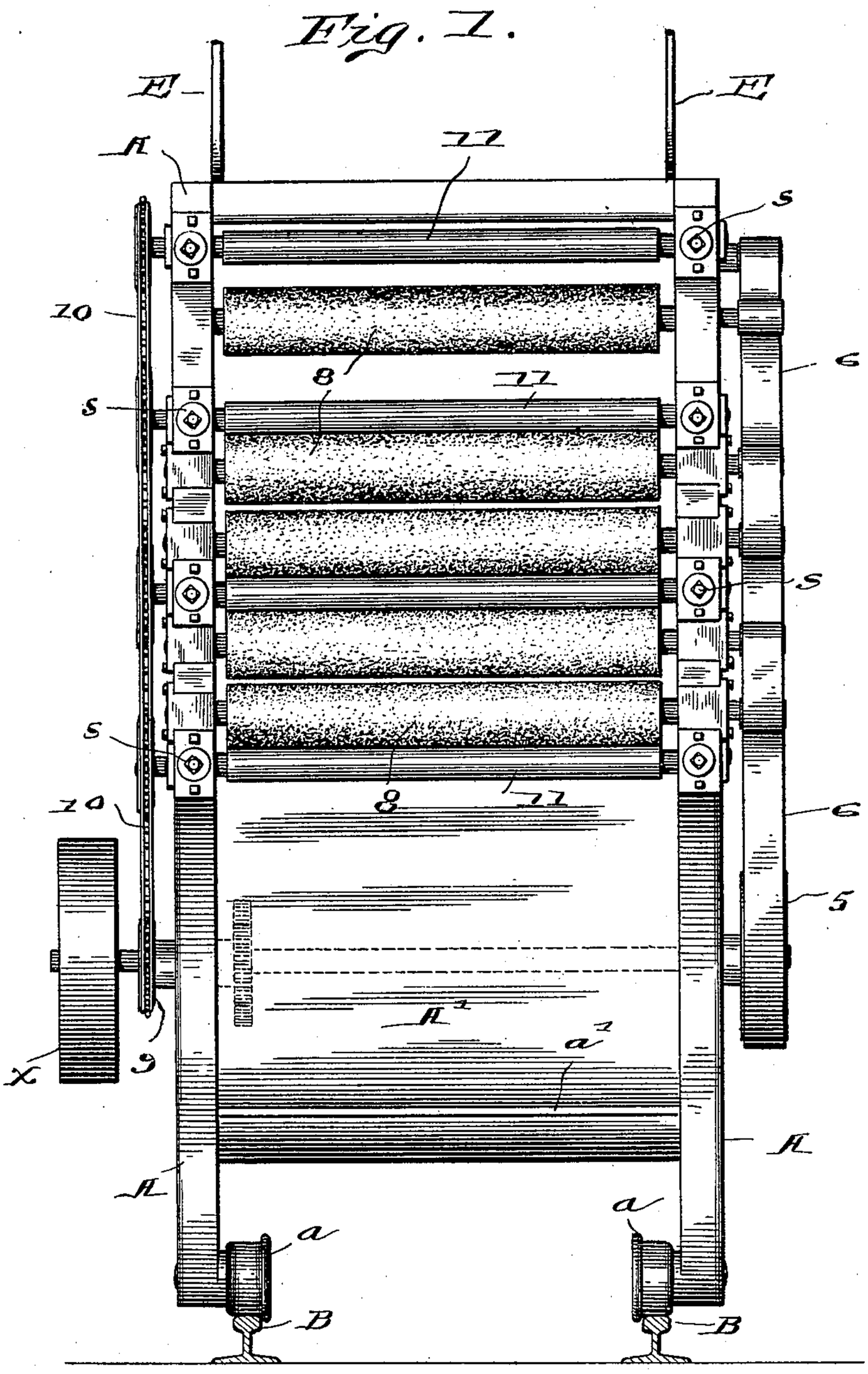
(No Model.) 4 Sheets—Sheet 1.

J. BURTON.

MACHINE FOR CLEANING AND POLISHING METAL PLATES.

No. 594,149. Patented Nov. 23, 1897.

Fig. 1.



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(No Model.) 4 Sheets—Sheet 2.

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MACHINE FOR CLEANING AND POLISHING METAL PLATES.

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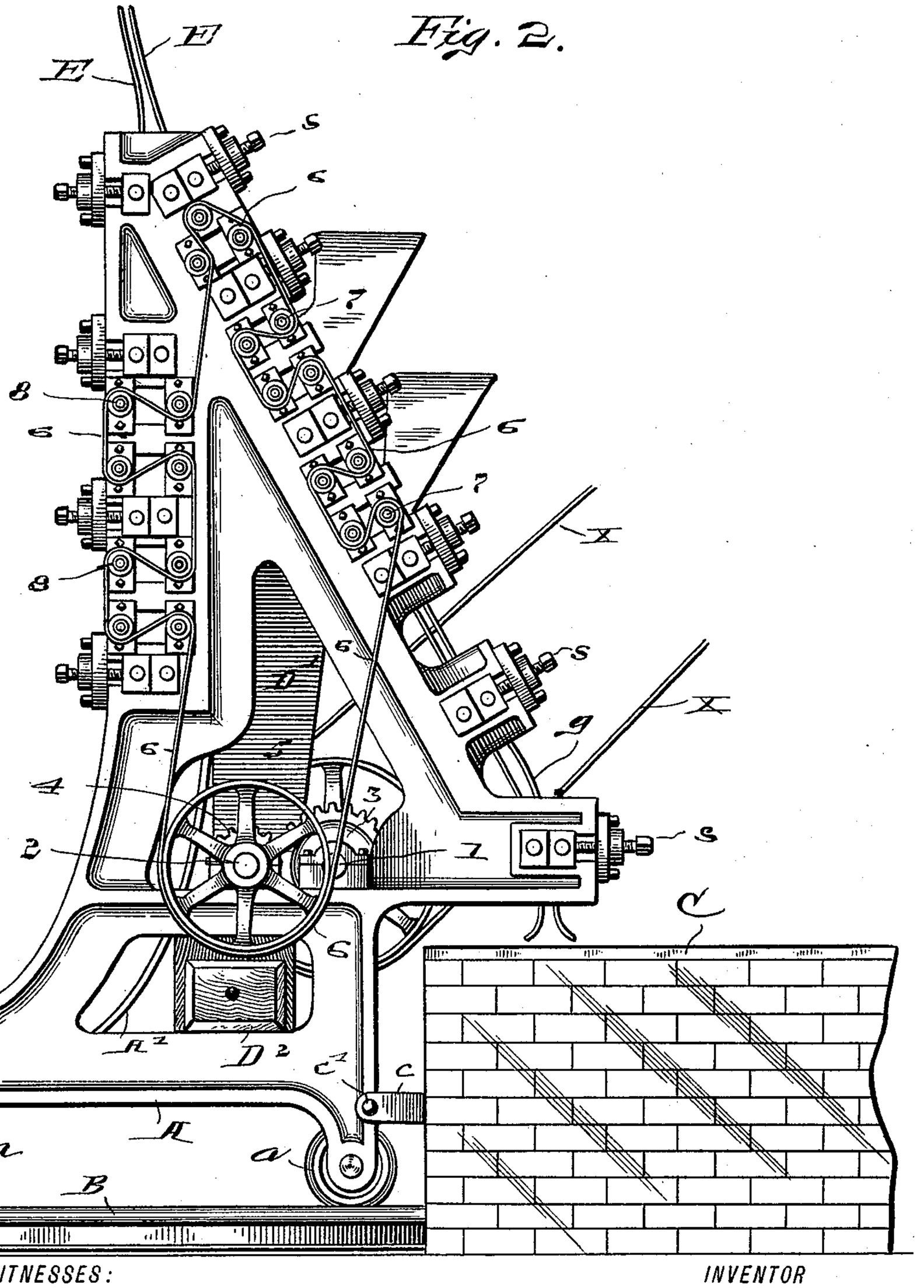
Fig. 2.



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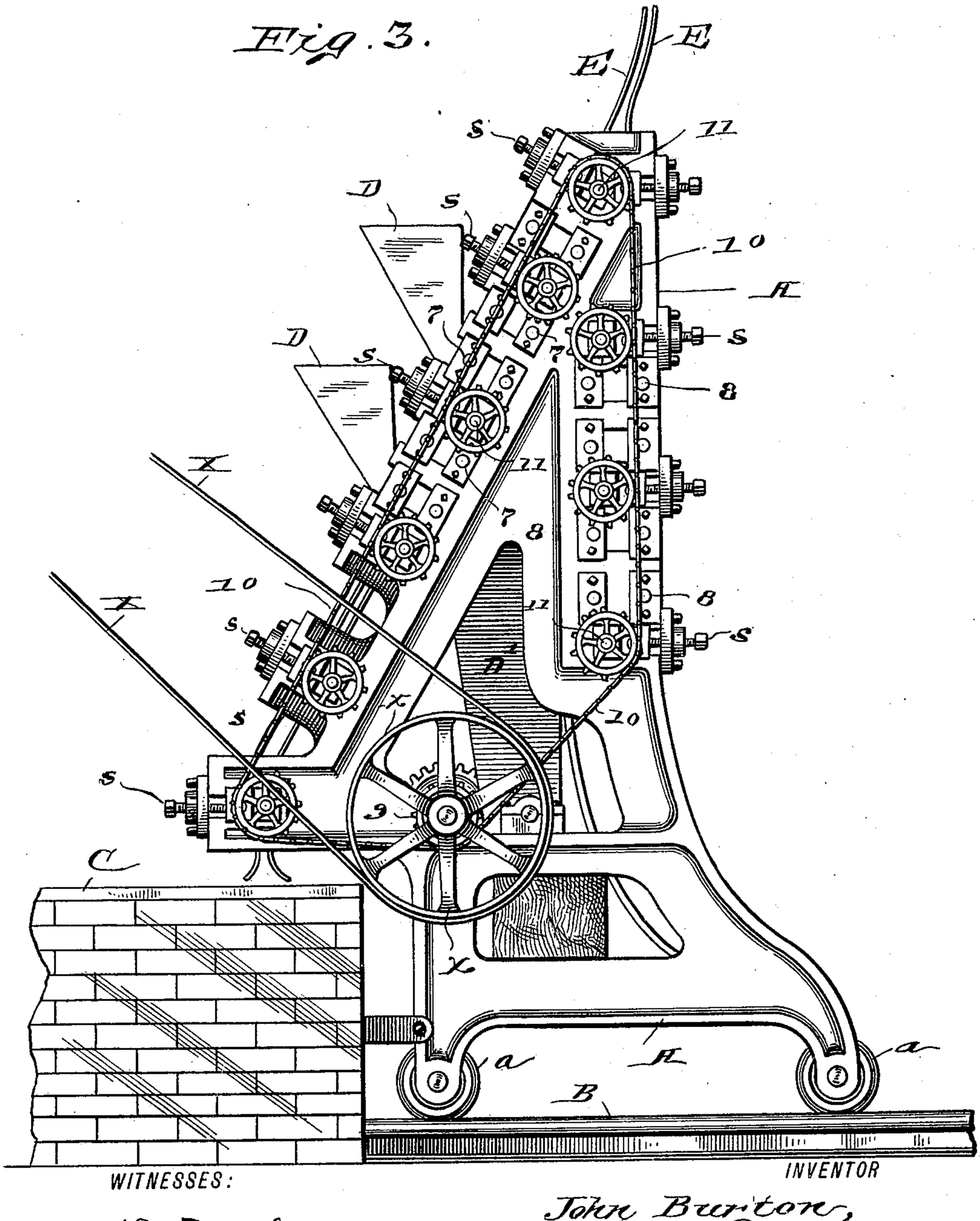
MACHINE FOR CLEANING AND POLISHING METAL PLATES.

No. 594,149. Patented Nov. 23, 1897.

Fig. 3.



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(No Model.) 4 Sheets—Sheet 4.

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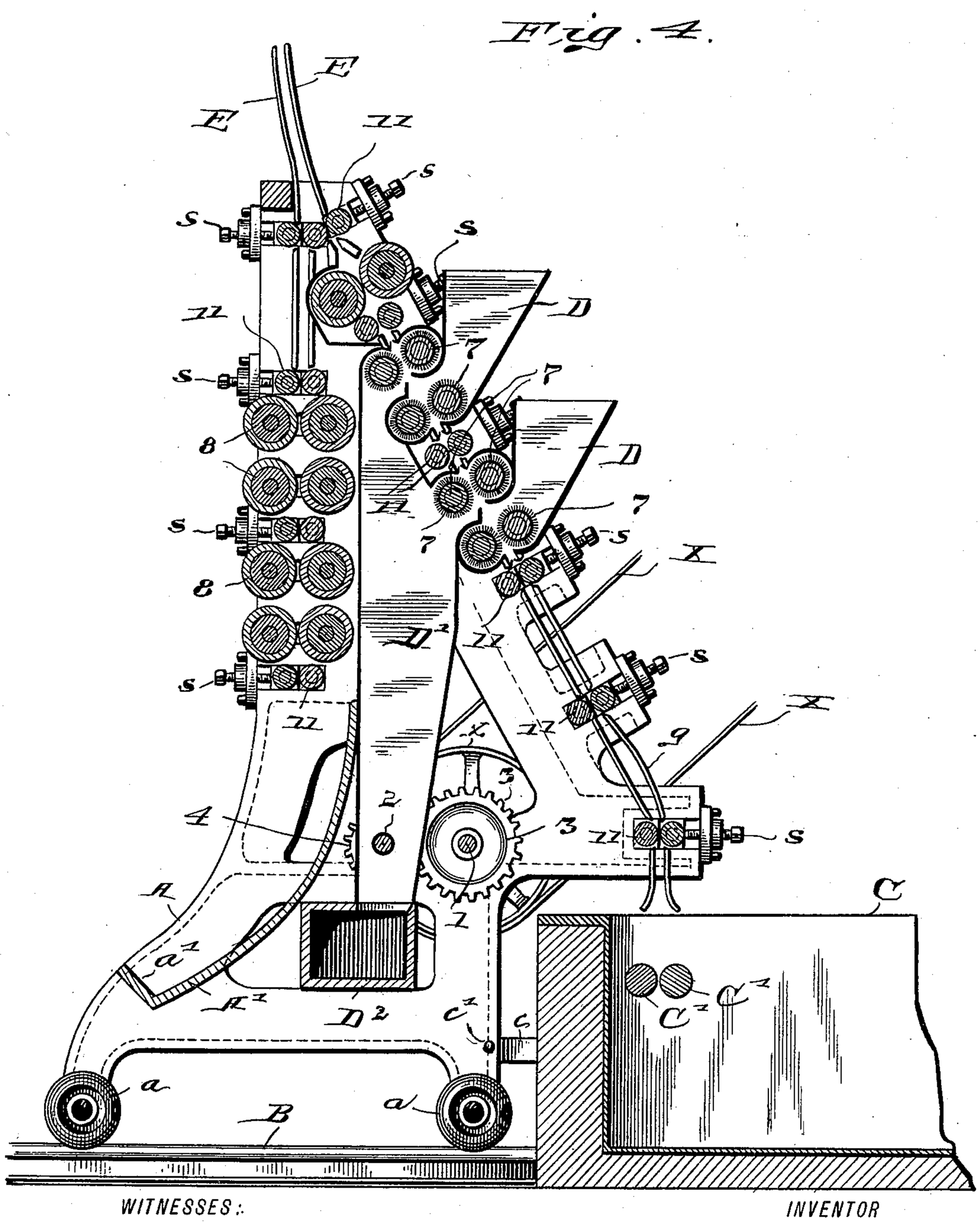
MACHINE FOR CLEANING AND POLISHING METAL PLATES.

No. 594,149. Patented Nov. 23, 1897.

Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN BURTON, OF ANDERSON, INDIANA.

MACHINE FOR CLEANING AND POLISHING METAL PLATES.

SPECIFICATION forming part of Letters Patent No. 594,149, dated November 23, 1897.

Application filed December 21, 1896. Serial No. 616,448. (No model.)

To all whom it may concern:

Be it known that I, JOHN BURTON, a subject of the Queen of Great Britain, (having declared my intention to become a citizen of the United States,) residing at Anderson, in the county of Madison and State of Indiana, have invented certain new and useful Improvements in Machines for Cleaning and Polishing Metal Plates, of which the following is a specification.

The object of my said invention is to provide a machine by which tin plates as they are drawn from the tinning-machine proper will be taken from said machine and without manual labor cleaned and polished to a condition ready for use.

A machine embodying my said invention will be first fully described and the novel features thereof then pointed out in the claims.

Referring to the accompanying drawings, which are made a part hereof, and on which similar letters and numerals of reference indicate similar parts, Figure 1 is a rear elevation of a machine embodying my said invention; Fig. 2, an elevation of one side of the machine; Fig. 3, an elevation of the other side of the machine, and Fig. 4 a central sectional view.

This machine consists, generally speaking, of a framework A, containing a series of carrying, cleaning, and polishing rolls arranged as will be hereinafter described, and also carrying hoppers containing the bran or mixture which aids in the cleaning operation. It also includes a receptacle into which the sheets of tin fall after the cleaning and polishing operations are completed. Said receptacle consists in part of parts of the sides of the frame A, within which is secured a bottom A′, terminating in an end *a*′, arranged below the carrying and polishing rolls, as best shown in Fig. 4. This machine should be mounted on tracks B, so that it may be moved to or away from the tinning-machine C, as the exigencies of its use and of the use of said tinning-machine may require. It is provided with the trucks *a* to enable it to be easily moved. In operation it is positioned alongside the tinning-machine, and while in operation is securely fastened in fixed relation thereto by stays *c*, extending out therefrom and united to the frame by bolts *c*′ or otherwise. The tinning-machine is or may be of any ordinary or desired construction and contains various sets of rolls, as is common. Of these I have illustrated only the final ones C′, which deliver the sheets after being coated with tin to my improved machine, as best illustrated in Fig. 4 of the drawings.

The machine is provided with a main driving-shaft 1 and a counter driving-shaft 2, which is driven from said main shaft by means of the spur-gears 3 and 4. From a pulley 5 on the former are driven by means of the belt 6 the series of cleaning-rolls 7 and polishing-rolls 8, while from a sprocket-wheel 9 on the latter are driven by means of the sprocket-chain 10 one each of several pairs of carrying-rolls 11, which are interspersed among the cleaning and polishing rolls. By this arrangement, as will be readily seen, both rolls of each pair of the cleaning and polishing rolls are driven, while one of each pair of carrying-rolls runs idly, except as driven by contact with the plates passing between the pairs. One roll of each pair of carrying-rolls is adjustable, as shown, a bearing at each end thereof being operated by an adjusting-screw *s*. The first pair of carrying-rolls only serves to receive the sheets of tin as they come from the tinning-machine and pass them along to the train of carrying-rolls which drives said sheets along between the cleaning-rolls, and there is a curve in the way or guide *g* between this first set of rolls and the first set by which the necessary change of direction of motion of the sheets of tin is secured.

Upon the frame A, I place one or more hoppers D, which I fill with an absorbent and cleaning material, generally bran, containing by preference a slight admixture of lime. These hoppers are so positioned as to deliver the material onto the sheets of tin as they are passing through the machine and also into the cylindrical brushes which form the first of the cleaning-rolls. The consequence is that this absorbent and cleaning material is thoroughly brushed onto the surface of the plates of tin, removing the oil which adheres thereto as they come from the tinning-machine and leaving the said plates in a clean condition ready to be polished. This "branning," as I denominate it, is an important part of the work to be performed by my ma-

chine. As will be observed, the cleaning rolls or brushes 7 are arranged in sets of two pairs each, so that each hopper supplies material to two pairs, the material being supplied to the upper pair of each set by being carried to it on the surface of the upwardly-traveling plates. The chute D′ leads to a box or receptacle D^2, into which the used material will fall, which is thus gathered so that it may be reused. The upper end of the chute D′ is so arranged about the brushing or cleaning rolls 7 as to receive the discharge of material from all of them, as will be best understood by an inspection of Fig. 4.

I may here remark that the three sets of carrying-rolls 11, between which the sheets of tin pass before they reach the brushing or cleaning rolls proper, serve in large measure to remove the oil which adheres thereto as they come from the tinning-machine. Of course the greater portion of this is done by the first set, which is directly above the tinning-machine, so that most of the oil flows back into said tinning-machine directly.

At the apex of the frame A, I position guides E, into which the edges of the sheets of tin will enter as they pass from the final set of carrying-rolls and be thus kept upright until they have escaped entirely from said rolls. Then the lower edges of the sheets are carried over the rearmost of said rolls, which also forms one of another pair of rolls situated at that point and by which the sheets are carried downwardly, as will be readily seen by an inspection of the drawings, especially Fig. 4. Intermediate the second set of carrying-rolls in this downwardly-actuating train are positioned the polishing-rolls. The carrying-rolls are driven at a comparatively slow speed, while the polishing as well as the cleaning rolls are driven at a comparatively high speed. The consequence is that the sheets of tin are permitted to descend rather slowly, while the polishing-rolls, being driven not only at a greater speed actually, but being also larger in size, (which of course increases the peripheral speed,) have a large action on the surfaces of the tin plates, which are thus polished very thoroughly. Said polishing-rolls are in the form of cylinders and are covered with a polishing material. I prefer sheepskin tanned with the wool on for this purpose. This is indicated by the difference in shading in Fig. 1. The polishing-rolls are there shown as having a woolly surface, while the carrying-rolls are shown as plain smooth cylinders.

The operation may be stated as follows: As the sheets of tin pass out of the tinning-machine they are delivered by the final rolls C′ thereof to the initial set of carrying-rolls 11 of my improved machine, as is best shown in Fig. 4, and carried thence up in an inclined path between the first or upwardly-actuating train of carrying-rolls and the cleaning-rolls 7 and under the mouths of the bran hoppers or receptacles D to the upper end of the machine, being cleaned of oil during the passage. As they arrive at the apex of the machine they are carried over the middle one of the carrying-rolls at that point and begin to descend between the second or downwardly-actuating train of carrying-rolls, down between the polishing-rolls 8, by which they are polished, and thence delivered into the receptacle A′ a' provided therefor, whence they can be removed in any desired manner. The cleaning-rolls which operate during the ascent of the sheets are preferably in the form of cylindrical brushes, while the polishing-rolls are cylinders covered with sheepskin tanned with the wool on.

As will be readily seen, the operation of the machine is entirely automatic, as it receives the sheets of tin from the tinning-machine, subjects them to the various operations provided for, and delivers them fully treated to a suitable receptacle without the interposition of any manual operation.

The machine as a whole is driven by a belt X, running to a pulley x, from some suitable source of power. (Not shown.)

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

1. In a machine for cleaning and polishing metal plates, the combination, of the train of carrying-rolls on one side of the upright frame, a series of sets of brushing or cleaning rolls interposed between them, hoppers containing an absorbent material mounted on said frame, one near and adapted to discharge directly onto each set of said cleaning-rolls, a second train of carrying-rolls leading downwardly on the opposite side of said frame, polishing-rolls interposed between them, said first set of carrying-rolls being adapted to deliver the plates to said second set of carrying-rolls, whereby they are first cleaned and then polished automatically by a single machine, substantially as set forth.

2. The combination with a tinning-machine, of a cleaning and polishing machine mounted to move toward and from said tinning-machine, means for securing them in fixed relation, the frame of said cleaning and polishing machine being formed with an overhanging portion adapted to project over the top of the tinning-machine, a train of carrying-rolls mounted on said frame, the lower pair of which are directly above the final set of rolls in said tinning-machine, cleaning-rolls interposed between said carrying-rolls, another train of carrying-rolls leading down the opposite side of said frame and adapted to receive the plates from said other carrying-rolls, and polishing-rolls between said carrying-rolls, whereby the plates as they leave the tinning-machine may be conveyed directly into and through the cleaning and polishing machine, and the entire operation made continuous, substantially as set forth.

3. The combination, in a machine for cleaning and polishing metal plates, of a frame in-

clined on one side and substantially vertical upon the other side, a train of carrying-rolls having brushing or cleaning rolls interposed between them mounted on the inclined side of the frame, and a train of carrying-rolls having polishing-rolls interposed between them mounted on the vertical side of the frame, whereby the plates being treated are cleaned while traveling up said inclined side and polished while descending said vertical side of said machine, substantially as shown and described.

4. The combination, in a machine for finishing metal plates, of a framework running to an apex, trains of carrying-rolls leading upwardly on one side toward said apex and downwardly therefrom upon the other side, the set of rolls near the apex of the machine consisting of three, the center one of which forms one of each of the two pairs, one leading upwardly, and the other downwardly, and guides positioned above said central roll, whereby the plate is held upright until it reaches its extreme upper position, and is then guided over said central roll to the second pair of the set, by which it is caused to descend.

In witness whereof I have hereunto set my hand and seal, at Indianapolis, Indiana, this 19th day of December, A. D. 1896.

JOHN BURTON. [L. S.]

Witnesses:

CHESTER BRADFORD,

JAMES A. WALSH.