

No. 708,660.

Patented Sept. 9, 1902.

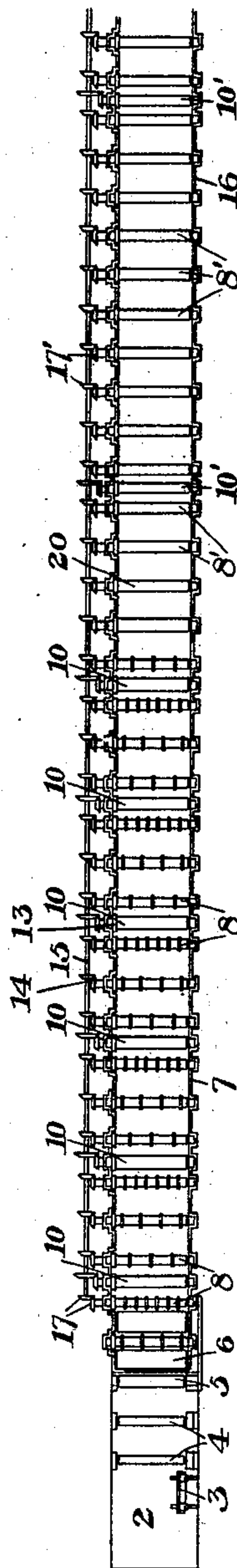
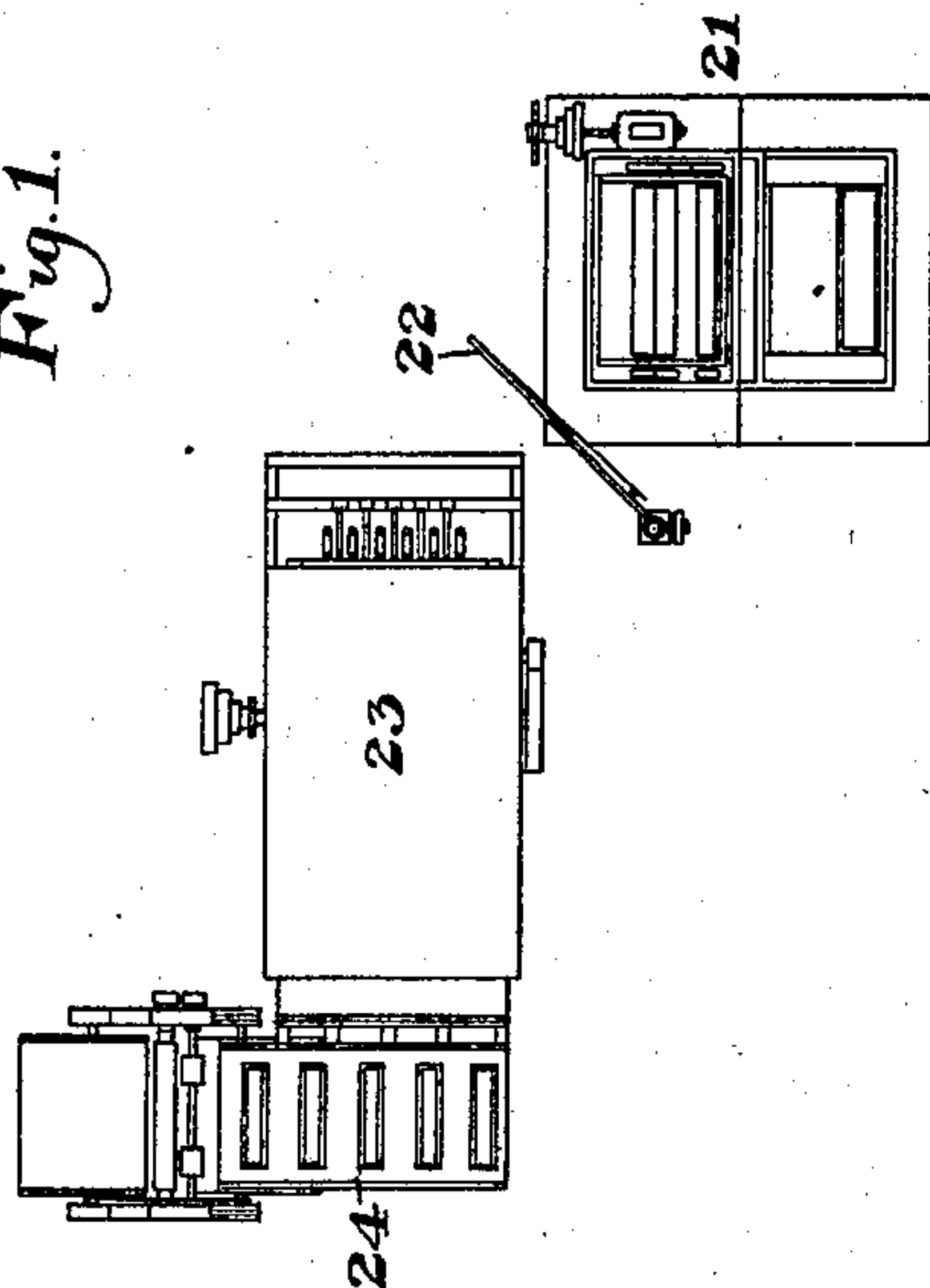
J. R. PHILLIPS.
PICKLING AND SWILLING APPARATUS.

(Application filed July 10, 1901.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.



WITNESSES

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H. M. Corwin

INVENTOR

James R. Phillips
by Baker & Remick
his attys.

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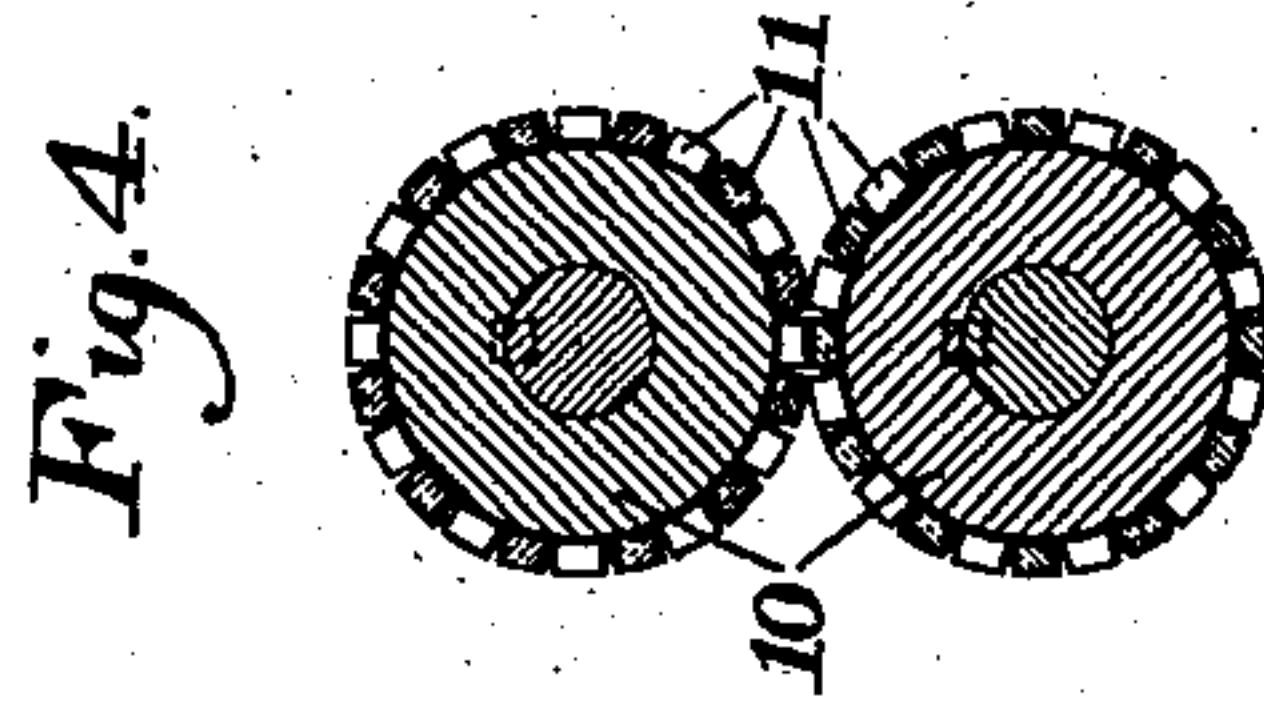
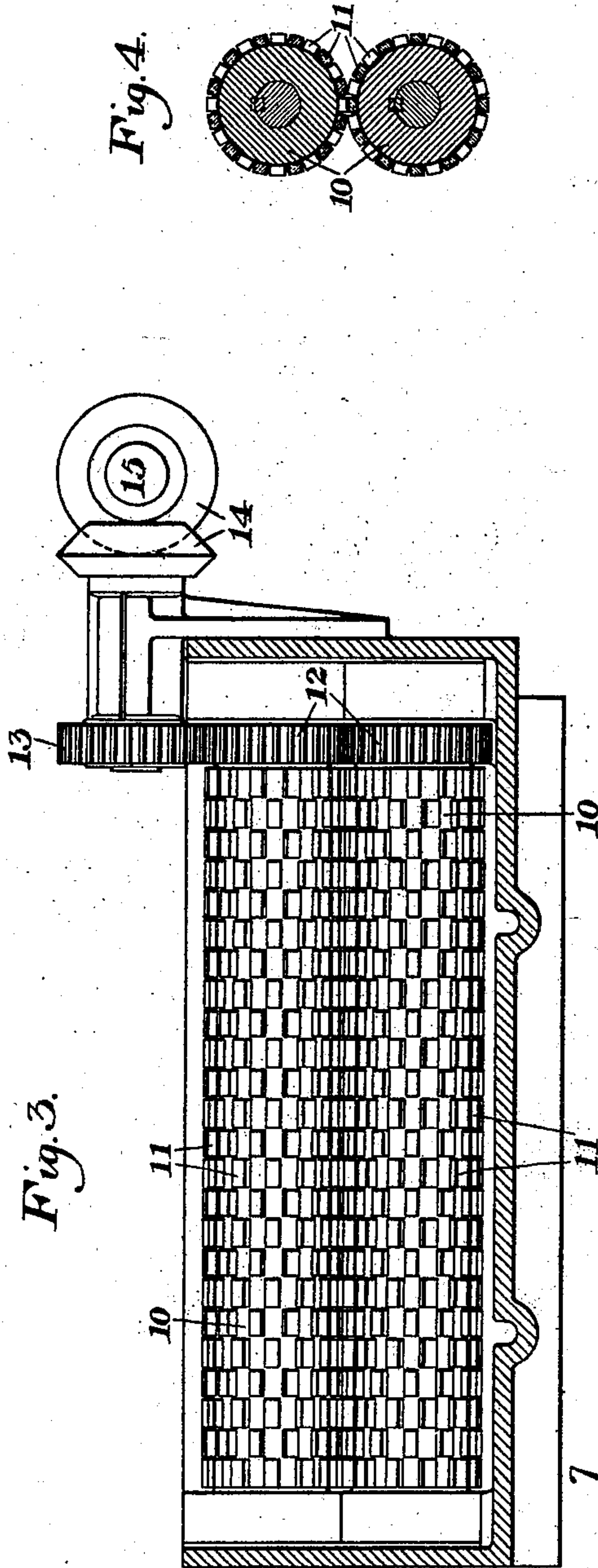
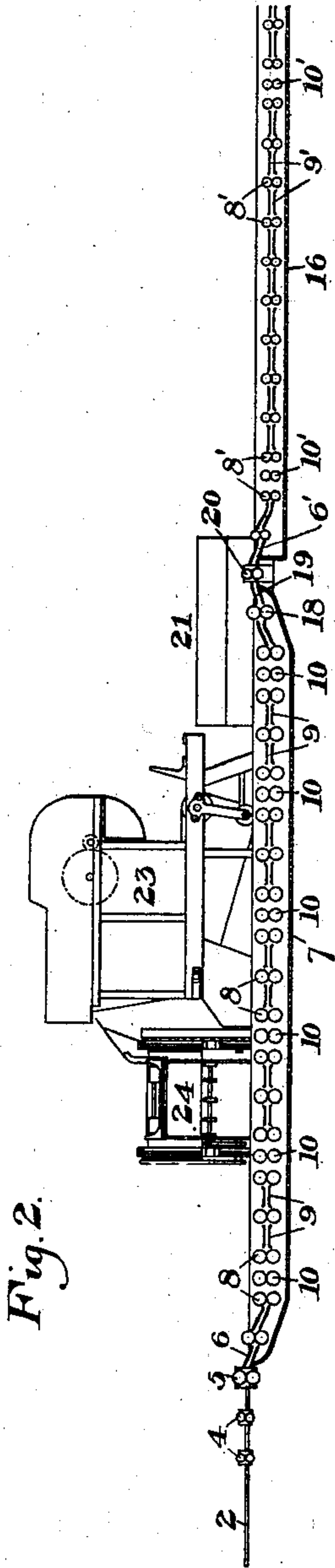
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PICKLING AND SWILLING APPARATUS.

(Application filed July 10, 1901.)

(No Model.)

2 Sheets—Sheet 2.



WITNESSES

Warren W. Swartz
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UNITED STATES PATENT OFFICE.

JAMES R. PHILLIPS, OF PITTSBURG, PENNSYLVANIA, ASSIGNOR TO THE AMERICAN TIN PLATE COMPANY, OF PITTSBURG, PENNSYLVANIA, A CORPORATION OF NEW JERSEY.

PICKLING AND SWILLING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 708,660, dated September 9, 1902.

Application filed July 10, 1901. Serial No. 67,779. (No model.)

To all whom it may concern:

Be it known that I, JAMES R. PHILLIPS, of Pittsburg, Allegheny county, Pennsylvania, have invented a new and useful Pickling and Swilling Apparatus, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan view of apparatus constructed in accordance with my invention. Fig. 2 is a longitudinal section of the same, and Figs. 3 and 4 are enlarged detail views showing the brushing-rollers which I preferably employ.

My invention relates to the pickling and swilling of plates and sheets preparatory to the tinning operation, and is designed to provide improved apparatus which will carry out these operations more rapidly and with greater economy than has formerly been possible.

In the drawings, 2 represents a table at the front end of the apparatus and upon which the pack of plates is set, being squared up against side guides 3, located at one side of this table. The plates or sheets are fed singly from this pack through two sets of preliminary feed-rollers 4 4 and to the feed-rollers 5. These rollers direct the sheets through guide 6 into the pickling vat or trough 7. This trough is of general rectangular form, and the sheets are fed therethrough by pairs of feed-rollers 8 8, with suitable guiding-plates 9 arranged between them. These sets of rollers are formed of acid-proof material and are arranged at such distances apart that the sheet will enter one set before it has left the bite of the preceding set.

At any desired distances apart between the pairs of feed-rolls I place sets of brush-rolls 10, which are driven at greater speed than the feed-rolls, preferably twice such speed, and are provided with brushing-surfaces arranged to clean the scale and foreign matters from the upper and lower faces of the sheets. This brushing-surface may be made in different forms, and I have shown the rollers as provided with projecting rubber plugs 11, which are set in staggered form, the plugs

of the upper roll intermeshing slightly with those of the lower roll somewhat in the manner of gear-teeth. The rollers are driven by end pinions 12, the upper of which meshes with pinion 13, driven by bevel-gear connection 14 with a longitudinal shaft 15, that extends alongside the pickling-trough and also the swilling-trough 16. All the feed-rolls are connected to this shaft 15 by bevel-gears 17, and as the brush-rolls rotate at a higher speed than the feed-rolls they give an abrading action upon the surface of the plate and greatly facilitate the pickling operation and shorten the time necessary therefor. At the exit end of the pickling-trough a pair of feed-out rolls 18 leads the plate through guides 19 to feed-rollers 20, located between the pickling-trough and the swilling-trough, and the sheets are thereby fed through suitable guides 6' to the feed-rollers 8', which are arranged similarly to those in the pickling-trough and are similarly connected to shaft 15 by bevel-gears 17'. The sheets are fed out of the swilling-trough by feed-out rolls similar to the rolls 18 of the pickling-trough and may then be transferred by the operator to a tinning apparatus adjacent thereto, which I have shown at 21 and which may be of any usual type. The plate emerging from the tinning-bath is caught by a catcher of any ordinary type, which I have shown at 22, and is thereby transferred to a branning-machine, which I have shown at 23. From the branning-machine the plates pass through a duster 24 and may then be fed to a carrier, which leads to the assorting-room.

The advantages of my invention flow from the continuous feeding of the plates through the pickling and swilling troughs and from the use of the brushing-rolls, which act upon the plates during the pickling operation. The use of these brushing-rolls is of special advantage, for that in the ordinary pickling operation the acid acts upon the clean portions of the plate more quickly than on the imperfect parts, whereas these brushes will have little or no effect on the smooth surfaces, but will act upon the imperfect parts of the surfaces of the faces and coact with

the acid in removing the foreign matters and afford a quick pickling action.

Many variations may be made in the form and arrangement of the parts without departing from my invention as defined in the claims.

I claim—

1. A pickling-trough having a series of feed-rolls of acid-proof material located therein, and mechanism for brushing the plates as they pass through said rolls; substantially as described.

2. A pickling-trough having feed-rolls of acid-proof material therein, and brushing-rollers located between the feed-rollers and arranged to brush the faces of the sheets while fed along by the feed-rollers; substantially as described.

3. A pickling-tank having feed-rollers arranged in pairs therein to feed the sheets successively through the vat, brushing-rollers arranged to act upon the sheets during the pickling operation, and mechanism for

driving the brush-rollers at a higher rate of speed than the feed-rollers; substantially as described.

4. A pickling-trough having a swilling-trough arranged in tandem therewith, rollers arranged to feed the sheets successively through both troughs, and brushing-rollers in both troughs having driving mechanism arranged to rotate them at a higher rate of speed than the feed-rollers; substantially as described.

5. A pickling-trough having brush-rollers arranged to act simultaneously upon the upper and lower faces of the sheet, said rollers having projecting plugs of a yielding material substantially as described.

In testimony whereof I have hereunto set my hand.

J. R. PHILLIPS.

Witnesses:

H. M. CORWIN,

GEO. B. BLEMING.