

No. 841,581.

G. G. SCHROEDER.

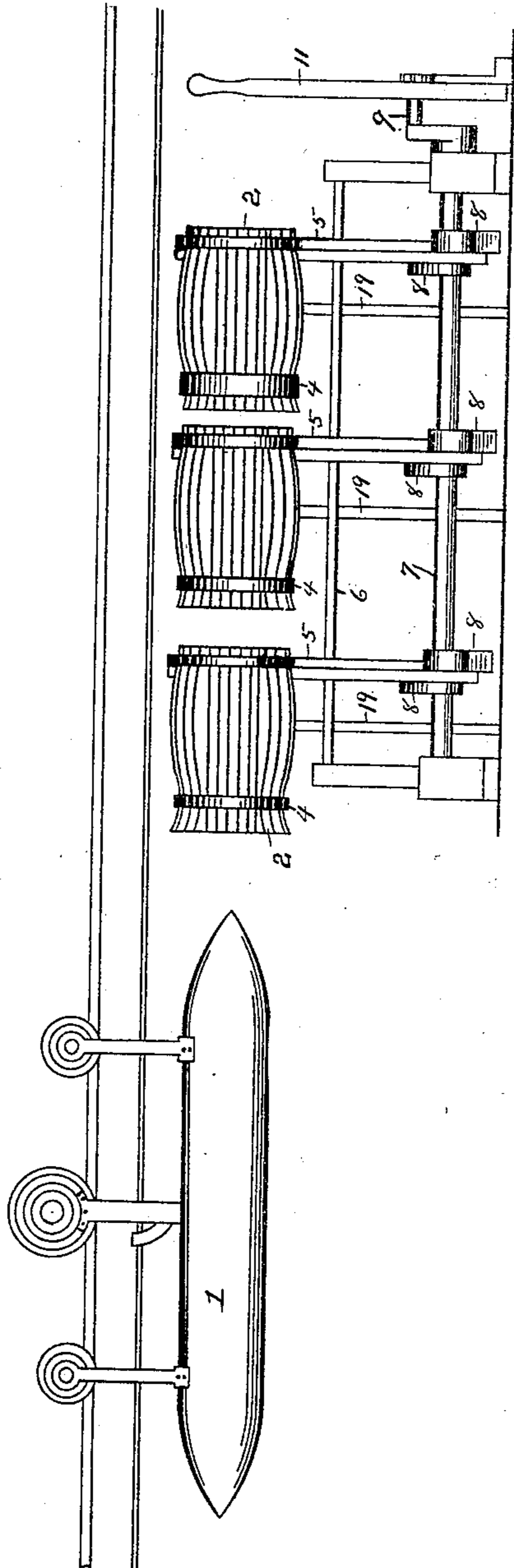
PATENTED JAN. 15, 1907.

BRAKE FOR AERIAL NAVIGATION.

APPLICATION FILED OCT. 8, 1904. RENEWED JUNE 25, 1906.

3 SHEETS—SHEET 1.

Fig. 1.



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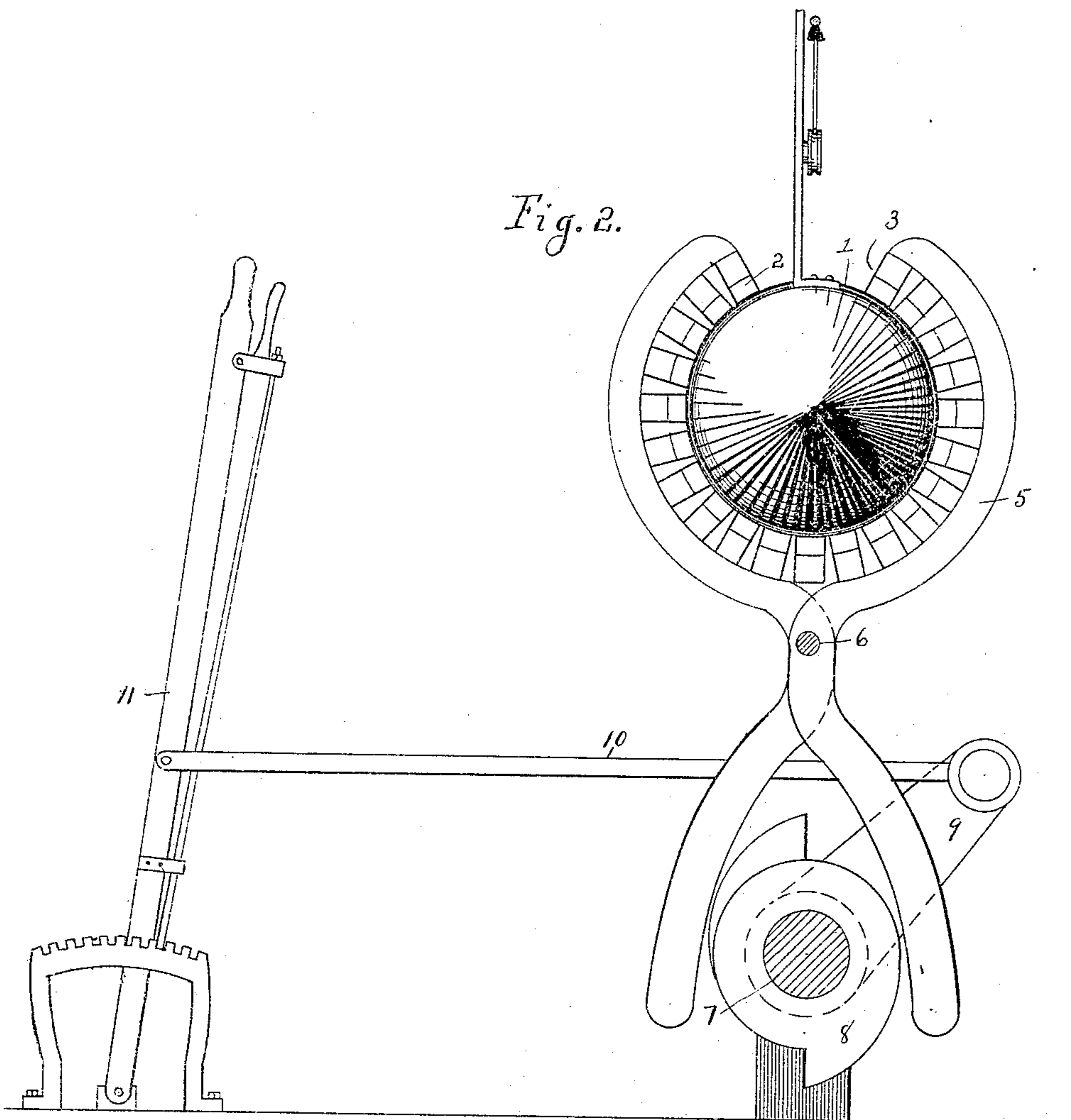
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3 SHEETS--SHEET 3.

Fig. 3.

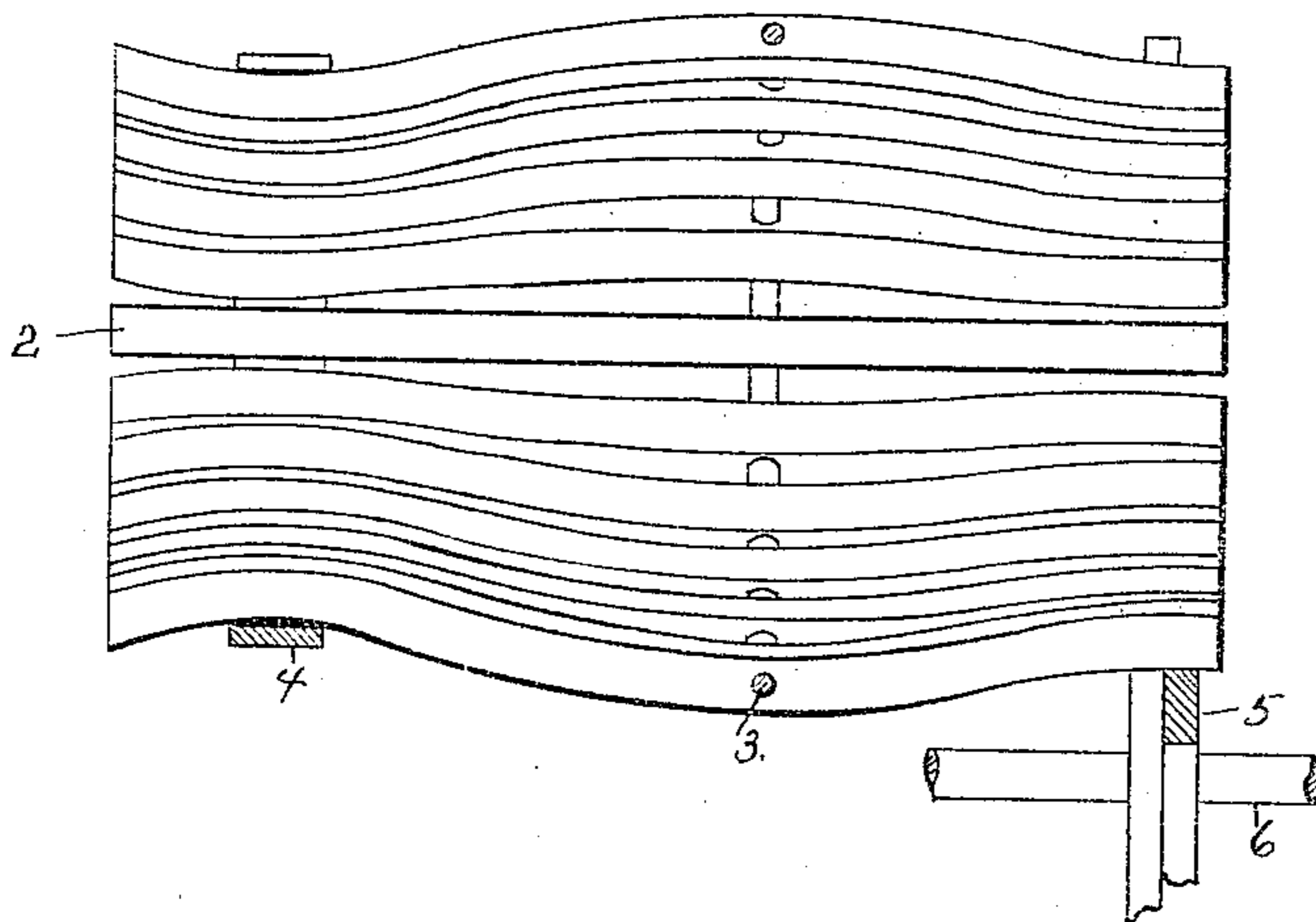


Fig. 4.

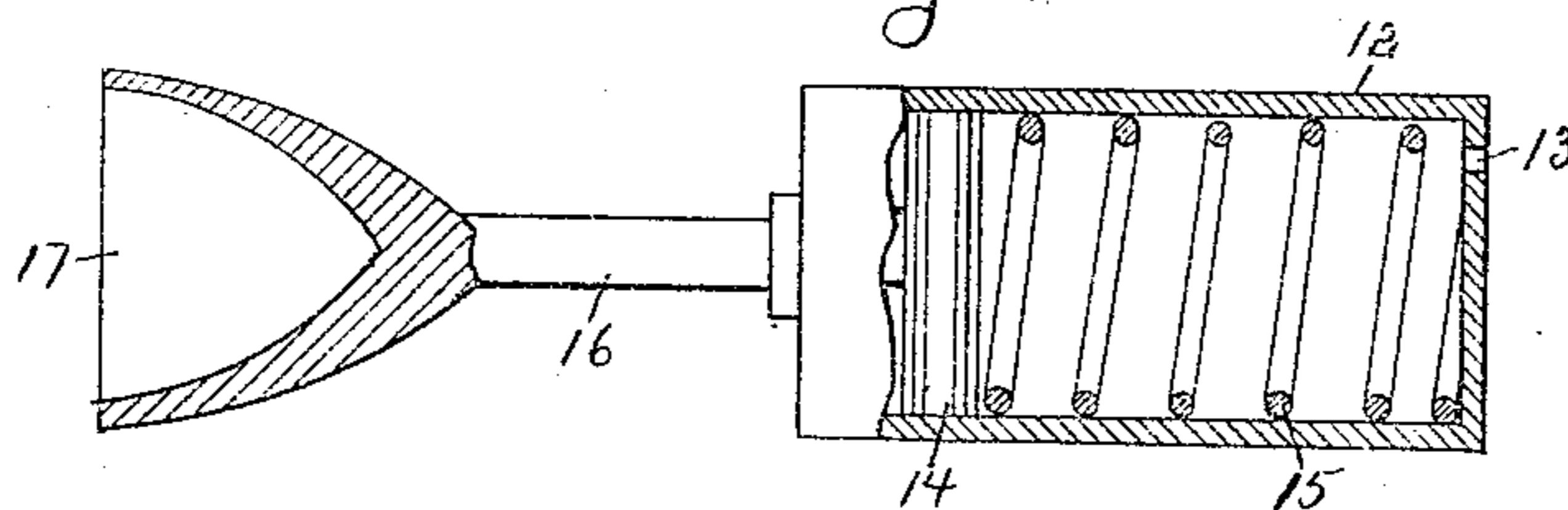


Fig. 5.

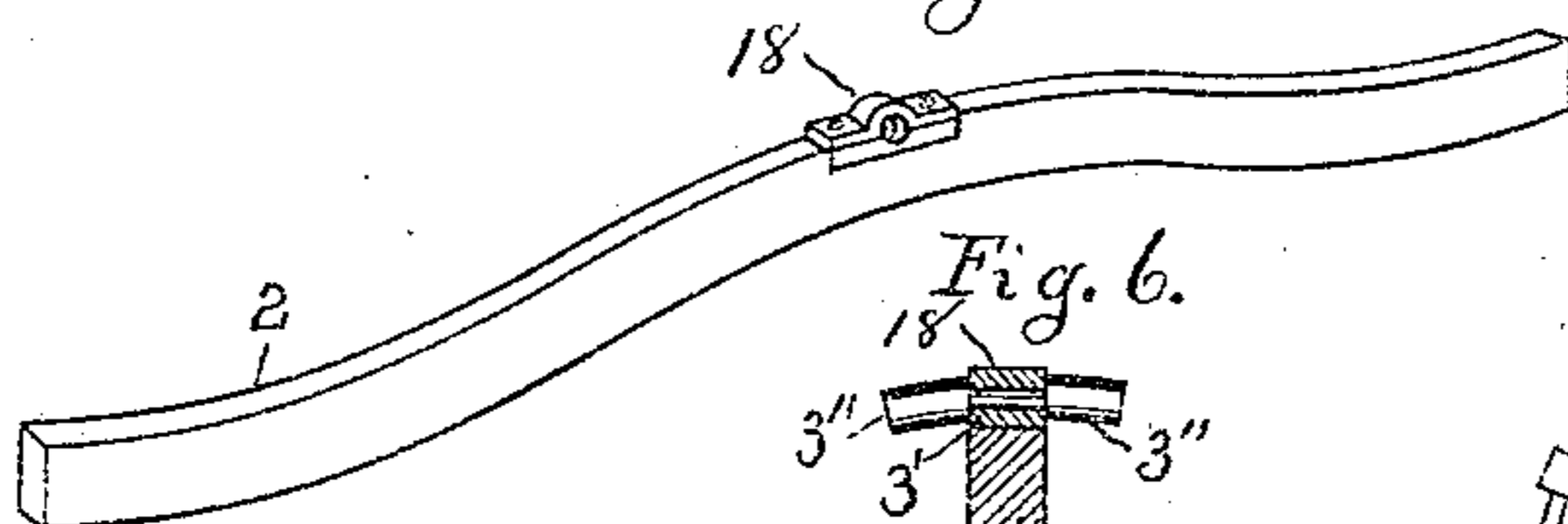


Fig. 6.

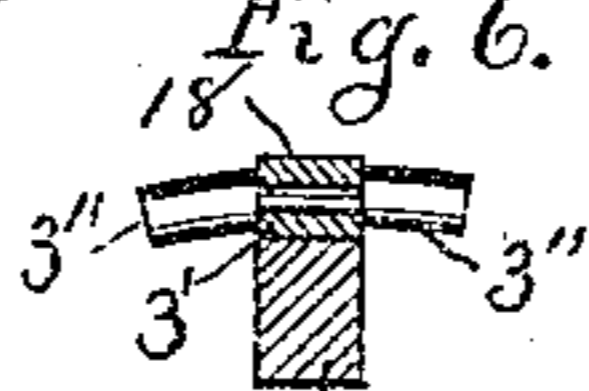


Fig. 8.

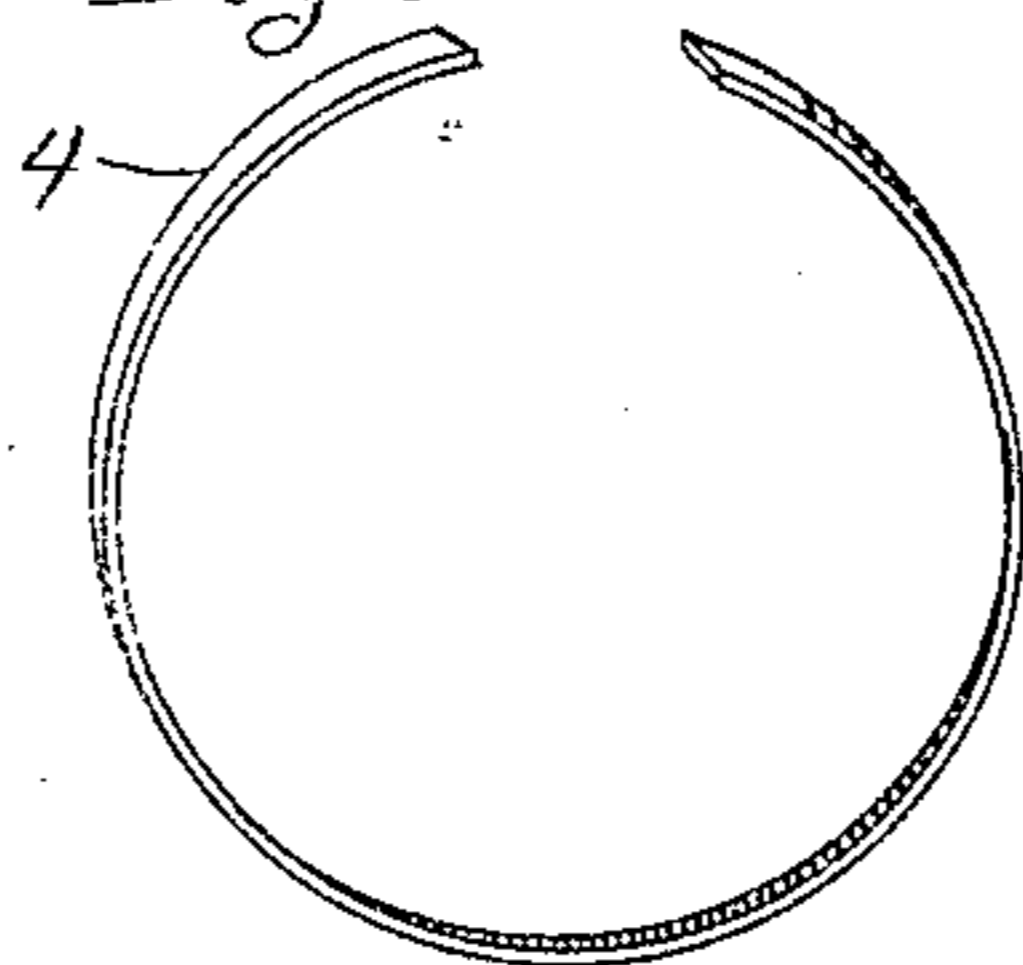
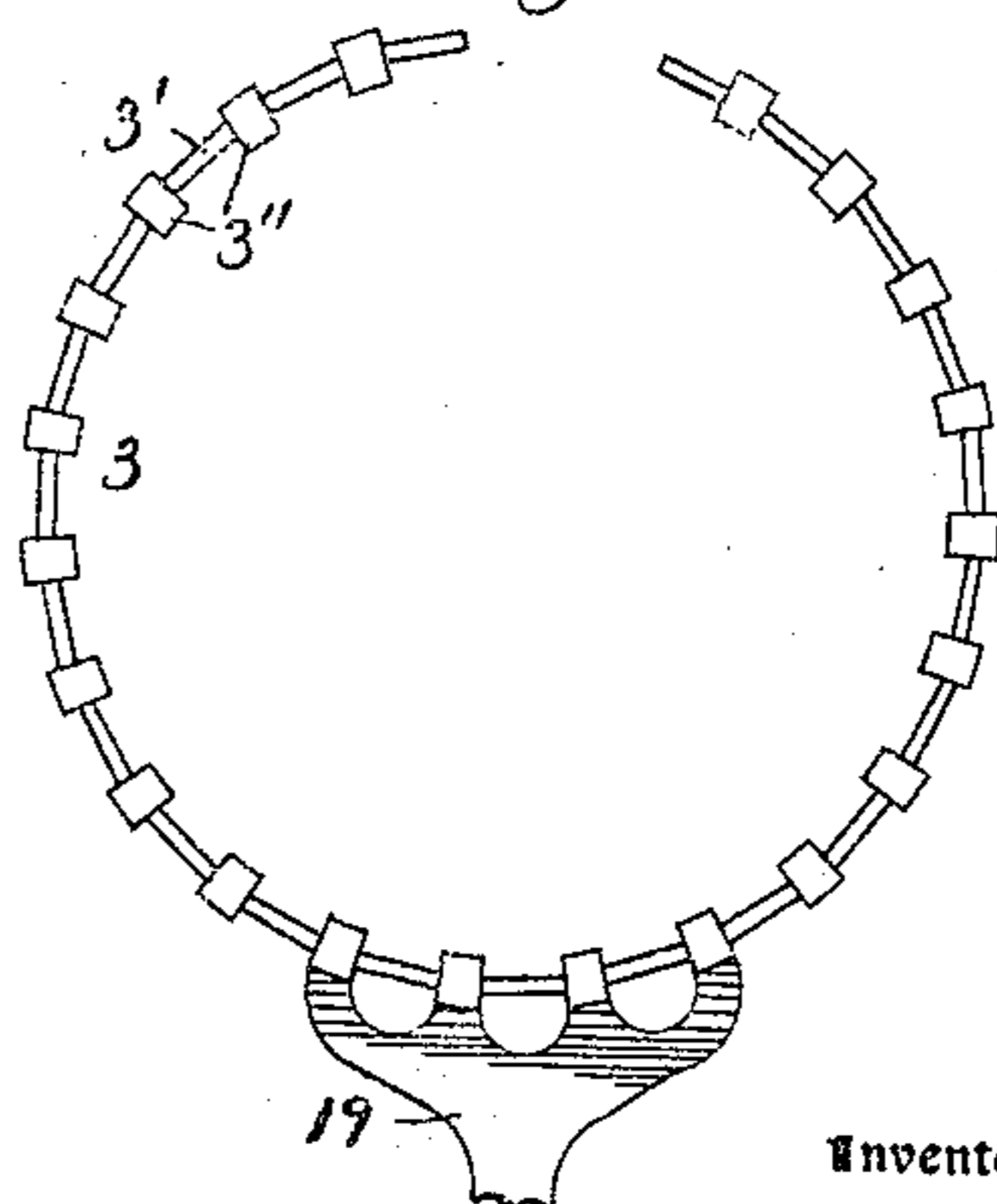


Fig. 7.



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# UNITED STATES PATENT OFFICE.

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## BRAKE FOR AERIAL NAVIGATION.

No. 841,581.

Specification of Letters Patent.

Patented Jan. 15, 1907.

Application filed October 8, 1904. Renewed June 25, 1906. Serial No. 323,345.

*To all whom it may concern:*

Be it known that I, GEORGE G. SCHROEDER, a citizen of the United States, residing at Washington, in the District of Columbia, have invented new and useful Improvements in Brakes for Aerial Navigation, of which the following is a specification.

This invention has relation to brakes adapted to be used in aerial-transportation systems. These brakes are located at the stations along the line of the aerial system and are so constructed as to automatically stop all motors or cars passing through the station, or they may be so set as not to interfere with or stop motors. A terminal buffer or brake is also provided, which is adapted to stop the motors or cars at the terminal stations. The braking devices at the stations may be operated to release the motors and attachments at any desired time.

In the accompanying drawings, Figure 1 is a side elevation of the brake. Fig. 2 is an end elevation of the brake. Fig. 3 is a longitudinal sectional view of one of the members of the brake. Fig. 4 is a sectional view of a terminal buffer. Fig. 5 is a perspective view of a modified form of one of the arms of the brake. Fig. 6 is a transverse sectional view of one of the arms, showing the means for pivotally attaching the same to its support. Fig. 7 is a side elevation of the pivotal support for said arms, and Fig. 8 is a perspective view of a band-spring used in the brake.

As above stated, a checking or braking device is located at each station. It will be observed that the receptacle 1 of the carrier is cylindrical in shape and pointed at its ends. The said checking or braking device is adapted to receive and operate upon said receptacle 1. The checking or braking device consists of a series of brakes, all being similar in construction, but gradually increasing in degree of braking strength. Each individual brake consists of a number of arms 2, pivotally supported at the point 3. Said arms are arranged substantially parallel to each other and almost describe a circle in cross-section, (see Fig. 2,) the space 3<sup>a</sup> being provided at the top in order that the hangers of the motor may be passed through the brake. The

band-spring 4 nearly surrounds one end of the braking device, and is adapted to hold the ends of the arms 2, around which it passes, in toward each other, and the tongs 5 surround the opposite ends of the arms 2. The tongs are pivoted together at 6. The shaft 7 passes between the lower ends of the tongs 5, and an eccentric 8 is located on the shaft 7 between the lower ends of each set of tongs. The end of the shaft 7 is provided with a crank 9, to the end of which is pivoted the pitman 10, which is also attached to the operating-lever 11. At terminal stations, in addition to the checking or braking devices above described, terminal buffers are provided. Said buffers consist of an air-cylinder 12, (see Fig. 4,) which is provided at one end with the aperture 13. The piston 14 is located in the cylinder 12 and is normally held against the cylinder-head by the coil-spring 15. The piston-rod 16 passes around the head of the cylinder 14 and is provided at its outer end with a socket 17, which is adapted to receive the pointed end of the receptacle 1.

The arms 2 are preferably made of wood or other equivalent material which offers sufficient friction to the receptacle 1, but does not wear the same. Each said arm throughout its length describes a sinusoidal or compound curve bowing outward at its middle. In the form of arm as shown at Fig. 5 the bearing 18 is located on the rear edge thereof and is provided with a removable section. The said bearing 18 receives the spindle portion 3' of the support 3. The blocks 32 are located at the ends of the spindles 3' and properly space the arms 2 apart. The uprights 19 support the pivotal arm-support 3, as shown in Fig. 7.

The operation of the invention is as follows: The motor carrying the receptacle 1 is started upon its journey along the cable or trackway provided for that purpose, and when it arrives at a station the current is cut off by any suitable means, (not shown in the drawings,) but the motor continues to travel by reason of the momentum that it has gained while subjected to the current. When it enters the station, the receptacle 1 passes into the

checking or braking devices, which are normally set to engage the sides of the receptacle 1 and offer friction-contact therewith, it being understood that the tension of the first spring 4 is less than that of the other springs and that the tension of the said springs gradually increases. Thus the inner sides of the arms 2 bear against the sides of the receptacle 1 and it is brought to a state of rest. The operator thus swings the lever 11, which causes the shaft 7 to describe a partial rotation, and the eccentrics 8, bearing against the lower ends of the tongs 5, force the said lower ends apart and contract the upper ends of the same. This presses the ends of the arms 2, surrounded by the tongs, in, and consequently the ends of the said arms under the springs 4 are forced out. Thus the receptacle 1 is released, and it may be moved through the checking or braking devices, where it may be unloaded and reloaded. Should it not be intended to have the motor stop at the station, the operator may throw the lever 11, so that there will be no frictional contact between the arms 2 and the receptacle 1, in which case the motor will pass on through the station and continue its journey. At terminal stations the end of the receptacle 1 enters the recess 17 and the piston 16 is moved back and compresses the air in the cylinder 12 and forces the same out gradually through the aperture 13, it being understood that before the end of the receptacle 1 engages the socket 17 that the said receptacle has passed through the checking or braking device, as above described. The said checking or braking devices are located under the trackway or cable upon which the cars or motor travel.

I claim—

1. In combination with a track adapted to support a prime mover having a depending receptacle, a braking device located adjacent said track and adapted to engage said depending receptacle and offer resistance thereto.

2. In combination with a track adapted to support a prime mover having a depending receptacle, a braking device located adjacent said track and adapted to receive said receptacle and offer resistance thereto.

3. In combination with a track adapted to support a prime mover having a depending receptacle, a braking device located adjacent said track and adapted to receive said receptacle and offer resistance thereto, said braking device having an opening through which the hanger of the said receptacle may pass.

4. In combination with a track adapted to support a depending receptacle, a braking device located adjacent said track and adapted to engage said receptacle and offer resistance thereto.

5. In combination with a track adapted to support a depending receptacle, a braking device located under said track and adapted to engage said receptacle and offer resistance thereto.

6. In combination with a track adapted to support a depending receptacle, a braking device located adjacent said track and adapted to receive said receptacle and offer resistance thereto.

7. In combination with a track adapted to support a depending receptacle, a braking device located adjacent said track and adapted to receive said receptacle and offer resistance thereto, said braking device having an opening through which the hanger of the said receptacle may pass.

8. In a system such as described, a braking device consisting of a number of substantially parallel pivoted arms arranged substantially in a circle in cross-section, and a spring actuating said arms.

9. In a system such as described, a braking device consisting of a number of substantially parallel pivoted arms arranged substantially in a circle in cross-section with an open space passing longitudinally through the braking device, and a spring actuating said arms.

10. In a system such as described, a braking device consisting of a number of pivoted arms, and a spring passing around said arms and actuating the same.

11. In a system such as described, a braking device consisting of a number of substantially parallel pivoted arms, and a spring passing around said arms and actuating the same.

12. In a system such as described, a braking device consisting of a number of substantially parallel pivoted arms arranged in the form of a circle in cross-section, a spring passing around said arms and actuating the same, said braking device having an open space passing longitudinally therethrough.

13. In a system such as described, a braking device consisting of a number of arms pivoted at an intermediate point, a spring actuating said arms at one end, and a means located at the opposite end for reacting upon said spring.

14. In a system such as described, a series of braking devices each consisting of a number of pivoted arms, and a spring actuating each set of arms, said spring gradually increasing in intensity throughout the series.

15. In a system such as described, a braking device consisting of a number of pivoted arms; each said arm describing along its longitudinal axis a sinusoidal curve, and a spring adapted to actuate said arms.

16. In a system such as described, a braking device consisting of a number of arms,

each said arm describing along its longitudinal axis a sinusoidal curve, and having its middle portion bowed outwardly, and a spring adapted to actuate said arms.

5 17. In a system such as described, a braking device consisting of a number of arms, a pivotal support for said arms, each said arm being provided with a bearing independent

of the bearing of the other arms, and a spring adapted to actuate said arms. 10

In testimony whereof I affix my signature in presence of two subscribing witnesses.

GEORGE G. SCHROEDER.

Witnesses:

EDMUND W. VAN DYKE,  
BARTON E. BROOKE.