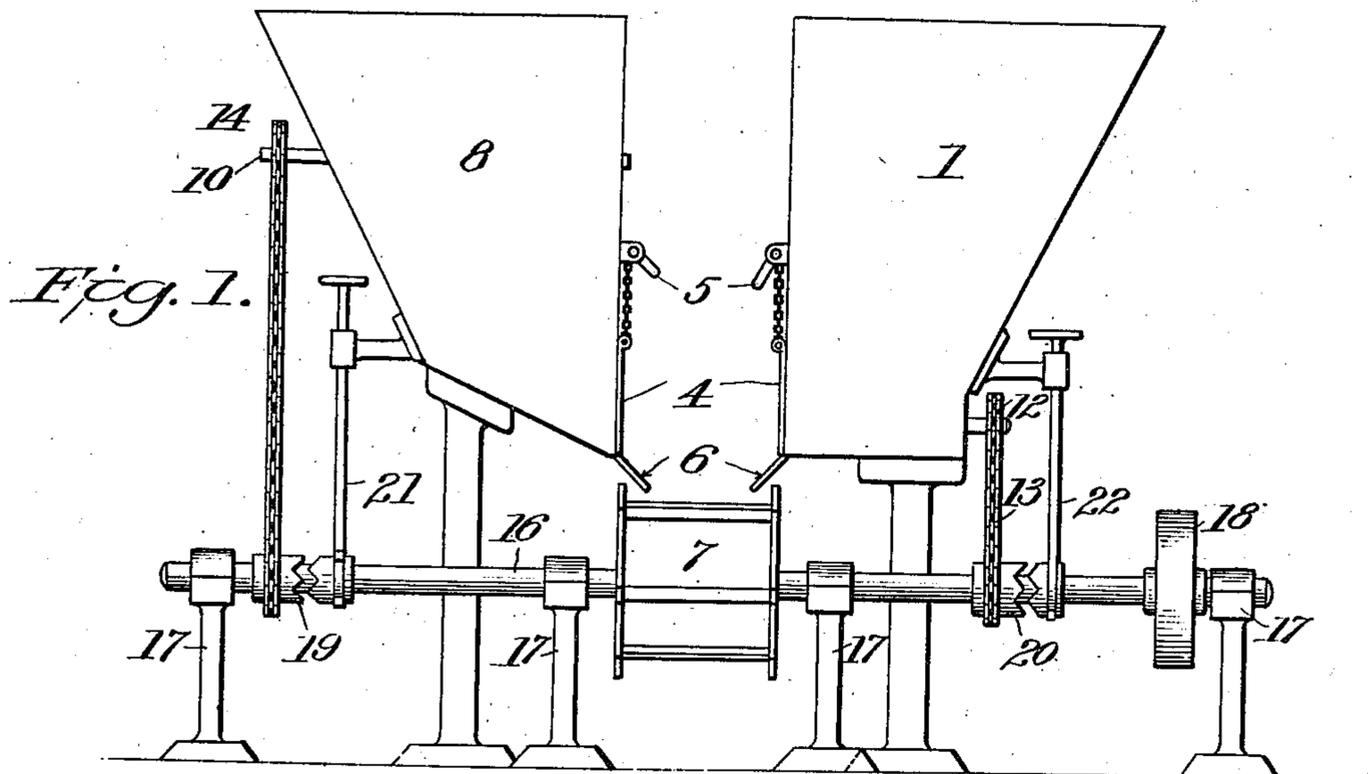


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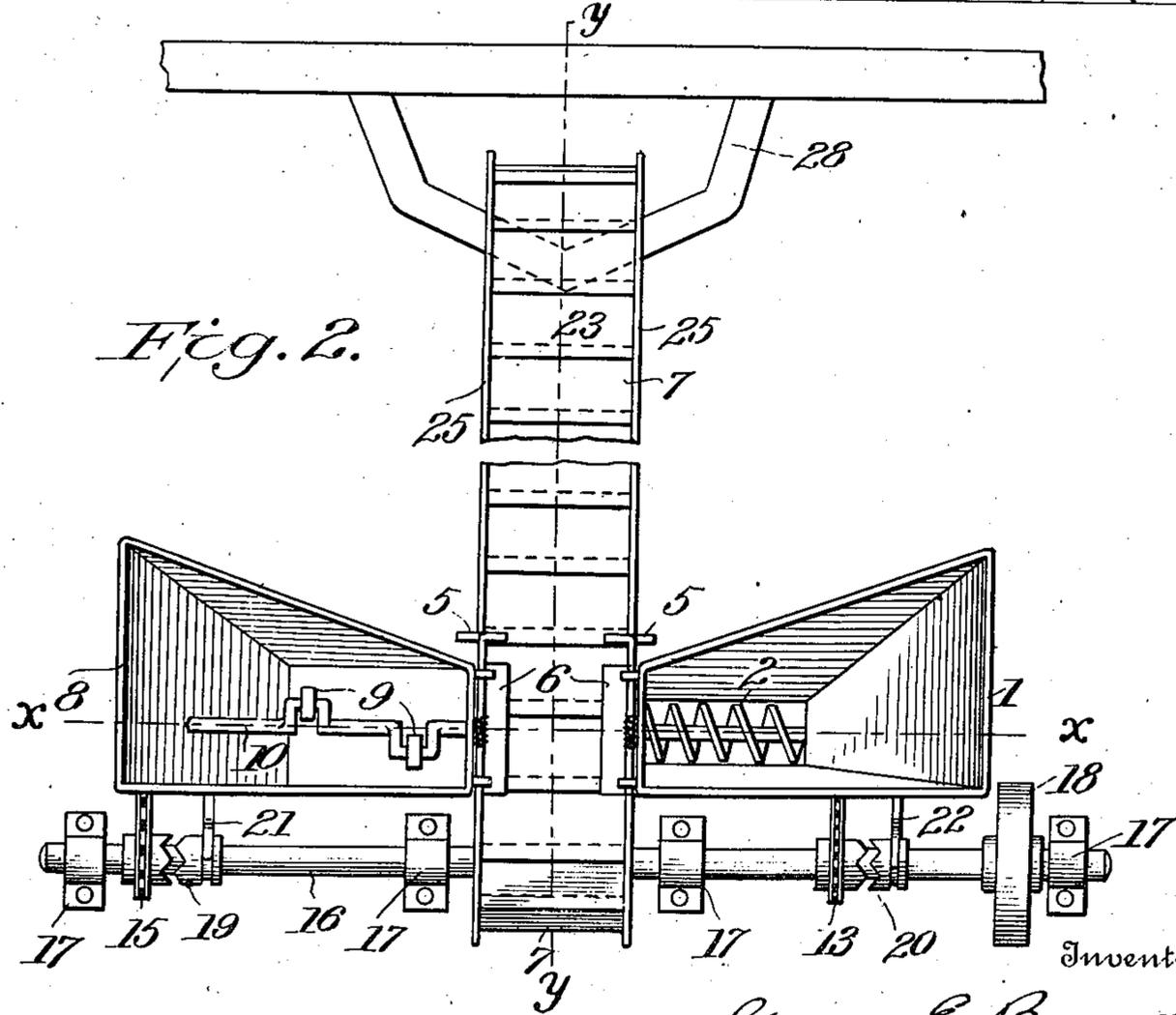
975,315.

Patented Nov. 8, 1910.

3 SHEETS—SHEET 1.



*Fig. 2.*



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3 SHEETS—SHEET 2.

Fig. 3.

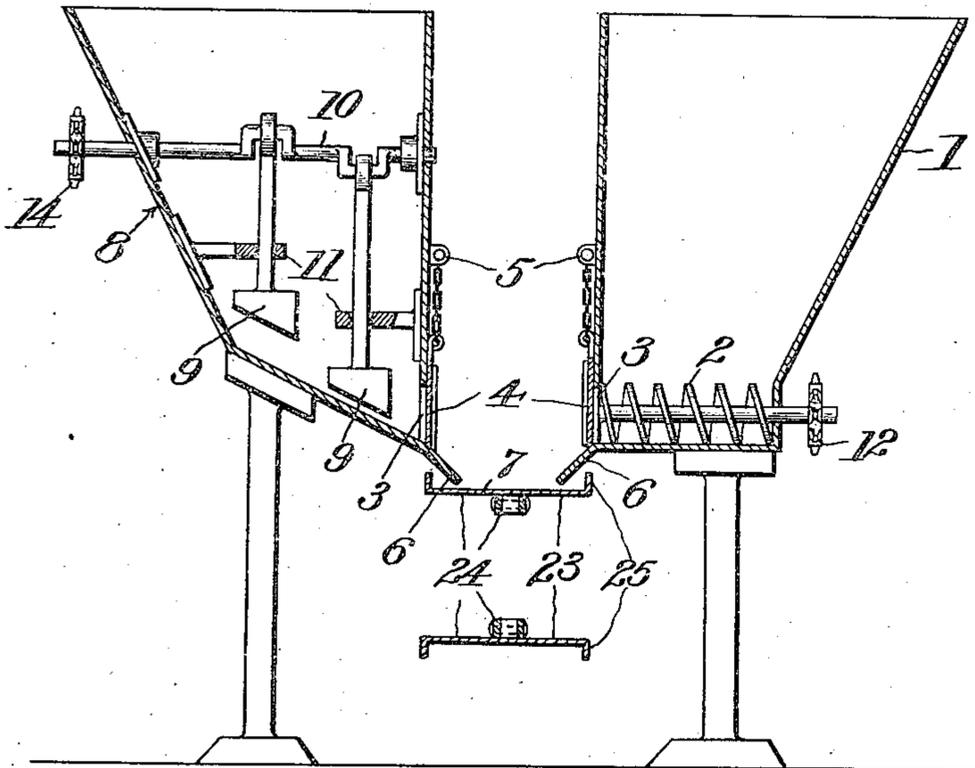
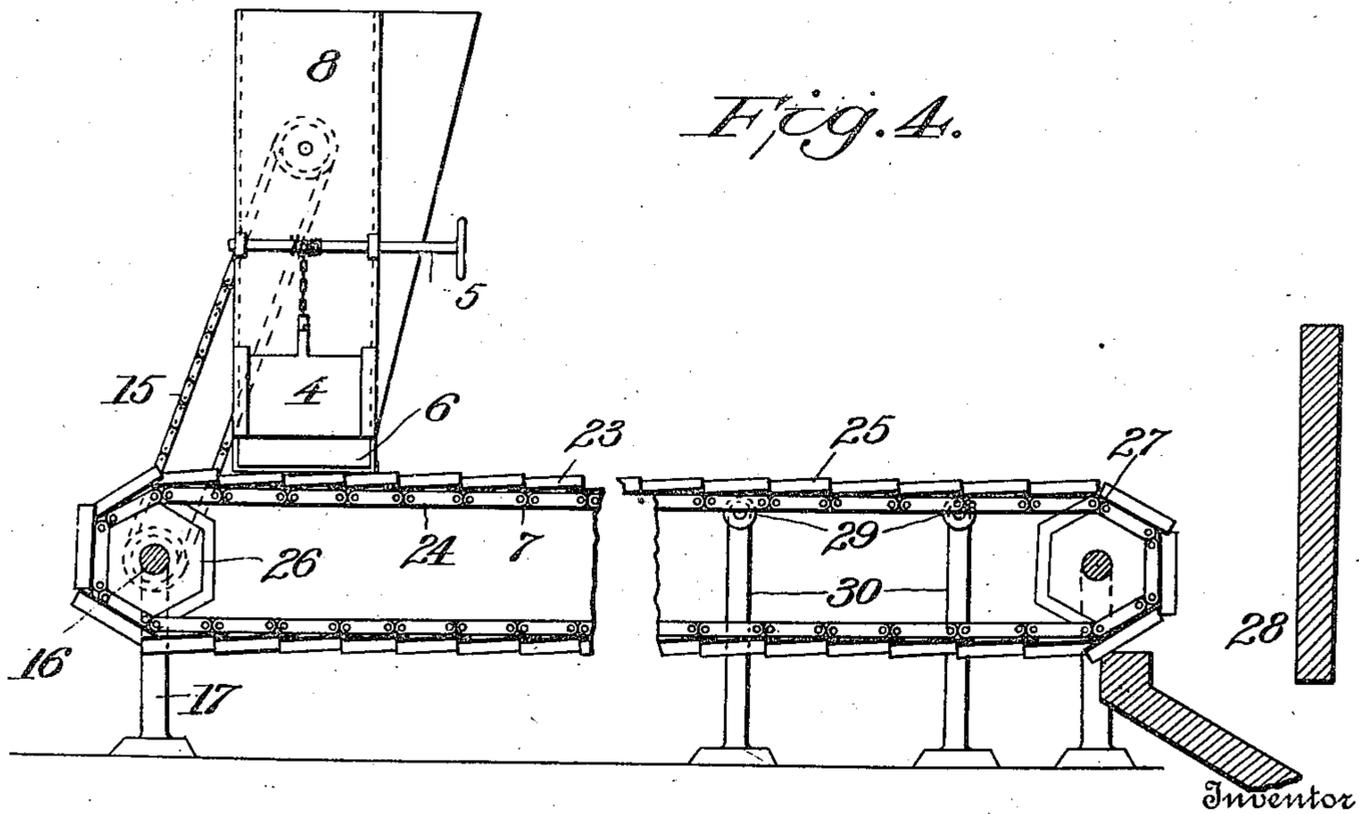


Fig. 4.



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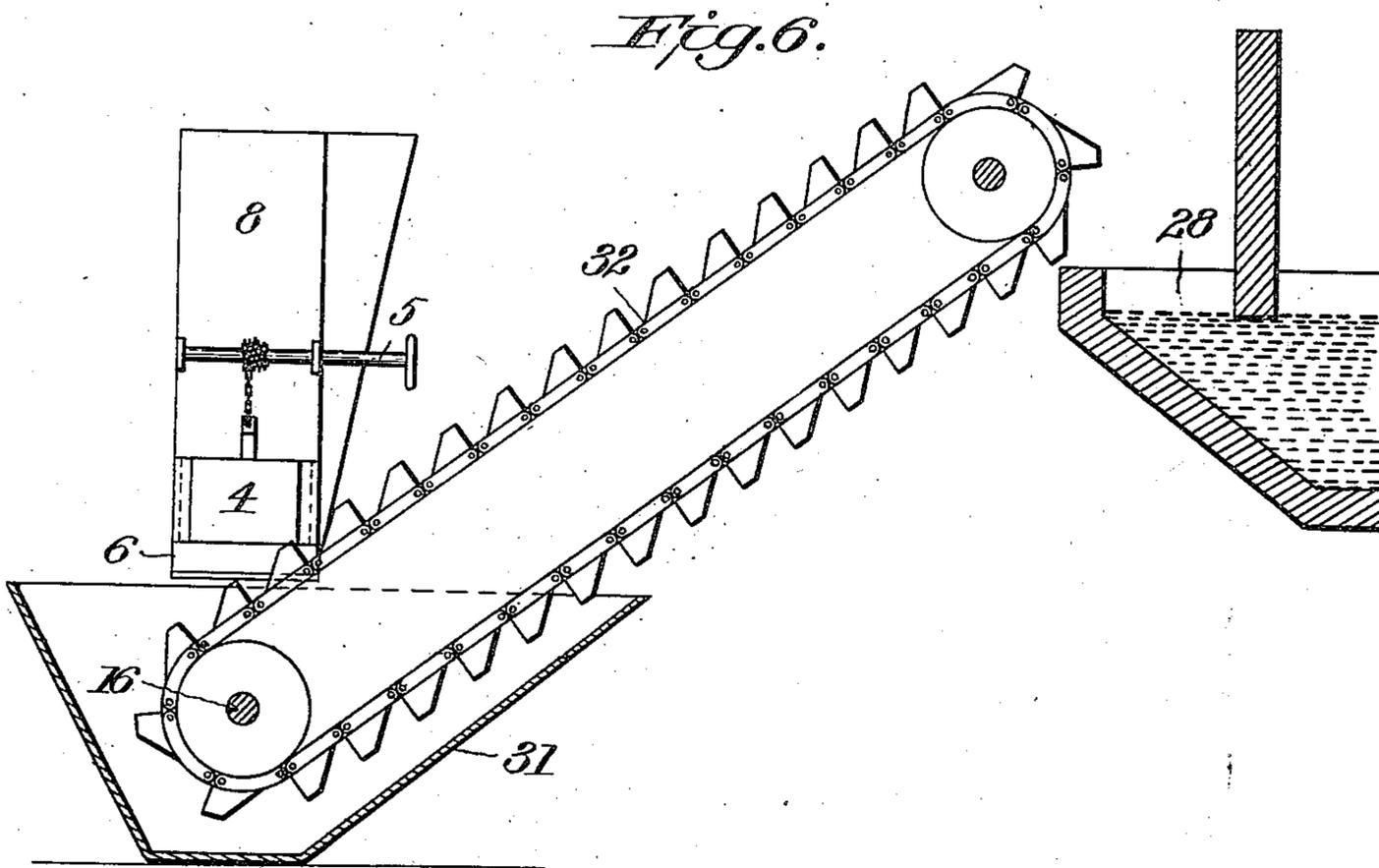
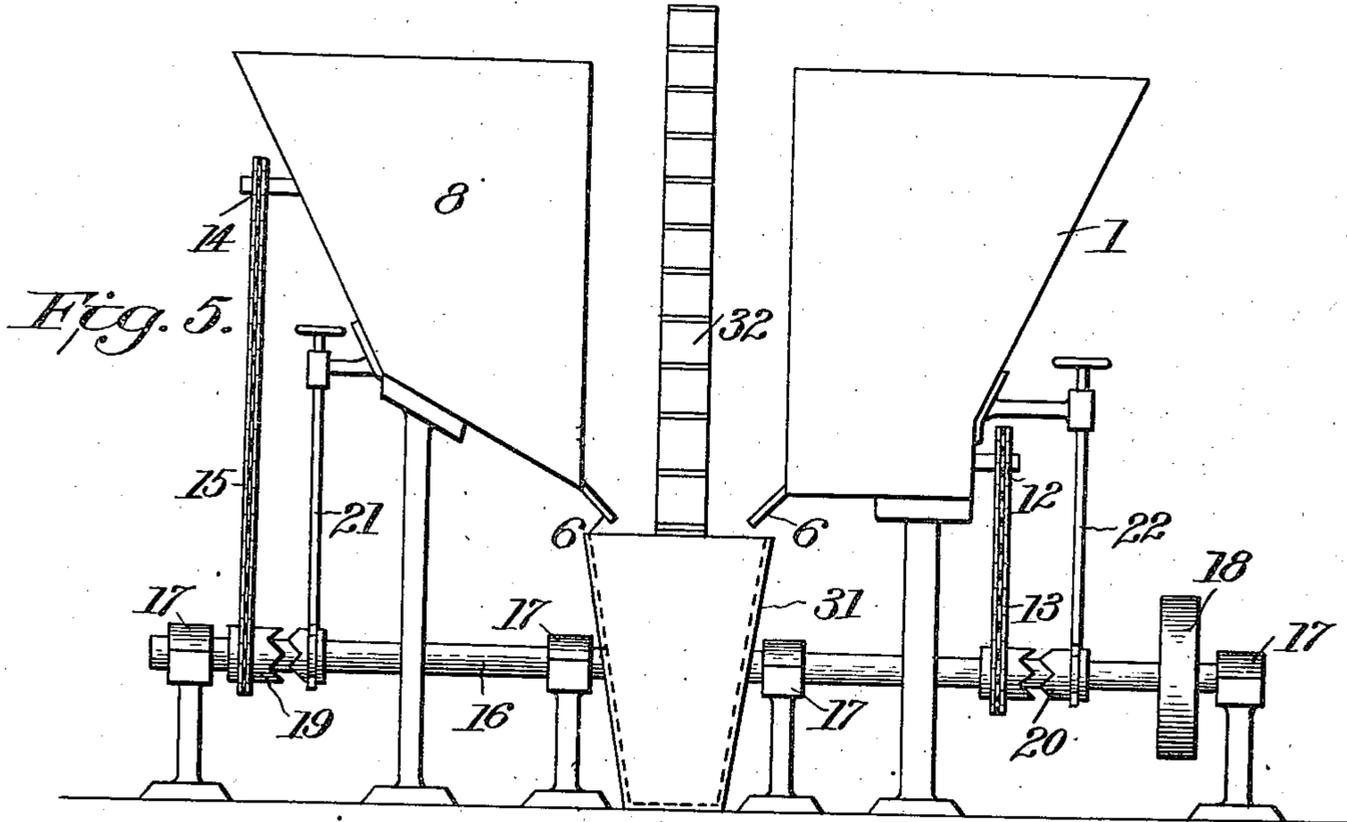
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3 SHEETS—SHEET 3.



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# UNITED STATES PATENT OFFICE.

GEORGE E. BARNETTE, OF NEW CASTLE, PENNSYLVANIA.

## MIXER AND CONVEYER.

975,315.

Specification of Letters Patent.

Patented Nov. 8, 1910.

Application filed January 12, 1910. Serial No. 537,761.

*To all whom it may concern:*

Be it known that I, GEORGE E. BARNETTE, a citizen of the United States, residing at New Castle, in the county of Lawrence and State of Pennsylvania, have invented certain new and useful Improvements in Mixers and Conveyers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others, skilled in the art to which it appertains to make and use the same.

My invention relates to a mixer and conveyer especially designed for mixing ingredients for making glass and for feeding them to the melting-tank, although the same apparatus may be employed for mixing concrete and other substances.

Among the objects I have in mind are to feed the tank on a level with the tank floor, to mix the ingredients to better advantage, to convey them in their mixed state more expeditiously to the tank and to simplify the construction and arrangement of the different parts generally.

Another object is to provide for simultaneously crushing and feeding cullet to the conveyer which carries the ingredients to the tank.

The invention consists of two hoppers or receptacles arranged at opposite sides of the conveyer and adapted to feed material to said conveyer at the same point, one of said hoppers being designed for holding batch and having a suitable feeding device to insure the uninterrupted delivery thereof to the conveyer, and the other hopper being designed for holding cullet and provided with means for crushing the same and forcing it toward the outlet opening to the conveyer.

The invention also consists in the features of construction and combinations of devices hereinafter described and specified in the claims.

In the accompanying drawings, illustrating the preferred embodiments of my invention:

Figure 1 is a front elevation of the two hoppers, the shaft for driving the feeding and crushing devices therein, and my preferred form of conveyer which is also driven by said shaft and which carries the ingredients to the melting-tank. Fig. 2 is a plan view also showing the melting-tank. Fig. 3

is a vertical section on the line  $x-x$  of Fig. 2. Fig. 4 is a sectional view on the line  $y-y$  of Fig. 2. Fig. 5 is a front elevation similar to Fig. 1 except that a modified form of conveyer is illustrated, and Fig. 6 is a sectional view on the line  $z-z$  of Fig. 5.

When the two hoppers are arranged on the same level with the melting-tank, I use a conveyer comprising a flight of pans, as illustrated in Figs. 1 to 4, inclusive. When said hoppers are arranged on a lower level or below the tank floor, the endless bucket-elevator or conveyer, shown in Figs. 5 and 6, is employed.

Referring first to Figs. 1 to 4, inclusive, 1 designates the batch hopper in the bottom of which is placed a feed screw 2 which discharges the batch through an opening 3 to which is fitted a sliding door or closure 4 controlled by a hand lever 5. A downwardly inclined lip or plate 6 is arranged at the lower edge of the opening 3 and projects over the conveyer 7 so as to deliver the batch to the center of the latter.

The cullet hopper 8 is equipped with a feed opening 3, closure 4, operating lever 5 and lip or plate 6, similar to those of the batch hopper. The bottom of said cullet hopper, however, is inclined upwardly away from its discharge opening and in this hopper there are mounted two reciprocating crushers 9, operated by means of a crank shaft 10 and guided in suitable brackets 11. The lower faces or end of the crushers are inclined to conform to the bottom of the hopper. Said crushers not only serve to break up irregular pieces of glass or cullet, but also force the contents of the hopper through the outlet opening when the closure is raised.

The feed screw 2 and crank shaft 10 are driven by suitable means, such as the sprocket wheels and chains 12 and 13 and 14 and 15, respectively, from the main shaft 16, journaled in suitable stands 17. Power may be directed to the main shaft by the belt wheel 18 or in any other manner. Clutches 19 and 20, respectively, are provided for throwing the feed screw and crank shaft in or out of driving connection with the main shaft. By means of these clutches, the feed screw and crank shaft may be driven in unison, said feed screw may be driven and the crank shaft remain sta-

tionary or vice versa. The clutches 19 and 20 are controlled by hand levers 21 and 22, respectively.

The conveyer 7 comprises a series of pans 5 23 secured at proper intervals to the sprocket chain 24 so that the edges of said plates will overlap when they are on one of the straight stretches of said chain. The pans have upwardly turning flanges 25 at their edges which are also adapted to overlap. The chain 24 is passed over a sprocket wheel 26 on the main shaft and over a similar sprocket wheel 27 mounted adjacent to the melting-tank 28. The upper stretch of 10 the conveyer is supported by a required number of rollers 29, journaled in stands 30, see Fig. 4. It will be noted that the pans are adapted to break joints in passing around the sprocket wheels but immediately 20 return to position with their edges and flanges overlapping when they come back to one of the straight stretches of the conveyer. It will also be observed that the arrangement of the hoppers with respect to 25 the conveyer is such that the batch and cullet are delivered from said hoppers at the same point and on to the middle portion of the conveyer. The result is that the ingredients from the two hoppers are mingled or blended on the conveyer and are 30 delivered in that state to the melting-tank where they are more readily fused because of their amalgamation. The delivery of the ingredients to the center of the conveyer not only aids in mixing them but also 35 prevents them from running over the side flanges of the pans.

The apparatus illustrated in Figs. 5 and 6 is similar to that shown in the other figures 40 and just described, except that a boot 31 is placed between the hoppers for the delivery of the materials therefrom, and an inclined bucket conveyer or elevator 32 is substituted for the flight of pans. As already explained, this inclined conveyer is used when 45 the melting-tank is placed at a higher level than the bottoms of the batch and cullet hoppers and it is accordingly necessary to elevate the ingredients from said hoppers to 50 said tank.

My conveyer constitutes what is known as a "dog house" feed or outside feed to the melting tank, the hopper 33 of said tank in which the ingredients are delivered by the 55 conveyer being termed the "dog house". Heretofore, it has been customary to employ four men for feeding the "dog house" with wheelbarrows, two of the men working together alternately so that the feeding may 60 be carried on continuously. It is also customary to employ a fifth man to superintend the melting of the glass in the tank. By

using my invention, one man can do all the necessary work connected with the feeding and superintendence of the tank so that it 65 results in the saving of the salaries of the four men whose services are dispensed with.

Attention is directed to the funnel shape of the batch hopper which causes the batch to gradually settle down to the bottom of 70 said hopper as the feed screw ejects or forces out the lower stratum. This is an important advantage because it keeps the batch moving all the time and prevents it from cementing or solidifying which it has a tendency to do 75 by reason of the lime and sand which it contains.

The construction of the conveyer and the combination therewith of the two hoppers adapted to deliver on to it at the same point 80 is claimed in another application filed by me on April 18, 1910, Serial No. 556,018.

I claim:

1. The combination, with a hopper having an inclined bottom and a discharge opening at the base of said incline, of a crusher arranged in said hopper, and means to reciprocate said crusher whereby the material is also fed by it through said discharge opening. 85 90

2. The combination, with a hopper having an inclined bottom and a discharge opening at the base of said incline, of a crusher arranged in said hopper and having its bottom end inclined to correspond with the bottom of the hopper, and means to reciprocate said crusher whereby the material is also fed by it through said discharge opening. 95

3. The combination, with an endless conveyer, of a shaft carrying one of the wheels over which the conveyer is passed, two hoppers arranged at opposite sides of said conveyer, a feed screw in one of said hoppers, a crusher in the other hopper, means for driving said feed screw and crusher from 100 said shaft, and means for delivering material from said hoppers to the conveyer. 105

4. The combination, with an endless conveyer, of a shaft carrying one of the wheels over which the conveyer is passed, two hoppers arranged at opposite sides of said conveyer, a feed screw in one of said hoppers, a crusher in the other hopper, means for driving said feed screw and crusher from said shaft, clutches for separately disconnecting said driving means from the shaft, and means for delivering material from said hoppers to the conveyer. 110 115

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

GEORGE E. BARNETTE.

Witnesses:

LE ROY JORDAN,  
GEORGE HOY.