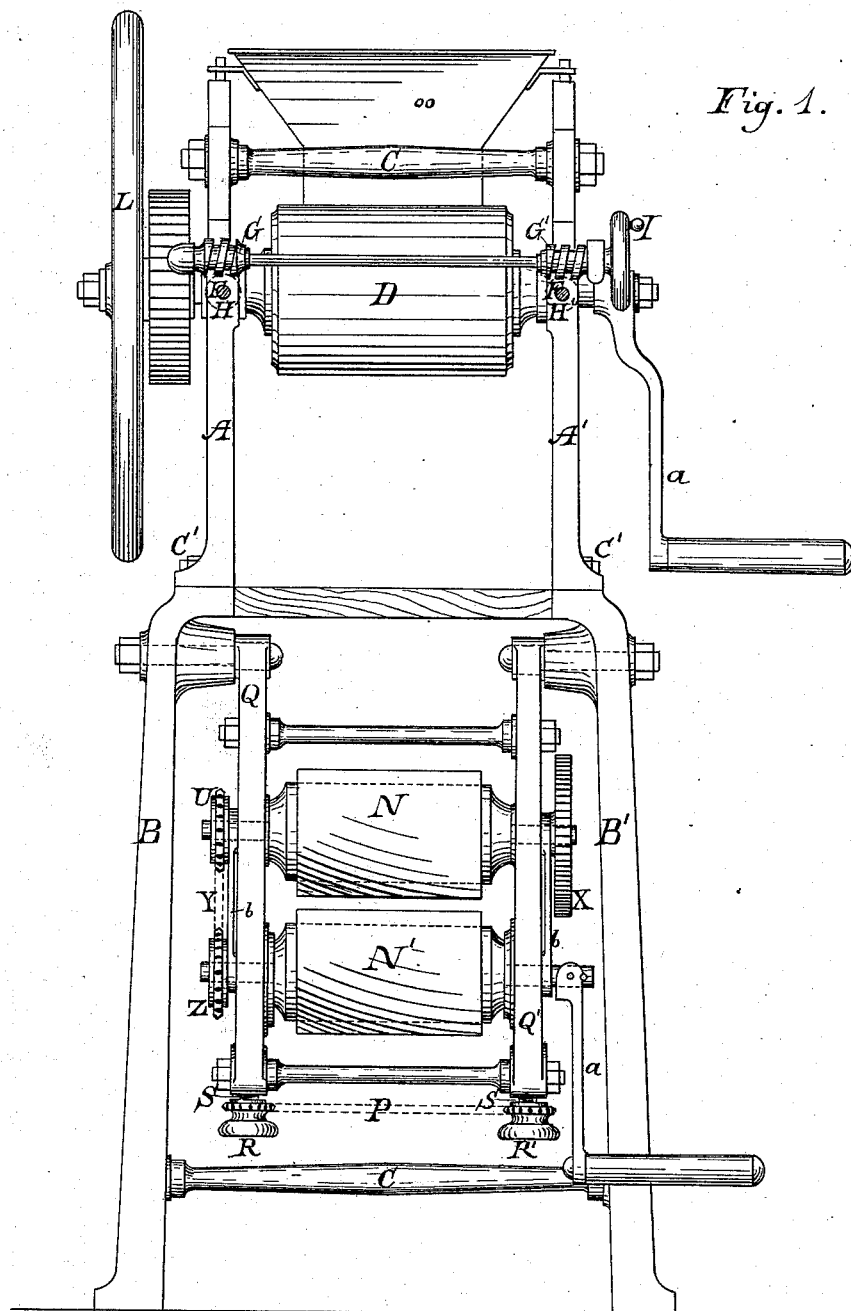


C. & W. FINAZ.

CRUSHING AND SHELLING MACHINE.

No. 264,869.

Patented Sept. 26, 1882.



Witnesses

Charles Smith
J. Stahl

Inventors

Charles Finaz
William Finaz
for Lemuel W. Terrell atty

(No Model.)

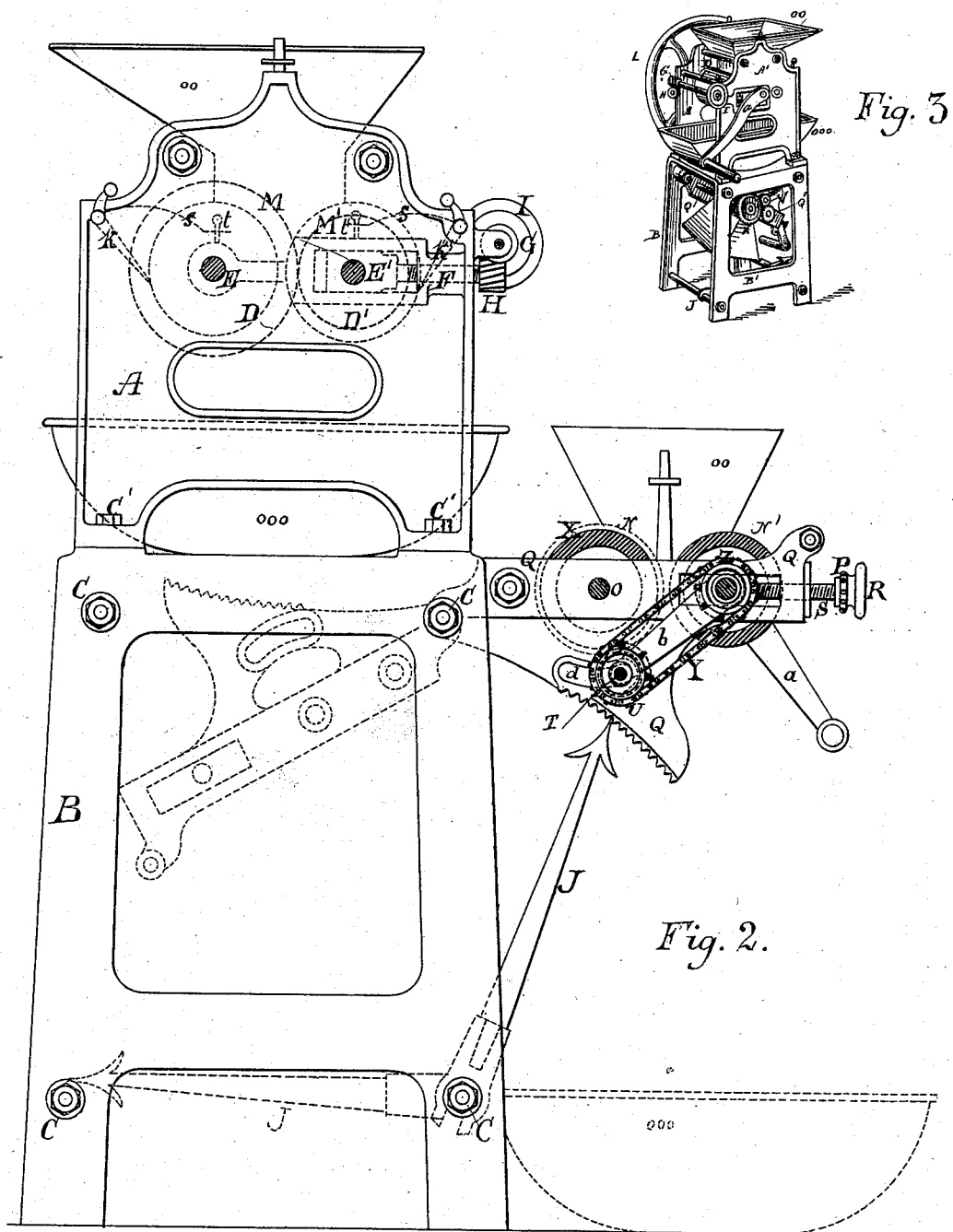
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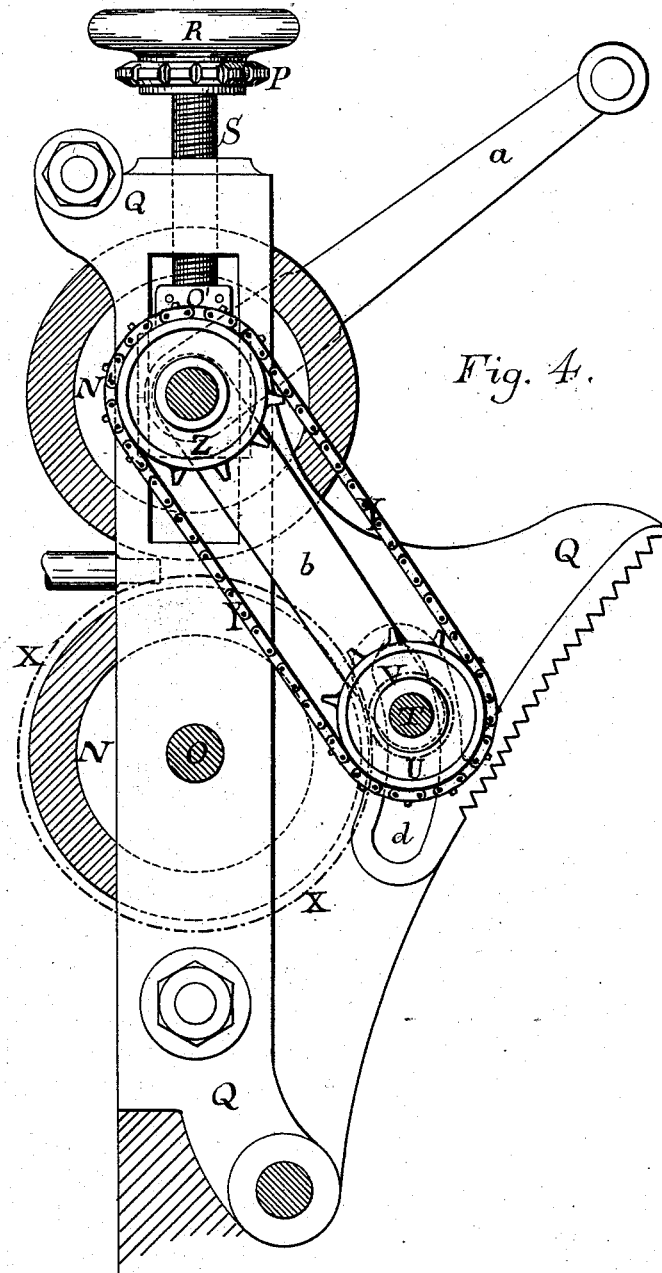


Fig. 4.

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UNITED STATES PATENT OFFICE.

CHARLES FINAZ AND WILLIAM FINAZ, OF GENEVA, SWITZERLAND.

CRUSHING AND SHELLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 264,869, dated September 26, 1882.

Application filed May 19, 1882. (No model.) Patented in France June 30, 1880, No. 136,280.

To all whom it may concern:

Be it known that we, CHARLES FINAZ and WILLIAM FINAZ, citizens of the Swiss Republic, and residing at Geneva, Switzerland, have invented a new and useful Improvement in Crushing and Shelling Machines, (for which we have obtained a patent in France, No. 136,280, bearing date June 30, 1880,) and the following is declared to be a correct description of the same.

Our crushing and shelling machine is formed by combining together two distinct machines hitherto in use, which go to make up an indispensable part of the stock of appliances used by confectioners, pastry-cooks, &c., the one device serving to shell almonds and the other device to crush almonds, pistachio-nuts, filberts, fish, meat, to break hazel-nuts, and to work up hard pastes.

Because these machines are indispensable, it is important to combine them and to render the use of them practical and economical as regards both construction, size, adaptability, and cost, for it is evident that two distinct machines, with sufficient stability and strength to work them, will require a tolerably large space, especially on account of their bulk, but also on account of their distinct mechanism. These are inconveniences which in small manufactories make it impracticable to place together two machines without causing much inconvenience in the service. The same may be said as to the cost. Two machines having each their own parts must necessarily cost more because of this multiplied mechanism. The almonds which are to be crushed must always be previously shelled, and, as this operation lasts but a short time, it hardly interferes with the work of crushing them. Now, by placing together upon a common frame the two machines, many instrumentalities will be employed for both that were previously employed in each. It is therefore certain that there must be a difference in the cost and in the space required for the machine, which will at the same time afford a greater saving in the service and in the first cost for machinery or manufacturing stock. These results are obtained by means of the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a front view of the machine, the

shelling part hanging down underneath out of the way. Fig. 2 is a side view of the apparatus, the shelling-machine being shown in its right position for working. Fig. 3 is a perspective view of the same. Fig. 4 is a side view of the mechanism of the shelling-machine drawn on a larger scale.

Similar letters refer to similar parts throughout the several views.

The frame of our combined machine is preferably of cast-iron, made of four pieces, A A' B B', and united together by the vertical bolts C' in one direction and by horizontal cross-bars C in the other direction. The way in which the pieces are thus fitted together horizontally enables us to separate at will the crushing apparatus from its support for repairs or for any other cause.

The crushing apparatus is composed of two cylinders, D D', of granite, having iron axes turning in metal bearings E E'. One of the cylinders, D', is movable, to allow for regulating the distance between them. This is done by means of two adjusting-screws, F, connected with the movable bearing E'. These adjusting-screws F are operated by the spiral gear-wheels G G', which engage the spiral gear-wheels H H', fixed on the screws F. This construction permits the adjustment of the movable cylinders D D' to be done by turning the little fly-wheel I, fastened on the common axis of the spiral gear-wheels G G'. The movable cylinder D', being revolved either by a belt or a crank, a, transmits its motion directly to the other cylinder by means of the two toothed wheels M M', which have different diameters, so as to move the surfaces of the cylinders D D' at different speeds, in order to produce a lacerating or rubbing action upon the material to be crushed.

Two scrapers, K K', provided with springs s s' and regulated by tension-screws t t', constantly bear against the cylinders, cleaning off the surplus material. The fly-wheel L is keyed on the axis of one of the cylinders, which aids the rotary motion by reason of its inertia.

A hopper, o o, with a large open top is placed upon the frames A A' above the cylinders D D', and receives the material to be crushed, and a bowl, o o o, with a half-circular bottom, is placed underneath to receive the crushed

material, which may be put into the hopper again and recrushed as many times as necessary to obtain the required degree of fineness.

The shelling apparatus, which is likewise shown in Figs. 1 and 2, and separately on a larger scale in Fig. 4, is composed of two wooden cylinders, $N N'$, provided with a surface-covering of caoutchouc, and they are mounted on iron axes, which turn, like those of the crushing-cylinders, in metal bearings $O O'$. In the same manner as in the crusher, the cylinder N' is made adjustable, in order to permit the regulating of its distance from the cylinder N and to make up for the unequal wearing of the caoutchouc. This motion is likewise performed by means of two adjusting-screws, S , connected with the movable bearings O' . The working of these adjusting-screws S is regulated by an endless chain, P , which engages with the rose-pinions $R R'$, keyed upon the screws S , which contrivance has the effect of moving the cylinder horizontally when the pinions $R R'$ are turned.

Previous to our invention shelling-machines having cylinders surfaced with a coat of caoutchouc were known, but were defective, because they required gear-wheels having sufficiently long teeth (twenty-five to thirty millimeters long) to remain in contact when the caoutchouc is new and to allow for the adjustment as the cylinders wear. To overcome this defect we have added an intermediate arbor, T , which transmits the rotary motion of the movable cylinder N' to the fixed cylinder N . For this purpose the arbor T bears at one end a chain-wheel, U , and at the other a pinion, V , which engages with the wheel X , keyed on the journal of the fixed cylinder N . The intermediate arbor, T , is put in motion by an endless chain, Y , which engages with the wheels U and Z , which wheel Z is keyed upon the axis of the movable cylinder N' and impelled by the crank a or by a belt and wheel. This combination of devices renders the cylinders independent and promotes their efficiency.

It is important that the intermediate arbor, T , remain parallel with the axes of the cylinders and in such a position that the chain Y will always be duly stretched, whatever its position is in reference to the movable cylinder N' . Two connecting-rods, b , are made use of, with one end of each having an eye around the intermediate arbor, T , and the other end around the axis of the movable cylinder N' , so as to oblige the intermediate arbor regularly to follow the cylinder in its digressions. There is a slot, d , in which the intermediate

arbor, T , moves and is supported. This slot is formed as a segment of a circle, the center of which circle is the bearings of the fixed cylinder N . This allows the teeth of the pinion V to constantly engage the teeth of the wheel X in whatever position it may occupy in the slot d by reason of the variations in the position of the cylinder N' . The whole shelling apparatus is secured in a frame, $Q Q'$, made of iron and connected by hinge-joints to the frame $B B'$, so as to enable it to be placed in between the frames of the crushing apparatus when not in use, as shown in the general view, Fig. 1, and in the perspective view, Fig. 2, so that both apparatus united together form but a single machine.

When working the shelling apparatus is placed in the horizontal position illustrated in Fig. 2 and maintained in that position by means of the strut or leg J , which rests with one end upon the cross-bar C , and with its other end supports the frame Q , which is provided for that purpose with a notched under surface.

The shelling apparatus is provided with a hopper, $o o$, to receive the material to be shelled, and the bowl $o o o$, for receiving the shelled or crushed substances, is adapted for use in both parts of the apparatus.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. The combination, with the crushing device $D D'$ and the frame $A A'$, of the supporting-frame $B B'$, the shelling apparatus composed of the frame $Q Q'$, hinged to the frame $B B'$, the rollers $N N'$, and mechanism for revolving the same, and the movable support J , substantially as set forth.

2. The combination of the crushing-rollers $D D'$, the mechanism for adjusting and revolving the said rollers, the hopper $o o$, frame A , and movable bowl $o o o$ with the frame $B B'$, supporting the frame $A A'$, and crushing mechanism, the frame $Q Q'$, hinged to the frame $B B'$, the rollers $N N'$, and mechanism for adjusting and revolving the same, substantially as set forth.

3. The combination, with the frame $Q Q'$ and rollers $N N'$, of the arbor T , chain-wheels $Z U$, and gear-wheels $V X$, substantially as set forth.

Signed by us this 24th day of April, A. D. 1882.

CHARLES FINAZ.
WILLIAM FINAZ.

Witnesses:

TH. MERL,
ELMER SCHNEIDER,