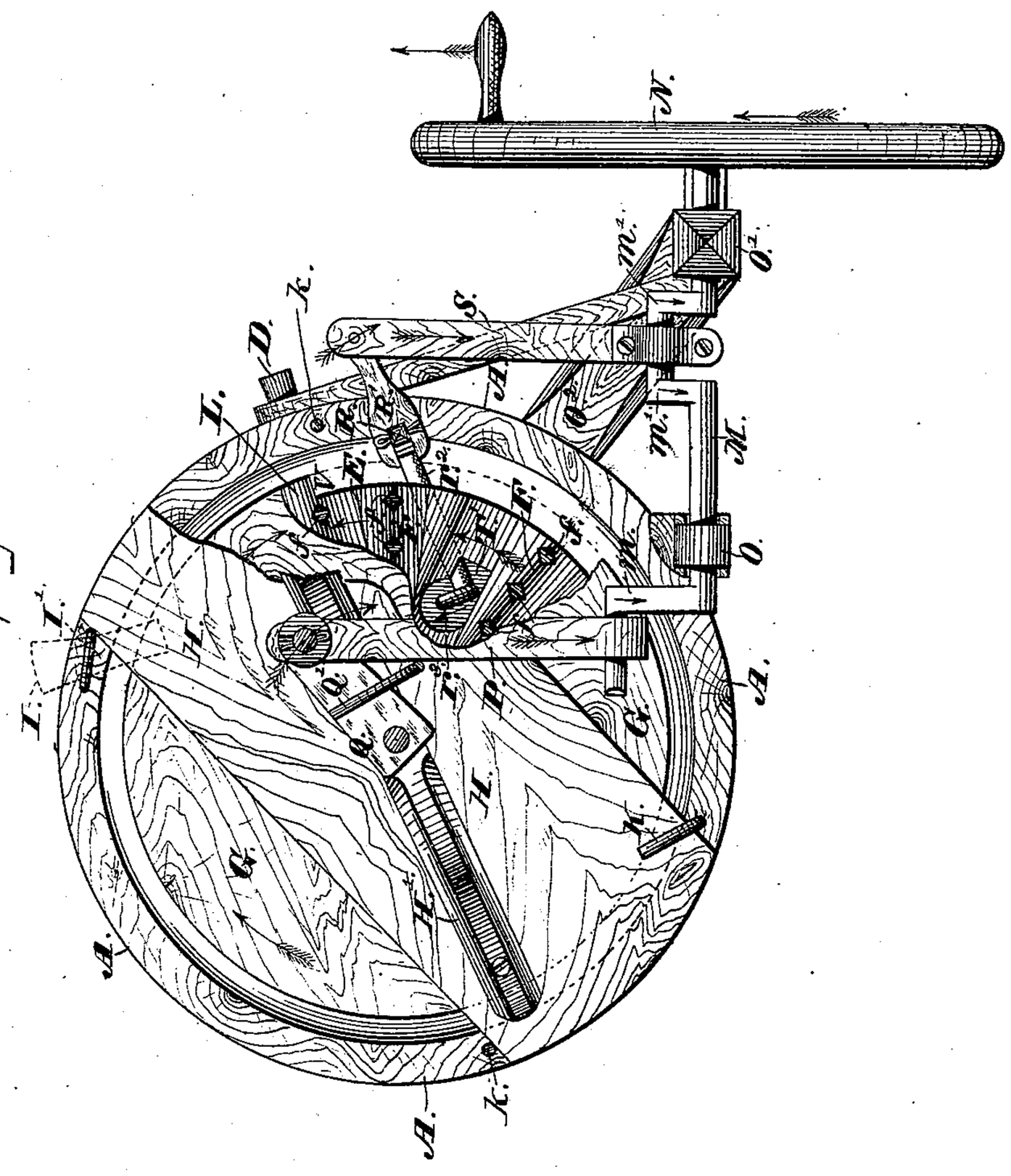
2 Sheets—Sheet 1.

T. SORG, Jr.

Washing-Machine.

No. 226,937. **Patented April 27, 1880.**

Fig. 1.



WITNESSES:

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2 Sheets—Sheet 2.

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Fig. 2.

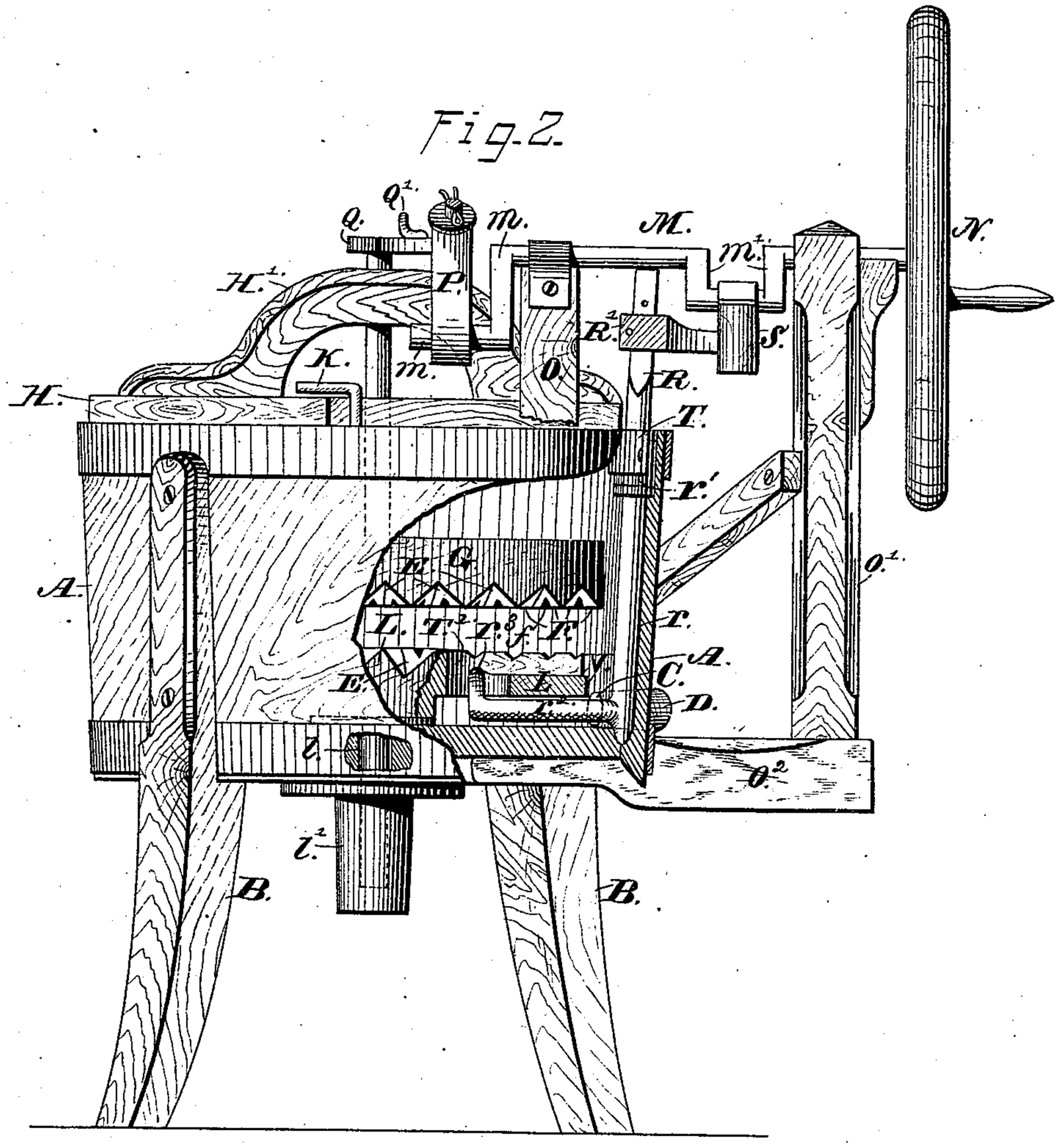
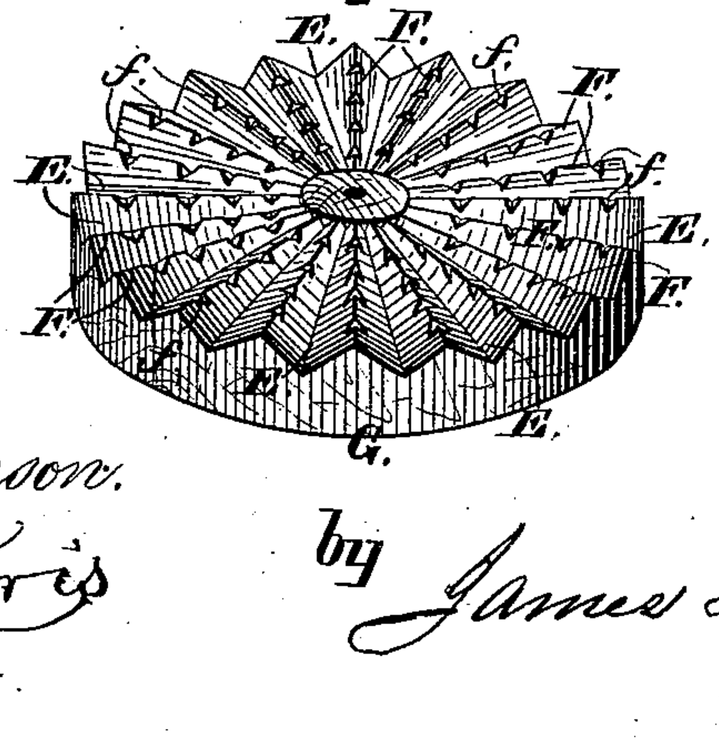


Fig. 3.



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UNITED STATES PATENT OFFICE.

THOMAS SORG, JR., OF LOMIRA, WISCONSIN.

WASHING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 226,937, dated April 27, 1880.

Application filed January 28, 1880.

To all whom it may concern:

Be it known that I, THOMAS SORG, Jr., of the town of Lomira, in the county of Dodge and State of Wisconsin, have invented new and useful Improvements in Washing-Machines, of which the following is a specification.

Figure 1 of the drawings is a plan or top view with a portion of the board which crosses the tub and portion of the upper disk broken away, so as to illustrate the connection between the disk and a vertical rod which actuates the same. Fig. 2 is a side elevation with a portion of the tub represented as broken away; and Fig. 3 is a view of one of the disks, illustrating its radial corrugations.

My present invention in washing-machines relates to a machine in which the clothes are washed between two corrugated disks adapted to vibrate in reverse directions, for the purpose of effectively rubbing and washing the clothes.

My invention consists in the combination of a lower corrugated horizontal disk, a vertical rod having at its lower end a bent arm which is connected with the disk, and mechanism, hereinafter described, for imparting a vibratory motion to the vertical rod and the disk.

The invention further consists in certain other features, the construction and operation of which will be fully hereinafter set forth, and pointed out in the claims.

Let A designate a tub, which is supported upon legs B of sufficient length to bring the tub within convenient reach of the operator.

An opening, C, is formed through the side of the tub for drawing off the suds and water when no longer needed, and a stop-cock or a plug, D, is provided for the purpose of closing the said opening as required.

Within the tub are arranged two disks, with a space between them for the clothes to be washed. The opposing faces of these disks are each formed with a series of radiating corrugations, E, and a like series of rubbing-surfaces, F, intermediate of the grooves or corrugations, which latter both deepen and widen toward the rims of the disks.

In the rubbing-surfaces are formed series of transverse notches *f*, which serve the double purpose of preventing the clothes from being thrown against the walls of the tub by centrifugal action while the disks are being vibrated, as hereinafter specified, and also of constituting channels between the corrugations for the passage of water while the space between the disks is well filled with clothes and like articles.

The upper disk, G, is suspended by a spindle journaled in a board, H, and a handle, H′, properly secured upon the same. This board is temporarily secured upon the rim of the tub by means of a bar, I, passed through a staple, I′, and extended over upon the board. Additional means for holding it in place during operation are found, both in a swiveled bent arm, K, which may be turned round, so as to clasp over the edge of the board, and in small pins *k*, between which the board is fitted.

The spindle of the lower disk, L, is stepped into a socket, *l*, which is extended down through the bottom of the tub and into a socket-piece, *l′*, either formed with or secured to the tub-bottom. The purpose of this construction is to obtain a greater bearing-surface for the spindle, in order to keep the disk properly centered during its vibratory movements.

Mechanism for imparting to these disks vibrations in reverse directions, so that their rubbing-surfaces will have effective action upon the clothes, may be described as follows: The shaft M of the driving-wheel N, which is actuated by the usual crank, is journaled in two standards, O O′, the former of which is secured directly to the body of the tub, while the latter-named standard is mounted upon an arm, O^2, which projects outwardly from the base of the tub. This standard O′ may be braced by means of one or more brace-rods secured to the tub and standard in any convenient way.

The main shaft serves to impart motion to both of the disks through the medium of suitable connecting mechanism, and for this purpose it is formed with two cranks, *m m′*, the former being for the purpose of actuating the mechanism belonging to the upper disk, and the latter-named crank, *m′*, for actuating the mechanism which controls the movements of the lower disk, L. The vibratory movement of the said upper disk is obtained by means

of a connecting-rod, P, between the crank *m* of the main shaft and a lever, Q, which is rigidly secured to the upper end of the spindle of the upper disk, the vibrations of the lever, consequent to its connections with the main shaft, necessarily imparting a vibratory movement to the disk.

The connecting-rod P is detachably connected with the crank-arm of the main shaft, so that when it is found desirable to have access to the interior of the tub the operator will remove the upper disk from the tub by raising the board from which said disk is suspended, as aforesaid, and then disconnect the rod P from the crank-shaft, in order to place the same in some convenient place where the parts will be ready for use as soon as occasion requires.

As a simple means of preventing the connecting-rod P from slipping off the crank-shaft during operation, I provide the lever Q with a bent rod, Q′, which, when the parts are connected for operation, will be in proper position, alongside of the connecting-rod, to prevent its working off from its connection with the crank-shaft.

In order to vibrate the lower disk simultaneously with the upper disk, but in such manner that its vibrations will be in a reverse direction, I secure to a rod, R, a lever, R′, and connect this lever with the crank *m′* of the main shaft by means of a connecting-rod, S. The rod R extends down to the bottom of the tub through a groove, *r*, and is stepped at its lower end in any suitably-formed seat. This rod is prevented from any displacement from such seat or bearing by means of a collar, *r′*, which is formed thereon, and a bearing, T, through which the rod is passed, the said bearing being secured to the tub, just above the collar, upon the rod in any suitable way—as, for instance by means of lugs or a strap. From the lower end of the vertical rod R extends a horizontal arm, r^2, which during the movements of the rod will vibrate over the bottom of the tub. This vibratory arm is bent upwardly at its end, as at r^3, so as to project into an opening, T′, formed in the lower disk.

By means of this arrangement of mechanism, which connects the lower disk with the main crank-shaft, the disk will be vibrated in reverse directions to the upper disk, which is connected with the same main shaft through the medium of the connections already described. These movements of the two corrugated disks will effectively distribute the clothes over their surfaces, the rubbing-surfaces, already described, will act upon the clothes in an efficient manner for removing the dirt, and the dirt as it is removed will settle down into the grooves of the lower disk, where, by reason of their inclination, it will gradually find its way to such space as may be between the rim of the disk and the walls of the tub, and also to a space, U, formed by cutting away a portion of the rim of the lower disk. The main object of cutting away this part of the disk is, however, to prevent it from bearing against such portion of the vertical rod R as may project out of the groove through which it passes.

In drawing off the water the dirt will pass off with it, and by vibrating the lower disk while the water is being drawn off the dirt and water will be thoroughly commingled. When necessary, however, the lower disk may be removed after the upper disk has been taken out, and hence it will not be necessary to allow any space for the passage of dirt and water between the lower disk and walls of the tub.

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

1. In a washing-machine, the lower corrugated disk, L, vertical rod R, having a bent arm, r^2, engaging with the disk, and means, substantially as described, for vibrating said rod, arm, and disk, all combined and arranged substantially as set forth.

2. The main shaft M of the driving-wheel, having cranks *m m′*, in combination with the two disks and intermediate connecting mechanism, substantially as set forth, whereby the disks are caused to vibrate in different directions, substantially as specified.

In testimony whereof I have hereunto set my hand and seal in the presence of two subscribing witnesses.

THOMAS SORG, JR. [L. S.]

Witnesses:

CASPER HOFER,

E. HEUSTING.