

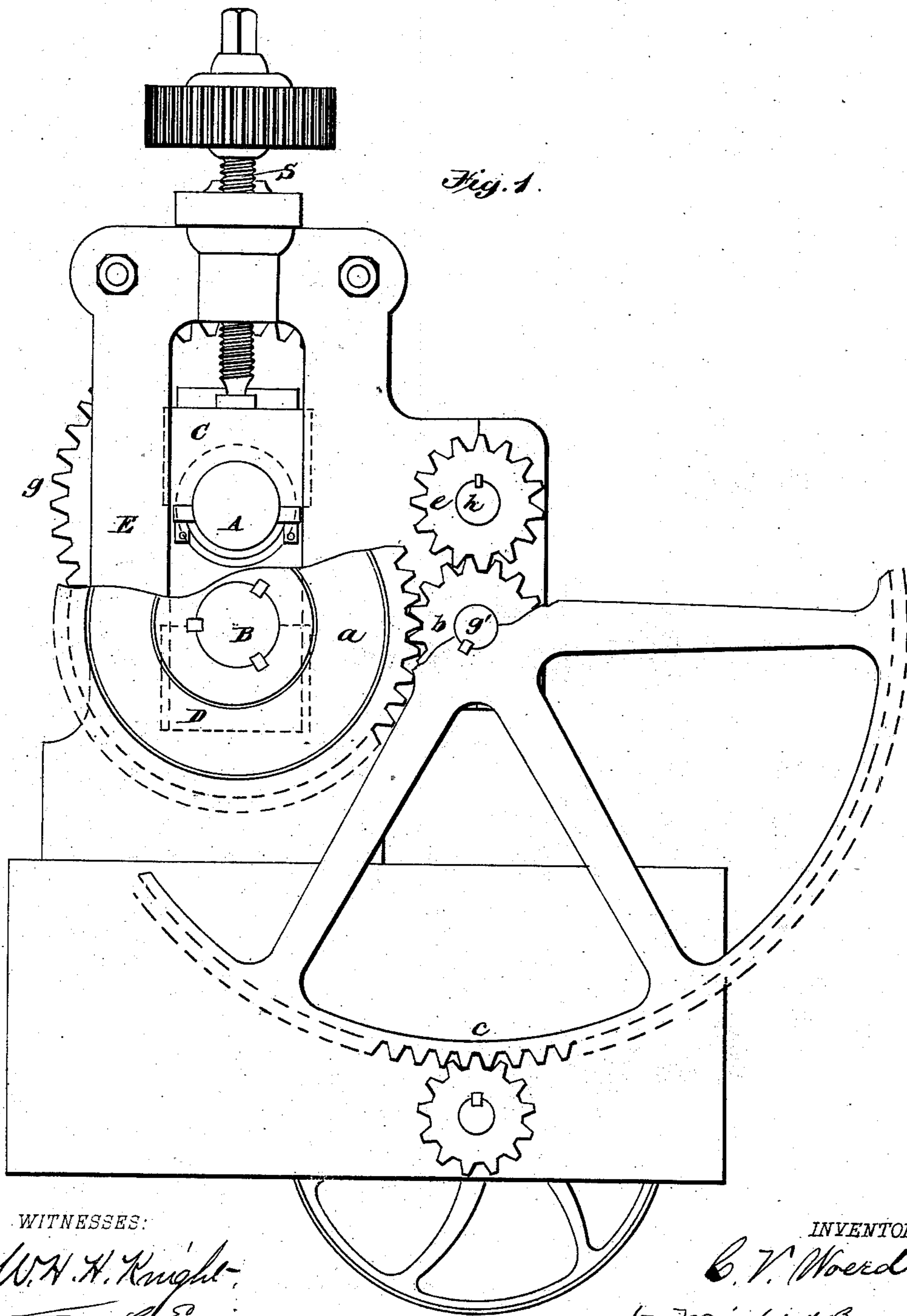
(No Model.)

3 Sheets—Sheet 1.

C. V. WOERD.
ROLLING MACHINE.

No. 270,170.

Patented Jan. 2, 1883.



WITNESSES:

W. H. Knight
W. L. Ewin

INVENTOR

C. V. Woerd
by Wright & Brown
Attorneys

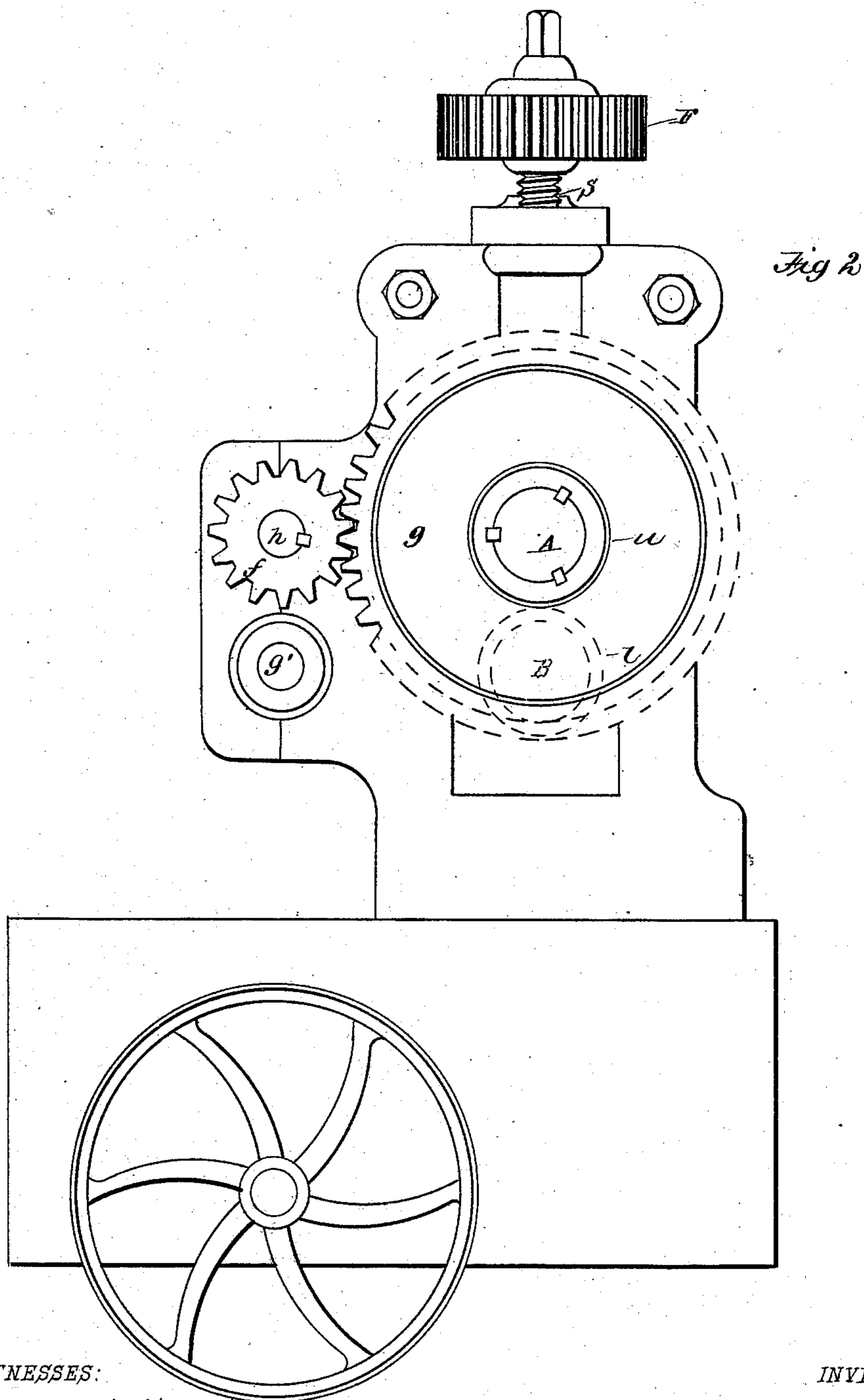
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WITNESSES:

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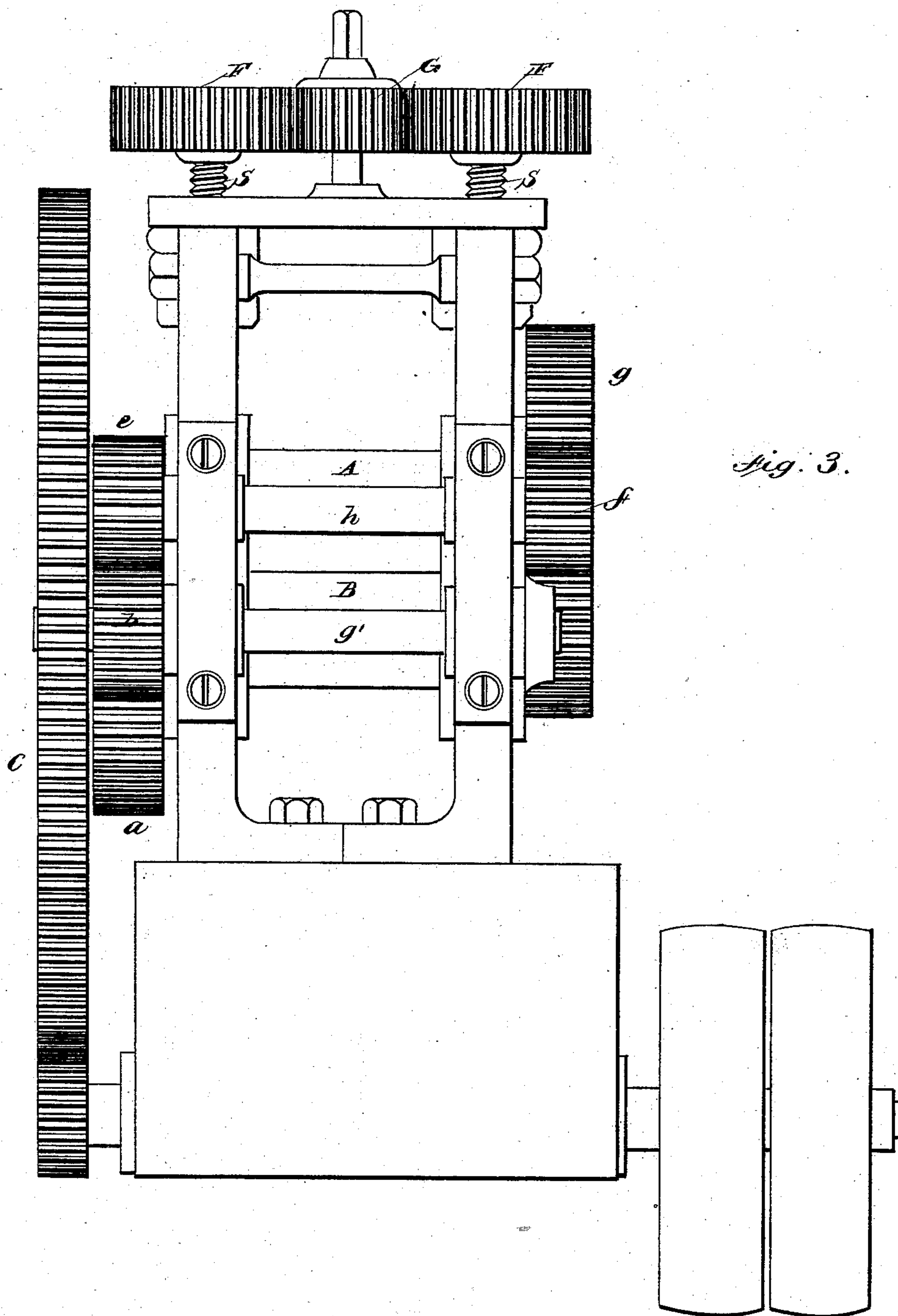
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UNITED STATES PATENT OFFICE.

CHARLES V. WOERD, OF WALTHAM, MASSACHUSETTS.

ROLLING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 270,170, dated January 2, 1883.

Application filed April 10, 1882. (No model.)

To all whom it may concern:

Be it known that I, CHARLES V. WOERD, of Waltham, in the county of Middlesex and State of Massachusetts, have invented certain
5 Improvements in Metal-Rolling Machines, of which the following is a specification.

This invention relates to rolls between which metal bars or plates are reduced by successive
10 passes through the rolls, which are adjustable, so that the space between them can be increased or diminished.

The object of the invention is to provide an improved arrangement of gearing connecting the ends of said rolls whereby any desired ad-
15 justment of the rolls can be effected without affecting the gears.

To this end my invention consists in the improvements which I will now proceed to describe and claim.

20 Of the accompanying drawings, forming a part of this specification, Figure 1 represents an end elevation of a pair of rolls and their supporting-frame and connecting-gearing embodying my invention. Fig. 2 represents an
25 elevation of the opposite end. Fig. 3 represents a rear elevation.

The same letters of reference indicate the same parts in all the figures.

In the drawings, A and B represent a pair
30 of rolls, which are journaled respectively in boxes C D, supported by a suitable frame, E, the boxes C of the upper roll being vertically adjustable in slots in said frame, so that the distance of the upper from the lower roll may
35 be increased or diminished.

S S represent screws, whereby said boxes C are adjusted and held positively at any position to which they may be adjusted. The
40 screws S S are preferably provided with gears F F, connected by an intermediate gear, G, whereby the screws are rotated in unison.

The parts thus far described are of the common construction, and do not constitute my invention.

45 Heretofore rolls which are adjustable toward and from each other have been connected, so as to be positively rotated in opposite directions, by gears separate from the rolls, journaled in fixed supports, and connected with
50 the rolls by jointed couplings which are capa-

ble of a lateral movement to permit the distance between the centers of the rolls to be varied. This connecting mechanism is cumbersome, noisy in operation, and occupies more
55 space than is desirable, the gears which impart motion to the rolls being necessarily at a considerable distance from the ends of the rolls.

In carrying out my invention I provide the roll A with a gear-wheel, *g*, and at the opposite end of the roll B a gear-wheel, *a*, of the
60 same size as *g*.

g' h represent two shafts journaled in the frame E parallel with the rolls A B. The shaft *g'* has a pinion, *b*, meshing with the gear-wheel of the lower roll, and the shaft *h* has a
65 pinion, *f*, meshing with the gear-wheel of the upper roll. The shaft *g'* is provided with a large gear-wheel, *c*, which receives motion from the prime motor. The shaft *h* is provided
70 with a pinion, *e*, which meshes with the pinion *b* of the shaft *g'*. The roll B and shaft *h* are therefore rotated by the shaft *g'*, and the roll A by the engagement of its gear-wheel with the pinion *e* on the shaft *h*. The axial
75 line of the shaft *h* is substantially in the same horizontal plane as the axial line of the upper roll, A. As a result of this arrangement the upper roll is enabled to be adjusted vertically
80 to a considerable extent without interfering with the operative relation between its cog-wheel *g* and the pinion *f* of the upper shaft, the distance between the centers of the upper roll and upper shaft being but slightly altered
85 by a considerable vertical adjustment of the roll.

If desired, the axial line of the upper shaft may be arranged in a horizontal plane midway between the planes in which the axial line of the upper roll stands at the upper and lower
90 extremes of its adjustment. This arrangement will reduce the extremes of variation between the gear *g* and pinion *f* (caused by the adjustment of the upper roll) to the minimum.

It will be observed that by my described improvements the machine is reduced to compact
95 form, and ample facility of adjustment is afforded.

The gears separated from the rolls and connected thereto by couplings, as heretofore, 100

must necessarily be of the same size as the rolls themselves, consequently are liable to be broken by the strain exerted on them by the rolls, while by my improved arrangement I am
5 enabled to make the gears on the rolls of considerably greater diameter than the rolls themselves, and thus prevent in a great measure this liability to breakage.

Although I have shown only two rolls in
10 the present instance, it will be obvious that my invention may be applied to three-high or four-high rolls, if desired, an additional shaft and pinion being employed for each additional roll, and all the shafts being geared together
15 and each to its own roll.

I claim—

The combination of two or more vertically-adjustable and independently-driven metal-

rolling rolls, each provided with a cog-wheel at one end of its shaft, and a corresponding num- 20
of fixed driving-shafts arranged in front of the said rolls in separate housings and geared each to the other and to the common motor at one end and to the rolls at the other, whereby
25 vertical adjustment of the rolls is permitted without interference with the operative relation of the gearing connecting the rolls and driving-shafts, substantially as described.

In testimony whereof I have signed my name to this specification, in the presence of 30
two subscribing witnesses, this 28th day of March, 1882.

CHAS. V. WOERD.

Witnesses:

G. H. SHIRLEY,
C. F. BROWN.