910,634.

O. ALLEN.

FELLY POLISHING MACHINE.

APPLICATION FILED JUNE 19, 1908.

Patented Jan. 26, 1909.

3 SHEETS—SHEET 1.

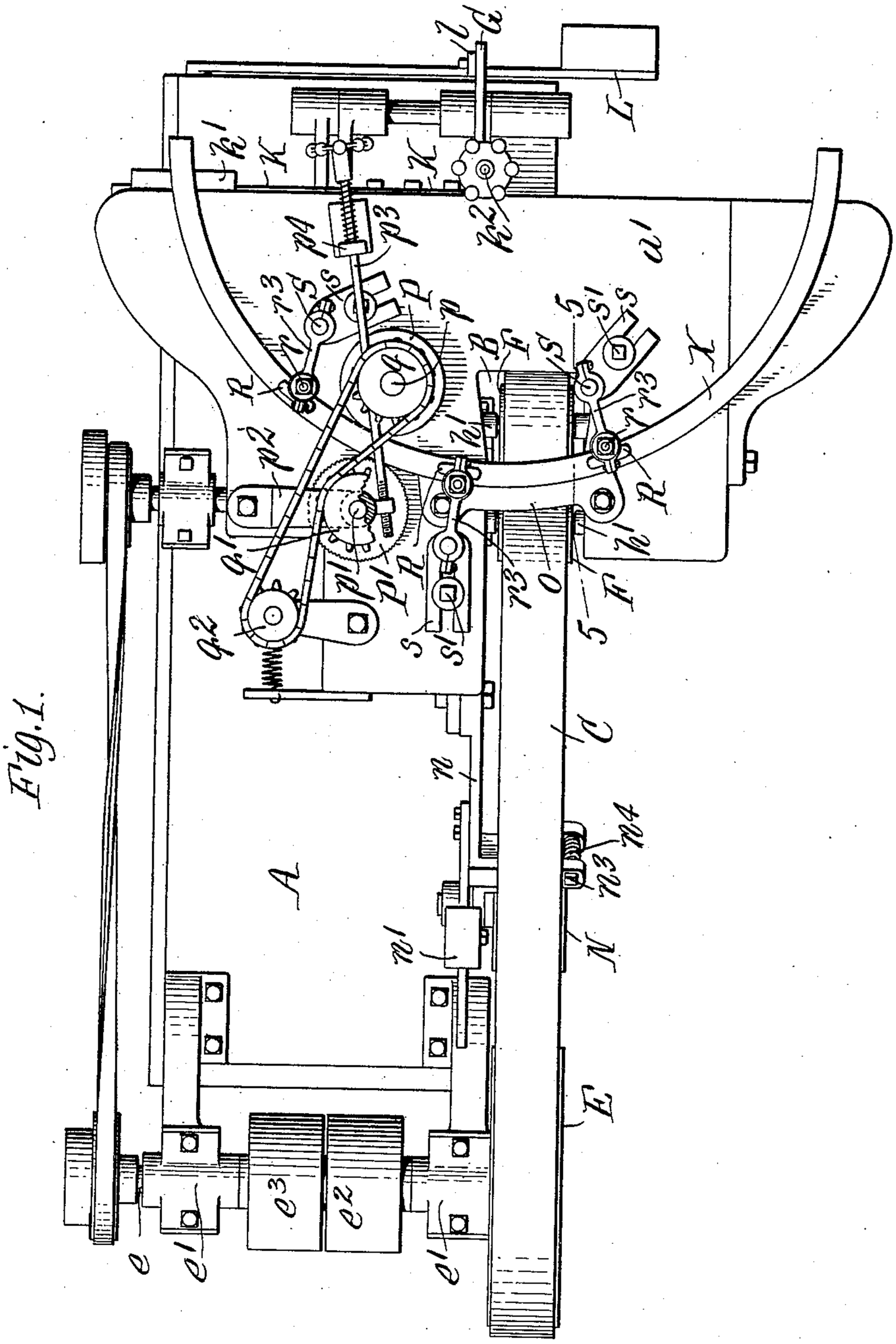

Fig. 1.

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3 SHEETS—SHEET 2.

Fig. 2.

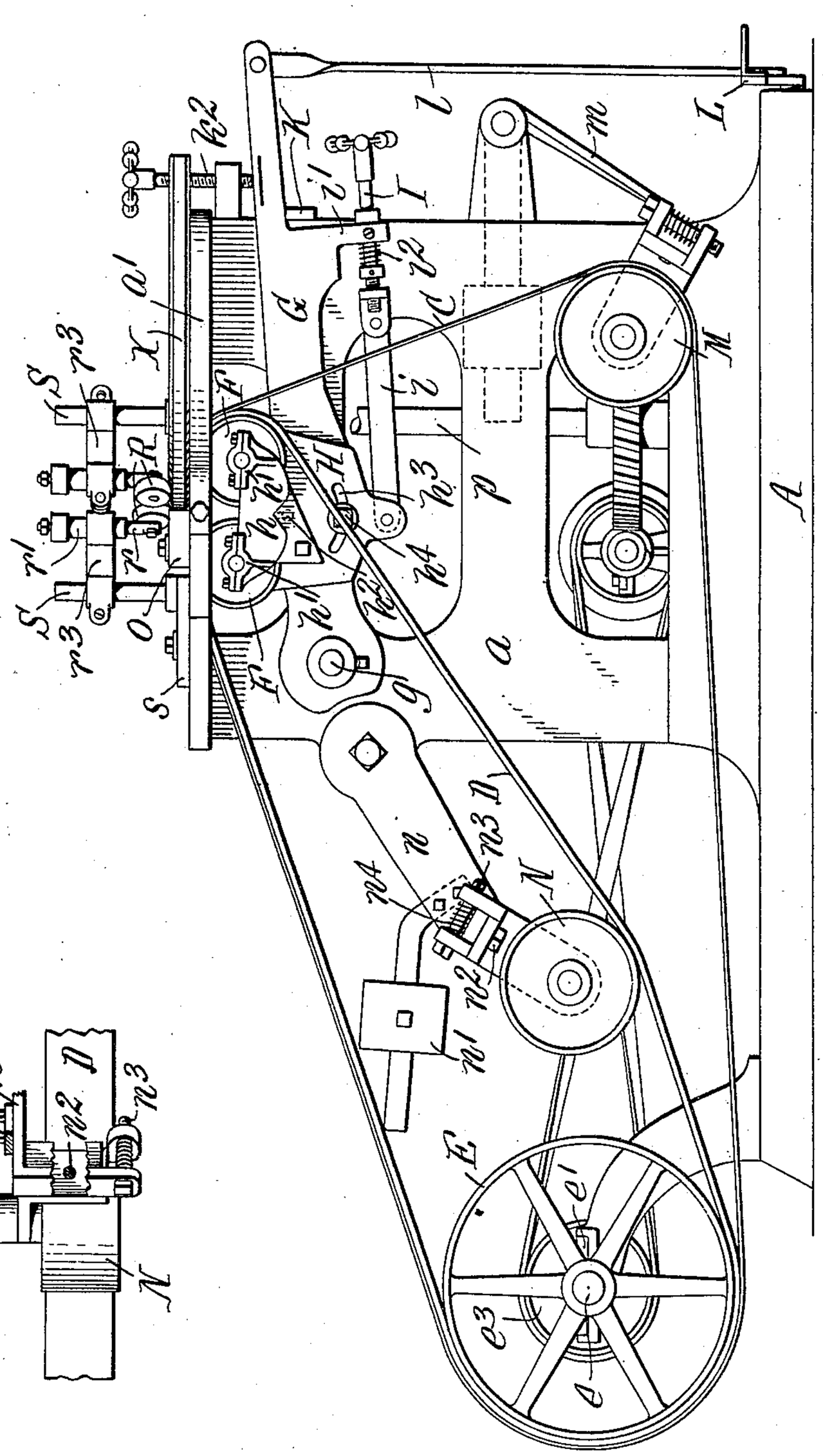

Fig. 3.

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3 SHEETS—SHEET 3.

Fig. 4.

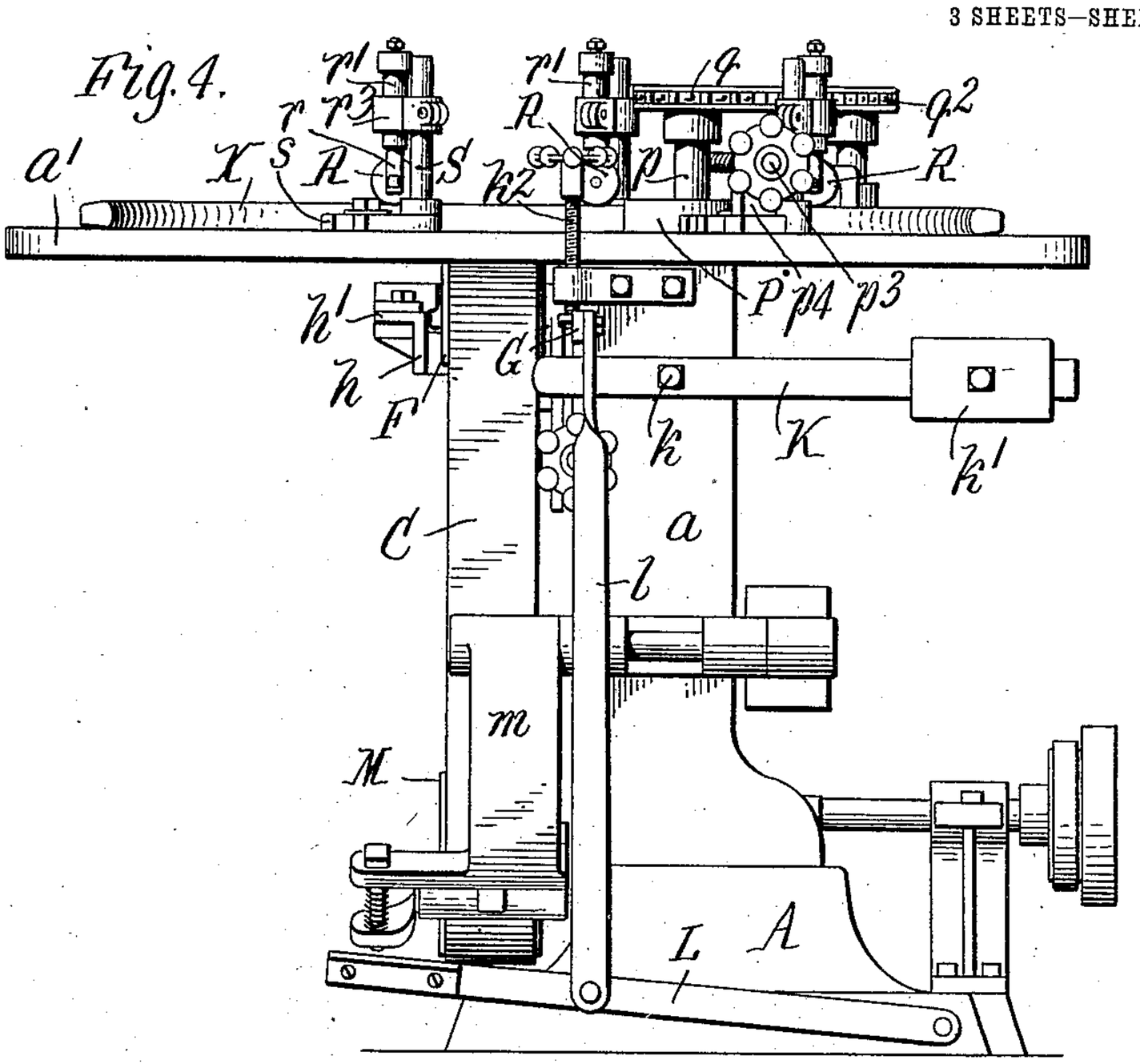


Fig. 5.

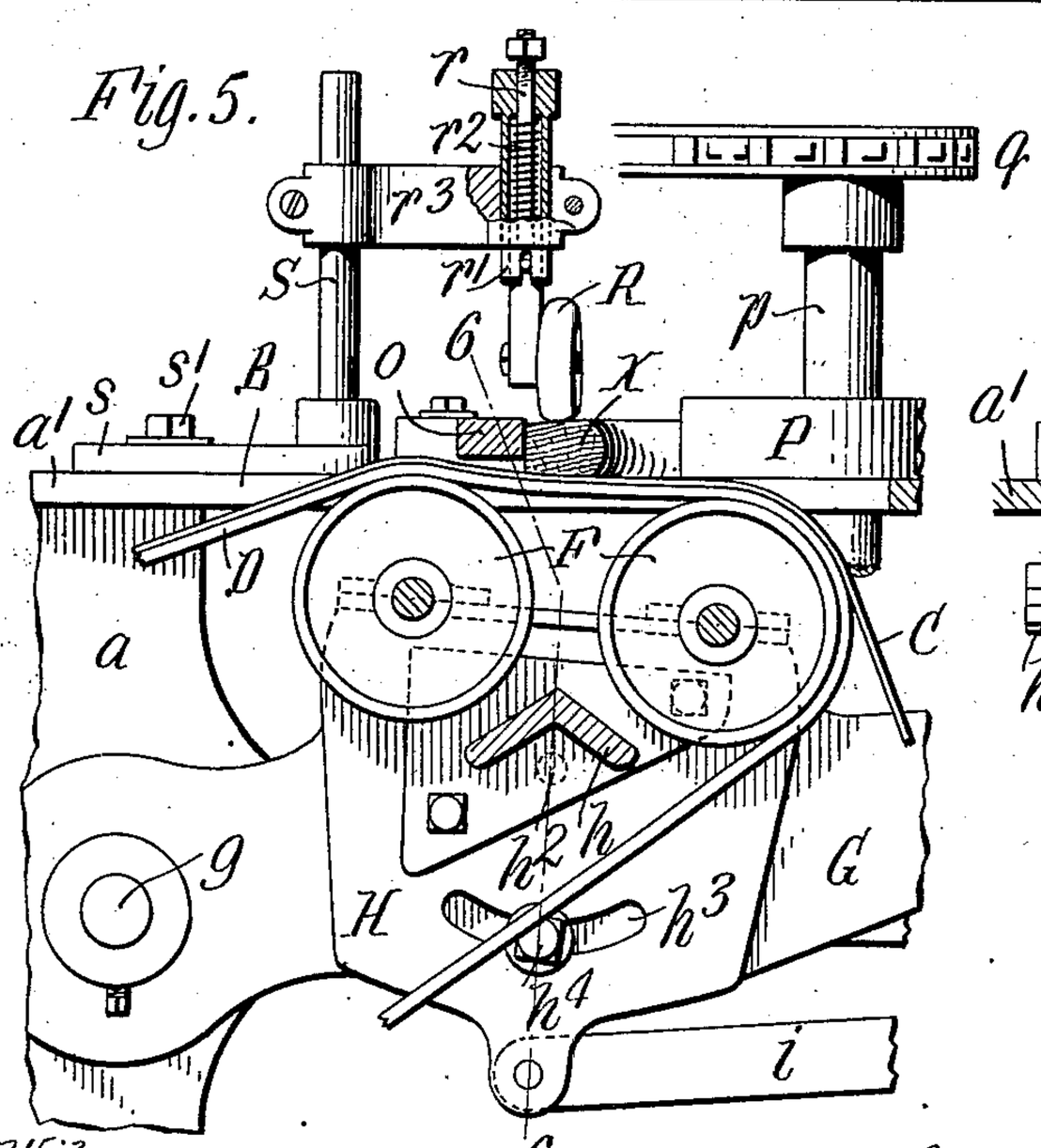
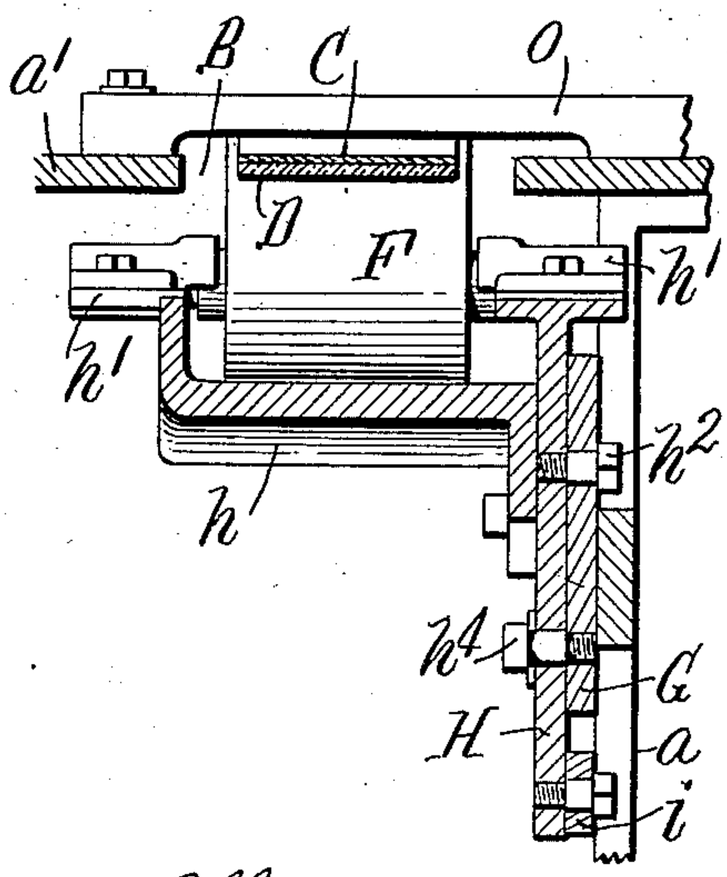


Fig. 6.



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UNITED STATES PATENT OFFICE.

OSCAR ALLEN, OF MOUNT MORRIS, NEW YORK.

FELLY-POLISHING MACHINE.

No. 910,634. Specification of Letters Patent. Patented Jan. 26, 1909.

Application filed June 19, 1908. Serial No. 439,281.

To all whom it may concern:

Be it known that I, OSCAR ALLEN, a citizen of the United States, residing at Mount Morris, in the county of Livingston and State of New York, have invented a new and useful Improvement in Felly-Polishing Machines, of which the following is a specification.

This invention relates more particularly to machines for polishing the sides of wheel rims or fellies in which an endless sanding or abrading belt is employed.

The objects of the invention are to produce an efficient and practical felly-polishing machine having provision for readily adjusting the angle of the abrading belt relative to the work for operation on fellies of different taper, and provided with means for quickly moving the abrading belt into and out of contact with the work for changing the fellies and regulating the abrading action; also to provide the machine with a belt which provides a yielding support or backing for the abrading belt opposite the work to thereby prevent the fellies from being burned and enable them to be finished with slightly convexed surfaces; also to improve felly-polishing machines in the respects hereinafter described and set forth in the claims.

In the accompanying drawings, consisting of three sheets; Figure 1 is a plan view of a felly-polishing machine embodying the invention. Fig. 2 is a side elevation thereof. Fig. 3 is a plan view, partly in section, of the tensioning device for the supporting belt. Fig. 4 is a front end elevation of the machine. Fig. 5 is a fragmentary sectional elevation thereof, on an enlarged scale, in line 5—5, Fig. 1. Fig. 6 is a fragmentary sectional elevation thereof in line 6—6, Fig. 5.

Like letters of reference refer to like parts in the several figures.

The frame of the machine can be of any suitable construction. A cast frame is shown in the drawings comprising a base A, a standard or upright portion *a* rising therefrom, and a horizontal work table or top *a'* at the upper end of the standard.

The felly or rim (shown at X) rests flat on the table *a'* over an opening B therein in which the polishing belt works against the lower side of the felly. The felly is held down on the table and fed endwise thereon to present the several portions thereof to the polishing belt by means hereinafter described.

C represents an endless polishing belt of ordinary construction having an abrading surface of sand or other suitable meterial, and D is a supporting belt of leather, or other strong material, which is arranged inside of the polishing belt with a portion thereof backing and supporting a portion of the polishing belt. Both belts pass around a drive pulley E and two adjustable guide and pressure pulleys F F arranged beneath the table in position to normally hold the portion of the polishing belt between them up in the opening B of the work table against the lower side of the felly.

The drive pulley E is secured to a shaft *e* which constitutes the drive shaft of the machine illustrated and is journaled in bearings *e'* on the frame base A and is provided with fast and loose pulleys e^2 e^3 for a drive belt. The pressure pulleys F F are supported by a lever G, Figs. 2, 5 and 6, which is pivoted at *g* in any suitable manner to the frame standard to swing vertically for raising and lowering the pressure pulleys F F to move the polishing belt into and out of contact with the felly, and the pulleys are journaled in a bearing frame which is angularly adjustable on the lever to change the inclination of the belts relative to the plane of the work table for polishing fellies having different tapers.

In the construction shown, see Figs. 5 and 6, the adjustable bearing frame for the pressure pulleys consists of a vertical plate H and a bracket *h* bolted thereto, having bearings *h'* for the opposite ends of the pulley shafts. The plate H is pivoted to the lever G by a bolt h^2 and has a slot h^3 concentric with its pivot through which a clamping screw h^4, screwed into the lever, passes. The lower end of the bearing frame for the pressure pulleys F F is connected by a link *i* and an adjusting screw I to an arm *i'* on the pressure lever G. The adjusting screw is journaled in the lever arm *i'* and has a screw-threaded connection with the link *i*, and a spring i^2 surrounds the screw between a collar thereon and the lever arm *i'*. The bearing frame for the pressure pulleys can be angularly adjusted on the pressure lever to change the inclination of the polishing belts relative to the plane of the work table

as may be required, by turning the adjusting screw I in one or the other direction. After the pulleys are adjusted to the desired position the clamping screw h^4 is tightened to secure the bearing frame firmly to the pressure lever. By thus mounting the pressure pulleys on the single angularly adjustable bearing, both pulleys are adjusted simultaneously by simply shifting the one part, which is much quicker and simpler than separately adjusting each pulley. The bearing frame for the two pulleys could be of different construction and other means could be used for adjusting it.

The free end of the pressure lever G bears on one end of a lever K, Fig. 4, pivoted at k on the standard and provided with an adjustable weight k', by which the pressure lever G is normally pressed upwardly to hold the polishing belt to the work. An adjustable stop screw k^2 on the standard above the free end of the pressure lever limits its upward movement.

L represents a foot lever which is pivoted to the front end of the frame and connected by a link l to the free end of the pressure lever. By pressing down on the foot lever the pressure lever and pulleys F F are lowered against the lifting action of the weighted lever K and the polishing belt moved out of contact with the felly. When the foot lever is released the weighted lever K will return it to the normal raised position and again raise the pressure pulleys to place the polishing belt against the felly. Other means could, however, be employed for raising and lowering the pressure lever.

M and N represent tightener pulleys over which the polishing and supporting belts C and D run for separately stretching the belts taut over the drive and pressure pulleys. The polishing belt is longer than the other belt and the tightener pulley M therefor is located between the two belts against the inside of the polishing belt, while the other tightening pulley is located inside of the supporting belt D. The tightener pulley N is carried at the outer end of a heavy arm or lever n pivoted on the standard, and having an adjustable weight n' by which the pulley is pressed against the supporting belt D. The arm n, see Figs. 2 and 3, consists of two parts swiveled together by a bolt or pin n^2 and adjustably connected by an adjusting screw n^3 passing loosely through a lug on one section and screwed into an opposite lug on the other section, and a spring n^4 surrounding the screw between the lugs. This swivel connection permits the pulley to be tilted in one direction or the other by turning the adjusting screw n^3 as may be necessary to equalize the tension on opposite edges of the belt. The other tightener pulley M is similarly mounted on a weight-actuated swinging arm m. Any other suitable tensioning means for the belts could be employed. By this manner of arranging the belts the strong supporting belt D forms a yielding support or cushion for the polishing belt C between the pressure pulleys F F at the point where it contacts with the felly, the tension of the belt D being sufficient to hold the polishing belt against the felly with the necessary pressure to quickly produce a smooth polished surface, while at the same time the polishing belt can yield or flex sufficiently to prevent burning or scorching the felly. The slight flexing of the belts also gives the felly a slightly convexed surface with sharp corners, which adds greatly to the attractive appearance and salability of the felly. A polishing belt alone would stretch so much as to render it unfit for polishing fellies or other work requiring sharp, well defined corners, and if the polishing belt is held against the felly by a wheel or rigid pressure device, great care and skill must be exercised to prevent burning the felly. The stop screw k^2 arrests the upward movement of the pressure lever to hold the polishing belt at the proper place to make the cut. By adjusting the stop screw and shifting the weight n' of the belt tightener pulley N toward or from the pulley to decrease or increase the tension of the supporting belt, the convexity of the surface of the felly can be regulated as may be desired. The adjustable weight n' also enables the supporting belt D to be placed under greater tension to increase the pressure of the abrading belt against the felly as the surface thereof wears away or becomes dull. The polishing belt can be quickly moved into and out of operative position by simply actuating the foot lever to regulate its polishing action and prevent cutting into a felly in the event that the feed of the felly is stopped for any reason, and also to enable a felly to be moved into position on the table under the holding means.

The following means are shown for holding the felly on the work table and feeding it forwardly over the polishing belt: O represents a curved guide rail bridging the belt opening B in the table against which one edge of the felly bears, and P P′ represent feed wheels between which the felly passes and which engage the opposite edges thereof. The feed wheel P is secured to a vertical shaft p driven by any suitable gearing from the drive shaft e. The other feed wheel P′ is secured to a shaft p' journaled in a swinging bearing p^2, Fig. 1, pivoted to the work table, and is pressed yieldingly against the felly by a spring-pressed adjusting rod p^3 which has a screw connection with the swinging bearing p^2 and passes through a lug p^4 on the table, being provided at its end with a hand-wheel for turning it. Sprocket wheels q q' are secured to the upper ends of the shafts p p', and a chain passing around the sprocket wheel q and a suitable tension wheel q^2 and

engaging the teeth of the sprocket wheel q' drives the feed wheel P'.

R represents presser rollers which bear on the felly at different points to hold it down on the table. Each presser roller is journaled at the lower end of a rod r, Fig. 5, which slides vertically in a guide sleeve r' and is pressed downwardly by a spring r^2 in the guide sleeve surrounding the presser rod and bearing at opposite ends against parts on the rod and sleeve. The sleeve r' is adjustably held in a split socket in one end of an arm r^3 having a split socket at its other end by which it is adjustably secured on a vertical post S. The post S has a slotted foot s adjustably secured to the work table by a screw s'. This construction of the pressers enables them to be adjusted vertically to suit fellies of different thicknesses, and horizontally toward and from the felly and angularly so that they will bear at the desired points on fellies of different radius. The presser springs are inclosed and protected in the guide sleeves.

In the operation of the machine, the polishing belt is lowered by depressing the foot lever L and a felly is placed on the table and shoved endwise under the pressers until its forward end is over the polishing belt, when the foot lever is released and the polishing belt raised into contact with the lower side of the felly by the weight-actuated pressure lever G. When the forward end of the felly is advanced between the feed wheels P P it is engaged and fed forwardly automatically by them. After the fellies have been polished on one side, they are turned over and reversed end for end and run through the machine again in the same manner to polish the other sides thereof.

I claim as my invention:

1. In a polishing machine, the combination of a work support, a polishing belt, pressure pulleys over which said belt passes and which hold the portion of the belt between them in contact with the work, a movable support which carries said pulleys and is movable to place said belt into and out of contact with the work, and a bearing frame in which said pulleys are journaled and which is adjustable on said support for changing the position of the portion of said belt between said pulleys relative to the work, substantially as set forth.

2. In a polishing machine, the combination of a work support, a polishing belt, pressure pulleys over which said belt passes and which hold the portion of the belt between them in contact with the work, a lever which supports said pulleys and is movable to move said belt into and out of contact with the work, a bearing frame in which both of said pressure pulleys are journaled and which is pivoted to said lever, and adjusting means for shifting said bearing frame to different positions on said lever to change the relation of said belt to the work, substantially as set forth.

3. In a polishing machine, the combination of a work support, a polishing belt, pressure pulleys over which said belt passes, a movable support which carries said pulleys and normally presses the portion of said belt between said pulleys against the work, said support being movable to place said belt into and out of contact with the work, and a bearing frame in which said pulleys are journaled and which is adjustable on said support for changing the position of said belt relative to the work, substantially as set forth.

4. In a polishing machine, the combination of a work support, a polishing belt, pressure pulleys over which said belt passes and which hold the portion of the belt between them in contact with the work, a lever which supports said pulleys, means acting on said lever to press said pulleys toward the work, means for moving said lever away from the work, and a bearing frame in which said pulleys are journaled and which is angularly adjustable on said lever for changing the relation of said belt to the work, substantially as set forth.

5. In a polishing machine, the combination of a work support, a polishing belt, pressure pulleys over which said belt passes and which hold the portion of the belt between them in contact with the work, a lever which supports said pulleys, pressure means acting on said lever to press said pulleys toward the work, and means for moving said lever away from the work, substantially as set forth.

6. In a polishing machine, the combination of a work support, a polishing belt, pressure pulleys over which said belt passes and which hold the portion of the belt between them in contact with the work, a supporting belt which passes over said pulleys beneath said polishing belt and forms a yielding pressure cushion for said polishing belt between said pulleys, said supporting belt forming the only pressure means for said polishing belt between said pulleys, and means for regulating the tension of said supporting belt, substantially as set forth.

7. In a polishing machine, the combination of a work support, a polishing belt, pressure pulleys over which said belt passes and which hold the portion of the belt between them in contact with the work, a supporting belt which passes over said pulleys beneath said polishing belt and forms a yielding pressure cushion for said polishing belt between said pulleys, said supporting belt forming the only pressure means for said polishing belt between said pulleys, and means for moving said pulleys to place the polishing belt into and out of contact with the work, substantially as set forth.

8. In a polishing machine, the combination of a work table, and a presser for holding the work on the table comprising a post adjustably secured to the table, an arm which is adjustable angularly and vertically on said post, a guide sleeve secured to said arm, a presser rod which slides in said sleeve and is provided with a presser roller to bear on the work, and a spring inclosed in said sleeve and acting on said presser rod to press said roller against the work, substantially as set forth.

Witness my hand, this 15th day of June, 1908.

OSCAR ALLEN.

Witnesses:
H. E. BRAMAN,
H. D. SWETT.