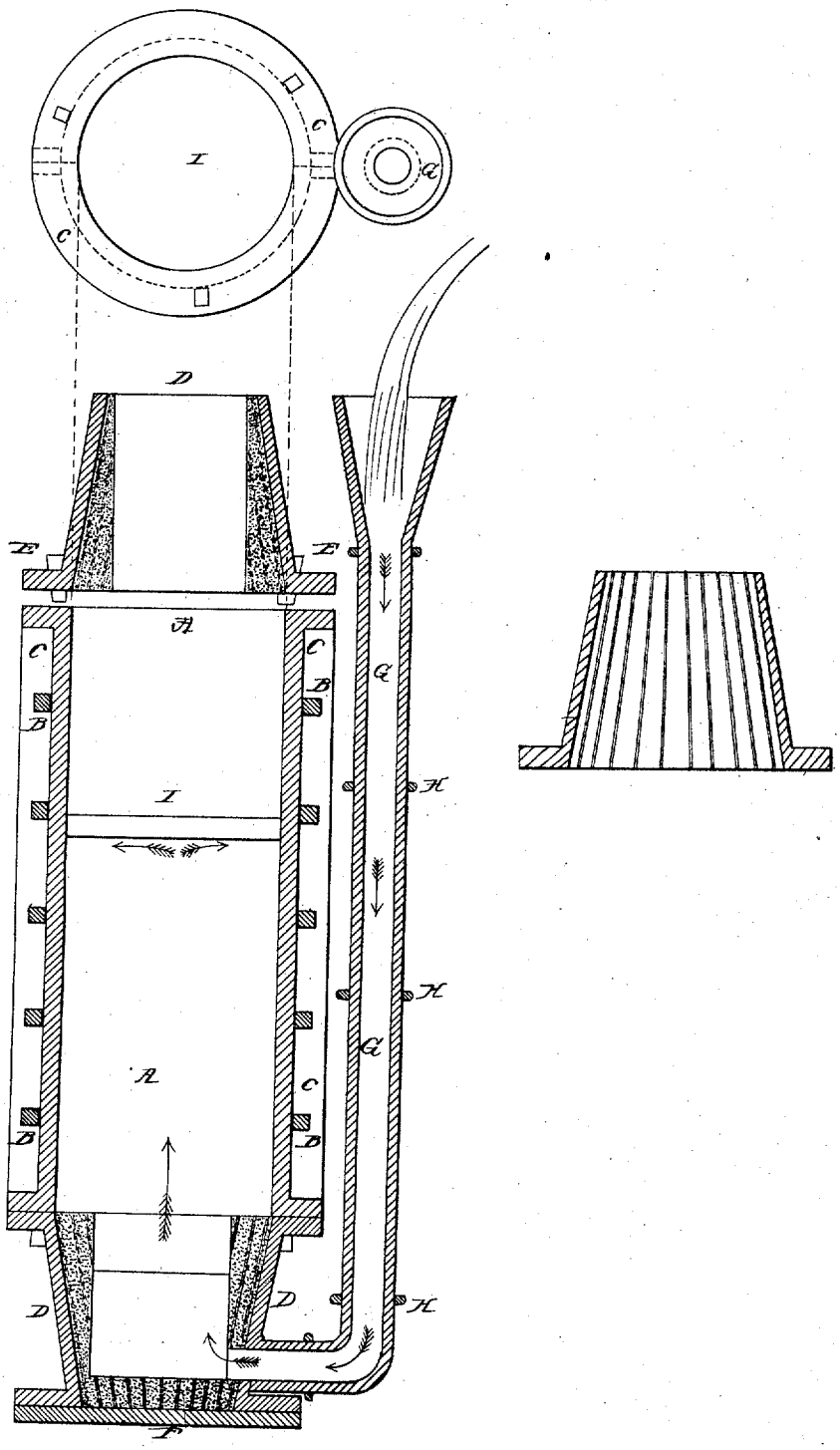
1483X

C. Alger,

Casting Iron Rolls.

Patented Mar. 30, 1811.



Mar. 30. 1811 1483X 33

Cyrus Alger
Letters Patent

The schedule referred to in these Letters Patent and making part of the same containing a description in the words of the said Cyrus Alger himself of his mode of casting large iron Rollers for Rolling iron &c.

The invention of this improvement in casting large iron rollers for rolling iron and other metals into sheets plates, and bars, consists in the first place in constructing the moulds in such a manner as to have the rollers descend cast in one mould and the shoulders and gudgeons of the roller cast in sand, and in the second place in the method to be observed in pouring the melted iron into the moulds in order to have the rollers cast perfectly sound strong and free from cold shuts in the surface of the body of the rollers.

And first. The part of the mould in which the body of the Roller is cast is called the cylinder and is made of cast iron three inches thick and as long and large in diameter as is required in the Roller to be cast in it. This cylindrical part of the mould is made in two pieces or halves each half being half a circle and are made to fit together with a good joint and fastened together with strong key bolts which go through ledges cast on the circular sides close to the joint of each piece. When thus fastened together by said key bolts which must be well fitted, the inside of it must be turned perfectly smooth and true and polished in a lathe, and the ends are also turned true and smooth the inside diameter must be the same at both ends. When the Rollers cast and cool, the said cylinder is unkeyed and taken apart otherwise it would be very difficult to get the roller out of the mould. This part of the mould must be made very perfect in the inside in order that the Rollers descent when cast therein may be equally perfect. To each end of this cylinder are also fixed with key bolts two other conical cylinders of cast iron which contain the sand in which the sand in which the gudgeons and shoulders of the roller are moulded and cast. These conical cylinders called the top and bottom moulds of the

mould are cast with a neck piece at their largest ends which
piece is to be turned in a lathe to make it fit with a good joint to the
of the said cylinder; each of the said neck pieces of the mould is fixed
to the end of the said cylinder by three key bolts well fitted; to each neck
as already; four iron bars or handles must be fastened on each side of
said cylinder and said top and bottom necks so as to handle them
with ease and safety. The bore of these neck pieces of the moulds
is cast a quarter smaller at their smallest ends than the bore of the
mould; and no other neck than the said cylinder is to have ends
are fastened. The inside of these neck pieces may have several small
cast in so as to prevent the sand from falling out. The smaller end
of the bottom neck piece is cast in so as to fix on it a bottom piece
of cast iron by key bolts. This said bottom piece incases the bore an
the whole mould is supported in a perpendicular position when casting
The cast iron part of the moulds being thus made the pattern for the
is then put into the moulds which are then keyed together, and the
body of said pattern must fit the inside of the cylinder part of the
the said sand is used in casting iron is then filled into the
of the moulds, and pounded in sufficiently firm round the gudgeons
said pattern, and against the shoulders of the body of it. The said
four pieces which incases the bore of the moulds is then keyed on firm
The top neck of the moulds being five or six inches longer than the
core of the roller to be cast therein, has a hole made in the said three
of the size of the gudgeon and in the same direction to the bore, a
hole being filled with melted iron, when the roller is cast displaces
consolidation of the gudgeon and roller below as they gradually cool
and thereby causing the roller and gudgeons sound and strong, when the roller
cool the top end on the square gudgeon which is called the "spine"
and off the moulds are then made and keyed together so that when the
is cast and cooled it may be taken out by unkeying the moulds, the
exposed part of which being the part of the iron mould in which the bo
of the roller is cast is taken off with care from the body of the roller.
shoulders and gudgeons being cast in sand are also easily taken out of th

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Before the moulds are to be placed on the moulds, must be made dry, more especially the body part of it that the melted iron may not blow as it is called when it meets the iron surface of the said body of the mould.

To the lower neck piece of the moulds is fixed a tube the whole of which communicates with the lower part of the cavity of the thing moulded and the other part of this tube extends perpendicular height equal to the height of the moulds. The melted iron is poured into this tube and enters at the bottom of the mould instead of being poured in at the top of the moulds as is customary. This tube is made in two pieces and put together with rings or other fastenings somewhat like a spout for a mould. The inside of this tube is coated over with clay so that after the mould is cast the cast iron in this tube may be easily taken out by taking said tube asunder longitudinally. The top of this tube is made like a funnel so as to be convenient in pouring the melted iron into it. Care must be taken to have the longitudinal joints of the said cylinder and the joints of the two neck pieces on the ends of said cylinder made tight so that the melted iron may not leak out, and also to have the inside of said cylinder well plastered and made sizzing hot so that the surface of the body of the roller may be cast perfectly smooth and free from imperfections. Secondly the the method to be observed in casting said Rollers in their moulds is this viz. to have a circular circum cut out of a pine board, or other suitable wood so as to fit the inside of the body of said moulds. This wooden circle is put into the said cylinder or body of the moulds and the top neck of the moulds is left off until the melted iron when pouring has filled the body of said mould and raised the said wooden circle to the top when it is taken off and the said top neck of the moulds is put on, keyed down, and then the melted iron is again poured in until the mould is filled. The use of this wooden circle is to keep the impurities on top of the melted iron from the sides of the body of the moulds and thereby prevent them from being cast on the surface of the rollers and this wooden circle effects this important object and keeps all the impurities on the middle of the melted iron and when the mould is full they may then be taken off altogether and

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(the top of the column where they can do no injury. Repeatedly repeat
coat over the top of the Rollers, melting it well down over and other melting m
Steel, Files and Saws, are to have them well tried to see the reason b
the Cutters to turn them to clear the surface of the body of the roller h
and to leave the gudgeons as well as the body of the Rollers and perfe
strong enough of water, smartly, and the surface of the roller p
dry, smooth true and free from cold shuts, Holes, and irregularities of th
Chamber and with this method well observed have been found to
these most important qualities and which render them superior to those
in any other manner. Care must also be taken to put the moulds together
in one way, so as to prevent any mistake. In moulding the Rollers
may be cast Rode rollers, for rolling iron into round and square bar
from this care it would only be necessary to have the steel cylinder in it
the body of the roller is cast turned out with proper circular mouldings
of grooves as may be wanted in the Rollers. The Rollers are cast in
perpendicular position with the gudgeon having a square on its end by
which to put it in operation drowned, or at the bottom when cast. C
of the moulds are well made and the pattern of the Rollers well mould
the Rollers will be cast so true as to admit them being ground in a com
case or Rafter and piece of cast iron with sand and water and fin
ed with Coarse emery without the trouble of turning their Rollers in
edge tools which require much time in consequence of the surface
of said Rollers. And to grind the Rollers true in the way it is
necessary to have them run very rapidly in the Lathe.

Ever
Yours Alger

Geo. Holcroft Esq.
Bankers
Knight.

(1694 Nov