Sept. 20, 1949. W. R. MULQUIN 2,482,201

SHEET MOVEMENT RESPONSIVE COUNTING DEVICE

Filed Oct. 30, 1947 4 Sheets-Sheet 1

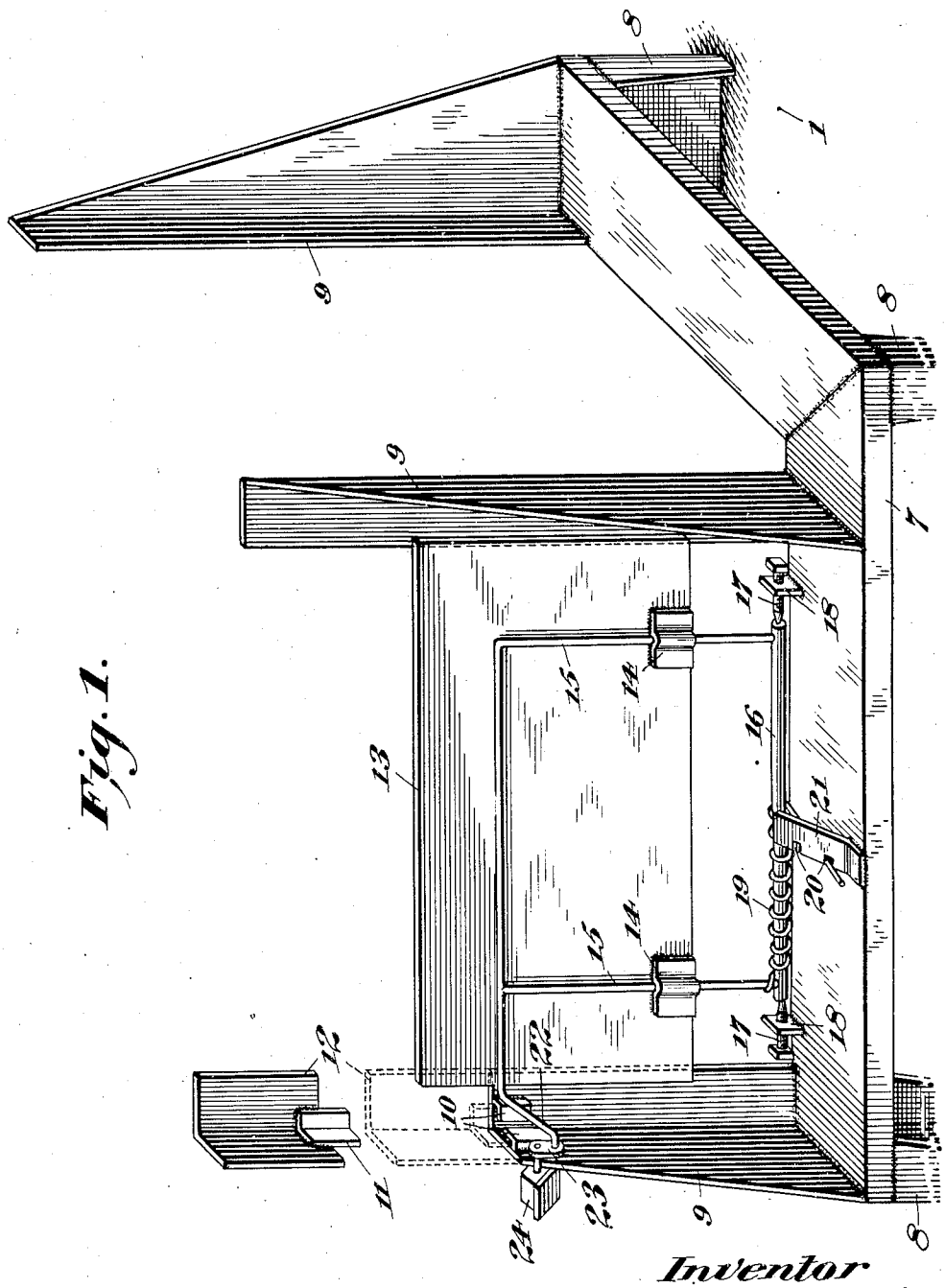

Fig. 1.

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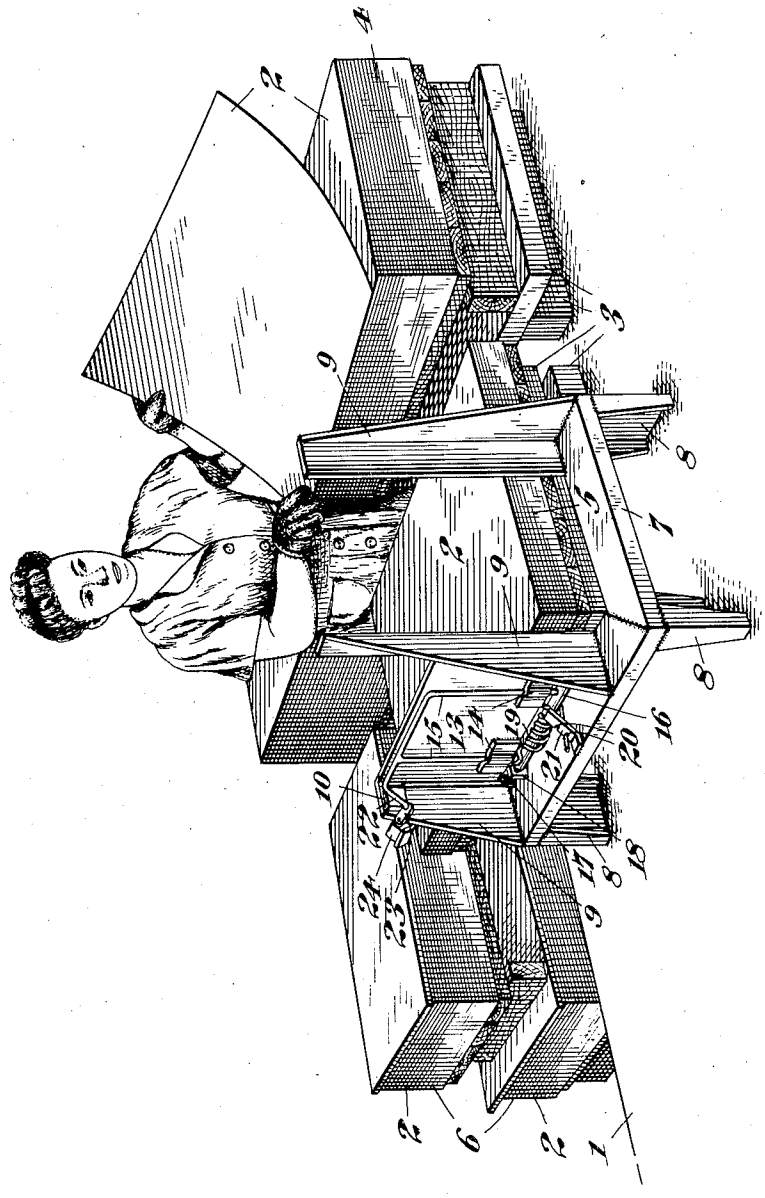
Fig. 2.



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SHEET MOVEMENT RESPONSIVE COUNTING DEVICE

Filed Oct. 30, 1947 4 Sheets-Sheet 3

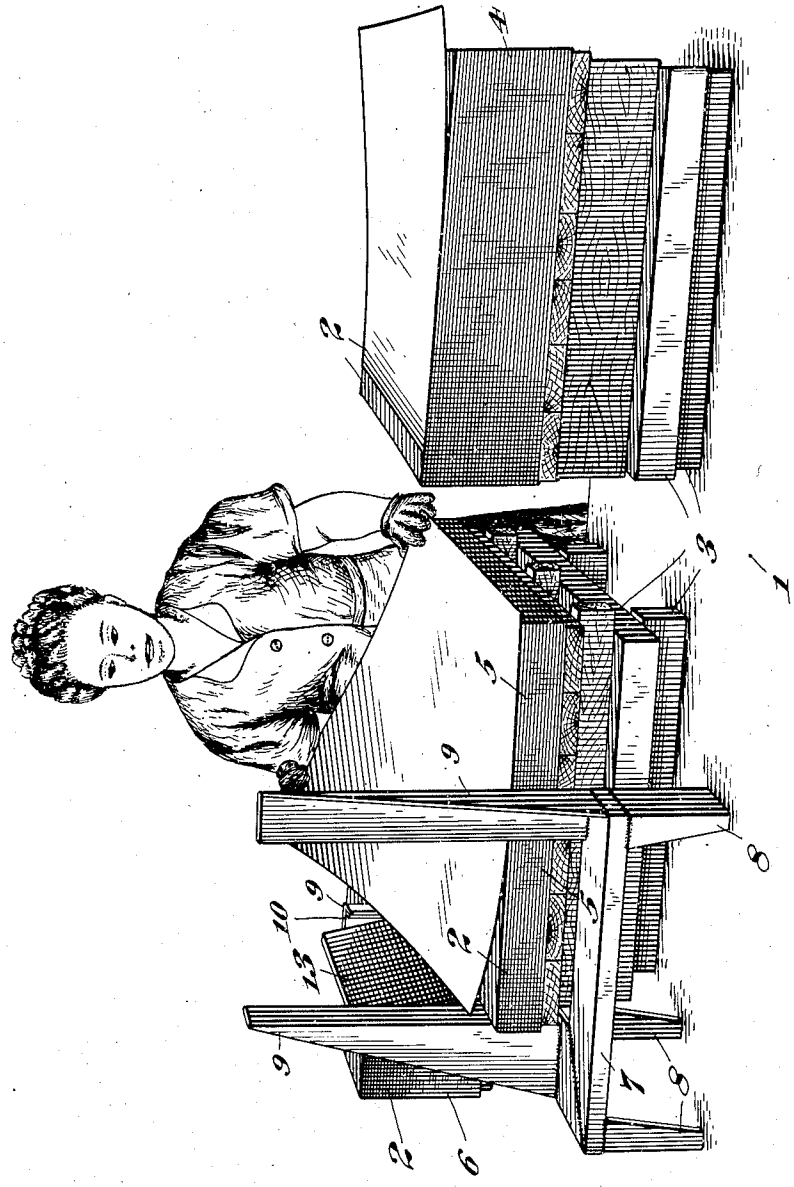

Fig. 3.

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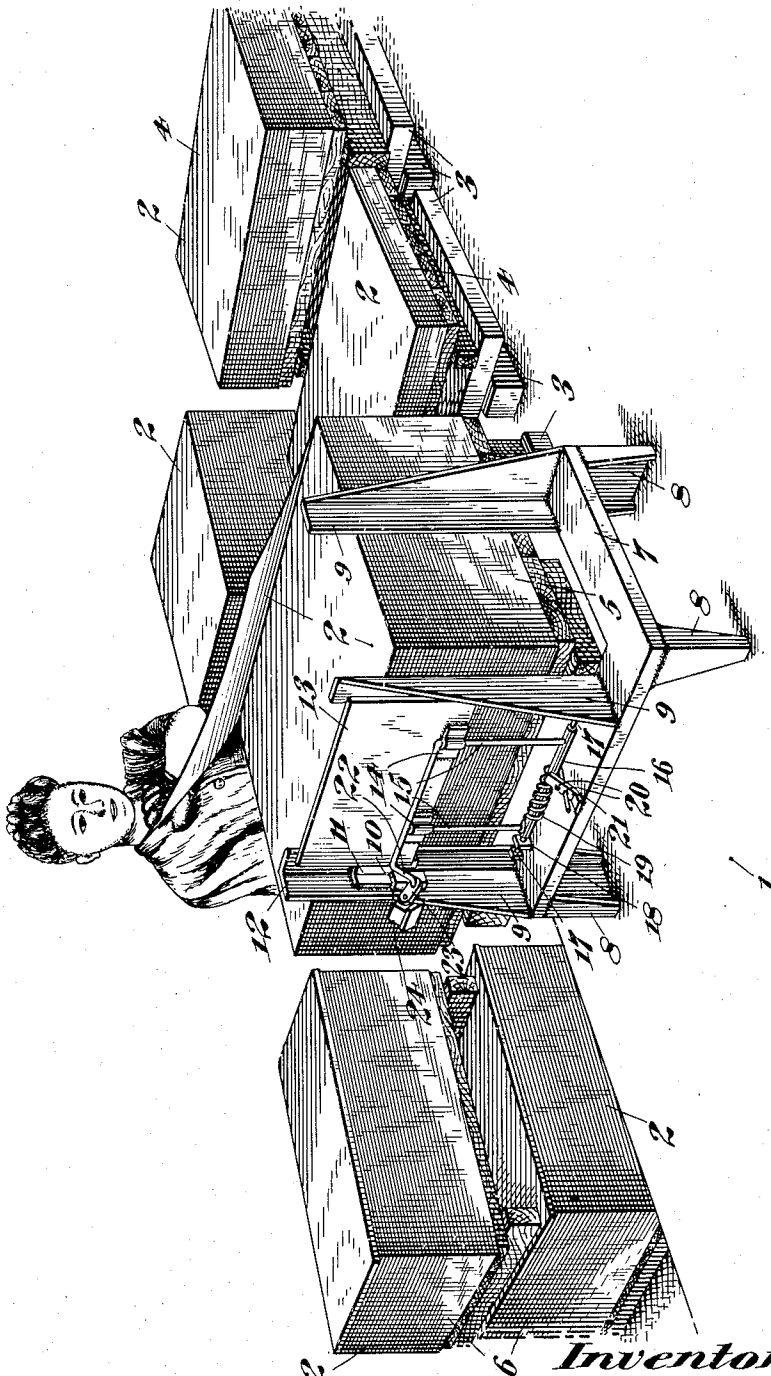
SHEET MOVEMENT RESPONSIVE COUNTING DEVICE

Filed Oct. 30, 1947 4 Sheets-Sheet 4

Fig. 4.



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Patented Sept. 20, 1949

2,482,201

UNITED STATES PATENT OFFICE

2,482,201

SHEET MOVEMENT RESPONSIVE COUNTING DEVICE

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Application October 30, 1947, Serial No. 783,134

3 Claims. (Cl. 235—98)

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My invention relates in general to a counting device, and particularly to a device for counting sheets and plates as they are piled one on top of the other.

In modern tin plate manufacture, the cleaned and polished sheets are carefully inspected for defects by expert assorters, usually women, who examine minutely both sides of each sheet, and who classify or assort them by hand into piles of accepted or rejected grades.

The sheets of each grade must also be counted and collected into packs of uniform size, this being generally a separate step from the assorting, and since hand reckoning involves some mental effort to remember numbers, occasional mistakes due to lapses of memory are quite likely to occur.

On object of this invention, therefore is to reduce or eliminate the necessity of hand reckoning sheets or plates.

Another object is to provide a device for mechanically counting tin plate during the assorting operation.

A further object is to provide a reliable tin plate counting device which is simply constructed, light in weight and easy to move from place to place, and readily adjustable for operating convenience.

Still other objects, purposes and advantages of the invention will appear hereinafter in the specification and in the appended claims.

In the annexed four (4) sheets of drawings, forming a part of this specification, and in which like characters of reference indicate like parts:

Figure 1 is a perspective view of a counting device constructed in accordance with this invention;

Fig. 2 is a perspective view showing the device in use when the pile is first started;

Fig. 3 is another perspective view, showing the movement of the vane to counting position which results when the assorter turns a sheet over; and

Fig. 4 is also a perspective view, but showing the machine in use when the pile is nearing completion.

Referring more particularly to the drawings, the numeral 1 designates the top of a table or base on which the sheets or plates 2 are piled during the assorting operation. Suitable supports, such as the skids 3, are conveniently positioned on the table 1 to receive the uninspected pile 4, the pile of accepted sheets 5, and the pile of rejected sheets 6.

The counting device of my invention comprises a horizontal base 7, which may be of welded steel

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plates and is preferably L-shaped, as in Fig. 1, and mounted on feet 8 resting on the table 1 adjacent the skids 3 for the pile 5. Mounted on said base 7 are a plurality of angle-iron uprights or standards 9, which serve as stops on two sides for the assorted sheets and thereby assist in forming an orderly pile. For convenience in assorting, the upright 9 which is nearest the assorter may be cut shorter than the rest, and provided with clips 10 adapted to engage a small angle-iron 11 welded to the extension 12.

On one side of the device, a pair of the standards 9 also serve as stops for a swinging rectangular vane 13, slidably clamped by friction plates 14 to the normally vertical support rods 15 which are secured to a horizontal cup-ended rock shaft 16 pivoted between cone-pointed setscrews 17 threaded in nuts 18 secured to the base 7. The reflex action of the spring 19 wound spirally around the rock shaft 16, one end of which spring bears against one of the rods 15 and the other end of which engages one of the slots 20 in the metal strap 21 secured to the base 7, will normally tend to hold the vane 13 inward against the stops and return it to its initial position after movement. An extension 22 to the support rods 15 is pivotally connected to a short lever 23 for tripping a small mechanical register or counter 24, of the well-known ratchet type having revolving numeral wheels, mounted on one of the standards 9.

The working principle of this device is the utilization of the blast of air created as a sheet or plate is turned over by an assorter.

In operation, the device with the angle extension 12 is removed, is placed against the skid 3 on which the assorted sheets 5 are to be piled. The vane 13 is on the right hand side as the assorter faces the pile. When the assorter turns a sheet over to the assorted pile 5, the blast of air created by the resulting fanning action strikes the vane 13, causing it to swing outward from the adjacent standards 9 and thereby to trip the lever 23 actuating the counter 24. The spring 19 forces the vane 13 back into position against said standards 9, and the next sheet is ready to be counted.

When only a few sheets have been assorted and the pile 5 is still low, as shown in Figs. 2 and 3, the vane 13 will be set in a correspondingly low position. As the angle extension 12 is not then required, and may even interfere to some extent with the assorter's passing rejected sheets over the device to her right, it is not used at this stage. However, as the assorted pile nears completion

and the vane 13 is moved upward, as shown in Fig. 4, it will then become necessary to put the angle extension 12 in place.

For counting the lighter gauges, where the fanning action is less strong, a shield consisting of a sheet of tin plate or the like may be placed upright between the two angles 9 on the end of the device opposite the assorter, so as to create more air pressure for actuating the vane.

Although I have hereinabove described this invention in considerable detail, I do not wish to be limited to the exact and specific details described, but I may also use such substitutions, modifications, or equivalents thereof as are included within the scope and spirit of the invention or pointed out in the appended claims.

What I claim as new and useful and desire to protect by Letters Patent is:

1. A device for counting metal sheets and plates comprising a supporting base, spaced standards secured to the base, a register provided with a trip lever mounted on one of said standards, a rock shaft pivotally mounted on said base, normally vertical support rods secured to said shaft and operatively connected to the trip lever, and a vane slidably clamped to said support rods.

2. A device for counting metal sheets and plates comprising a supporting base, spaced standards secured to the base, extension means for lengthening one or more standards as desired, a register provided with a trip lever and mounted on one of said standards, and a vane pivotally mounted on said base and operatively connected to said

trip lever for actuation by the air gusts from the movement of the sheets being counted.

3. A device for counting metal sheets and plates comprising a horizontal L-shaped base, feet supporting the base, spaced standards secured to said base, a register having a trip lever mounted on one of said standards, spaced nuts secured to said base adjacent the standards, cone-pointed set-screws threaded into said nuts, a cup-ended horizontal rock shaft pivoted on said set-screws, normally vertical support rods secured to said shaft, and operatively connected to the lever, a vane slidably clamped to said support rods, a metal strap having a plurality of slots secured to the base, a spring wound spirally around the shaft and having one end bearing against one support rod and the other end engaging one of the slots in the strap to hold the vane normally against the standards.

WILLIAM RUSSELL MULQUIN.

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