

(No Model.)

5 Sheets—Sheet 1.

C. OSTERWALDER.

MIXING AND KNEADING MACHINE.

No. 346,413.

Patented July 27, 1886.

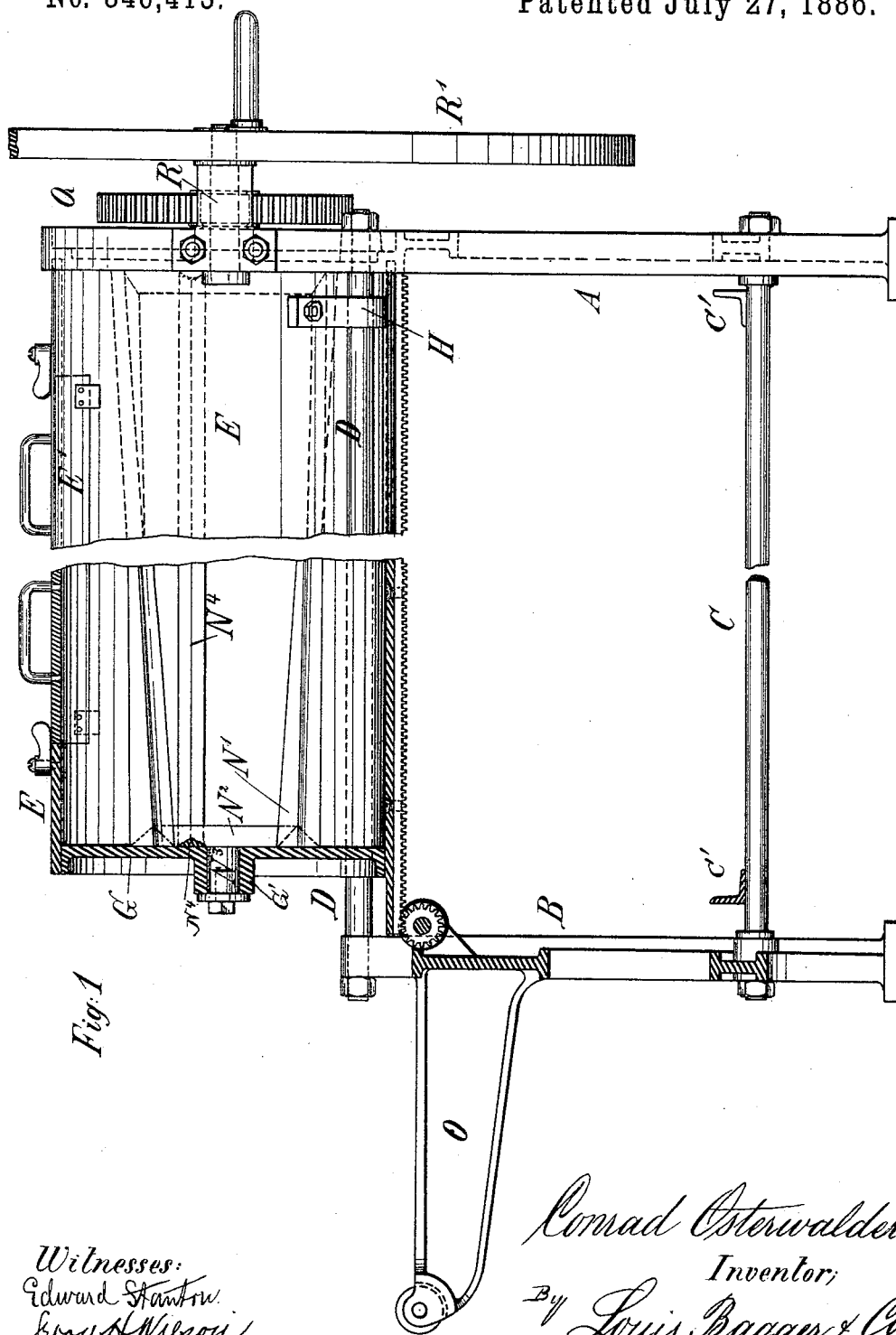


Fig. 1

Witnesses:
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J. W. Wilson

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By Louis Bagger & Co.
Attorneys.

(No Model.)

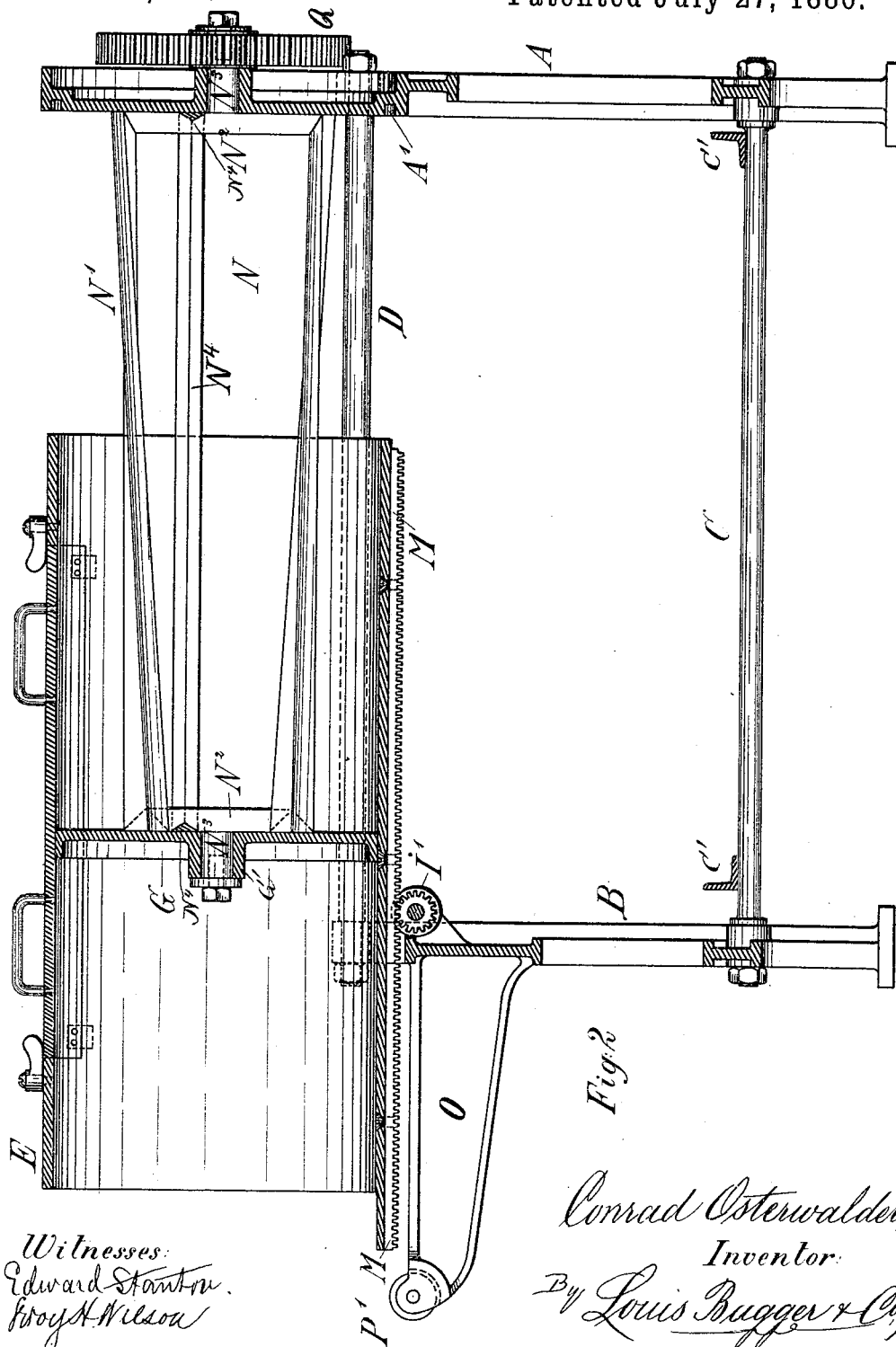
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Fig. 3

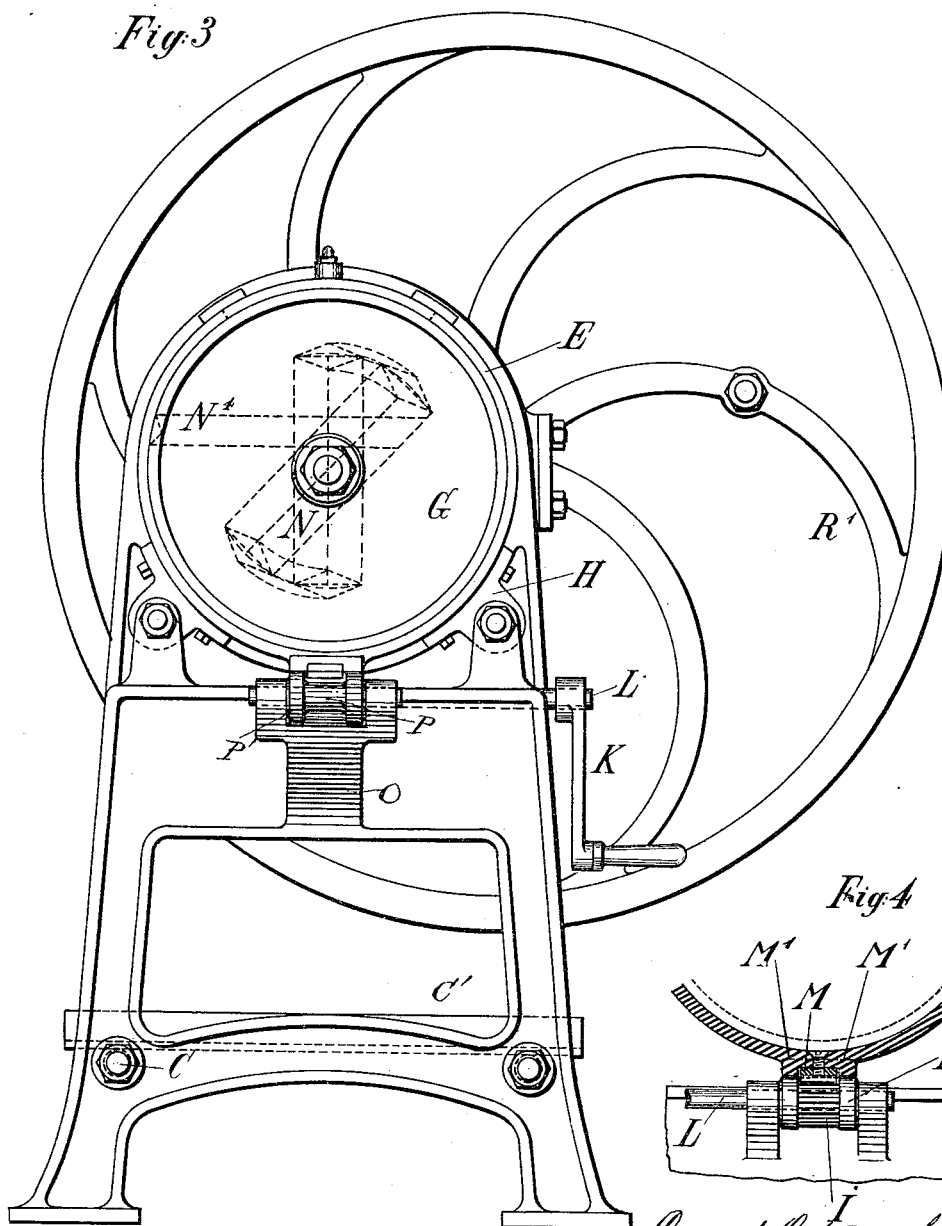
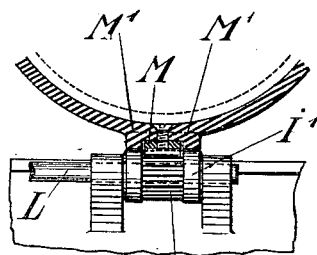


Fig. 4



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(No Model.)

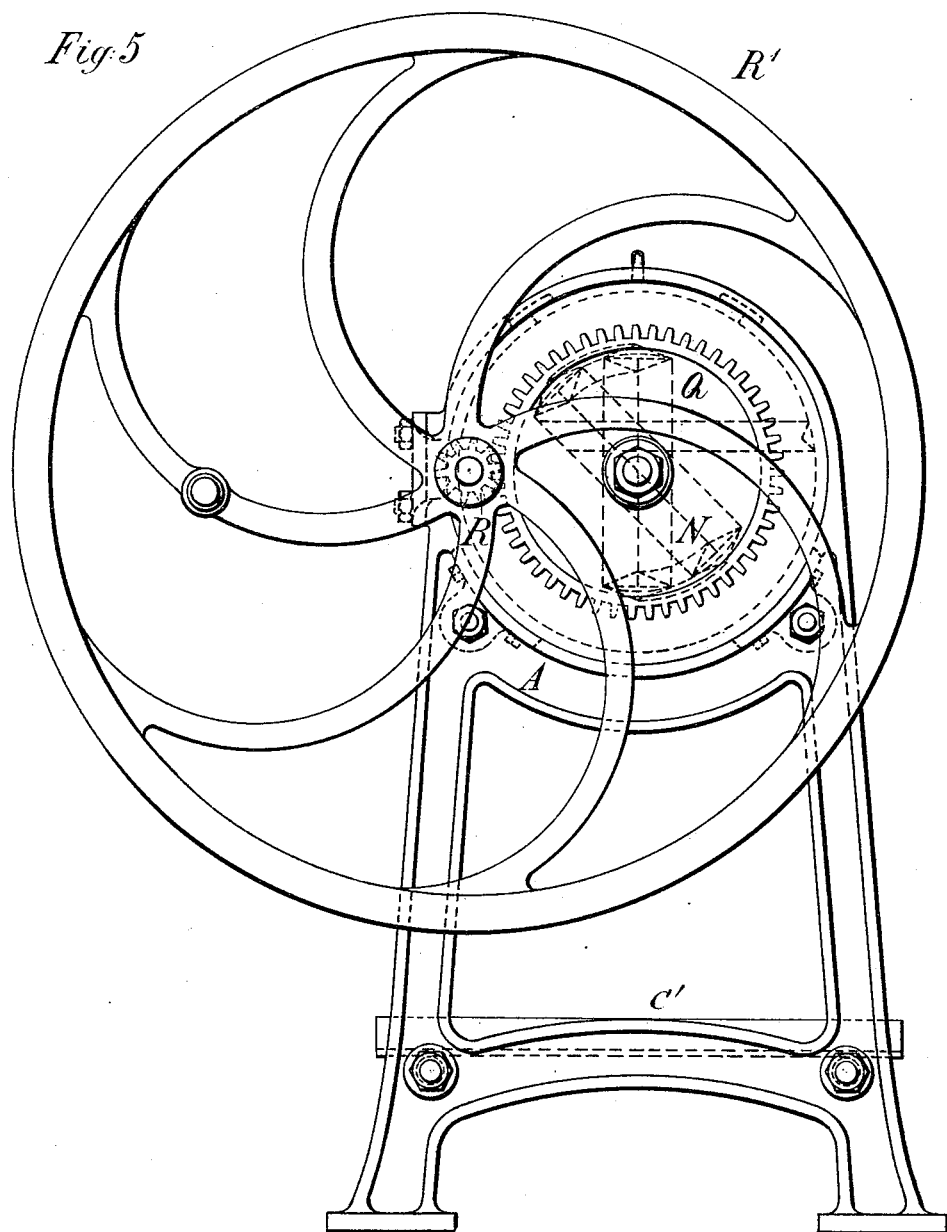
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Witnesses:
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(No Model.)

5 Sheets—Sheet 5.

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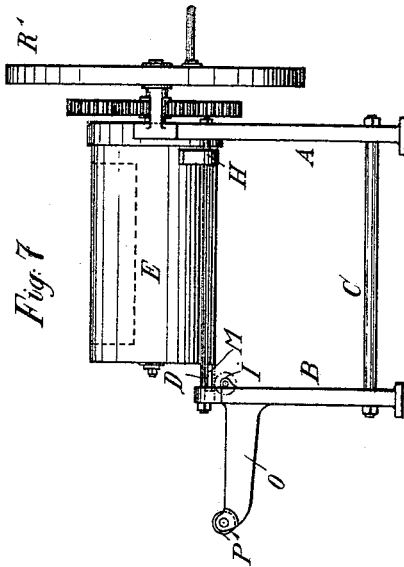


Fig. 7

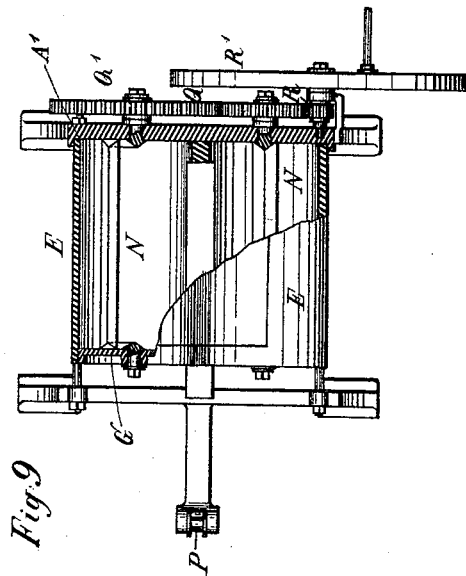


Fig. 9

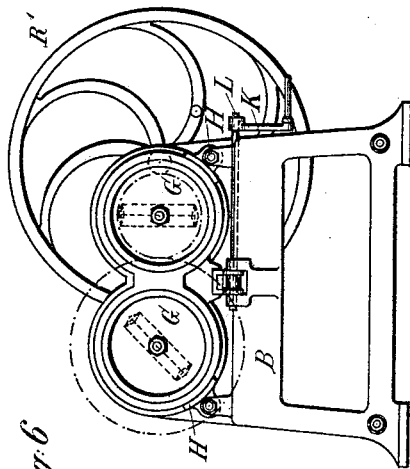


Fig. 6

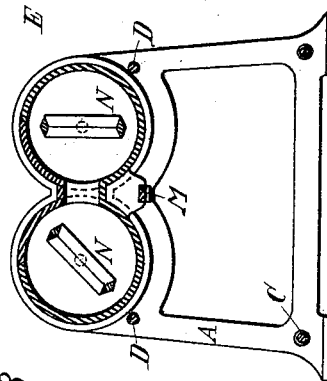


Fig. 8

Witnesses:
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Frederick Wilson

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By Louis Ragger & Co.,
Attorneys.

UNITED STATES PATENT OFFICE.

CONRAD OSTERWALDER, OF BIEL, SWITZERLAND.

MIXING AND KNEADING MACHINE.

SPECIFICATION forming part of Letters Patent No. 346,413, dated July 27, 1886.

Application filed March 17, 1886. Serial No. 195,604. (No model.)

To all whom it may concern:

Be it known that I, CONRAD OSTERWALDER, a citizen of the Republic of Switzerland, residing at Biel, in Switzerland, have invented certain new and useful Improvements in Mixing and Kneading Machines, of which the following is a specification, and in which—

Figure 1 is a side view, partly in section, of my improved mixing and kneading machine. Fig. 2 is a longitudinal vertical sectional view of the same. Fig. 3 is an end view seen from the end toward which the mixing-vessel is drawn out. Fig. 4 is a transverse sectional detail view of the lower side of the cylindrical vessel and the means for drawing it out. Fig. 5 is an end view seen from the end having the means for revolving the stirrers. Fig. 6 is an end view of a modification of the machine having a double cylinder. Fig. 7 is a side view of the same. Fig. 8 is a vertical cross-section of the same; and Fig. 9 is a top view of the machine, showing a portion of the machine in horizontal section.

Similar letters of reference indicate corresponding parts in all the figures.

My invention has relation to mixing and kneading machines; and it consists in the improved construction and combination of parts of such a machine, in which the vessel in which the material is mixed may be drawn axially out from the mixers or stirrers, dropping the mixed and kneaded material in a suitable receptacle under the mixing-vessel, as hereinafter more fully described and claimed.

In the accompanying drawings, the letter A indicates the rear support, and B the front support, both of which are connected at their lower ends by longitudinal brace-rods C, and near the upper ends by rods or rails D, which form guides and supports for the rear end of the cylindrical mixing vessel E. This vessel is open at both ends, and has an aperture at its upper side, through which the vessel may be filled, and which is closed by a lid or cover, E', having suitable handles and means for securing it. The rear end of the mixing-vessel fits with its edges into a circular groove, A', in the forward face of the upper portion of the rear support, and the said groove may be provided with suitable packing, if desired. The forward end of the cylinder is closed by a circular head or piston, G, which fits snugly

within the cylinder and slides within the same, and the center of this head is provided with a bearing, G'. The rear end of the cylinder is provided at its under side with two laterally-projecting brackets, H H, formed with bearings, which slide upon the guide-rails of the frame, and the middle of the under side of the cylinder is provided with a rack-bar, M, having rails M' M' at its sides, which rails travel upon the flanges I' of a pinion, I, which meshes with the rack-bar. This pinion is secured upon a transverse shaft, L, journaled in bearings upon the rear side of the upper end of the front support, and the end of the shaft is provided with a suitable handle or crank, K, by means of which it may be revolved. The upper end of the forward support is provided with a forwardly-projecting bracket, O, the forward end of which is provided with a roller, P, having flanges P', upon which the guide-rails of the cylinder may travel.

The mixer or kneader N consists of two end pieces, N², preferably triangular prismatic, which end pieces are provided with outwardly-projecting trunnions N³ at their middles, and the ends of the end pieces have the ends of the mixing-blades N' secured to them, the said mixing-blades being preferably slightly spirally twisted for the purpose of allowing them to pass through the material to be mixed and kneaded with greater ease, the end piece at one end standing at an angle to the end piece at the other end, as indicated in dotted lines in Figs. 3 and 5. A triangular prismatic bar, N⁴, having its ends bent in the same direction and at right angles to the main portion, is rigidly secured by these ends to the end pieces N² of the mixer, and is so adjusted that as the mixer is rotated said bar acts as a scraper to remove the mixing material from the ends and side of the mixing-receptacle, Figs. 1, 2, 3, and 5.

The power for revolving the mixer and kneader is applied to a fly-wheel, R', having its shaft upon the rear side of the rear support, and having a pinion, R, at its center, and this pinion meshes with a cog-wheel, Q, which is secured upon the outer end of the trunnion at the rear end of the mixer, so that by revolving the fly-wheel the mixer may be revolved within the cylinder.

The bracing-rods C connecting the lower

portions of the supports are provided with L-shaped rails C', upon which a receptacle may be placed for the reception of the mixed and kneaded mass.

5 When the machine is operated, the materials for mixing and kneading are placed in the cylinder through the aperture in the top of the cylinder, the cover being removed, and after closing the cover the mixer and kneader 10 may be revolved and the mass mixed and kneaded until it reaches its desired consistency. The cylinder may now be drawn forward, and it will be seen that the head will force the mass out at the rear end of the cylinder, allowing it to drop into the receptacle, 15 which may be placed between the supports of the frame, the head scraping the sides of the cylinder and freeing them from any adhering portions of the mass. When the cylinder is 20 entirely drawn out, the inner side of the cylinder and the mixer and kneader may be easily cleaned, and be ready for the reception of another quantity of materials to be mixed and kneaded after the cylinder has been forced 5 back again into its normal position. It follows that the cylinder may be drawn out or pushed in by other means than the pinion and rack-bar, a screw fitting in a suitable nut upon the cylinder, being capable of performing the 30 same operation, or any other suitable mechanism for moving the cylinder.

In Figs. 6 to 9 is shown a modification of the machine, in which two mixing-cylinders are shown secured side by side, having the 35 same means of support as the single cylinder, and having a rack-bar and driving-pinion in common, and the rear trunnions may be connected together by suitable gearing, so that the mixers will revolve together. The adjoining 40 sides of the cylinders are preferably open, so that one cylinder may communicate with the other, and the materials to be mixed and kneaded may pass from one cylinder into the other, the two cylinders thus subjecting the 45 materials to a thorough mixing and kneading.

Having thus described my invention, I claim and desire to secure by Letters Patent of the United States—

1. The combination of a mixing-receptacle 50 having open ends, a longitudinal mixer, disks at either end of said mixer, over one of which said receptacle is adapted to move longitudinally and which completely closes the end thereof, as and for the purpose shown and 55 described.

2. The combination of a mixing-receptacle having a mixer secured in a stationary frame and a head secured to one end of said mixer and closing the end of said receptacle, which 60 is adapted to move longitudinally over said head, substantially as and for the purpose set forth.

3. In a mixing and kneading machine, the combination of supports connected by longitudinal rails, a receptacle open at both ends 65 and bearing with its rear end against the forward face of the rear support, and having means for sliding it forward, a head fitting in the open forward end of the receptacle and sliding within the receptacle, and a revolving 70 stirrer having one end journaled in the head, as and for the purposes shown and set forth.

4. In a mixing and kneading machine, the combination of supports having longitudinal guide-rails connecting them and having a circular groove in the forward face of the higher 75 rear support, a cylinder having bearings sliding upon the guide-rails and means for sliding it forward, and having open ends, its rear end resting in the groove in the rear support, a 80 head fitting in the open forward end of the cylinder and sliding within the same, and a revolving stirrer or mixer journaled with its rear end in the center of the circular groove of the rear support, and with its forward end 85 in the center of the head, as and for the purpose shown and set forth.

5. In a mixing and kneading machine, the combination of supports having two guide-rods connecting the same near the upper ends 90 and having a forwardly-projecting bracket upon the forward support provided with a flanged roller at its outer end, a cylinder having two laterally-projecting brackets formed with bearings sliding upon the guide-rods 95 and having a rack-bar upon the middle of its under side provided with parallel rails at its sides, and a shaft journaled transversely upon the forward support and having means for revolving it, and provided at its middle with a 100 pinion engaging the rack-bar and having flanges at its sides for the rails, as and for the purpose shown and set forth.

6. In a mixing and kneading machine, the combination of a cylinder, a support having 105 an annular groove for the reception of one end of the cylinder and a head closing the other end of the cylinder, a stirrer having prismatic end pieces journaled with trunnions at their middles in the ends of the cylinder, and having 110 their respective ends connected by triangular prismatic blades having a spiral twist, and a scraper for the side and ends of the cylinder, substantially as and for the purpose shown and described. 115

In testimony whereof I hereunto affix my name, in the presence of two subscribing witnesses, this 15th day of February, 1886.

CONRAD OSTERWALDER.

Witnesses:

EMIL BLUM,
WILLIAM SCHNEIDER.