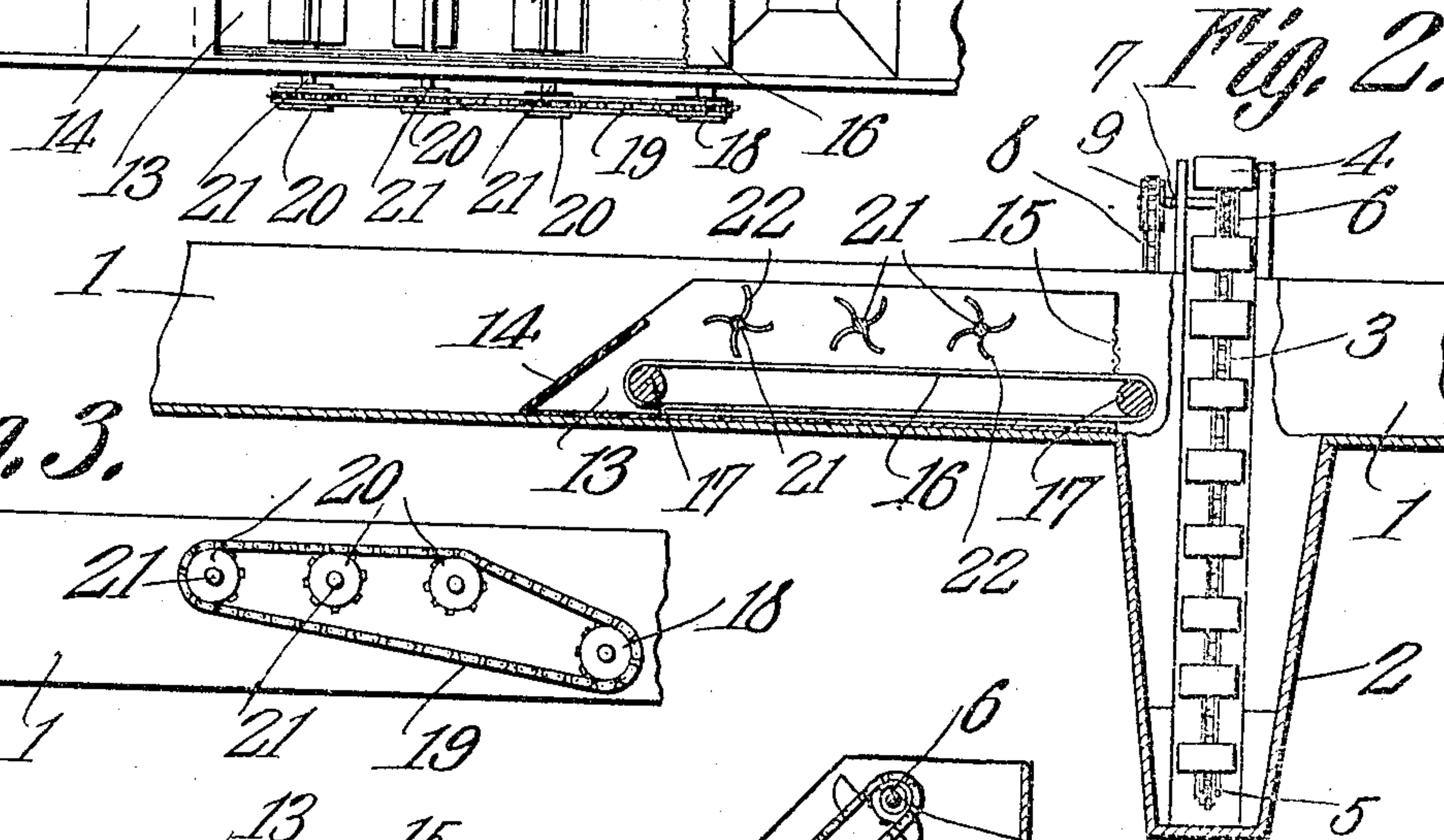
943,789.

Patented Dec. 21, 1909.  
2 SHEETS—SHEET 1.

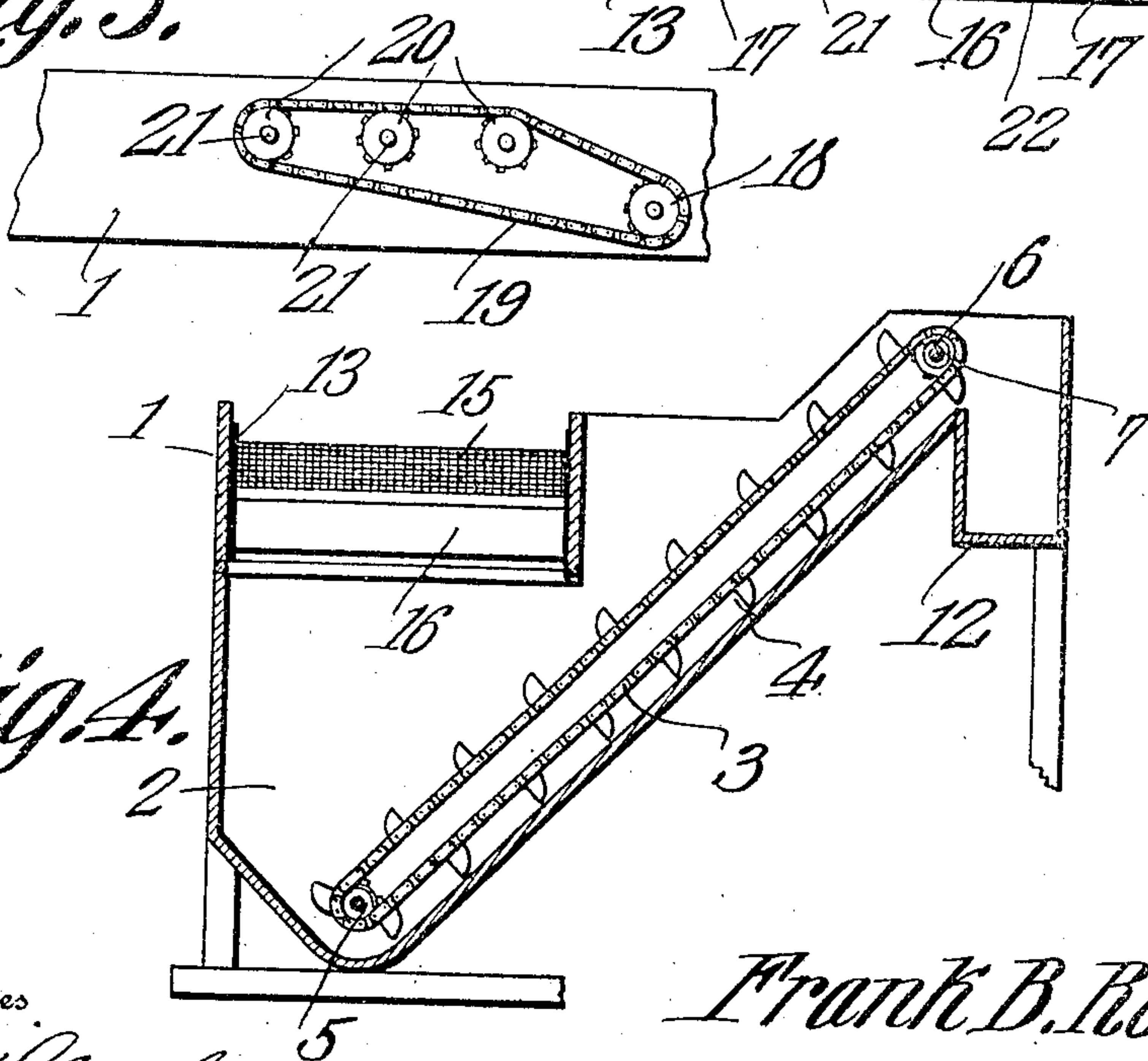
*Fig. 1.*



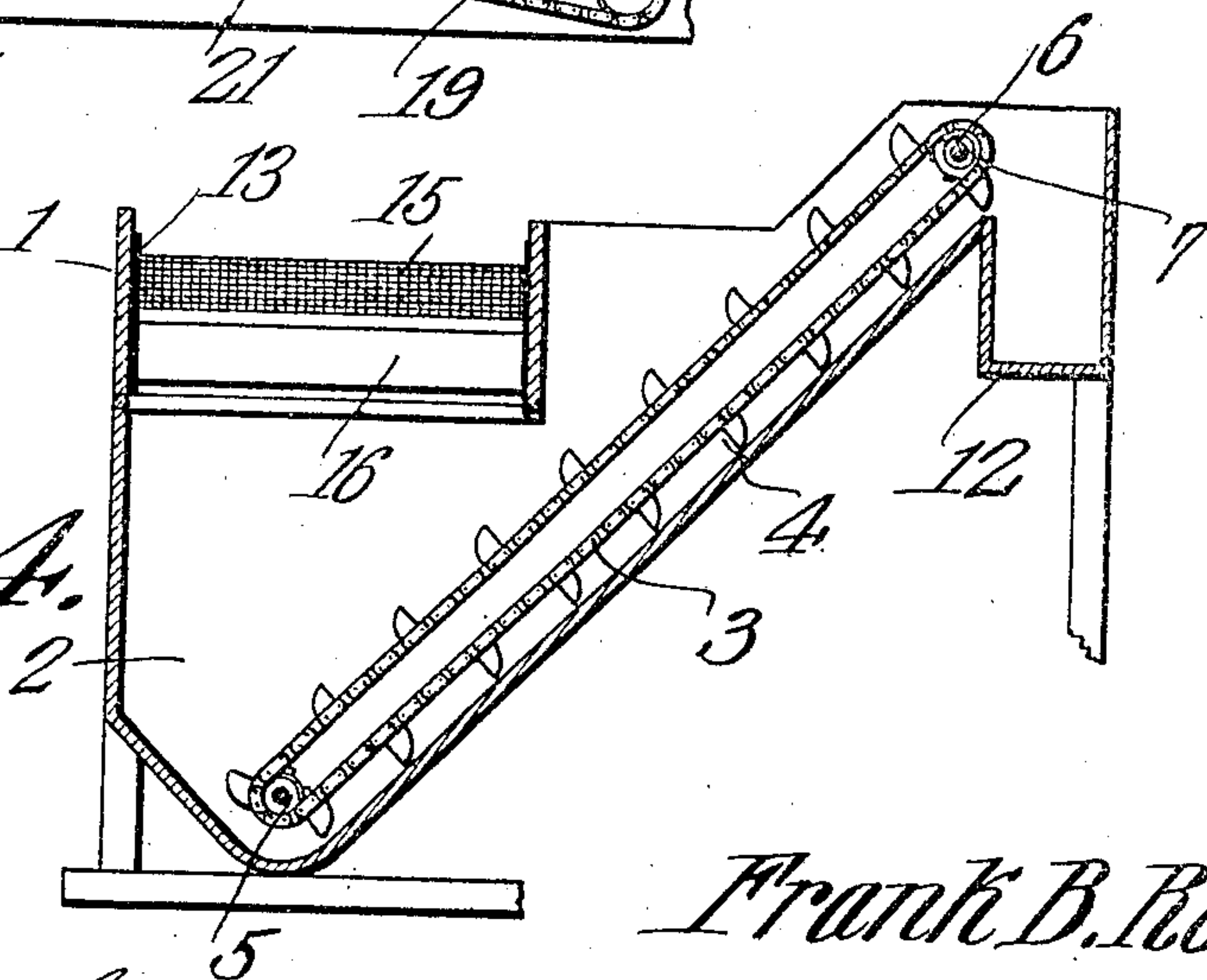
*Fig. 2.*



*Fig. 3.*



*Fig. 4.*



Inventor

*Frank B. Roberts.*

By *C. A. Snow & Co.*  
Attorneys

Witnesses

*E. J. Stewart*  
*Hubert D. Lawson*

F. B. ROBERTS.  
MACHINE FOR SAVING GOLD.  
APPLICATION FILED JAN. 14, 1909.

943,789.

Patented Dec. 21, 1909.

2 SHEETS—SHEET 2.

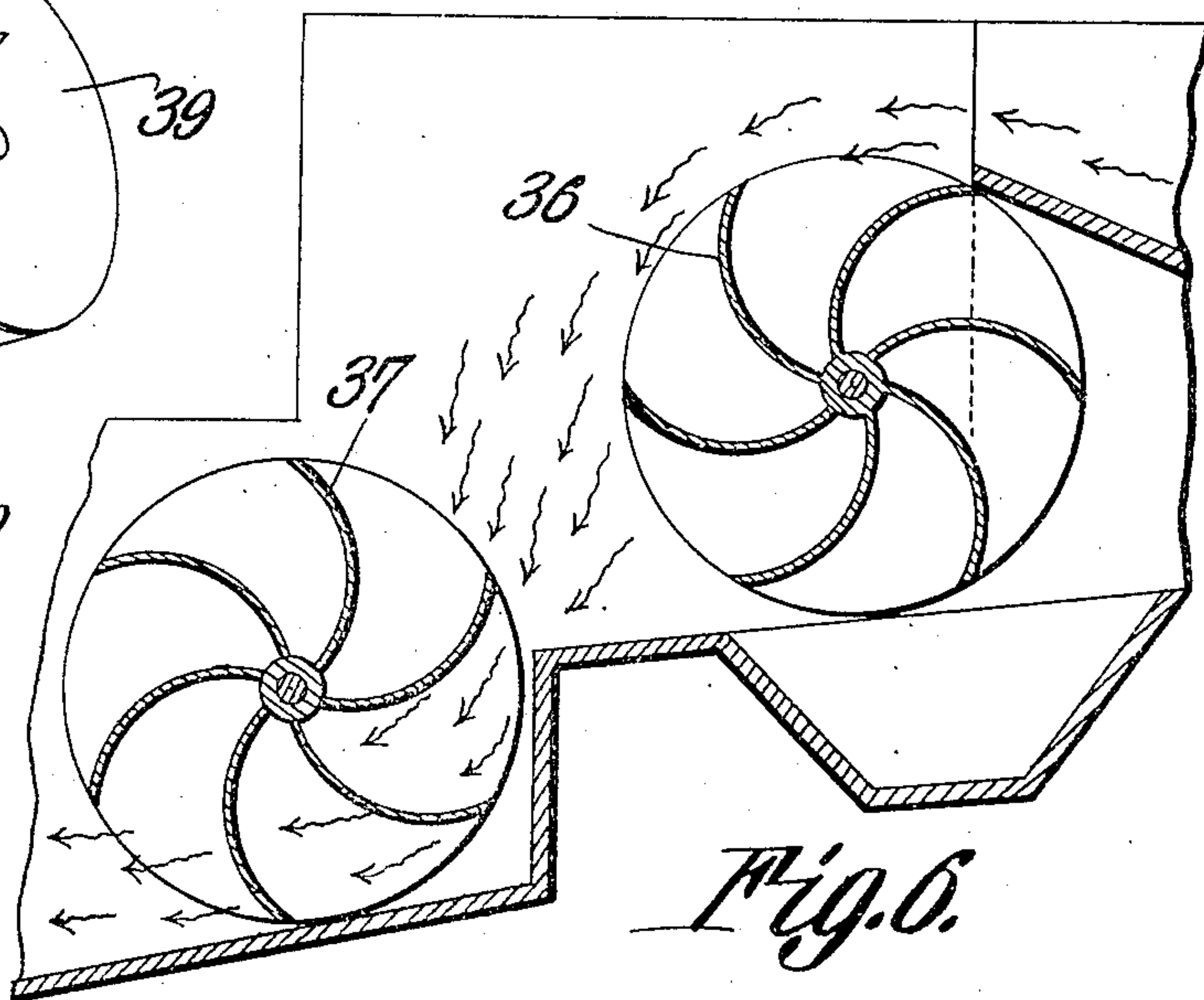
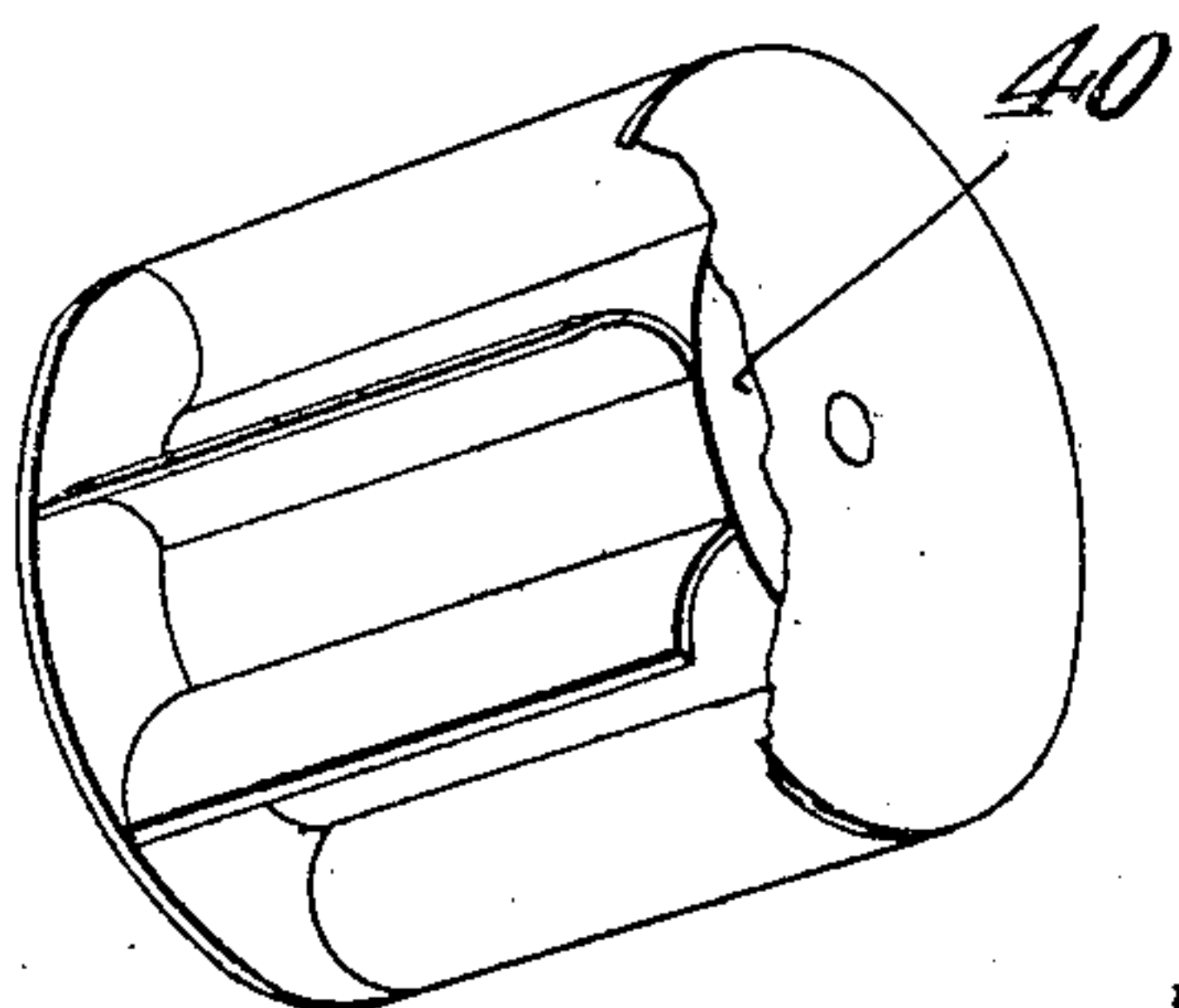
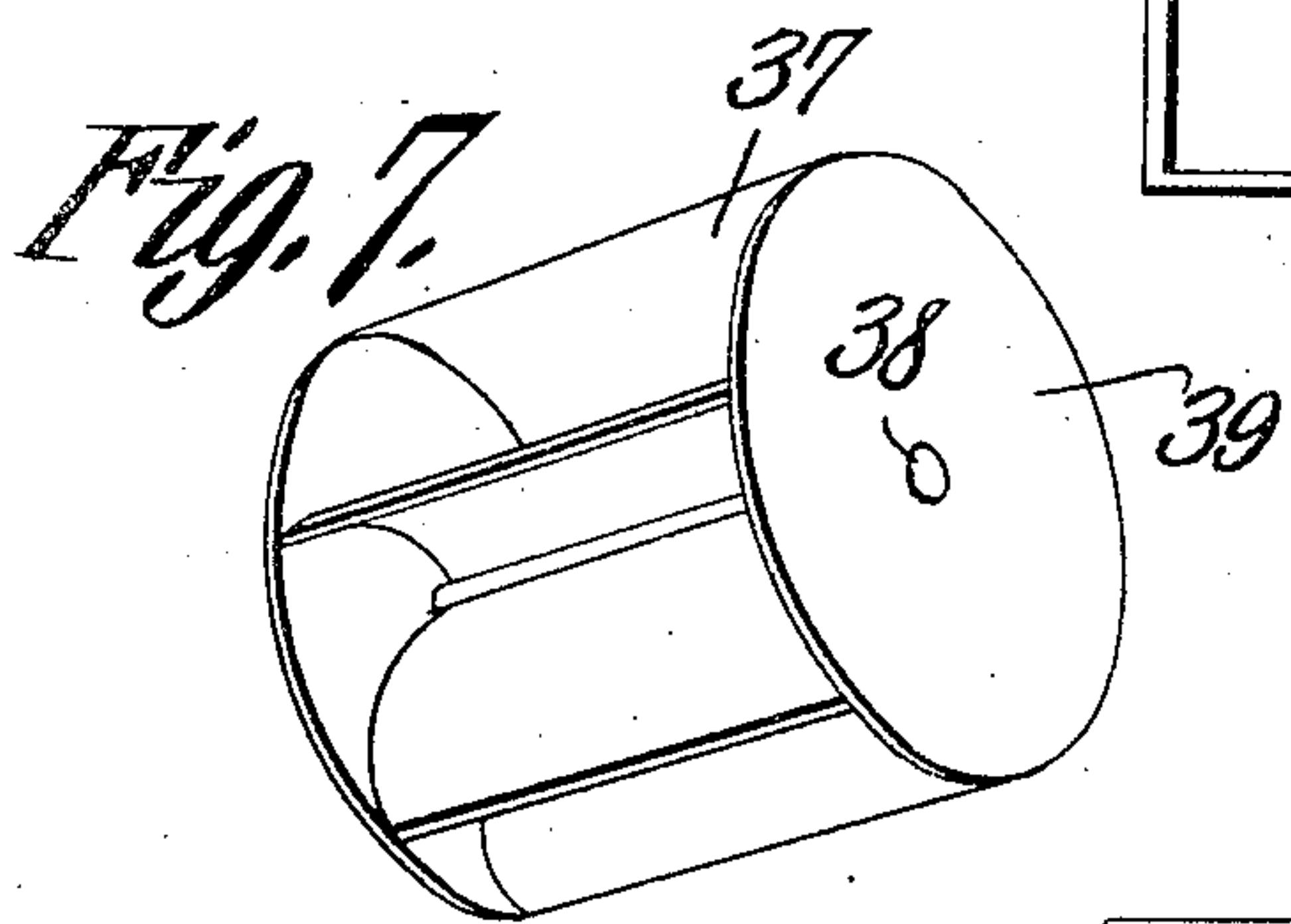
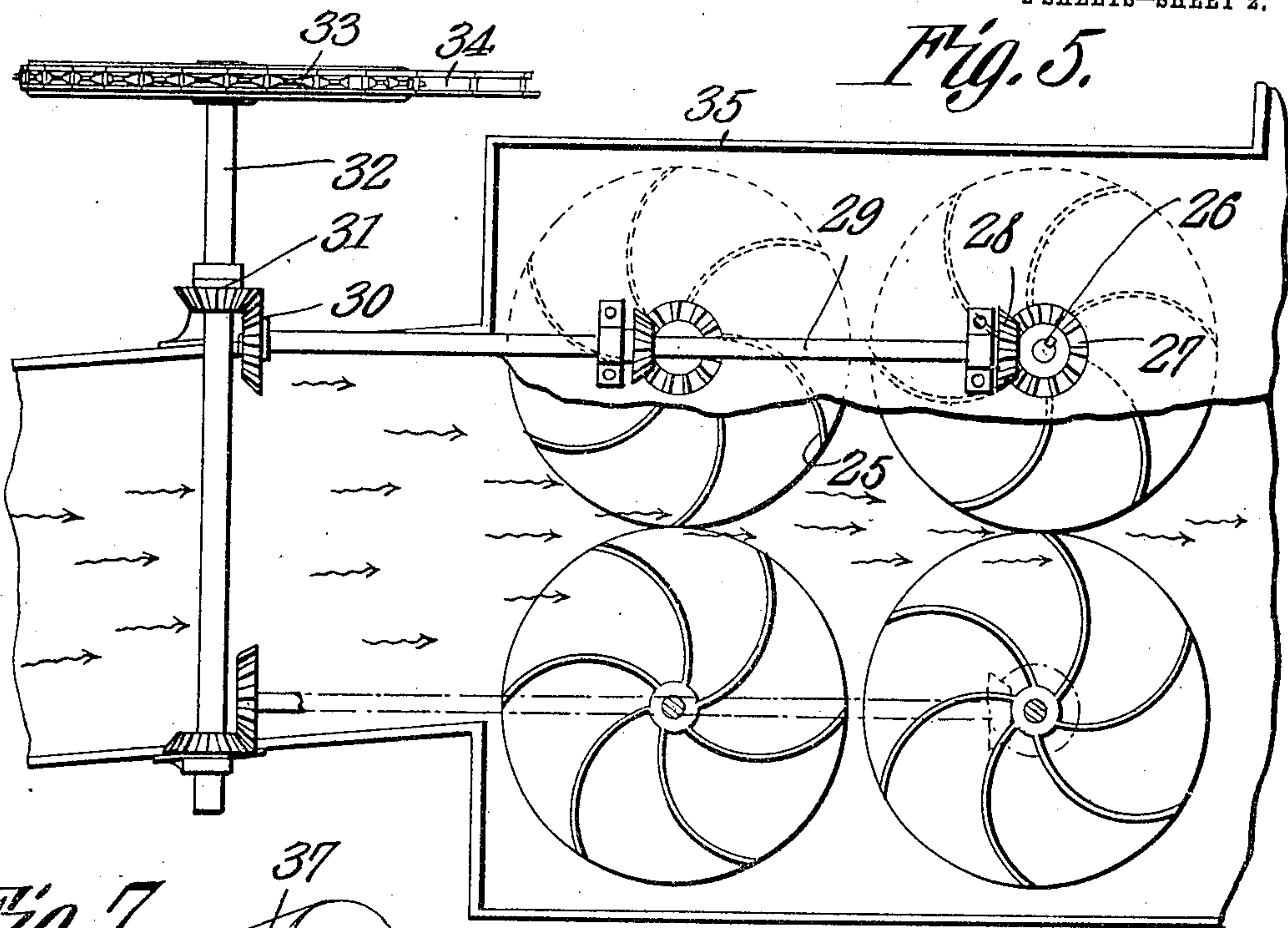


Fig. 8.

Fig. 6.

Witnesses

*E. J. Stewart*  
*Herbert D. Lawson*

Inventor

*Frank B. Roberts.*

By

*C. A. Snow & Co.*  
Attorneys



# UNITED STATES PATENT OFFICE.

FRANK B. ROBERTS, OF SALEM, OREGON.

MACHINE FOR SAVING GOLD.

943,789.

Specification of Letters Patent. Patented Dec. 21, 1909.

Application filed January 14, 1909. Serial No. 472,317.

*To all whom it may concern:*

Be it known that I, FRANK B. ROBERTS, a citizen of the United States, residing at Salem, in the county of Marion and State of Oregon, have invented a new and useful Machine for Saving Gold, of which the following is a specification.

This invention relates to machines for saving gold and black sand such as obtained in placer mining and the object of the invention is to provide a series of revoluble riffles designed to collect the values contained within a current of water and to deposit them upon conveying means, the force of the current being such as to not only actuate the riffles but to also drive the conveying mechanism.

With these and other objects in view the invention consists of certain novel details of construction and combinations of parts hereinafter more fully described and pointed out in the claims.

In the accompanying drawings the preferred form of the invention has been shown.

In said drawings:—Figure 1 is a plan view of a portion of a sluice having the present improvement embodied therein: Fig. 2 is a longitudinal section through the parts shown in Fig. 1. Fig. 3 is a side elevation of the power-transmitting mechanism employed for driving the conveyer from the riffles. Fig. 4 is a vertical transverse section through the elevating portion of the conveyer, the separating mechanism being shown in elevation. Fig. 5 is a plan view of a modified form of separator. Fig. 6 is a central vertical section through another modified form of separator. Fig. 7 is a perspective view of one of the wheels used in connection with these forms of separators. Fig. 8 is a perspective view of another form of wheel, one end of said wheel being partly broken away.

Referring to the figures by characters of reference, 1 designates a sluice provided at a suitable point therein with a receiving trough 2 extending downwardly from the bottom thereof and in which a suitable elevator may be located if desired. As shown in the drawings this elevator consists of an endless chain 3 carrying a series of buckets 4, said chain being mounted on sprockets 5 and 6, one of which is arranged on a shaft 7, receiving motion through a chain 8 and from a sprocket 10 arranged on a drive-shaft 11. A suitable receptacle 12 may be

located adjacent the upper portion of the elevator so as to receive the material carried upwardly by said elevator. Although this elevator has been shown and described, it is to be understood that, if desired, it may be dispensed with.

Arranged within the sluice 1 at the upstream side of the trough 2 is a box 13 open at the top and having its up-stream end inclined as at 14, while a screen 15 extends across the opposite end of the box and is spaced from the bottom of said box so as to form an opening through which extends one end of an endless conveyer-apron 16 extending longitudinally within the bottom portion of the box. This apron is mounted upon rollers 17 as ordinarily, one of said rollers being located above the trough 2 as clearly shown in Fig. 2 so that the material being conveyed by the apron will be discharged into the trough. One of these rollers 17 has a sprocket 18 revoluble therewith and disposed outside the sluice 1, said sprocket receiving motion through a chain 19 from a series of sprockets 20 located upon the ends of parallel transversely extending shafts 21. These shafts extend through the sluice 1 and the box 13 and are disposed in a plane extending through the upper edges of the inclined end wall 14 and of the screen 15. Arranged within the box 13 and upon each shaft 21 is a series of riffle-blades 22 extending throughout the width of the interior of the box 13, said blades being curved transversely as shown in Fig. 2 and being so located that the concave faces thereof will be presented to the current flowing longitudinally within the sluice and over the inclined portion 14 of the box 13. It will be seen therefore that these blades 22 will be actuated by the current and cause shafts 21 to simultaneously rotate and motion will be transmitted from the said shafts through gears 20, chain 19 and sprocket 18 to the apron 16. One of the shafts 21 has a gear 23 thereon which meshes with another gear 24 geared on the shaft 11 heretofore referred to. When the shafts 21 are rotated in the manner described motion will be transmitted from them through the gears 23 and 24 to shaft 11 which will in turn drive the elevator hereinbefore referred to.

As heretofore stated the mechanism herein described is particularly designed for use in placer mining and is designed to be placed within the sluice ordinarily utilized for con-



veying the value-bearing current of water. The water acting upon the concave faces of blades 22 will cause the shafts 21 to rotate simultaneously, and these concave faces form pockets or riffles which collect the gold and black sand contained within the current and direct it downward on to the apron 16. As heretofore stated the inclined wall 14 and the screen 15 extend upwardly through a plane passing through the shafts 21. The screen 15 acts as a means for retarding the flow of water located between the wall 14 and said screen, and the values deposited by the blades 22 on to the apron 16 are thus dropped into a practically quiet body of water, so that there is little if any danger of said values being washed away by the circuit after they leave the blades 22. As the shafts 21 rotate under the action of the current of water motion is transmitted therefrom through gears 20 and chain 19 to gear 18 and roller 17, and the apron 16 is thus actuated and conveys the values thereon to the upper end of the trough 2 into which the said values are discharged. The water contained within this trough is practically still and as the values accumulate within the trough they are engaged and carried upwardly by the buckets of the elevator, which, as heretofore stated, is actuated by means of the gears 23 and 24 and the chains of the sprockets cooperating therewith.

From the foregoing description it will be understood that it becomes unnecessary to use any motive power other than that supplied by the current within the sluice, the blades 22 operating both as riffles and as water-wheels for driving the conveying mechanism supplied by the riffles.

As heretofore stated, the elevator may be dispensed with and the values permitted to remain within the trough 2 until the desired quantity has accumulated whereupon the water may be shut off and the contents of the trough removed in any manner desired.

It is to be understood that the box 13 and the parts contained therein can be readily located within a sluice of ordinary construction.

Instead of arranging the wheels as indicated in Figs. 1 and 2, they can be disposed in opposed pairs as indicated at 25 in Fig. 5. These wheels are mounted on vertical shafts and the water is designed to pass between the wheels as indicated by the arrows in Fig. 5, thus causing them to rotate. The shafts 26 of the wheels have gears 27 thereon meshing with gears 28 on shafts 29 which are utilized for transmitting power through gears 30 and 31 to a shaft 32 on which a sprocket or pulley or gear 33 is provided for driving a chain 34, or belt or shaft. In this construction of separators the values are accumulated by the concave faces of the

blades of the wheels and carried outwardly toward the lateral pockets 35 formed at the sides of the sluice and where the values are deposited out of the path of the currents passing through the sluice.

As indicated in Fig. 6 instead of utilizing wheels arranged upon vertical shafts and wheels such as indicated in Figs. 1 and 2, an over-shot wheel 36 and an under-shot wheel 37 may be utilized for accumulating the values and also for driving mechanism. The wheels used in connection with the separator or power wheel are preferably formed of bowed blades 37 extending from a shaft 38 and abutting at their ends against the heads 39 to which they may be secured. If desired, however, the blades may be arranged about a drum 40 as shown in Fig. 8.

It is to be understood that in all respects other than those herein described the structures disclosed in Figs. 5 and 6 will be similar to that shown in Figs. 1 and 2, it being designed to place the wheels within a sluice, river, creek, canal, flume, or other moving body of water or where pressure is obtained by the use of a penstock, and to have them actuate suitable mechanism, such for example, as an elevator, saw mill, flour mill, woolen mill, electric or gas plant, power plant, or any other kind of machinery capable of being operated by water power. It is also to be noted that in each instance the riffles or blades operate to collect the values and discharge them into quiet water when used for mining purposes, but when said wheels are placed within a flume or other moving body of water, as aforesaid, the power obtained therefrom is by the pressure or force of the water against the blades of the wheel, as shown by Fig. 6, but when used in a penstock or other place where pressure is obtained from above the wheels can be disposed in opposed pairs or in series, as indicated at 25 in Fig. 5.

Various changes can of course be made in the construction and arrangement of parts without departing from the spirit or sacrificing the advantages of the invention. For example, the shafts carrying the riffle blades can be provided with roller bearings or ball bearings.

What is claimed is:—

1. A separator comprising a sluice, transversely extending inclined means and transversely extending perpendicular means therein for maintaining a quiescent body of water below the moving body of water in the sluice, a series of revoluble riffles actuated by said movable body of water for collecting values and depositing them within the quiescent body of water, a receiver, and means actuated by the riffles for conveying the deposited values to the receiver.

2. A separator comprising a sluice, spaced transversely extending means upstanding



from the bottom thereof for maintaining a quiescent body of water within the sluice and below the movable body of water therein, one of said means constituting a screen, 5 a series of revoluble riffles projecting above the quiescent body and actuated by the movable body for collecting values and depositing them between said upstanding means, and value-conveying means actuated by the 10 riffles.

3. A separator comprising a structure having an inclined wall at one end, an upstanding screen at the other end of said structure, said end wall and screen being disposed to 15 maintain a substantially quiet body of water within the structure, means for directing a current of water over said wall and screen, a revoluble series of riffle-plates within said structure and projecting above the end wall 20 and screen.

4. A separator comprising a structure having an inclined wall at one end and an upstanding screen at its other end, means for directing a current of water over said structure, said end wall and screen maintaining 25 a substantially quiet body of water there-

between, a revoluble series of riffle-plates mounted within the structure and movable into position above the end wall and screen and into the current of water passing there- 30 over, each of said blades having a pocket.

5. A separator comprising a structure having an inclined wall at one end and an upstanding screen at its other end, means for directing a current of water across said 35 structure, said end wall and screen maintaining a practically quiet body of water therein, a revoluble series of riffle-plates mounted within the structure and movable successively into the water-current above 40 said structure and into the quiet body of water within the structure, conveying means within said structure, and means operated by the riffle-plates for actuating the conveying means. 45

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

FRANK B. ROBERTS.

Witnesses:

JOS. H. ALBERT,  
WATT SHIPP.