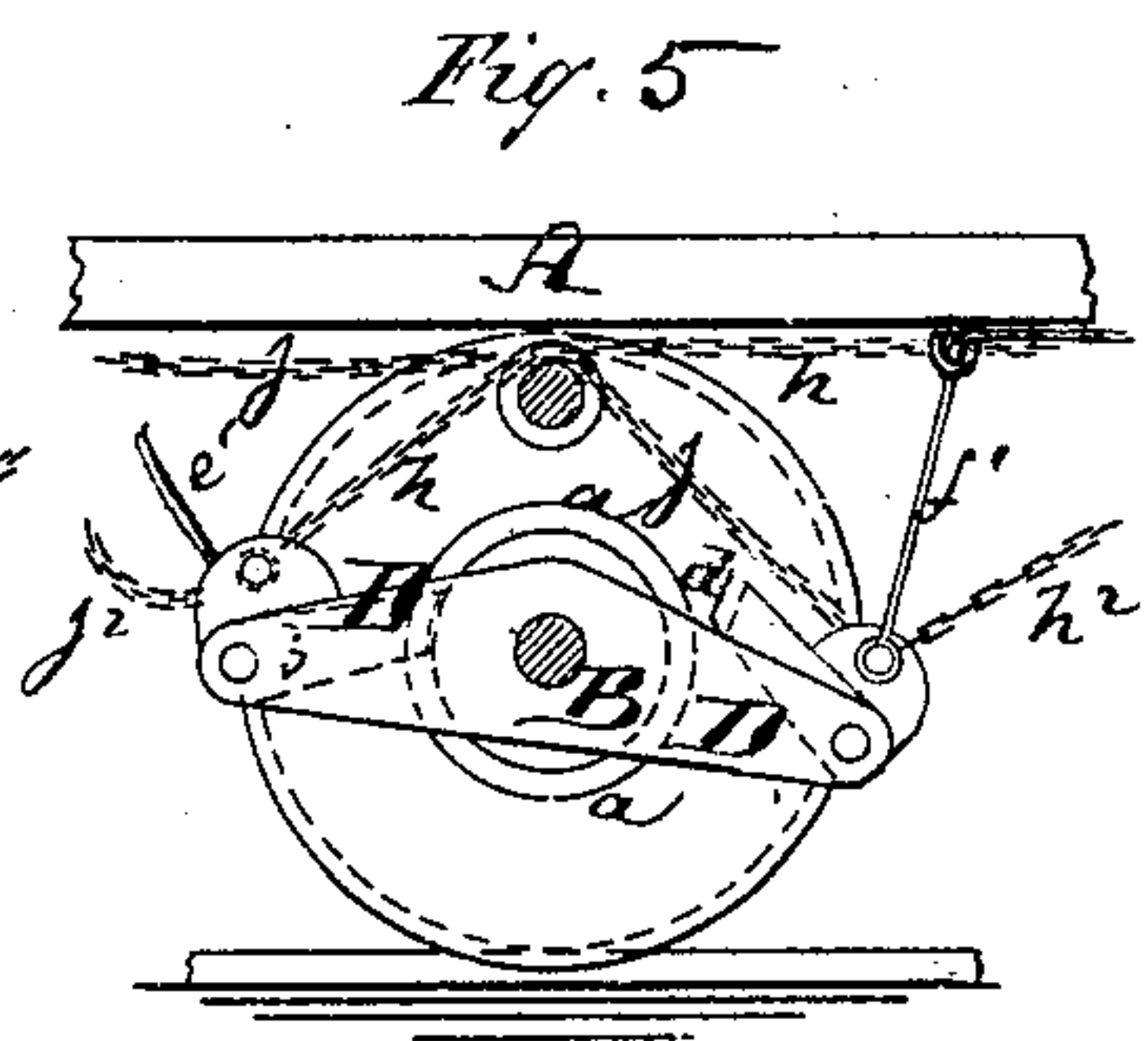
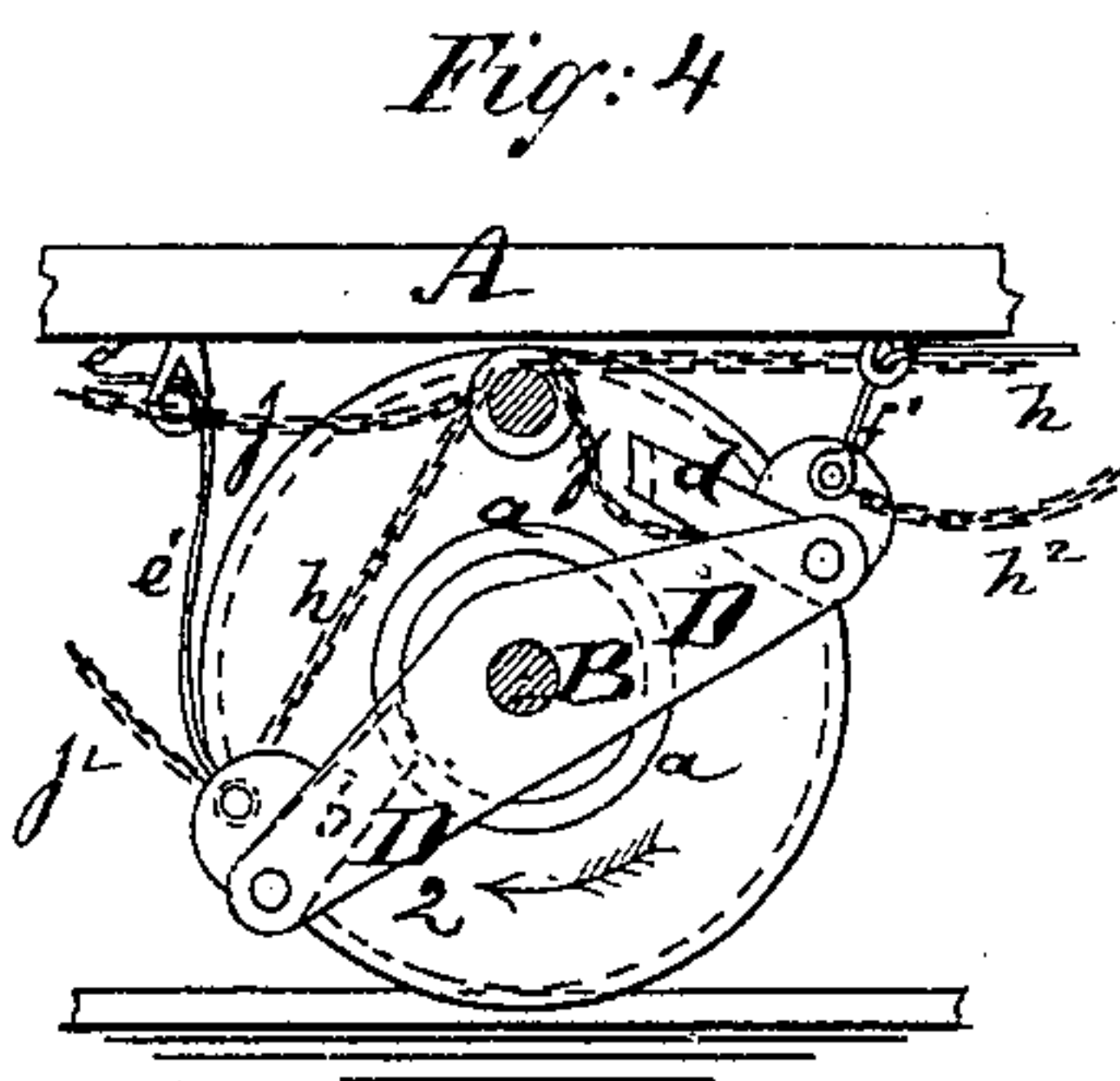
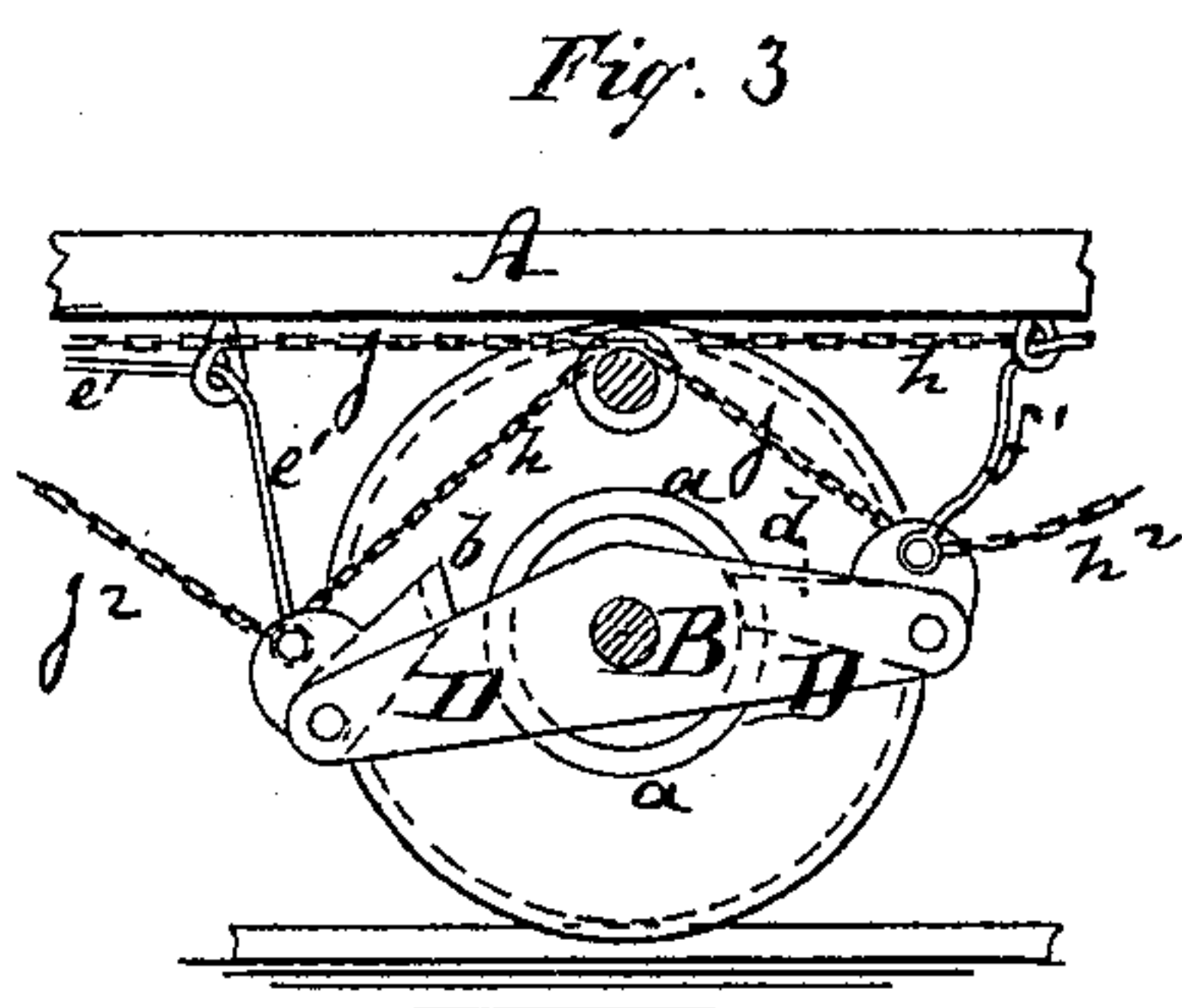
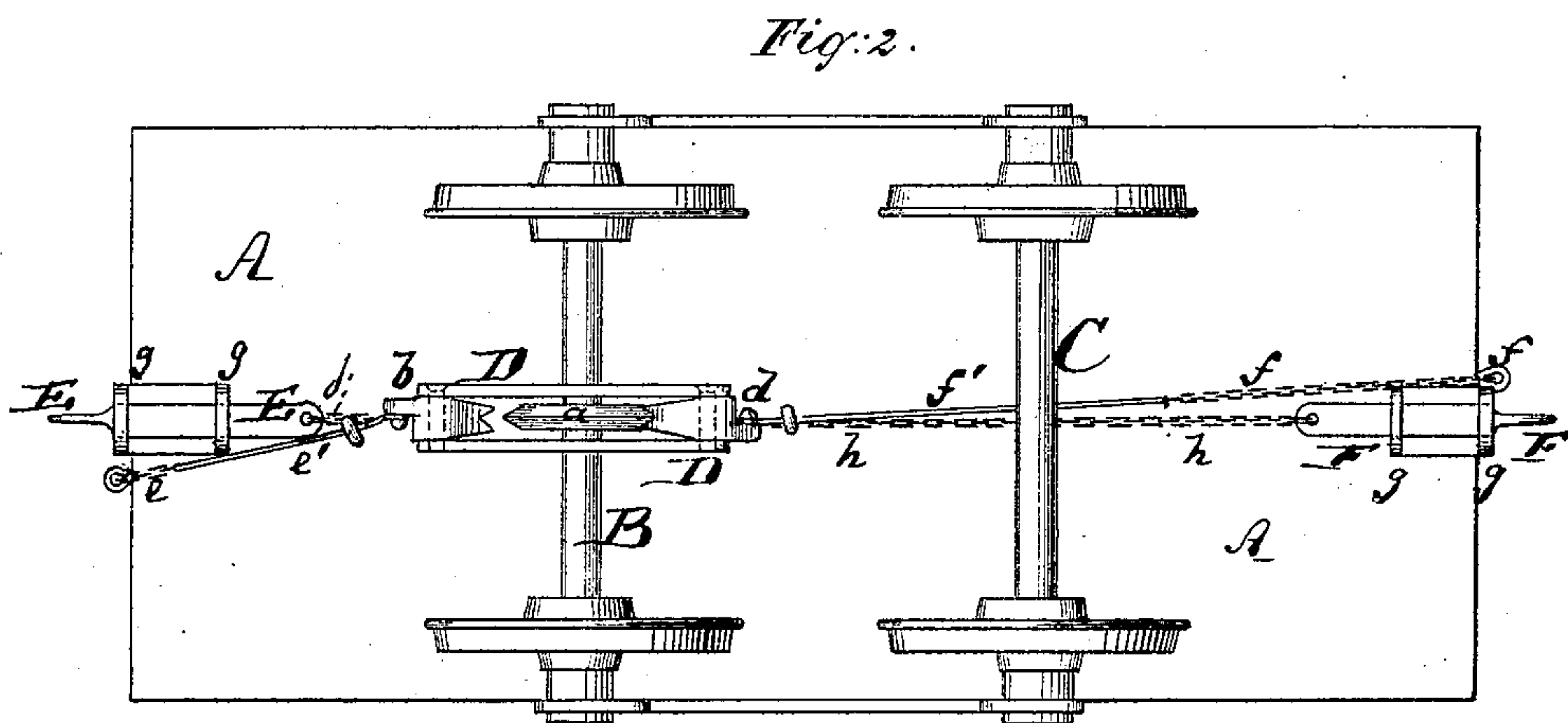
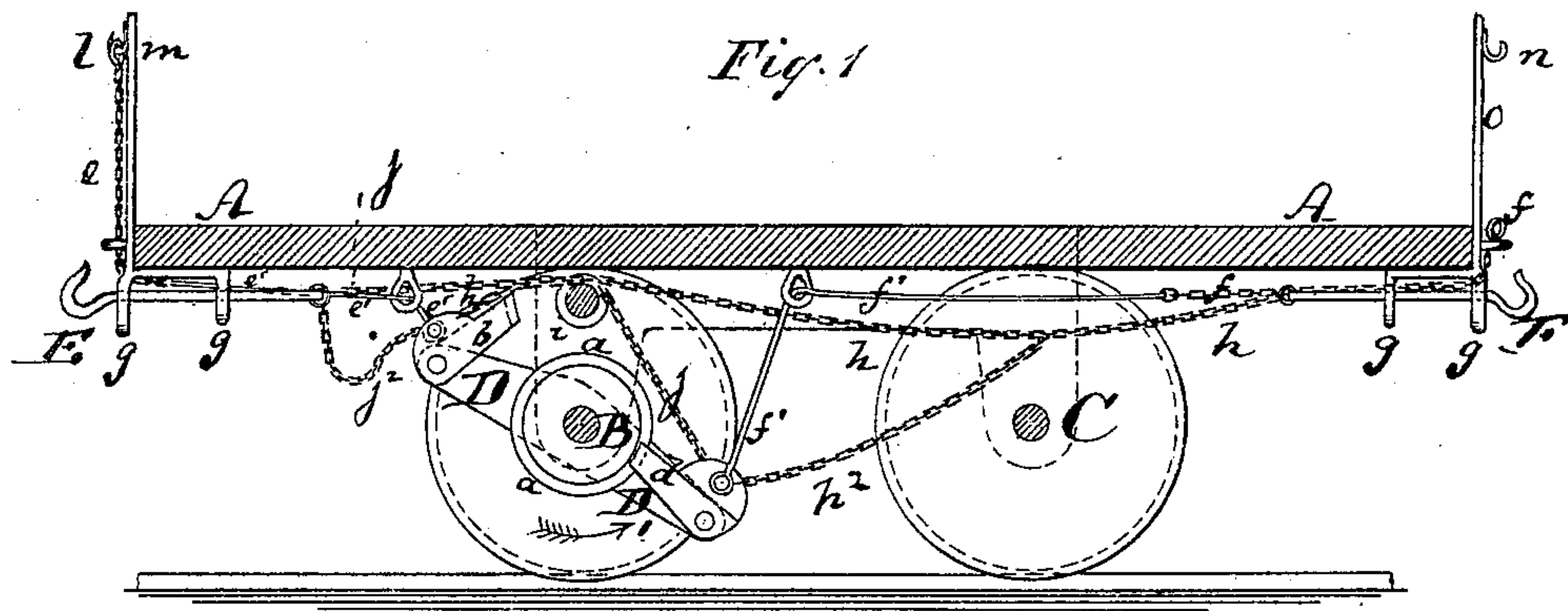


E. GUNTHER.  
Car-Starters.

No. 150,029.

Patented April 21, 1874.



Witnesses.

Thos. Raettig.  
E. Webb

Inventor.

Eduard Günther.  
by his attorney  
A. V. Inesca



# UNITED STATES PATENT OFFICE.

EDUARD GÜNTHER, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF HIS  
RIGHT TO JOSEPH ROBITSCHER, OF SAME PLACE.

## IMPROVEMENT IN CAR-STARTERS.

Specification forming part of Letters Patent No. **150,029**, dated April 21, 1874; application filed  
March 25, 1874.

*To all whom it may concern:*

Be it known that I, EDUARD GÜNTHER, of New York, in the county of New York and State of New York, have invented a new and Improved Car-Starter, of which the following is a specification:

Figure 1 represents a vertical longitudinal section of a car having my improved car-starter. Fig. 2 is a bottom view of the same, and Figs. 3, 4, and 5, are side views of my attachment, showing it in different positions.

Similar letters of reference indicate corresponding parts in all the figures.

This invention has for its object to produce an attachment for street-cars, whereby the draft power, when applied to a stationary car, will at first directly affect one of the car-axles, and in part revolve the same, so that the draft-animals will not in the beginning have to pull the entire weight of a car, but will start it by applying a pawl to one of the axles, partly turning the same. The car will thereby be started in its forward motion with gradually-increasing speed, so that finally the draft of the entire car will be less difficult, and the shock of suddenly starting the car avoided. My invention consists in applying a lever to one of the car-axles, and providing it with two pawls at opposite ends, said pawls being intended at the proper time to bear against a disk that is mounted upon the axle, and in connecting said pawls with straps that extend to the ends of the car, and in connecting the pawls also, respectively, with the two draft-hooks of the car, all as and for the purpose hereinafter described.

In the drawing, the letter A represents the bottom of a suitable street-car. B is one axle, C the other, both being supported by suitable wheels. Upon the axle B is mounted a disk, *a*, which I prefer to make with a V-shaped edge, as in Fig. 2, to give a large amount of friction-surface, but which may also be made, if desired, with ratchet-teeth, or of other suitable form of edge. D is a lever, turning loosely on the axle B, and carrying a pawl, *b*, at one end, and a pawl, *d*, at the other end, both pawls being of equal size and style, and both pivoted at equal distances from the axle B, respectively. The pawl *b* is at a point be-

tween its pivot and its free end connected with a cord or strap, *e*, that extends to one end of the car, such cord or strap having, by preference, an elastic section, *e'*, of rubber or metal, which elastic section is clearly indicated in Fig. 2. In a similar manner is the pawl *d* connected with a cord or strap, *f*, that extends to the opposite end of the car, said cord or strap *f* having also an elastic section, *f'*, also as indicated. E and F are the two draft-hooks of the car, applied to opposite ends of the same, and made to slide in suitable eyes *g g*, that are attached to the car for their support. The draft-hook F is by a chain, *h*, that passes over a friction-pulley, *i*, which is suspended from the bottom of the car above B, connected with the pawl *b*. The draft-hook E is by a similar chain, *j*, connected with the pawl *d*. A brace-chain, *j'*, extends also from the chain *j* to the pawl *b*, and a brace-chain, *h'*, from the chain *h* to the pawl *d*.

The operation of the apparatus is as follows: When the car is to be moved by applying draft power to the hook E, the strap *e* is taken hold of by the driver and drawn tight and fastened to a hook or button, *l*, on the front guard *m* of the car. Thereby the pawl *b* is carried up nearer to the bottom of the car, and the lever D swung into the position shown in Fig. 1, the pawl *b* being by the strap *e* held away from the disk *a*, as shown. When the horses begin to pull on the hook E, the said hook will slide in the eyes *g g*, and will pull the chain *j*, and thereby carry the lever D around in the direction of the arrow 1, shown in Fig. 1, holding the end of the pawl *d* tight against the edge of the disk *a*, and causing the said pawl to take hold of the disk and turn it in the same direction with the arrow 1. Thereby the wheels of the axle B will also be turned in the same direction and the car started before the horses begin to take hold of the entire weight thereof. The position into which the parts are brought by applying the draft to the hook E is shown in Fig. 3, and in this position finally the parts remain all the time during which the car is being pulled by means of the hook E. Thus it is shown that the hook E, when the power is applied to it, will not cause, as usual, the whole body of the car to be pulled for-



ward, but will first affect the pawl  $d$  and turn the axle B, and thus propel the car by turning said axle, and start the car in the proper way. The speed, of course, of starting will gradually increase as the forward motion of the hook E increases under the influence of the draft applied to it. When the parts are in this position—that is to say, in the position shown in Fig. 3—the pawl  $d$  will also serve as a brake for preventing the car from moving backward, and it will therefore secure the car against danger of running backward on steep hills and inclines; but when the car is to be backed up the draft-hook is slid backward, and the pawl  $d$  thereby brought into the position shown in Fig. 1, and no longer in the way of the backward motion of the car. When it is desired to apply the draft to the hook F and not to E the chain  $e$  is first released from the fastening  $l$  and the chain  $f$  then secured to a button,  $n$ , or hook on the guard O. The lever D will thereby be brought into the position indicated in Fig. 4, the pawl  $d$  swung away from the disk  $a$ , the pawl  $b$ , however, applied thereto. When the draft is thereupon applied to the hook F the chain  $h$  is stretched and carries the pawl  $b$  upward, turning the lever in the direction of the arrow 2, shown in Fig. 4, into the position shown in Fig. 5, and during such motion of the lever the pawl  $b$  will affect the disk and turn it, and with it the axle B, so as to properly start the car. In this position the pawl  $b$  will also serve the same purpose of a brake as the pawl  $d$  was formerly shown to serve. The braces  $h^2$  and  $j^2$  serve to keep the respective pawls with which they are connected away from the disk  $a$ , when such pawls are to

be out of operation—that is to say, when the draft-hook E is pulled the brace  $j^2$  keeps the pawl  $b$  away from the disk  $a$ , and when the draft-hook F is pulled the brace  $h^2$  keeps the pawl  $d$  away from the disk  $a$ , as respectively indicated in Figs. 3 and 5. When it is desired to have ratchet-teeth on the disk  $a$ , instead of the V-shaped edge, there must be ratchet-teeth in the opposite directions, so that the two pawls may affect the disk in the requisite manner when they are to be applied.

It is evident that this invention, instead of being duplicated on a single axle, may also be applied in halves to one axle or the other, and on cars which are to have one draft end only the lever D will require but one pawl and one strap connection,  $e$ , and draft-chain connection  $j$ .

I claim as my invention—

1. The combination of the disk  $a$ , mounted upon the axle B of a car, with the lever D carrying the pawls  $b$   $d$ , and the straps  $e$  and  $f$ , chains  $j$  and  $h$ , and sliding draft-hooks E and F, all for operation substantially as described.
2. The combination of the disk  $a$ , mounted upon the axle B, with a lever, D, strap  $e$ , draft-chain  $j$ , and sliding draft-hook E, all substantially as shown and described.
3. The brace-chains  $j^2$  and  $h^2$ , applied in combination with the chains  $j$  and  $h$  and pawls  $b$  and  $d$ , substantially as and for the purpose shown and described.

E. GÜNTHER.

Witnesses:

A. V. BRIESEN,  
E. C. WEBB.