

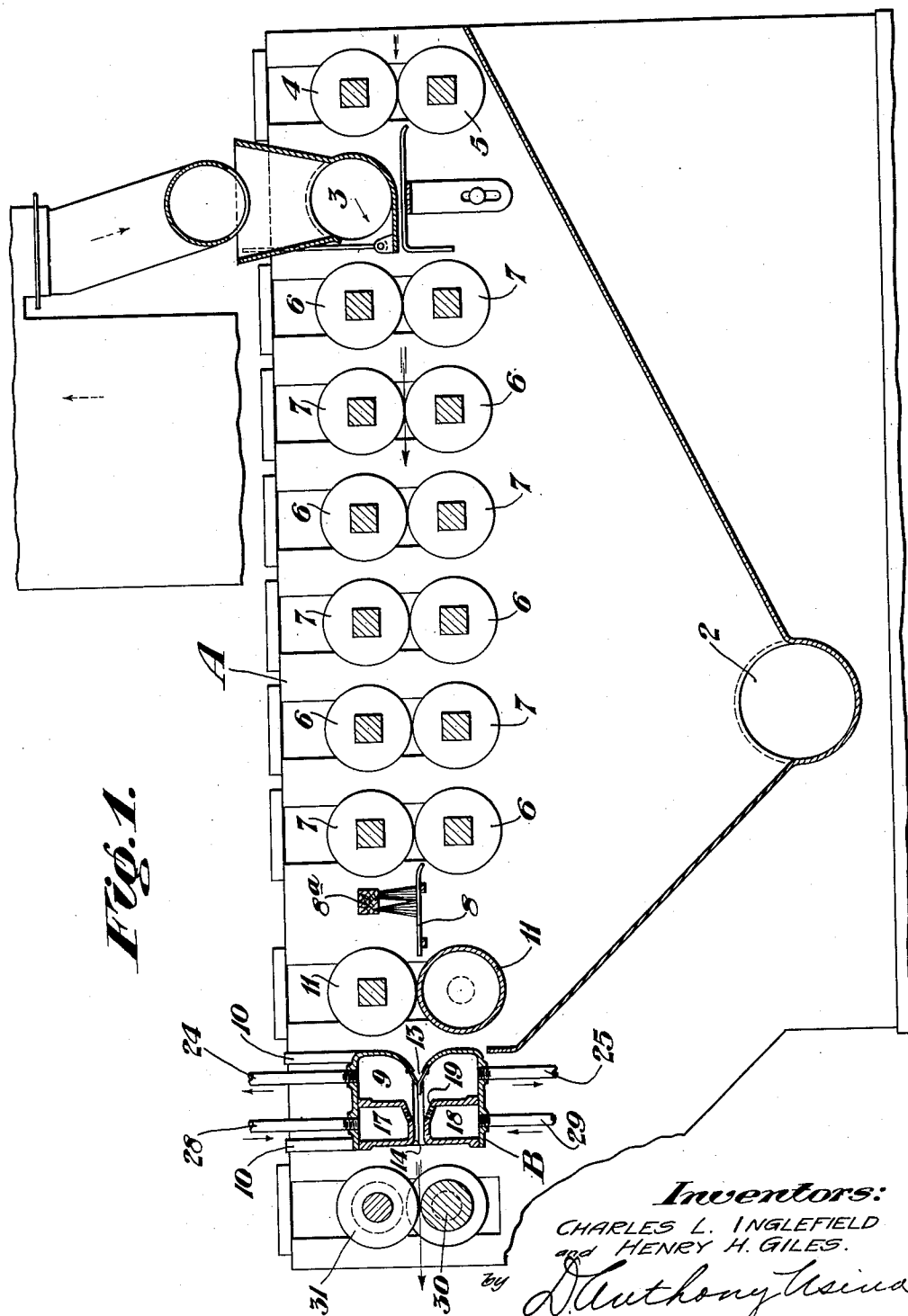
Dec. 17, 1929.

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1,739,593

Filed Nov. 19, 1927

2 Sheets-Sheet 1



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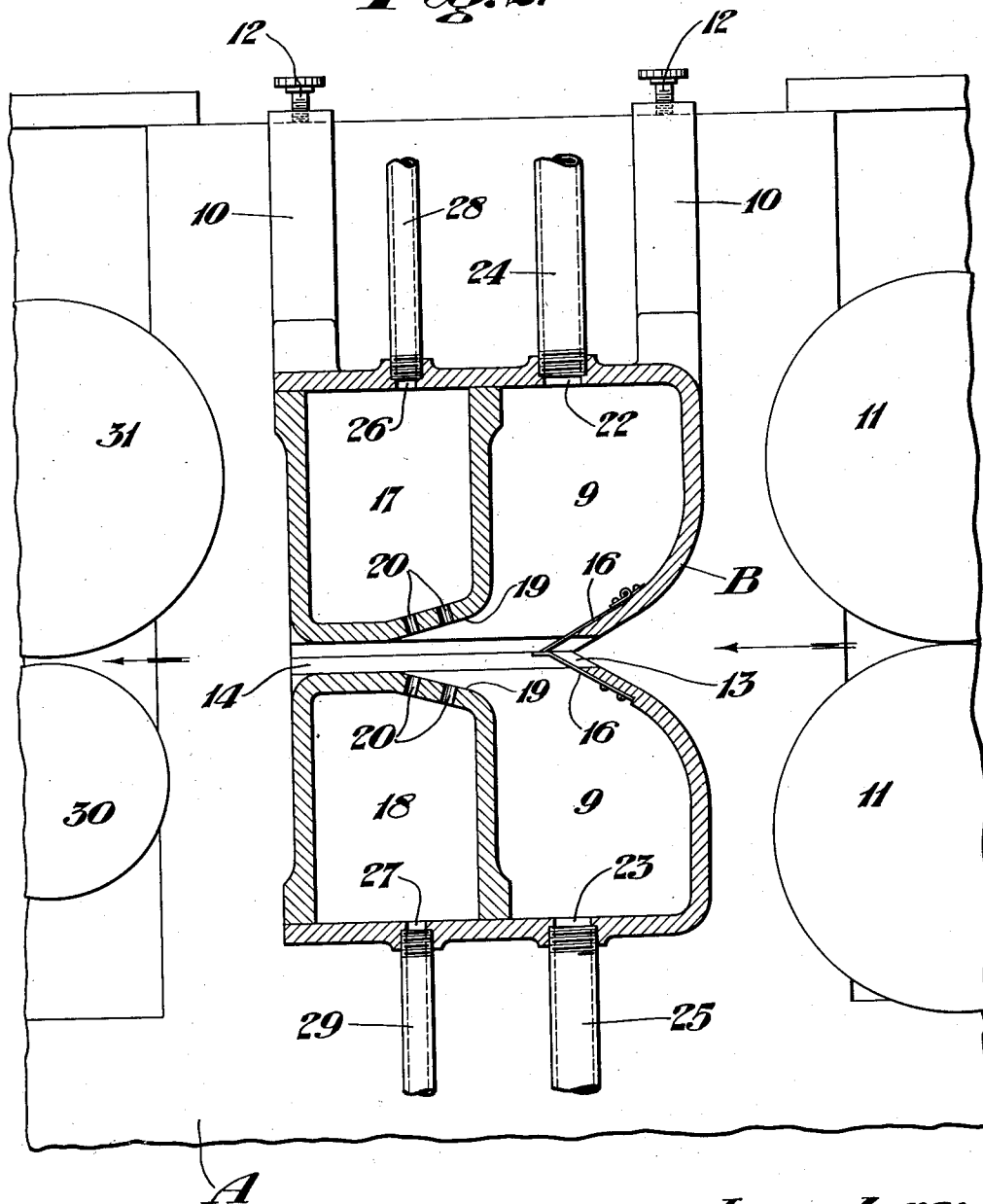
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2 Sheets-Sheet 2

Fig. 2.



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UNITED STATES PATENT OFFICE

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TIN-PLATE-CLEANING MACHINE

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This invention relates to tin plate cleaning machines and more particularly to that class of cleaning machines known as "branning machines", due to the fact that bran or middlings are used as a cleaning agent to absorb and wipe off the oil carried on the tin plate after the tinning operation.

As is well known, tin plate passes through a body of palm oil or grease when passing out of the tinning machine, and it has long been the practice to pass the freshly tinned sheets or plates through a cleaning machine known as a "branner" to remove the oil or grease adhering to the freshly tinned sheets or plates.

The standard branner or branning machine is composed of a housing having a plurality of pairs of cleaning rolls journaled therein and containing a sufficient quantity of bran to at least cover some of said pairs of rollers. The rollers of each pair rotate at differential speeds so as to cause a rubbing action between the plates and rollers which serves to wipe the bran over the surface of the plates and cause the bran to wipe off and absorb the oil or grease. One or more brushes are also generally employed to wipe off the bran which adheres to the sheets or plates.

Experience has shown that while the above class of plate cleaning machine is effective in removing the oil or grease from the sheets or plates, it has the objection or disadvantage of leaving small particles of the bran, wheat middlings or other cleaning substances adhering to the surfaces of the plates. These small particles and dust are not removed completely in the subsequent handling of the plates and, therefore, when the sheets or plates are packed for shipment, these particles become embedded in the relatively soft tin coating, and serve as a deteriorating influence on the quality of the product.

The present invention has for its object the provision of means incorporated in the cleaning machine or branner to completely remove all traces of bran and dust from the surfaces of the cleaned sheets or plates so that the relatively soft tin surfaces of said sheets or plates will remain unmarred during subsequent handling and shipping operations.

In the drawings—

Figure 1 is a vertical sectional view through a cleaning machine having our invention applied thereto.

Figure 2 is an enlarged detail sectional elevation of the pneumatic cleaning mechanism.

Referring more particularly to the drawings, the letter A designates the housing of the machine as a whole, which is adapted to contain a quantity of bran. The bran is adapted to constantly be withdrawn from the lower end of the housing, as at 2, by a screw conveyer (not shown), and to be constantly fed into the machine through a supply housing 3 adjacent the inlet end of the machine by a feeding screw (not shown).

A pair of pinch rollers 4 and 5 are journaled at the inlet end of the machine to feed the plates to be cleaned through the machine and into the bite of the first pair of cleaning rollers 6 and 7. A plurality of pairs of cleaning rollers 6 and 7 are arranged in line through the machine and are adapted to convey the plates through the machine and to rub the bran over the surfaces of the plates.

The cleaning rollers 6 and 7 are operated at different speeds and the fast and slow rollers are in reversed positions in each alternate pair of rollers. That is, the upper rollers of each alternate pair of rollers are rotated at a greater speed than the lower rollers of said pairs of rollers, and the lower rollers of the other pairs of rollers are rotated at the fast speed, while the upper rollers of said last named pairs of rollers, are the slow speed rollers. This different speed of the cleaning rollers will cause the fast rollers to move relative to and rub the surfaces of the plates passing between the rollers so as to rub the bran over the plate surfaces and thus rub or scour off the oil or grease from the plates.

A plate table 8 is located immediately beyond the last pair of cleaning rollers 6 and 7 and a brush 8^a is mounted above and bears against the table 8 so as to brush the bran from the plates as they emerge from the last pair of cleaning rollers.

A pair of pinch rollers 11 are mounted beyond and adapted to receive the plates from the table 8.

A pneumatic cleaning mechanism B is located immediately beyond the pair of pinch rollers 11. The mechanism B comprises a substantially rectangular hollow casting forming a suction chamber 9 which casting is suspended from the sides of the housing A by hanger straps 10 which are adjustable vertically by set-screws 12.

The chamber 9 is provided with alined inlet and outlet openings 13 and 14 adjacent the horizontal center of the chamber 9 and in alinement with the bite of the pairs of cleaning rollers 6 and 7.

The inlet opening 13 is provided with a hinged closure 16 adapted to yield as the plates engage it.

A pair of fluid pressure manifold chambers 17 and 18 are formed along the forward walls of the casting above and below the outlet opening 14. The abutting faces of the manifold chambers 17 and 18 are flared adjacent their rear edges, as at 19, to form a substantially V-shaped plate receiving slot, and said flared or inclined faces are provided with a series of nozzle ports or openings 20 through which the fluid under pressure blows from the manifold chambers against the surface of the plates as they pass through the suction chamber. The nozzle ports 20, being formed in the flared or inclined portions 19 of the chambers 17 and 18, will direct a blast of fluid under pressure rearwardly and against the plates and will thus serve to loosen or scour off any adhering particles of dust or bran from the plate surfaces, which dust or bran particles will then be removed by suction.

The suction chamber 9 is provided with ports 22 and 23 in its upper and lower walls, respectively, which are adapted to be connected with suction conduits 24 and 25, so as to provide suction on both sides of the plates passing through said chamber.

The manifold chambers 17 and 18 are provided with fluid pressure inlet ports 26 and 27, respectively, connected with fluid pressure conduits 28 and 29, so as to provide fluid pressure supply to both of said manifolds.

As the plates pass from the pneumatic cleaning mechanism B they are passed into the bite of a pair of concave and convex feed-out rollers, 30 and 31, respectively, which feed the plates to a suitable piling mechanism (not shown).

While we have shown and described our improved pneumatic cleaning mechanism B as applied to a common and well known form of branner it will be understood that we do not wish to be limited thereto since it may be employed with any form or construction of tin plate cleaning machine using bran, middlings, saw dust or other porous material, as a cleaning agent.

We claim—

In a branning machine for cleaning tin

plate, a pneumatic cleaning mechanism mounted adjacent the exit end of said machine, said mechanism including a housing member consisting of bottom, top, end and a rear side wall, upper and lower fluid pressure chambers mounted adjacent the front of said housing member and forming the front side wall thereof, said rear side wall of said housing being provided with a plate inlet opening and said fluid pressure chambers being spaced vertically to form a plate outlet opening through which the plates being cleaned pass, said openings being alined horizontally, the portion of said housing to the rear of said fluid pressure chambers forming a suction chamber, means for supplying fluid under pressure to said fluid pressure chambers, means for withdrawing air from said suction chamber, said fluid pressure chambers having their adjacent inner edges beveled to form a flared entrance to said outlet opening and said beveled edges being provided with a series of nozzle ports adapted to direct fluid under pressure rearwardly and against both sides of the plates passing through said suction chamber, and a yielding closure for said inlet opening.

In testimony whereof, we have hereunto set our hands.

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