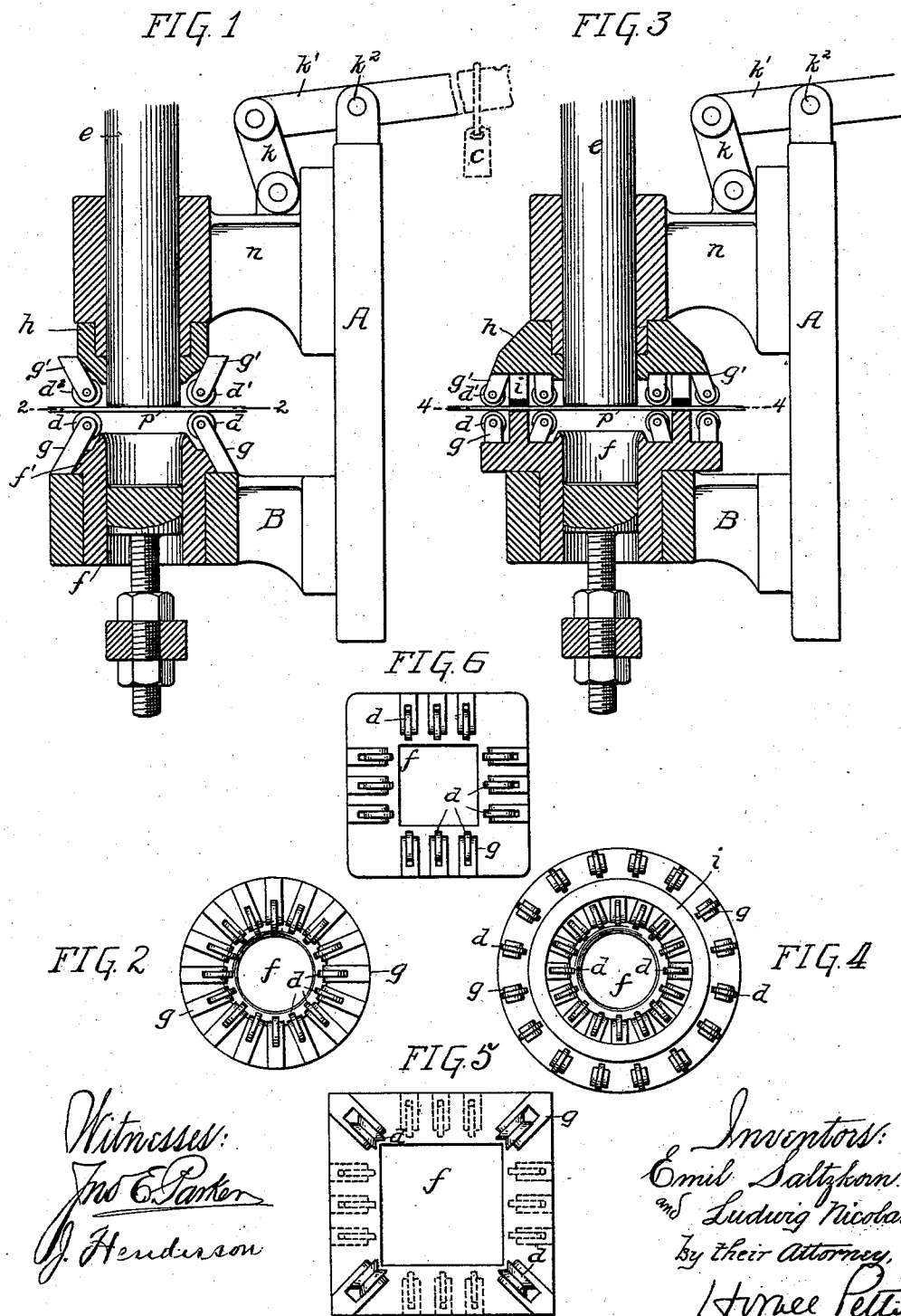


E. SALTZKORN & L. NICOLAI.
STAMPING OR PRESSING MACHINE.

No. 531,337.

Patented Dec. 25, 1894.



Witnesses:
John E. Parker
J. Henderson

Inventors:
Emil Saltzkorn
and Ludwig Nicolai
by their Attorney,
Harold Pettit

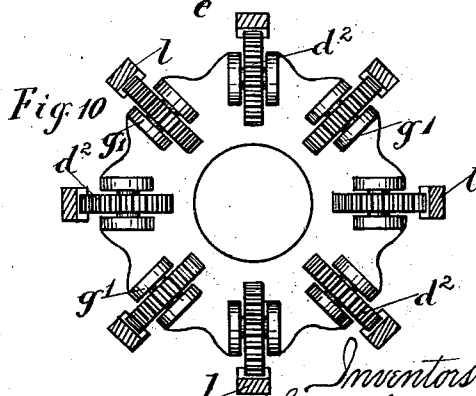
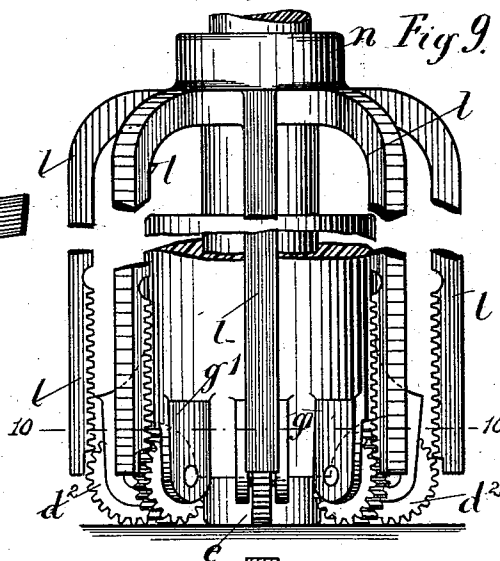
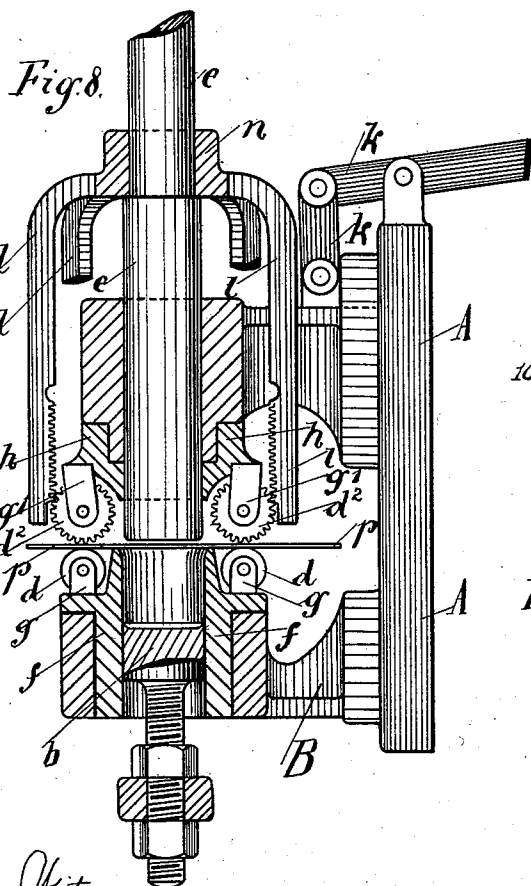
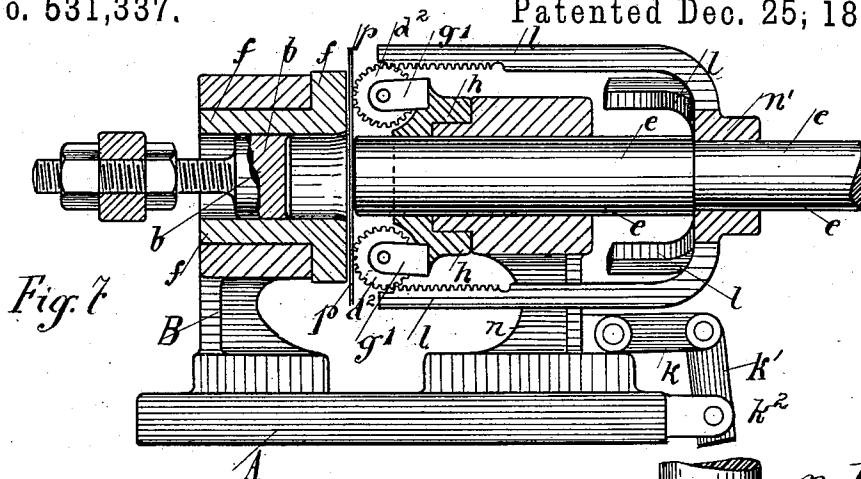
(No Model.)

2 Sheets—Sheet 2.

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Witnesses:
Geo. E. Parker
James Scott Jr.

Inventors:
Emil Saltzkorn
Ludwig Nicolai,
by their Attorney,
Horace Pette.

UNITED STATES PATENT OFFICE.

EMIL SALTZKORN AND LUDWIG NICOLAI, OF DRESDEN, GERMANY.

STAMPING OR PRESSING MACHINE.

SPECIFICATION forming part of Letters Patent No. 531,337, dated December 25, 1894.

Application filed December 13, 1893. Serial No. 493,557. (No model.)

To all whom it may concern:

Be it known that we, EMIL SALTZKORN and LUDWIG NICOLAI, subjects of the Emperor of Germany, and residents of Dresden, in Saxony, Germany, have invented certain new and useful Improvements in Stamping or Pressing Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

Our invention has for its object the manufacture of various articles such as boxes, basins, &c., from material having comparatively small tensile strength, such for instance, as wood or straw pulp boards, paperboard, inferior qualities of leather, or certain kinds of sheet metal.

In the manufacture of such articles by means of a stamping or pressing machine it is usual to confine the material to be acted upon by a holding ring or device of similar character which extends completely around the mouth of the mold into which the material is to be forced and is so arranged as to resist, to some extent, the forcing of the material into the mold so that the latter may be properly stretched and the surplus material taken up in the body of the article being formed. It has been found in practice, however, that articles of this character cannot be made from inferior qualities of wood or strawboard and like flimsy material inasmuch as they do not possess sufficient strength to resist the stretching and friction to which they are subjected during the operation, this being especially the case where the article to be formed is provided with a flange or sides extending at a right angle to its bottom portion. In the manufacture of such articles by stamping it is necessary to have some device for holding the edges of the material for if placed loosely upon the upper surface of the mold and forced therein by the die, one or other side will yield and the material will overlap on the sides or flanges and result in an imperfect article. In order therefore, to guide the material and subject it to a strain which it is capable of withstanding, we propose to arrange around the mouth of the mold a series of rollers which may be placed either above or below or on each side of the sheet to be acted upon.

In the accompanying drawings:—Figure 1 is a sectional elevation of a machine constructed in accordance with our invention. 55
Fig. 2 is a plan view of a part of the same on the line 2—2 Fig. 1. Fig. 3 is a view similar to Fig. 1 illustrating the employment of two series of rollers arranged in concentric rings, with an intervening friction ring. Fig. 4 is a 60
plan view on the line 4—4 Fig. 3. Figs. 5 and 6 are views similar to Fig. 4 illustrating different arrangements of the holding and guiding rollers which may be employed in the manufacture of rectangular articles. Fig. 7 is a sectional 65
view showing a construction in which the rollers are provided with toothed peripheries which are mechanically rotated to assist in feeding the sheet toward the mold. Fig. 8 is a similar view with a second series of plain 70
rollers beneath the sheet and in line with the toothed rollers. Fig. 9 is an elevation of the die, its spindle, the toothed rollers and their operating racks, and Fig. 10 is a sectional plan view on the line 10—10 Fig. 9. 75

The present methods of holding the sheet of material being acted upon by flat or corrugated plates or by means of rings with a large surface causes a large amount of friction, and material if at all flimsy is incapable of withstanding the forming process. To 80
reduce this friction and hold the material with a force proportionate to its strength is the object of our invention and to this end we provide one or more circles of revolving 85
rollers between which the material to be treated is held.

In the drawings (Figs. 1 and 2) A represents a carrying frame from which projects an arm, B, provided with a box in which the 90
mold, *f*, may be placed. Guided vertically in this frame is an arm, *n*, one end of which is connected by a link, *k*, to a lever, *k'*, fulcrumed at *k*², on the framework and so arranged that the arm may be raised or lowered 95
as desired. This arm is provided with a guideway for the reception of a die, *e*, of a contour in cross section corresponding to the shape of the article being formed, and it may be either round as shown, or oval or elliptical 100
or square, or oblong or hexagonal or other form as required.

Projecting from a flange, *f'*, on the mold box, *f*, are a series of arms, *g*, in which are

spindles, carrying rollers, *d*, and from a removable flanged collar, *h*, on the arm, *n*, project arms, *g'*, carrying spindles on which are mounted rollers, *d'*.

5 The upper surface of the mold may be plain as shown in Fig. 7 and only one set of rollers be employed, or as shown in Fig. 1 two sets, one below and one above the sheet may be used. When material of greater diameter is
10 being operated upon it will be found advantageous to employ several concentric circles of rollers, those of one circle being arranged alternately with the intervening spaces of the next set, so that the rollers of one set work
15 in the intervening spaces of the other and vice versa.

To prevent material having a very smooth surface from giving away too easily under pressure a frictional holding ring, *i*, may be
20 placed between the two circles or rollers, as shown in Fig. 3, or several holding rings may be placed in front or to the rear or on both sides of a single or of several sets of rollers. In operation the lever, *k'*, is operated until
25 the arm, *n*, in which the die is carried, is raised somewhat above the surface of the mold, and after the material, *p*, has been placed in position, the lever is released and the upper rollers rest upon the material, pressing
30 it into contact with the lower rollers carried by the mold or with the smooth upper surface of the mold, as the case may be. The die, *e*, then descends pressing the material within the hollow of the mold and the rollers
35 permitting a perfectly even, gradual feed of the material as they exert the same retarding friction at all points.

When different grades of material are being acted upon we may make the handled end of
40 the lever, *k'*, act as a scale beam, and by adjusting a weight, *c*, thereon partially counterbalance the weight of the arm, *n*, and permit only a portion of the weight of the arm to rest upon the sheet, through rollers, *d*. This arrangement, however, is insufficient when the
45 material to be operated upon is of exceedingly flimsy nature. It is then necessary to exercise even more care and in such cases the rollers must be revolved to feed the material
50 gradually toward the mold as the die descends. To accomplish this object a number of rollers or segments are provided with toothed or roughened peripheries and are so
55 arranged as to gradually feed the material toward the mold as the pressing operation progresses. These rollers or segments are either directly or indirectly connected with the die or any other operating part so that
60 they revolve with the forward motion of the die and feed the material under treatment forward toward the center thereby lessening or neutralizing the stretching force exerted by the action of the die.

Referring now to Figs. 7 to 10 *d*², represents a series of rollers provided with toothed
65 or roughened peripheries which are adapted

to be brought into contact with the surface of the material under treatment and with each roller engages a rack, *l*, secured to a hub or sleeve on the die, *e*, so that when the die
70 begins moving toward the material the rollers are turned and feed the material in a radial line toward the center. In Fig. 7 this arrangement is shown in connection with a mold having a smooth upper surface while in
75 Fig. 8 there is a series of rollers, *d*, placed beneath the material to support the weight of the toothed rollers and the die guide by which they are held. In some cases it may be desirable to employ a toothed pinion on the
80 spindle of each serrated or toothed roller for the rack to engage in order to avoid the necessity of using comparatively large teeth on the peripheries of the feeding rollers, or the rollers may have smooth peripheries and be
85 turned by frictional contact with the racks, *l*, the racks in such case being either smooth or roughened to insure the turning of the rollers.

Having thus described our invention, what
90 we claim, and desire to secure by Letters Patent, is—

1. A pressing or stamping mold, in combination with a series of rollers adapted to be held in contact with the surface of the material being acted upon and to guide the same
95 evenly toward the mold, substantially as specified.

2. In a pressing or stamping machine, the combination with a mold, of a die, a movable
100 guide therefor and a series of rollers carried by such guide and adapted to be brought into contact with the surface of the material being acted upon, substantially as specified.

3. In a pressing or stamping machine, the
105 combination with a mold and die, of a series of rollers provided around the entrance of the mold and adapted to support the material being operated upon, and a second series of pressing rollers provided above the mold and
110 adapted to bear upon the upper surface of such material.

4. The combination with a mold and die, of two or more series of rollers arranged in concentric circles and adapted to support the
115 material being acted upon, the rollers of one series being arranged on radial lines extending through the intervening spaces of the rollers of the opposite series, substantially as specified.

5. The combination with the mold and die, of two or more series of rollers arranged concentrically and adapted to support the material being operated upon, and an intervening
120 friction ring between the series of rollers, substantially as specified.

6. The combination of the mold, two or more series of concentrically arranged rollers provided around the mouth of said mold, a friction
125 ring provided between adjoining series of rollers, a die, a guide therefor, and pressing rollers and friction ring provided on said

guide at points directly opposite to the rollers and friction ring of the mold, the whole being adapted to clamp and guide the material being acted upon, substantially as specified.

5
10 7. The combination of the mold, a die, a vertically movable guide for said die, a series of rollers carried by said guide and adapted to press upon the material being acted upon, a fulcrumed lever connected to said guide and

a weight adjustable upon said lever, substantially as specified.

In witness whereof we have hereunto set our hands this 24th day of November, A. D. 1893.

EMIL SALTZKORN.
LUDWIG NICOLAI.

Witnesses:

HERNANDO DE SOTO,
RUD. SCHMIDT.