

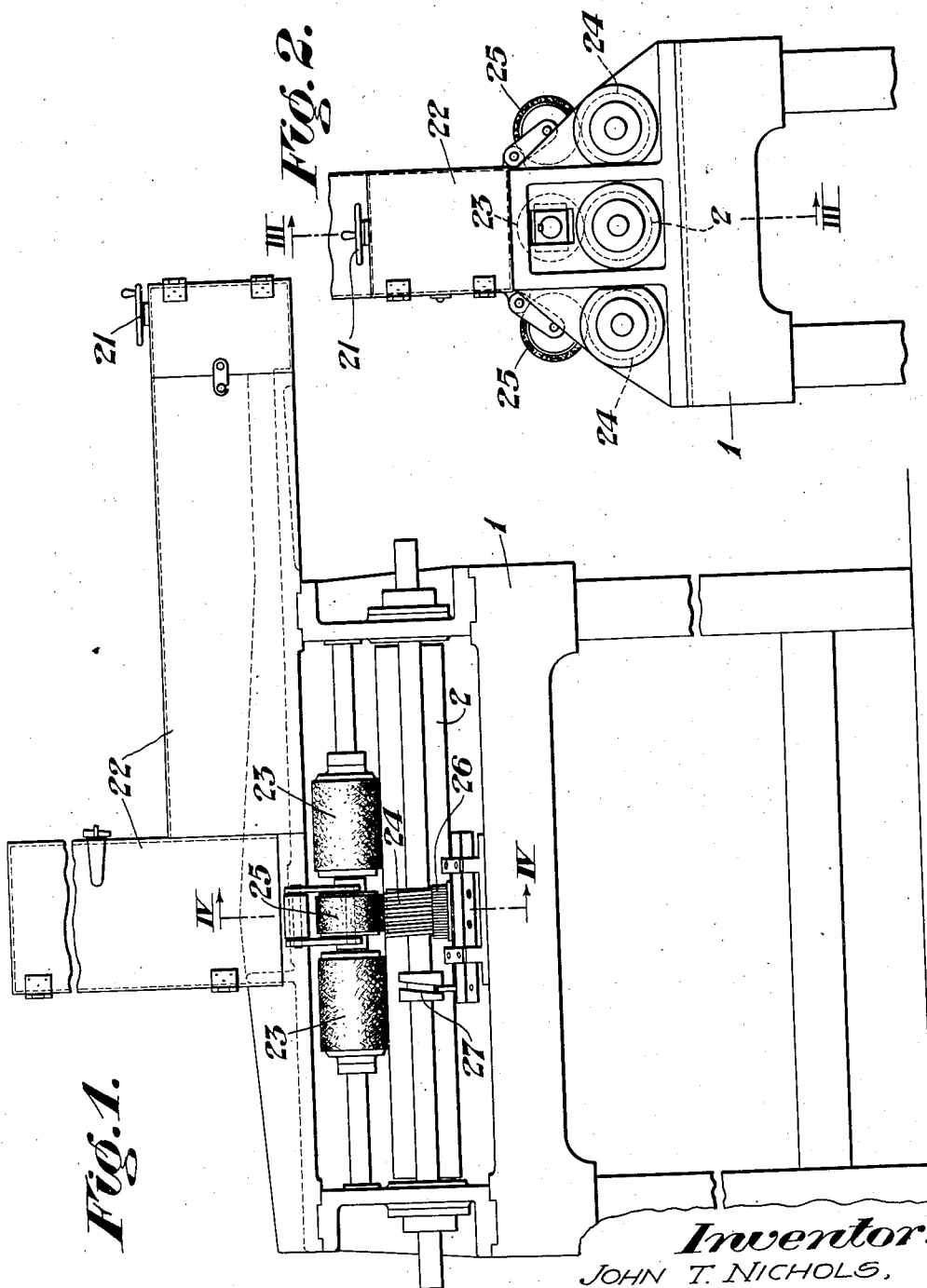
June 19, 1934.

J. T. NICHOLS
SHEET GAUGING MACHINE

1,963,310

Filed Nov. 5, 1931

3 Sheets-Sheet 1



Inventor:

JOHN T. NICHOLS,

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his Attorneys.

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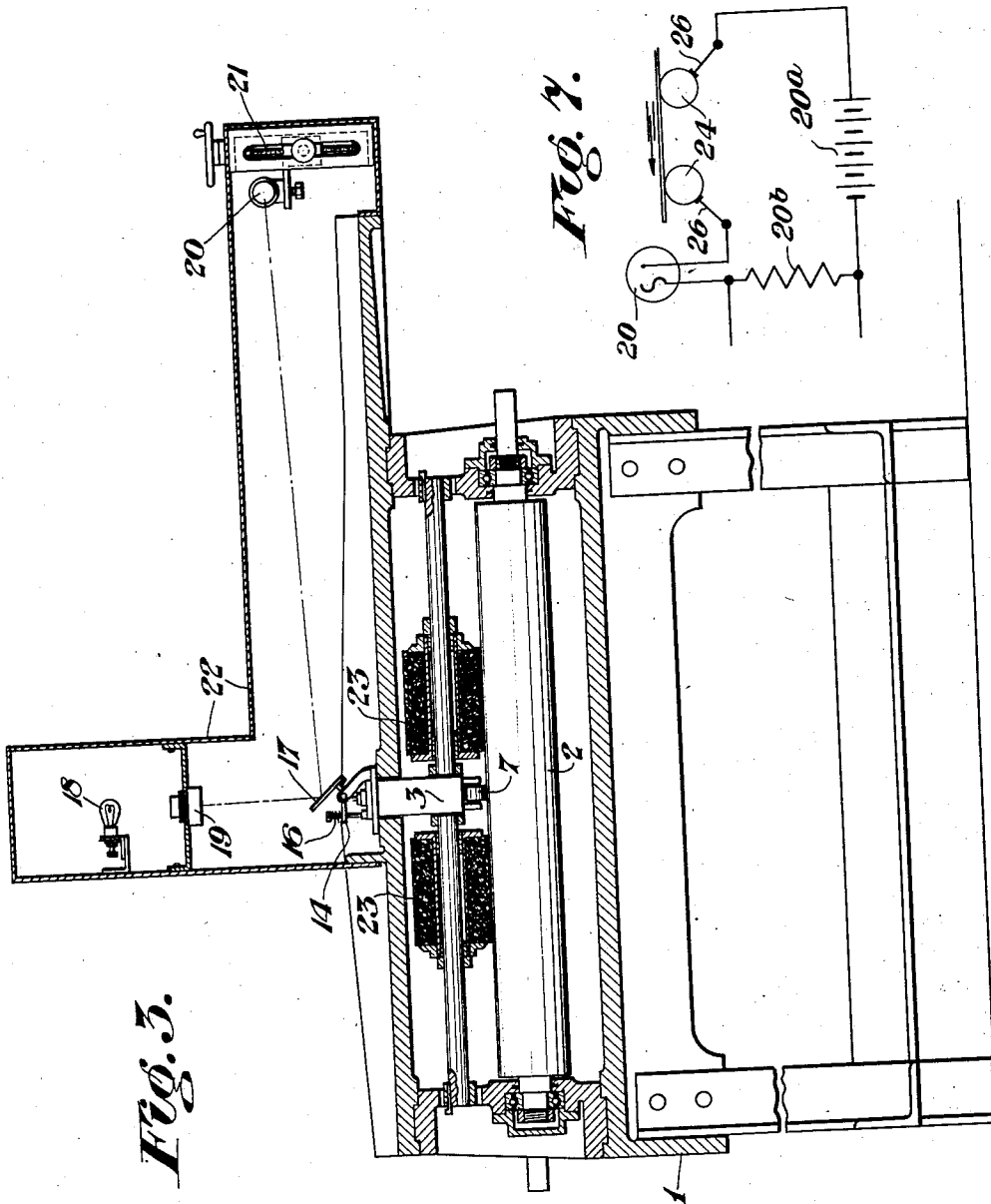


Fig. 3.

Fig. 4.

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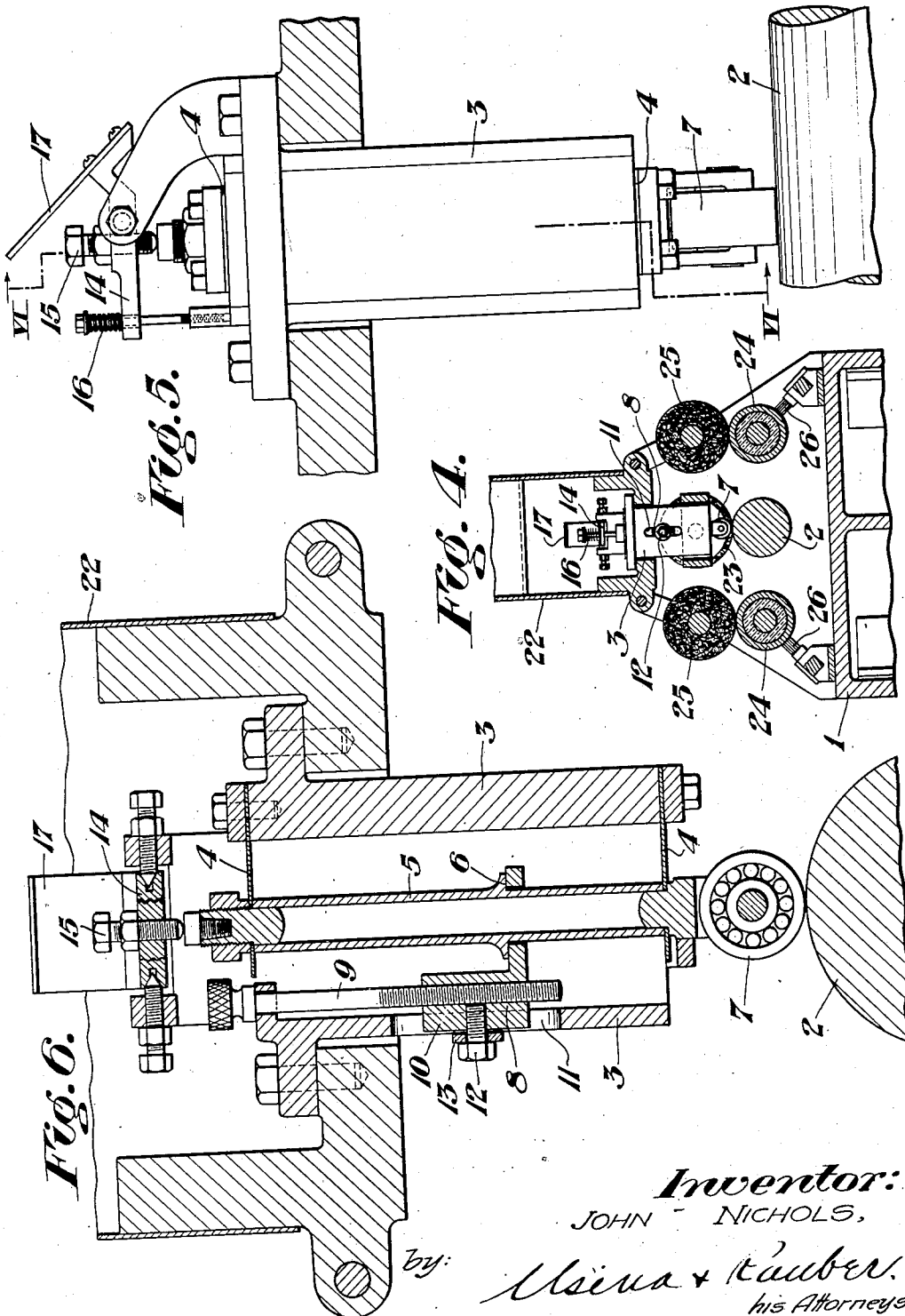
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UNITED STATES PATENT OFFICE

1,963,310

SHEET GAUGING MACHINE

John T. Nichols, Pittsburgh, Pa., assignor to
American Sheet and Tin Plate Company, a
corporation of New Jersey

Application November 5, 1931, Serial No. 573,202

6 Claims. (Cl. 88—14)

This invention relates to sheet gauges, one of the objects being to provide a machine through which sheets, and particularly metal sheets, may be passed for rapid gauging. Such a machine is desirable, for instance, to gauge tin plate prior to packing to assure its conformance with the commercial tolerance of thickness.

The accompanying drawings show an example of the invention constructed for this use, the respective figures being as follows:

Figure 1, an end elevation;
Figure 2, a side elevation;
Figure 3, a cross-section on the line III—III of Figure 2;
Figure 4, a cross-section on the line IV—IV of Figure 1;
Figure 5, an enlarged detail from Figure 3; and,
Figure 6, a cross-section on the line VI—VI of Figure 5.

Figure 7 is a wiring diagram.

In detail, a frame 1 carries a centrally positioned solid metal roll 2 and a support 3 over this roll. Leaf springs 4, each having an end fixed to the support 3, carry at their free ends an elongated member 5 having a shoulder 6. An anti-frictionally mounted roll 7 is carried by the lower end of this member to coast with the roll 2 and a bracket 8 loosely surrounds the member 5 beneath the shoulder 6 and is in engagement with a knurled headed screw 9.

This bracket has a shoulder 10 projecting into a slot 11 in the support 3 so that it may be locked by a screw 12 and washer 13, when once adjusted. A rocker arm 14 is mounted over the top of the member 5 and carries a stud 15 whose lower end contacts the upper end of the latter, a compression spring 16 urging the rocker arm towards this member.

A reflector 17 upon which a beam of light is cast by a light 18 through focusing lens 19 is carried by the rocker arm 14, and a photo-electric cell 20 is vertically adjustably carried by a crank handled screw 21 for illumination by this reflector. A light-tight housing 22 protects these various parts from extraneous light and also serves as a mounting.

The machine, so far as it has been described, operates substantially as follows:—The bracket 8 and photo-electric cell 20 are adjusted by their respective adjusting screws so that the cell will be illuminated when sheets within the commercial tolerance are passed between the rolls 2 and 7. Any off-gauge sheet will cause the light beam thrown by the reflector 17 to move away from the cell. By the use of any conventional circuit this

may be made to operate signals, to mark the defective sheet, to operate a sheet deflector and other desirable functions.

The frame 1 further carries an alined pair of felt rolls 23 which contact with the roll 2 to securely hold the sheets thereagainst. To insure tangential passage of sheets between the rolls 2 and 7, screw threaded surfaced metallic rolls 24 are insulatingly carried by the frame 1 in horizontal alinement with the roll 2 and felt rolls 25 are carried above these to hold sheets thereagainst. Laterally slidable metallic brushes 26 are mounted to contact the metallic rolls 24 and are reciprocated by cams 27 carried by the shafts of these rolls. By interposing these brushes in the circuit of the photo-electric cell 20 the latter will be energized only when a sheet is actually passing through the machine with its central portion between the rolls 2 and 7, this being desirable because otherwise the machine will detect not only off-gauge sheets but sheets having slightly burred or defective edges as well.

One form of the above circuit is suggested by Figure 7. The photo-electric cell 20 is energized by a battery 20^a through a resistance 20^b and rolls 24, the latter being by way of a spanning sheet. An amplifier may be connected to the extremes of the resistance in the usual manner.

The rolls 24 are surfaced as described and the brushes 26 are reciprocated to insure perfect contact with rapidly passing sheets.

Although I have shown and described a specific example of my invention in accordance with the patent statutes, I do not intend to limit myself thereto, except as defined by the appended claims.

I claim:

1. A sheet gauge including fixed and movable rolls, a reflector in connection with said movable roll, means for casting light on said reflector, a light sensitive cell arranged for illumination by said reflector, metallic rolls arranged on both sides of said first named rolls and means for electrically energizing said cell, said metallic rolls being arranged in circuit with said last named means and said cell.

2. A sheet gauge including fixed and movable rolls, a reflector in connection with said movable roll, means for casting light on said reflector, a light sensitive cell arranged for illumination by said reflector, metallic rolls arranged in alinement with and on both sides of said first named rolls, metallic brushes contacting with said metallic rolls, a current source and means for con-

necting said source to said cell so that said brushes are in series therewith.

3. A sheet gauge including a support, leaf springs each having an end fixed to said support, a vertically elongated member carried by the free ends of said springs, a roll carried by the lower end of said member, a rocker arm carried by said support above said member, a stud in screw threaded engagement with said arm and contacting the upper end of said member, means for resiliently urging said arm towards said member and a reflector carried by said arm.

4. A sheet gauge comprising a frame, a centrally positioned roll carried by said frame, a support on said frame over said roll, leaf springs each having an end fixed to said support, a vertically elongated shouldered member carried by the free ends of said springs, a vertically adjustable bracket contacting the shoulder on said member, a roll carried by the lower end of said member, a rocker arm carried above said member, a stud in engagement with said arm and contacting the upper end of said member, a reflector carried by said arm, means for casting light on said reflector, a light sensitive cell arranged for illumination by said reflector, metallic rolls carried by said frame and alined with and on both sides of said first named roll, metallic brushes contacting said metallic rolls, and non-metallic rolls opposing said metallic rolls.

5. A sheet gauge comprising a frame, a centrally positioned roll carried by said frame, a support on said frame over said roll, leaf springs each having an end fixed to said support, a vertically elongated shouldered member carried by the free ends of said springs, a vertically adjustable bracket contacting the shoulder on said member, a roll carried by the lower end of said member, a rocker arm carried above said member, a stud in engagement with said arm and contacting the upper end of said member, a reflector carried by said arm, means for casting light on said reflector, a light sensitive cell arranged for illumination by said reflector, metallic rolls carried by said frame and alined with and on both sides of said first named roll, metallic brushes contacting said metallic rolls, and non-metallic rolls opposing said metallic rolls.

trally positioned roll carried by said frame, a support on said frame over said roll, leaf springs each having an end fixed to said support, a vertically elongated shouldered member carried by the free ends of said springs, a vertically adjustable bracket contacting the shoulder on said member, a roll carried by the lower end of said member, rolls carried by said frame on each side of said last named roll and contacting said first named roll, a rocker arm carried by said support above said member, a stud in screw threaded engagement with said arm and contacting the upper end of said member, a reflector carried by said arm, means for casting a light beam on said reflector, a vertically adjustable light-sensitive cell arranged for illumination by said reflector, metallic rolls carried by said frame in horizontal alinement with and on both sides of said first named roll, metallic brushes contacting said metallic rolls and non-metallic rolls opposing said metallic rolls.

6. A sheet gauge including a movable member constructed and arranged for contact with a passing sheet, a light deflector arranged for movement by said member, a photoelectric unit, means for casting light on said unit by way of said deflector, and sheet-operable circuit makers spaced to either side of said member and connected in series with said unit.

JOHN T. NICHOLS.

35	110
40	115
45	120
50	125
55	130
60	135
65	140
70	145
75	150