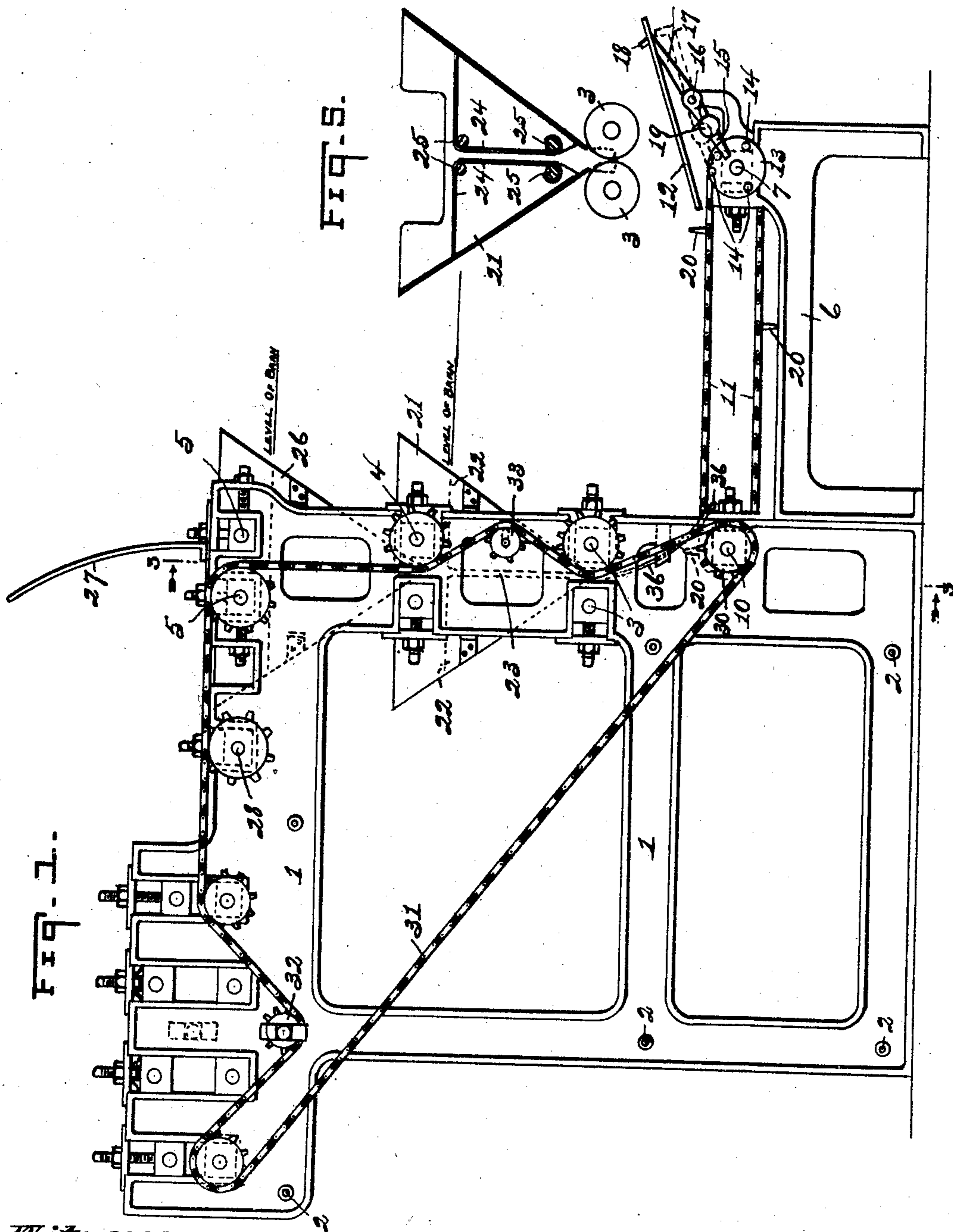


No. 794,108.

PATENTED JULY 4, 1905.

A. J. MASKREY.
PLATE CLEANING MACHINE.
APPLICATION FILED DEC. 19, 1903.

3 SHEETS—SHEET 1.



Witnesses:
J. B. Jeffman,
A. H. Schuch.

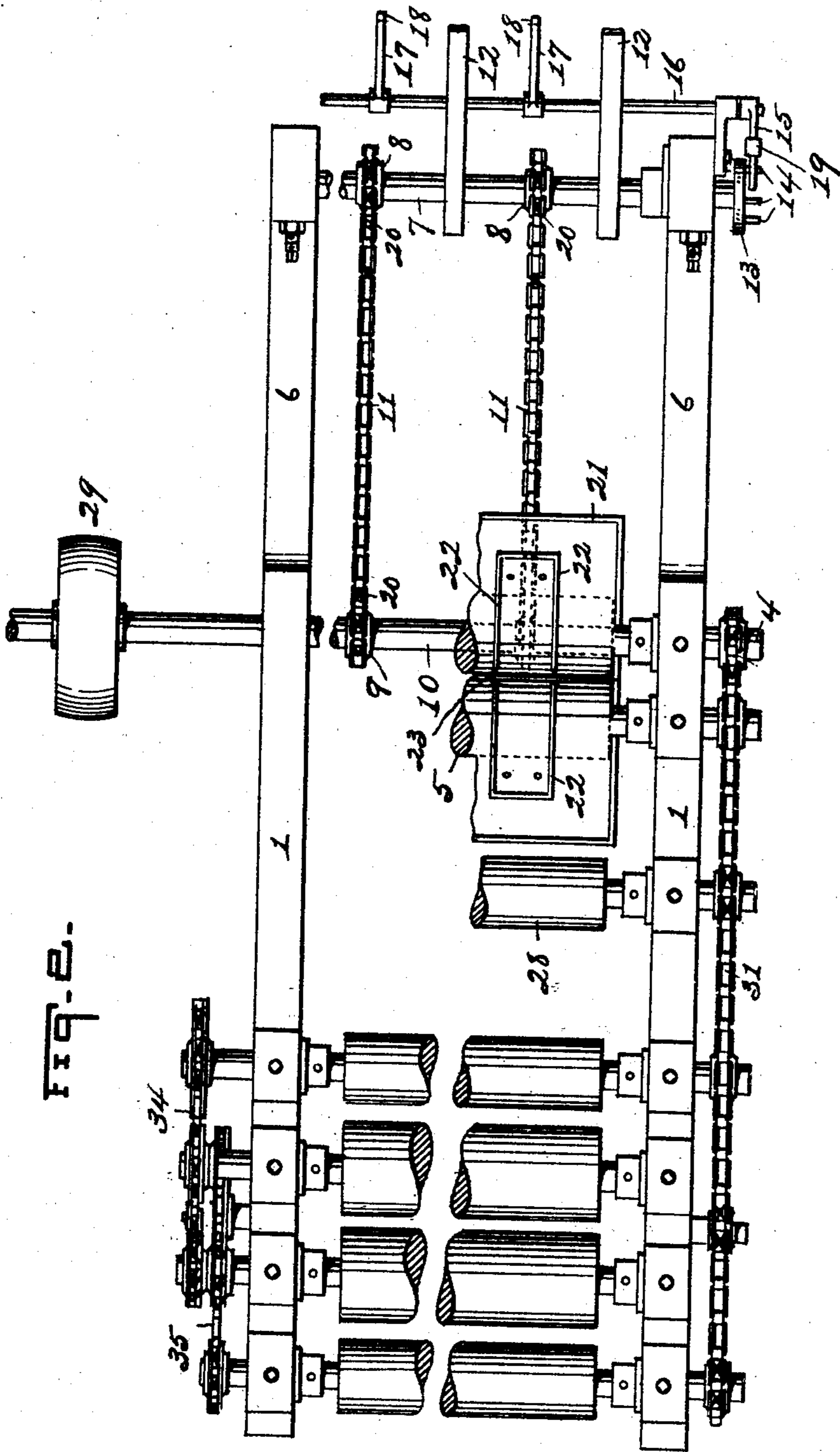
Inventor
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No. 794,108.

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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

FIG. 3.

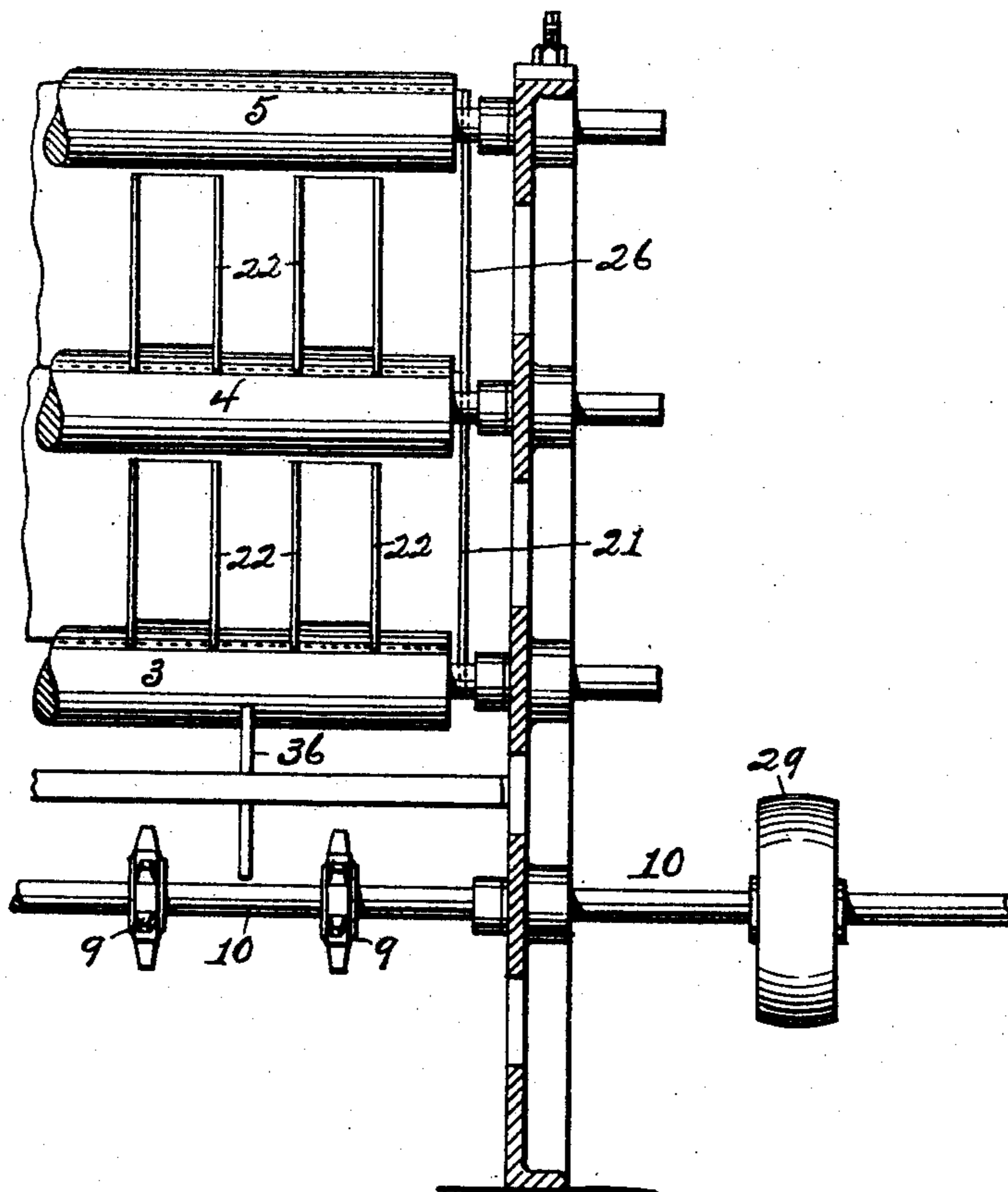
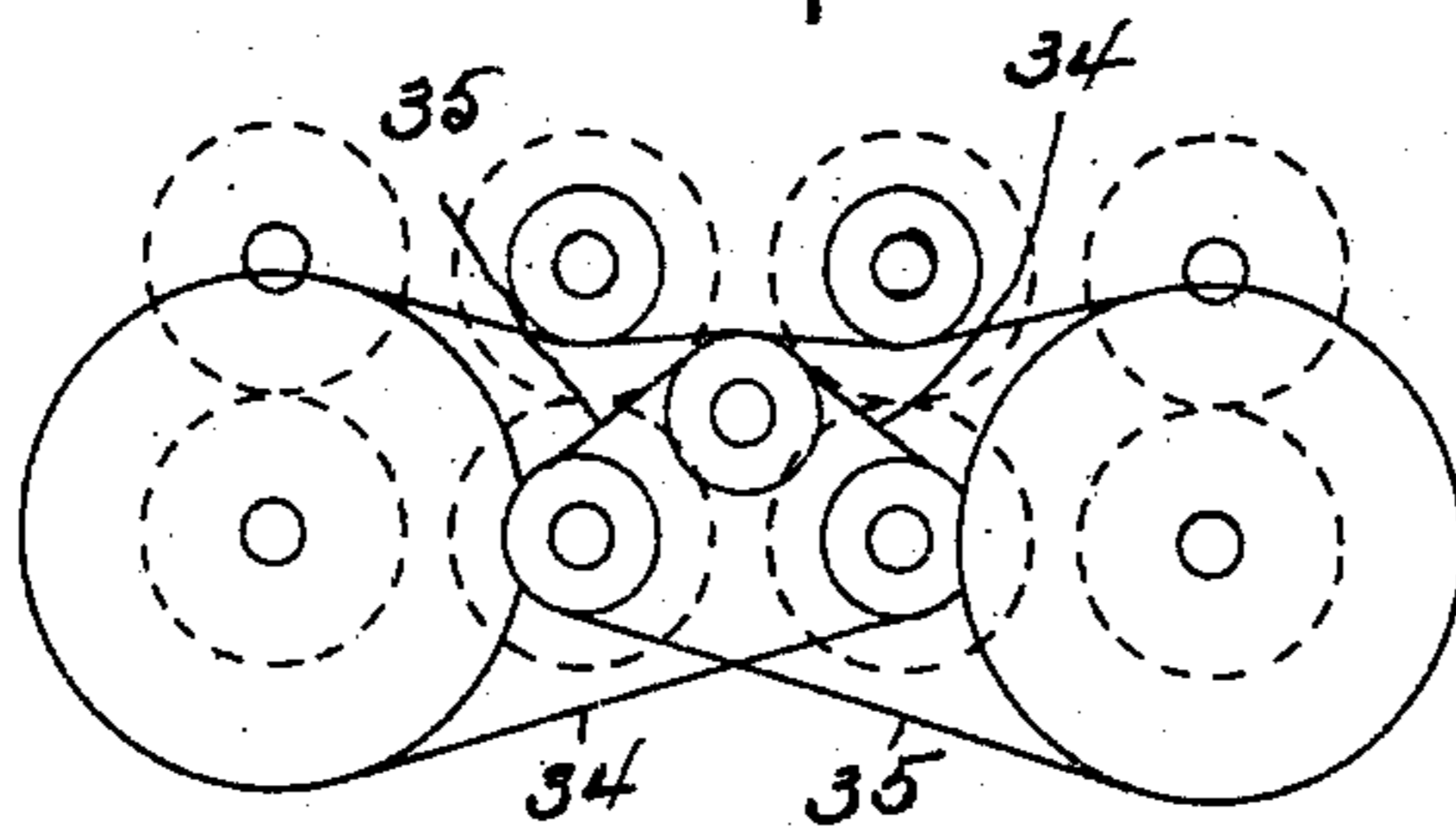


FIG. 4.



Witnesses:

J. P. Hoffman,
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Inventor

A. J. Maskrey

By H. E. Dunlap,
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UNITED STATES PATENT OFFICE.

ARTHUR JAMES MASKREY, OF MARTINS FERRY, OHIO.

PLATE-CLEANING MACHINE.

SPECIFICATION forming part of Letters Patent No. 794,108, dated July 4, 1905.

Application filed December 19, 1903. Serial No. 185,777.

To all whom it may concern:

Be it known that I, ARTHUR JAMES MASKREY, a subject of the King of Great Britain, and a resident of Martins Ferry, county of Belmont, and State of Ohio, have invented certain new and useful Improvements in Plate-Cleaning Machines, of which the following is a specification.

My invention relates to new and useful improvements in plate-cleaning machines, and more particularly to a machine for cleaning the surfaces of tin and terne plates after they have passed through the tinning-pot in the tinning process.

Among the existing methods of cleaning coated metal plates probably the most common is to pass the plates through a branner in a protecting-cradle, said plates in their passage being passed through a small quantity or light layer of bran, some of which is gathered on the upper face of the plate and is allowed to slide off, cleaning said face. The plate is then reversed in said branner and the operation is repeated in another part thereof to clean the other face of the plate. Another common method of cleaning coated plates is to pass them through bran or other cleaning material in which are located rapidly-revolving cleaning-rolls, which rub the cleaning material over the surfaces of the plates and frictionally wipe the grease therefrom.

The chief objections to the above-mentioned methods are that the plates are frequently bent in passing through the branner, producing "wasters," and especially is this the case when the cleaning material is of too great depth, that the brilliant polish of the plate is destroyed by the frictional wiping and rubbing of cleaning-rolls and that the cleaning-rolls turning rapidly in the cleaning material create a dust which fills the air throughout the tin-house, which dust is not only detrimental to the processes of tinning, but also injurious to the health of the workmen.

By my invention the objections above enumerated are obviated, as I use no rolls for cleaning or wiping the plates and depend upon the depth of the bran or cleaning material used, through which the plate is forced, and upon the angle or inclination at which the sides of

the vessel containing the cleaning material is placed to force the said material against the sides of the plate. Furthermore, I employ guides for directing the plate through the vessel containing the material, which guides prevent the bending and buckling of said plate, and because the cleaning material is not unduly stirred little or no dust is created.

The chief object of the invention is to provide a machine for cleaning, drying, and removing from the faces of metallic coated plates the grease which adheres thereto after the coating process.

A further object of the invention is to provide a machine of the character mentioned equipped with a feeding device for mechanically and automatically feeding the plates thereto at regular intervals.

With these and other objects in view my invention finally consists in the particular construction, arrangement, and combination of parts, which will hereinafter be fully described, and specifically pointed out in the claims appended hereto.

In describing my invention in detail reference is herein had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a side elevation of my invention complete. Fig. 2 is a fragmentary top plan view of the same. Fig. 3 is a partial vertical cross-section on the line 3 3, Fig. 1. Fig. 4 is a plan of the gearing for driving the polishing-rolls, said gearing being on the opposite side of the machine from that shown in Fig. 1; and Fig. 5 is a cross-section of a hopper, showing a slight modification in the guides which are located therein.

Referring to said drawings, in which like reference-numerals designate like parts throughout the several views, 1 indicates the sides of a frame, said sides being connected by rods 2. In the front end of said frame is journaled a series of sets of plate-carrying rolls, (sets 3, 4, and 5 being shown in the drawings,) said rolls being located in vertical alinement, as shown, and adapted for carrying a metal plate upward. Located in front of said frame is a table 6, the front end of which has mounted therein or thereon a shaft 7, having a series

of sprocket-wheels 8 fixed thereon. Connecting said sprocket-wheels 8 with similar wheels 9 on a shaft 10 in the front end of the frame 1 are a series of endless plate-carrying sprocket-chains 11. Leading down to said chains at the front end of the table are the ordinary inclined bars 12, upon which the plates are deposited immediately after being coated. On one end of the shaft 7 is located a wheel or disk 13, having on one side thereof at equidistant intervals horizontal studs 14 for engaging the end of an arm 15, provided on a shaft 16, which is suitably journaled in the extreme front end of said table, as shown. Said shaft 16 has mounted thereon a plurality of rearwardly-extending arms 17, the rear ends of which are each provided with an upright post 18, said posts normally standing projected upward between the bars 12, so as to prevent a plate deposited on said bars from sliding forward. A weight 19 is provided on the arm 15 for normally counterbalancing the weight of the arm 17, and consequently for holding said posts projected upward between said bars 12. Mounted on each of said chains 11 at equidistant intervals is a series of vertical posts 20, said posts on the different chains being located in alinement parallel to the shaft 7, the object of all of which will presently be shown.

Located directly above the rolls 3 and suitably secured to the sides 1 of the frame is a deep hopper 21, containing bran or other suitable plate-cleaning material. The opposite sides of said hopper are inclined inward, as shown, preferably forming an acute angle at the bottom of the hopper, so as to cause the cleaning material to exert as great pressure as possible against the sides of a plate of metal as it passes therethrough. The said inclined sides of the hopper end in close proximity to the respective upper faces of said rolls 3, and the ends of said hopper project downward beyond the ends of the sides and lie close against the ends of the rolls below the nip thereof, thus preventing the leakage which would otherwise occur. Mounted within said box or hopper 21 and secured to each of the sides thereof in any suitable manner is a plurality of plates 22, the inner edges of which stand vertical above the nip of the rolls, leaving a narrow bell-mouthed passageway 23 (shown in dotted lines in Fig. 1) for the plates of metal which rise from the rolls 3. Said plates 22 are located but a short distance apart and are intended to guide the plates upward through the bran or cleaning material, and thus prevent the buckling thereof.

Instead of the plates 22 wires 24, stretched over longitudinal horizontal rods or bars 25, as shown in Fig. 5, may be employed, and the result attained will be the same as when said plates are used.

A second hopper 26, similar in construction and arrangement to that just described, is preferably used, it being mounted above the rolls 4.

On the top of the frame 1 in a suitable position over the rolls 5 is mounted an inclined guide 27 for causing a plate which emerges from said rolls 5 to fall forward upon the single carrying-roll 28, which is suitably journaled in the top of the frame 1. In the rear of said carrying-roll 28 are suitably mounted a plurality of sets of ordinary polishing-rolls, the same being of the usual construction and arrangement and adapted for receiving and polishing the plates conveyed thereto.

On one end of the shaft 10 is a belt-wheel 29, through which motion is communicated to said shaft and thence to the various sets of rolls in the machine. On said shaft 10, outside the frame 1, is a sprocket-wheel 30, and connected in any suitable manner with the various sets of rolls in the machine is a sprocket-chain 31 for driving said sets of rolls, said chain being driven by said wheel 30. As is apparent, the means illustrated may be employed for driving the rolls, if desired; but since various other gearing means may also be employed without altering the character of my invention no detailed description of the gearing means shown is deemed necessary.

32 and 33 indicate adjustable idlers which are employed with the particular gearing herein shown, their object being to hold the chain 31 in contact with the sprocket-wheels and to facilitate the adjustment of the slack in the said chain.

As shown in Fig. 2, two chains 34 and 35 are preferably employed for driving the various sets of polishing-rolls, said chains being located on the opposite side of the machine from that shown in Fig. 1 and connected in the manner outlined in Fig. 4.

As is obvious, the number of sets of relatively vertical rolls may be multiplied or decreased as desired without altering the general character of my invention, as may also the number of hoppers employed. However, I prefer to use two of the latter, as shown.

Now my machine operates substantially as follows: A metal plate deposited on the bars 12 slides down until it strikes the upright posts 18, which normally project upward between said bars, where it is held until one of the studs 14 on the revolving disk 13 engages the end of the arm 15 and raises it upward. When said arm 15 is carried upward, the arms 17, carrying the posts 18, are tipped downward, releasing the plate and permitting it to slide forward upon the chains 11. Said chains being adjusted with relation to said studs, a line of posts 20 stand at the moment said plate slides upon the chains directly in front of the ends of said bars 12. The front edge of the plate, therefore, strikes said posts 20 and still

sliding said plate follows said posts as they move forward. The next following line of posts 20 come up directly behind the plate, and when the front edge of the plate strikes the guide 36, which leads to the rolls 3, said following posts 20 push said plate upward along said guide until it is seized by said rolls 3. Immediately the front edge of the plate is engaged by said rolls it is whipped up thereby, (they being geared to travel at as great or a greater speed than the shaft 7,) whereupon said posts are cleared by the plate. Passing from the rolls 3 the plate is guided upward vertically through the passage-way 23 by the edges of the plates 22, it being rubbed and cleaned by the bran or other cleaning material in the hopper 21 through which it is forced. Passing from the rolls 4 the plate is in like manner rubbed and cleaned by the cleaning material in the hopper 26 and is guided to the rolls 5. Emerging from the said rolls 5 said plate is caused to fall forward upon the single roll 28 by the guide 27 and is thence carried to the polishing-rolls. Having passed through these last-mentioned rolls the plate is discharged, preferably, upon a truck.

As illustrated in the drawings, the sides of the hopper are steeply inclined, so as to allow the bran or cleaning material, which preferably fills the hopper to a point which just clears the rolls thereabove, to pack as closely as possible, and therefore to exert a considerable pressure against the faces of the plates passed therethrough. This results in the plates being much more thoroughly cleaned than is at all possible with the ordinary bran-ner where but a thin or light layer or bed of the cleaning material can be employed.

Where rolls are used in a box containing cleaning material for frictionally cleaning plates, said rolls exert a pressure which causes the particles of the cleaning material to scratch the plates, whereas with my construction and arrangement the plates are not scratched or otherwise injured.

The plates 22 are disposed edgewise in the hopper, as shown, so that they guide the plates of metal through the deep bed of cleaning material without bending or buckling and at the same time so as not to obstruct the pressure of said material against the said plates of metal.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a device of the character described, a series of sets of rolls located in vertical alinement, a series of hoppers interposed between said sets of rolls, said hoppers having a bed of cleaning material therein, means for guiding a plate of metal through the cleaning material, and mechanism for driving said rolls, substantially as described.

2. In a plate-cleaning machine, a series of sets of rolls located in vertical alinement, a plurality of hoppers interposed between said sets of rolls, each of said hoppers adapted for containing a deep bed of cleaning material, plates disposed edgewise in each of said hoppers for guiding a coated plate through the cleaning material and to the rolls thereabove, and gearing for driving said rolls, substantially as described.

3. In a plate-cleaning machine, a series of sets of rolls located in vertical alinement, a plurality of hoppers interposed between said sets of rolls, each of said hoppers adapted for containing a deep bed of cleaning material, plates disposed edgewise in each of said hoppers for guiding a metal plate through said cleaning material and to the rolls thereabove, gearing for driving said rolls, and means for feeding the plates automatically to the lower of said sets of rolls, substantially as described.

4. In a plate-cleaning machine, the combination with a frame and a series of sets of vertically-alined plate-carrying rolls, of a hopper mounted on said frame over each of said sets of rolls except the delivery set, plate-cleaning material in said hopper, steeply-inclined sides to said hopper, and guides for directing the course of a plate through said cleaning material, substantially as described.

5. In a plate-cleaning machine, the combination with a series of sets of vertically-alined plate-carrying rolls, of one or more hoppers interposed between said sets of rolls, said hoppers having steeply-inclined sides, the ends of said hoppers projecting below the nips of the rolls, each of said hoppers containing a deep bed of cleaning material, and plates disposed edgewise in said hoppers to form a vertical passage-way therethrough, substantially as described.

6. In a plate-cleaning machine, the combination with a series of sets of vertically-alined plate-carrying rolls, of one or more hoppers interposed between said sets of rolls, said hoppers having steeply-inclined sides, the ends of said hoppers projecting below the nips of the rolls, each of said hoppers containing a deep bed of plate-cleaning material, plates disposed edgewise in said hoppers to form a vertical passage-way in which a metal plate is guided through said cleaning material, and a mechanical feeder whereby metal plates are automatically conveyed to said carrying-rolls, substantially as described.

7. In a device of the character described, the combination with plate-carrying rolls, and with inclined bars on which plates are deposited after coating, of an automatic feeder for said rolls, said feeder interposed between said rolls and said inclined bars, and comprising a table, a shaft mounted on said table, endless plate-carrying chains connected with said shaft and extending near to the first set

of said rolls, a second shaft in the rear of the first-mentioned shaft, a series of rearwardly-extending arms carried by said second shaft, an upright post on the rear end of each of said
5 arms, means whereby said posts are normally held projected upward between said bars, means whereby said posts are withdrawn from between said bars at regular intervals, and

posts carried by said chains, all substantially as and for the purposes set forth and described. 10

Signed by me in the presence of two subscribing witnesses.

ARTHUR JAMES MASKREY.

Witnesses:

H. E. DUNLAP,

A. H. SCHULZ.