

**CPC****COOPERATIVE PATENT CLASSIFICATION****A21C****MACHINES OR EQUIPMENT FOR MAKING OR PROCESSING DOUGHS; HANDLING BAKED ARTICLES MADE FROM DOUGH****A21C 1/00**

**Mixing or kneading machines for the preparation of dough** (domestic mixing or kneading machines [A47J 43/00](#), [A47J 44/00](#); { mixing in general [B01F](#); mixing or kneading of substances in a plastic state in general [B29B 7/00](#) })

**A21C 1/003**

. { Plant; Systems, i.e. flow charts or diagrams }

**A21C 1/006**

. { Methods }

**A21C 1/02**

. with vertically-mounted tools; Machines for whipping or beating

**A21C 1/04**

. with inclined rotating mixing arms or levers

**A21C 1/06**

. with horizontally-mounted mixing or kneading tools; Worm { or screw } mixers

**A21C 1/065**

.. { Worm or screw mixers, e.g. with consecutive mixing receptacles }

**A21C 1/08**

. with rollers

**A21C 1/083**

.. { by calendering, i.e. working between rollers (using rollers for shaping dough [A21C 3/02](#)) }

**A21C 1/086**

.. { having a receptacle rotating about a vertical axis cooperating with rotary rollers }

**A21C 1/10**

. with additional aerating apparatus for the manufacture of aerated doughs

**A21C 1/105**

.. { the gas being introduced through the shaft of a rotary tool }

**A21C 1/12**

. for the preparation of dough directly from grain

**A21C 1/14**

. Structural elements of mixing or kneading machines; { Parts; Accessories }

**A21C 1/1405**

.. { Tools }

**A21C 1/141**

... { having mixing or cutting elements essentially perpendicular to their axes }

**A21C 1/1415**

... { Shafts; Heads therefor }

**A21C 1/142**

.. { Feeding mechanisms, e.g. skip lifting mechanisms }

**A21C 1/1425**

... { for feeding in measured doses }

**A21C 1/143**

... { using pneumatic means }

**A21C 1/1435**

... { for liquids ([A21C 1/1425](#) takes precedence) }

**A21C 1/144**

.. { Discharge mechanisms }

**A21C 1/1445**

... { using tiltable receptacles; Tilting mechanisms therefor }

**A21C 1/145**

.. { Controlling; Testing; Measuring ([A21C 1/1425](#) takes precedence) }

**A21C 1/1455**

... { Measuring data of the driving system, e.g. torque, speed, power }

**A21C 1/146**

... { Measuring properties of the dough, e.g. moisture, electrical conductivity, temperature ([A21C 1/1455](#) takes precedence) }

- A21C 1/1465 .. { Drives }
- A21C 1/147 ... { for planetary motion }
- A21C 1/1475 ... { Brakes therefor }
- A21C 1/148 .. { Safety arrangements ([A21C 1/1485](#) takes precedence)}
- A21C 1/1485 .. { Doors; Closures; Operating, e.g. safety, mechanisms therefor }
- A21C 1/149 .. { Receptacles, e.g. provided with means for carrying or guiding fluids, e.g. coolants }
- A21C 1/1495 .. { Arrangements for cooling or heating (receptacles with means for guiding fluids per se [A21C 1/149](#)); Arrangements for applying super- or sub-atmospheric pressure }

### **A21C 3/00      Machines or apparatus for shaping batches of dough before sub-division**

- A21C 3/02 . Dough-sheeters; Rolling-machines; Rolling-pins {(mixing or kneading dough by rollers [A21C 1/08](#); non-manual rolling and working of discrete dough pieces [A21C 7/00](#))}
- A21C 3/021 .. { Rolling-pins; Hand-operated spreading or rolling devices ([A21C 11/004](#) takes precedence)}
- A21C 3/022 .. { Laminating or undulating a continuous dough sheet, e.g. by folding transversely or longitudinally onto a moving surface (combined with filling [A21C 9/045](#))}
- A21C 3/024 .. { using one or more rollers with an axis of rotation substantially parallel or oblique to the direction of dough transport ([A21C 3/065](#) takes precedence)}
- A21C 3/025 .. { with one or more rollers moving perpendicularly to its rotation axis, e.g. reciprocally ([A21C 3/024](#) takes precedence; hand-operated rollers [A21C 3/021](#))}
- A21C 3/027 ... { with multiple rollers moving in a closed loop, e.g. in an orbital path; Planetary roller systems }
- A21C 3/028 .. { using rollers having a shape other than straight round cylinders ([A21C 3/04](#) takes precedence)}
- A21C 3/04 . Dough-extruding machines; { Hoppers with moving elements, e.g. rollers or belts as wall elements for drawing the dough }
- A21C 3/06 . Machines for coiling sheets of dough, e.g. for producing rolls, { e.g. crescent-rolls (as part of a machine for further moulding or forming [A21C 7/00](#); with filling [A21C 9/06](#))}
- A21C 3/065 .. { the coil axis of the produced rolls being in parallel or oblique position relative to the transport direction; with coiling elements, e.g. rollers, being placed in parallel or oblique position relative to the transport direction }
- A21C 3/08 . Machines for twisting strips of dough, e.g. for making pretzels
- A21C 3/10 . combined with dough-dividing apparatus

### **A21C 5/00      Dough-dividing machines**

- A21C 5/003 . { with revolving bodies, e.g. with bodies having spaces separated by radially oriented elements or walls }

- A21C 5/006 . { for dispensing liquid or semi-liquid dough, e.g. batter }
- A21C 5/02 . with division boxes and ejection plungers
- A21C 5/04 . . with division boxes in a revolving body with radially-working pistons
- A21C 5/06 . . with division boxes in a revolving body with axially-working pistons
- A21C 5/08 . with radial, i.e. star-like, cutter-blades slidable in the slots of, and relatively to, a pressing-plunger {(A21C 7/06 takes precedence)}
- A21C 7/00      Machines which homogenise the subdivided dough by working other than by kneading**
- A21C 7/005 . { the dough pieces being worked in radially disposed cavities in a rotating drum }
- A21C 7/01 . with endless bands {(A21C 7/005 takes precedence)}
- A21C 7/02 . with moulding channels (A21C 7/01 takes precedence)
- A21C 7/04 . with moulding cups (A21C 7/01 takes precedence)
- A21C 7/06 . combined with dividing machines with radial, i.e. star-like, cutter-blades slidable in the slots of, and relatively to, a pressing-plunger
- A21C 9/00      Other apparatus for handling dough or dough pieces**
- A21C 9/02 . Apparatus for hanging or distributing strings of dough, such as noodles, spaghetti or macaroni, on bars
- A21C 9/04 . Apparatus for spreading granular material on, or sweeping or coating the surfaces of, pieces or sheets of dough {(coating baked articles A21C 15/002)}
- A21C 9/045 . . { Laminating dough sheets combined with applying a filling in between, e.g. lasagna-type products (ravioli-making machines A21C 9/066; making laminated baked wafer sheets A21C 15/02)}
- A21C 9/06 . Apparatus for filling pieces of dough such as doughnuts {(A21C 11/163 takes precedence; apparatus for filling baked articles A21C 15/007)}
- A21C 9/061 . . { Making continuous filled tubular products, e.g. with subsequent cutting }
- A21C 9/063 . . { Applying a folding, wrapping, rolling action (A21C 9/045, A21C 9/061 take precedence)}
- A21C 9/065 . . { by means of injection into a piece of dough (filling baked articles A21C 15/007)}
- A21C 9/066 . . { using two separate sheets or pieces of dough with filling in between, e.g. crimped at their edges; Ravioli-making machines (A21C 11/163 takes precedence)}
- A21C 9/068 . . . { Tools for crimping or trimming of edges or rims, e.g. hand-operated }
- A21C 9/08 . Depositing, arranging and conveying apparatus for handling pieces, e.g. sheets of dough {(for handling liquid or semi-liquid dough, e.g. batter A21C 5/006)}
- A21C 9/081 . . { Charging of baking tins or forms with dough }

- A21C 9/083 . . { Manipulating tins, pans etc., e.g. charging or discharging conveyors, trolleys or ovens }
- A21C 9/085 . . { Separating, spacing, orienting or aligning discrete dough pieces, e.g. after passing a cutting device }
- A21C 9/086 . . { Stacking or unstacking discrete dough sheets (with filling in between sheets [A21C 9/045](#)) }
- A21C 9/088 . . { Folding or bending discrete dough pieces or dough strips (twisting strips of dough [A21C 3/08](#); with filling action [A21C 9/063](#); forming toroid-shaped dough pieces [A21C 11/002](#)) }
  
- A21C 11/00      Other machines for forming the dough into its final shape before cooking or baking**
  
- A21C 11/002 . { the shape being toroid-like, e.g. bagels, doughnuts (extruding machines for toroid shaped products [A21C 11/166](#)) }
- A21C 11/004 . { forming the dough into a substantially disc-like shape with or without an outer rim, e.g. for making pie crusts, cake shells or pizza bases }
- A21C 11/006 . . { by pressing or press-moulding ([A21C 11/008](#) takes precedence) }
- A21C 11/008 . . { by press-rolling }
  
- A21C 11/02 . Embossing machines
- A21C 11/04 . . with cutting and embossing rollers or drums {([A21C 11/106](#) takes precedence) }
- A21C 11/06 . . handling regularly pre-shaped sheets of dough
- A21C 11/08 . . with engraved moulds, e.g. rotary machines with die rolls
  
- A21C 11/10 . combined with cutting apparatus {([A21C 11/004](#) takes precedence) }
- A21C 11/103 . . { having multiple cutting elements slidably or rotably mounted in a diaphragm-like arrangement }
- A21C 11/106 . . { using hand-operated cutting tools ([A21C 9/068](#) takes precedence) }
  
- A21C 11/12 . Apparatus for slotting, slitting or perforating the surface of pieces of dough
- A21C 11/14 . . for star-like stamping
  
- A21C 11/16 . Extruding machines
- A21C 11/163 . . { Applying co-extrusion, i.e. extruding two or more plastic substances simultaneously, e.g. for making filled dough products; Making products from two or more different substances supplied to the extruder }
- A21C 11/166 . . { for making toroid-shaped products, e.g. doughnuts ([A21C 11/163](#) takes precedence) }
- A21C 11/18 . . with pistons
- A21C 11/20 . . with worms
  
- A21C 11/22 . Apparatus with rollers and cutting discs or blades for shaping noodles
  
- A21C 11/24 . Apparatus for cutting out noodles from a sheet or ribbon of dough by an engaging pair of grooved rollers

- A21C 13/00**      **Provers, i.e. apparatus permitting dough to rise** {(testing dough properties [G01N 33/10](#))}
- [A21C 13/02](#)      .    with endless conveyers { e.g. for moving the dough pieces progressively through the prover }
- A21C 14/00**      **Machines or equipment for making or processing dough, not provided for in other groups of this subclass**
- A21C 15/00**      **Apparatus for handling baked articles**
- [A21C 15/002](#)      .    { Apparatus for spreading granular material on, or sweeping or coating the surface of baked articles (of pieces of dough [A21C 9/04](#); for confectionary [A23G 3/28](#))}
- [A21C 15/005](#)      . .    { of which at least the dispensing part is hand-held, e.g. comprising a flexible container, pouch or gun-like applicator }
- [A21C 15/007](#)      .    { Apparatus for filling baked articles (filling pieces of dough [A21C 9/06](#); filled bakery products [A21D 13/0019](#), [A21D 13/085](#))}
- [A21C 15/02](#)      .    Apparatus for shaping or moulding baked wafers; Making multi-layer wafer sheets
- [A21C 15/025](#)      . .    { Apparatus for shaping or moulding baked wafers, e.g. to obtain cones for ice cream }
- [A21C 15/04](#)      .    Cutting or slicing machines or devices specially adapted for baked articles other than bread (for cutting or slicing bread [B26B](#), [B26D](#))