

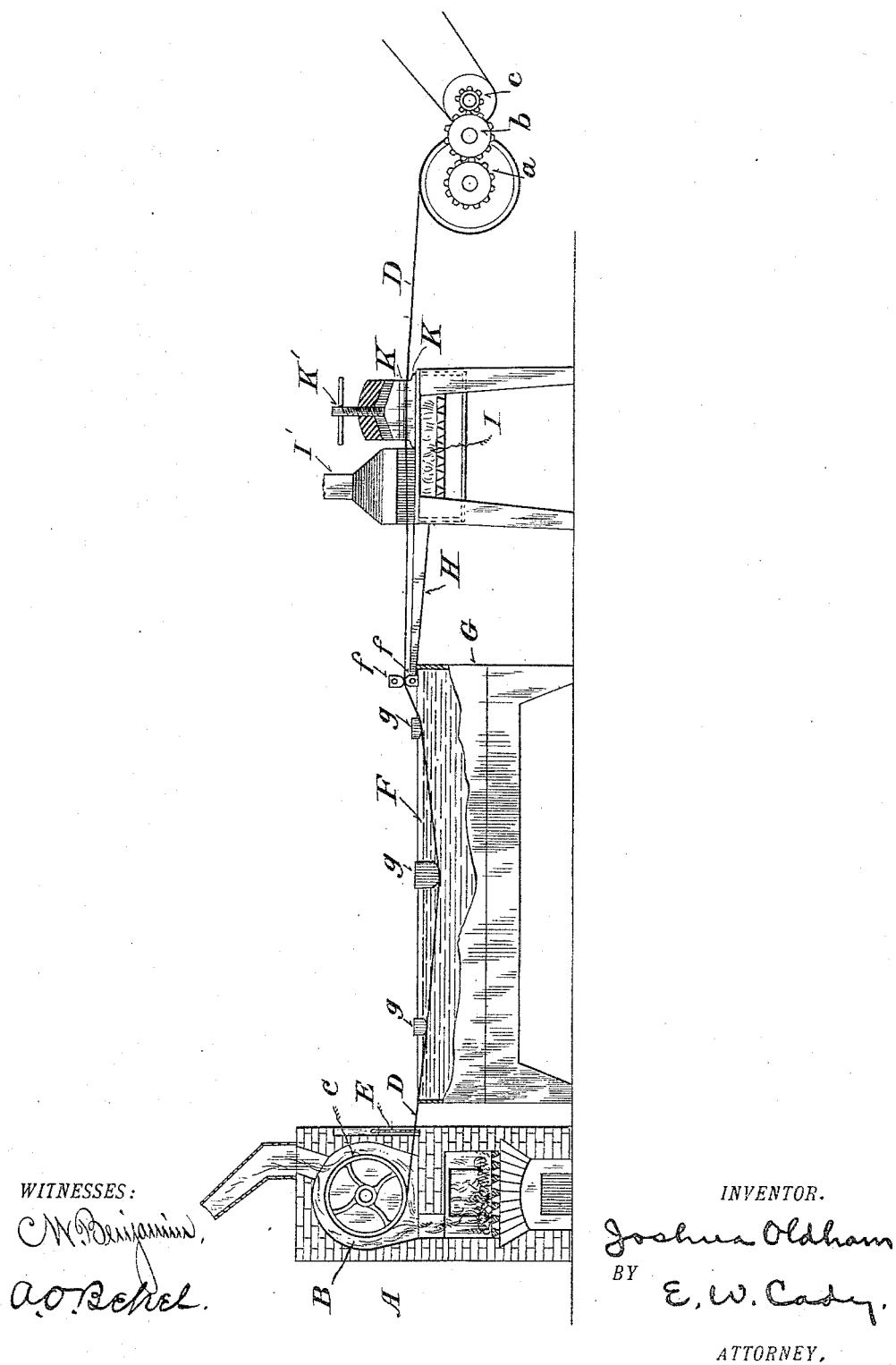
(No Model.)

J. OLDHAM.

APPARATUS FOR TEMPERING STEEL BANDS.

No. 381,575.

Patented Apr. 24, 1888.



UNITED STATES PATENT OFFICE.

JOSHUA OLDHAM, OF BROOKLYN, NEW YORK.

APPARATUS FOR TEMPERING STEEL BANDS.

SPECIFICATION forming part of Letters Patent No. 381,575, dated April 24, 1888.

Application filed June 18, 1887. Serial No. 241,760. (No model.)

To all whom it may concern:

Be it known that I, JOSHUA OLDHAM, of Brooklyn, Kings county, New York, have invented a new and useful Improvement in Apparatus for Tempering Steel Bands, of which the following is a specification.

My invention relates to the tempering of steel bands with special reference to the manufacture of band-saws, and has for its object to facilitate the tempering and to attain a more perfect result, whereby the tendency to break is obviated.

Heretofore the steel band was rolled or coiled up in a furnace or heater and heated; but in this method the metal was imperfectly heated. The strip was then passed through a bath of oil or other hardening substance, and from thence to heated dies. The trouble was, however, that in the transition from the bath to the heated dies the metal was apt to break when subjected to the pressure of the dies. To obviate these objections I have contrived a device whereby the band or blade is uniformly heated in the furnace, and after being immersed in a bath of hardening substance the temper is reduced by passing it over an open fire, and then the tempering is further continued by drawing the steel band under tension between heated dies.

The accompanying drawing illustrates my invention, with furnace in section and oil-tank broken away.

Referring to the drawing, A indicates a furnace or heater in section, of any suitable size and shape, provided with a chamber, B, which is exposed to the heat and products of combustion, as shown. Within the chamber B is mounted a wheel, C, revolved by a band and pulley, (not shown,) or in any suitable way. The band or blade D to be tempered is wound upon this wheel C, and, the latter slowly revolving in the heated chamber B, the band D is uniformly heated. The band D passes through an opening in door E and through the oil F or other hardening substance in tank G, being held therein by guides *g*. As band D passes from the bath F, the oil is wiped off by means of the rubbers *ff*, which may be blocks covered with leather. It now being necessary to partly reduce the temper of blade D, it is passed along table H and over an open fire, I, produced by any suitable combustion, such as

of oil, gas, &c. The products of combustion from fire I are carried off by means of chimney I', which may be so mounted as to be raised and lowered over the fire. The tempering is continued, after passing the blade D over the fire, by subjecting it to pressure while under tension between the heated dies K. The latter, as shown, are located over the fire I, so as to be heated, and are closed upon the band D sufficiently tight by the screw K' as to require the power of a set of gearing—such as *a b c*—to draw the blade D from between them, and thereby keep it under tension.

The proportions and relative positions of the parts here shown need not be followed, as bands of different lengths may be tempered. The band D may vary in width, but will not generally exceed twelve inches, so that the rim of wheel C and dies K need be but little wider. The trough or tank G, which may be of any size, is generally about thirteen feet long.

The mechanism for uniformly heating the blade or band and the combined open fire and heated dies are highly essential features in this improvement. The great danger of breaking while passing through the dies is obviated by the gradual tempering of the open fire and the heated dies under pressure. In the old method the pressure of the dies was apt to be brought upon the steel in its most brittle state and the steel liable to break. By my improvement the steel is brought to such a condition of temper that all danger of breaking is obviated.

In operation the wheel in the oven slowly revolves, and the steel band, which has become thoroughly and uniformly heated, passes from the wheel directly to the bath without any opportunity to become cool. By this means a great advantage is gained over the method of passing the steel band from a drum and over a fire, and then through a bath, for in the latter case the steel is imperfectly heated and the tempering is not gradual and uniform.

I am aware that it is not new to temper steel bands by drawing them over a fire, then through a bath of hardening substance, and then between heated dies under pressure, and such I lay no broad claim to; but

What I do claim is—

An apparatus for hardening and tempering steel bands, consisting of a heating-chamber

containing a wheel on which a steel band is to
be wound and exposed to the products of combustion,
a tank adjacent thereto adapted to contain oil or
other hardening substance,
5 through which the steel band from the wheel
in the oven is passed, a fire-place with clamping-
dies located over the same, over which fire
and between which dies the steel band is

adapted to be drawn, and a tension and drawing
mechanism, substantially as described. 10

In testimony whereof I have hereunto subscribed
my name.

JOSHUA OLDHAM.

Witnesses:

HIRAM KETCHUM,
EDWARD W. CADY.