

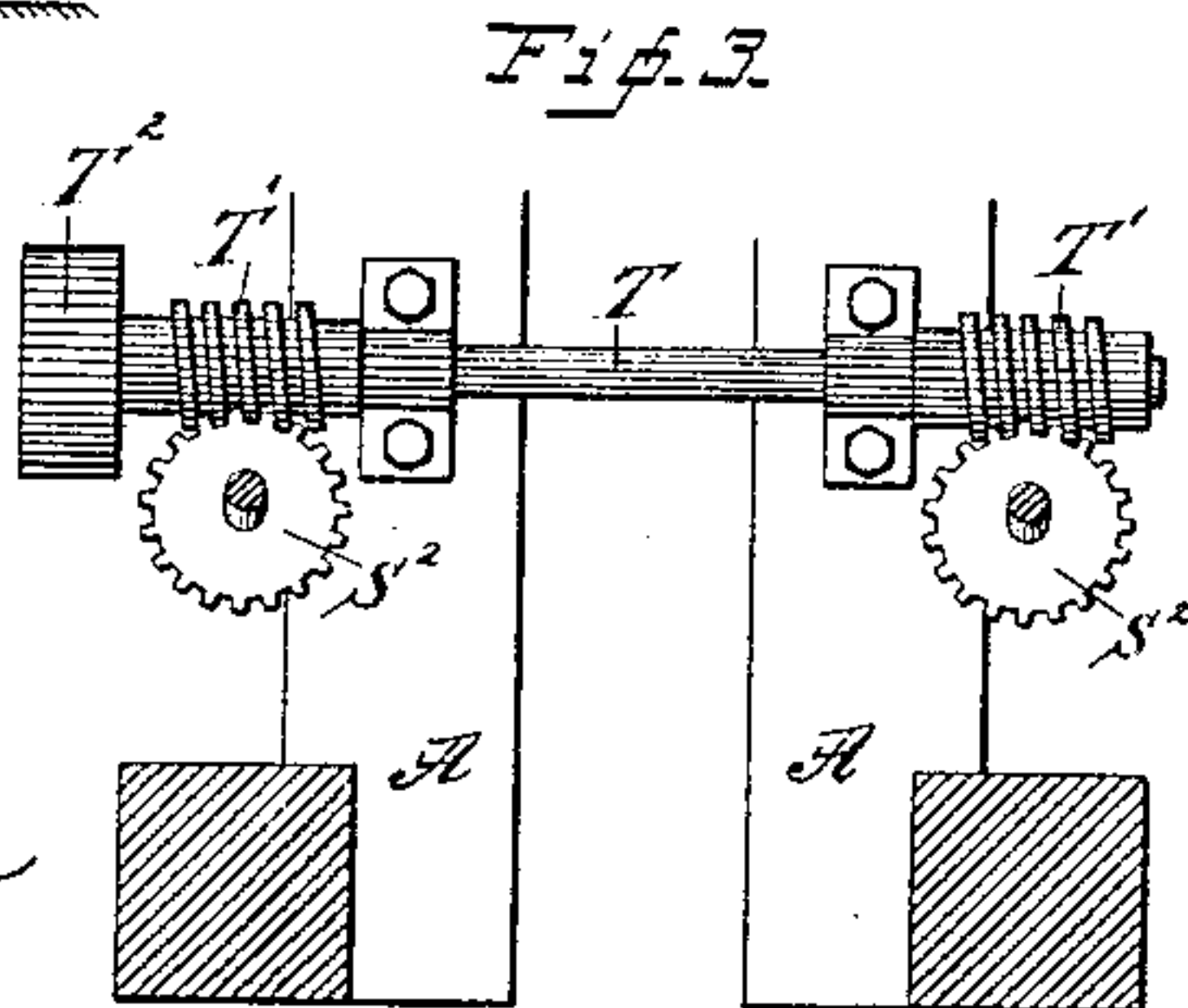
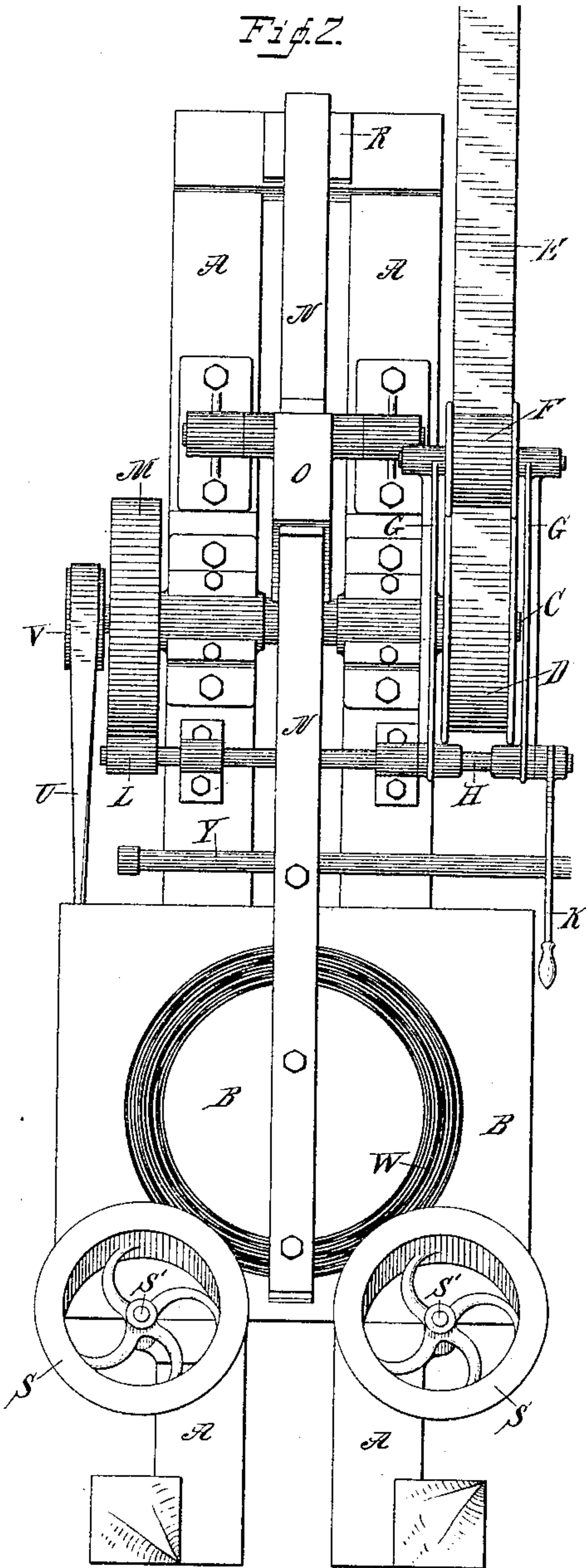
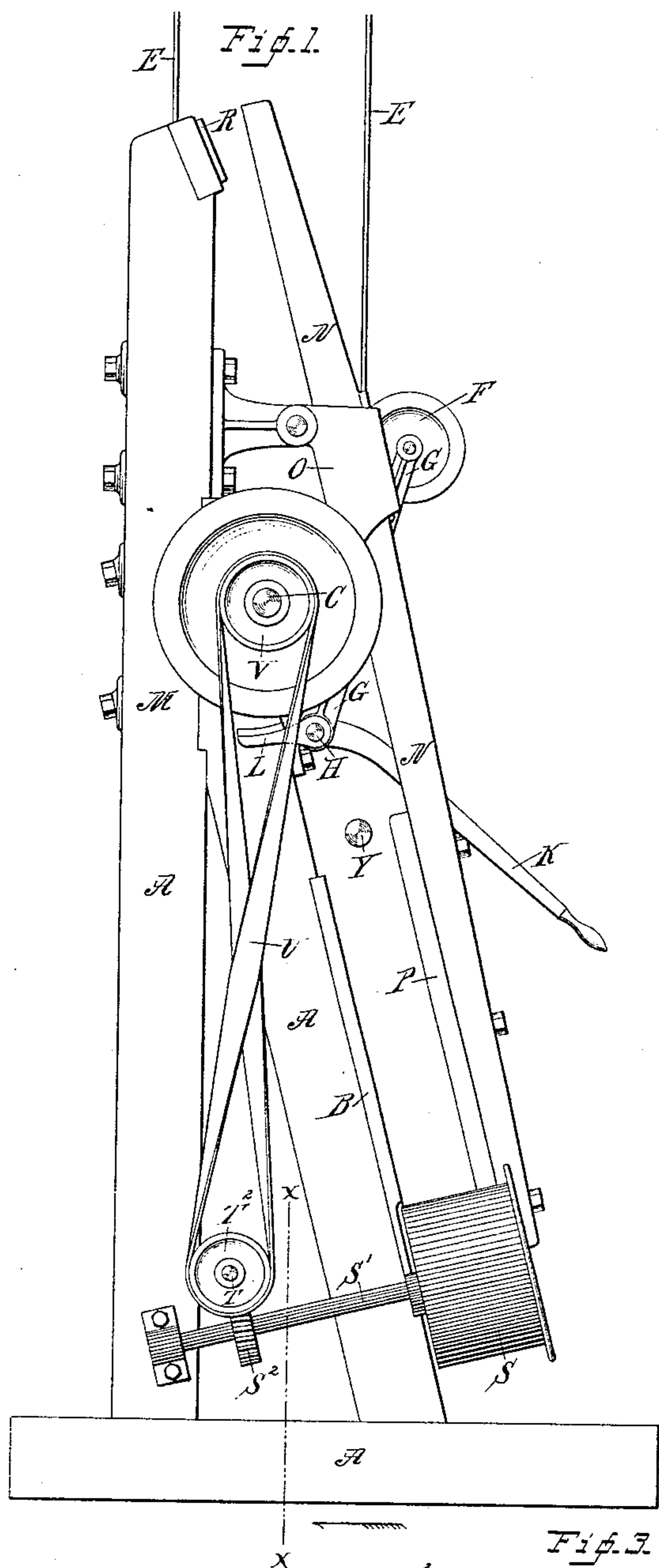
(No Model.)

2 Sheets—Sheet 1.

H. BORCHARDT.
MACHINE FOR CLEANING WIRE.

No. 326,939.

Patented Sept. 29, 1885.



Witnesses,

C. C. Perkins.
C. E. Ruggles

Inventor,
Hugo Borchardt
By A. M. Wooster
att'y.

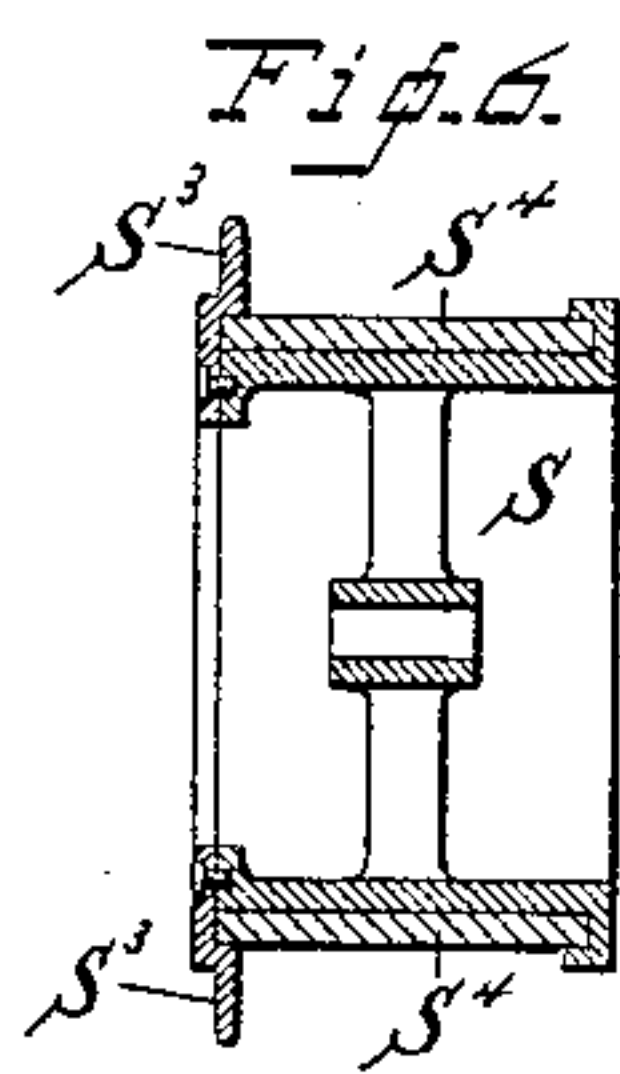
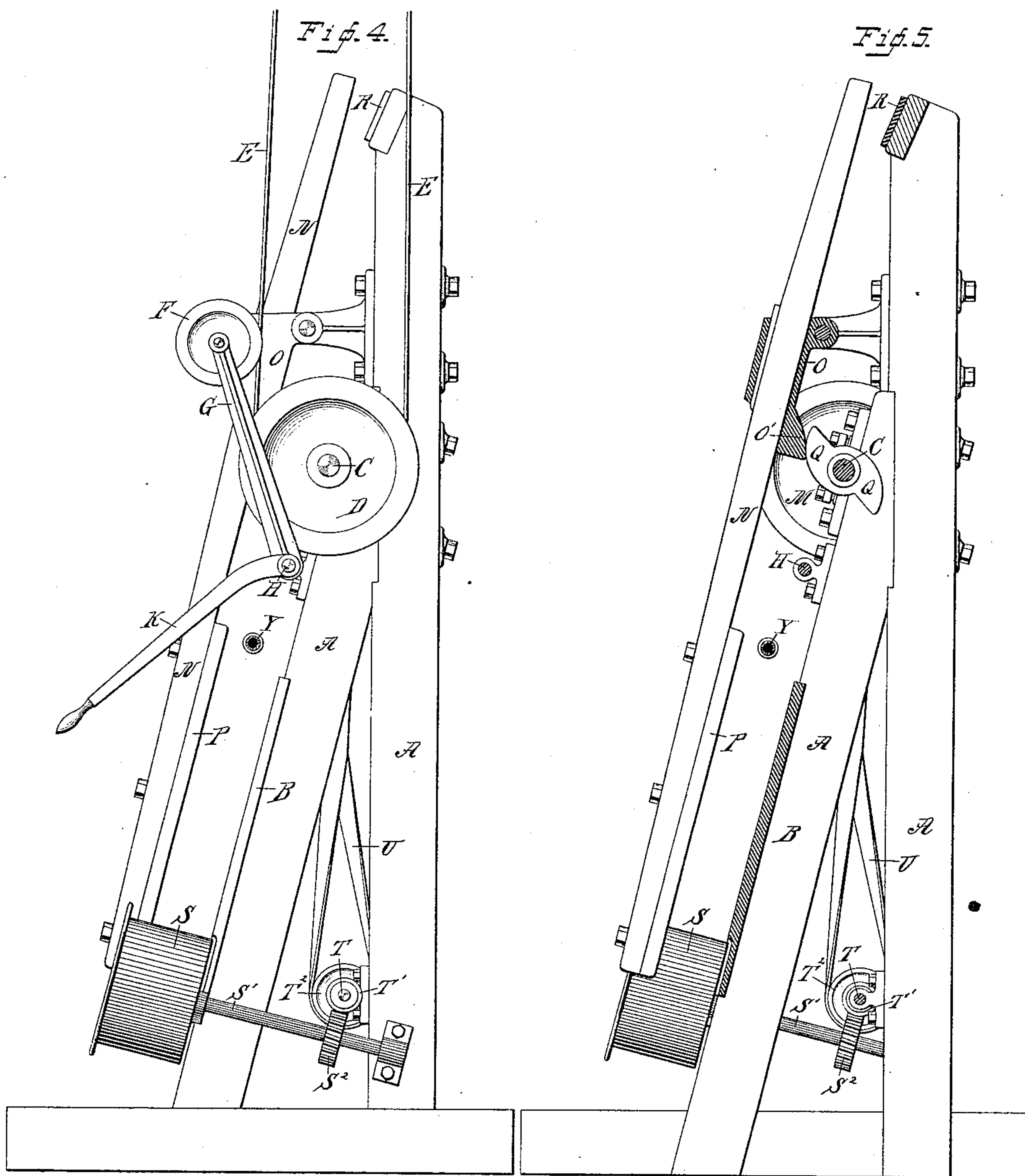
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UNITED STATES PATENT OFFICE.

HUGO BORCHARDT, OF BRIDGEPORT, CONNECTICUT.

MACHINE FOR CLEANING WIRE.

SPECIFICATION forming part of Letters Patent No. 326,939, dated September 29, 1885.

Application filed August 3, 1885. (No model.)

To all whom it may concern:

Be it known that I, HUGO BORCHARDT, a citizen of the United States, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Machines for Cleaning Wire; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention has for its object to produce a machine that will quickly and thoroughly remove the scale of oxide from coils of wire by beating them. It is of course well understood by those familiar with the art of wire-working that the coils of wire when removed from the annealing-pots are covered with a scale of oxide, which must be removed before any further operations can be proceeded with. Likewise in the tempering of certain grades of wire—as, for example, piano-wire—hard scales of oil and oxide form upon the surface, which must of course be removed before the wire can be drawn to smaller sizes. The first step toward the removal of this scale is ordinarily to dip the coils of wire in a weak solution of sulphuric acid. After the acid bath there have heretofore been three principal methods of manipulating the wire to remove the scale: first, the coils of wire have been tumbled in barrels, the trunnions of which were attached at their traverse axes; secondly, the coils have been lifted by a lever or helve and dropped upon an iron or stone bed, and, thirdly, after being removed from the acid bath, they have been laid upon a table or bed and beaten by three or four men with heavy clubs.

In order to wholly do away with the clumsy and unsatisfactory methods now in use for removing the scale from wire, and at the same time to enable me to weaken and frequently to entirely dispense with the acid bath, I have devised the simple and novel cleaning-machine which I will now describe, referring by letters to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation; Fig. 2, a front elevation; Fig. 3, a section on the line *xx* in Fig. 1; Fig. 4, a side elevation, the point of

view being opposite to that in Fig. 1; Fig. 5, a central section, the beater being left in full lines; and Fig. 6 is a sectional view of a friction-roller, in which the flange is shown as removable and the perimeter faced with wood.

Similar letters denote the same parts in all the figures.

A represents the frame-work of the machine; B, a bed suitably secured to the frame-work, and lying at an angle greater than an angle of forty-five degrees, but not exceeding ninety degrees, to the plane upon which the machine stands.

C is the shaft of the machine, and D a belt-pulley thereon.

E is a belt passing to the main or a counter shaft. (Not shown.)

F is a binder-pulley pivoted at the outer end of arms G, the inner end of said arms being attached to a rock-shaft, H, which is journaled upon the frame-work of the machine.

The rock-shaft is operated by a hand-lever, K, and is provided at its opposite end with a brake, L, which is caused to bear against the periphery of a fly-wheel, M, upon shaft C as soon as the hand is removed from lever K, as will be more fully explained.

N is the beater-helve, which is secured in a holder, O, pivoted upon the frame-work. The under side of holder O is provided with a boss, O', which is engaged by a cam or cams, Q, on the shaft, whereby violent oscillatory movement is imparted to the beater-helve, its center of oscillation being the pivotal point of holder O.

R is a cushion upon the frame-work, preferably a thick pad of rubber, against which the upper end of the helve strikes, and which imparts the momentum necessary to strike a powerful blow after it has been lifted by one of the cams.

S represents a pair of flanged rollers upon the outer ends of shafts S', which are journaled upon the frame-work. The shafts are provided with worm-gears, which are driven by worms T' upon a shaft, T, journaled at the back of the machine. This shaft is provided with a pulley, T², and motion is imparted thereto by means of a belt, U, passing from said pulley to a pulley, V, upon shaft C.

W in Fig. 2 represents a coil of wire sup-

ported by the rollers S, and lying against the bed.

I have shown shafts S' as placed at right angles to the plane of the bed, this being of course the preferable arrangement. An essential feature of my invention is, that the bed shall be placed at an angle greater than forty-five degrees, and not exceeding ninety degrees, to the plane upon which the machine stands, and that the coil of wire shall be caused to rotate while lying against the bed. Rollers S are caused to rotate in the same direction, which of course causes the coil resting between them to rotate in the opposite direction, the arrangement being such that while gravity will cause the coil to lean against the bed, the weight of the coil will be supported by the rollers so that the coil is sure to be rotated thereby. It is of course apparent that if the angle of the bed be less than forty-five degrees the coil will not rotate, as the friction upon the bed will be greater than upon the rollers.

In Fig. 6 I have illustrated a friction-roller for the wire to rest upon, made with a removable flange, S³, and having a face formed of pieces of wood, S⁴, held in position by the flange, which is itself held by screws engaging the edge of the roller. By making the face of wood I greatly increase the friction upon the wire.

Y represents a sprinkling-pipe, from which water is caused to flow in jets upon the coil while it is under the beater-helve, thus washing it perfectly.

The operation is as follows: Belt E runs loosely over pulley D, so that ordinarily shaft C is not rotated. When it is desired to use the machine, a coil of wire is placed in position, as shown in Fig. 2—that is, resting upon rollers S and leaning against the bed. Hand-lever K is then lifted, which presses binder-pulley F against the belt, tightening it, and thus imparting motion to shaft C. As soon as the shaft begins to move motion is imparted through belt U and pulleys T² and V to shaft T, and from this to shafts S', carrying the rollers which support the coil of wire, whereby the coil is caused to rotate under the beater-helve. At the same time the helve itself is caused to oscillate violently by means of cams Q and cushion R, the result being that face-piece P upon the beater-helve is thrown with great force against the face of the coil, which at the same time is being rotated, so that no two successive blows strike in the same place. In practice I preferably so arrange the beater-helve that the blow is somewhat heavier upon the lower side of the coil, thereby increasing the vibration of the separate strands of wire. I ordinarily speed the machine to strike three hundred blows per minute. By placing the wire in a nearly upright position, in addition to securing rotation of the coil, I get the full benefit of the greatest possible vibration that can be imparted to the separate strands of the coil by

the blows of the face-piece, the weight of the coil being almost entirely upon its edge. This arrangement of parts furthermore enables the coil to be thoroughly washed by the sprinkling-pipe while being beaten, and insures the greatest economy in space, the entire machine occupying a space only four feet square.

I do not of course limit myself to the exact details of construction illustrated and described, as it is obvious that various changes may be made without departing in the slightest from the spirit of my invention.

I claim—

1. A machine for cleaning wire, consisting, essentially, of a bed lying at an angle greater than forty-five degrees, but not exceeding ninety degrees, to the plane of the machine, against which the coil of wire leans, and rollers which support the coil and at the same time impart rotation thereto, in combination with a beater-helve the face of which strikes the face of the coil as it is being rotated.

2. In a wire-cleaning machine, a bed against which the coil rests and which lies at an angle greater than forty-five degrees, but not exceeding ninety degrees, to the plane of the machine, and flanged rollers at the base of the bed, which support the coil and impart rotation thereto, in combination with a beater-helve whose face acts upon the face of the coil as it lies against the bed.

3. Bed B and rollers S, in combination with an oscillating beater-helve, a holder therefor, and cams which engage the holder to actuate the helve.

4. Bed B and rollers S, in combination with an oscillating beater-helve, a holder therefor having a boss, O', cams which engage the boss, and a cushion, R, against which the upper end of the helve strikes.

5. The combination, with the bed, rollers, and beater-helve, of a shaft having cams to actuate the beater-helve, and a belt-pulley, a belt passing over said pulley, and a binder-pulley pivoted to arms G, and operated by a hand-lever, whereby the belt is tightened and motion is imparted to the machine.

6. The combination, with the bed, rollers, beater-helve, and shaft having cams, belt-pulley, and fly-wheel, as described, of a rock-shaft having arms by which a binder-pulley is carried, a brake adapted to act on the fly-wheel, and a hand-lever by which the machine is stopped and started.

7. The combination, with the bed, beater-helve, shaft C, having pulley V, and shaft T, having worms T' and pulley T², of the flanged supporting-rollers whose shafts are provided with worm-wheels driven by worms T'.

8. In a wire-cleaning machine, the bed secured to the frame-work at an angle greater than forty-five degrees, but not exceeding ninety degrees, to the plane of the machine, and the beater-helve adapted to oscillate in a plane at right angles to the bed, in combina-

tion with friction-rollers provided with wood faces, and removable flanges which support the coil of wire and impart rotation thereto.

5 9. The bed lying at an angle greater than forty-five degrees, but not exceeding ninety degrees, to the plane of the machine, friction-rollers below the bed, which support and rotate the coil of wire, and a beater-helve adapted to oscillate in a plane at right angles

to the bed, in combination with pipe Y, from 10 which water is thrown upon the coil as it is rotated under the beater-helve.

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

HUGO BORCHARDT.

Witnesses:

A. M. WOOSTER,

A. B. FAIRCHILD.