

(No Model.)

S. R. WILMOT.
ROLLING MILL ROLL.

No. 281,597.

Patented July 17, 1883.

Fig 1.

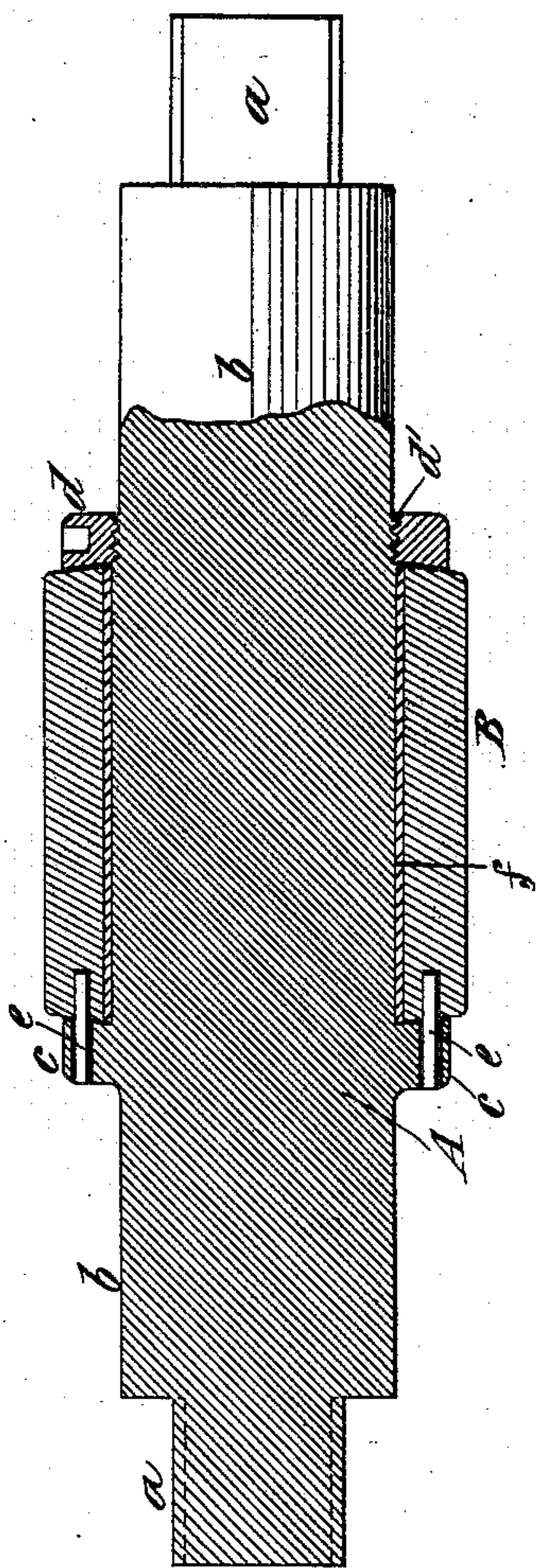
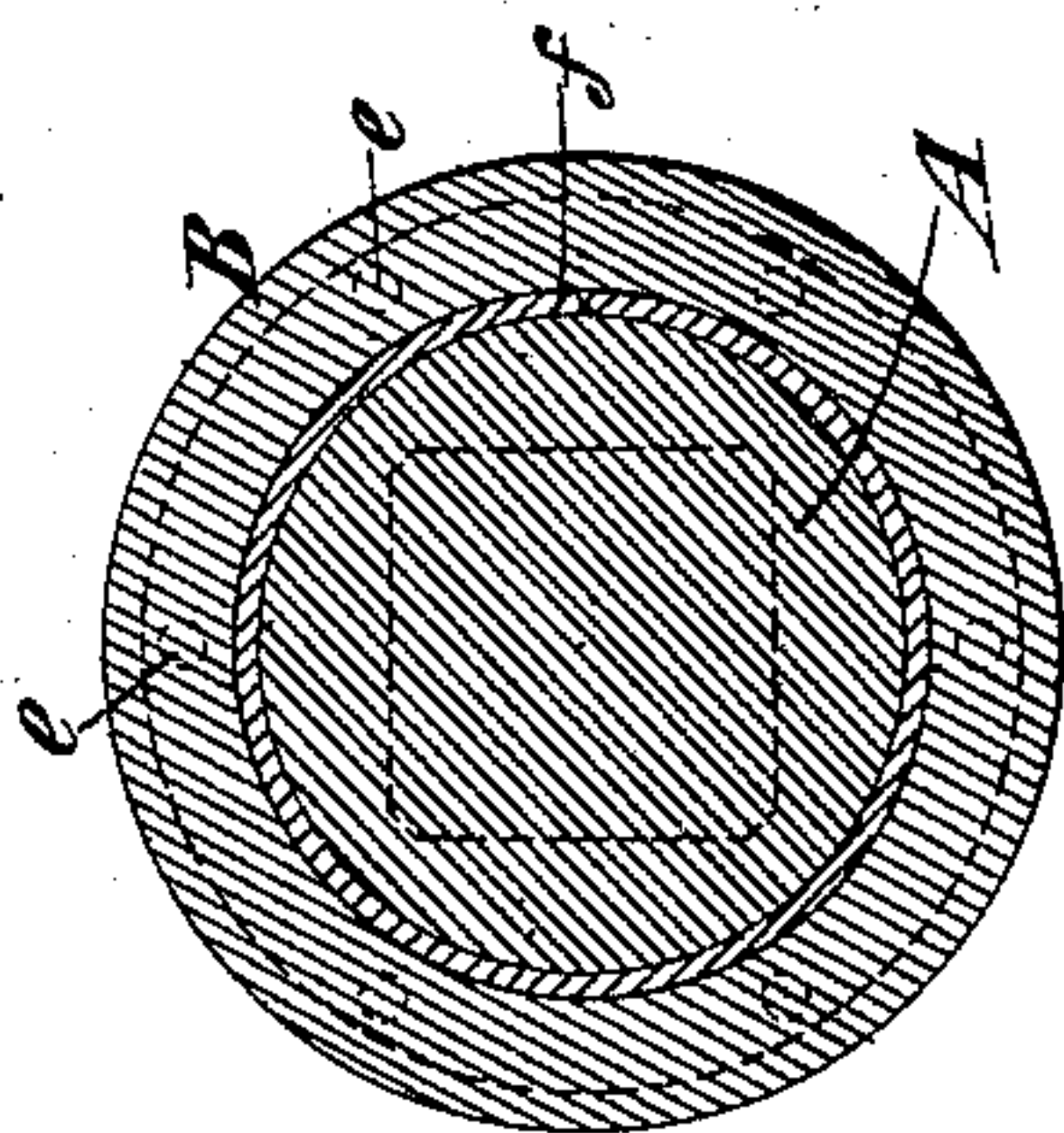


Fig 2.



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UNITED STATES PATENT OFFICE.

SAMUEL R. WILMOT, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO HIMSELF
AND WILLIS F. HOBBS, OF SAME PLACE.

ROLLING-MILL ROLL.

SPECIFICATION forming part of Letters Patent No. 281,597, dated July 17, 1883.

Application filed October 27, 1882. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL R. WILMOT, of the city of Bridgeport, in the county of Fairfield and State of Connecticut, have invented a new and useful Improvement in Rolling-Mill Rolls, of which the following is a specification.

My invention relates more particularly to rolls for reducing cold iron and steel to very great length and very thin with few annealings, thereby securing the greatest perfection of metal with the least possible amount of waste, owing to the absence of trimming, scaling, and pickling.

The invention consists in the combination of a roll-shaft having an integral collar provided on the inner face with pins or spurs, and having a loose collar screwed upon it, and a roll-face or sleeve of hardened steel fitting between the collars and engaging with said pins or spurs.

The invention also consists in the combination of a roll-shaft having an integral collar and a loose collar screwed thereon, both said collars having their inner faces beveled inward, and a roll-face or sleeve of hardened steel held between said collars, and having its ends correspondingly beveled. The advantage of beveling the ends of the roll-face or sleeve and the collars is, that in case of breakage or fracture of the roll-face or sleeve the pieces thereof will be held by the collars.

In the accompanying drawings, Figure 1 represents a longitudinal section and partial side view of a rolling-mill roll embodying my invention, and Fig. 2 represents a transverse section of the roll.

Similar letters of reference designate corresponding parts in both the figures.

My improved roll is composed of two principal parts—a shaft, A, and a roll-face or sleeve, B, surrounding and secured fast to the shaft.

The shaft A is made of the best hammered steel, chosen with reference to its great toughness and strength, but not hardened, and therefore not liable to crack. At its ends it has the usual projections, *a*, for couplings or drivers. Inside of these projections are the usual necks, *b*, which are made longer than is customary, to give a large bearing-surface and avoid heat-

ing. Inside the neck, at one end, is a collar, *c*, forged integral with the shaft, and inside the neck, at the other end, is a collar or nut, *d*, which engages with a screw-thread, *d'*, on the shaft. Between the collar *c* and the collar or nut *d* the shaft is turned smooth, but slightly tapering toward and rather larger in diameter than the top of the screw-thread *d'*. The collars *c d* have their inner faces beveled inward, as shown, at an angle of fifteen degrees, (15°), or thereabout, for a purpose hereinafter described. The shaft and collar or nut *d* are then separately case-hardened and ground perfectly true all over.

The roll-face or sleeve B is made of the best cast-steel, thoroughly hammered, and turned somewhat larger than the external diameter of the collars *c d*, to allow for wear and grinding down while in use. The ends of the roll-face or sleeve are beveled to fit the beveled faces of the collars *c d*, so that in case of fracture of the roll-face or sleeve the pieces will be retained on the shaft, and the roll-face or sleeve is connected with the integral collar *c* by pins or spurs *e*, which are driven into holes in one part and enter holes in the other part. The pins or spurs prevent the roll-face or sleeve from turning on the shaft, and they are ordinarily driven into holes in the collar and fit snugly in corresponding holes in the roll-face or sleeve. The roll-face or sleeve is bored out smoothly a little larger than the shaft, and then hardened as deep as possible, both inside and outside, after which the temper is slightly drawn to toughen it. After this it will be found that the inside is not perfectly round and straight, and is not of uniform size throughout. It is therefore cleaned, and a soft-metal lining or bush, *f*, is cast or otherwise placed therein, and afterward reamed out tapering exactly to the taper of the shaft, but purposely small. This lining may be of brass or other suitable alloy. The roll-face or sleeve is now heated almost but not quite enough to draw the temper, and then driven or pressed home on the shaft. Contraction of cooling then takes place and causes the roll-face or sleeve to fit so tightly and perfectly that it can never become loose accidentally. After the roll-face or sleeve becomes worn and useless by use, it can be

heated and taken off, leaving the shaft ungalled and perfect, ready to receive another roll-face or sleeve, which may be renewed as often as becomes necessary.

5 My improved roll can readily be made as large as is desired, there being no greater risk in making large sizes than small. To renew the roll-face or sleeve will cost only a fraction of the cost of making an entirely new roll, as
10 is now necessary.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination of the roll-shaft having the integral collar provided with pins or spurs,
15 and having the loose collar screwed thereon,

and the roll-face or sleeve of hardened steel fitting between the collars and engaging with the pins or spurs, substantially as herein described.

2. The combination of the roll-shaft having 20 the integral collar, and the loose collar screwed thereon, both said collars having their inner faces beveled inward, and the roll-face or sleeve of hardened steel having its ends correspondingly beveled, substantially as herein de- 25 scribed.

S. R. WILMOT.

Witnesses:

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