

(No Model.)

W. S. WILSON.

3 Sheets—Sheet 1.

HORSE RAKE.

No. 305,649.

Patented Sept. 23, 1884.

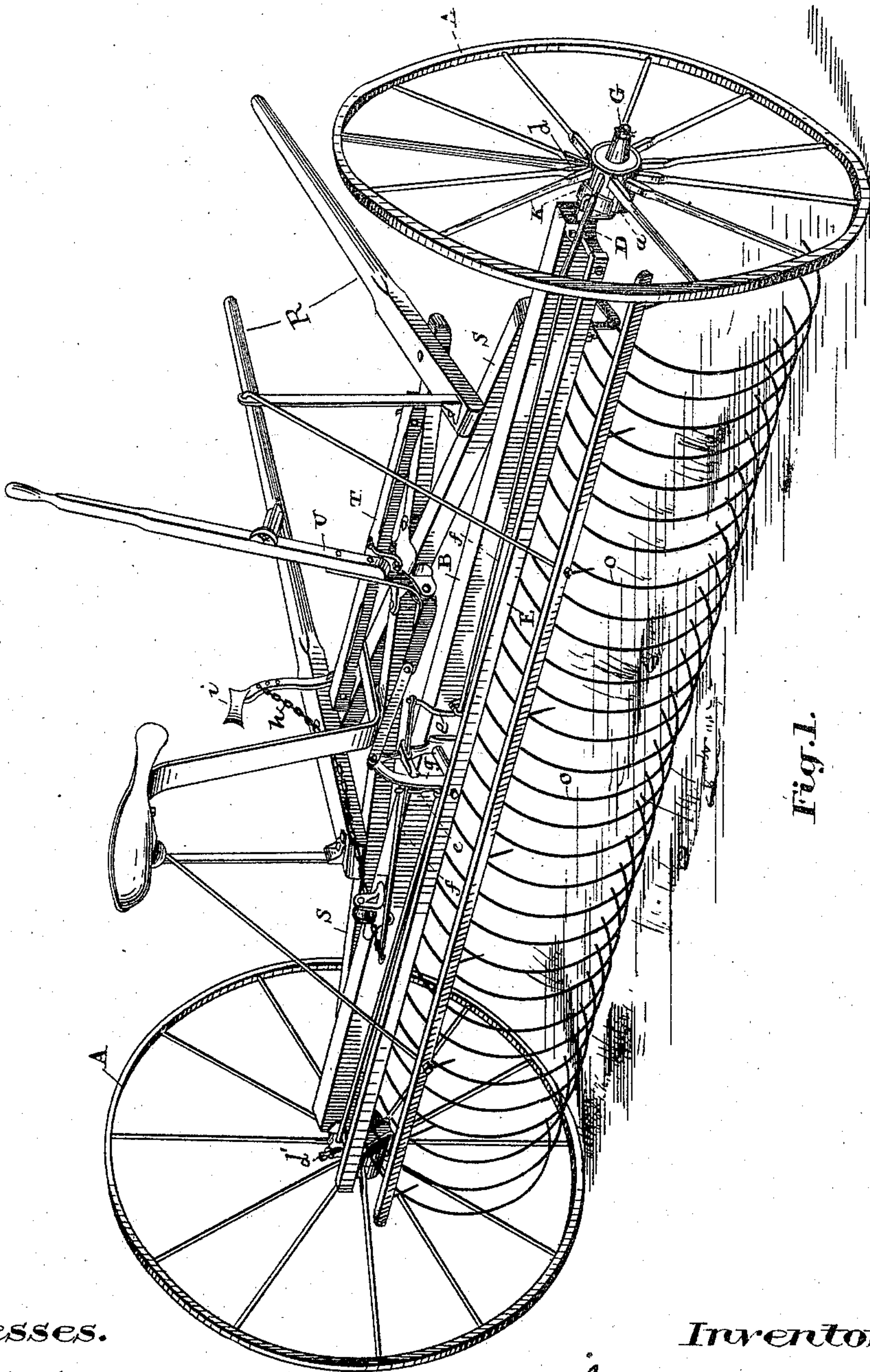


Fig. 1.

Witnesses.

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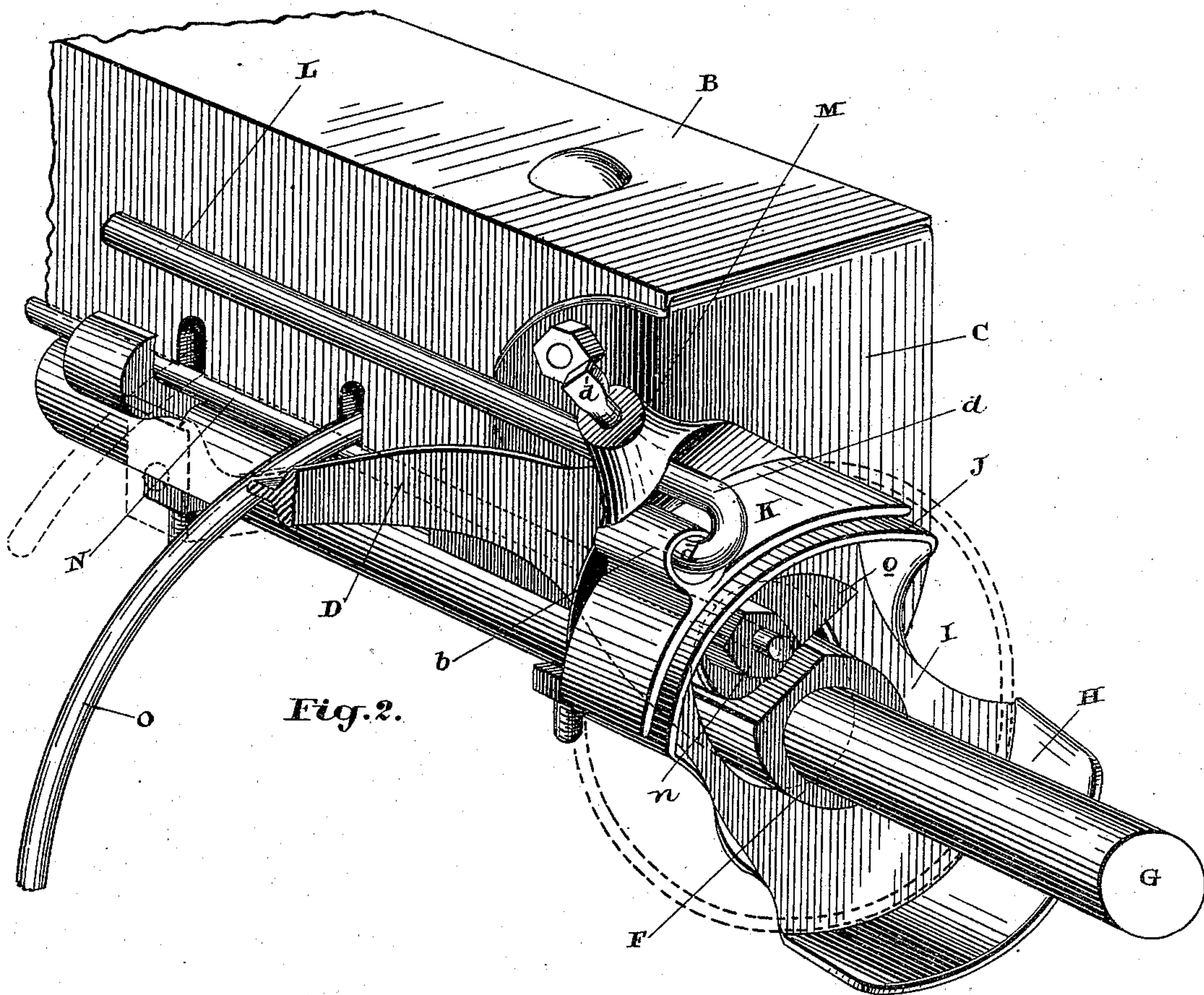


Fig. 2.

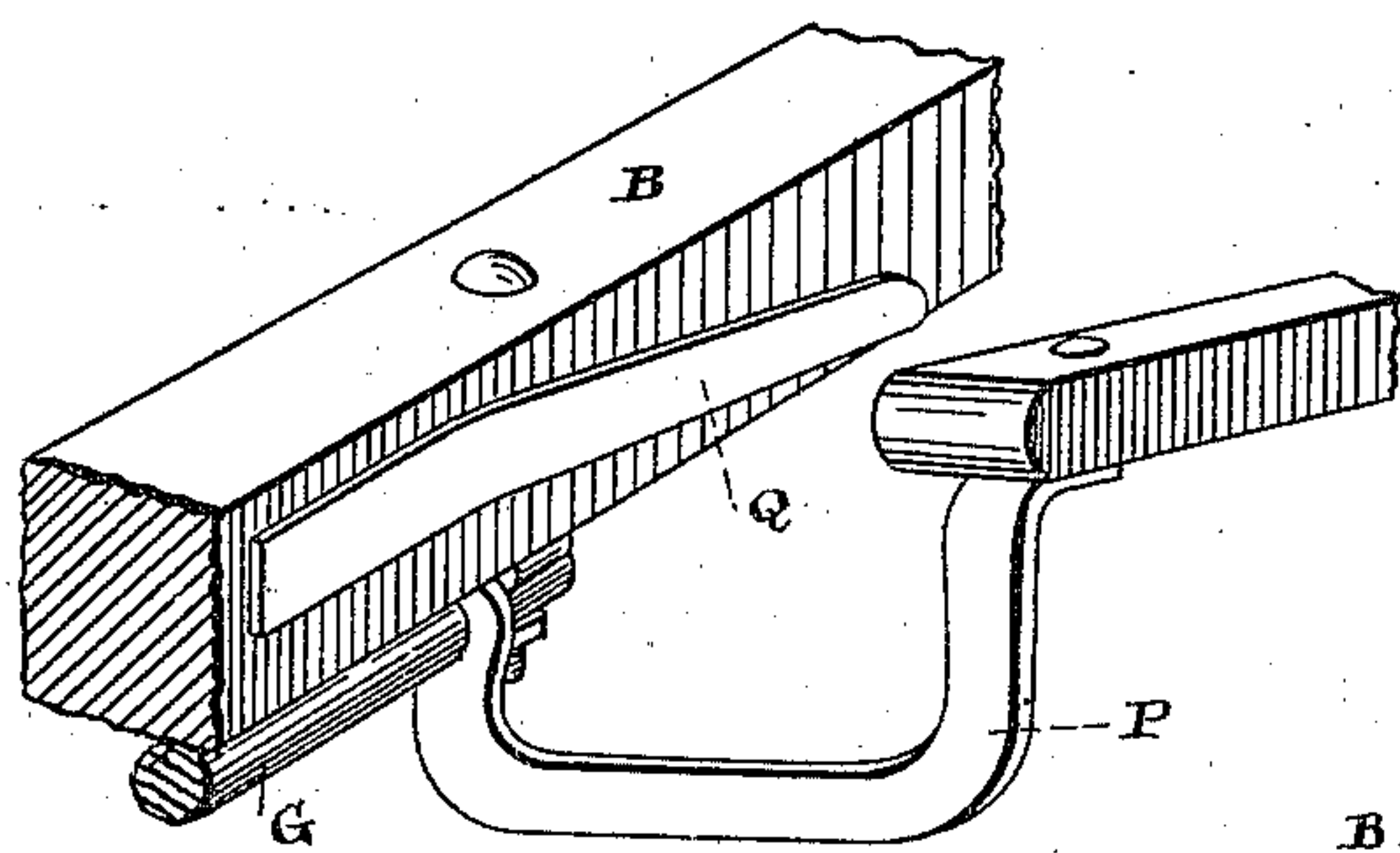


Fig. 3.

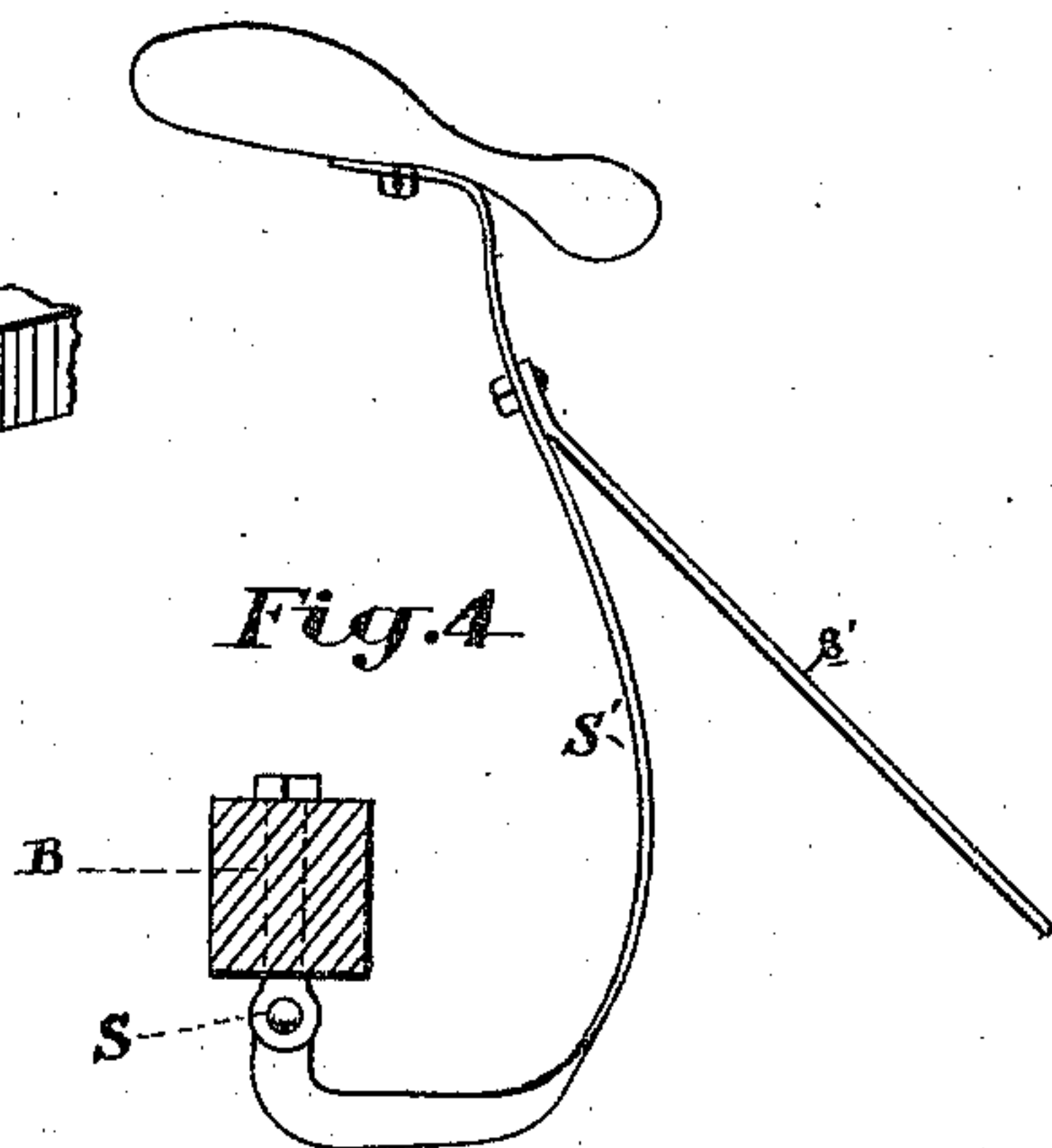


Fig. 4.

Witnesses.

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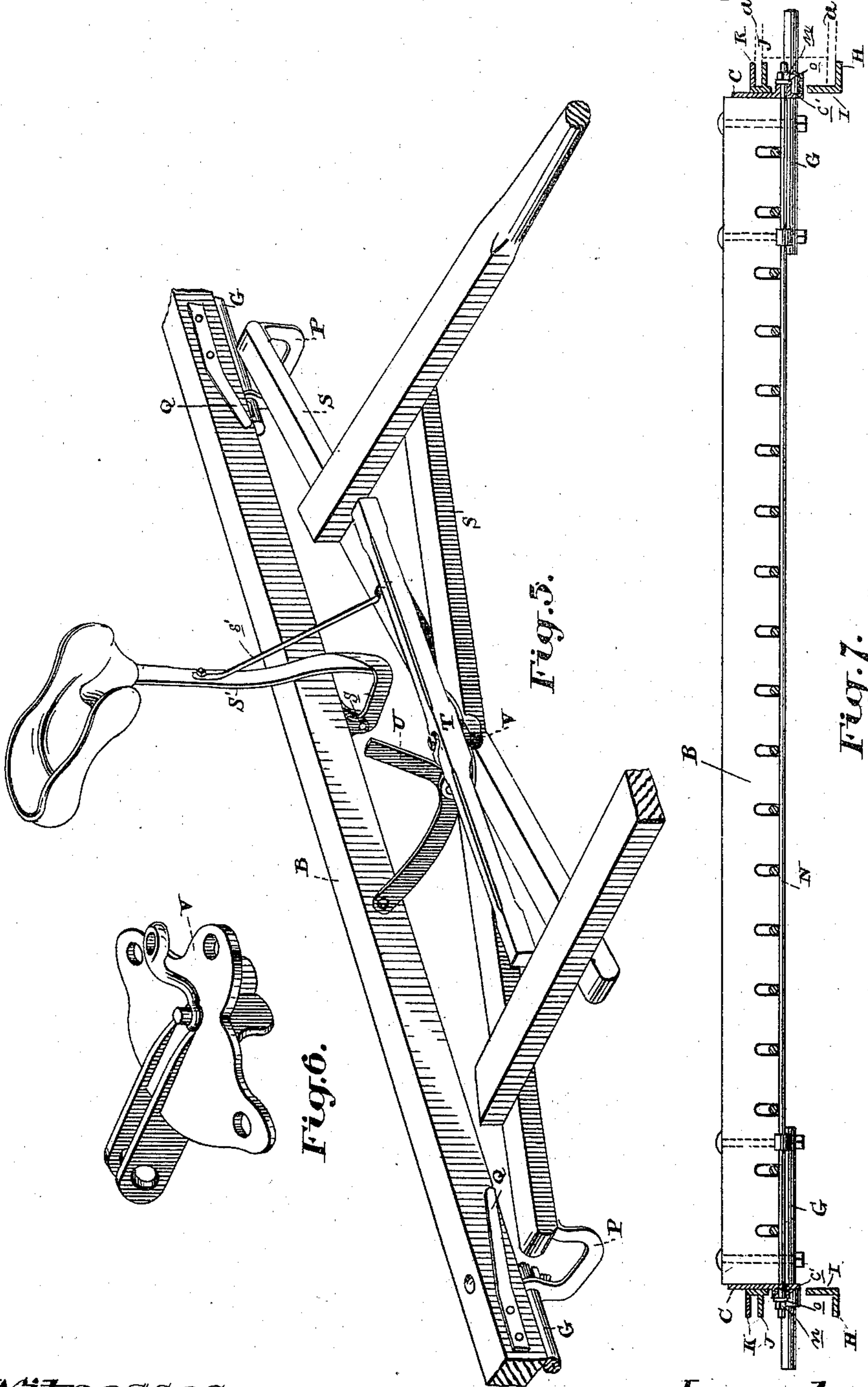
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# UNITED STATES PATENT OFFICE.

WILLIAM SANDFIELD WILSON, OF AYR, ONTARIO, CANADA.

## HORSE-RAKE.

SPECIFICATION forming part of Letters Patent No. 305,649, dated September 23, 1884.

Application filed October 27, 1883. (No model.) Patented in Canada December 11, 1883, No. 18,275.

*To all whom it may concern:*

Be it known that I, WILLIAM SANDFIELD WILSON, of the village of Ayr, in the county of Waterloo, in the Province of Ontario, Canada, mechanic, have invented certain new and useful Improvements in Horse-Rakes; and I do hereby declare that the following is a full, clear, and exact description of the same.

The invention relates to that class of horse-rakes in which the carrying-wheels revolve freely on the axle, and to which axle the rake-teeth are attached.

The object of the invention is to devise a simple and effectual friction dumping device, and to otherwise construct the machine so as to make it simple and effectual in its operation; and it consists, essentially, in loosely attaching to the end of the axle a flanged clamp adapted and arranged, in connection with a cap, to clamp the inner and outer surfaces of a pulley-shaped hub formed on the carrying-wheel, the said friction-clamp being operated by a rod journaled on the axle and operated by the dumping-lever, as hereinafter more particularly explained.

The peculiar plan of bracing the thills also forms a feature in my invention, as does also a plan for trussing the wooden axle, and other features which will be hereinafter more particularly explained.

Figure 1 is a perspective rear view of my improved horse-rake. Fig. 2 is a perspective view on an enlarged scale, showing in detail the end of the axle with the friction-clamp and parts connected. Fig. 3 is a perspective view showing the connection between the thill-frame and axle. Fig. 4 is a side elevation showing the seat attached to the axle. Fig. 5 is a perspective detail view showing the manner of bracing the thills, with their connection to the axle. Fig. 6 is a perspective detail view of the center casting for the bracing-rods of the thills, the dumping-lever, and whiffletree. Fig. 7 is a rear elevation of the axle, showing the truss-rod.

In the drawings, A are the carrying-wheels, and B the wooden axle. Each end of this axle is capped by a bracket, C, which forms a protection for the end of the axle, and has an arm, D, extending from it to carry the rider-bar E. This bracket C is provided with a projection,

c', the object of which will be hereinafter explained.

F is a boss cast on the bracket C, and forming part of the spindle G. This spindle, which is located at the end of the axle B, passes through the wheel A, and is suitably attached to the said wheel, so as to permit the wheel to revolve freely on it without allowing it to fall off. Each wheel A has an inwardly-projecting hub, a, formed on it in what may be termed a "pulley shape"—that is to say, a rim having an inner and outer surface. This rim or pulley-shaped hub a forms a bearing surface for the friction-clamp, which is formed in the following manner: A flange, H, extends outwardly from the plate I, and is adapted to fit the outer surface of the pulley-shaped hub a.

J is another flange attached to the plate I, on the side opposite to the flange H, and adapted to fit the inner surface of the pulley-shaped hub a. The plate I has an oblong hole made in it to fit over the boss F, and is supported and operated by the rod L, as hereinafter described.

K is a friction-cap adapted to fit the outer surface of the pulley-shaped hub a. This friction-cap has an eye, b, through which the hooked end d of the rod L passes. This rod L has bearings near the center of the axle B, and in a hole made in the extension-piece M, which is attached to or forms part of the plate I. When the wheel A is put in position, its pulley-shaped hub a passes between the cap K and flange J, while the other flange, H, is located nearly against the outer surface of the pulley-shaped hub a. Owing to the positions of the flanges H and J and the friction-cap K, and also the fact that the rod L and hook d support the plates I and K, respectively, the said flanges and cap are caused to approach each other, thus clamping the hub a when the rod L is rolled in its bearings. The motion of course need be but very slight, being merely sufficient to cause the clamps to clasp or release the hub. The hole made through the extension-piece M of the plate I is slightly larger than the rod L, a set-screw, d', being employed for the purpose of reducing the size of the hole and forming a fulcrum-point for the hooked rod L. The position of the fulcrum-point is thereby adjustable. I



have spoken of only one rod, and have referred to Fig. 2, where only one set of clamps is shown; but it will of course be understood that the other end of the axle is similarly provided with friction-clamps, and that there is a rod for each end of the axle.

With the view of operating the two rods simultaneously, a crank, *e*, is formed on the inner end of each rod. These cranks are connected to the horizontal lever *f*, which is pivoted or fulcrumed on the quadrant-bracket *g*. The end of the horizontal lever *f* is connected by a chain, *h*, with a foot-lever, *i*, which is pivoted on the thill-frame, as indicated. By pressing on the foot-lever *i* the lever *f* acts against the cranks *e*, causing the rods *L* to rock in their bearings, and, as the outer ends of these rods are connected, as described, to the friction-clamps, these latter are caused to clamp the hub *a*. It will of course be understood that the hooks *d*, formed upon the outer ends of the rods *L*, are bent in a reverse direction to each other, so that both clamps work simultaneously, notwithstanding the fact that the rod leading to one end of the axle rolls in an opposite direction to the rod leading to the other end of the axle.

*N* is a truss-rod extending from end to end of the axle *B*, immediately below its bottom edge, so as to form a support for the teeth *O*, which are attached to the axle *B*, and extend from the rear end of the said axle through elongated holes, as indicated. The outer ends of the truss-rod *N* pass through the bracket *C* and through the plate *I*. Each end is provided with a suitable nut, *n*, so that sufficient tension may be thrown upon the rod to suitably truss the axle, while the hole through the plate *I* is made oblong, so that said plate may move when the clamps are being operated.

*o* is a washer of sufficient size to prevent its passing through the slot in the plate *I*, and is held in bearing contact with the face of the projection *e'* on the plate *C* by the nut *n* on the truss-rod *N*, on which the said washer is mounted. By this construction the space between the said washer and the plate *C* is greater than the thickness of the plate *I*, which is loosely confined between the two in such a manner as not to interfere with its adjustability, but still prevent its lateral displacement.

In order to relieve the horse as much as possible from the weight of the driver, I arrange the seat so that said weight shall be in the vertical plane of the axis of the carrying-wheels, or slightly in rear of the same. This is effected either as shown in Fig. 1 or as shown in Figs. 4 and 5. In the latter case the seat is provided with two supports, one, *S'*, journaled below the axle *B*, its pivot-point *S* being on a line with the center of the spindles *G*, upon which the axle *B* rocks when the rake is being dumped. A brace-rod, *s'*, having one end rigidly secured to the thills and the other to the support *S'*, serves to stay the seat. This construction allows of the axle

being rocked and the rake dumped without changing the relative position of the seat. In order to permit the axle *B* to rock in this manner, it is necessary that the thill-irons *P* should be set as shown in Figs. 3 and 5. In order to relieve these thill-irons *P* of the shock caused by the axle striking against them, and also to cause the said axle to recover itself quickly when dumped, I provide the spring-plates *Q*, fixed to the axle *B*, and arranged to come in contact with the thill-iron *P* when the axle is rolled to dump the rake. I connect the thills *R* by the diagonal cross-bars *S*, to the outer ends of which are connected the thill-irons *P*.

In order to strengthen the connection between the cross-bars *S*, and at the same time furnish a strong point for the pivoting of the whiffletree *T* and the hand dumping-lever *U*, I provide a casting, *V*, which is shaped substantially as shown in Fig. 6.

What I claim as my invention is—

1. In a horse-rake, the combination of the axle provided with spindles upon which the wheels revolve freely, a pulley-shaped hub formed on the inside of each wheel, a pendent plate movably connected to the axle and loosely surrounding the spindle, and having two friction-flanges opposite to each other, one flange adapted to fit the outer surface of the pulley-hub and the other flange the inner surface thereof, and mechanism adapted to actuate the plate so as to press its flanges against the pulley-shaped hub, and thereby form a friction-connection between the wheel and axle, as and for the purpose herein specified.

2. In a horse-rake, the combination of the axle, the spindles, the wheels revolving freely thereon, the rake-teeth connected to said axle, a plate movably attached to the axle, and having two projecting friction-flanges formed on it to fit against the pulley-shaped hub of the wheel, as specified, and a curved cap adapted to fit the outer surface of the pulley-shaped hub, and located immediately over the flange fitting against the inner surface of the hub, and a crank-rod journaled in the plate and having its crank end attached to the cap in such a manner that by rocking the rod the cap and flange are caused to press against the hub, substantially as and for the purpose specified.

3. In a horse-rake, the friction dumping device consisting of the plate *I*, having the flanged clamps *H* *J*, and the cap *K*, fitting against the pulley-shaped hub *F*, in combination with a crank-rod, *L*, journaled in the plate and connected to the cap, as specified, and the set-screw *d'*, arranged to act against the rod *L*, substantially as and for the purpose specified.

4. In a horse-rake, the combination of the wooden axle, the spindles secured thereto, the wheels revolving freely on said spindles, the rake-teeth attached to said axle, an iron bracket fixed to each end of the axle, and provided with a boss forming part of the wheel-spindle, the flanged clamp supported by said boss, and



an arm extending from said bracket to support the end of the rider-bar, substantially as and for the purpose specified.

5 In a horse-rake, the friction dumping device consisting of a movable flanged clamp and a cap arranged to clamp the inner and outer surfaces of the pulley-shaped hub of the wheel, in combination with a rod journaled on the axle, and having on its inner end a crank  
10 connected to the dumping-lever, and on its outer end a hook upon which the clamping-cap is suspended, substantially as and for the purpose specified.

6 In a horse-rake, the combination of the  
15 wooden axle, the spindles fixed thereto, the wheels revolving freely on said spindles, the rake-teeth secured to the axle, and a truss-rod extending from end to end of the axle on its bottom side and supporting the rake-teeth,  
20 substantially as and for the purpose specified.

7 In a horse-rake, the wheels revolving freely on spindles fixed to a wooden axle, the rake-teeth attached to said axle, and the flanged clamping-plate, in combination with a truss-rod, extending from end to end of the axle immediately below its bottom edge, so as to form  
25 a support for the teeth, the end of the rod passing through elongated holes in the flanged clamp, as described, and provided with nuts to  
30 hold the same in position, substantially as and for the purpose specified.

8 In a horse-rake, the combination of the wooden axle B, the wheel-spindles G, and a

driver's seat arranged to extend behind or immediately above the axes of the carrying-  
35 wheels, and provided with two supports, one of which is rigidly connected with the thills and the other pivotally secured to the axle, with its pivot-point in line with said spindles, substantially as and for the purpose specified. 40

9 In a horse-rake, the rake and means by which it is dumped by the rocking of the axle, in combination with the thills, the irons by which said thills are pivoted to the axle, and  
45 springs Q, attached to the axle, and arranged to come in contact with said thill-irons, substantially as and for the purpose specified.

10 In a horse-rake, the thills R, braced together by the diagonally-crossed bars S, extending outwardly to a point near the carrying-wheels, in combination with thill-irons  
50 fixed to the outer ends of the cross-bars and pivoted to the axle, as specified.

11 In a horse-rake, the combination of the thills braced together by diagonal crossed bars  
55 S, the whiffletree T, the hand dumping-lever U, and a metal bracket, V, bolted to the cross-bars S, and shaped to form a pivot-point for the lever and a pivot-point for the whiffletree, substantially as and for the purpose specified. 60

Signed at the village of Ayr, Province of Ontario, this 5th day of October, A. D. 1883.

WILLIAM SANDFIELD WILSON.

In presence of—

JAS. S. BLACK,

W. W. WATSON.