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A. RIDD.

APPARATUS FOR PLANISHING METAL SHEETS.

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Fig. 1.

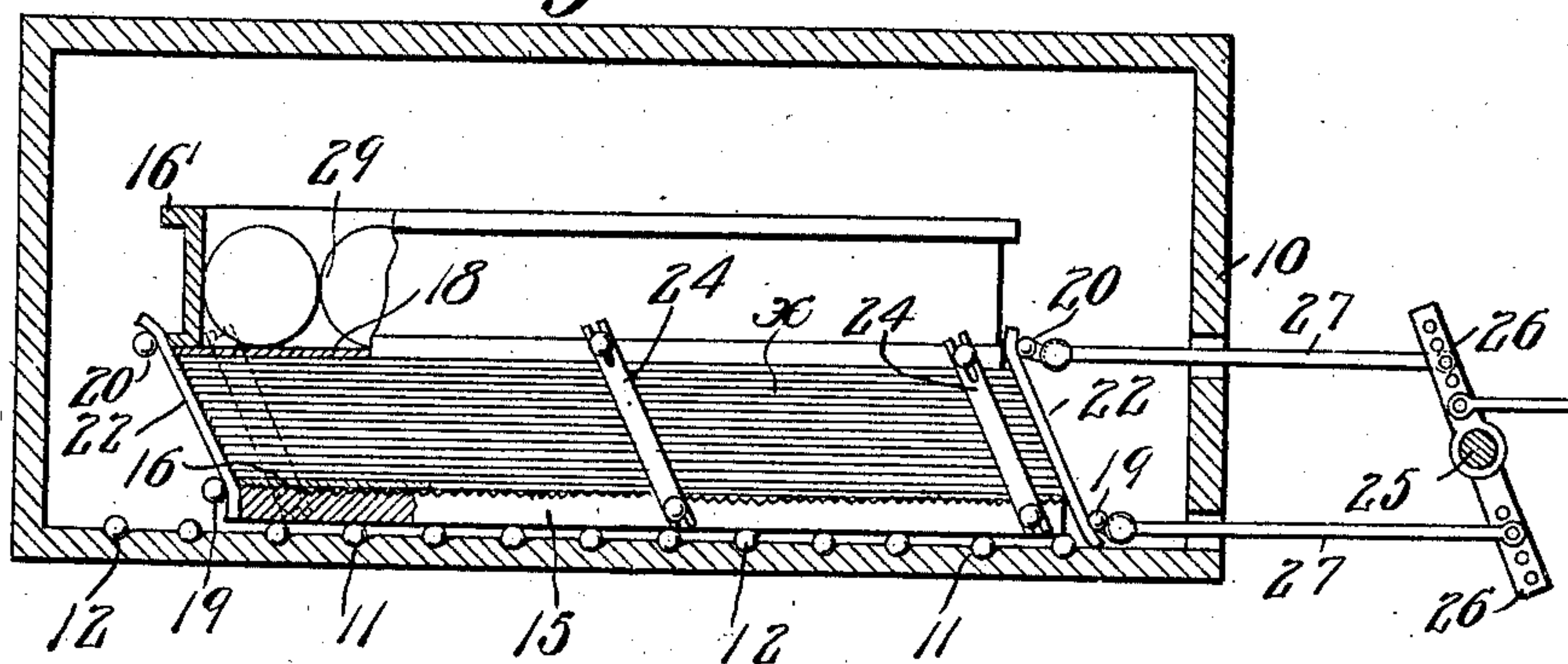


Fig. 2.

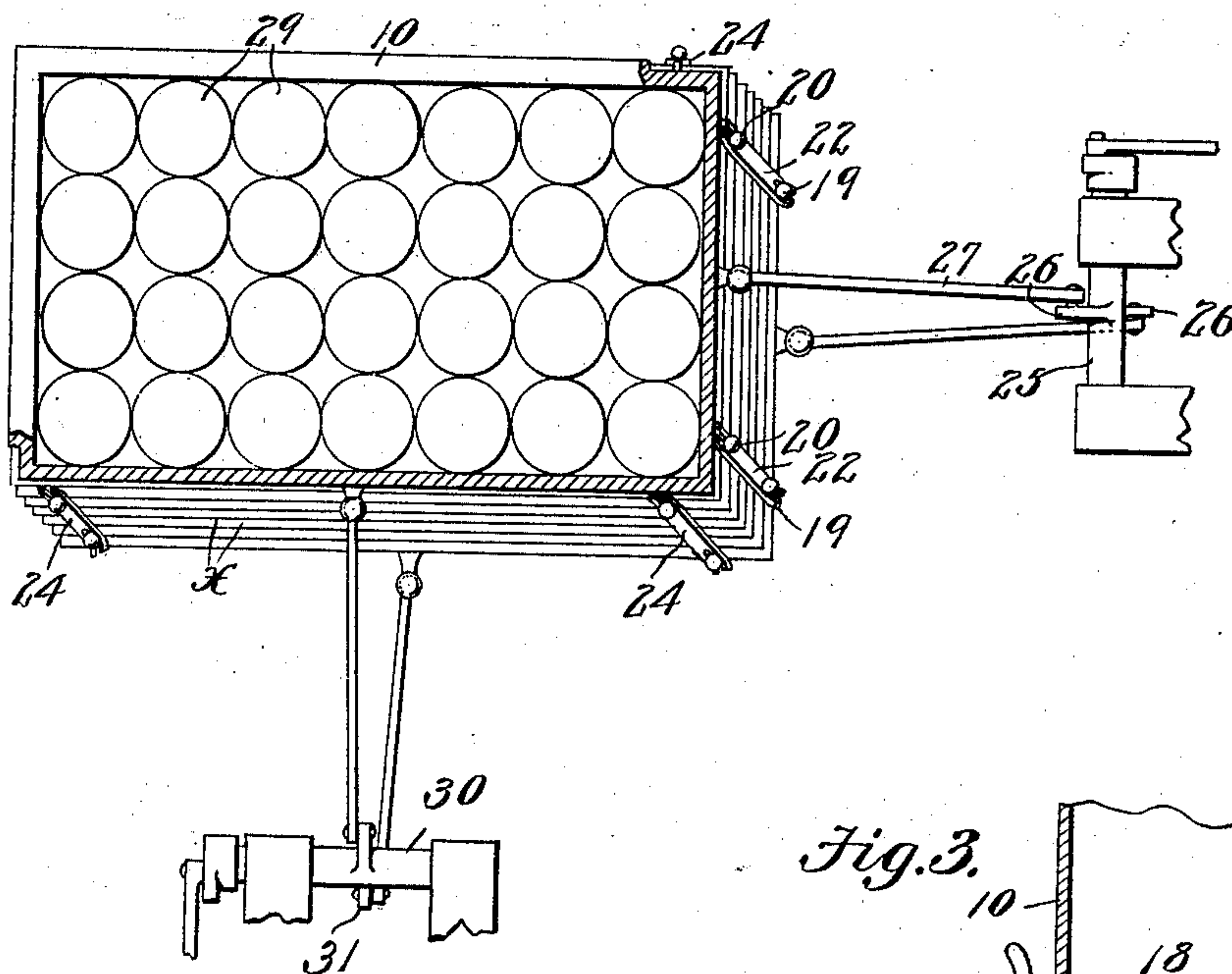
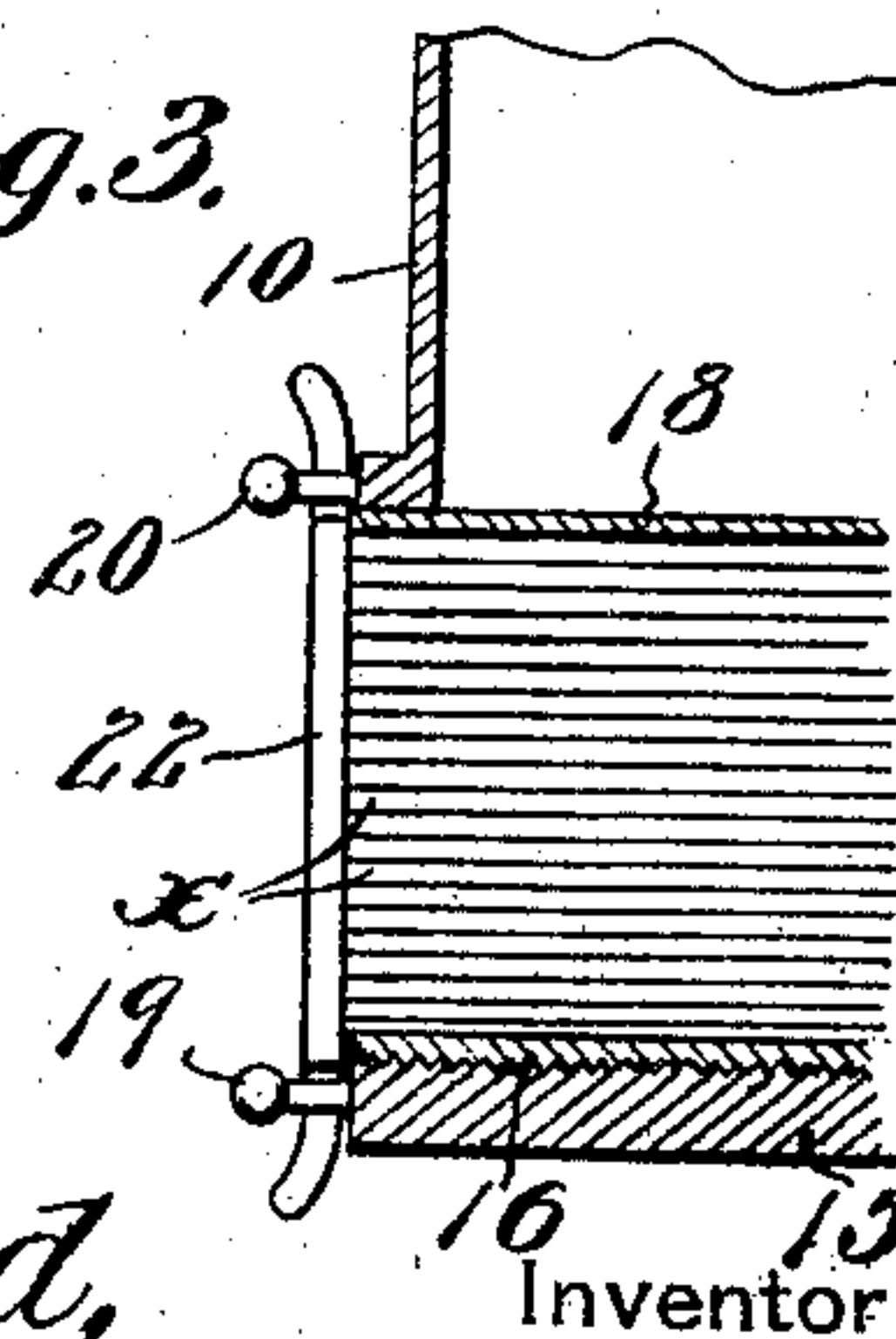


Fig. 3.



Witnesses

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APPARATUS FOR PLANISHING METAL SHEETS.

No. 845,718.

Specification of Letters Patent.

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Serial No. 280,708.

To all whom it may concern:

Be it known that I, AMBROSE RIDD, a citizen of the United States, residing at Newport, in the county of Campbell and State of Kentucky, have invented a new and useful Apparatus for Planishing Metal Sheets, of which the following is a specification.

This invention relates to the manufacture of sheet metal, and has for its principal object to provide a sheet of metal having a smooth planished condensed surface of the same character as that of Russian sheet-iron. This metal is formed of thin sheets of steel or iron, the surfaces of which are coated with oxid, and the oxid is condensed in order to form a protective coating for the metal. It is found that by causing these oxid-coated plates to slide on each other while held together under more or less pressure the surfaces will become highly finished and condensed.

It is the principal object of the invention, therefore, to produce this sheet metal at comparatively small cost and in approximately the same time as that required for the production of the tin or terne plates of commerce.

A further object of the invention is to provide for the frictional sliding of the plates on each other while the plates are maintained under a comparatively high temperature, as in an annealing-oven, so that the annealing and planishing processes may be carried on simultaneously.

With these and other objects in view, as will more fully hereinafter appear, the invention consists in certain novel features of construction and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportions, size, and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, Figure 1 is a sectional elevation illustrating an apparatus for planishing sheet metal in accordance with the invention, the apparatus in this case being shown as within an annealing or similar oven. Fig. 2 is a plan view of the same. Fig. 3 is a detail sectional view, on an enlarged scale, showing the operation of the device.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

The oven 10 may be of any desired construction, and on the floor of the oven are arranged a number of grooves or depressions 11 for the reception of a plurality of sets of anti-friction balls or rollers 12 of any desired size. On top of these rollers is arranged a plate 15, preferably formed of iron. The upper face of this sheet is preferably roughened and receives a sheet 16, against which rests the lowermost sheet of a pack x under treatment, the pack in the present instance being shown as formed of a comparatively large number of sheets, although it will be understood that each pack may comprise three or four or more sheets.

On top of the pack is placed a box 16, having substantial side and end walls, formed preferably of structural iron or the like, while the bottom 18 is formed of a comparatively thin sheet of metal, a sheet of eighteen or twenty gage being found sufficient to accomplish the desired result.

The front and rear portions of the lower plate 15 are provided with projecting pins 19, and the end walls of the box are also provided with projecting pins 20, and extending between these pins are plates or bars 22, having recesses for the reception of the ends of the pins, these bars serving to engage the end portions of the sheets of metal being treated and serving to impart positive movement thereto as the plate 15 and the box 16 are reciprocated in the manner hereinafter described. The side edges of the lower plate 15 and the side members of the box are also provided with vertically-connected bars or strips 24, which are arranged to engage with the sides of the sheet and serves to prevent lateral displacement thereof when the lower plate 15 and the box are moved endwise, and these bars or strips 24 may be further employed for the purpose of imparting movement to the sheets of metal in case the lower plate and box are moved laterally.

At a suitable point is a horizontally-disposed shaft 25, to which rocking movement is imparted from any suitable source of power, and extending from the shaft is a pair of diametrically-opposed arms 26, that are adjustably connected by links 27 to the lower plate 15 and the box 16.

When the shaft 25 is rocked, the plate 15 will be moved in one direction and the box 16 at the top of the sheets will be moved in the opposite direction, and at each movement the strips 22 will engage the ends of the sheets and will positively move the latter endwise, and thus cause them to slide frictionally on each other.

These sheets are coated with oxid, which may be formed naturally during the several rolling and heating processes to which the sheets are subjected during their manufacture, or the oxid may be artificially produced by exposing the plates to the action of a blast of oxygen, or the oxid may be applied in the form of a ferric oxid in finely-divided form.

On the thin flexible bottom 18 of the box are placed loose weights 29, which may be in the form of balls or blocks of metal or other material, the weight of which is sufficient to press the sheets together, so that when the latter are forced to slide on each other the coating of oxid will be condensed and the surfaces of the sheets will be planished.

It is well known in the manufacture of thin sheet metal the rolls will vary either from unequal expansion or contraction, or one roll may spring slightly, so that the resultant sheets will not be of uniform thickness throughout and may be thinner at the edges than at the center, or vice versa. If the pressure applied to the plates is uniform throughout, there is likelihood of the wearing down or planishing of the thickest portion of the sheets in advance of the thinner portions, so that the latter will not receive the same treatment, and imperfect sheets will result. By the employment of the yieldable bottom in the weight-box a more or less mobile weight is secured and the pressure, while uniform, is exerted equally on all parts of the plate without regard to the thickness of the latter, so that all of the plate will receive the same treatment.

It is obvious that the plates may be moved laterally on each other as well as endwise, and for this purpose an additional rock-shaft 30, having rocker-arms 31, may be employed, the arms being connected to the sides of the lower plate and the box in the same manner as the arms 26, and the endwise and lateral movement may be alternate or may occur simultaneously, as desired. The polishing operation may be carried on either by connecting the plate and box in such manner as to slide the plates diagonally on each other or by causing circular or gyratory movement of the sheets.

The present application is a division of an application for which Letters Patent of the

United States were granted to me on January 2, 1906, No. 808,691, claims for the method having been retained in said patent, while claims for the apparatus form the subject of the present application.

Having thus described the invention, what is claimed is—

1. In apparatus of the class described, a support for a pack of oxid-coated sheets, a mobile weight adapted to rest on the sheets and arranged to automatically accommodate itself to variations in the thickness of the sheets, and means for causing relative movement of the support and the weight, and thereby effecting sliding movement of the sheets on each other.

2. In apparatus of the class described, a support for a pack of oxid-coated sheets, a weighted receptacle adapted to rest on top of the pack and provided with a flexible bottom, a mobile weight resting on the bottom and exercising constant pressure without regard to variations in the thickness of the sheets, and means for causing relative movement of the support and the weighted receptacle to thereby effect sliding movement of the sheets on each other.

3. In apparatus of the class described, a pair of upper and lower parallel members between which a pack of sheets may be placed, means for moving one of said members parallel with respect to the other, and means for connecting said members and for transmitting the movement to a pack of sheets.

4. In apparatus of the class described, a slidable plate forming a support for a pack of oxid-coated sheets, a weight adapted to rest on the sheets, means connecting the plate and weight and serving to transmit movement to the sheets, and means for moving the plate and weight parallel with respect to each other.

5. In apparatus of the class described, a pack-supporting plate, antifriction members on which said plate rests, a weight-box arranged to rest on top of the pack and provided with a flexible bottom, a plurality of loose weights arranged in the receptacle and resting on said bottom, sheet-engaging bars connecting the plate and weight-receptacle, a shaft having rocker-arms, and means connecting the rocker-arms to the plate and weight-receptacle.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

AMBROSE RIDD.

Witnesses:

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