

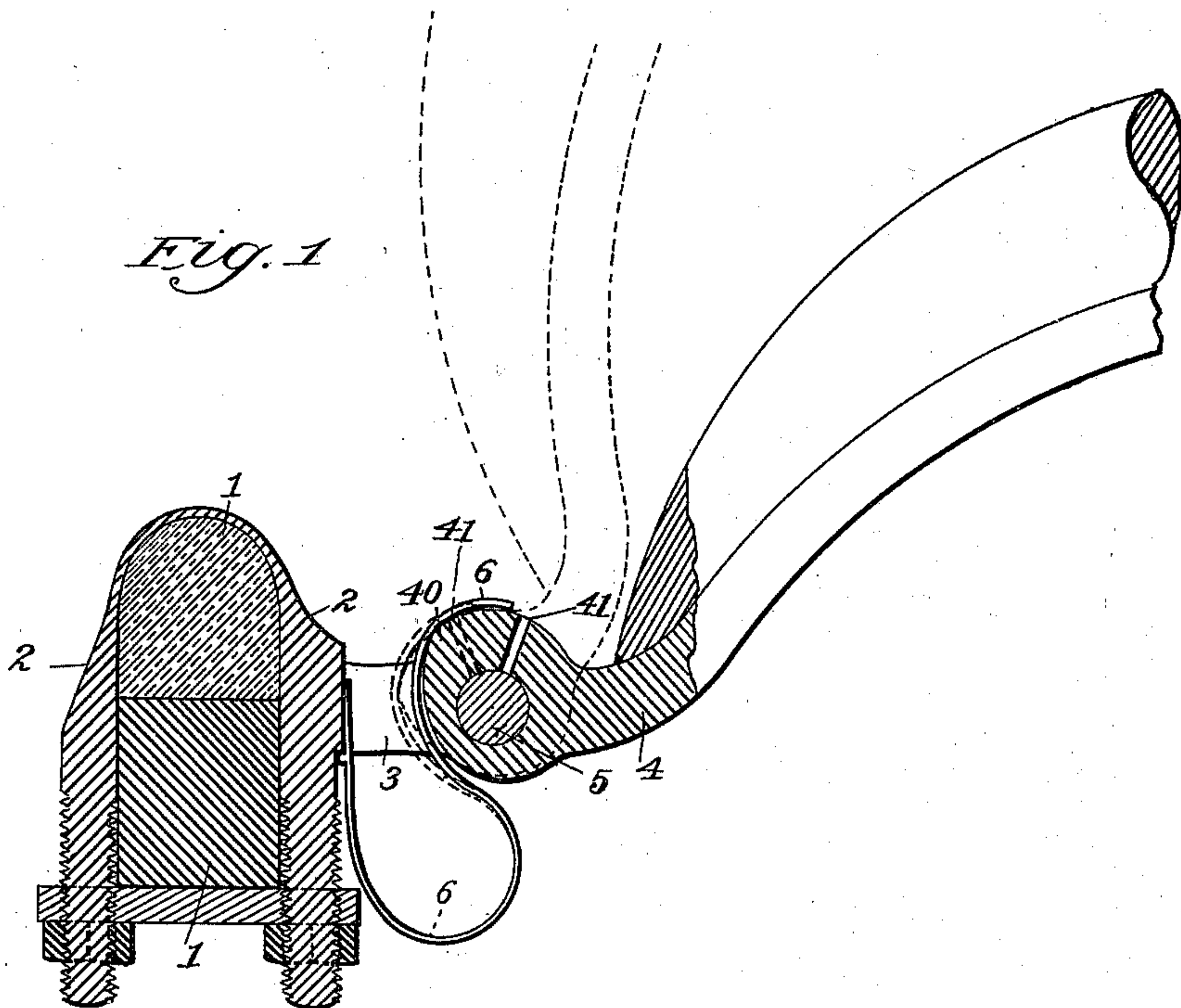
(No Model.)

F. M. BISHOP.  
THILL COUPLING.

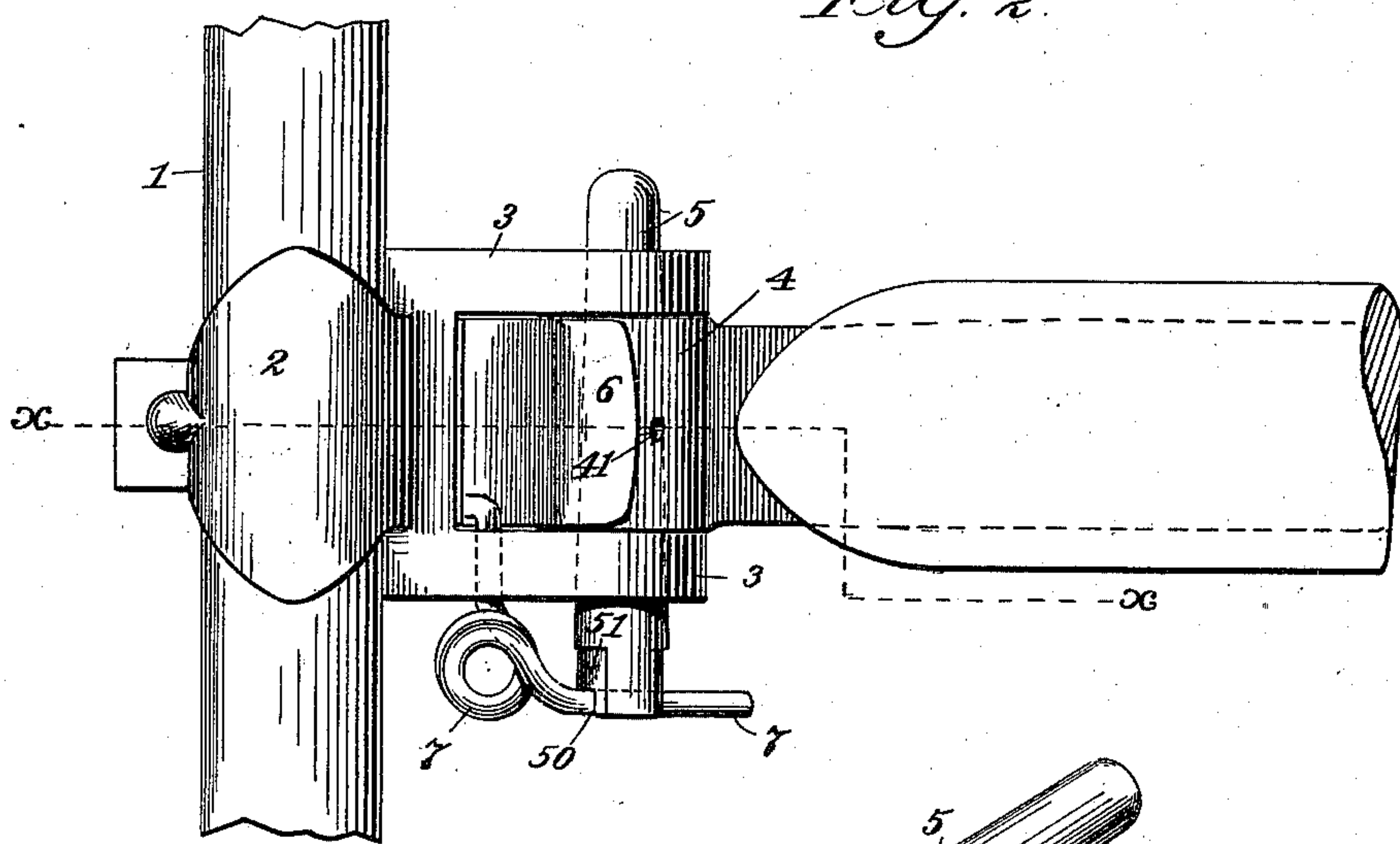
No. 555,998.

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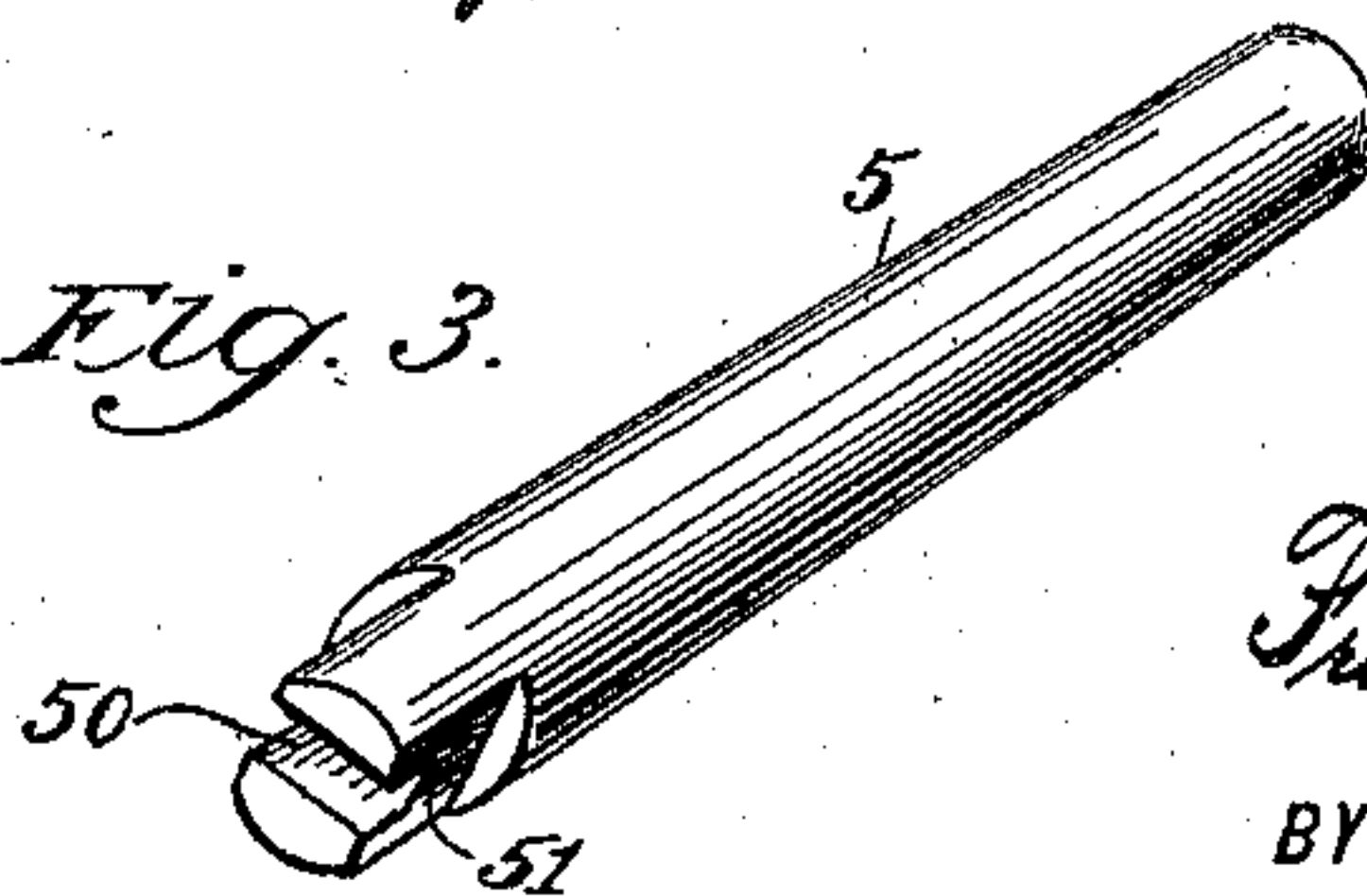
*Fig. 1*



*Fig. 2*



*Fig. 3*



WITNESSES:

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## THILL-COUPLING.

SPECIFICATION forming part of Letters Patent No. 555,998, dated March 10, 1896.

Application filed August 30, 1895. Serial No. 560,985. (No model.)

*To all whom it may concern:*

Be it known that I, FRANCIS M. BISHOP, of Newark Valley, in the county of Tioga and State of New York, have invented a certain new and useful Improvement in Thill-Couplings, of which the following is a full, clear, and exact description, reference being made to the accompanying drawings, forming part of this specification.

This invention relates to improvements in couplings for attaching thills and poles to axles or other parts of vehicles; and the invention consists of a coupling having substantially the structure and comprising one or more of the particular combinations of parts herein described and claimed.

On the accompanying sheet of drawings, Figure 1 is a vertical section of the coupling applied to a vehicle; Fig. 2, a plan of the same, on which the line  $x\ x$  indicates the plane of Fig. 1; and Fig. 3, a detail in perspective of the coupling-pin.

Similar reference-numerals designate like parts in the different views.

The general object of this invention is to so improve the structure of thill-couplings as to lessen their well-known tendency to rattle after a short period of use, and to facilitate the coupling and uncoupling of thills and poles to and from the vehicles to which they are applied.

The drawings represent the coupling secured to the front axle 1 of a vehicle by means of a clip 2, like that with which thill-couplings are commonly provided. To this clip or another suitable support in lieu thereof are affixed the lugs 3. The iron 4 of the thills or pole is supported between the lugs 3 by a pin 5 passing through the lugs and iron, and a spring 6 bears against the end of the iron 4 and overlaps a portion of its upper surface. The pin 5 tapers from end to end, as shown in Fig. 3, and is made of steel and hardened, and the holes through which the pin passes in the lugs 3 and iron 4 also taper in conformity with the pin. The upper part 40 of the iron 4 constitutes a cam, which is arranged to push backward the part of the spring 6 that bears against the iron when the ends of the thills are raised from the ground, it being assumed that the vehicle is provided with thills instead of a pole, so that the pressure

of the spring against the iron is then greater than it is when the ends of the thill rest on the ground. In the upper part of the iron 4 is an oil-hole 41, through which oil may be applied to the pin 5. When the thills are held as they are if the vehicle is attached to a horse, the oil-hole is covered by the spring 6, so that dust and water are then excluded from it; but when the ends of the thills rest on the ground the oil-hole is exposed in front of the spring, where oil may be easily conveyed to it.

In the larger end of the pin 5 is a slot 50, and the sides of the pin are flattened next to that end, as appears at 51, to render it easy to turn the pin with a wrench or with the fingers.

A spring 7, secured in one of the lugs 3 and resting in the slot 50 in the pin 5, serves to prevent the pin from turning on its axis and to hold it under constant pressure in contact with the tapering bearing-surfaces within the lugs and thill-iron. This spring is adapted to turn in the lug and may be forced out of the slot in the pin and turned far enough with the fingers to allow the pin to be removed from and replaced in the lugs without hindrance from the spring.

In order to prevent the coupling from rattling, especially after its parts have become worn to some extent, it is essential that the spring 6 should be quite stiff and capable of exerting strong pressure against the iron 4 when the vehicle is in use; but such a spring would render it difficult to remove the pin or bolt of the coupling from the lugs 3 and replace it therein, were it not for the action of the cam 40 and that of the tapering pin in relation to the spring. When the parts of the coupling are in the relative positions in which they are represented in Fig. 1 in full lines, the ends of the thills or that of the pole then resting on the ground, the pressure of the spring 6 ought to be great enough, and in this coupling is great enough, to hold the thill-iron tightly against the pin, so that it would not be easy to remove the pin from the lugs if it was not made tapering; but the difficulty of removing an ordinary cylindrical pin from the lugs would be much less than that of replacing it in them would be. The pin being out, the spring 6 forces the iron 4 forward so



that the hole in the iron does not register with those in the lugs, and a cylindrical pin could not be easily made to enter the iron, but the small end of the tapering pin is inserted in the large end of the hole in the iron without trouble and then the pin is driven through the iron and the other lug, the pin acting as a wedge whereby the iron and spring are forced backward into their proper positions. Moreover, the cam 40 is adapted by this action of the pin upon the iron to supplement the action of the pin upon the spring, the result being that the whole pressure of the spring upon the iron when the vehicle is in use is due to the successive action of the pin and cam upon the spring, as described. The relative positions of the cam and spring when the vehicle is in use are indicated by dotted lines in Fig. 1. In consequence therefore of the combined effects of the tapering pin and cam the tendency of the coupling to rattle in a short time may be effectually overcome by the use of a spring having the proper resiliency and strength to compensate for wear without the disadvantage of rendering it difficult to attach the thills or pole to and detach them from the vehicle.

The means described for oiling the pin and for preventing it from turning on its axis and keeping it always snug in the lugs and thill-iron help to protect the coupling from wear, as well as to render it noiseless and its use convenient.

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

1. In a thill-coupling, comprising lugs 3, a thill-iron pivoted between the lugs, and a spring 6 overlapping the upper part of the iron, the oil-hole in that part of the thill-iron which is covered by the spring when the ends of the thills are elevated and which is exposed when they rest on the ground, substantially as described.

2. In a thill-coupling, comprising a thill-iron pivoted to a support, a shield for an oil-hole overlapping the upper portion of the thill-iron, and an oil-hole 41 in that part of the thill-iron which the shield covers when the thills are elevated and which is exposed when they rest on the ground, substantially as described.

3. In a thill-coupling, comprising lugs 3, the

combination of a spring 6 adapted to bear against the thill-iron, a thill-iron having a tapering hole therein and having the thickness of the iron between the hole and the surface on which the spring 6 bears greater than the distance between the spring and the holes in the lugs when the spring rests in its natural position, and a tapering pin whose diameter at its smaller end is less than that of the uncovered portion of the larger end of the hole in the thill-iron when the spring is in its natural position and the bearing-surfaces of the thill-iron and spring are in contact, substantially as described.

4. In a thill-coupling, comprising lugs 3, the combination of a spring 6 adapted to bear against the thill-iron, a thill-iron having a tapering hole therein and having the thickness of the iron between the hole and the surface on which the spring 6 bears greater than the distance between the spring and the holes in the lugs when the spring rests in its natural position, and a tapering pin whose diameter at its smaller end is less than that of the uncovered portion of the larger end of the hole in the thill-iron when the spring is in its natural position and the bearing-surfaces of the thill-iron and spring are in contact, and in whose larger end is a slot 50, and a spring 7 secured in one of the lugs and adapted to turn therein and to rest in the slot 50, substantially as described.

5. In a thill-coupling, comprising lugs 3, the combination of a spring 6 adapted to bear against the thill-iron, a thill-iron having a tapering hole therein and having a cam 40 and having the thickness of the iron between the hole and the surface on which the spring 6 bears greater than the distance between the spring and the holes in the lugs when the spring rests in its natural position, and a tapering pin whose diameter at its smaller end is less than that of the uncovered portion of the larger end of the hole in the thill-iron when the spring is in its natural position and the bearing-surfaces of the thill-iron and spring are in contact, the cam being arranged to act against the spring 6 as the thills are raised substantially as described.

FRANCIS M. BISHOP.

In presence of—

S. W. BYINGTON,  
C. H. RANDALL.