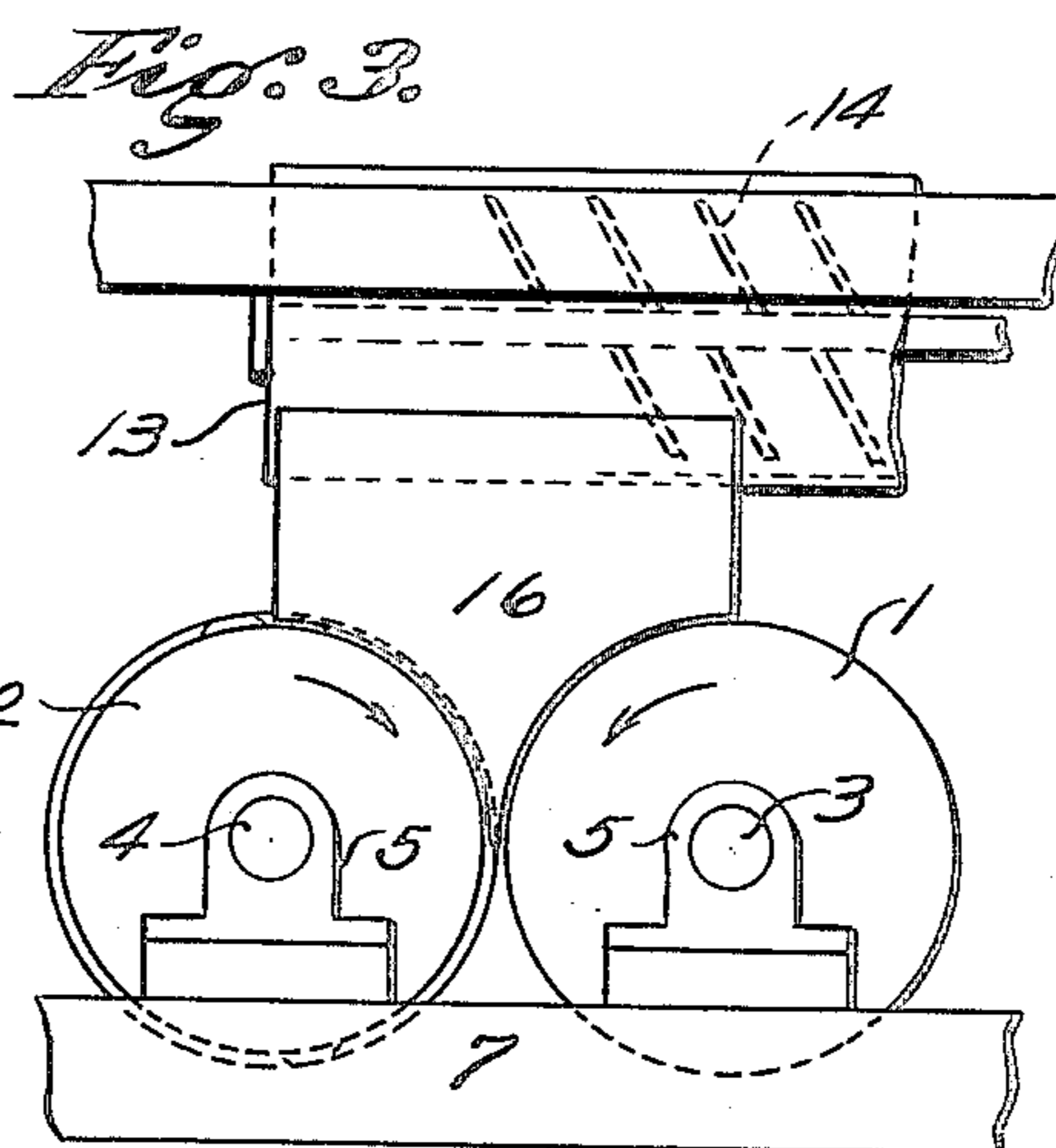
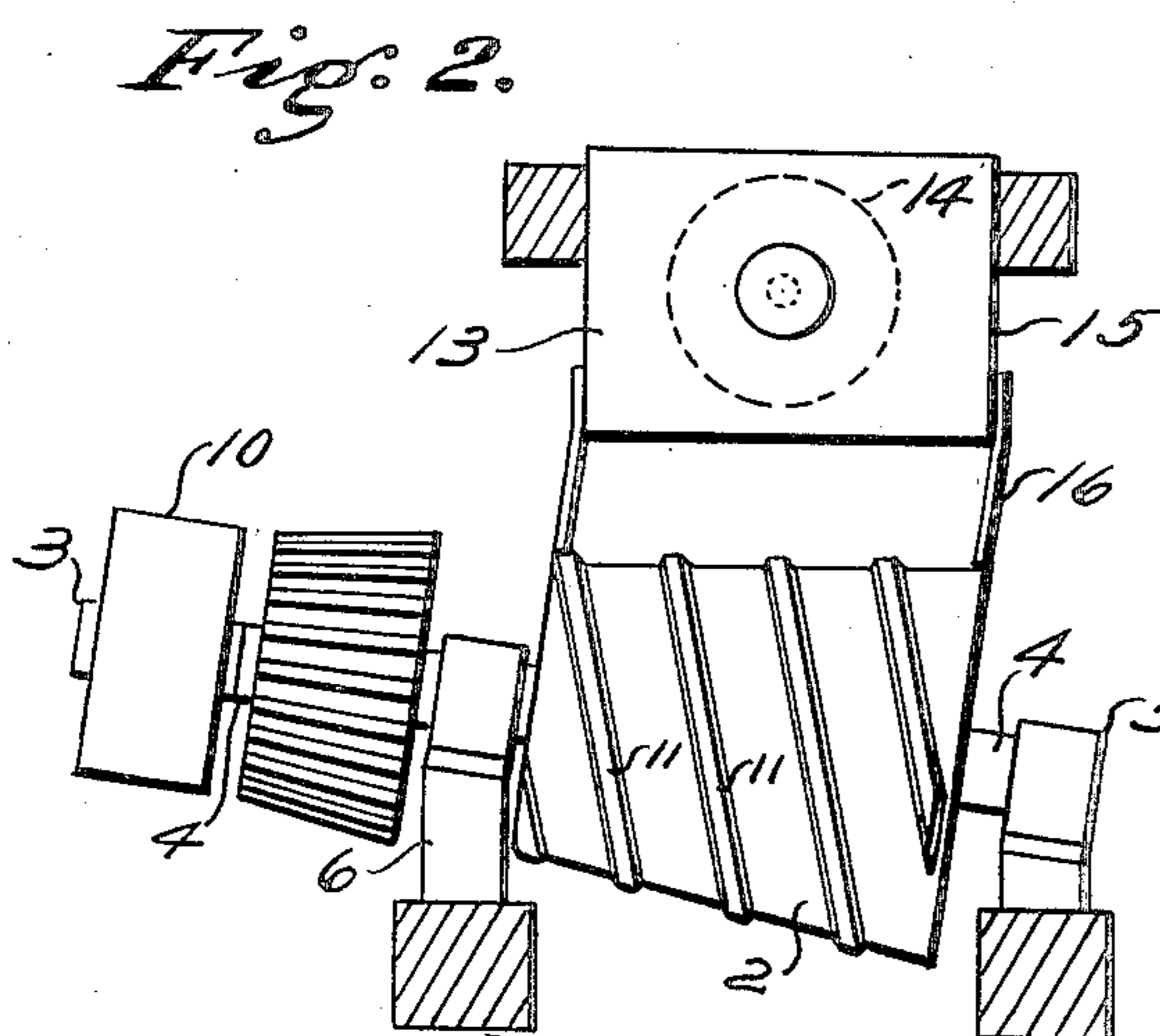
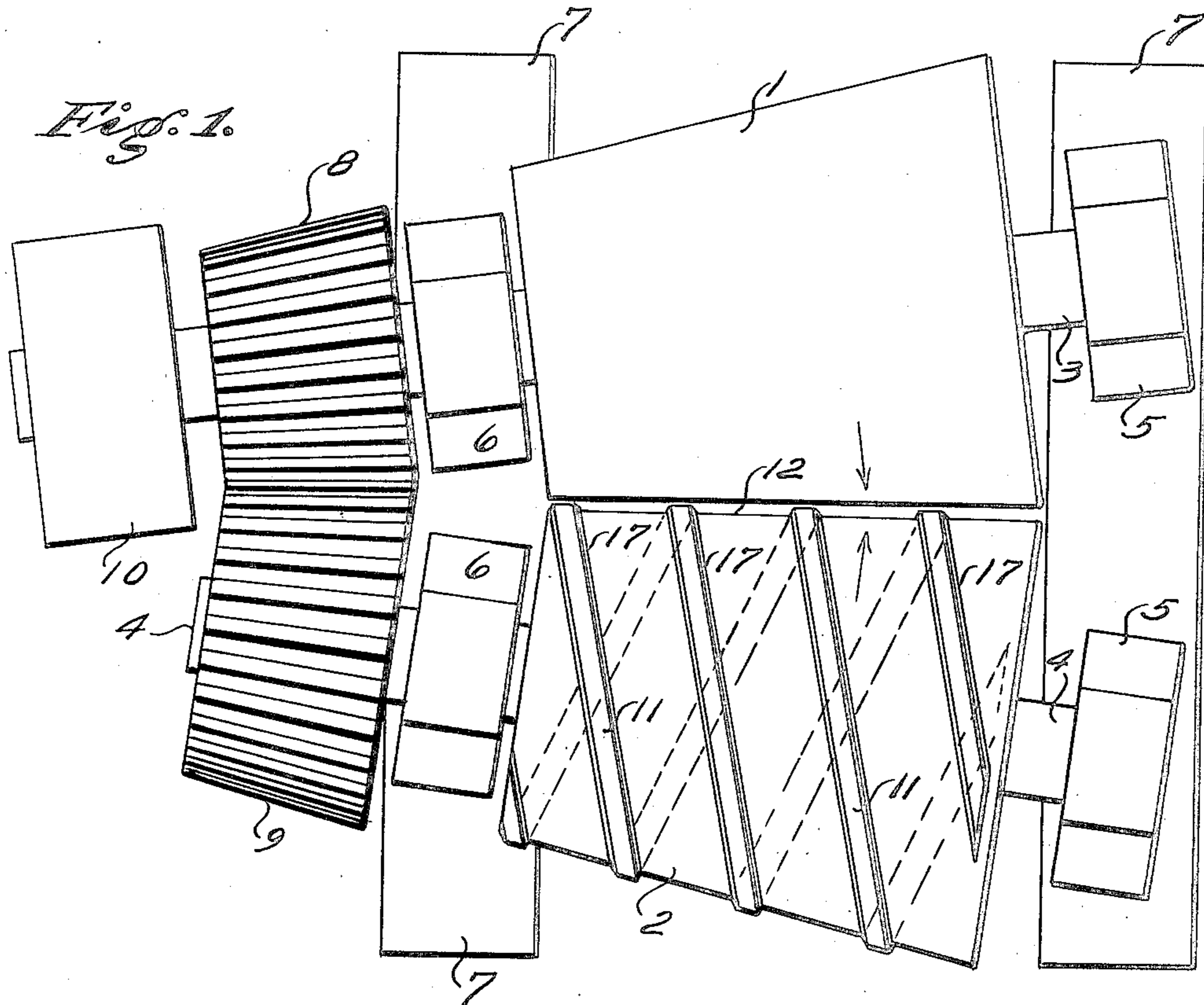


No. 813,273.

PATENTED FEB. 20, 1906.

J. H. BACH.
BRICK CLAY CRUSHER ROLLS.
APPLICATION FILED FEB. 6, 1903.



Witnesses:

Rudow Rummel
Geo. J. Morrison

Inventor,
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his Attorneys.

UNITED STATES PATENT OFFICE.

JULIUS H. BACH, OF CHICAGO, ILLINOIS.

BRICK-CLAY-CRUSHER ROLLS.

No. 813,273.

Specification of Letters Patent.

Patented Feb. 20, 1906.

Application filed February 6, 1903. Serial No. 142,181.

To all whom it may concern:

Be it known that I, JULIUS H. BACH, a citizen of the United States of America, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Brick-Clay-Crusher Rolls, of which the following is a specification.

The main object of my invention is to provide an improved construction for clay-crusher rolls whereby stones will be readily removed from the clay and whereby the excessive wear of the rolls due to the presence of such stones will be avoided, and particularly whereby the wearing of undesirable ruts or grooves in the rolls will be in a large measure prevented or retarded. I accomplish this object by the construction shown in the accompanying drawings, in which—

Figure 1 is a top plan of a pair of crusher-rolls constructed according to my invention. Fig. 2 is a side elevation of the same, showing parts of the feed-hopper and a granulator above the rolls. Fig. 3 is an end elevation of the same.

The main features wherein the device shown differs from the device described in my Patent No. 728,831, of May 26, 1903, are, first, that one of the rolls herein shown is provided with spiral ridges instead of a spiral groove, and, second, that the space between adjacent convolutions or spires of said spiral ridges is considerably greater than the height of such ridges. The effect of this construction is a much more rapid discharge of stones, since such stones receive a blow from the edge of the ridge and are often thrown along the rolls sufficiently far to come in contact with and be carried along by one of the succeeding convolutions of the ridge. This action is facilitated by the inclined sides of the ridges, which tend to project the stones upward sufficiently to clear the crest of the succeeding ridge.

The wide space between the adjacent convolutions also prevents the friction of a stone on two of such adjacent convolutions at the same time. The convolution having the forwarding effect upon the stone is the only one in contact therewith, and such contact may be only momentary, since a stone dropping against such forwarding edge is frequently impelled toward or over the adjacent convolution ahead of the mere spiral driving power of the ridge.

In the device shown in the drawings a pair of rolls 1 and 2 are mounted on shafts 3 and 4, respectively, journaled in the bearings 5 and 6 on the frame 7. The shafts 3 and 4 are connected together by the bevel-gears 8 and 9, and power is applied by a belt (not shown) to the pulley 10. The gear-wheel 8 is considerably smaller than the gear-wheel 9, so that the roller 1 will rotate with a greater peripheral speed than that of the roller 2. The peripheries of the rolls 1 and 2 are near together, but not in contact with each other.

The roller 2 is provided with a plurality of spiral ridges 11, extending around and along its periphery in suitable direction to cause stones to be conveyed along the rolls toward the large end of same when the rolls are rotated in the direction indicated by arrows in the drawings. The ridges 11 are preferably made of less width than the space 12 between adjacent convolutions of same. The spaces 12 are preferably of a width equal to six or eight times the height of the ridges 11. The advancing edges 17 of the ridges are preferably beveled, as shown.

The feed-hopper is indicated at 13, and a portion of the granulator is shown at 14. The wall 15 of the feed-hopper at the largest end of the rolls is provided with a flap 16, of flexible material, which extends down close to the peripheries of the rolls and serves to check the violence of the speed of stones discharged by the ridges 11.

The operation of the device shown is as follows: The clay and stones contained therein after having been reduced by the granulator 14 are dropped into the feed-hopper 13 and delivered between the rolls. The clay is crushed by the rolls and passes between same, while the stones are retained in the trough of the rolls and through the action of the ridges 11 and the conical form of the rolls are caused to roll along said trough toward the large end of the rolls and finally pass out under the flap 16. The rotation of the rolls causes stones which are located between same to be struck by the advancing edges 17 of the ridges 11, causing said stones to be projected away from said edges and along the trough between the rolls. The stones therefore receive a succession of intermittent blows from the edges 17 and are rapidly moved along said trough. Since the edges 17 are beveled, the stones are projected somewhat upwardly and often sufficiently far in the direction of the length of the rolls

to be engaged by the advancing edge 17 of one of the succeeding convolutions of the ridges 11.

The advantages of having the spaces between the ridges of a width considerably greater than the height of the ridges are, first, that the obstructing forward wall of the groove is, so to speak, taken out of the way and space is obtained for the full effect of the edge 17 in the free projection of the stones, and, secondly, that in consequence of this the stones not being confined in a groove are not held in continuous wearing contact with the roll-surfaces and carried along at no greater speed than that determined by the pitch of the groove, which, as shown in practice, results in the cutting of a spiral groove in the smooth roll and in the shortening by wear of the useful life of both rolls. By my invention this life is greatly prolonged.

It will be seen that some of the details of the structure shown may be altered without departing from the spirit of my invention. I therefore do not confine myself to such details, except as hereinafter limited in the claims.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. An apparatus for crushing clay and removing the stones therefrom, comprising a supporting-frame; a pair of coacting crusher-rolls, one of same having a ridge extending spirally around and along its periphery, the width of the space between adjacent spires of said ridge being considerably greater than the height of the ridge, whereby said ridge is adapted to eject stones by discontinuous impluses, and the other roll having opposed to and coacting with the spirally-ridged part of the first roll, a periphery unbroken by ridges or depressions; and means for simultaneously revolving said rolls; one of said rolls being geared to revolve at differ-

ent peripheral speeds than the other, substantially as described.

2. An apparatus for crushing clay and removing the stones therefrom, comprising a supporting-frame; a pair of coacting crusher-rolls, one of same having a ridge extending spirally around and along its periphery, the width of the space between adjacent spires of said ridge being considerably greater than the height of the ridge, whereby said ridge is adapted to eject stones by discontinuous impulses, and the other roll having opposed to and coacting with the spirally-ridged part of the first roll, a periphery unbroken by ridges or depressions; and means for simultaneously revolving said rolls; one of said rolls being conical and geared to revolve at different peripheral speeds than the other, substantially as described.

3. An apparatus for crushing clay and removing the stones therefrom, comprising a supporting-frame; a pair of conical coacting crusher-rolls, one of same having a ridge extending spirally around and along its periphery, the width of the space between adjacent spires of said ridge being considerably greater than the height of the ridge, whereby said ridge is adapted to eject stones by discontinuous impulses, and the other roll having opposed to and coacting with the spirally-ridged part of the first roll, a periphery unbroken by ridges or depressions; and means for simultaneously revolving said rolls, one of said rolls being geared to revolve at different peripheral speeds than the other, substantially as described.

Signed at Chicago this 2d day of February, 1903.

JULIUS H. BACH.

Witnesses:

WM. R. RUMMLER,
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