

C. L. IRVING.
Combined Brakes and Starters for Street-Cars.
 No. 143,909. Patented Oct. 21, 1873.

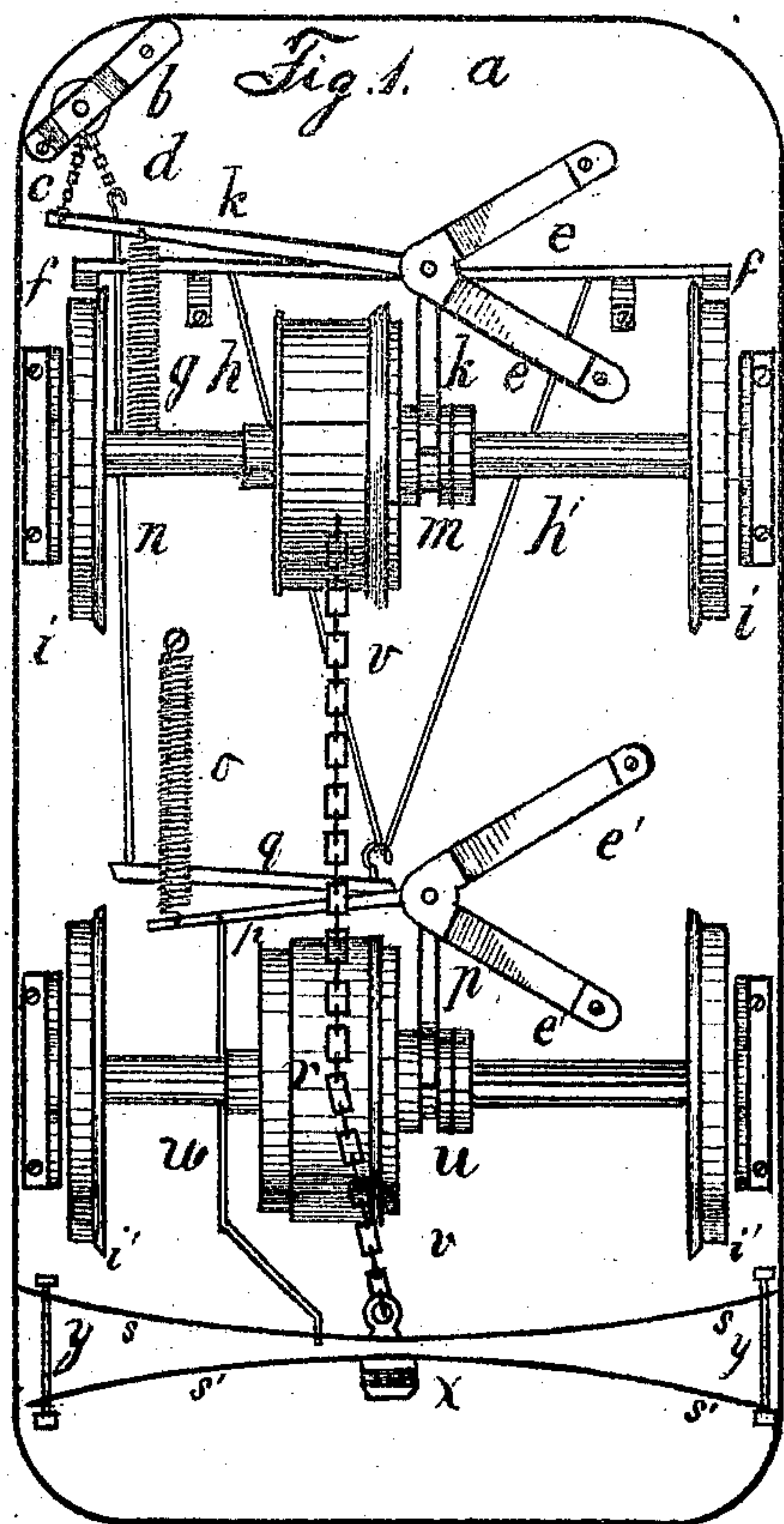
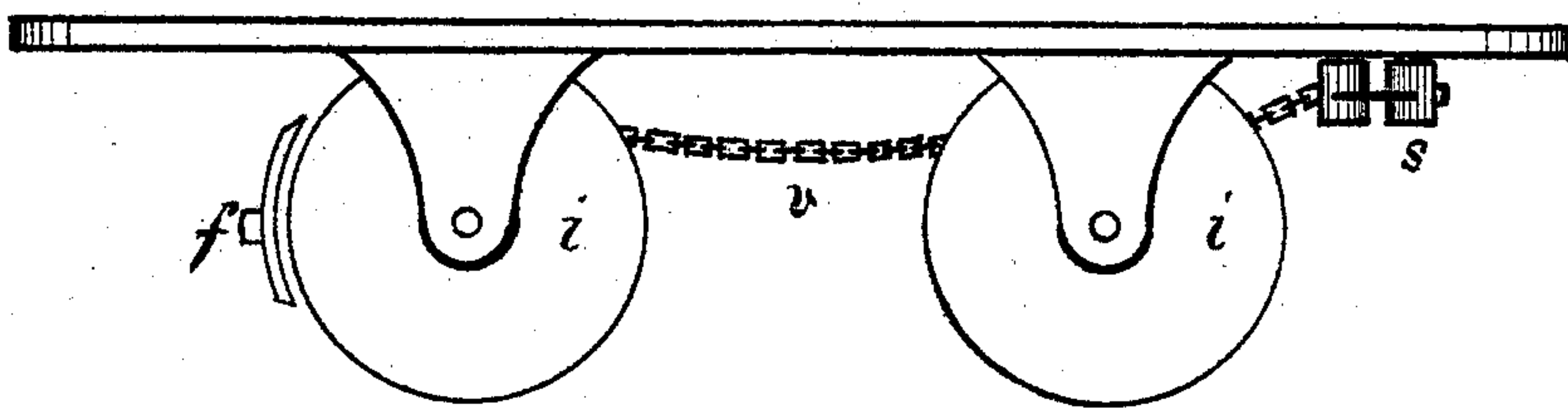


Fig. 2.

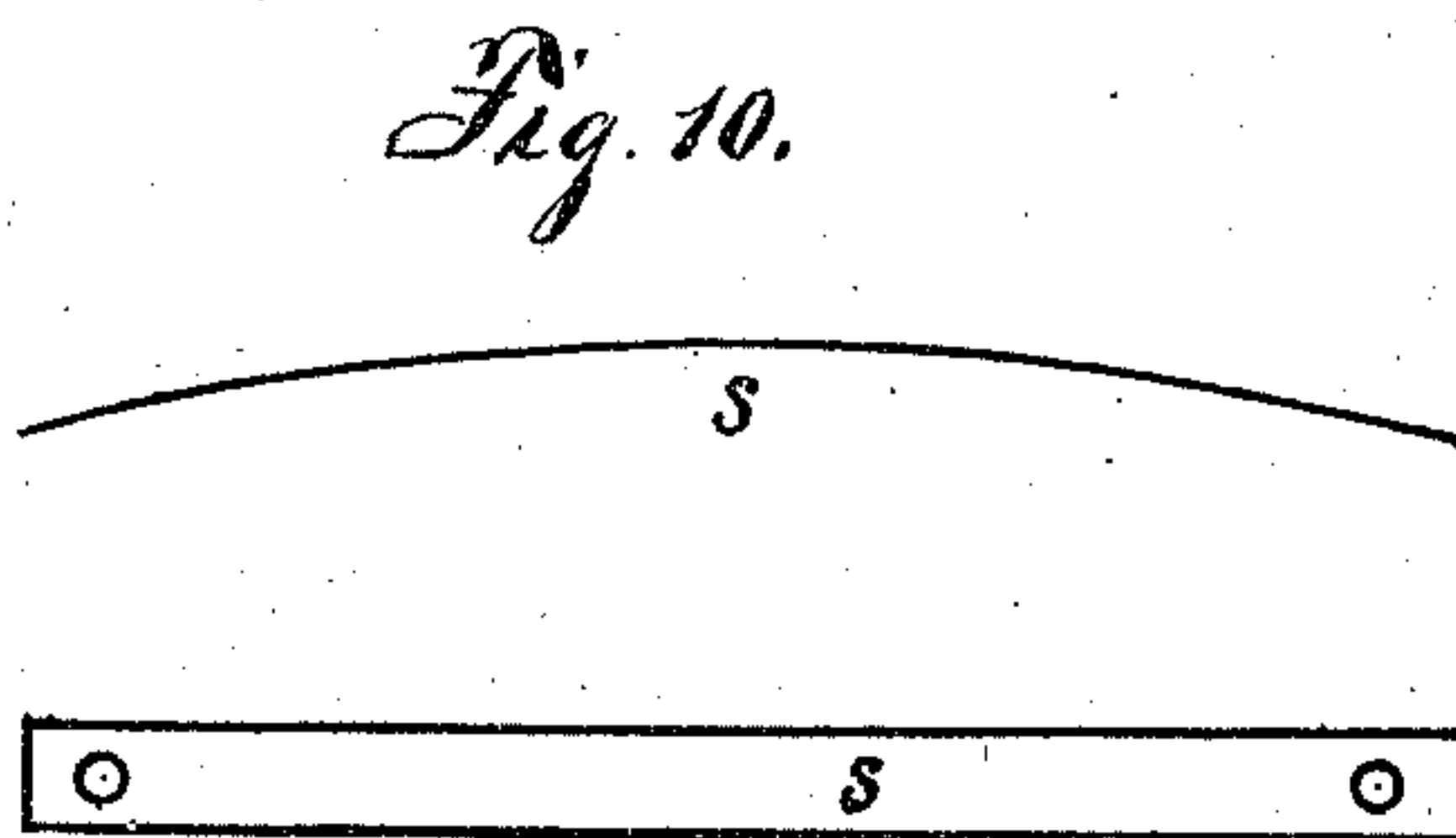
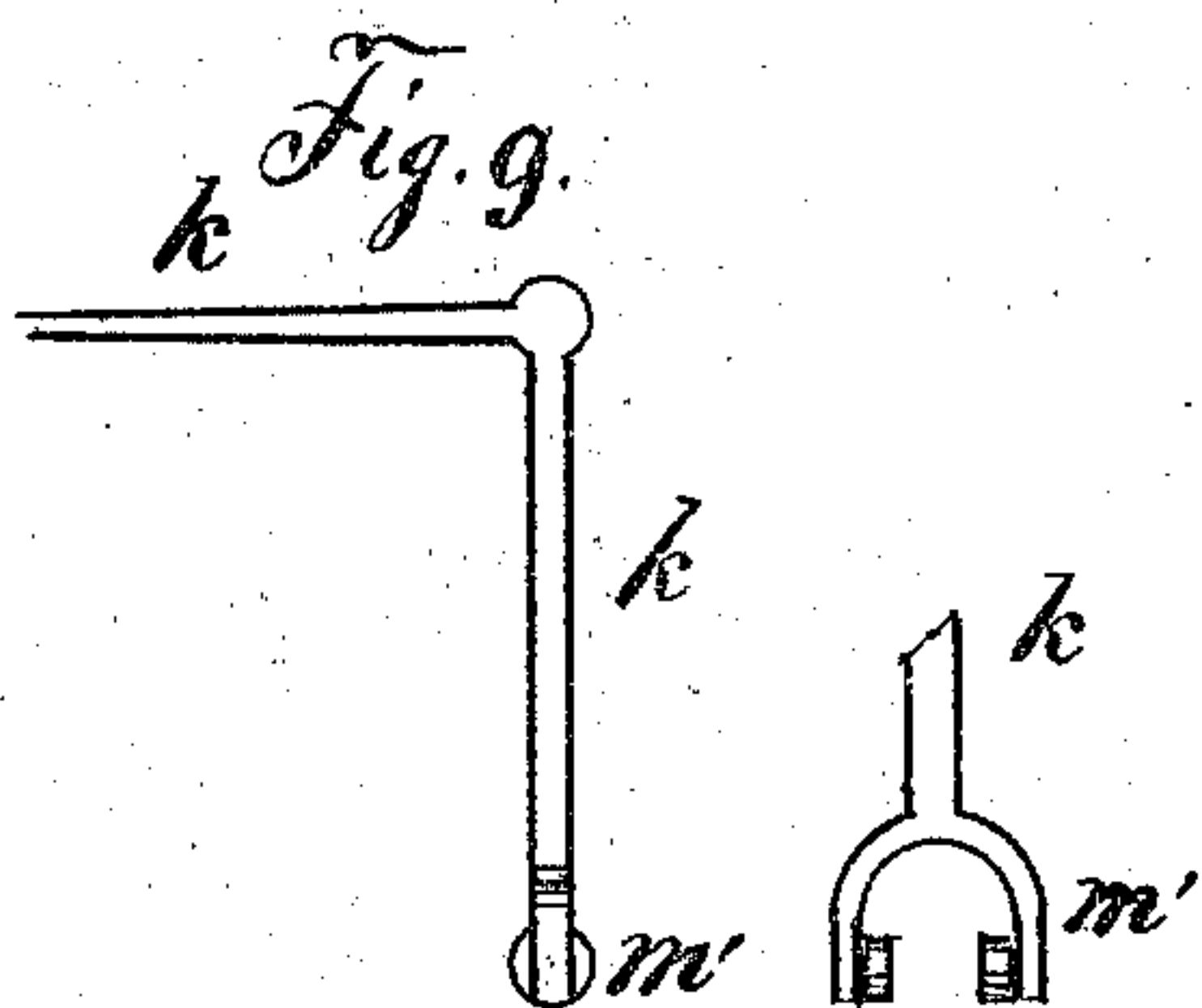
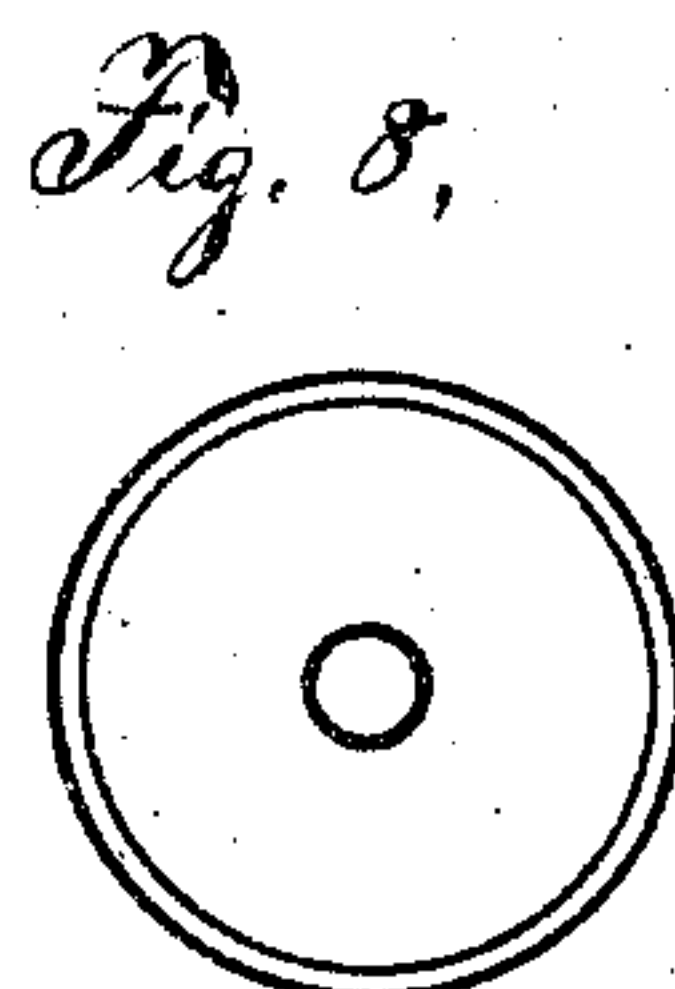
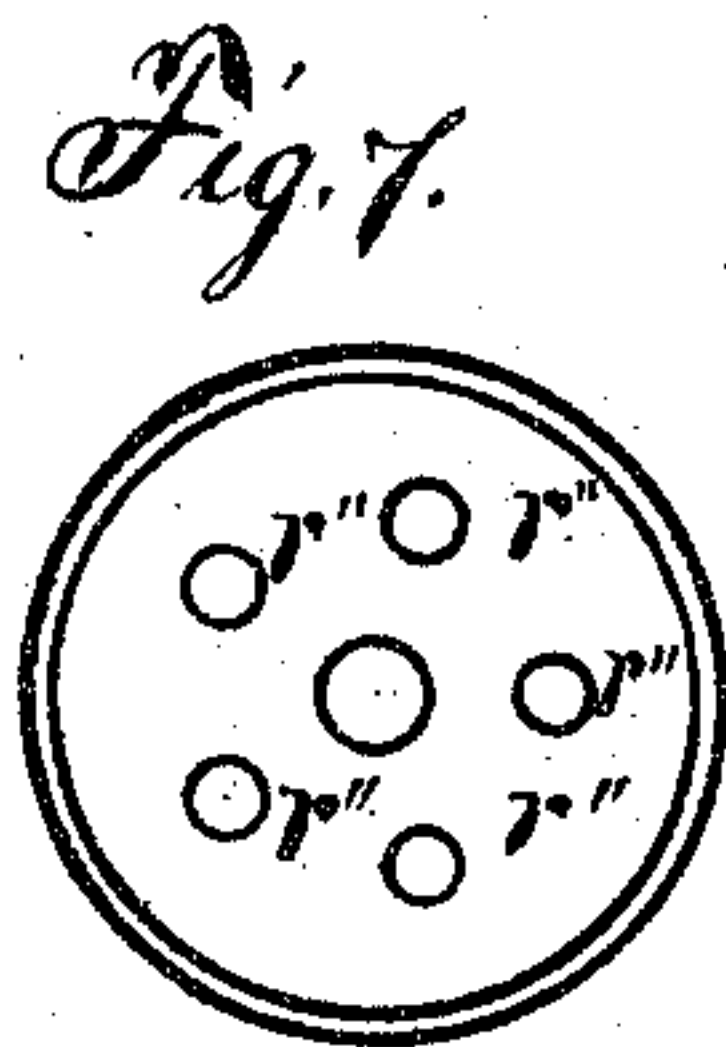
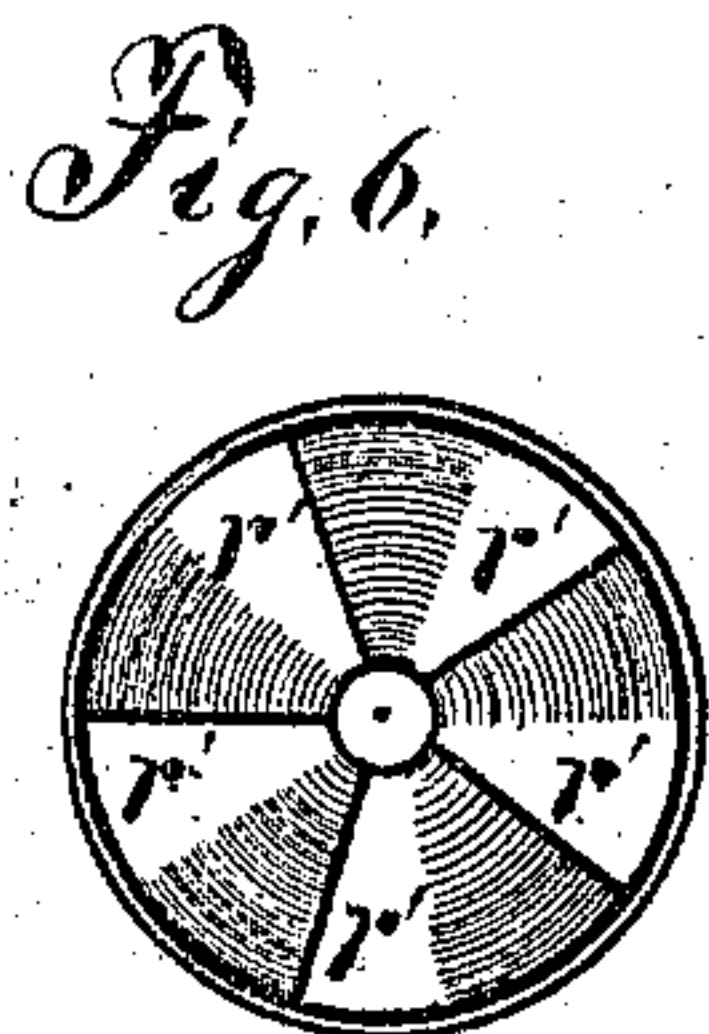
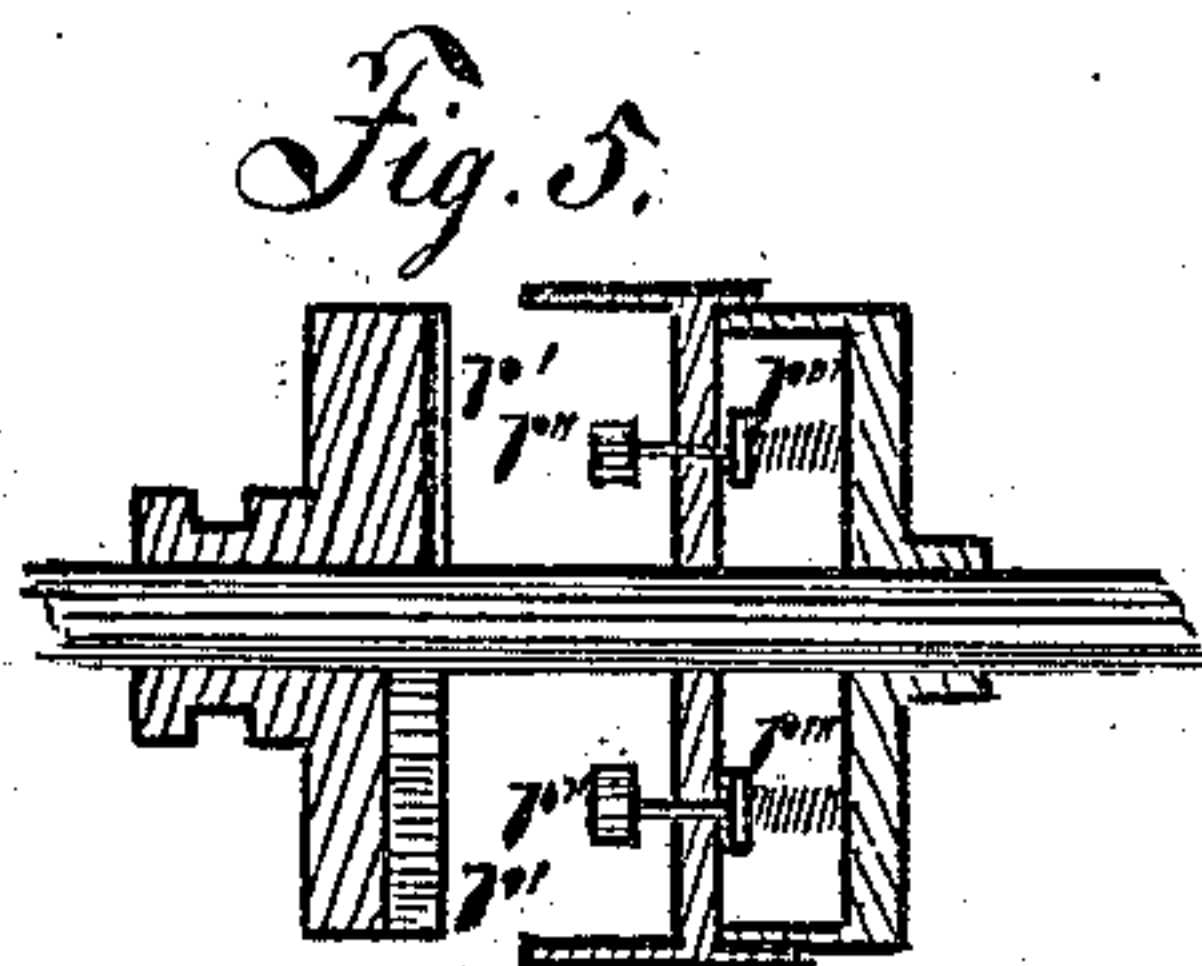
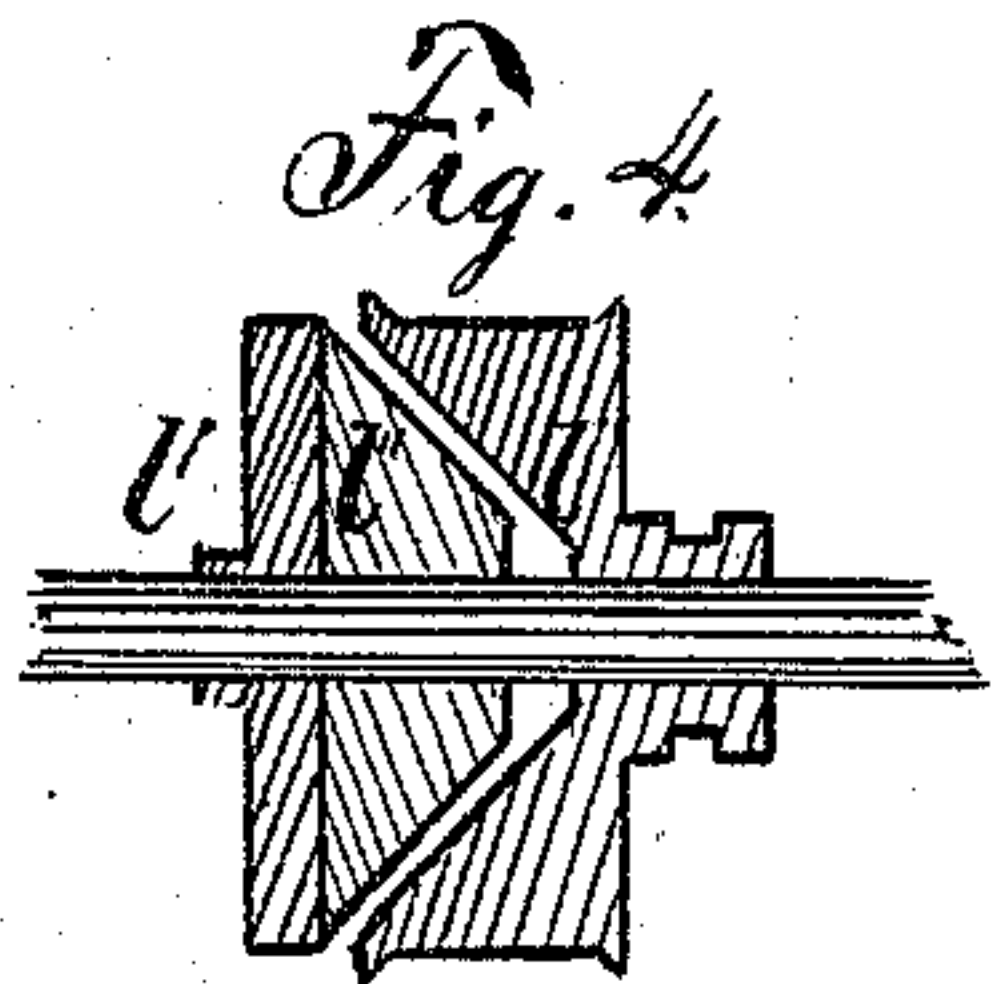
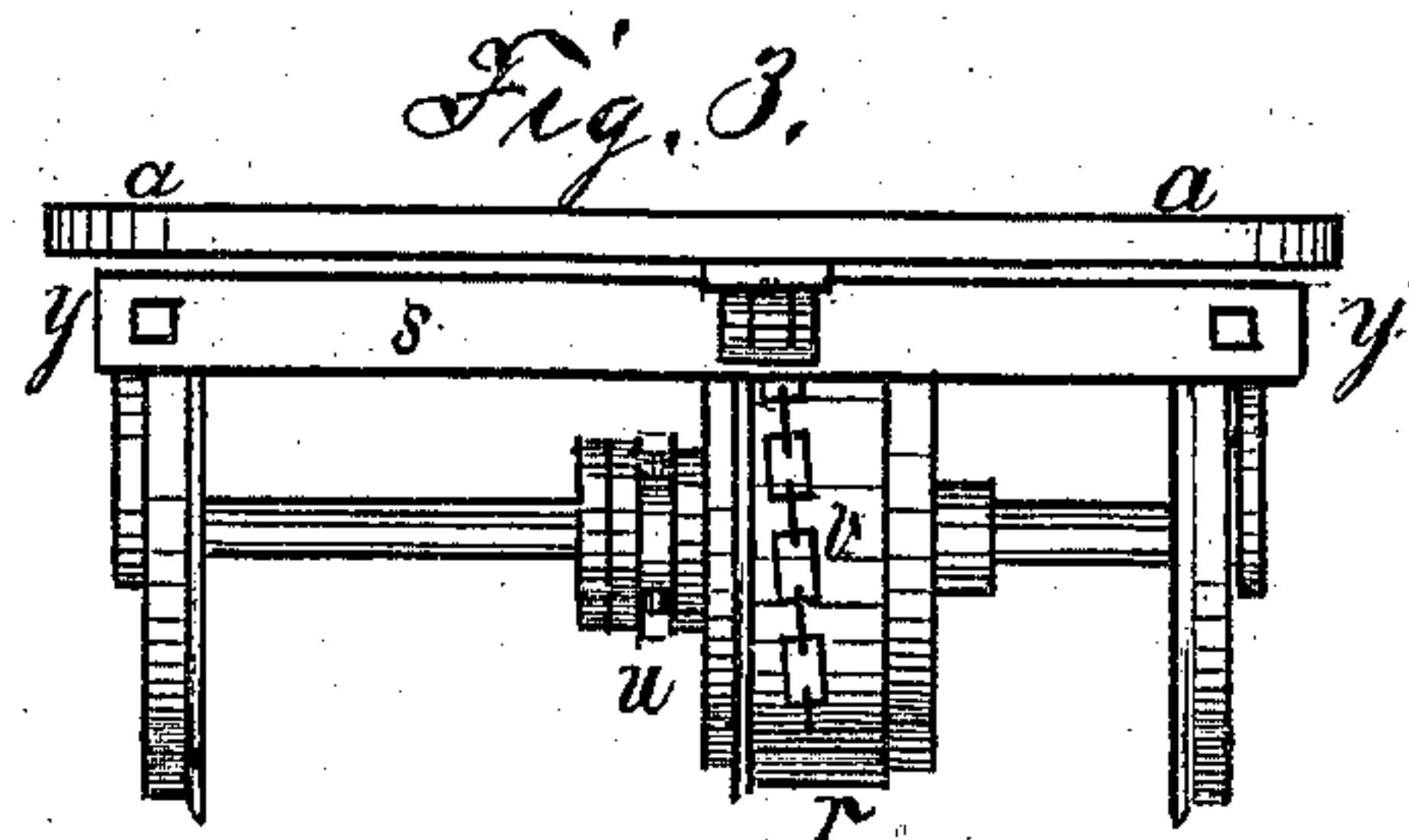


Attest

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Charles Donnellan

Cornelius L. Irving
 Inventor

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UNITED STATES PATENT OFFICE.

CORNELIUS L. IRVING, OF INDIANAPOLIS, INDIANA.

IMPROVEMENT IN COMBINED BRAKES AND STARTERS FOR STREET-CARS.

Specification forming part of Letters Patent No. 143,909, dated October 21, 1873; application filed April 25, 1873.

To all whom it may concern:

Be it known that I, CORNELIUS L. IRVING, of the city of Indianapolis, county of Marion and State of Indiana, have invented an Improvement in Street-Cars, of which the following is a specification:

My invention relates to that class of street-cars which are drawn by horses and like beasts of draft. The device is such that, while the car is easily stopped, it will assist the horse in starting.

The nature and object of the invention will be more fully understood from the following general description and claims:

Figure 1 is a bottom view of a street-car with my device on it; Fig. 2, a side view of the same; Fig. 3, an end view of the same; Fig. 4, a sectional view of one of the drums; Fig. 5, a sectional view of the other drum; Figs. 6, 7, and 8, detailed views of the drum represented by Fig. 5; Fig. 9, views of the shifters; Fig. 10, views of the elliptical spring *s*.

An ordinary street-car is to be constructed with its wheels and axles as usual. Upon the rear axle near its middle is to be placed the drum represented by Fig. 5, and upon the front axle near its middle is to be placed the drum represented by Fig. 4. Upon the bottom of the car near the back end is fastened the elliptical spring *s*, as shown in Figs. 1, 2, and 3, and exhibited in detail in Fig. 10. To this spring *s* is attached the chain *v*, as shown in the drawing, which may be either wound round the drum on the back axle and fastened to it by a staple, and passing on be fastened to the drum on the fore axle by means of any convenient device. The drum of Fig. 4, which is to be placed on the fore axle, consists of three parts. *l'''* is a metallic disk turning on the axle, one side of which is turned into a conical socket and adapted to the wood cone *l''*, which is fastened on the metal disk *l'* and slides upon a key. The drum represented by Fig. 5, which is to be put on the back axle, is constructed as follows: *r'* is a disk of metal sliding upon a key on the axle, on one side of which disk is a radial ratchet, represented by Fig. 6. *r''* are bolts, which, acting by means of the elasticity of the springs *r'''*, act as pawls on the ratchet *r'*. When the brake is off the cone *l''* will stand away from the conical socket *l'''* so far as not to be effected by it. The same will be

the case with the pawls *r''* and the ratchet *r'*. But as soon as the brake *b* is turned it winds up the chain *c*, which causes the shifter *k* to force together the cone *l''* and the conical socket *l'''*. This drum will then turn with the axle and wind the chain *v* upon it. This, by the continuity of the chain *v*, will cause the drum *r* to revolve and the spring *s* to unbend. As the spring *s* is unbent it no longer holds the slide *u*. This releases the shifter *p*, which, by the elasticity of the spring *o*, forces the ratchet *r'* and the pawl *r''* together, thus holding the spring unbent as long as the car is standing still. When the brake is let off the spring *s* will, by reason of its elasticity, draw back the various parts of the device to their original position, and in so doing give the wheels a part revolution, which will greatly assist the horse in starting. All these devices are to be arranged and used substantially as set forth.

This device will not interfere with the ordinary brake for stopping the car, because, while the car is provided with the ordinary apparatus, the ratchets at the brake-handle *b* are so arranged that, to use my device, the brake-handle is to be turned one way, and to use the ordinary brake the operator has only to turn the handle the other way.

The parts of the drums on the axles, represented respectively by Figs. 4 and 5, which slip on the axle, may be filled with anti-friction metal.

I claim—

1. The combination of the cone and socket frictional cylinder attached to the front axle, with the spring pawl and ratchet cylinder attached to the rear axle, and the elliptic spring, substantially as and for the purpose specified.

2. The combination of the ratchet *r'*, the pawls *r''*, and spiral springs *r'''*, substantially as shown and described.

3. The combination of the elliptic spring *s*, rod *w*, and shifter *p*, with the cone and socket frictional cylinder, substantially as set forth.

In testimony that I claim the foregoing specification I have hereunto set my hand this 24th day of March, 1873.

CORNELIUS L. IRVING.

Witnesses:

E. J. SUMNER,

CHAS. E. DONNELLAN.