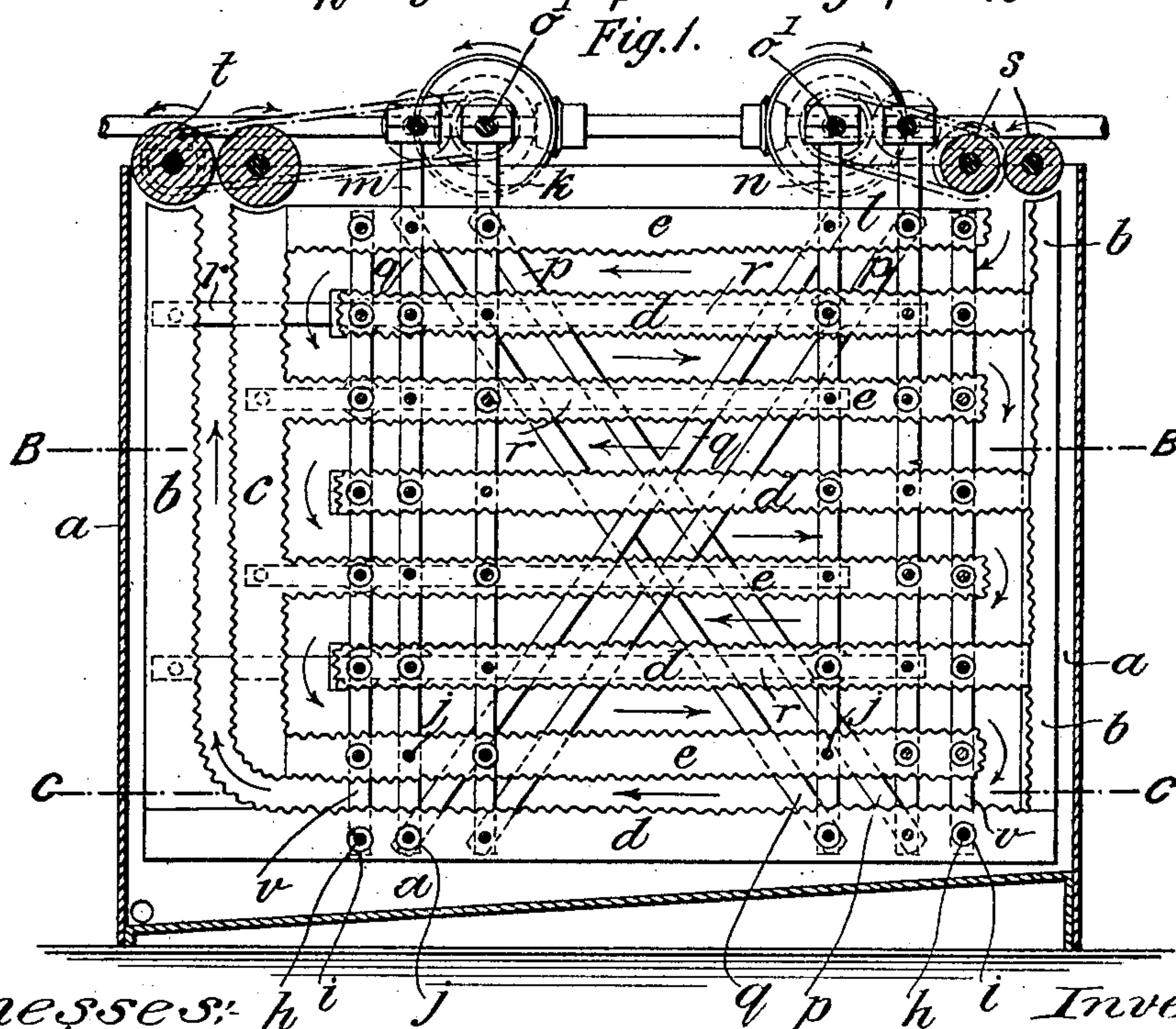
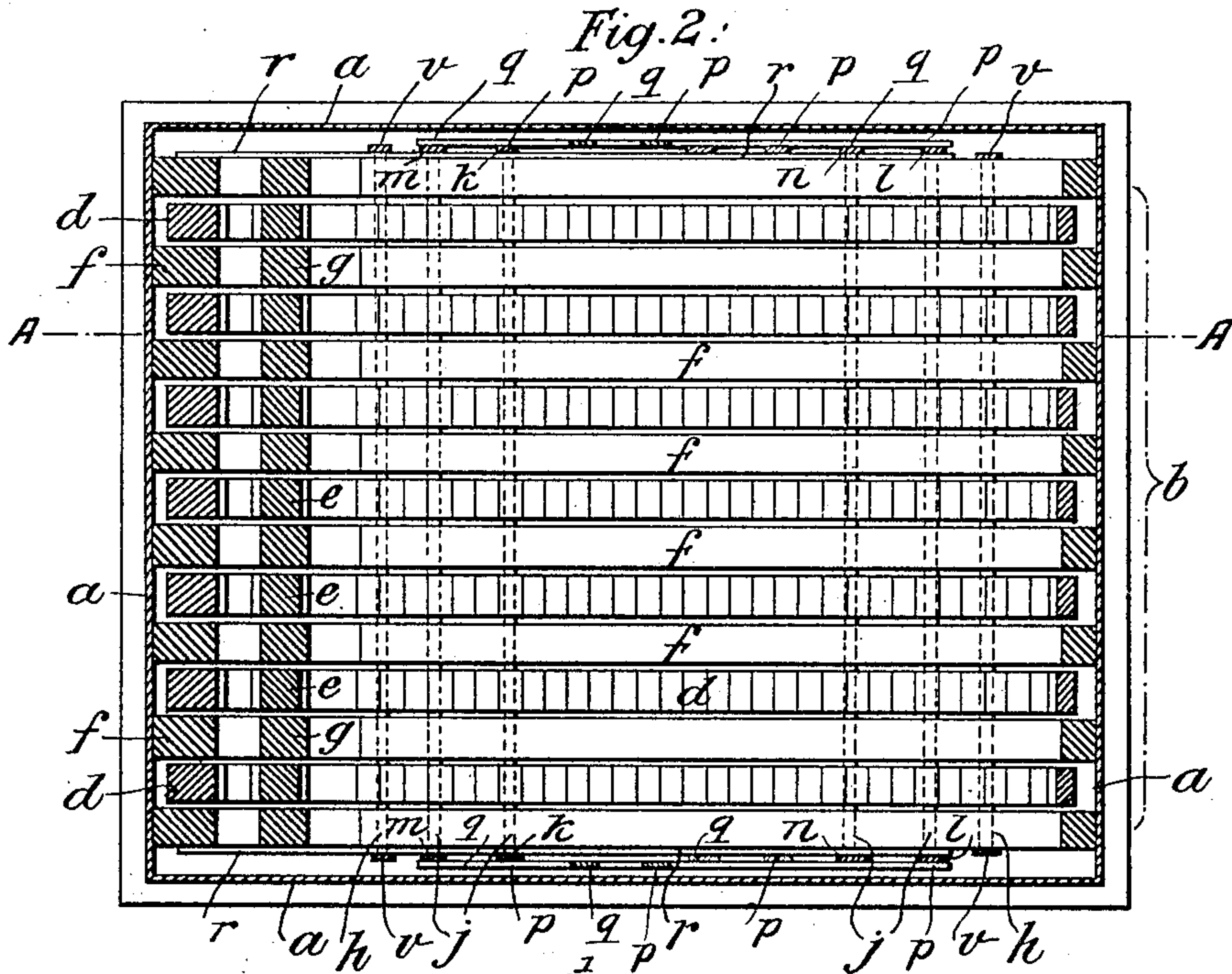


F. L. BARTELT.
 APPARATUS FOR WASHING LINEN.
 APPLICATION FILED OCT. 30, 1906.

904,828.

Patented Nov. 24, 1908.

3 SHEETS—SHEET 1.



Witnesses: h i j
 Henry Thieme
 F. George Barry

Inventor: Friedrich Ludwig Bartelt
 My attorneys
 Brown & Shward

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Fig. 3

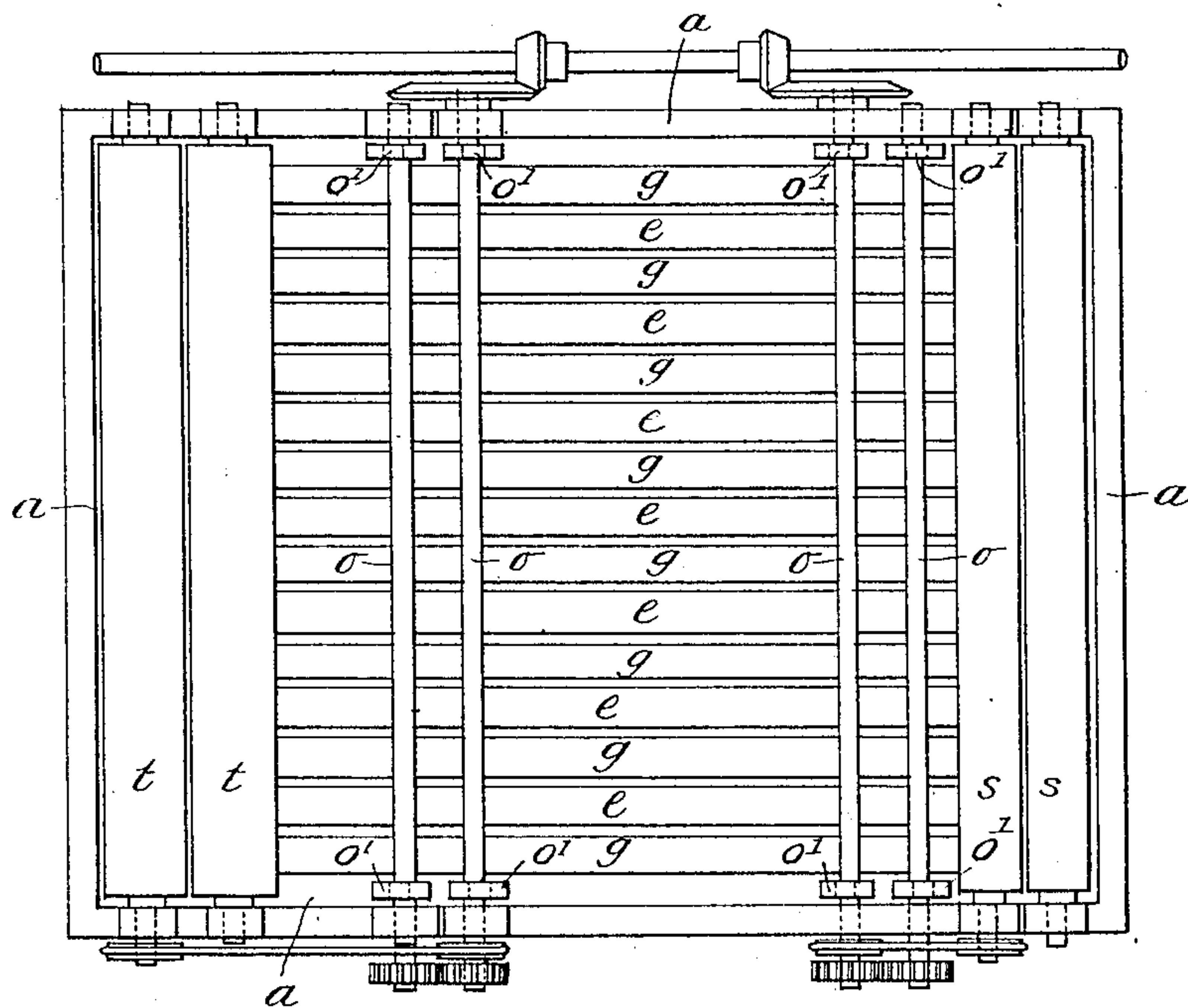
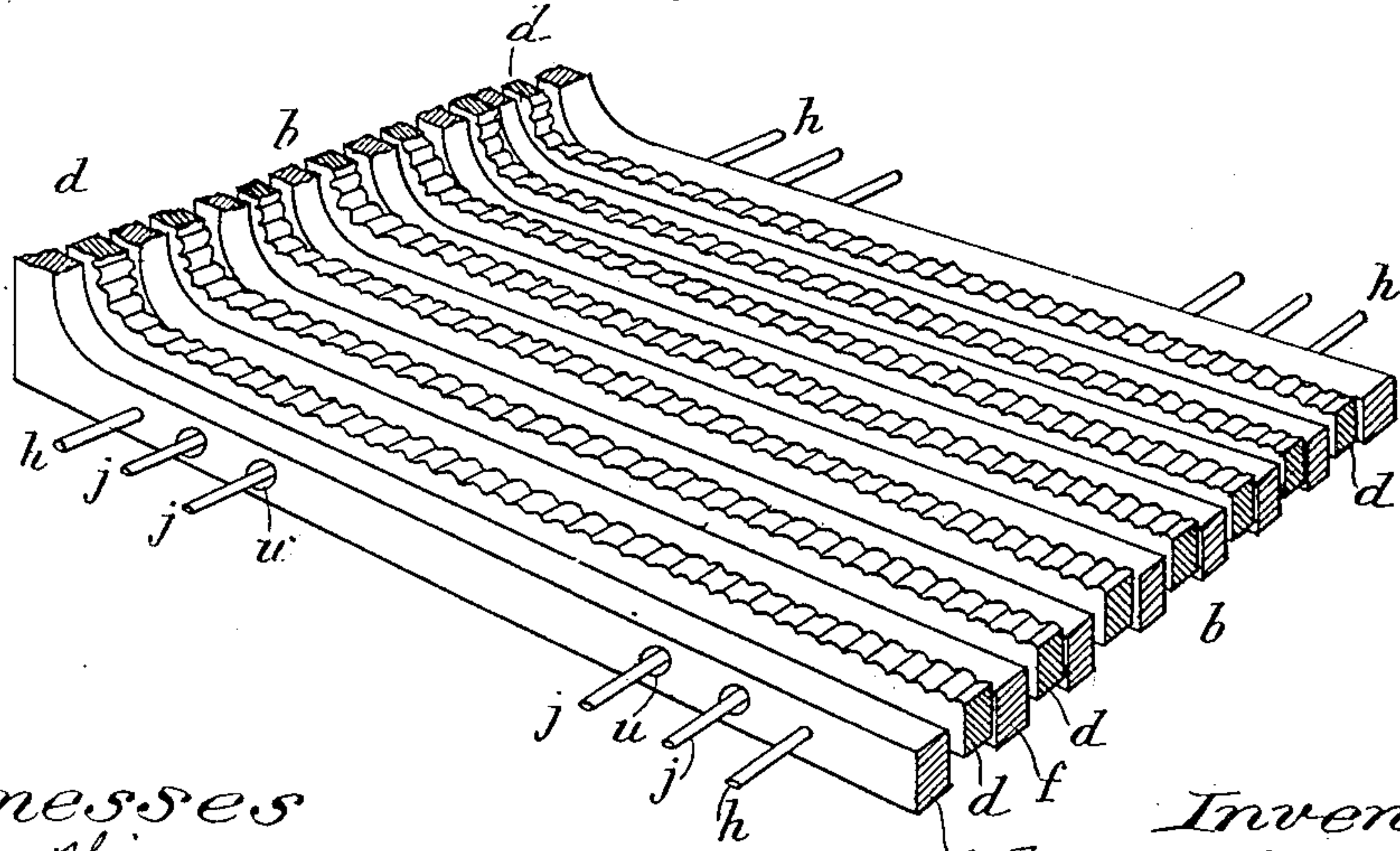


Fig. 4



Witnesses
 Henry Thieme.
 J. George Barry.

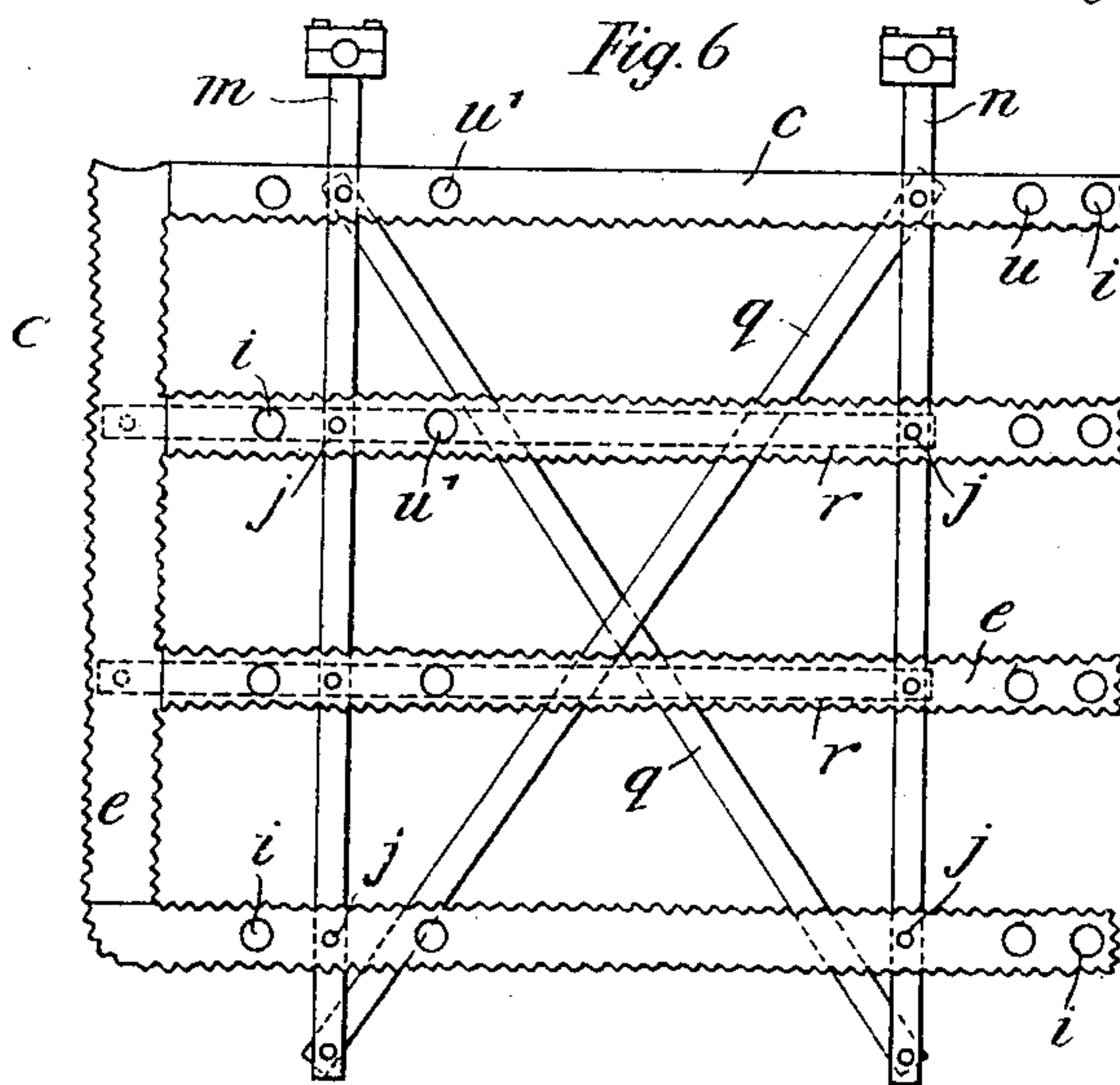
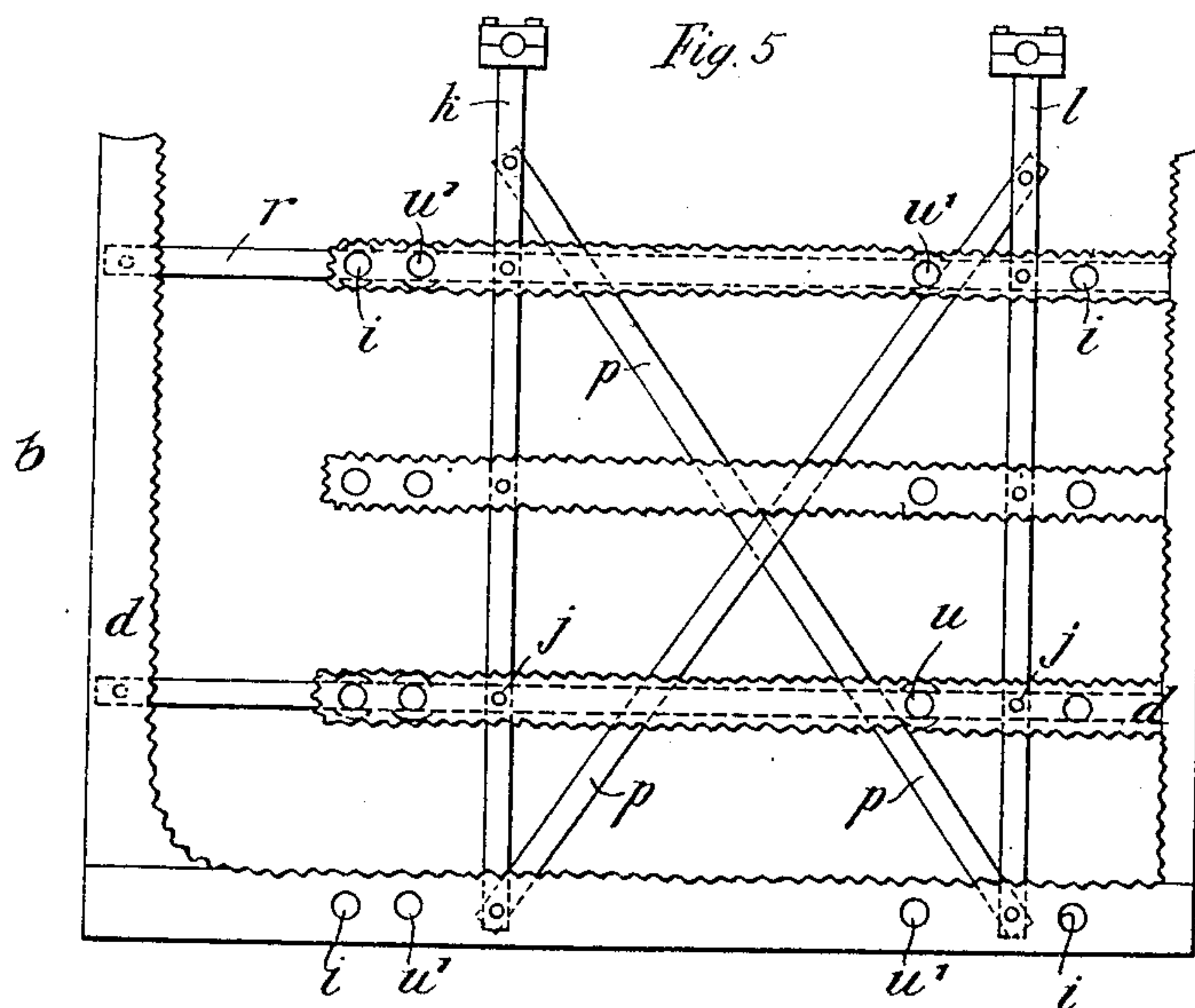
Inventor:
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3 SHEETS—SHEET 3.



Witnesses:
Henry Thieme,
J. George Barry.

Inventor:
Friedrich Ludwig Bartelt
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UNITED STATES PATENT OFFICE.

FRIEDRICH LUDWIG BARTELT, OF BRISTOL, ENGLAND.

APPARATUS FOR WASHING LINEN.

No. 904,828.

Specification of Letters Patent.

Patented Nov. 24, 1908.

Application filed October 30, 1906. Serial No. 341,321.

To all whom it may concern:

Be it known that I, FRIEDRICH LUDWIG BARTELT, soap and chemical manufacturer, a subject of the King of Great Britain, and resident of 3 Kensington Place, Brislington, Bristol, England, have invented new and useful Improvements in Apparatus for Washing Linen, of which the following is a specification.

The present invention has reference to apparatus for washing linen, under which term is included ordinary laundry articles, and is designed to carry the linen regularly through the tank and at the same time to impart thereto the friction or rubbing requisite for thorough cleansing.

According to my invention I employ a structure which is introduced into the tank or vessel, comprising shelves or trays arranged in such a way as to form a zig-zag path for the linen. These shelves comprise movable frames which are capable of receiving motion from cranks or their equivalent which give to the said frames movement in a rotary path. The movable frames of the adjacent shelves are arranged to operate simultaneously upon the linen passing between them; that is to say, in approaching each other they grip and squeeze the linen and move it one step in the direction of its travel and in receding they move back to obtain a fresh grip. It will be understood that the movable frames of the alternate shelves act with those next thereto as they rise and fall so that the advancing and receding movements are in fact receding and advancing movements when spoken of in connection with the linen on the next shelves. In this way friction is given to the linen and the washing solution displaced by the movements above mentioned is caused to circulate through the linen under treatment and convey it in the direction required.

In the accompanying drawings I have shown a washing tank embodying my invention, and I may here remark that under the term washing I wish to include scouring, bleaching, rinsing and other similar operations commonly spoken of under that head.

Figure 1 is a sectional elevation on the line A—A of Fig. 2, Fig. 2 is a horizontal section on the line B—B of Fig. 1, Fig. 3 is a plan view, Fig. 4 is an isometrical plan view of a section taken on the line C—C of Fig. 1, Fig. 5 is a side elevation of one of the outer mov-

able frames, and Fig. 6 is a similar view of one of the inner movable frames.

a is a tank or shell provided preferably with an inclined bottom. Within the tank *a* is a structure composed of two sets *b* and *c* of frames. The outer set is denoted by *b* and the inner set by *c*. These sets are made up of alternating stationary and movable frames. The stationary frames of the set *b* are denoted by *f* and the movable frames of the set *b* are denoted by *d*, Fig. 2. The stationary frames of the set *c* are denoted by *g* and the movable frames of the set *c* are denoted by *e*, Fig. 2.

The stationary frames are threaded on transverse rods *h* which pass loosely through holes *i* in the movable frames. Each set of the movable frames is similarly threaded on transverse rods *j* which pass loosely through holes *u* in the bars of the stationary frames and also through holes *u'* in the bars of the other movable frames. The movable frames of set *b* are threaded on two bars *j* and the movable frames of set *c* are threaded on two other bars *j*, so that the movement of either pair of bars *j* will give motion to those frames which are threaded upon them but will not affect those frames through which the said bars loosely pass. The stationary frames are firmly supported in any suitable manner, for instance, by battens *v* in the tank, but the rods *j* of the movable bars are supported in links *k k l l m m* and *n n* slung from the cranks *o'* of transverse shafts *o*. The links *k* and *l* support the frames *d* comprised in the set *b*, and the links *m* and *n* support the frames *e* composed in the set *c*. The links *k* and *l* and *m* and *n* are tied together by diagonal bars *p p* and *q q* respectively, so that the rotary movement given to the cranks of the shafts *o* by the gearing best seen in Fig. 3, is imparted to the entire movable parts of the sets *b* and *c*.

r are strengthening rods for the bars which comprise the frames *d* and *e*, and are widened as shown in dotted lines at the points where the rods *h* and *j* pass through them. It will be seen from Figs. 2, 3 and 4 that the stationary and movable frames are arranged alternately side by side. In Fig. 3 the frames *e* and *g* of the set *c* appear and in Figs. 2 and 4 the frames *d* and *f* of the set *b* are seen. When the sets *b* and *c* are fitted together, *c* is placed within *b* as seen in Fig. 1, the spacing of the bars of the frames being

so arranged that a zig-zag channel indicated by the arrows in Fig. 1, is provided. To prevent over-feeding the tank and to prepare starched linen for treatment, feed rollers are employed.

s are a pair of rollers partly immersed in the solution through which rollers the linen is fed regularly to the tank; *t* are the delivery rolls situated at the top of the outlet channel seen on the left of Fig. 1.

The adjustment of the movable sets *b* and *c* and the timing of their cranks is such that when one is rising the other is falling. In this way the spaces between the frames are alternately widened and diminished in width and the linen is gripped and carried along, first in one portion of the zig-zag channel and then in the part next following, the buoyancy of the linen or articles being treated coacting with the movable sets to pass the articles upwardly through the terminal channel.

Besides feeding the linen along, the movement of the frames provides the necessary friction for the linen and causes the water to wash to and fro through the same.

Tanks thus fitted are preferably arranged in series so that the linen passes from one to another, but they may also be used singly if preferred. Means are provided for the supply of solution which are not shown.

What I claim and desire to secure by Letters Patent of the United States is:

1. Apparatus for washing linen comprising a liquid containing tank, a plurality of movable frames having a zigzag channel therethrough and means for imparting to the movable frames movements in rotary paths in opposite directions for rubbing,

soaking and advancing the linen along said channel.

2. Apparatus for washing linen comprising a liquid containing tank, a plurality of movable frames having a zigzag channel therethrough, means for imparting to the movable frames movements in rotary paths in opposite directions for rubbing, soaking and advancing the linen along said channel, rolls for feeding the linen into said channel and rolls for delivering the linen from said channel.

3. Apparatus for washing linen comprising a liquid containing tank, a plurality of sets of movable frames having a zigzag channel therethrough, the movable frames being arranged in the same vertical plane, and means for imparting to the movable frames movements in rotary paths in opposite directions for rubbing, soaking and advancing the linen along said channel.

4. Apparatus for washing linen comprising a liquid containing tank, a plurality of sets of movable frames having a zigzag channel therethrough, the movable frames being arranged in the same vertical plane, means for imparting to the movable frames movements in rotary paths in opposite directions for rubbing, soaking and advancing the linen along said channel, rolls for feeding the linen into said channel and rolls for delivering the linen from said channel.

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

FRIEDRICH LUDWIG BARTELT.

Witnesses:

ALFRED SAMUEL BISHOP,
WALTER FRANK TANDY.