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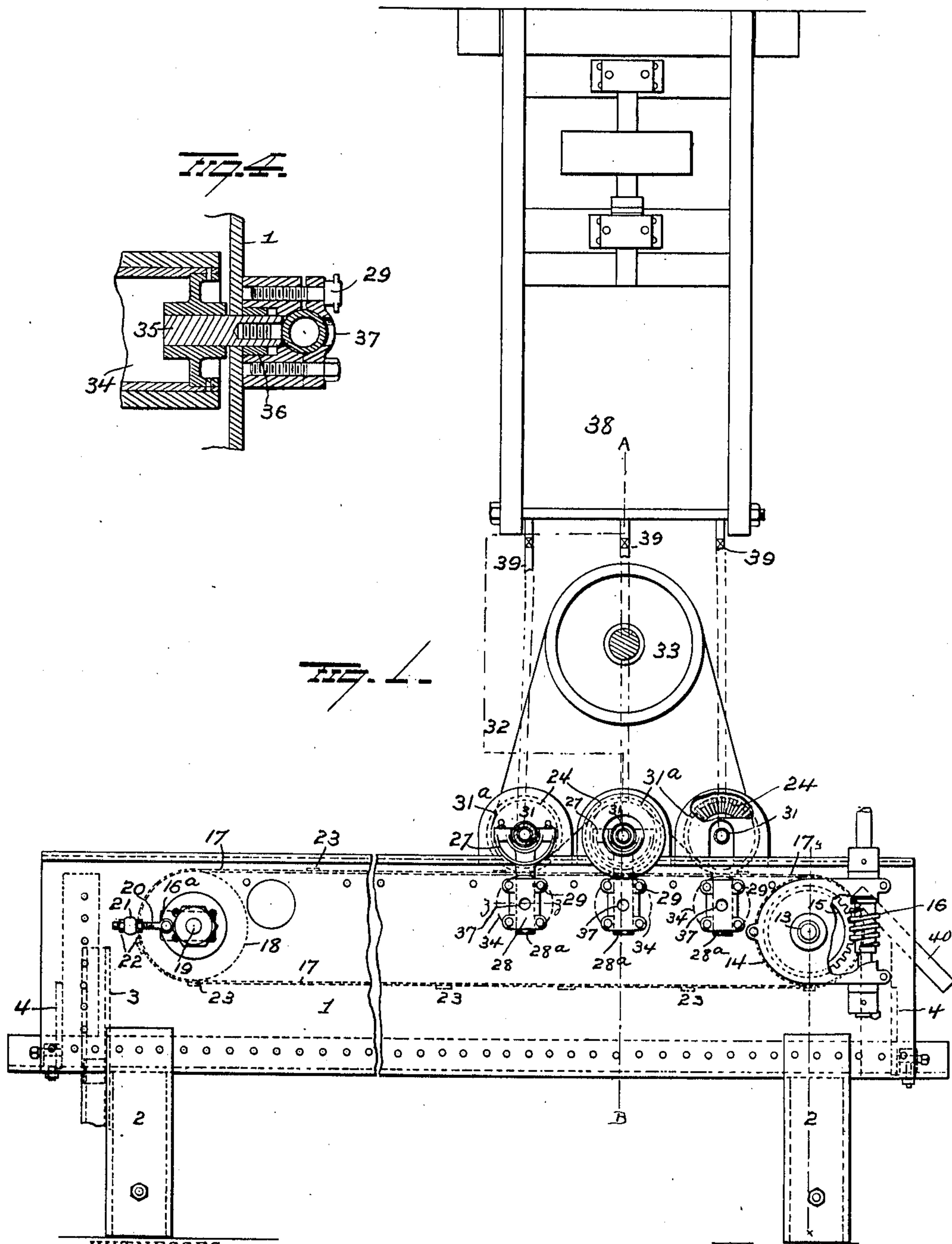
PATENTED OCT. 29, 1907.

D. F. BRODERICK.

MACHINE FOR SCOURING AND SCRATCH BRUSHING FLAT METAL WARE.

APPLICATION FILED AUG. 3, 1906.

3 SHEETS—SHEET 1.



WITNESSES  
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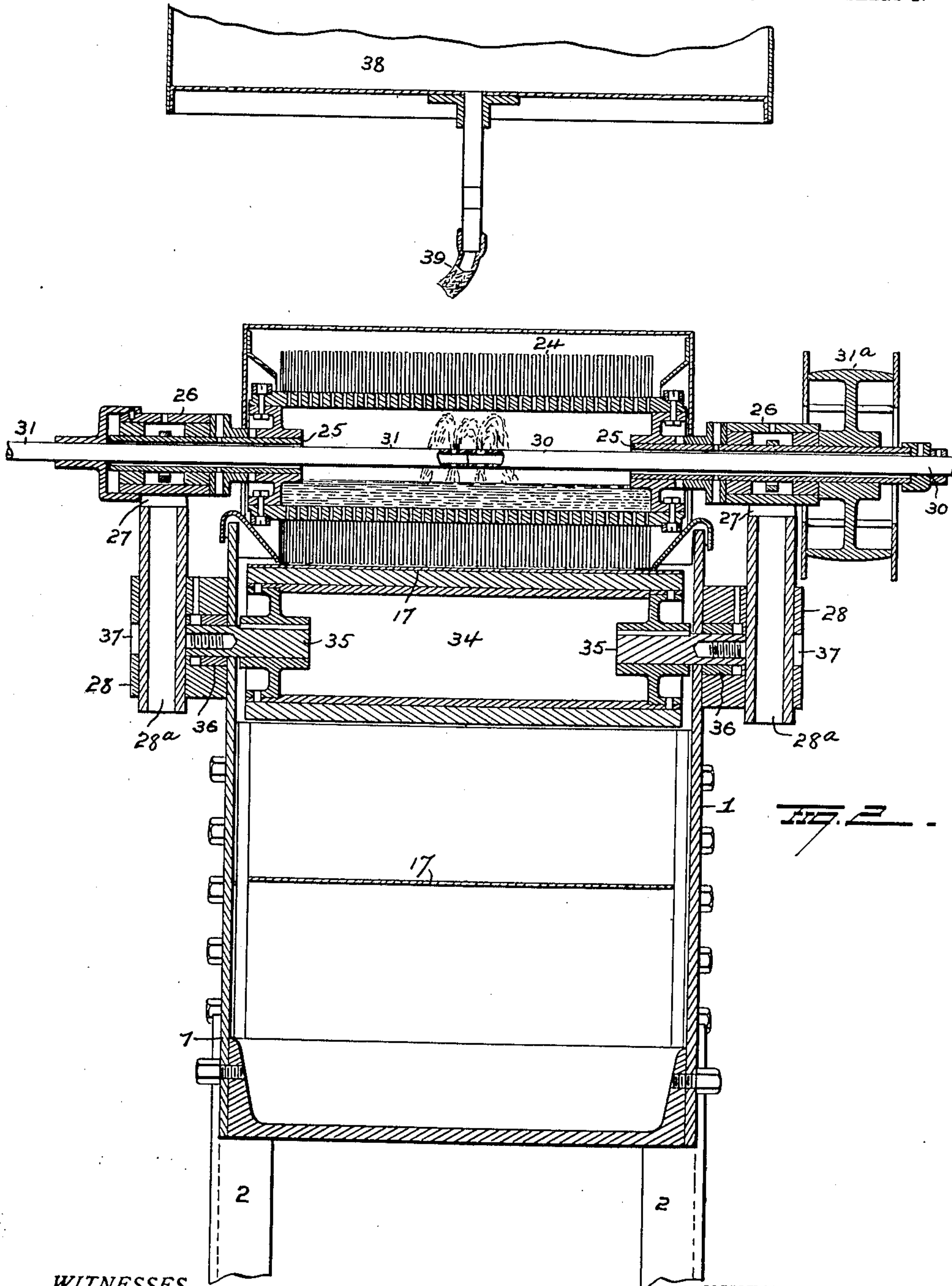
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3 SHEETS—SHEET 2.



WITNESSES

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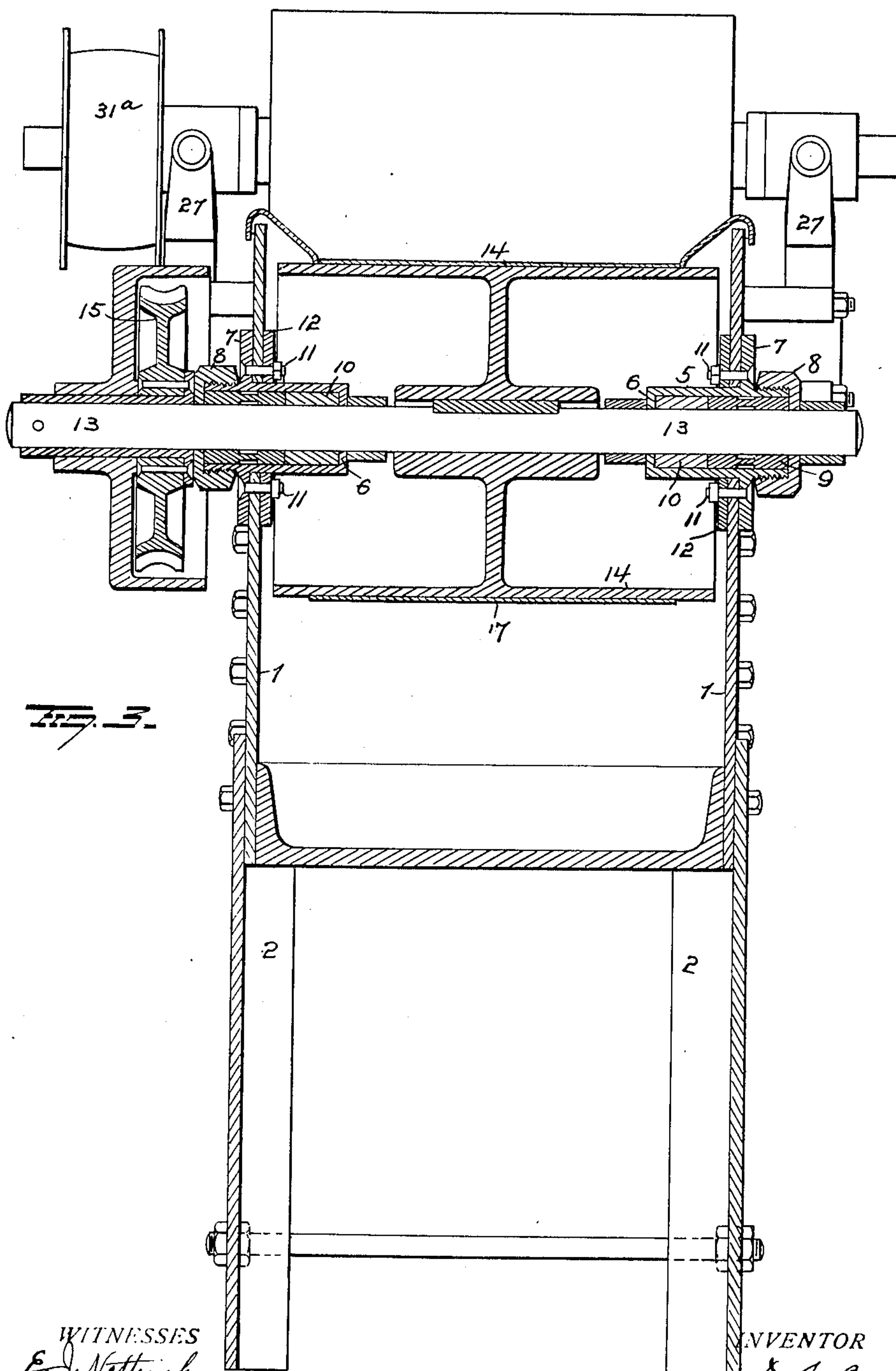
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3 SHEETS—SHEET 3.



*Fig. 3.*

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# UNITED STATES PATENT OFFICE.

DAVID FELIX BRODERICK, OF NEW BRITAIN, CONNECTICUT, ASSIGNOR OF ONE-HALF TO  
LEWIS SPERRY, OF SOUTH WINDSOR, CONNECTICUT.

## MACHINE FOR SCOURING AND SCRATCH-BRUSHING FLAT METAL WARE.

No. 869,478.

Specification of Letters Patent.

Patented Oct. 29, 1907.

Application filed August 3, 1906. Serial No. 329,060.

*To all whom it may concern:*

Be it known that I, DAVID FELIX BRODERICK, of New Britain, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Machines for Scouring and Scratch-Brushing Flat Metal Ware; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in machines for scouring and scratch brushing flat metal ware, and it consists of a horizontal flexible conveyer, a brush adjustably mounted in a position to engage the exposed surfaces of the articles on said conveyer, conveyer supporting roller located in the vertical plane of the brush, means for moving the conveyer and means for rotating the brush.

In the accompanying drawings, Figure 1 is a view in side elevation partly in section of my improved apparatus. Fig. 2 is a view in transverse vertical section on the line A—B of Fig. 1. Fig. 3 is a similar view on the line X—Y of Fig. 1, and Fig. 4 is a view in section on the line Z—Z of Fig. 1.

1 represents a rectangular tank mounted on legs 2 and provided with an overflow pipe 3, which latter extends up some distance from the bottom of the tank, so as to form a sediment chamber into which the pumice stone or other abrading material can settle, while the water or other scouring fluid passes off through the pipe 3. This overflow pipe is preferably placed as far away from the brushes as possible, so that the pumice stone or other abrading material may settle or be precipitated before reaching the overflow pipe, and this precipitate may be removed for further use, through the gates 4, located at the ends of the tank.

Secured within the sides of the tank, near its rear end, are boxes, each of which is composed of a cylinder 5 having an inwardly projecting flange 6 at its inner end, and an outwardly projecting flange 7 near its outer end, the portion of the cylinder to the outside of the flange 7, being screw threaded for the attachment of the packing nut 8. This packing nut serves to hold the bushing 9 and the rubber washer 10 in place. This washer rests against the flange 6 and prevents the entrance of any abrading material to the bushing. The two boxes thus constructed are secured to the sides of the tank by screw bolts 11 which also pass through reinforcing rings 12, located against the inner faces of the side walls of the tank.

Journaled in the two bearings above described, is the driving shaft 13 to which the drum 14 is keyed, and keyed to shaft 13 near one end outside the tank, is the worm wheel 15 which latter meshes with the worm shaft 16 and is driven thereby.

Mounted in elongated slots 16<sup>a</sup> formed in the side walls of the tank near the front end of the latter, are boxes in all respects similar to those carrying shaft 13, except that they are not secured to the side walls of the tank, but are slidingly mounted in the slots 16<sup>a</sup>, so that they may be adjusted to take up any slack in the belt or conveyer 17, which latter is carried by the drum 14 on shaft 13, and by drum 18 on shaft 19 journaled in the movable bearings. In these movable bearings, the inner ring is secured to the outer flange of the cylindrical box by screws which pass through the slots 16<sup>a</sup> thus locking the boxes against endwise displacement. The boxes may be positively adjusted and held in any desired position, by the screw rods 20 secured to the outer flange of the cylindrical box, and passing through bosses 21 (one at each side), and by the lock nuts 22 secured on the screw rod on opposite sides of the bosses.

The flexible belt or conveyer 17 is provided on its outer face with a series of transverse slats 23, which operate to positively force or carry the articles to be scoured or burnished under the brushes.

In the present machine I have shown three brushes 24, each of which consists of a hollow cylinder carrying bristles or wires with perforations intermediate the bristles or wires for the passage of the scouring material. Each cylinder is secured to two hollow shafts 25, one at each end, and these shafts are journaled in the bearing boxes 26, pivotally mounted in the yokes 27. The stems 28<sup>a</sup> of the yokes are supported in the blocks 28, each of which latter is split from the top downward for a part of its length, and is provided with a clamping screw 29 which clamps the stem within the block.

As the boxes are pivotally supported by vertically adjustable yokes, it will be seen that either end of either brush may be adjusted independently of the other, thus permitting the brushes to be adjusted to compensate for wear at either end, and also to be adjusted to operate upon articles that are deeper or thicker at one end than at the other end.

30 are water pipes passing into the brushes through the hollow shafts at one end, and 31 are pipes passing into the brushes through the hollow shafts at the other end, through which abrading material is introduced. These pipes discharge the water and pumice stone or other abrading or scouring material into the hollow cylinders 24, and it is fed therefrom to the bristles or wires, through the perforations before referred to, and is carried into direct contact with the articles being scoured or burnished.

One hollow shaft of each brush is provided with a belt pulley 31<sup>a</sup>, all three of which are engaged by the single drive belt 32. This belt passes from the driving pulley 33 down under one pulley 31<sup>a</sup>, up over the next pulley 31<sup>a</sup>, down and under the next pulley 31<sup>a</sup>, and then up to the drive pulley. By this arrangement all



three brushes are not only driven simultaneously and at the same rate of speed, but the middle brush revolves in a direction opposite the direction of rotation of the outer brushes. By this arrangement all parts of  
5 all surfaces, whether flat, depressed or raised, are reached by the bristles or wires and thoroughly scoured or burnished.

Located in the vertical planes of the brushes, are apron or conveyer supporting cylinders 34, one for each  
10 brush. These cylinders are preferably composed of metal bodies covered with vulcanized rubber, and each is supported in a position well up to the brush so as to solidly support the articles on the conveyer while they are being acted upon by the brushes. Each cylinder  
15 34 is carried by two stub shafts 35 keyed thereto, each shaft being mounted at its ends in bushings or bearings 36 carried by the blocks 28. These blocks have openings 37 extending transversely through same, and each stub shaft 35 has a female threaded opening in its outer  
20 end. These stub shafts are introduced from the outside through the openings 37, thus permitting of the ready assembling of the parts, and they may be withdrawn by screwing a bar or other tool into the threaded openings in these ends, and applying a pulling force to the  
25 bar or tool.

The abrading material is contained in an elevated tank 38 and is fed by gravity through pipes 39 leading therefrom to the several brushes, and the water is also supplied from a suitable source of supply. If soap wa-  
30 ter be used for scouring it can be mixed with the pumice stone and supplied therewith.

With this machine, the articles to be polished, scoured, burnished or scratch brushed, are fed onto the conveyer and are carried by the latter under the  
35 several brushes and are acted upon by each. As the conveyer moves slowly and the brushes revolve rapidly, each article placed on the conveyer will be thoroughly acted upon by the brushes. As the articles leave the rear brush, they are carried onto the spout 40 and  
40 dropped therefrom into a suitable receptacle, preferably containing water.

I make no claim in this application to the construction of the brushes *per se*, as the latter forms the subject matter of pending application for patent filed July  
45 28th, 1906, Serial No. 328,271.

It is evident that changes in the construction and relative arrangements of the several parts might be

made without avoiding my invention and hence I would have it understood that I do not restrict myself to the particular construction and arrangement of parts 50 shown and described, but,—

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

1. The combination with a tank and an endless conveyer therein, of a plurality of cylindrical scouring or  
55 abrading brushes located over the conveyer and in position to operate on articles on said conveyer, means for rotating said brushes, and conveyer supporting cylinders located in the vertical planes of the brushes.

2. The combination with a tank and an endless conveyer therein, of a plurality of cylindrical scouring or  
60 abrading brushes located over the conveyer and in position to operate upon the articles on said conveyer, a pulley for each brush, a driving belt passing under one pulley, over the next pulley and under the next pulley whereby  
65 the several pulleys are rotated in unison and at the same speed but the alternate pulleys in reverse directions from those on either side, and conveyer supporting cylinders located in the vertical planes of the brushes.

3. The combination with a tank and an endless conveyer therein, of yokes adjustably secured to the sides of  
70 the tank, bearings pivotally mounted in said yokes and a scouring or abrading brush journaled in said pivoted bearings.

4. The combination with a tank and an endless conveyer therein, of vertically adjustable yokes, bearings  
75 mounted to rock lengthwise in said yokes, and a cylindrical scouring or abrading brush journaled in said rocking bearings.

5. The combination with a tank and an endless conveyer therein, of a scouring or abrading brush journaled  
80 at its ends in boxes, and means whereby these boxes may be vertically adjusted independently of each other.

6. The combination with a tank and an endless conveyer therein, of a plurality of cylindrical scouring or  
85 abrading brushes, journal boxes in which the brush shafts are mounted and a vertically adjustable device supporting each journal box.

7. The combination with a tank and an endless conveyer therein, of boxes secured to the sides of the tank,  
90 yokes vertically adjustable in said boxes, bearings pivoted to said yokes, a scouring or abrading brush mounted in said pivoted bearings, a cylinder for holding the conveyer up to the brush, and forming a solid support for the article passing under the brush, and stub shafts inserted from  
95 the outside through bearings in the sides of the tank and engaging and supporting the ends of the holding cylinder.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses.

DAVID FELIX BRODERICK.

Witnesses:

R. S. FERGUSON,

GEO. F. DOWNING.