

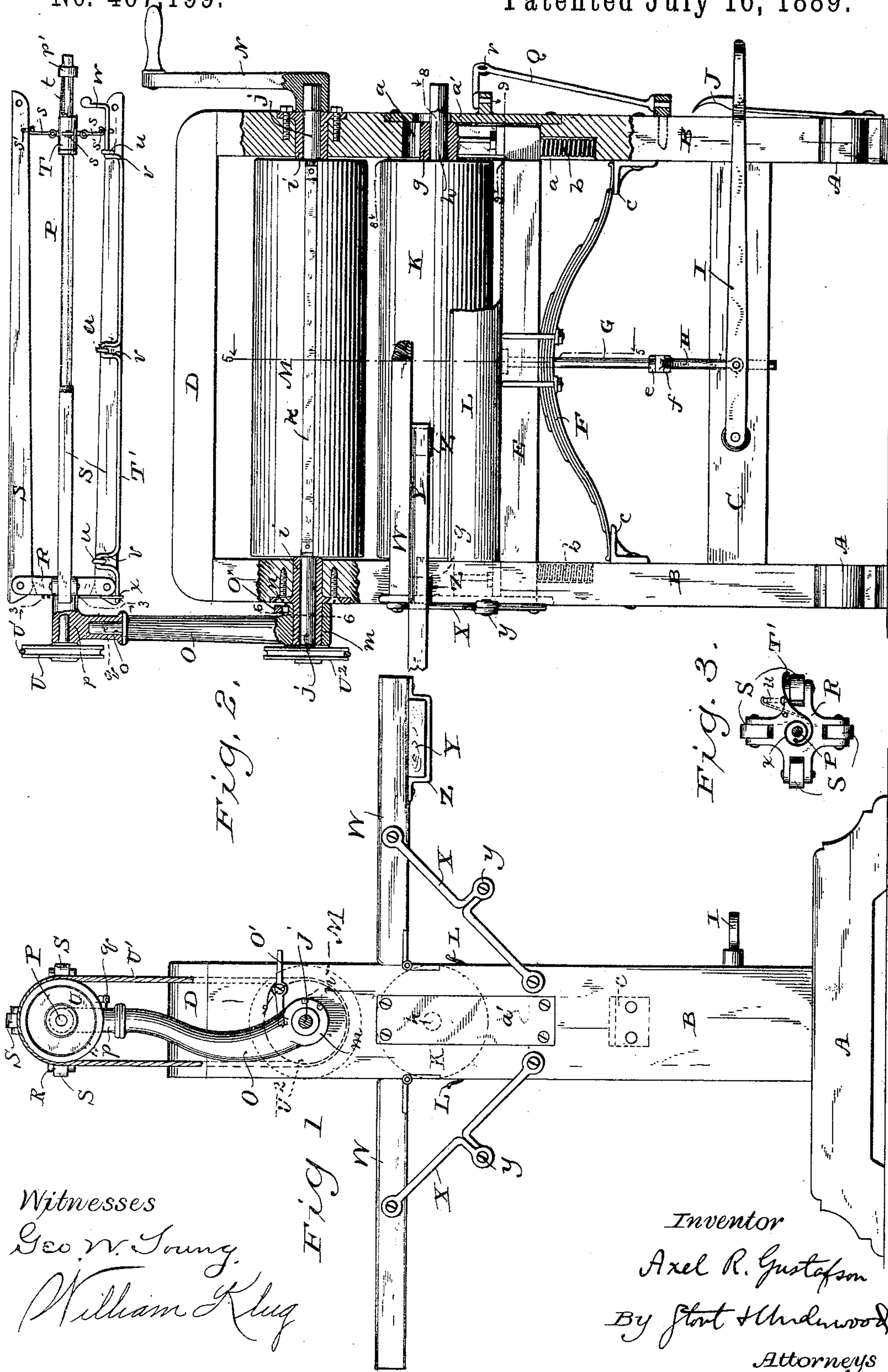
(No Model.)

3 Sheets—Sheet 1.

A. R. GUSTAFSON.  
LAUNDRY MACHINE.

No. 407,199.

Patented July 16, 1889.



Witnesses  
Geo. W. Young  
William Klug

Inventor  
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By J. H. Hurdwood  
Attorneys

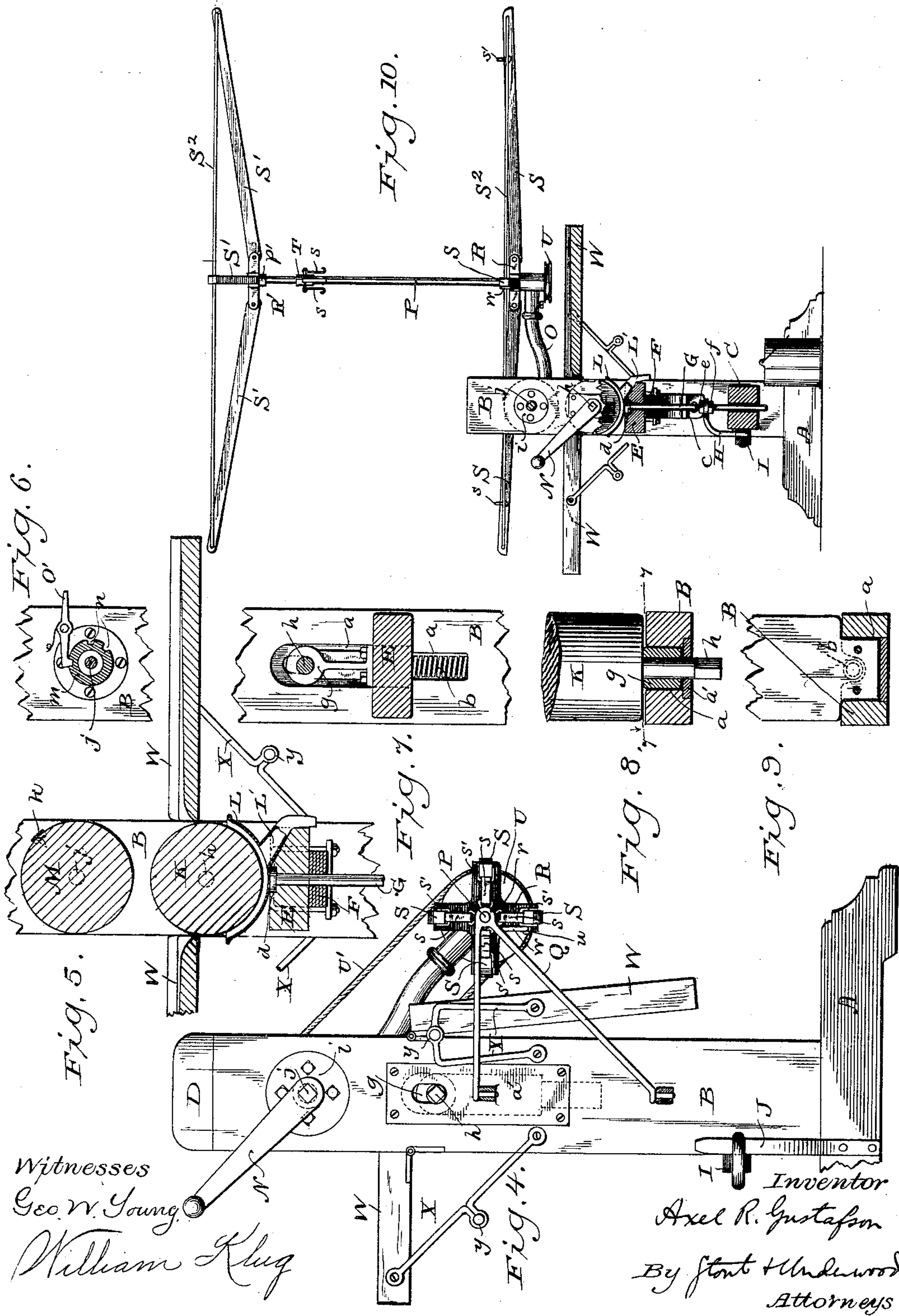
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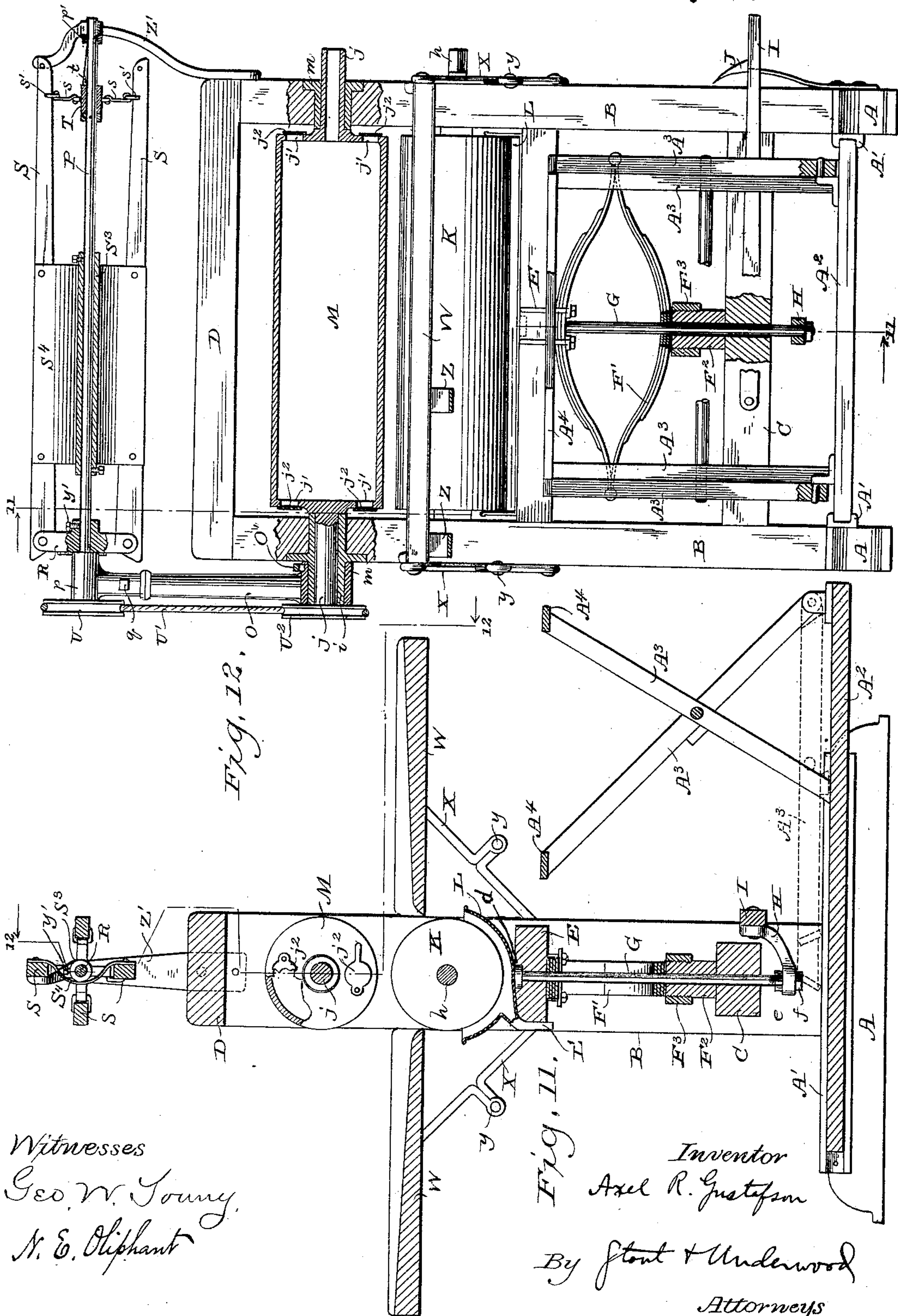
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3 Sheets—Sheet 3.

A. R. GUSTAFSON.  
LAUNDRY MACHINE.

No. 407,199.

Patented July 16, 1889.



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# UNITED STATES PATENT OFFICE.

AXEL R. GUSTAFSON, OF MARINETTE, WISCONSIN.

## LAUNDRY-MACHINE.

SPECIFICATION forming part of Letters Patent No. 407,199, dated July 16, 1889.

Application filed April 14, 1888. Serial No. 270,682. (No model.)

*To all whom it may concern:*

Be it known that I, AXEL R. GUSTAFSON, of Marinette, in the county of Marinette, and in the State of Wisconsin, have invented certain new and useful Improvements in Laundry-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates to laundry-machines; and it consists in certain peculiarities of construction and combination of parts, to be hereinafter described with reference to the accompanying drawings and subsequently claimed.

In the drawings, Figure 1 represents a side elevation of a machine constructed according to my invention; Fig. 2, a rear elevation of the same, partly broken away; Fig. 3, a detail end view of a reel that forms part of my machine, the view being taken on line 3 3, Fig. 2; Fig. 4, an elevation of a portion of the drive side of the machine; Figs. 5, 6, 8, and 9, sections taken, respectively, on lines 5 5, 6 6, 8 8, and 9 9, Fig. 2; and Fig. 7, a section on line 7 7, Fig. 8. Fig. 10 represents a side elevation of my machine, partly broken away, and illustrating a clothes-drying apparatus in position for use; and Figs. 11 and 12, sections respectively taken on lines 11 11 and 12 12 of each other, these latter figures showing certain features not previously illustrated.

Referring by letter to the drawings, A represents the feet, B the standards, and C D the cross-braces, that are united in any suitable manner to form the frame of my machine. The inner sides of the standards are provided with slots *a*, that serve as guides for the ends of a loose cross-piece E, and also as housings for spiral springs *b*, upon which said ends of the cross-piece rest, said slots being covered by plates *a'*, detachably connected to the outer sides of the standards. As best illustrated by Fig. 2, I clip a semi-elliptic spring F to the cross-piece E, and this spring has its ends supported by brackets *c*, secured to the standards B of the machine-frame. A rod G, having a head *d*, is passed down through the loose cross-piece E, semi-elliptic spring F, and cross-brace C, and an arm H, held in place on said rod by means of nuts *e f*, is secured to a foot-lever I, the latter being pivotally connected to said cross-brace and held in its depressed posi-

tion by a spring-catch J, that is made fast to one of the feet A of the machine-frame.

Connected to the ends of the loose cross-piece E, upon the upper side of the latter, are bearings *g* for the journals *h* of a roller K, and secured to the same side of said cross-piece is a trough L, that partially incloses said roller and is provided with a discharge-spout L'.

Arranged in the standards B, above the grooves *a*, are stationary bearings *i* for the journals *j* of a roller M, and, as shown in Figs. 2 and 5, a longitudinal strip *k*, of tape or other suitable material, is rigidly secured at its ends to said roller, for the purpose to be hereinafter described. As best illustrated by Fig. 2, one journal of each roller K M is extended and squared to engage a crank N, the latter being changed from one journal to the other at the pleasure of the operator. On the bearing *i* for that roller-journal *j* that is opposite the crank side of the machine I arrange a pivotally-adjustable arm O, that has its hub *m* provided with notches *n* for engagement with a spring-dog O', that is pivoted to the adjacent standard B, and serves to hold said arm in the position to which it may be adjusted. The free end of the arm O is provided with a journal *o*, on which is arranged a right-angle bearing *p* for a shaft P, said bearing being held against rotation on its journal by means of a pin *q* or other suitable stop. When the pivotal arm O is swung down, as best illustrated by Fig. 4, the end of the shaft P farthest from said arm is supported in a bearing *r* on a skeleton bracket Q, that is pivotally connected to the adjacent standard B of the machine-frame.

Fast on the shaft P adjacent to the arm O is a head R, that has pivotally connected thereto a series of arms S, that constitute a reel, the ends of these arms farthest from said head being provided with eyes *s'*, that connect with hooks *s* on a sleeve T, that is loose on said shaft, the latter being provided with a spring-stop *t*, that normally impinges against the outer end of the sleeve. One of the reel-arms S is provided with a series of eyes *u*, that serve as bearings for the crank-depressions *v* of a rod T', that is provided at its outer end with a hand-grip *w*, and has its inner end connected to a volute-spring *x*, that



is secured to the reel-head R, as best shown by Fig. 3.

Fast on the reel-shaft P adjacent to the right-angle bearing *p* is a pulley U, that has a belt-connection U' with another pulley U<sup>2</sup> on that journal *j* of the roller M that is adjacent to the pivotal arm O.

The reel-shaft P is provided near its outer end with a collar *p'*, that, when said shaft is in a vertical position, as shown by Fig. 10, serves as support for a head R', that has pivotally connected thereto a series of reel-arms S', the latter and the reel-arms S being provided at their free ends with perforations through which to pass clothes-lines S<sup>2</sup>.

Hinged to the standards B of the machine-frame in front and rear of the rollers K M are table-leaves W, that are held in their raised position by means of braces X, each of which is pivotally connected at its ends to said standards and table-leaves. In order that the braces X may fold up, and thereby permit the table-leaves W to be swung down, I make each brace of two sections united by a pivot *y*. The rear one of the table-leaves W is provided with an adjustable board Y, that in the drawings, Figs. 1 and 2, is shown as supported in brackets Z upon the under side of said table-leaf in such a manner that it may be drawn out for use; but it is obvious that I may otherwise adjustably secure said board to the table-leaf accordingly as may be found most convenient.

In the operation of my machine, when it is desirable to use the rollers K M for wringing clothes, the crank N is placed on the squared journal of the roller K, and the clothes are fed between said rollers from the rear one of the table-leaves W, pressure being exerted by the springs F *b b* and the wrung-out water caught by the trough L, the latter and the spout L' conducting this water to a pail or other suitable receptacle.

The wrung-out clothes are caught on the front one of the table-leaves W and then hung up on the reels to dry, the bearing *p* having been turned on its journal, so as to bring the shaft P in a vertical position, and the reel-arms dropped to a horizontal position, as shown by Fig. 10. After the clothes have been wrung out and dried they are ready to be smoothed, and this is accomplished by the rollers, the foot-lever I being disconnected from the spring-catch J to allow the springs F *b b* to bring the roller K up close against the one M and the crank N changed to the squared journal of the latter roller.

Sheets and other large pieces of the dried clothes are smoothed by my machine in the following manner: The crank N is placed on the squared journal of the roller M, the foot-lever I released from the spring-catch J, and one edge of said sheet inserted under the tape *k*. This being done, the roller M is revolved to wind the sheet thereon, the smoothing being accomplished by the pressure of the roller K against said sheet during the operation. A

sheet having been wound on the roller M, as above described, the arm O is swung down and the bearing *p* turned to bring the reel-shaft P to a horizontal position below said roller, the hinged bracket Q being swung around to bring the bearing *r* in position to engage that end of said shaft farthest from said arm, as shown by Fig. 4, the hooks *s* engaged with the eyes *s'* on said reel-arms, the sleeve T pushed back beyond the free end of the spring-stop *t*, and the belt U' placed on the pulleys U U<sup>2</sup>. The free edge of the wound-up sheet is now clamped against one of the reel-arms S by the spring-rod T', and by a movement of the roller M reverse to that already described said sheet is wound off onto the reel. This being accomplished, the spring-stop *t* is depressed, the sleeve T drawn toward the operator to bring the adjacent ends of the reel-arms toward each other, and the spring-rod T' is turned so as to release the confined edge of the sheet, and the latter is then drawn off the reel. The sheet when drawn off the reel will be already folded lengthwise, and to lay this fold and such others as may be made said sheet is again run between the rollers.

The leaves W in their horizontal position serve as tables on which to smooth such clothes on which it is desirable or necessary to use sad-irons, and for doing this work on shirt-bosoms, skirts, &c., the adjustable board Y will be found convenient, and, as shown by Fig. 11, said leaves are inclined toward the trough L to secure good drainage.

As shown in Figs. 11 and 12, I provide an attachment for smoothing and bending collars and cuffs, this attachment consisting of a roller S<sup>3</sup> and a curved plate S<sup>4</sup>. The roller S<sup>3</sup> is made fast (by set-screws or other suitable means) to the reel-shaft P when the latter is in the position best shown by Figs. 2 and 12, and by screws, pins, or other suitable means the curved plate S<sup>4</sup> is detachably secured to opposing arms S of the reel, so that the curved portion of said plate will be nearly or quite in contact with said roller. When the roller S<sup>3</sup> and curved plate S<sup>4</sup> are employed; the set-screw *y'*, (shown in Fig. 12,) that holds the reel-head R on the shaft P, is loosened, and, as shown in the same figure, I provide an arm Z', that serves as a bearing for the outer end of said shaft and a stop to prevent any possible rotation of the reel.

As shown by Figs. 11 and 12, the roller M and one of its journals *j* may be made hollow for the purpose of utilizing hot air or steam for heating said roller, and in such a construction the ends of this hollow roller would be provided with draft-openings *j'* and pivoted cut-off plates *j''* for said openings.

In Figs. 11 and 12 I show guides A', attached to the inner sides of the frame-feet A, and in these guides I arrange a sliding base A<sup>2</sup>. To each side of the sliding base I pivot one of two pivotally-connected crossed braces A<sup>3</sup>, and I unite the cross-braces on one side of said base with those on the other by means



of horizontal strips  $A^4$ , this construction being best illustrated in Fig. 11. The crossed braces  $A^3$  and horizontal strips  $A^4$  form a support for tubs or other receptacles, and  
 5 when this support is not needed it can be laid down on the sliding base, as shown by dotted lines, Fig. 11, and said base run back in its guides.

Instead of the semi-elliptic spring  $F$ , I may  
 10 employ a full elliptic spring  $F'$ , as illustrated in Figs. 11 and 12. In the latter construction, (which will perhaps be the preferable one) the brackets  $c$  will be omitted and the arm  $H$  connected to the rod  $G$  below the  
 15 cross-brace  $C$  of the frame. The full elliptic spring  $F'$  is supported by a sleeve  $F^2$ , that rests on the cross-brace  $C$  of the frame and surrounds the rod  $G$ . Arranged on the upper end of the sleeve  $F^2$  is a nut  $F^3$ , and by  
 20 adjusting this nut the tension of the spring  $F'$  may be readily regulated.

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

25 1. In a laundry-machine, the combination of a suitable frame, a pair of rollers arranged within the frame, an arm pivotally connected to said frame, and a folding clothes-reel in turn connected to the arm, substantially as  
 30 set forth.

2. In a laundry-machine, the combination of a suitable frame, a pair of rollers arranged within the frame, an arm connected to a journal-bearing of one of the rollers, a bracket  
 35 connected to said frame on the side opposite the arm, a reel having its shaft journaled in said arm and bracket, and a belt-gear connecting one of the rollers with said reel-shaft, substantially as set forth.

40 3. In a laundry-machine, the combination of a suitable frame, a pair of rollers arranged within the frame, an arm connected to a journal-bearing of one of the rollers and provided at its free end with a bearing, a shaft arranged  
 45 in the bearing, a head fast on the shaft, and a series of reel-arms connected to said head, substantially as set forth.

4. In a laundry-machine, the combination of a suitable frame, a pair of rollers arranged  
 50 within the frame, an arm pivotally connected

to a journal-bearing of one of the rollers, a dog for limiting the movement of the arm, a right-angle bearing pivotally adjustable on the free end of said arm, and a reel having its shaft journaled in said bearing, substantially as set forth. 55

5. In a laundry-machine, a reel that comprises a shaft, a head arranged on the shaft, a series of arms pivotally connected to the head, a sleeve loose on said shaft and provided with hooks to engage eyes on the reel-arms, and a spring-stop for the sleeve, substantially as set forth. 60

6. In a laundry-machine, a reel that comprises a shaft, a head arranged on the shaft, 65 a series of arms pivotally connected to the head, a sleeve loose on said shaft and provided with hooks to engage eyes on the reel-arms, a spring-stop for the sleeve, and a clamping-rod connected to one of said reel-arms, 70 substantially as set forth.

7. In a laundry-machine, the combination of a suitable frame, an arm pivotally connected to the frame, a folding clothes-reel having one end of its shaft journaled to the arm, another 75 arm secured to said frame and provided with a bearing for the other end of the reel-shaft, a roller arranged on said reel-shaft, and a plate detachably connected to opposing arms of the reel and having a curved portion arranged to come adjacent to said roller, substantially as set forth. 80

8. In a laundry-machine, the combination of a suitable frame, a roller having fixed bearings in the frame, another roller having its 85 bearings in a vertically-adjustable cross-piece, an elliptic spring clipped to the cross-piece, a support for the spring, a nut adjustable on said support and impinged against said spring, and means, substantially as described, 90 for adjusting said cross-piece, as set forth.

In testimony that I claim the foregoing I have hereunto set my hand, at Milwaukee, in the county of Milwaukee, and State of Wisconsin, in the presence of two witnesses.

AXEL R. GUSTAFSON.

Witnesses:

N. E. OLIPHANT,  
 WM. KLUG.