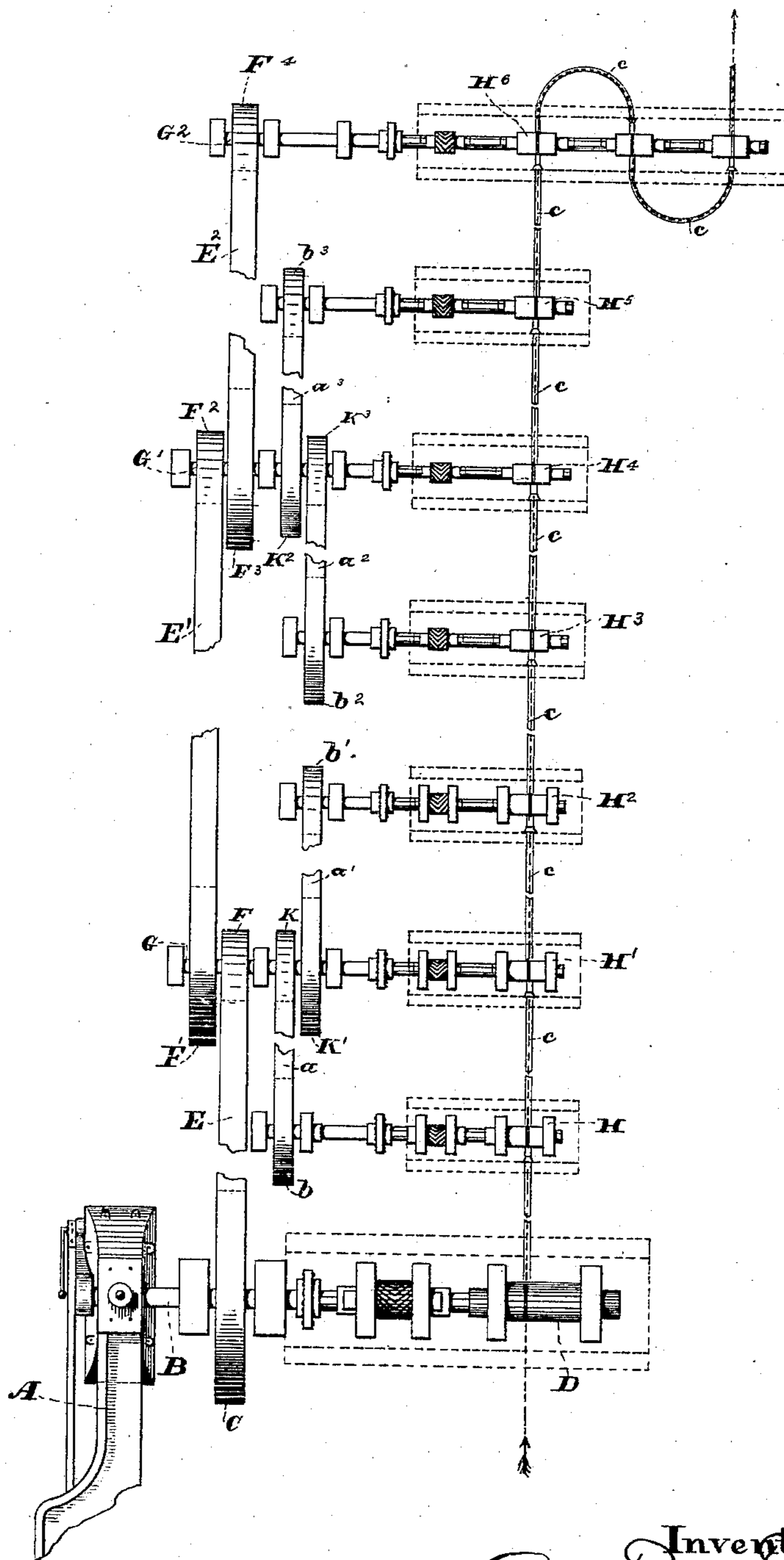


(No Model.)

C. B. BEACH.
CONTINUOUS ROLLING MILL.

No. 370,522.

Patented Sept. 27, 1887.



Witnesses

N. B. Ametudy

Jno. H. Hall

Inventor.

C. B. Beach
By Jno. H. Hall
Atty.

UNITED STATES PATENT OFFICE.

CLIFTON B. BEACH, OF CLEVELAND, OHIO.

CONTINUOUS ROLLING-MILL.

SPECIFICATION forming part of Letters Patent No. 370,522, dated September 27, 1887.

Application filed November 22, 1884. Renewed April 6, 1887. Serial No. 233,925. (No model.)

To all whom it may concern:

Be it known that I, CLIFTON B. BEACH, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Rolling-Mills; and I do hereby declare the following to be a description of the same, and of the manner of constructing and using the invention, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it appertains to construct and use the same, reference being had to the accompanying drawing, forming a part of this specification, the principle of the invention being herein explained, and the best mode in which I have contemplated applying that principle so as to distinguish it from other inventions.

My invention relates to an improvement in rolling-mills, particularly to mills for the production of rods, bars, &c., and to that type of mills known as "continuous."

It is of great importance that the floor of the mill should be as free as possible from all obstructions and at the same time the mill be simple and convenient in arrangement and construction.

The drawing hereto annexed shows a plan view of my improved rod-mill.

A represents the engine; B, the main driving-shaft, and C the main pulley fixed thereon. The main driving-shaft is coupled in the ordinary manner directly to the roughing-rolls D.

E is a belt connecting the main driving-shaft B, by pulley C, with the power-transmitting pulley F, fixed upon the first secondary driving-shaft, G. This shaft G is coupled directly to the second stand of rolls, H', in the series of rolls H H' H² H³ H⁴ H⁵ H⁶, while the secondary driving-shaft G' is coupled in like manner directly to the fifth stand of rolls, H⁴. Belt E' passes over pulley F' on shaft G and over pulley F² on shaft G', thereby independently connecting together said two shafts. Upon shaft G are two pulleys, K K', which, by means of belts *a a'*, connect pulleys *b b'* with the rolls H and H², respectively. Upon shaft G' are pulleys K² K³, which, by means of belts *a² a³*, respectively, connect pulleys *b² b³* with the rolls H³ H⁵. This system of belts and pulleys may be continued at pleasure for any desired number of roll-stands up to and including the fin-

ishing pass. I believe, however, the best practice to be to employ not more than six of these stands proper, making the seventh in line the first pass of the finishing-train, as shown.

It will be seen that by belt E² I connect pulley F³ with pulley F⁴, whose shaft G² is coupled directly to the finishing-train H⁶. In the finishing-train there may be two or more rolls, as desired.

By employing this system and arrangement it is apparent that without placing the roll-stands too far apart there will be sufficient belt-room between shafts G G' G² for the transmission of power, and also ample length of belt at *a a' a²* for the transmission of the power required to run a single stand of rolls. The roughing-rolls D may be placed at any desired distance from the first stand of rolls, H, and I recommend that instead of attempting to automatically feed the billet from the roughing-rolls to the stand H the billet be carried down, sheared off if necessary, and stuck into the roll pass at H. From this point onward the billet will, by the aid of the conductors *c c*, between each stand, pursue its course without handling up to the finishing pass of the train.

I have not attempted in the above description to show the relative proportions of the various pulleys with a view to the attainment of that acceleration of speed from stand to stand which actual practice demands. This proportion is determinable by fixed and well-known rules, and the amount of over-feed or under-feed desired will in each case govern. The descriptions and drawing are simply intended to illustrate what I conceive to be the best arrangement of this type of mill and my system of belts and pulleys for the transmission of power from a primary source and at the same time imparting to each stand of rolls such acceleration of speed as the case demands.

I claim—

1. In a rolling-mill, the combination, with two driving-shafts belted together, of two driven shafts coupled each to a stand of rolls and independent belts connecting said driven shafts respectively to said driving-shafts, substantially as set forth.

2. In a rolling-mill, the combination, with two driving-shafts coupled each to a stand of rolls and belted together, of two driven shafts coupled each to a stand of rolls and independ-

ent belts connecting said driven shafts respectively to said driving-shafts, substantially as set forth.

3. In a rolling-mill, the combination, with two
5 stands of rolls whose shafts are belted together, of a third stand of rolls located between said two stands, and having its shaft belted to one of said first-named shafts, substantially as set forth.

10 4. In a rolling-mill, the combination, with two stands of rolls whose shafts are belted together, of two stands of rolls located between said first-named stands, the shaft of one of said intermediate stands being belted to one of said first-named shafts, while the shaft of the other intermediate stand is belted to the remaining one of
15 said first-named shafts, substantially as set forth.

20 5. In a continuous rolling-mill, the combination, with a single engine and a main driving-shaft, of roughing-rolls actuated by the latter, and a series of parallel single-pass stands of

rolls located one in front of another and belted to said driving-shaft, substantially as set forth.

6. In a rolling-mill, the combination, with
25 roughing-rolls coupled to the main driving-shaft, of a series of parallel stands of rolls located one in front of another, and roll-stand shafts belted to said main driving-shaft, substantially as set forth.

30 7. In a rolling-mill, the combination, with a series of stands of rolls and a series of roll-stand shafts each having two or more pulleys, of independent belts respectively connecting a pulley of each preceding roll-stand shaft to a pulley of a succeeding roll-stand shaft, substantially as set forth.

In testimony that I claim the foregoing to be my invention I have hereunto set my hand this 19th day of November, A. D. 1884.

CLIFTON B. BEACH.

Witnesses:

THOS. B. HALL,
JNO. G. HALL.