

G. E. RICHMOND.  
FEED MIXER.

APPLICATION FILED SEPT. 10, 1909.

Patented May 30, 1911.

994,032.

4 SHEETS—SHEET 1.

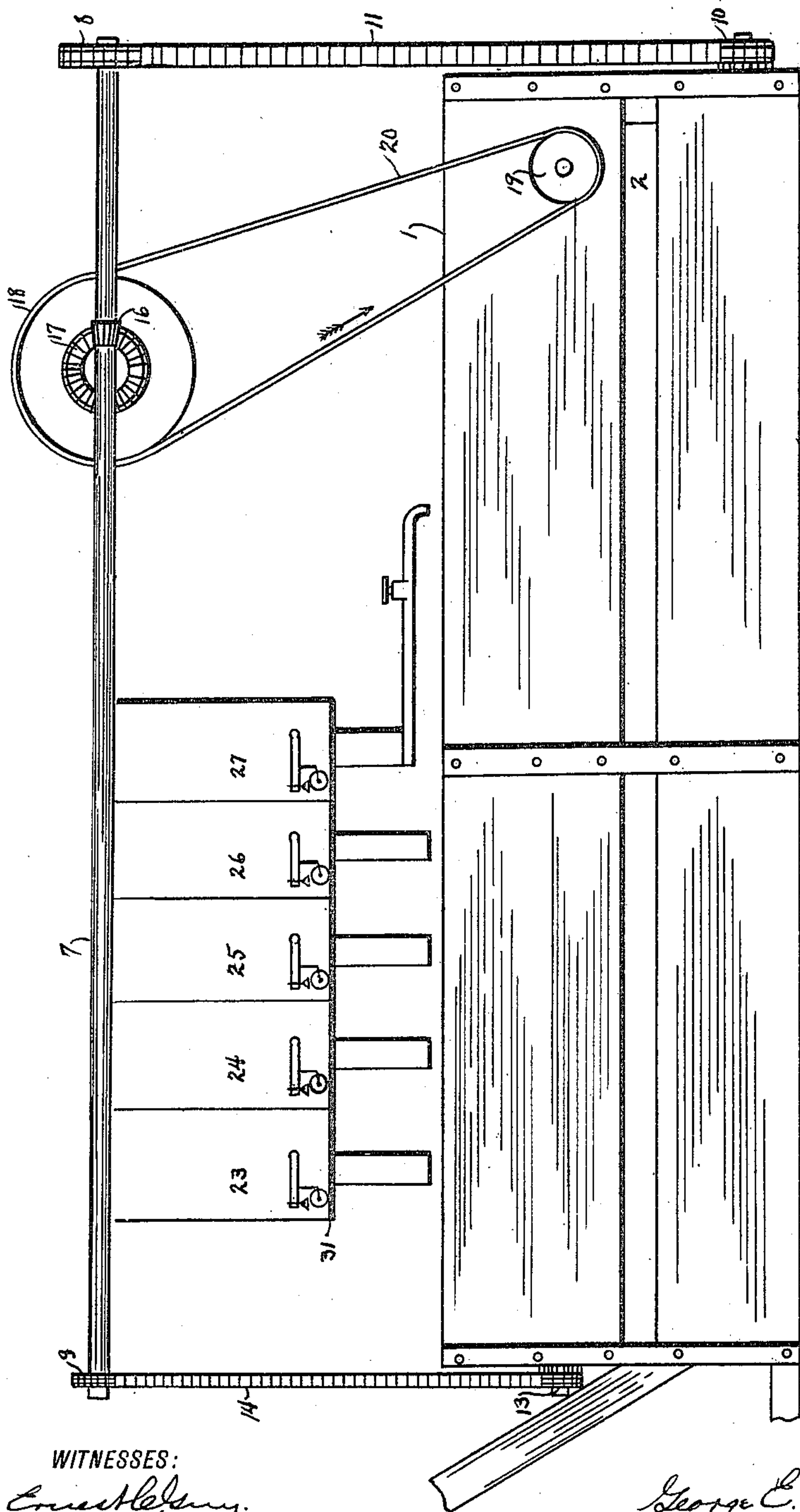


Fig. 1.

WITNESSES:

*Conestoga*  
*A. B. Leach*

INVENTOR

*George E. Richmond*

BY

*Hardway & Co. Ashby*  
ATTORNEY

G. E. RICHMOND.

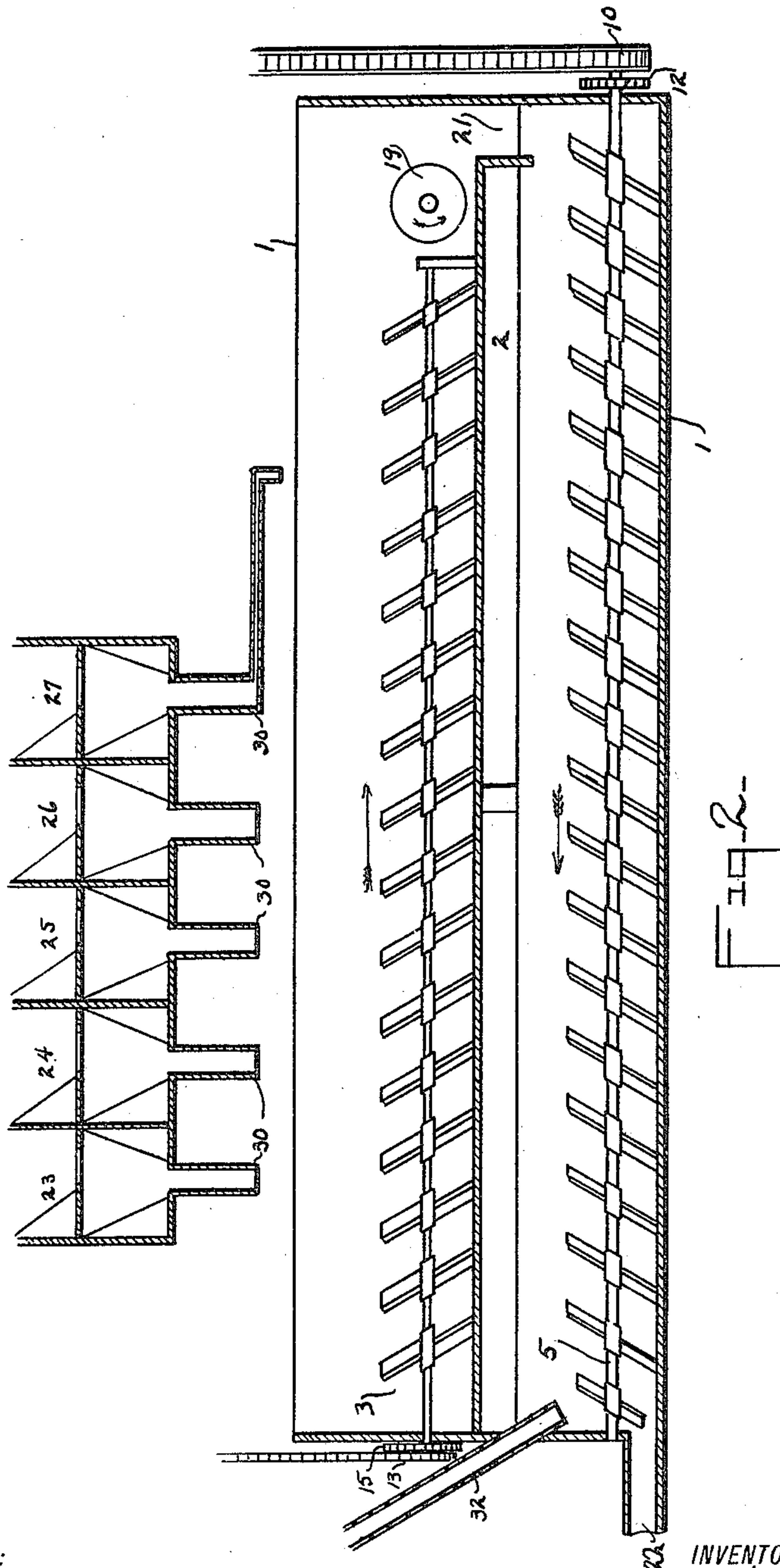
FEED MIXER.

APPLICATION FILED SEPT. 10, 1909.

Patented May 30, 1911.

4 SHEETS—SHEET 2.

994,032.



WITNESSES:

*Emmett H. King*  
*A. B. Beach*

INVENTOR

*George E. Richmond.*

BY

*Hardway & Cuthbert*  
ATTORNEY

994,032.

G. E. RICHMOND.  
FEED MIXER.  
APPLICATION FILED SEPT. 10, 1909.

Patented May 30, 1911.

4 SHEETS—SHEET 3.

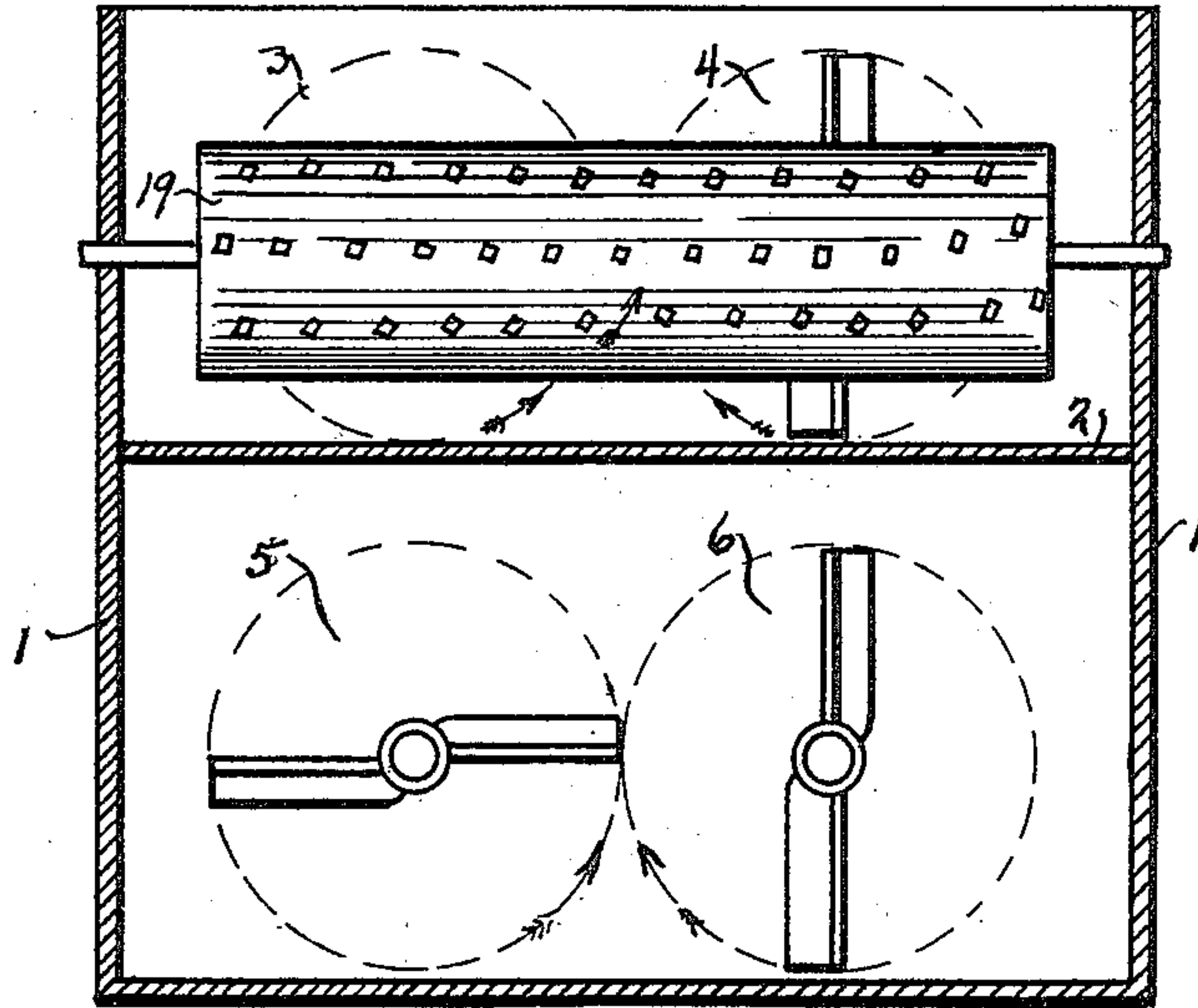


Fig. 3.

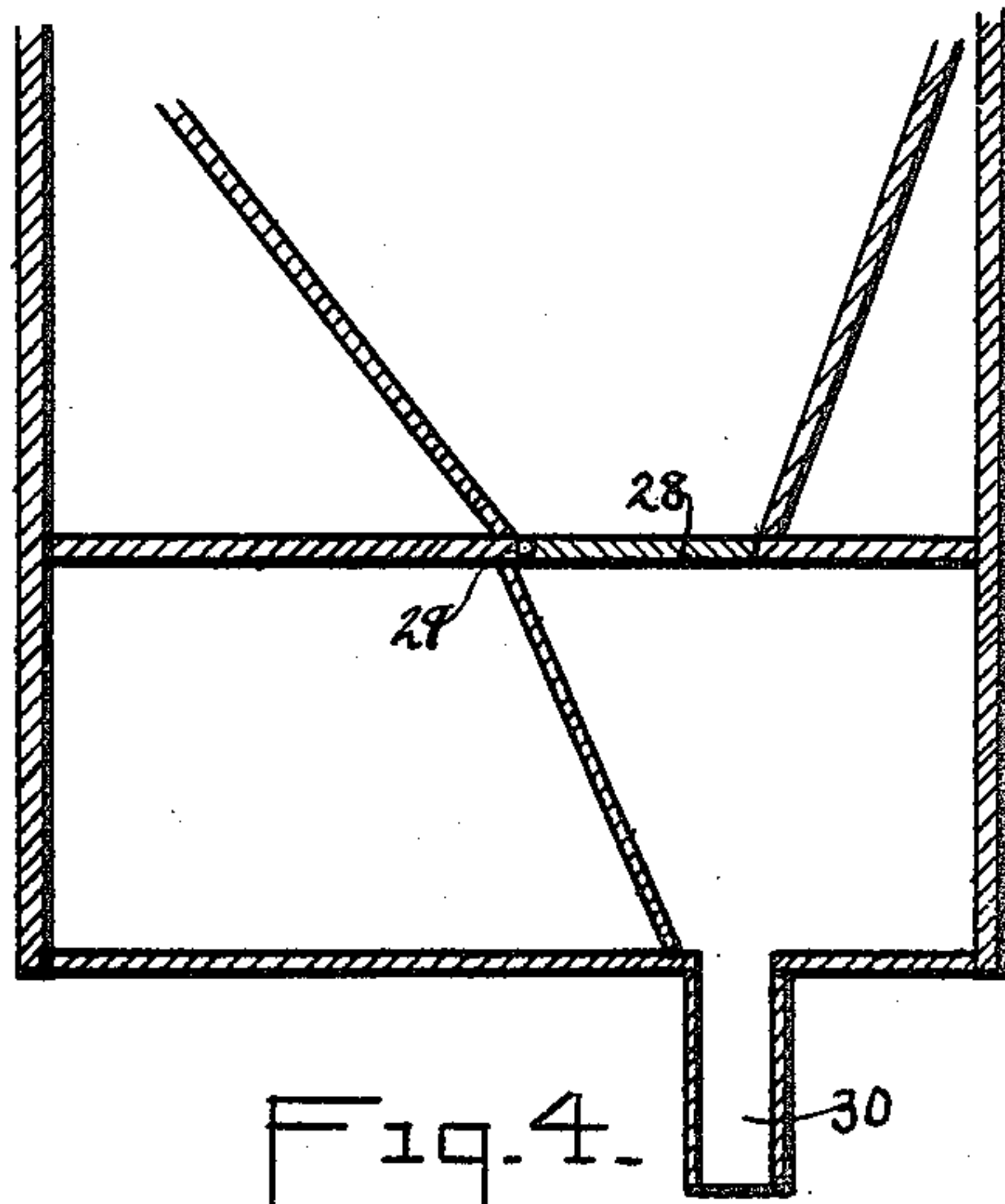


Fig. 4.

WITNESSES:

*Ernest H. Long*  
*A. B. Brown*

INVENTOR

*George E. Richmond*

BY

*Hardway S. Ostry*  
ATTORNEY

G. E. RICHMOND.

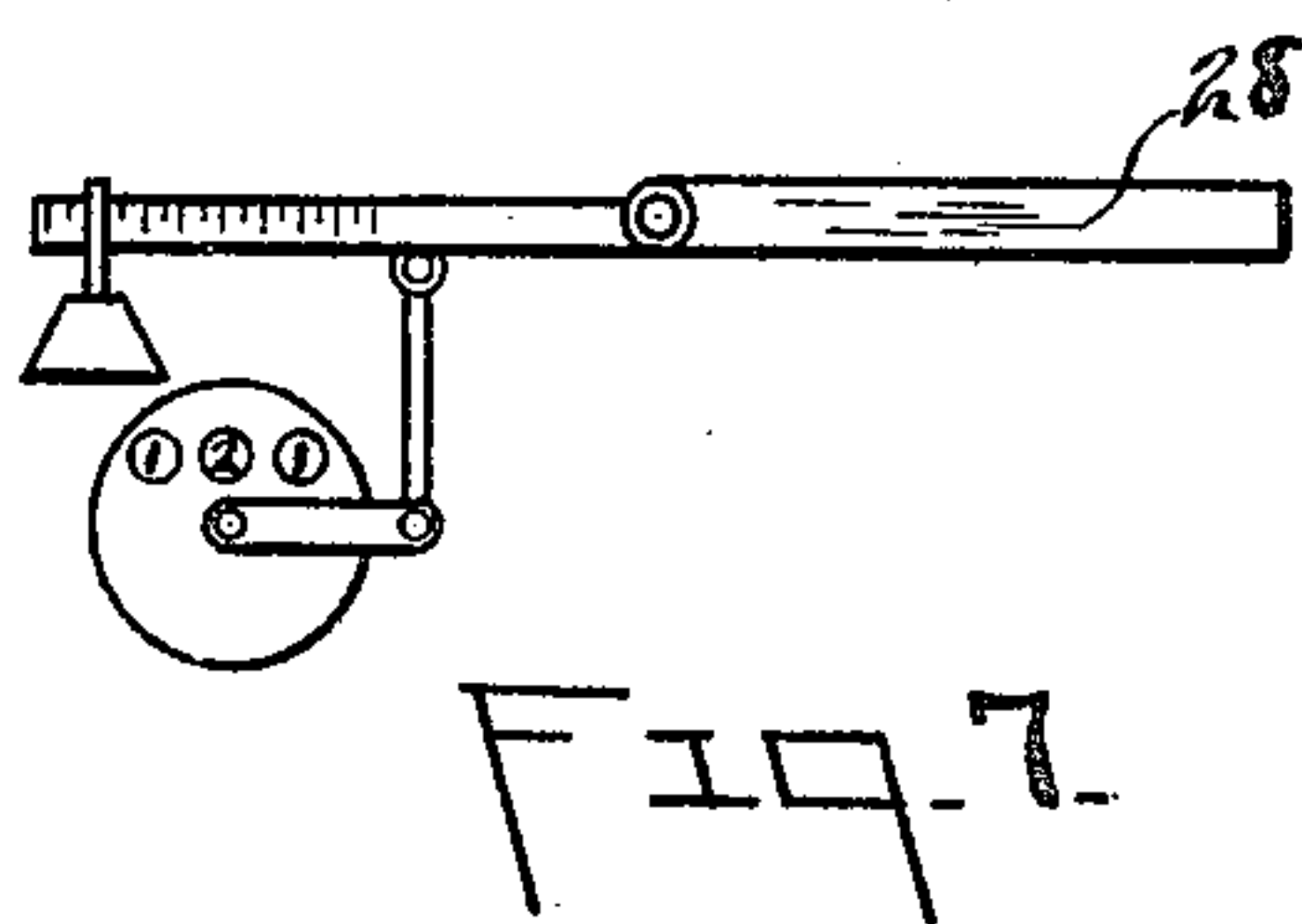
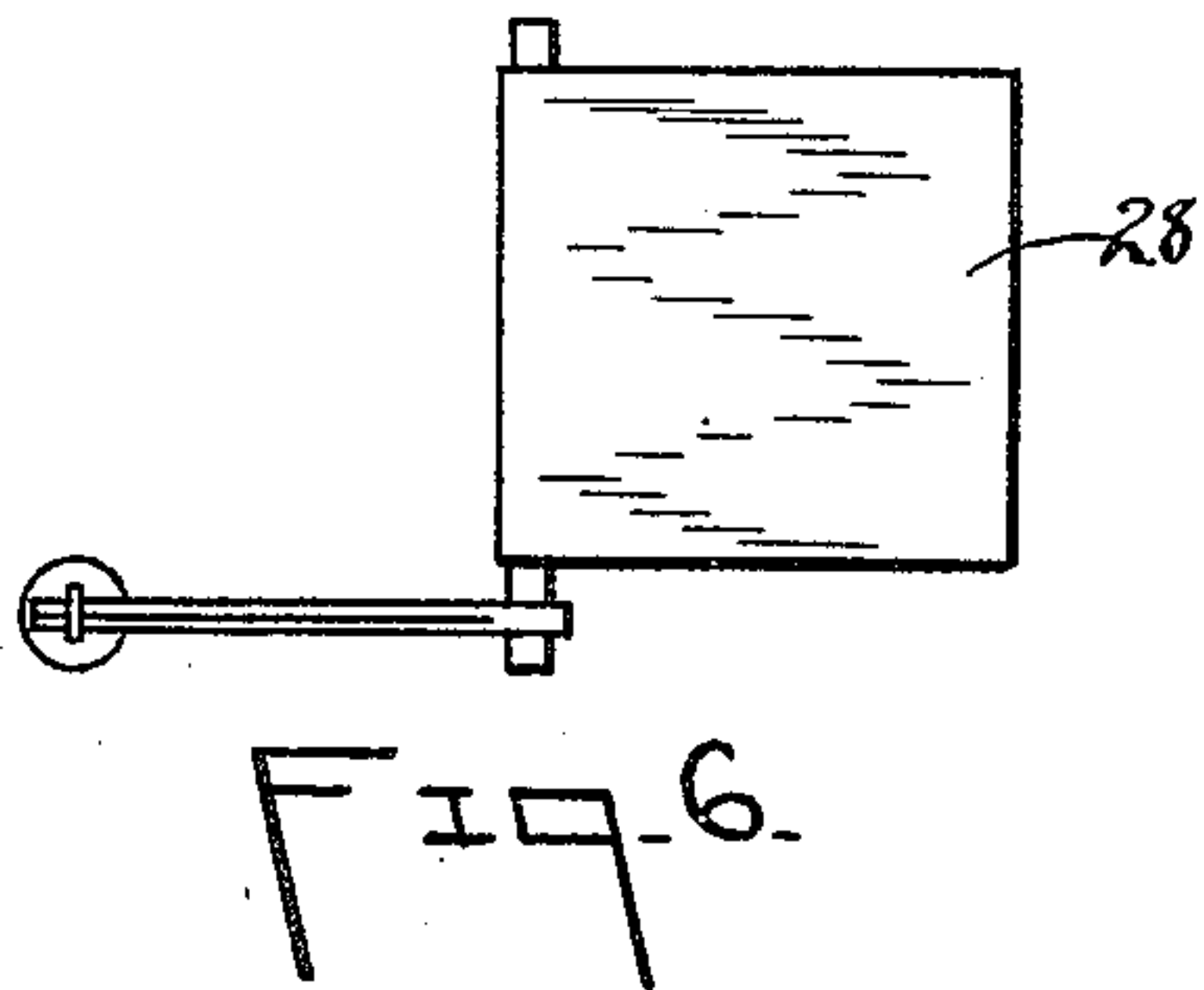
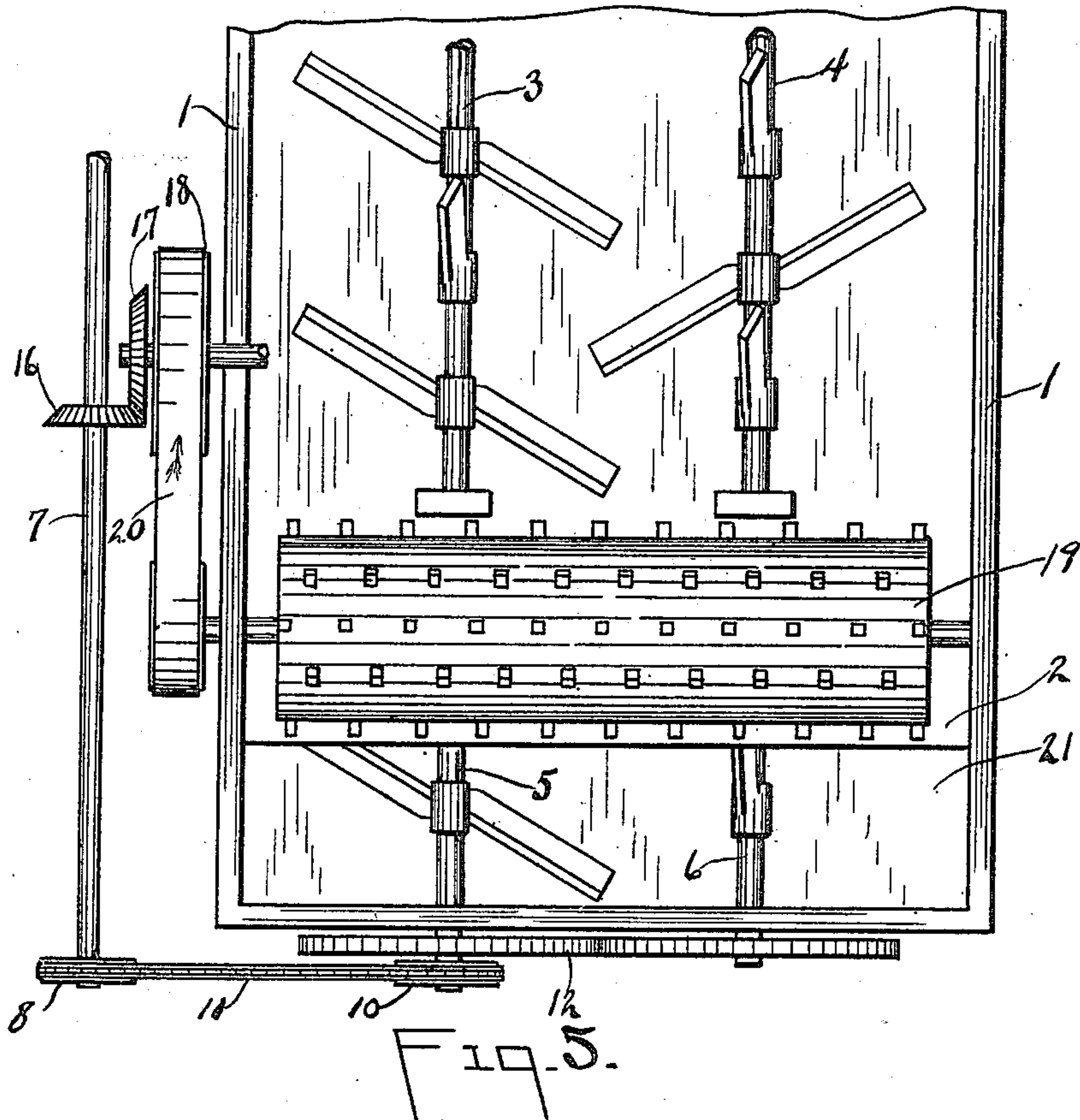
FEED MIXER.

APPLICATION FILED SEPT. 10, 1909.

Patented May 30, 1911.

4 SHEETS—SHEET 4.

994,032.



WITNESSES:  
*Ernest B. ...*  
*Nathaniel Dent.*

INVENTOR.  
*George E. Richmond.*  
BY  
*Hardway & Cushing*  
ATTORNEYS.



# UNITED STATES PATENT OFFICE.

GEORGE E. RICHMOND, OF HOUSTON, TEXAS.

## FEED-MIXER.

994,032.

Specification of Letters Patent.

Patented May 30, 1911.

Application filed September 10, 1909. Serial No. 517,105.

*To all whom it may concern:*

Be it known that I, GEORGE E. RICHMOND, citizen of the United States, residing at Houston, in the county of Harris and State of Texas, have invented certain new and useful Improvements in Feed-Mixers, of which the following is a specification.

My invention relates to new and useful improvements in feed mixers.

The object of the invention is to provide a device of the character described which will thoroughly mix various kinds of grain, or other feed stuffs, together and put the same into condition for market.

Another object of the invention resides in the provision of means whereby the different ingredients, of the general mixture, may be fed into the mixing chamber, automatically, and in any desired proportion.

With the above and other objects in view, my invention has particular relation to certain novel features of construction and operation, an example of which is given in this specification and illustrated in the accompanying drawings, wherein:—

Figure 1. is a side elevation of the mixer, complete. Fig. 2. is a sectional side view thereof. Fig. 3. is an end elevation of the device. Fig. 4. is a detailed side sectional view of the feed mechanism. Fig. 5 is a plan view of the operative mechanism of the mixer showing the auxiliary mixing cylinder. Fig. 6 is a plan view of the weighing platform and the scales connected thereto, and Fig. 7 is a side elevation thereof.

Referring now more particularly to the drawings, wherein like numerals of reference designate similar parts in each of the figures, the numeral 1 refers to the casing of the mixing chamber which is separated into upper and lower compartments by means of a transverse partition 2. These compartments are each designed to contain two mixing propellers, 3, 4, 5, and 6 respectively, extending longitudinally of the mixing chamber, 3 and 4 opposing each other in the same horizontal plane which is also true of 5 and 6.

The numeral 7 refers to the main drive shaft which is provided with sprocket wheels 8 and 9. The sprocket wheel 8 communicates motion to another sprocket wheel 10 rigidly mounted upon the shaft of propeller 5 and thus to said propeller, through sprocket chain 11. The shaft of this propeller also carries a spur gear 12, rigidly

mounted thereon, which meshes with a similar spur gear carried by the shaft of mixing propeller 6 and thus rotates said propeller.

The sprocket wheel 9 is operatively connected to the sprocket wheel 13, carried by the shaft of propeller 3, by means of a sprocket chain 14. The shaft of this propeller also carries a spur gear 15 rigidly mounted thereon which meshes with a similar gear wheel, rigidly mounted on the shaft of propeller 4.

The drive shaft 7 carries a bevel gear 16 which meshes with a bevel gear 17, carried by drive wheel 18, and communicates motion to said wheel. This drive wheel communicates rotation to an auxiliary mixing cylinder 19 through belt 20. This auxiliary mixing cylinder is mounted transversely, in the upper compartment of the mixing chamber, immediately beyond the discharge ends of propellers 3 and 4 and is designed to receive the partially mixed feed, to further mix the same and then deliver to the under propellers 5 and 6, through the passage way 21. This cylinder is provided with teeth which project therefrom and thus make it more effective as a mixing cylinder and thoroughly agitate the feed being mixed. These mixing propellers comprise suitable supporting shafts which carry laterally extending arms, as shown in Fig. 2. They rotate toward each other from beneath, as indicated by the arrows in Fig. 3, and the arms of the propellers 3 and 4 have their operative faces inclined rearwardly, or from the discharge end of the mixer, so as to force the contents of the upper compartment of the mixer toward auxiliary cylinder 19. It is further to be observed that these arms extend from their respective supporting shafts at other than right angles, each arm being alined with, and practically a continuation of, its opposing arm.

The arms of propellers 5 and 6 are arranged exactly the reverse of those of propellers 3 and 4 so as to force the contents of the under compartment of the mixing chamber toward the discharge outlet 22.

Arranged above the mixing chamber is a plurality of containers 23, 24, 25, 26, and 27 for holding the ingredients to be mixed, in readiness for discharge into said chamber. A detail of one of said containers is shown in Fig. 4. This container comprises three compartments, as shown, the upper of which is always filled with one of the ingredients



to be mixed, which constantly streams down through a suitable aperture into the middle hopper shaped compartment. The bottom 28 of this compartment is hingedly mounted at the point 29 and serves as the weighing platform of a pair of scales which is provided for each container as shown in Figs. 1, 6 and 7. The weighing platform 28 is hinged so as to open downward and discharge into the lower compartment from which discharge spout 30, leads into the mixing chamber. These scales may be set at any desired amount and the platform 28 will discharge only when this amount has fallen onto said platform.

Each of the scales may be connected with an automatic counting device 31, which may be of the ordinary form, and each discharge of each container thus registered, and a record of the quantity of mixed material thus kept.

Containers 23, 24, 25 and 26 are designed to contain dry material, of the nature of grains, while container 27 is intended as a receptacle for a liquid ingredient such as syrup, which is usually one of the ingredients of this quality of feed stuff, and the discharge spout 30 of this last mentioned container is prolonged so that its discharge will be near the rapidly rotating auxiliary mixing cylinder 19, and the mixture thus made more perfect.

It is obvious that the above described construction will feed the ingredients to be mixed, into the upper compartment of the mixing chamber where it is forced along toward mixing cylinder 19 by means of the mixing propellers 3 and 4 and at the same time thoroughly mixed. The mixture then passes through passage way 21 into the lower compartment of the mixing chamber and its movement reversed, passing toward the discharge 22 and being further mixed by the propellers 5 and 6. I have also provided an inlet 32 which is provided for the introduction of chopped hay etc. This inlet is provided for the introduction of the hay near the discharge 22 and onto the discharge ends of propellers 5 and 6 where it may be mixed with the other food ingredients before being finally discharged from the mixer.

What I claim is:

1. In a device of the character described, a casing provided with a plurality of compartments; a pair of oppositely rotatable mixers disposed longitudinally within each compartment, those of each compartment being arranged to force the mixture in a direction the opposite of that of the adjacent compartment; a rotatable drum mounted

transversely within the casing and disposed so as to receive the mixture from one set of mixers, further agitate the same and transfer it to the set therebelow.

2. In a device of the character described a casing provided with a plurality of compartments; a pair of oppositely rotatable mixers disposed longitudinally within each compartment; radiating arms carried by said mixers whose operative faces are disposed so as to force the mixture in one compartment in a direction the opposite of the movement of the mixture in the adjacent compartment; a rotatable drum mounted transversely within the casing and disposed so as to receive the mixture from one set of mixers and transfer it to the set therebelow.

3. In a device of the character described a casing provided with a plurality of compartments, those of each compartment being arranged to force the mixture in a direction the opposite of that of the adjacent compartment; a rotatable drum mounted transversely within the casing and disposed so as to receive the mixture from one set of the mixers and transfer it to the set therebelow; an operative mechanism for imparting motion to the mixers and drum; containers mounted above the casing and disposed to discharge therein and onto the mixers, and means carried by the containers for automatically recording the amount of the discharge therefrom.

4. In a device of the character described a casing composed of an upper and a lower compartment; a pair of oppositely rotatable mixers mounted within each compartment; radiating arms carried by said mixers whose operative faces are disposed so as to force the feed to be mixed longitudinally along said compartments, the mixture of one compartment being forced in a direction the opposite of that of the other compartment; a plurality of containers mounted above said casing and discharging their contents into said casing and onto said mixers; a rotatable drum transversely mounted in said casing intermediate said mixers and so disposed as to receive the mixture from one set of mixers, further agitate the same and deliver it to the other set of mixers; and an operative mechanism connected with said mixers and drum for imparting rotation to the same.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE E. RICHMOND.

Witnesses:

E. C. GERRY,  
MABEL EMERY.