

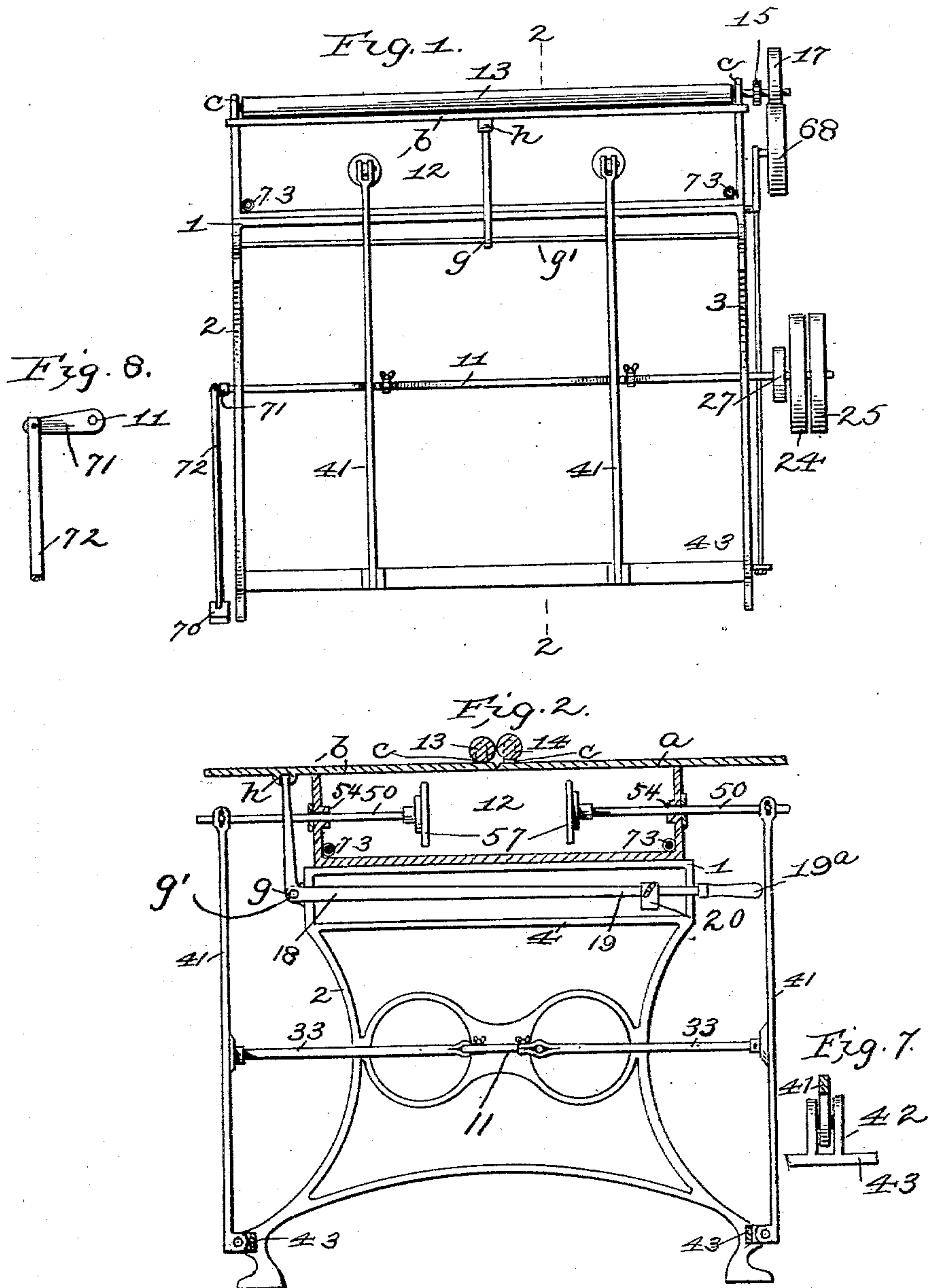
(No Model.)

2 Sheets—Sheet 1.

J. RANDALL.  
STARCHING MACHINE.

No. 562,661.

Patented June 23, 1896.



Attest  
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by Ellis Spear  
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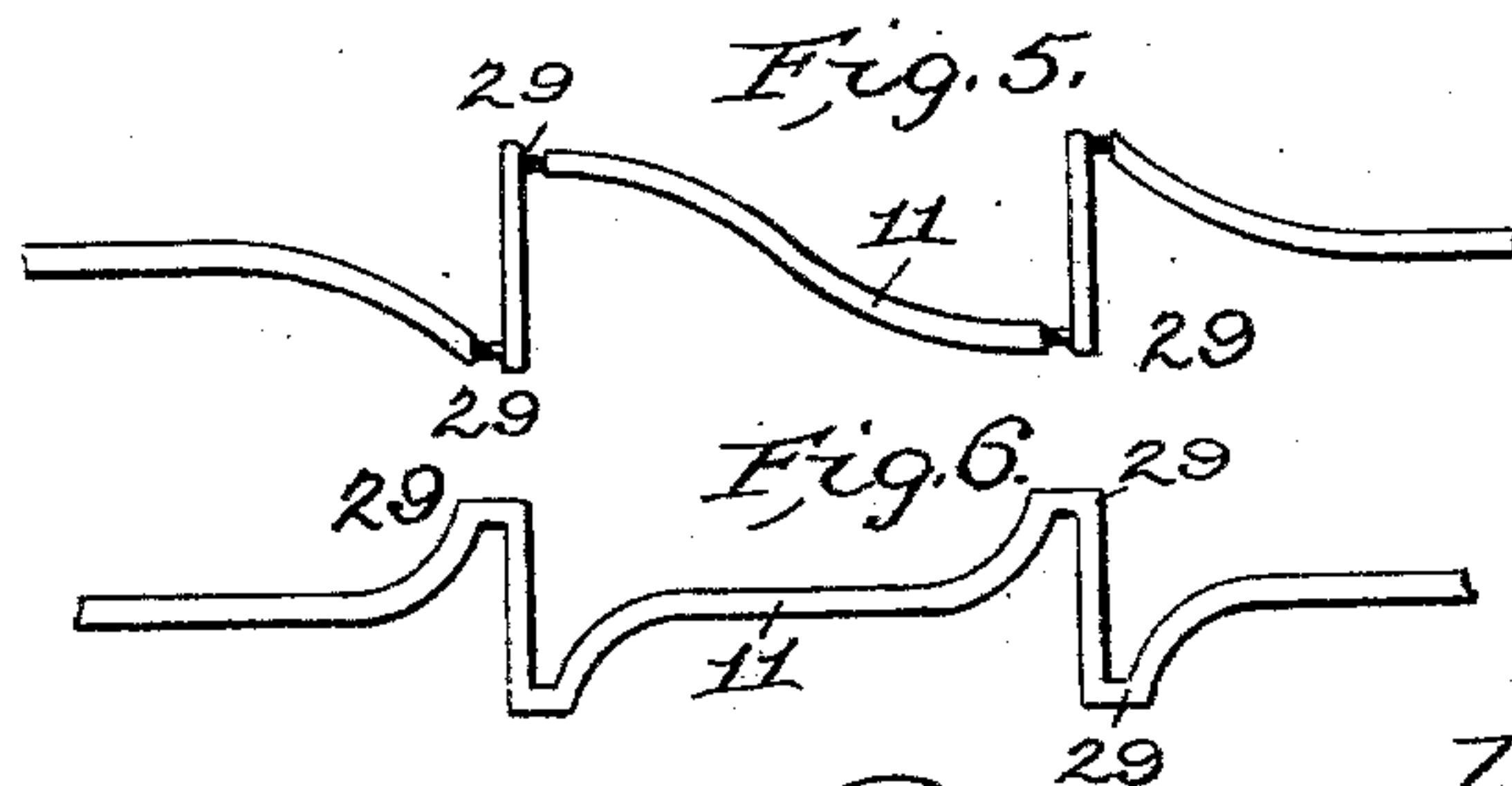
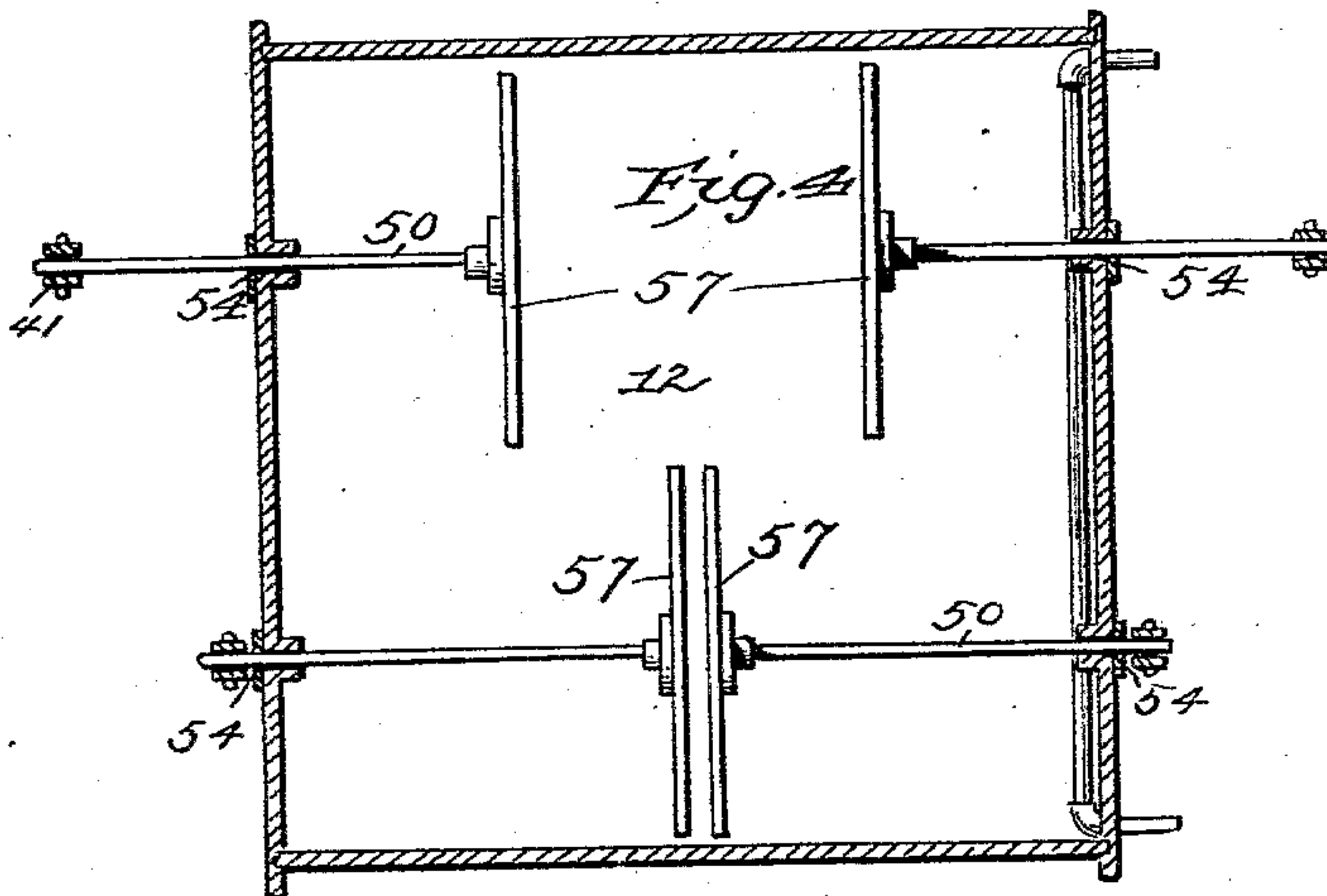
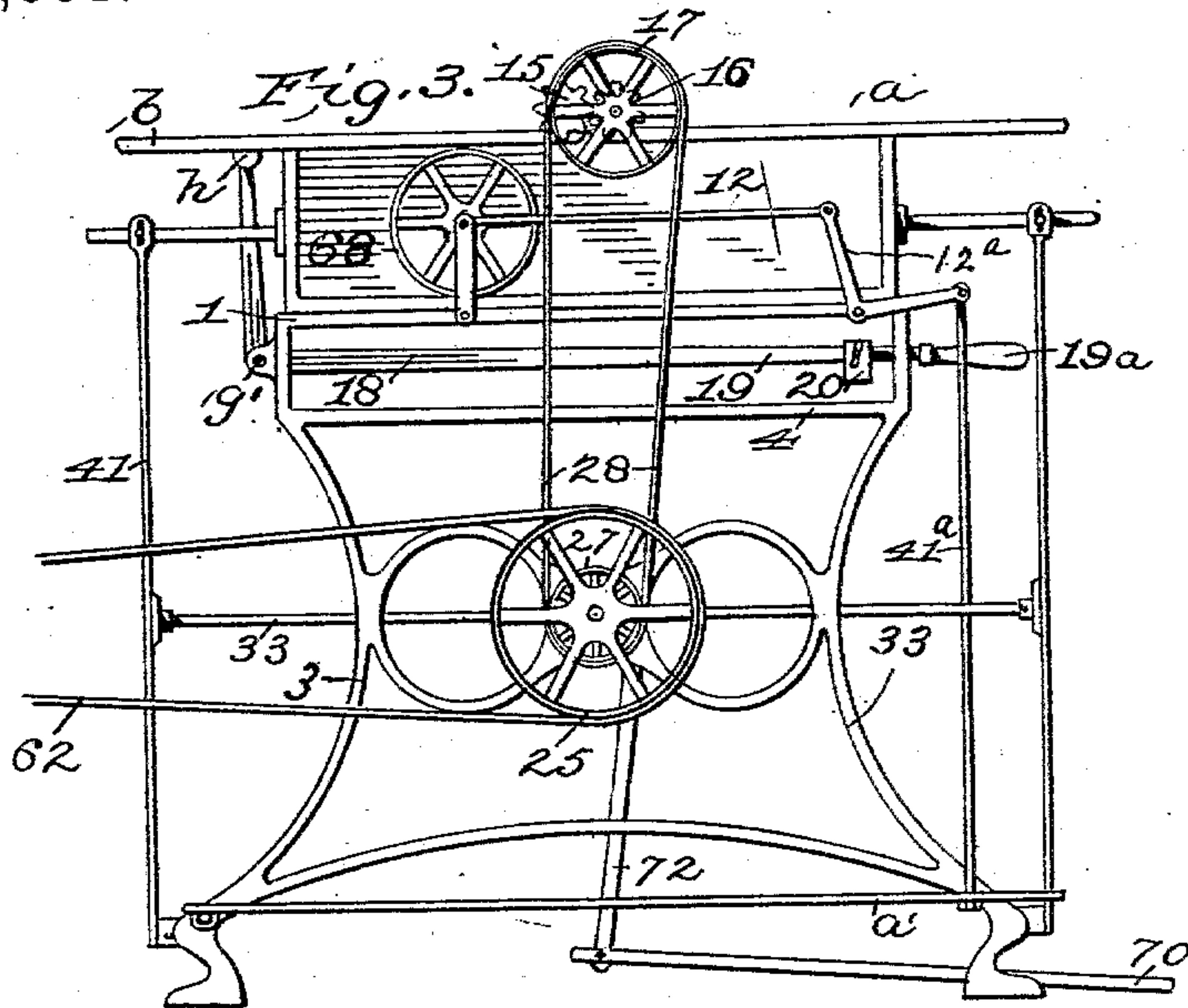
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2 Sheets—Sheet 2.

J. RANDALL.  
STARCHING MACHINE.

No. 562,661.

Patented June 23, 1896.



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Inventor  
*James Randall*  
by *Ellis Spence*  
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# UNITED STATES PATENT OFFICE.

JAMES RANDALL, OF CHARLESTON, WEST VIRGINIA, ASSIGNOR OF ONE-HALF TO T. HILL MARSHALL, OF SAME PLACE.

## STARCHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 562,661, dated June 23, 1896.

Application filed June 1, 1895. Serial No. 551,352. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES RANDALL, a citizen of the United States, residing at Charleston, in the county of Kanawha and State of West Virginia, have invented certain new and useful Improvements in Starching-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to an improvement in starching-machines in which articles to be starched are submerged in a bath of hot starch and subjected to a pounding action, and are withdrawn from the bath between a pair of rollers under tension.

The object of the invention is to improve the details of construction and arrangement of parts whereby a simple and effective machine is produced.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is an elevation of one side of the machine, showing the driving-wheels. Fig. 2 is a section on line 2 2 of Fig. 1. Fig. 3 is an end elevation. Fig. 4 represents a horizontal section through the starch-box. Figs. 5 and 6 show details of the crank-shaft. Fig. 7 is a detail view of the pivotal connection between the rods 41 and the cross-bar 43, and Fig. 8 is a detail showing crank-arm 71 and link 72.

In the drawings the platform 1, which supports the starch-box, is shown supported upon suitable side frames 2 and 3, which are braced by the cross-piece 4. These side frames are identical in construction and comprise the inwardly-curved standards and intermediate framework of any preferred design. The frames support the driving-shaft 11, herein-  
after described.

Upon the platform 1 is mounted the rectangular starch-tank 12, which is closed by a cover comprised of a stationary section *a* and a movable section *b*. Upon the adjacent edges of these sections are mounted the rollers 13 14, journaled in suitable bearings in the ears *c*. Upon one end of the shaft of each roller is secured a cog-wheel 15 or 16, which cog-wheels are in mesh when the rollers are in proximity to each other. The driving-

wheel 17 is fixed to the shaft carrying the cog-wheel 16, which is journaled on the stationary cover-section *a*. The movable section is moved or shifted to separate the rollers and provide for the admission of articles by means of a bell-crank lever, which is fulcrumed at *g* on a cross-bar *g'*, connecting the side frames. The end of the upturned arm of the bell-crank lever is fitted in a socket *h* in the movable cover-section *b*, while the other arm 19 extends horizontally to the front of the machine, where it is provided with a suitable handle 19<sup>a</sup> within convenient reach of the operator.

In order that the movable section may be normally kept closed and under sufficient tension to wring the articles as they are drawn out between the rollers, a weight 20 is adjustably mounted upon the arm.

One end of the transverse driving-shaft 11 projects through its bearing in the side frame and carries the fixed and loose pulleys 24 25 and the smaller fixed belt-pulley 27, which is connected with the driving-pulley 17 upon the shaft of roller 14 by endless belt 28.

The shaft 11 is bent or cast with two pairs of diametrically opposite cranks 29, which are adapted to reciprocate the pitmen, the inner split ends of which embrace the eccentrics and are clamped thereto by set-screws which hold the split ends together. The opposite ends of these pitmen are pivoted to the vertical spring-rods 41 intermediate of their ends. These rods 41 are provided at their lower ends with inwardly-extending lugs which are pivoted between the ears 42, projecting from the cross-bars 43, carried by the side standards.

The plungers 50 pass through suitable openings 54 in the starch-tank, and carry upon their inner ends the pounder-heads 57, while the outer ends of the plungers are connected with the upper ends of the rods 41, as shown clearly in Figs. 2 and 4.

The machine is driven by an endless belt 62, connected with a suitable source of power. (Not shown.)

To operate the rollers 13 and 14, the belt 28, which is normally idle, may be tightened and thrown into operation by the belt-tight-



ener pulley 68, journaled on a pivoted standard. This standard may be swung back and forth to and from the belt by a rod 12, connected to one arm of a bell-crank lever 12<sup>a</sup>, while the other arm of said bell-crank lever is connected by a rod 41<sup>a</sup> with a foot lever or treadle *a'*. The pitmen 33 are connected with the cranks 29 of shaft 11 in such a manner that when the pair of plungers in one end of the starch-tank are driven toward each other the pair at the other end are separated. This action throws the starch between the plungers which are separated and facilitates the saturation of the fabrics.

In order that the articles may be readily withdrawn from the tank, it is advisable that none of the plungers should be in proximity, and in order to provide for this a crank-arm 71 is provided upon the end of shaft 11 parallel with the cranks of the shaft, which crank-arm is connected by a link 72 with a treadle 70, and should the machine come to a rest with the cranks 29 in a horizontal position, pressure upon the treadle 70 after the driving-belt has been shifted to the loose pulley will give the shaft 11 a quarter-turn and

bring all the plungers equidistant from each other.

The starch is kept hot by a steam-pipe 73 passing through the tank.

Having thus described my invention, what I claim is—

In combination, the frame, the horizontal starch-tank carried thereby, the reciprocating pounders with means for operating the same, the two-part cover for said tank comprising the stationary and movable sections, the rollers journaled on the adjacent edges of said sections with means for rotating them, the bell-crank lever pivoted in the frame and having one arm connected with the movable section, and its other arm extending forward beneath the tank and provided with a suitable handle, and a weight adjustably mounted on said forwardly-extending arm, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES RANDALL.

Witnesses:

TOM. SWINBURN,

T. C. LOWRY.