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Sheet 1-2 Sheets.

J. & C. Bruce,

6963X

Cracker Machine,

Patented Mar. 13, 1832.

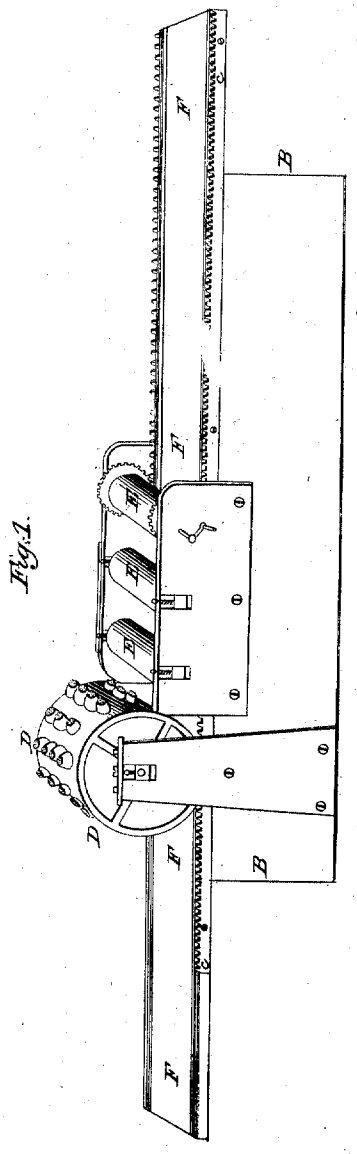


Fig. 1.

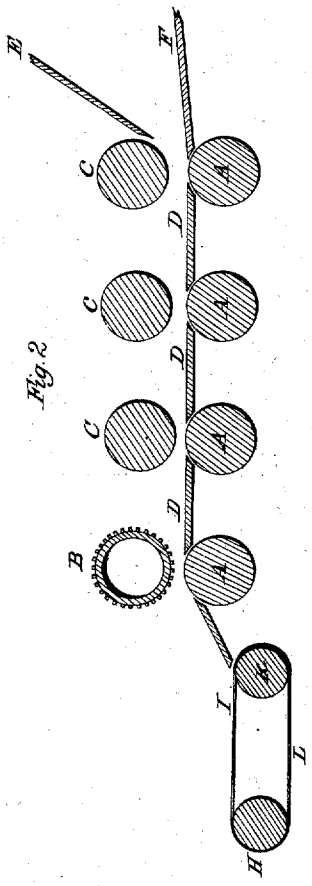


Fig. 2.

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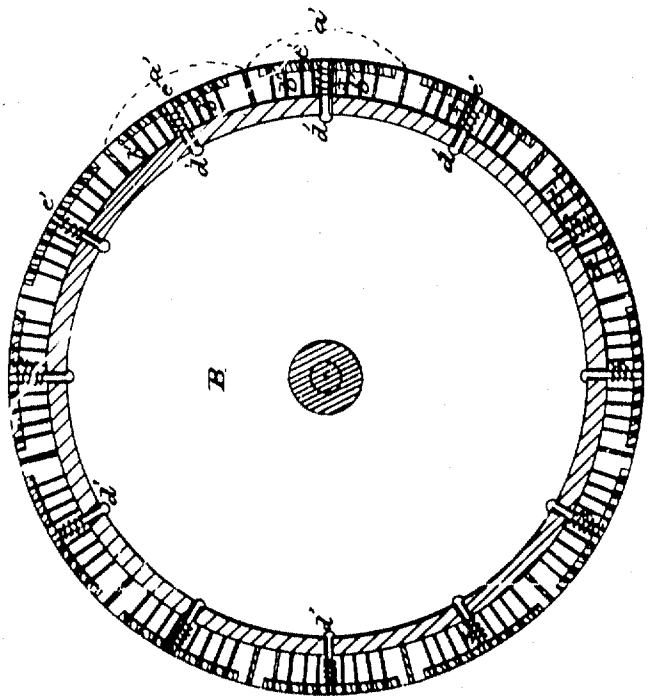


Fig. 2

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Inventors:

John Bruce
Charles Bruce

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6963x

Mar 13, 1832

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John Bruce and Charles Bruce.

Letters Patent.

The Schedule referred to in these Letters Patent and making part of the same, containing a description in the words of the said John Bruce and Charles Bruce of their improvement in the Machine for manufacturing Ship Biscuit pilot bread crackers &c.

Know all whom it may concern by these presents. that we John Bruce of the County of Kings and Charles Bruce of the same County State of New York. have invented and discovered a new and useful machine for Manufacturing or forming from the dough of flour and other usual materials. what is commonly called ship biscuit Navy and pilot bread crackers. New year cakes ginger nuts. tea biscuit &c &c. and that a specification of the aforesaid Machine is contained in the words following. A long rectangular slab of suitable length. width and thickness and made of wood or other materials or metals is to be provided having its two longest surfaces perfectly plane or level & parallel with each other. A piece of frame work is to be prepared among other things. to receive this in such a manner that its two larger surfaces may be parallel with the horizon or as near thereto as may be convenient and in such manner also that with the aid of a groove or grooves or other similar contrivance made in or attached to the said frame it may be moved backward and forward in the direction of its length as sufficient and convenient for the use of this slab is to receive at one end of it and on the uppermost surface of the same. the dough from which is intended to be made the aforesaid ship biscuit Navy and pilot bread, crackers, New year cakes, ginger nuts, tea biscuit &c &c. and being put in motion by any convenient power and so as to convey the said dough underneath two, three or more cylindrical rollers placed as before over the said slab. with their axes parallel to one another and parallel also to the said slab but successively [illegible]

nearer

nearer to the said slab as they are located farther from that end of the frame first receiving the dough.— The dough being thus conveyed on the said slab underneath the said rollers is pressed into a flat form and spread evenly over and upon its surface every time it passes underneath any one of the said rollers becoming thinner than it was before till having passed under that roller which is farthest from that end of the frame which first receives the dough it is brought as near as may be to the intended thickness of the aforesaid ship biscuit, navy pilot bread, crackers, New Year cakes, ginger nuts, tea biscuit &c &c.

And still further use of this slab is after having in conjunction with the rollers already mentioned, passed or spread the dough into its flat and proper form and thickness, to convey it under the cylinder hereafter and herein to be described and named the cutting cylinder for the purpose of being cut into pieces of the required shape and such as we have already mentioned. Effectually to make the said oval angular slab serve the purpose required of it, it is necessary that [illegible] sides of the said slab should be attached to what is usually called a rack with teeth on its upper side working into teeth of a wheel fastened and belonging (in preference) to that particular cylindrical roller, which is nearest to that end of said frame, which first receives the dough, and in order to keep the dough from spreading sideways so as to run rough upon and fill the teeth of the said rack as also the teeth of the wheel into which it works a slip of any suitable material, and of sufficient height, is to be made fast in the uppermost surface of the said slab in such a manner as to be in the direction of its length at or near each edge of the said slab, and extending the whole or nearly the whole length thereof. Motion backwards and forwards will be alternately given to the aforesaid slab, by the use of a crank or other machine attached to the shaft of the cylindrical roller last mentioned and moved by the hand or other similarly regulated power in an alternate manner. The cylindrical rollers two, three, four, or more of them are placed in the frame which receives and continues the aforesaid slab. They are placed over it in such manner that their axes are at right angles to the length of the slab, and by screws or any other convenient machinery they are made capable of being elevated or depressed so as to [illegible]

further

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further from or approach nearer to the upper surface of the said slab, as occasion may require. A wheel (and it has been already ~~inserted~~ mentioned) is attached to the shaft of that particular cylindrical roller, which is nearest to that end of the ~~before~~ aforesaid frame at which the dough is first received and works into the teeth of the rack immediately below it, giving motion to it, and of course to the slab itself on which it is ~~parsimoniously~~ secured in a backward and forward manner. But if the wheel first described be made fast to the shaft of the particular cylindrical roller, above named the shaft of no other cylindrical roller can have any wheel attached to it. all other rollers will be moved by the mere contact and pressure of the dough between them and the slab. It will be understood also that the two ships intended to prevent the dough from encroaching upon the rack or racks above mentioned will require that all the cylindrical rollers be so shaped as to admit the said ships to pass freely under them. They will or rather should be so shaped accordingly. The piece of machinery intended to be made use of in cutting the dough into the desired forms after it shall have been rendered flat and of an equal and proper thickness is a cylinder which we shall name the cutting cylinder supplied with what we shall call cutters. Like the cylindrical rollers already mentioned for flattening the dough it stands over or above the aforesaid slab, but in such manner as to press immediately on it, and having its axis ~~crosswise~~, or at right angles to the direction of the length of the slab; it is situated, in the frame further from that end of it at which the dough is first received than any of the cylindrical rollers above mentioned, and of course as near as may be to the one which brings the said dough to the required thickness. The cutters if not made of a piece with the cylinder itself, as they may be, the rest perhaps with the same convenience may in another manner, be inserted into the said cylinder by the aid of screw work, or otherwise, if the bussoir be to be of a circular shape circular holes of a suitable diameter may be drilled or bored at right angles to the axis, into the cutting cylinder, so as to penetrate into its interior the said cutting cylinder of course being hollow and either with or without the ends of the same being closed at the pleasure of the owner. Into these holes

holes or perforations are screwed or otherwise made fast short cylindrical tubes having an internal diameter equal to that which the biscuit to be, is intended to possess: That extremity of each cylindrical tube which may be called the bottom, and which is nearest in point of distance to the axis of the aforesaid cutting cylinder has its aperture closed up with a plate either separately attached or of a piece with the tube itself. The length of each of these short cylindrical tubes should not be less than three, four, or six times the thickness of the proposed biscuit. Into every such plate when the biscuit to be required to be perforated three should be inserted and made fast Holes to as many cylindrical or other shaped wires as may be necessary to perforate the biscuit sufficiently, these wires should be made somewhat sharp and pointed, they should be so placed as may be equidistant from each other, and their external extremities should terminate in the external surface of the aforesaid cutting cylinder; In the centre of the plate which closes the bottom of each of the short cylindrical tubes is inserted but in a loose and not permanent manner, another cylindrical or other shaped wire and which wire will call the central wire, standing at right angles to the axis of the aforesaid cutting cylinder, having an enlargement, head or knob at that extremity of it which appears within the cavity and being of such a length that the other extremity terminates in the external surface of the said cutting cylinder. To the external extremity is secured in a permanent manner a circular plate not flat but curved to the periphery of the aforesaid cutting cylinder of a diameter nearly equal to that of the tube in which it is located and having as many perforations made in it as there are cylindrical or other shaped wires as already mentioned inserted into the plate in the extremity of the tube opposite to it, these perforations being somewhat longer than the wires which pass through them. Between the two plates in the two opposite extremities of each of the short cylindrical tubes above mentioned are made fast to the said tube another moveable in it, is a spiral or other spring or springs the intention of which is to allow the outermost and moveable plate, as the dough is pressed into the tube to recede or retreat from before it, and when the cutting cylinder

cylinder shall have turned sufficiently to admit of it to expel the biscuits &c. before mentioned from the tubes already perforated and fit to be put into the oven. The use of the enlargement head or rim on the internal extremity of the aforesaid central wire is to prevent the external and moveable plate to which it is attached from falling out of its tube when it is in a declining or pendent position. It need scarcely be added that the external surface of the last mentioned plate may have any name or device engraved or otherwise made upon it that may be desired. and this will be the more easily effected in the working those articles the dough of which does not require to be perforated, for in this case no wires will be working in any of the short cylindrical tubes except the central wire and of course no perforation whatever in the moveable plate. The short cylindrical tubes in order to enable the operator to obtain the greatest number of pieces of biscuit &c. from a given quantity of dough should be arranged in longitudinal series in such manner that the individual tubes of any two contiguous series should not be opposite to, but mostly intermediate between those of each other, the distance apart of these tubes in every direction being the least possible that circumstances will admit. In using the machine as thus far described and which is complete, the dough is placed upon the slab after the slab itself as well as the remaining machinery have been dusted over with flour to prevent its sticking, the roller nearest to the dough is set in motion by a crank or any other means, this carries the slab with the dough upon it underneath the said roller, and the motion being continued underneath another & another until it be sufficiently flattened when the motion being still continued the dough is carried under the cutting cylinder, unless the short cylindrical tubes aforesaid pressing inward the moveable plates before described and delivering the biscuit &c. by the action of the spiral springs so soon as the cutting cylinder shall have turned so far from the aforesaid slab as to admit of it. when the whole plate of dough shall have passed under the said cutting cylinder and a proper distance beyond it, the biscuit &c. are to be passed to the oven, the remainder is placed among the dough the slab is turned back to its former position

position and the same process repeated. Perhaps a little better method of constructing a machine embracing the same principles will be as follows. Let there be provided a suitable frame of wood or other material in which are to be secured, so that they may be capable of revolving when applied to use four or more cylindrical rollers of the same length as the aforesaid cutting cylinder of convenient, and better probably than otherwise of one and the same diameter. Let the axis of these be so placed as that the upper surface shall be in one and the same horizontal plane, and let this plane, as near as may be convenient, be coincident with the Horizontal plane of the aforesaid frame; The three or more cylindrical rollers first above mentioned in this one specification together with what we have denominated the cutting cylinder are placed immediately over the said four cylindrical rollers just in the present modification described and at the same distances therefrom as they were directed to be from the rectangular slab aforesaid; one of the four last mentioned cylindrical rollers, to wit, that over which is placed the cutting cylinder aforesaid may have its external curved surface composed of some suitable elastic covering for the purpose ~~for the purpose~~ of enabling the short cylindrical cutting tubes more effectually to perform their duty than they otherwise might.

To obtain the proper proportionate velocities of these various cylinders &c. let appropriate pullies or wheel work be made use of to connect each of the machinery as revolved, and let also stationary slabs or planes of wood or other suitable material or small recolving rollers be placed between each successive pair of cylindrical rollers to support the dough from falling while it is being conducted to the next pair, and the operation may probably be better done thereby the machine first and herein described. At that end of the frame at which the dough is received ~~[illegible]~~ an inclined table or hopper should be provided and made fast to the said frame the use of which table or hopper is to introduce the dough between the

&c

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the first and more distant pair of cylindrical rollers thence by the agency of the aforesaid stationary slabs or small revolving rollers to be conducted to the second and less distant pair of rollers, thence again by the slab or its substitute, roller or rollers to the third and still less distant pair of rollers, and ultimately to the cutting cylinder aforesaid when it is to be made into the form of biscuit &c. &c.

At the opposite end of the frame aforesaid are inflexible planes, inclined at a convenient angle to the horizon of a convenient length, & having a width equal to the length of the cylindrical rollers aforesaid is to be made fast in such a manner as best to avoid touching the cylindrical roller over which is placed the cutting cylinder. Down this inclined plane it is intended the biscuit &c. together with what may be called the scraps or refuse dough shall fall or descend and then be received on a feeding cloth having a width equal to the length of the aforesaid cutting cylinder which feeding cloth passes horizontally around two cylindrical rollers so as to fit tight thereon and from which the biscuit &c. are to be taken immediately to the oven and the refuse dough to be worked over again and lastly it is possible that the work we desire our machinery to perform might be done best of all, by constructing it in such a manner that the dough shall descend vertically downwards or nearly so till it comes to the cutting cylinder aforesaid which will deliver it by the help of the inclined plane aforesaid upon the horizontal feeding cloth last mentioned. In this latter case, neither the intervening slab or slabs nor roller or rollers will be of any use or if so of very little, all that is important is by wheels or pulleys to give the proper and appropriate velocities to the different pieces requiring to be put in motion.

It is to be added that obvious means very similar to those already herein described are requisite to be resorted to in all these modifications of our principles or rather of our Machinery to prevent the dough from spreading beyond the extremities of the cylindrical rollers and the cutting cylinder;

There remains now for us to say in what we conceive that which we claim as new and original with us in the foregoing amended Machinery

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machining. We claim as new, the use of two or more cylindrical rollers arranged to reduce the dough to its desired thickness in connection with the aforesaid cutting cylinder.

And we claim as new the use of the aforesaid cutting cylinder containing cutters of the ordinary description whether it be so constructed as to make circular biscuit cakes or the same or similar articles of any other shape or form whatever.

Witnesses
Peter R. Stagg
John J. Cameron
M. J. Ruggles

John Bruce
Charles Bruce

2042 words