D. C. Gately,

Belting Machine,

No. 26,178. Patented Nov. 22, 1859.

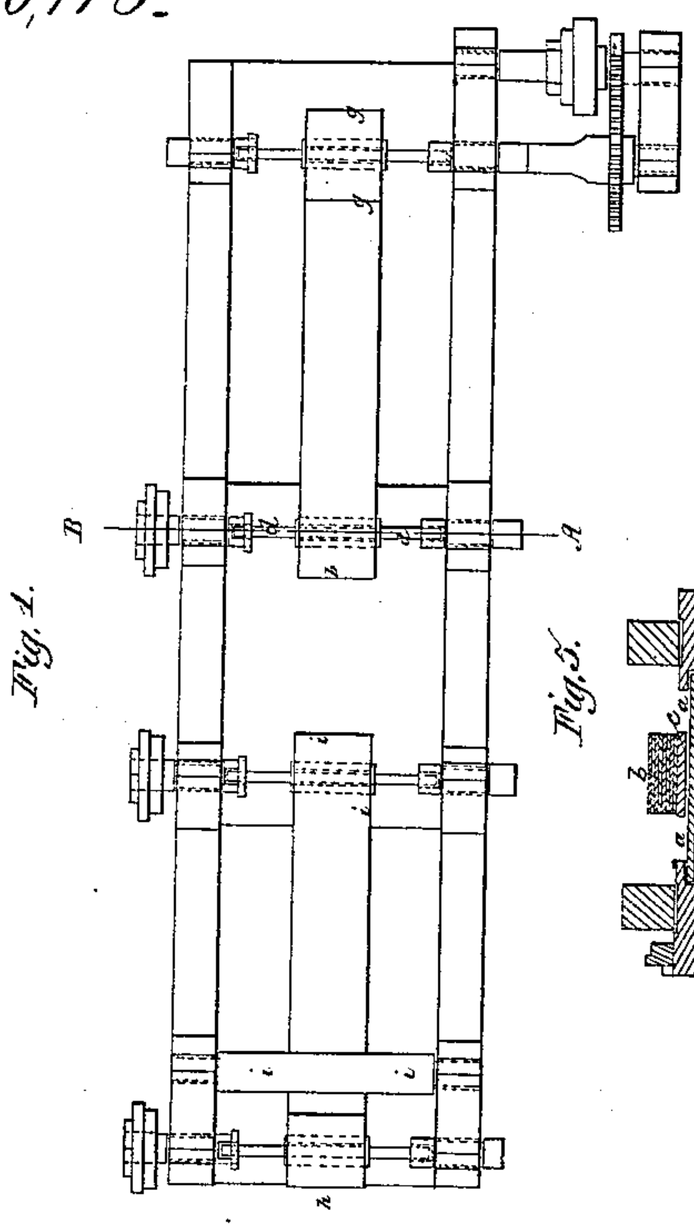

Fig. 1.

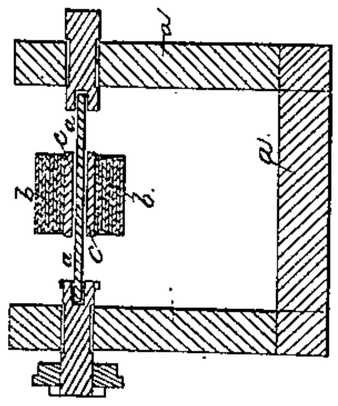

Fig. 5.

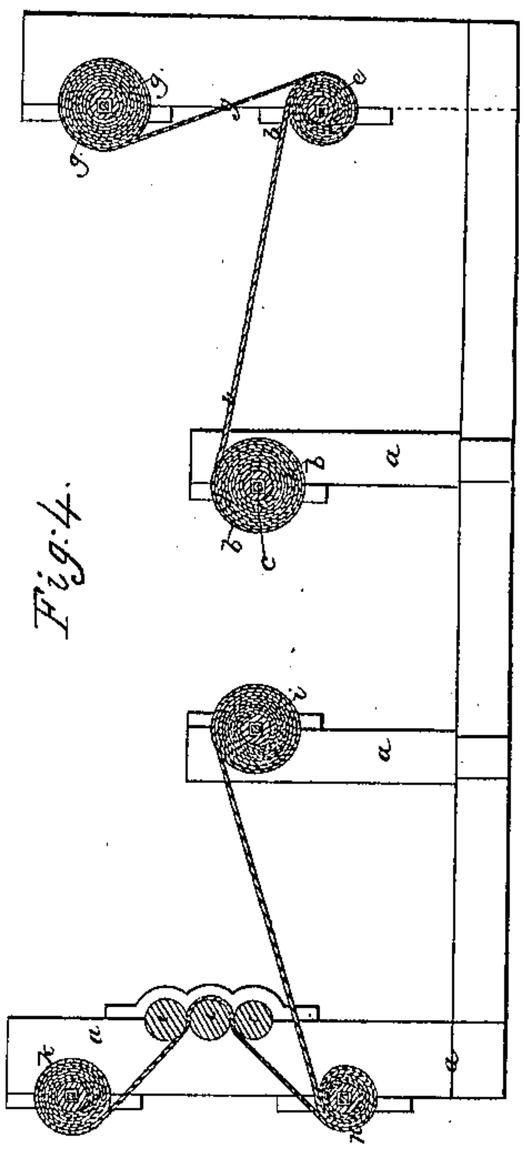

Fig. 4.

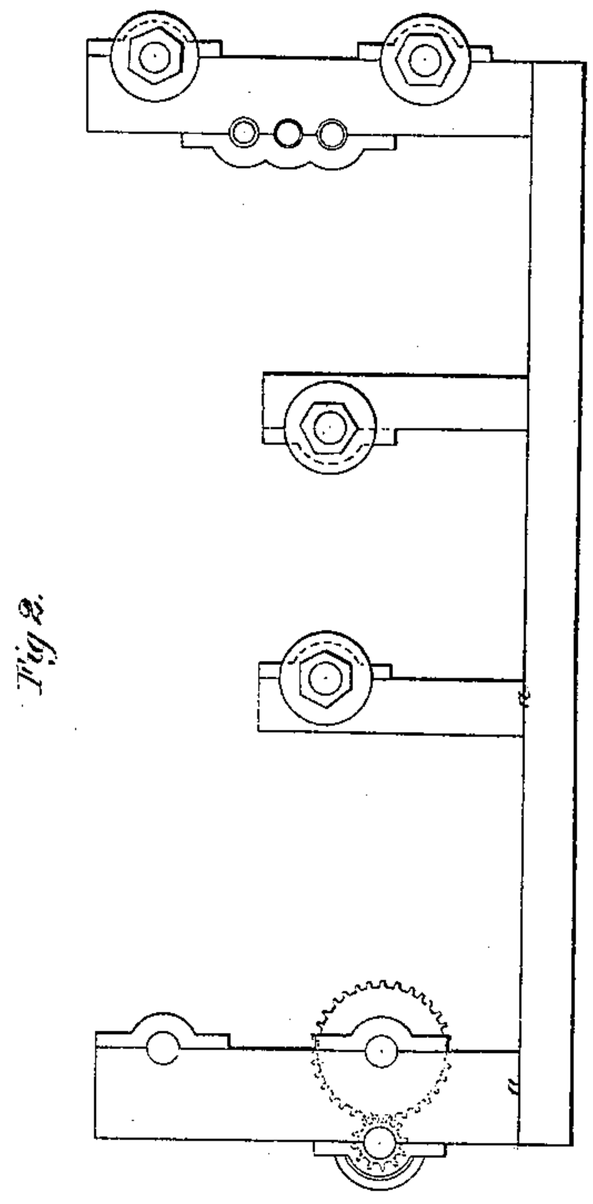

Fig. 2.

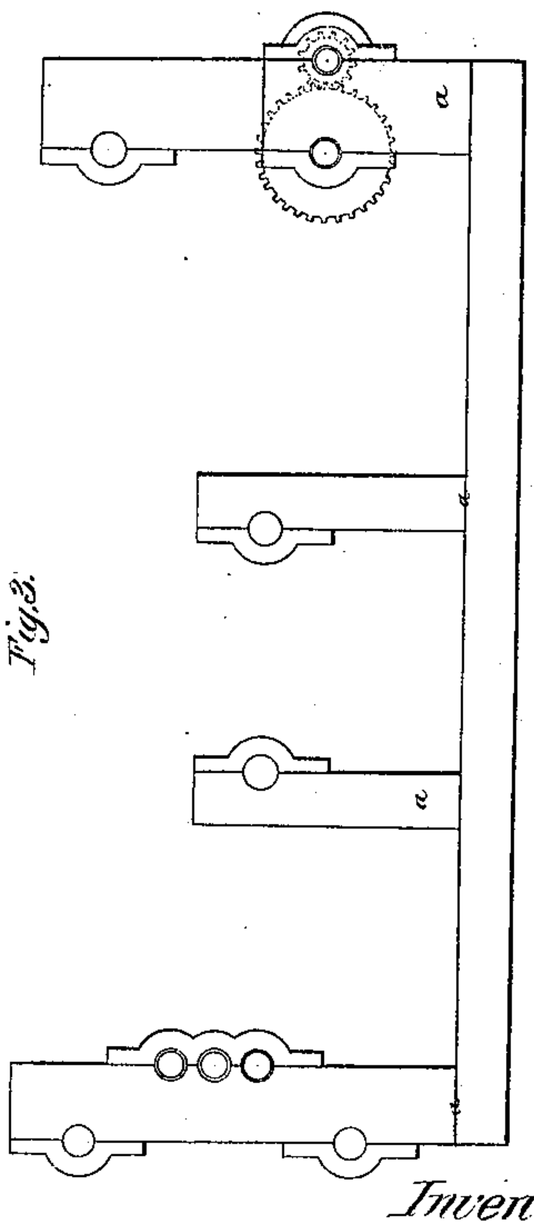

Fig. 3.

Witnesses.

D. B. Beers.
W. W. Perkins.

Inventor.

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UNITED STATES PATENT OFFICE.

DENNIS C. GATELY, OF NEWTOWN, CONNECTICUT.

MAKING RUBBER BELTING.

Specification of Letters Patent No. 26,178, dated November 22, 1859.

To all whom it may concern:

Be it known that I, DENNIS C. GATELY, of Newtown, in the county of Fairfield and State of Connecticut, have invented a new and useful Process of Making Machine Belting or Banding of Gutta-Percha or India-Rubber, and that the following description, taken in connection with the accompanying drawings, hereinafter referred to, forms a full and exact specification of the same, wherein I have set forth the nature and principles of my improvements, by which my invention may be distinguished from all others of a similar class, together with such parts as I claim and desire to have secured to me by Letters Patent.

The figures of the accompanying plate of drawings represent my improvements.

Figure 1 is a plan or top view of an improved machine for rolling up india rubber belting or banding. Figs. 2 and 3 are side elevations of the same. Fig. 4 is central, longitudinal, vertical section, and Fig. 5 is a transverse vertical section, taken in the plane of the line A, B Fig. 1.

My invention consists of a process of making machine belting or banding of gutta-percha or india-rubber. The old method of making these belts was to cover strips of heavy duck with india-rubber or gutta-percha, these when properly folded together, were vulcanized by being stretched out and exposed to the action of heat, in long steam boilers, made for the purpose. This method had many defects and occasioned many difficulties. It required much room, occasioned a great loss of heat, produced a rough irregular surface, and also occasioned blistering and air bubbles on the belts, which destroyed their value.

The objects of my invention were to save room in the heaters, and the expense of heating, to prevent blisters or bubbles on the belt, and also to make a belt with a perfectly smooth friction surface, which would give to the belt, that perfection of driving power, which I wished to obtain.

In the progress of my discovery, I heated belts, between metallic plates, placed in steam boilers. I then arranged a set of two long plates, covered with hollow casings, called steam-jackets between which I vulcanized my belts, passing them through, as one portion after the other was vulcanized. I have however produced a perfect process, which I will describe and for which I wish to obtain Letters Patent. I take thin sheets of flexible metal, of the width of my belt, and of the same length and roll them up tightly on a mandrel. This may be done by hand, but is best done by a machine which I have made for the purpose, and which is shown by the accompanying drawings.

a a a represent the supporting framework of the machine.

b b is a large roll of rubber belting wound upon a shell or hollow shaft *c* placed upon a square shaft *d*, in such a manner that it can be slipped off the same,—when the said shaft is taken out of its bearings,—being susceptible of such removal as will be seen by inspection of Fig. 5. The rubber belt *b b* is then fed to another shell or mandrel *e* arranged upon a square shaft *f*, in such a manner that it can be slipped off the same, in the same manner as the shell *c* from its shaft *d*.

g is a roll of flexible metal which is fed to and wound upon the mandrel *e* at the same time with the belt *b b*, in such a manner that the belt will be tightly held and pressed between the layers of metal, as shown in Fig. 4. When the belt and flexible metal are wholly wound upon the mandrel *e*, the said mandrel is slipped off its shaft, and the belt, still held between the layers of metal as described, is vulcanized in a steam boiler or in any suitable manner. The roll of metal and belting is then again placed in the machine at *h*, the finished belt being fed upon another mandrel *i*, where it is ready for delivery from the machine, and the flexible metal to a mandrel *k*, after passing between smoothing rollers *l*, *l*, *l* which remove the creases from the metal and render it fit for use again. The strips of metal may be in different lengths rolled up with the belt and butted or lapped at the ends; but I use strips of the required length, which are manufactured expressly for the purpose.

In rolling up the belts, my desire is to roll them as tightly as possible, and when this is done, a belt, two or three hundred feet in length, is in the form of a compact roll, which can be vulcanized in a small steam boiler with ease and economy. In this vulcanizing the belt in a roll, it is impossible on account of the tight pressure, that any air bubbles, or blisters should be produced, and the same pressure gives great strength and solidity to the whole belt. The great and essential advantages of this method of

heating, are, that the metal being a conductor of heat conveys the heat evenly and thoroughly through the belt when rolled up and vulcanizes it perfectly and equally as well within as on the surface and edges, and that in the process of vulcanization, the polished sheets of metal give a perfectly smooth and almost polished surface to the belt itself, and thus a belt which is wholly novel is produced. The best friction surface is thus given to the belt and thereby a great saving is made in the amount of power required in driving machinery, while at the same time a greater steadiness of motion is imparted thereto.

The ordinary process of making up belts before vulcanizing is familiar, and need not be described; gutta percha and india-rubber belts can be equally well made in my method. Several narrow belts if desired can be rolled up in one wide sheet of metal; and I have described a machine for rolling up the belts in metal, as that is the method I prefer, but I do not claim it as an essential feature of my invention for the belt can be roller up by hand or any other suitable machinery.

Having thus described my improvements I shall state my claim as follows: What I claim as my invention and desire to have secured to me by Letters Patent, is—

The method above described for manufacturing machine belts or bands of india rubber or gutta-percha, by rolling them in thin sheets of flexible metal and then heating them, substantially in the manner, and for the purposes above described.

DENNIS C. GATELY.

Witnesses:
D. B. BEERS,
W. W. PERKINS.