

(No Model.)

3 Sheets—Sheet 1.

W. A. WHEELER.
EDGE CURLING MACHINE.

No. 316,711.

Patented Apr. 28, 1885.

Fig. 1.

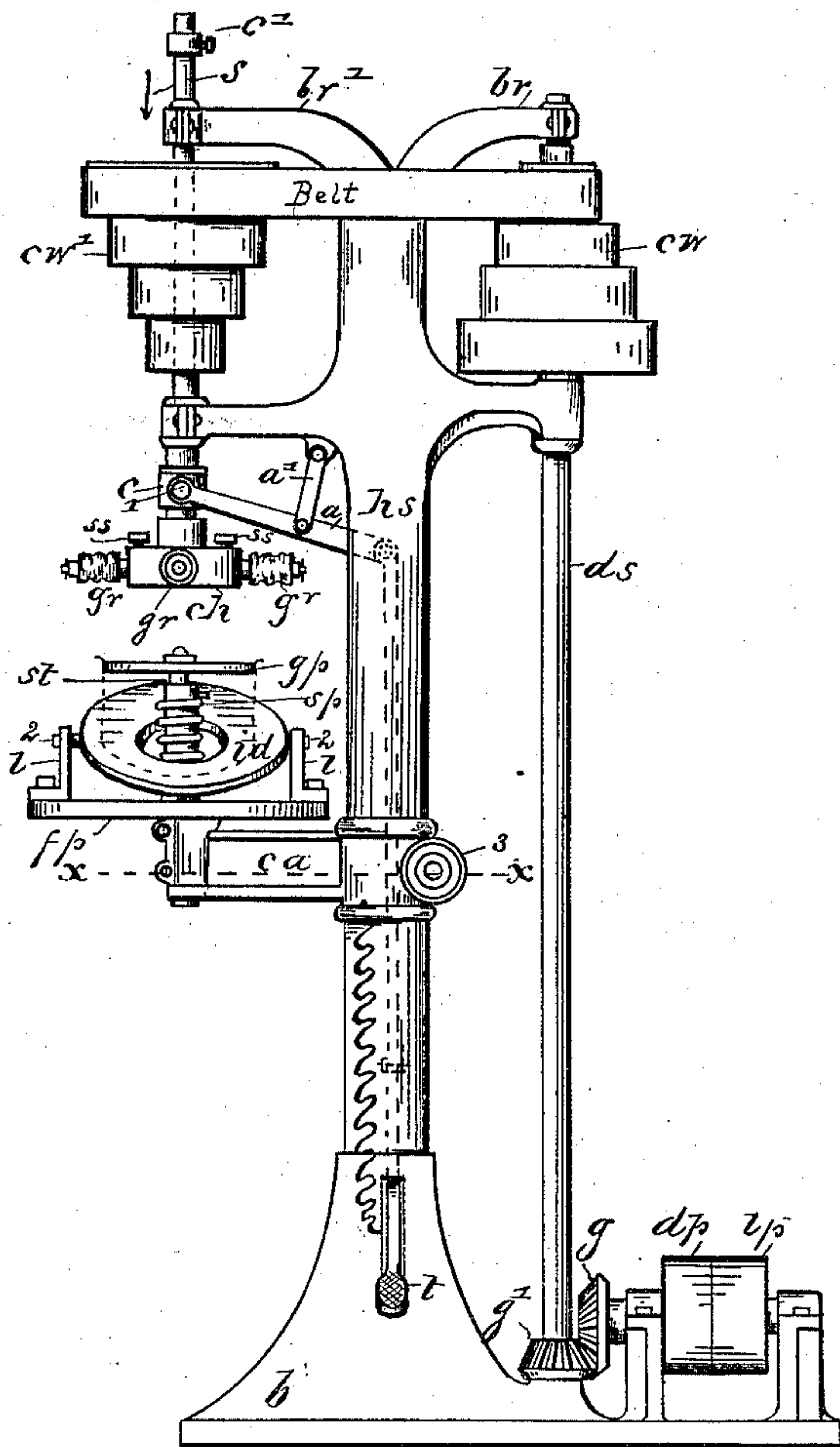
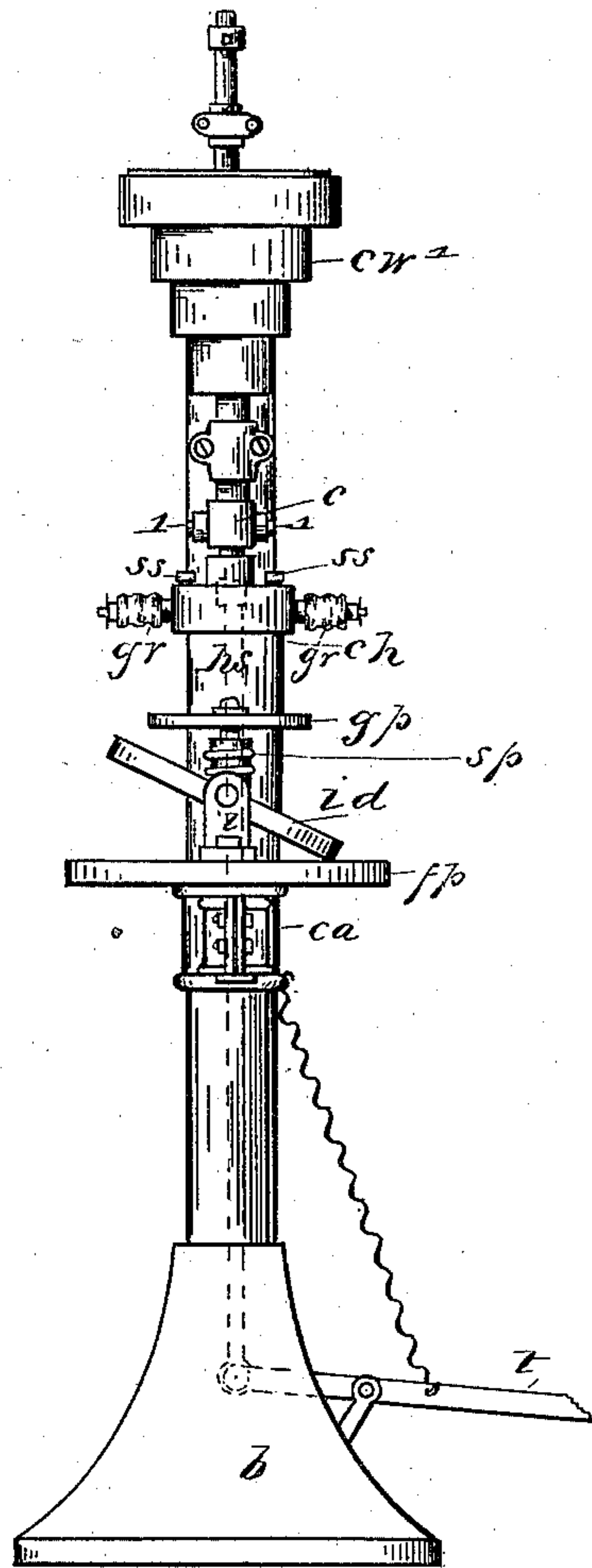


Fig. 2.



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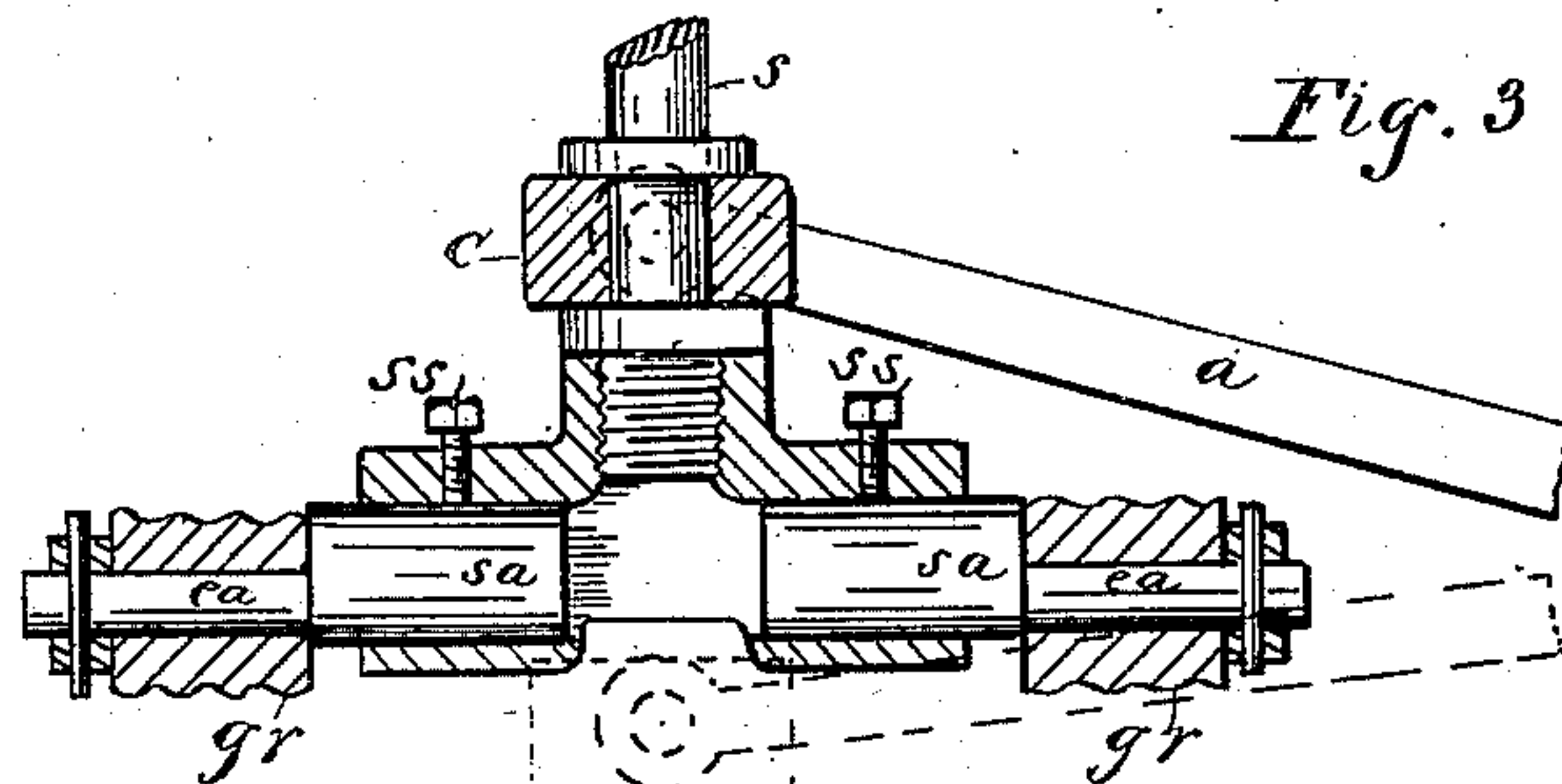


Fig. 3

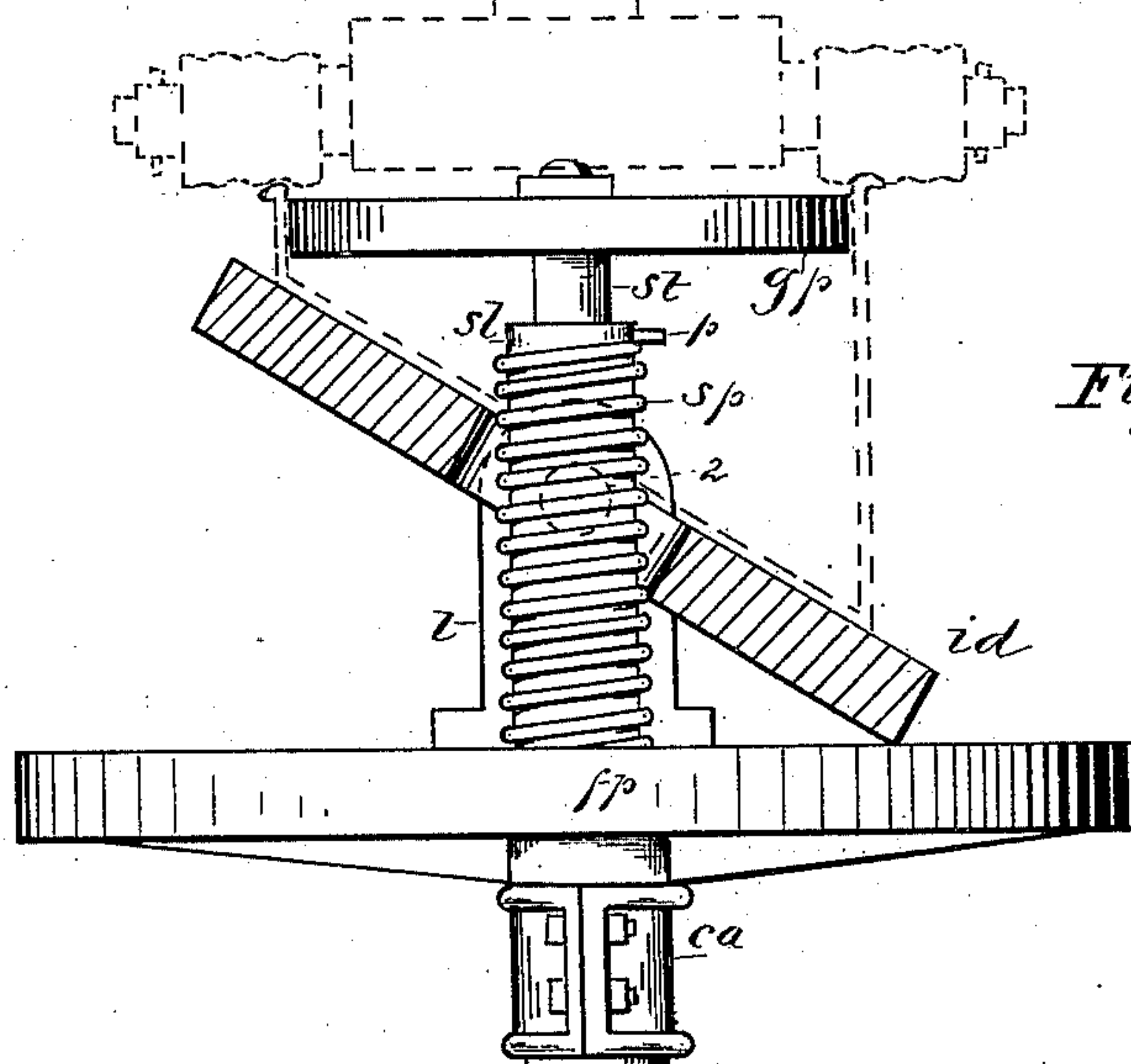
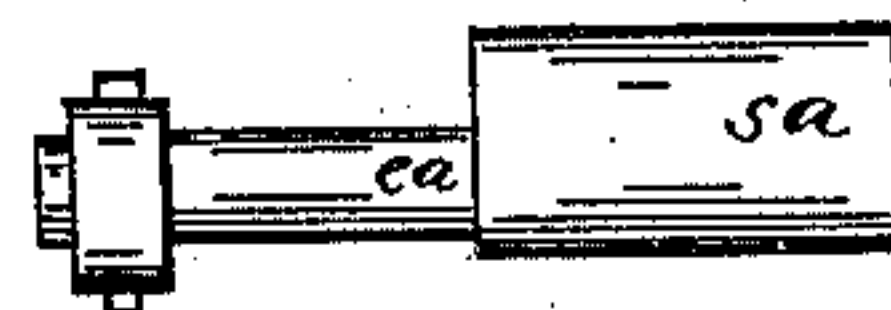


Fig. 4.

Fig. 5.



Fig. 6



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Fig. 7.

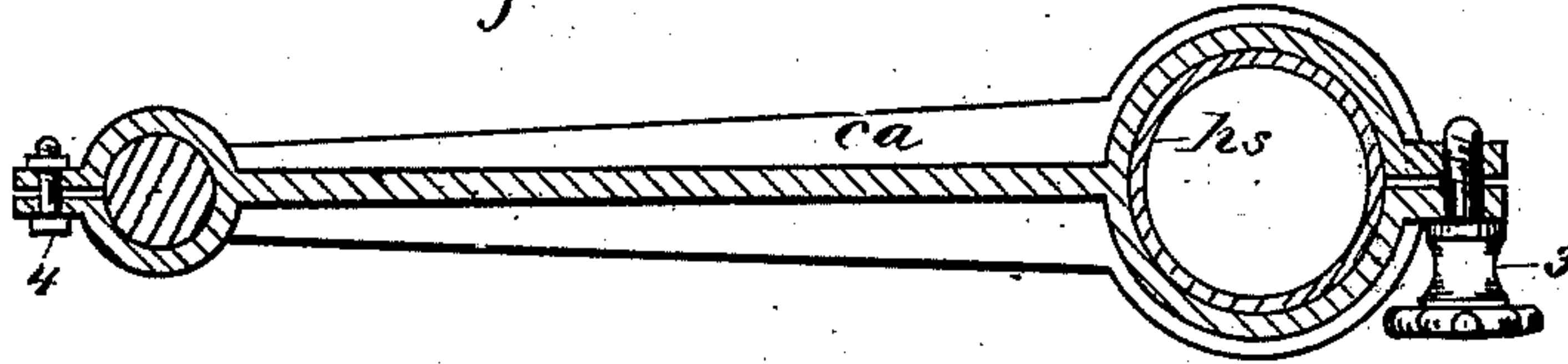


Fig. 8.

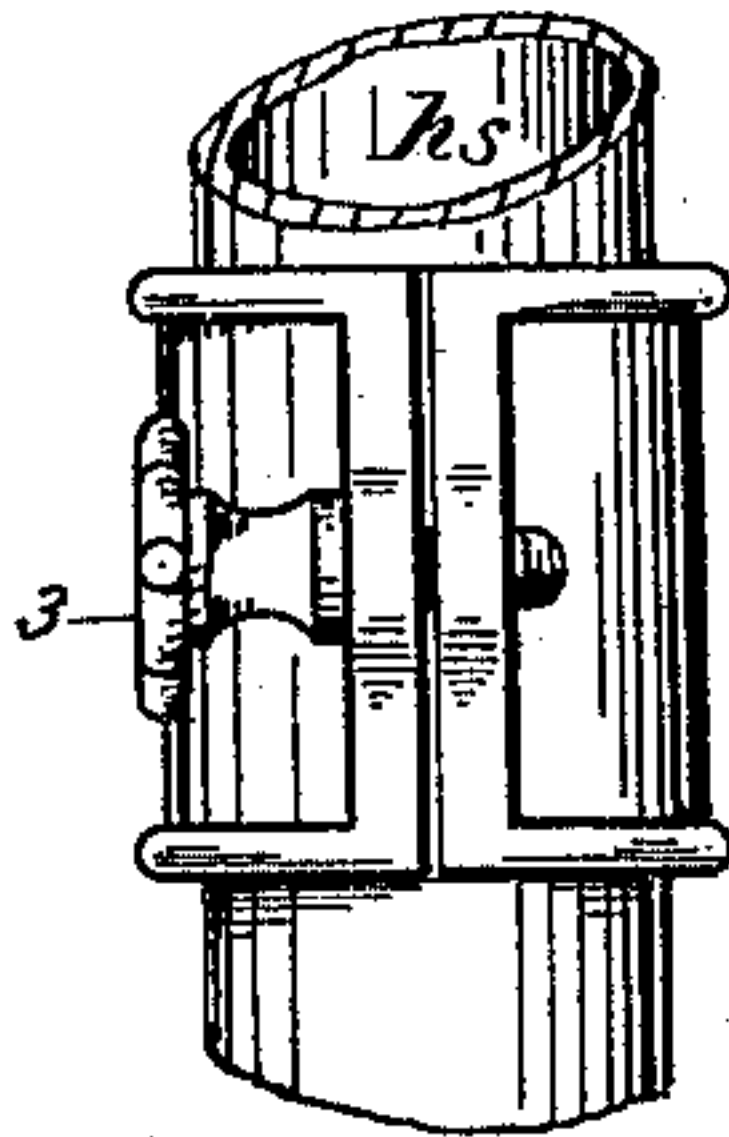


Fig. 9.

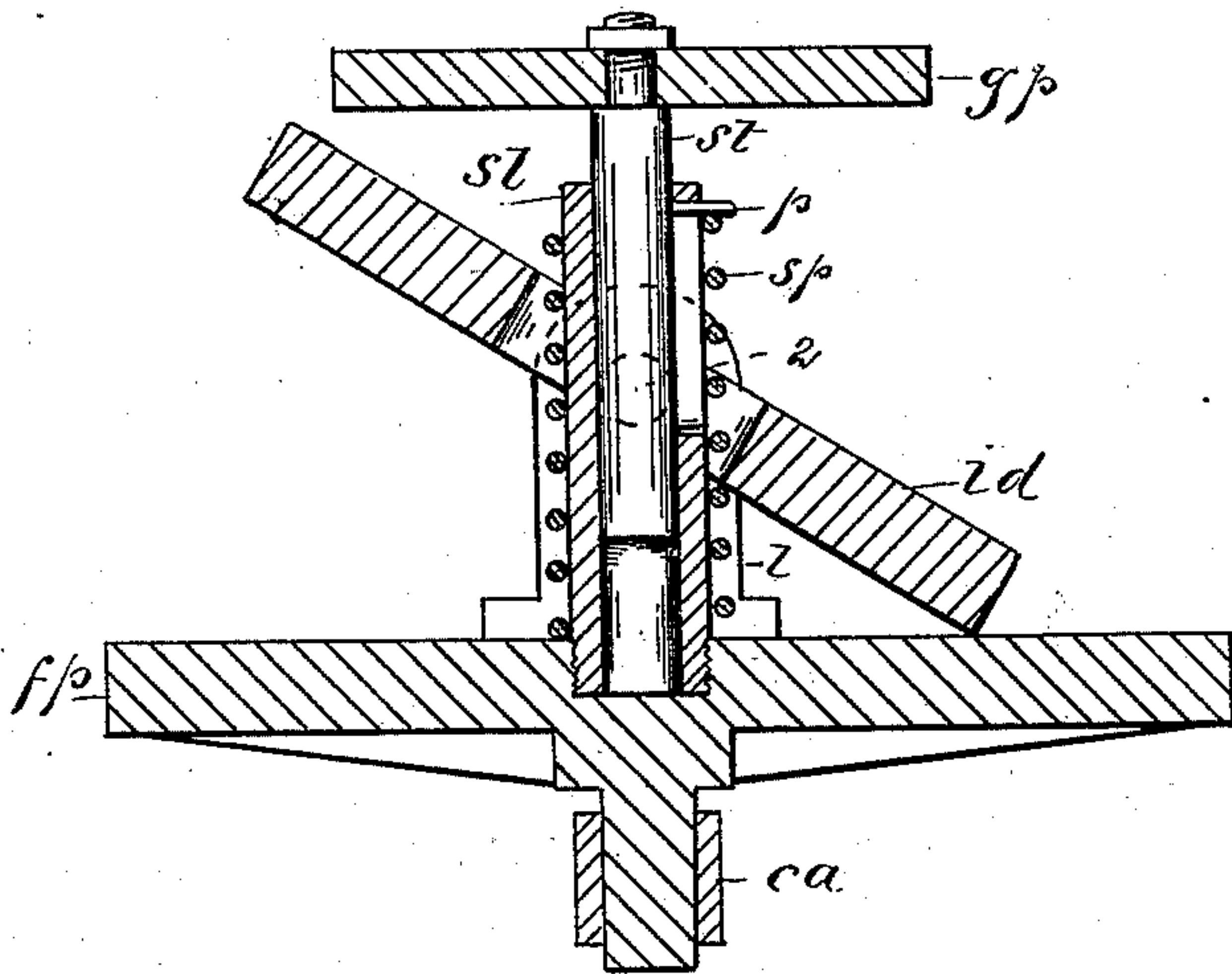
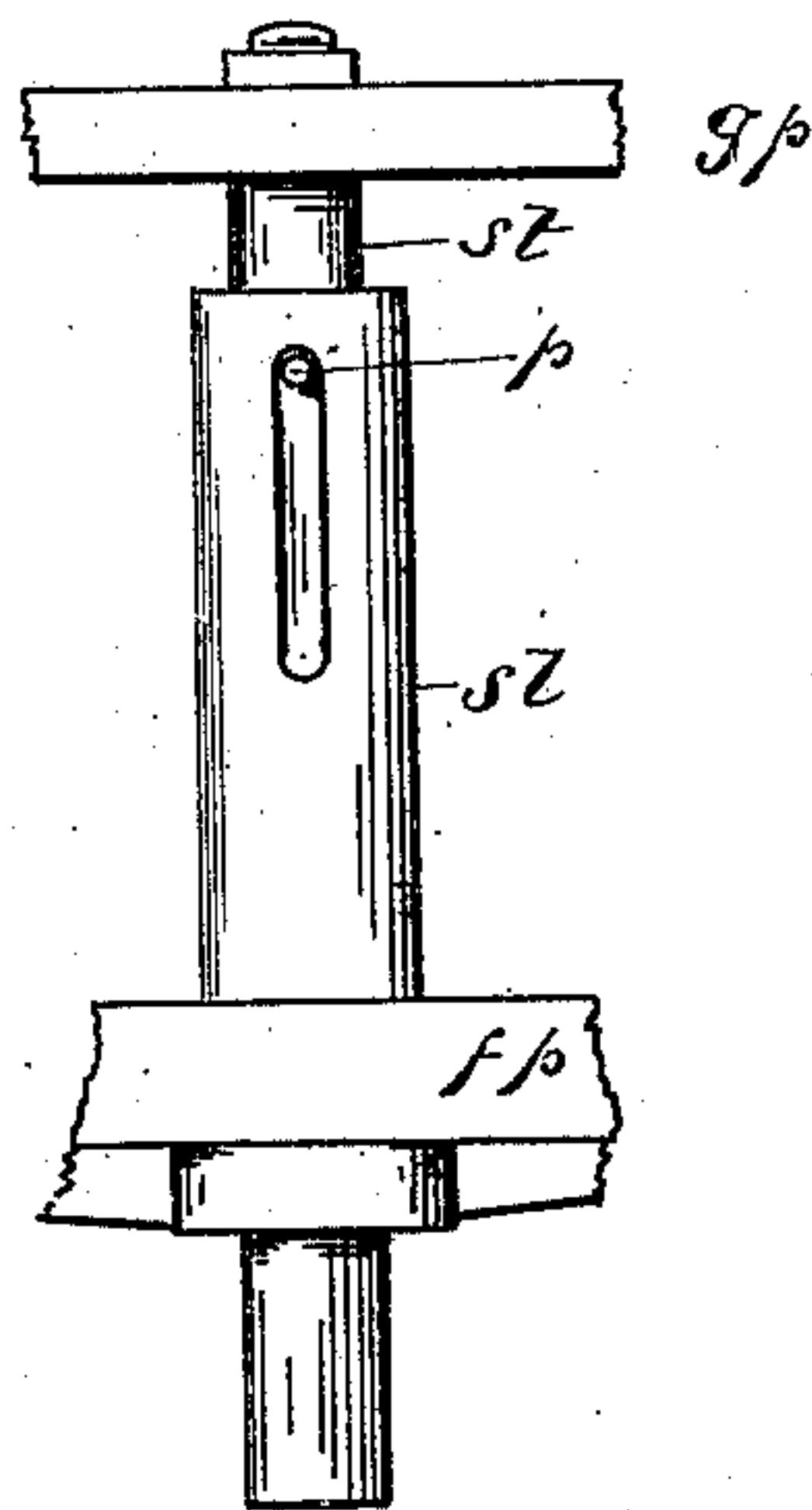


Fig. 10.



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UNITED STATES PATENT OFFICE.

WILLIAM A. WHEELER, OF INDIANAPOLIS, INDIANA.

EDGE-CURLING MACHINE.

SPECIFICATION forming part of Letters Patent No. 316,711, dated April 28, 1885.

Application filed February 16, 1885. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM A. WHEELER, a resident of Indianapolis, Marion county, Indiana, have made certain new and useful Improvements in Edge-Curling Machines, a description of which is set forth in the following specification, reference being made to the accompanying drawings, in the several figures of which like letters indicate like parts.

My invention is designed to curl over the edges of sheet-metal pipes which have been previously flanged by other machines, the object being to form a double seam where the sections of pipe are united, as for making stove-pipe elbows, and will be understood from the following description.

In the drawings, Figure 1 represents a side view of the machine; Fig. 2, a front view; Fig. 3, a detail view of the revolving head or chuck with the grooved rollers inserted, the rollers and chuck-head being in horizontal section, the dotted lines indicating the position of the chuck when the rollers are in contact with the flange of the pipe-section. Fig. 4 is a detail view of the face-plate, the inclined disk, and guide-plate and their connections, the inclined disk being in cross-section. Fig. 5 is an end view of the stub-axle and the eccentric axle, upon which the grooved rollers are mounted; and Fig. 6 is a side view of the same, showing the collar and pin which secure the grooved rollers upon the eccentric axle. Fig. 7 is a longitudinal section on the line *xx*, Fig. 1. Fig. 8 is a rear view of the arm *ca*. Fig. 9 is a vertical section of the parts shown in Fig. 4. Fig. 10 is a side view of the sleeve with portions of the guide and face plates, showing the slot in which the pin *p* moves. Figs. 3, 4, 5, 6, 7, 8, 9, and 10 are drawn upon a larger scale than Figs. 1 and 2.

In detail, *b* is a cast-iron base supporting an upright hollow shaft, *hs*, branched at the top into brackets *br br'*, the arms of which brackets provide bearings on the one side for the driving-shaft *ds*, which carries the cone-wheel *cw*, and on the other side for the vertical shaft *s*, which carries the cone-wheel *cw'* and the chuck *ch* with its grooved rollers *gr*.

lp is a loose, and *dp* is a driving, pulley mounted on a short shaft having bearings in two uprights connected with the extension of

the base, and *g g'* are two bevel gear-wheels, the one mounted on the shaft of the driving-pulley, and the other on the lower end of the driving-shaft *ds*, adapted to mesh with each other, so that the revolution of the driving-pulley drives the shaft *ds* and the cone-wheel *cw*. The two cone-wheels *cw cw'* are connected by a belt, as shown in Fig. 1, through which power is transmitted from the driving-shaft *ds* to the vertical shaft *s*, causing the chuck to revolve.

t is a treadle, which works through a slot in the base *b*, and is connected with an arm which passes up through the hollow shaft *hs*, and is there pivoted to an arm, *a*, which is forked at its outer end, the arms passing on each side of the collar *c*, and a pivot, *l*, is passed through all, including the shaft *s*. A short arm, *a'*, is pivoted to arm *a* and to a projection below the bracket *br'*, as shown. When the treadle *t* is pressed down with the foot, it forces up the long arm inside the hollow shaft *hs* and drops the arm *a*, which forces the chuck *ch* with its rollers down toward the guide-plate *gp*, as shown in dotted lines in Fig. 3, bringing the grooves of the rollers upon the edges of the pipe-section, the pressure being brought to bear by means of the treadle *t*, curling the edge of the pipe over, as shown in the dotted lines in Fig. 4.

Upon the lower end of the shaft *s* is secured a chuck, *ch*, which has openings bored in its periphery of sufficient depth to receive the stub-axes *sa*, and the end of these stub-axes is turned so as to form a smaller axle, *ea*, whose center is not in line with the center of the stub-axle, but is eccentric in relation thereto, as shown in Figs. 5 and 6. This eccentric axle carries the grooved rollers *gr*, which are secured thereon by means of a small collar and pin, as shown in Fig. 6. These rollers have several circumferential grooves to accommodate the different sizes of pipe—as, for instance, four, five, six, and seven inch pipe—and may be constructed to fit any desired size of pipe. The stub-axes *sa* are secured in the sockets of the chuck by set-screws *ss*, and the object of making the axle *ea* eccentric in relation to the stub-axle *sa* is to secure the vertical adjustment of the grooved rollers, as the set-screw *ss* secures the horizontal adjustment, for if the axle *sa* be turned round in its socket it will

raise or lower the eccentric axle *ea*, and consequently the grooved roller mounted thereon, as desired.

fp is the face-plate or bed-plate, having a projection underneath, which is clamped in the forward end of the clamp-arm *ca*, whose rear end incloses and clamps the shaft *hs*, and by means of the clamp-screw 3 in the rear this arm and face-plate may be raised or lowered, as desired, along the shaft *hs*. (See Figs. 7 and 8.)

gp is a guide-plate, resting on a step formed at the upper end of the short standard *st*, and secured thereon by means of a nut. This standard is inclosed in a sleeve, *sl*, having a spring, *sp*, coiled around the same. A small pin, *p*, connected to the standard, passes through a slot in the sleeve and over the top coil in the spring *sp*, as shown in Figs. 4 and 9.

l are lugs bolted on opposite sides of the face-plate, and between the two, and secured to these lugs by pivots 2, is an inclined disk, *id*, which has an opening in the center to pass over the sleeve and spring, as shown in Figs. 1, 4, and 9. This inclined disk is intended to form a support for the angular section of the elbow-pipe, which is indicated in position by the dotted lines in Fig. 4. The standard *st* of the guide-plate *gp* does not extend down through the sleeve as far as the face-plate *fp*, and, being loose in the sleeve, may be forced a short distance downward when the chuck with its rollers takes the position shown by the dotted lines between Figs. 3 and 4, the elasticity of the coil-spring tending to throw it back to its normal position, as shown in Fig. 4, when the pressure of the chuck is removed. The position of the arm *a* when the chuck is forced down is indicated by the dotted lines in Fig. 3.

The machine operates as follows: The pipe-section is placed over the guide-plate *gp*, its angular side resting upon the inclined disk *id*, as indicated by the dotted lines in Fig. 4. The upper edges of this pipe-section have been previously bent over at substantially a right angle to the sides of the pipe by means of the machine shown in Letters Patent No. 224,974, issued to me February 24, 1880. The pipe being now in position, as shown, the operator steps upon the treadle, forces the chuck with its rollers down upon the edges of the pipe, the guide-plate *gp* being forced down a short distance, so that the edges of the pipe will extend above it, and, all being in readiness, he throws the belt over to the driving-pulley. The chuck, with its rollers, revolves rapidly, and, forcing it still farther downward with his foot by means of the treadle, the flanged edge is curled over into a hook shape between the proper grooves on each side, as shown in Fig. 4. When it has reached the limit of the gage previously set, which is determined by the distance that the collar *c'* is set above the top of the bracket *br'* on the shaft *s*, the pressure on the treadle is removed, the chuck is lifted, the pipe-section taken off and a new one put

on, and the operation is repeated as long as desired. The sections being prepared in this way, their edges turned over, they are locked together and closed down by means of the seaming-machine shown in Letters Patent No. 254,891, issued to me March 14, 1882.

What I claim, and desire to secure by Letters Patent, is the following:

1. The combination of the base *b*, the hollow standard *hs*, provided with arms, the vertical shaft *s*, having bearings in such arms, the chuck *ch*, mounted on such shaft, and the grooved rollers *gr*, mounted on the axle *ea* of the stub-axle *sa*, which stub-axle is adapted to fit in openings in said chuck, all combined substantially as described.

2. The base *b*, the hollow standard *hs*, providing bearings for a shaft carrying the chuck *ch*, having openings to receive the stub-axes, upon which the grooved rollers *gr* are mounted eccentrically, as shown, and the treadle *t*, having arm and lever connections for raising and lowering the shafts, all combined substantially as described.

3. The chuck-head *ch*, having openings to receive the stub-axes *sa*, provided with eccentric axles *ea*, and the grooved rollers *gr*, mounted on such eccentric axles, all combined substantially as described.

4. The face-plate *fp*, having standards connected therewith, the inclined disk *id*, having pivotal bearings in such standards, the guide-plate *gp*, mounted on the upper end of the standard *st*, provided with the pin *p*, which is surrounded by a sleeve having a slot to receive such pin, and a coil-spring pressing against such pin passing through an opening in the inclined disk *id*, the whole connected to the hollow standard *hs*, all combined substantially as described.

5. The base *b*, supporting the hollow standard *hs*, having arms for carrying the shaft *s* in bearings therein, the chuck-head *ch*, connected with such shaft, the grooved rollers *gr*, mounted on eccentric axles connected with such chuck, the face-plate *fp*, provided with standards for carrying the inclined disk *id* in bearings therein, the guide-plate *gp*, for guiding the pipe-section, the standard *st*, having the pin *p*, connected with such guide-plate passing through the inclined disk and surrounded by the sleeve *sl*, slotted to receive the pin *p*, and the spring *sp*, pressing against such pin, the clamp-arm *ca*, the treadle *t* with its arm and lever connections to the shaft *s*, and driving mechanism, all combined substantially as described.

6. The stub-axle *sa*, having the eccentric axle *ea* connected therewith, in combination with the grooved rollers *gr*, for curling the pipe-edge mounted thereon, substantially as described.

7. The vertical shaft *s*, sustained in bearings, the chuck-head *ch*, connected with such shaft, the grooved rollers *gr*, mounted on axles connected with such chuck, the inclined disk *id*, pivoted to a support, the guide-plate *gp*,

mounted on the upper end of the standard *st*, provided with the pin *p*, the sleeve *sl*, slotted to receive the pin *p*, and the coil-spring *sp*, pressing against such pin, the sleeve and its spring
5 passing through openings in the inclined disk, the guide-plate and disk having connections to an arm and supporting-standard, all combined substantially as described.

10 8. The guide-plate *gp*, mounted on the upper end of the standard *st*, provided with a pin, *p*, moving in the slot of a sleeve, *sl*, in which the standard slides, the sleeve sur-

rounded by a coil-spring pressing against the pin *p*, which passes through an opening in an inclined disk having bearings in arms at the
15 opposite sides thereof, the whole connected with a support, all combined substantially as described.

In witness whereof I have hereunto set my hand this 12th day of February, 1885.

WILLIAM A. WHEELER.

Witnesses:

C. P. JACOBS,
W. E. BARTON.