

April 28, 1925.

1,535,705

C. D. WILKE

PROOFER

Filed July 23, 1923

2 Sheets-Sheet 1

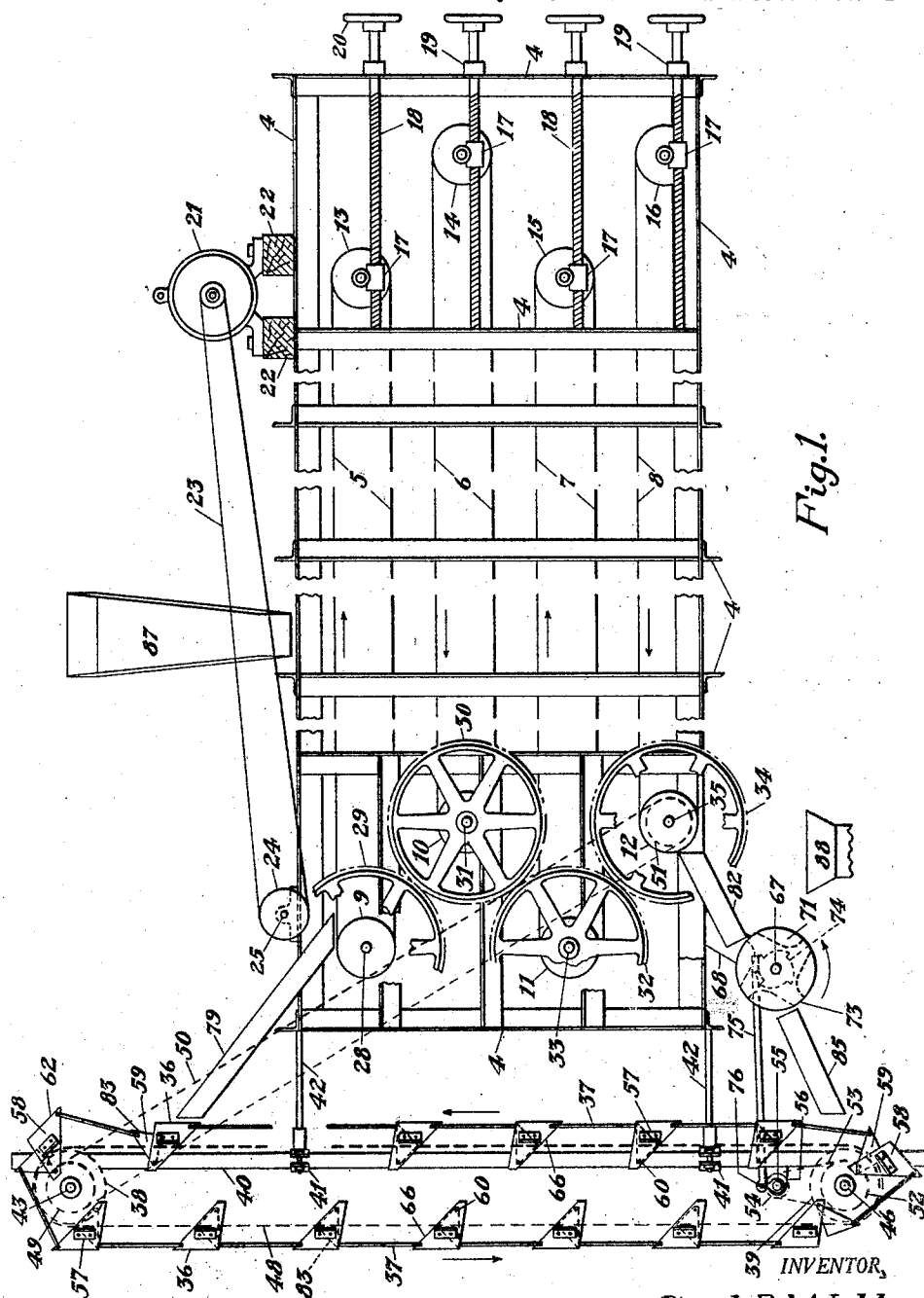


Fig. 1.

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2 Sheets-Sheet 2

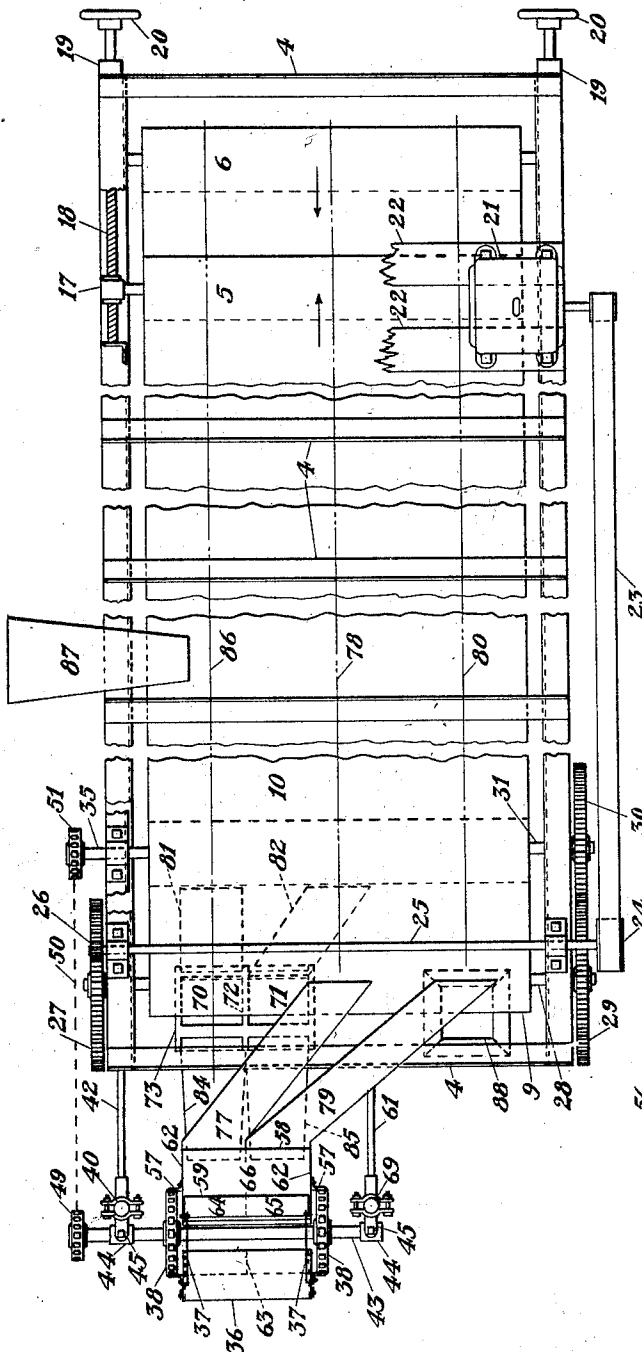


Fig. 2.

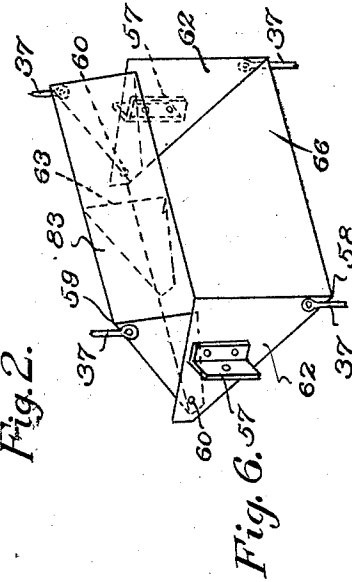


Fig. 6.

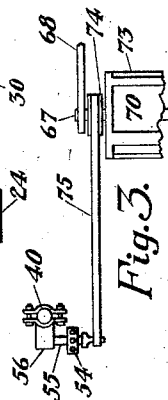


Fig. 3.

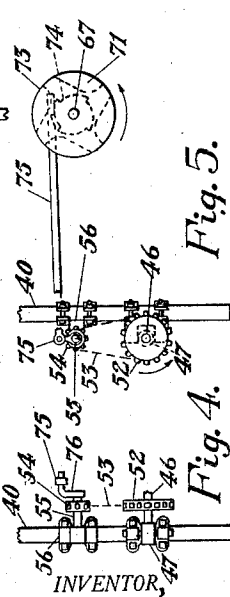


Fig. 5.

Fig. 4.

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UNITED STATES PATENT OFFICE.

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PROOFER.

Application filed July 23, 1923. Serial No. 653,151.

To all whom it may concern:

Be it known that I, CARL D. WILKE, a citizen of the United States, residing in the city of Beatrice, in Gage County, in the State of Nebraska, have invented certain new and useful Improvements in Proofers, and have described the same in the following specification illustrated by the accompanying drawings.

My invention relates to that class of automatic proofers, called belt-type proofers, which are commonly employed in making bread and which commonly comprise a plurality of endless belt conveyers on which the dough, after being duly mixed and divided into separate masses, balls, or inchoate loaves, and before being molded to fit the pans used in the baking, is permitted to inflate itself by rising. It is the main object of the invention to increase the capacity of a proofer of this class without thereby rendering necessary or desirable any increase of its length; to diminish the length of such a proofer without thereby reducing its capacity; and to adapt the length of such a proofer of prescribed capacity to the length of a limited space available for its accommodation. To accomplish these results I incorporate in my improved proofer as parts thereof an endless belt conveyer having longitudinally disposed surface areas for loaves to stand on, and means for transferring the loaves in continuous procession from one to another of these areas.

In said drawings, illustrating the best manner in which I have contemplated applying the principles of the invention, Fig. 1 is a side elevation of the principal parts of a proofer which is constructed in accordance with these principles. Fig. 2 is a plan view of principal parts of the same proofer. Figures 3, 4 and 5 are respectively a partial plan view, a partial end view and a partial side elevation of the timer mechanism. Fig. 6 is a detail showing in perspective one of the elevator buckets.

In the illustrative machine pictured in these drawings the numeral 4 denotes the framework of a casing for the endless conveyers. It is of general oblong rectangular form, is composed of the connected angle-iron bars which are denoted by the same numeral, is suspended or otherwise sup-

ported in the horizontal position shown, and is of any desired length not exceeding that of the space available for its accommodation. In this framework are mounted in horizontal positions a plurality of endless conveyers, 5, 6, 7 and 8, one above another, comprising respectively the broad or multiple belts which are denoted by the same numerals, and the power rolls 9, 10, 11 and 12 and idle rolls 13, 14, 15 and 16, on which the belts run. These power rolls are journaled transversely in bearings on the sides of the framework 4, while the idle rolls are similarly journaled in the adjustable bearings 17. To tighten the belts when necessary, the last mentioned bearings may be adjusted by turning the screws 18, which are journaled in the framework 4 and provided with the fixed collars 19 and with the handwheels 20. These conveyers, which in the present instance are four in number, may be made either more or less numerous in other proofers of the same kind, as may be found desirable. They are of uniform width sufficient to accommodate on each belt a plurality of the dough masses above referred to, when such masses are spaced apart thereon in the direction of its width. They are also of uniform length. The belts 5 and 7 are located somewhat nearer the forward end of the machine than are the belts 6 and 8, but are in vertical registration with the latter in all other respects. This overlapping registration is best indicated by the staggered arrangement of the belt rolls as shown in Fig. 1. These belts may be regarded severally as consisting of equal and parallel unseparated belt strips or longitudinal sectional areas having the imaginary centre lines 78, 80 and 86, and designated by these numerals respectively. As an electrician might say, they are arranged in series. They move at a uniform speed in the opposite directions indicated by arrows.

Motive power may be supplied by a rotary motor 21, mounted on the crossbars 22 at the top of the framework. In the present instance it is transmitted by the belt 23 to the pulley 24 on the shaft 25 of the gear 26, which meshes with the gear 27 on the shaft 28 of the conveyer roll 9; and thence by the gear 29 to the gear 30 on the shaft 31 of the conveyer roll 10, which meshes

with the gear 32 on the shaft 33 of the conveyer roll 11, which meshes with the gear 34 on the shaft 35 of the conveyer roll 12.

The means employed for returning the dough masses from the bottom belt to the top belt of the proofer during the operation of the machine, comprise in the present instance the timer 73 and the elevator which is shown at the left in Figures 1 and 2. The elevator, which extends from a level below the conveyers to a level above them, has a frame consisting of the two vertical posts, or pipes, 40 and 69, one of which is shown in Fig. 1, and both in Fig. 2. These are fastened by the clamps 41 to the supporting brackets 42 and 61 extending from the framework 4. The elevator comprises two parallel shafts, namely, the upper shaft 43 journaled in the bearings 44 which are secured to the brackets 45 on the posts 40 and 69 respectively, and the lower shaft 46 journaled in similar bearings 47. The shaft 43, which is the driving shaft of the elevator, has keyed thereon a pair of spaced sprocket wheels 38, which are connected by the sprocket chains 48 with a pair of similar sprocket wheels 39 on the lower shaft 46. The shaft 43 likewise carries the sprocket 49 which is connected by the sprocket chain 50 with its driving sprocket 51 on the shaft 35 of the belt roll 12. The shaft 46 has keyed thereon, as best shown in Figures 4 and 5, the sprocket 52, which is connected by the sprocket chain 53 with the sprocket 54 on the stub shaft 55 journaled in the bearing 56 secured to the post 40. The elevator has a plurality of uniformly spaced buckets 36 which are tied together in series by the links 37, and have on their opposite ends the outstanding ears 57 by which the buckets are individually fastened to the sprocket chains 48. Each bucket consists of the outer member 58 and the inner member 59, which are pivoted together by the pins 60. The outer member 58 has the flat oblong floor 66 and the parallel end walls 62, the latter being of general triangular form and united integrally with the floor. The inner member 59 is of similar shape and has the similar floor 83, as well as a transverse vertical partition 63 dividing its interior space into the equal sections, or chambers, 64 and 65 which are arranged in parallel. By the links 37 the outer member 58 of each bucket is tied to the inner member 59 of the next following bucket.

The timer 73, which takes part in returning the dough masses from the belt 8 to the belt 5, is a rotary member of general cylindrical form keyed on the shaft 67, which is journaled in a pair of brackets 68 extending downward from the framework 4. Only one of these brackets is shown in the drawings. The timer has a plurality of spaced troughlike peripheral pockets 70 and 71,

which are arranged in parallel end to end in two circumferential rows denoted by the same numerals respectively and encircling the timer on opposite sides of the central aligned partitions 72. It is actuated from the elevator, being rotated step by step by the pawl 75 which is pivotally connected with the crank 76 on the stub shaft 55 and engages the ratchet 74 on the timer shaft 67.

Several straight sloping chutes secured to the framework 4 are employed for the purpose of distributing the individual dough masses to and from different parts of the machine. The chute 77 leads from a point near the top of the elevator and near the path of the bucket chambers 64 to a point near and above the middle section 78 of the upper belt 5; and in like manner the chute 79 leads from a point near the top of the elevator and near the path of the bucket chamber 65 to a point near and over the marginal section 80 of the same upper belt 5. The chutes 81 and 82 extend between the conveyer belt 8 and the timer 73, the chute 81 registering at its upper end with the marginal section 86 of the belt, and at its lower end with the timer pockets 70, while the chute 82 similarly registers with the central section of the belt and with the timer pockets 71. Similarly the chutes 84 and 85 extend between the timer and the elevator, the chute 84 registering with the timer pockets 70 and with the bucket chambers 64, while the chute 85 registers with the timer pockets 71 and with the bucket chambers 65.

In the operation of the invention, the individual masses of dough, ready for proofing, are delivered one after another by the trough 87 or other means onto the marginal section 86 of the upper belt 5, at uniform distances apart. On this section each of them rides rearward as far as the conveyer extends, and then drops off onto the corresponding section 86 of the next lower belt, 6. On this it rides forward as far as the belt extends and then tumbles therefrom onto the corresponding marginal section of the next subjacent belt 7, by which it is carried to the rear and dropped onto the subjacent section of the bottom belt 8. By this belt it is carried forward to the chute 81 by which it is delivered into one of the timer pockets 70, then in position to receive it. When an elevator bucket comes to its loading position shown at the bottom of Fig. 1, the timer, being actuated from the elevator by the ratchet and pawl makes a partial rotation which not only dumps the contained dough mass from the timer pocket 70 through the chute 84 into the chamber 64 of the bucket, but also brings the next following timer pocket 70 into position to receive the next following dough mass from the chute 81. Then the individual dough mass car-

ried upward in the bucket chamber 64, is delivered through the chute 77 to the middle section 78 of the upper conveyor belt 5. On the middle sections of the successive conveyer belts it then rides in the same directions as before to the chute 82, and thence goes to the timer pocket 71, whence it is delivered by the chute 85 to the chamber 65 of a bucket 36 then presented in the before mentioned loading position. Being carried upward in this chamber and permitted by the relative pivotal movement of the bucket members 58 and 59 to slide out of the bucket it is guided by the chute 79 onto the marginal sectional area 80 of the top belt 5. On this sectional area and on the corresponding marginal sections of the subjacent conveyor belts it then rides as before to the forward end of the bottom belt 8, from which it drops into the hopper or other receptacle 88. As the operation continues, the spaced dough masses ride the several sectional areas of all the conveyor belts in one long procession, as it were, and in single file, through the

25 proofer.

I claim as my invention—

1. In a proofer of the specified class, an endless belt conveyor having a plurality of longitudinally disposed sectional areas of belt surface, and means, including an elevator, for delivering a continuous procession of loaves in single file from one to another of these areas.

2. A proofer of the specified class, comprising a series of endless belt conveyers, one above another, each having a plurality of longitudinally disposed areas of belt surface in vertical registration with corresponding belt surface areas of the other conveyers, an elevator, a timer operatively positioned between the elevator and the bottom belt conveyor, and chutes from the elevator to surface areas of the top belt conveyor respectively.

3. A proofer of the specified class, comprising a series of endless belt conveyers with a plurality of longitudinally disposed areas of belt surface of each conveyor in vertical alinement with like areas of each other conveyor, a bucket elevator having individual chambers in each bucket, means for transferring loaves from the bottom con-

veyer to the bucket chambers, and chutes leading from the different chambers to different surface areas of the top conveyor.

4. A proofer of the specified class, comprising a series of endless belt conveyers, one above another, having severally a plurality of striplike areas of belt surface for loaves to stand on, a bucket elevator having chambers in each bucket, a rotary timer having pockets transversely partitioned apart, chutes between the bottom conveyor and the timer pockets respectively, chutes between the timer pockets and the bucket chambers respectively, and chutes leading from the bucket chambers to different areas of the top belt conveyor.

5. A proofer of the specified class, comprising a plurality of endless conveyers arranged in series one above another, a bucket elevator having chambers arranged in parallel, a timer having pockets arranged in parallel, and a plurality of chutes arranged in series with the conveyers, the pockets and the chambers.

6. A proofer of the specified class, comprising a series of endless conveyers, an elevator operatively connecting the ends of the series and having chambers arranged in parallel, a rotary timer having pockets, and a plurality of chutes in series with the conveyers, the pockets and the chambers.

7. A proofer of the specified class, comprising a plurality of endless conveyor belts arranged in series one above another and severally having a plurality of parallel belt areas for loaves to stand on, a bucket elevator having chambers in each bucket, a timer having pockets arranged in parallel, and a plurality of chutes forming with the belt areas, the chambers and the pockets a single continuous route of travel for the loaves.

8. In a proofer, an endless belt conveyor having longitudinally disposed surface areas for loaves to stand on, in combination with means, including a like conveyor, for continuously transferring a procession of loaves in single file from one of these areas to another.

Witness my signature at Omaha, Nebraska, July 18, 1923.

CARL D. WILKE.