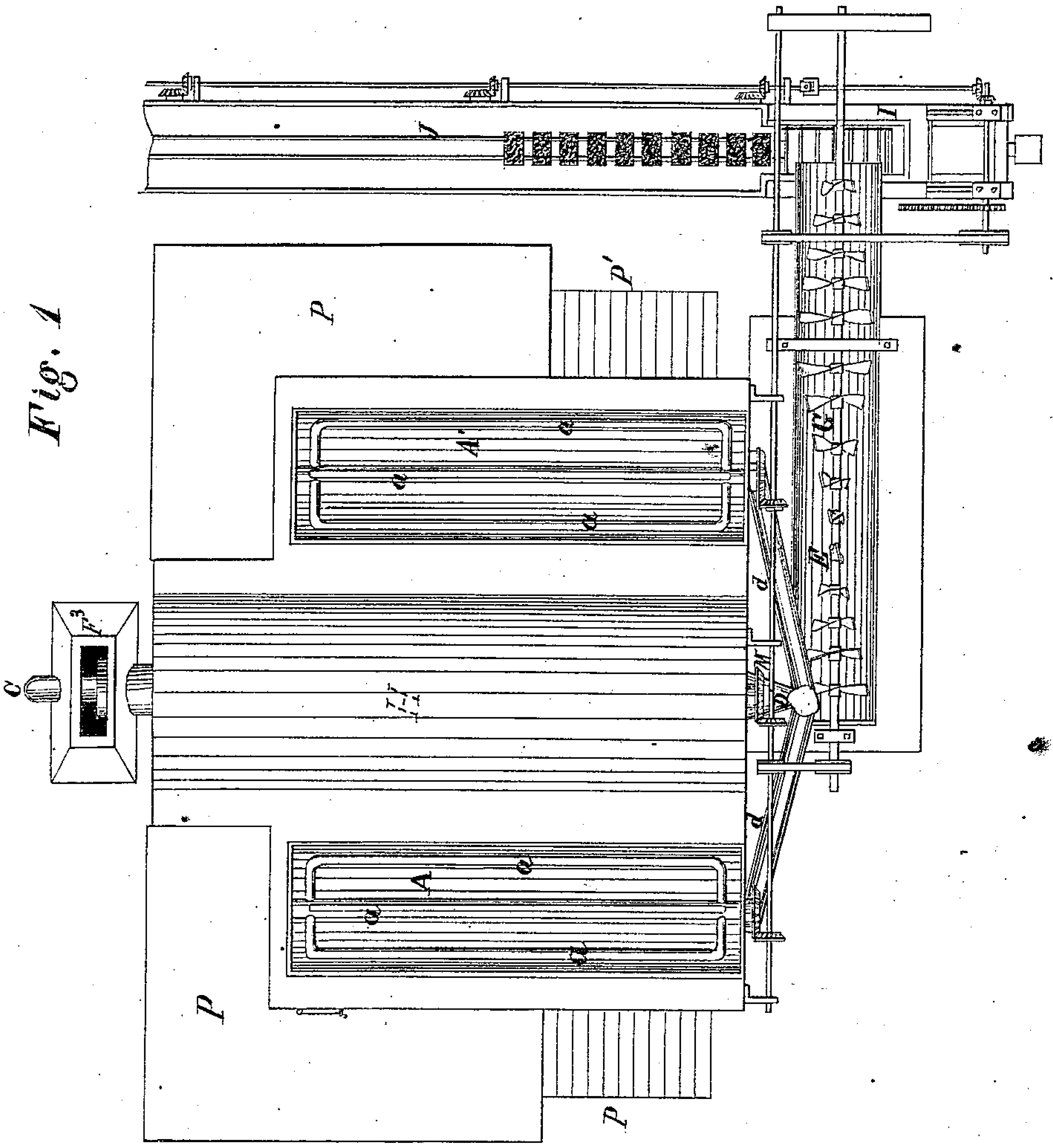
3 Sheets--Sheet 1.

T. COOK.

Machine for Manufacturing Blocks of Artificial Stone.

No. 161,866.

Patented April 13, 1875.



WITNESSES
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Fig. 2

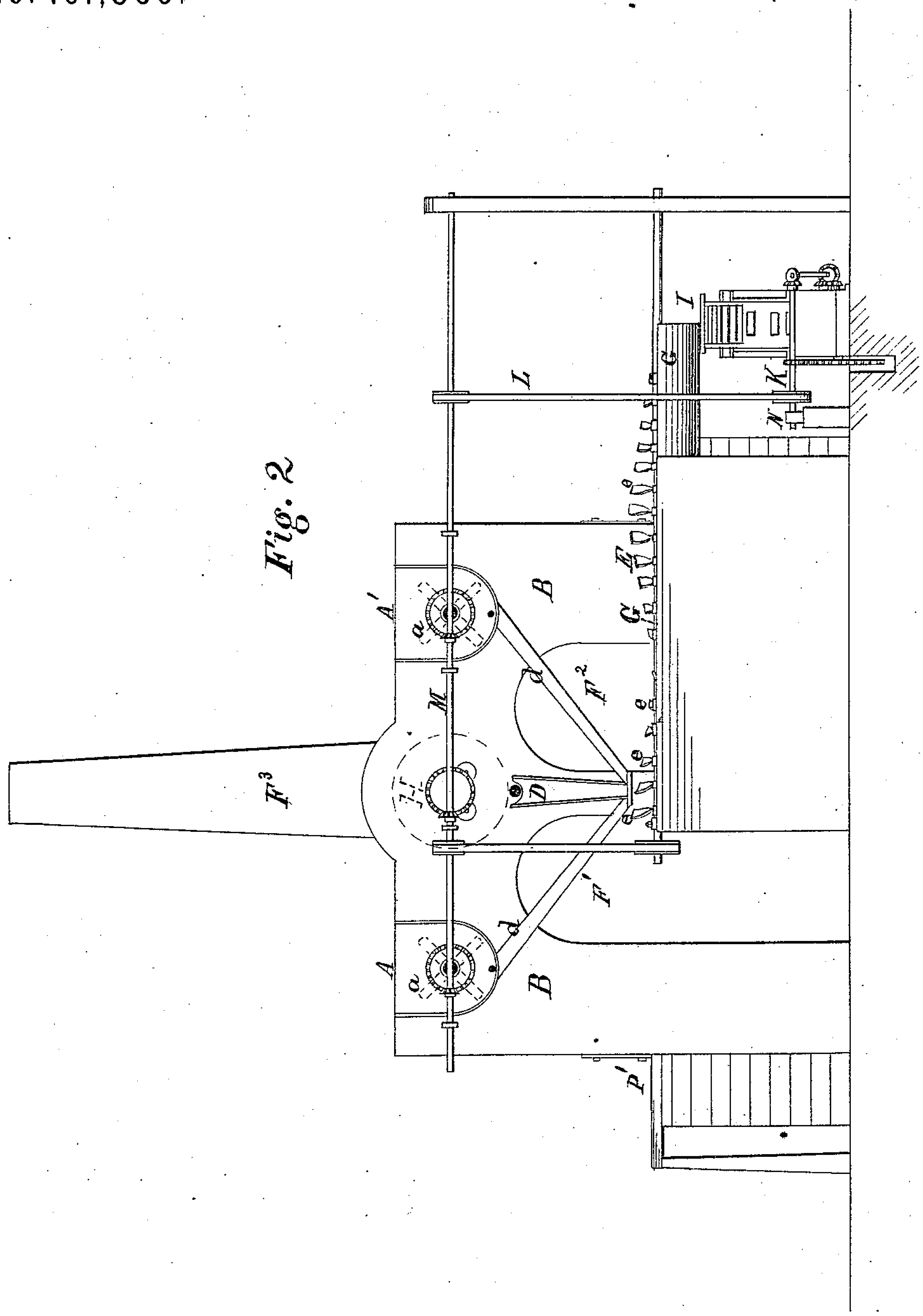

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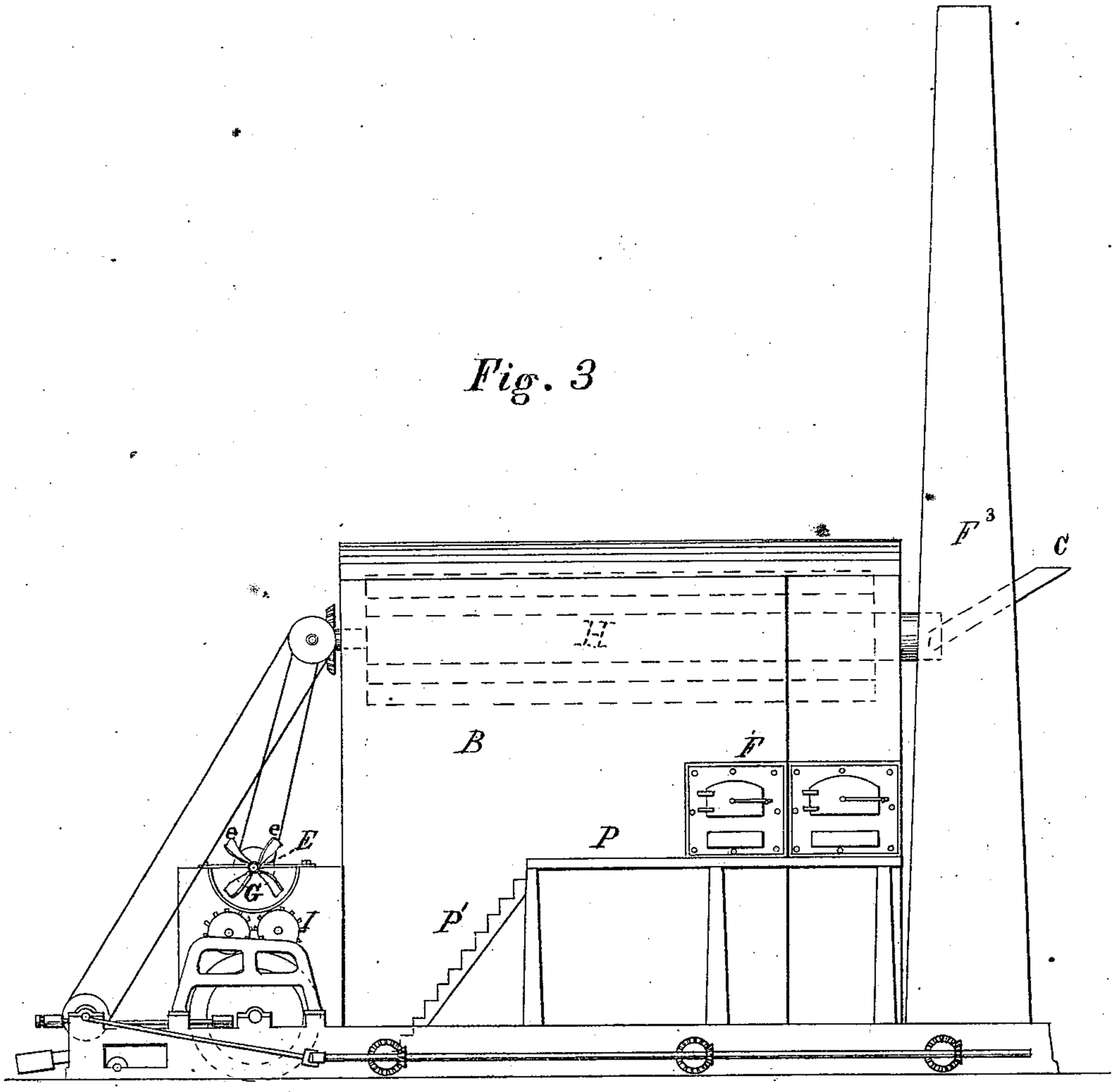
Fig. 3



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UNITED STATES PATENT OFFICE.

THOMAS COOK, OF SING SING, NEW YORK, ASSIGNOR TO J. R. DOS PASSOS AND ZACHARIAH E. SIMMONS, OF NEW YORK CITY.

IMPROVEMENT IN MACHINES FOR MANUFACTURING BLOCKS OF ARTIFICIAL STONE.

Specification forming part of Letters Patent No. **161,866**, dated April 13, 1875; application filed February 24, 1875.

To all whom it may concern:

Be it known that I, THOMAS COOK, of Sing Sing, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Machinery for Manufacturing Blocks of Concrete, Artificial Fuel, &c.; and I do hereby declare the following to be a full and exact description of the same, reference being had to the accompanying drawings forming part of this specification, in which—

Figure 1 is a top plan view of the machinery for carrying out my invention. Fig. 2 is a front elevation, and Fig. 3 is a side elevation, of the same.

Similar letters of reference in the accompanying drawings denote the same parts.

The object of this invention is to provide for the public an improved combination of mechanism for the more rapid, convenient, and effective treatment of the materials used in making artificial concrete blocks, artificial fuel, and other blocks of similar character, and for combining said materials, compressing them to form the blocks, and delivering the completed blocks from the machine, in such a manner as to effect the utmost possible saving of time and of hand-labor, and produce the most perfect blocks at the least practicable expense.

This object I accomplish by means of my improved combination and arrangement of mechanism adapted to heat the asphalt or other equivalent material, heat the ground, pulverized, or granular stone, or other equivalent thereof, convey said heated stone and heated asphalt to a mixing-vessel and discharge them together thereinto, thoroughly mix and incorporate them together, convey the mixed materials to the press and compress them into suitable blocks, and, if desirable in any particular case, convey the completed blocks away to a suitable receptacle, or to the place where they may be wanted for use.

My invention consists, first, in the improved combination and combinations of mechanism, for the purposes referred to, and as I will more particularly hereinafter describe; secondly, in an improved arrangement of mechanism by which one of the vessels employed for heating and stirring the asphalt may be delivering the melted asphalt to the mixing-vessel while the other is heating up a new charge of asphalt to be used in its turn with the mixer, as I will also proceed to describe; and, thirdly, in the improved process of manufacturing the blocks by machinery without the intervention of hand-labor.

In the drawings, B is a brick structure adapted to the proper support and convenient arrangement of the apparatus, and provided with a furnace, F, for heating the granulated stone or equivalent material in its passage through the apparatus; a furnace or furnaces, F^1 F^2, for heating one or both of the asphalt-vessels; a smoke-flue, F^3; and, if preferred, a suitable furnace under the mixing-vessel for the purpose of keeping the materials at the proper temperature for mixing in cold weather. In lieu of this last-mentioned furnace, a flue or flues from either of the other furnaces, provided with regulating-dampers or cut-offs, may be caused to pass under or beside the mixing-vessel, or a set of steam-pipes or hot-water pipes from a suitable boiler may be arranged to control and regulate the temperature of the materials in the mixer. A variety of suitable arrangements for this purpose will readily suggest themselves to the mind of any skilled mechanic familiar with the state of the art without further description herein.

A suitable platform, P, provided with steps P^1 and guard-rail, may be arranged to accommodate the workmen in attending to the fires, inspecting the progress and condition of the work, supplying the materials, &c., and the form of this platform must in all cases be adapted to the form of the brick structure, the arrangement of the vessels and furnaces, the nature of the work, &c.

The brick structure having been thus provided and adapted to its appropriate functions, the mechanism which I employ in connection with it may be described as follows: C is a chute, through which the ground or pulverized stone, or other granular or pulverulent material, is fed to the apparatus, said feed-chute being provided with a suitable con-

veyer, if preferred. H is the heater, into which such pulverized or granular material is delivered from the feed-chute, and through which it is slowly passed, by the operation of suitable mechanism, and heated during its passage by means of the furnace F. A A′ are vessels, in which the asphalt is heated by means of the furnaces F^1 F^2, and stirred by the rotary agitators *a*, or other suitable means. D is the spout or pipe, through which the pulverized or granulated materials, after having been properly heated, are delivered from the heater H into the mixing-vessel G. *d d* are two spouts or pipes, through which the melted asphalt is delivered from one or both vessels A A′ into the mixer G, simultaneously with the heated stone from the heater H. E is a powerful agitator, arranged longitudinally of the vessel G, and provided with oblique blades *e e*, or the equivalent thereof, arranged in a spiral manner upon their supporting-shaft, which at the same time thoroughly mix the heated stone and melted asphalt together, and force the combined mass along toward the discharge end of the vessel, where the materials are delivered into a suitable press, I, and molded and compressed into blocks of the size and form desired. The blocks may then be conveyed away, by a carrier, J, to any place where they may be wanted, the action of the press in delivering them onto the carrier, and of the carrier in conveying them away, being automatic.

I prefer to use, for the heater H and for the press I, improved devices which form the subject of two applications for Letters Patent of the United States filed by me contemporaneously herewith, and are therefore not necessary to be particularly described herein; but the substitution of other forms of heater or press, or of both, will not be a departure from the principles of this invention, which is not limited to any particular construction of either of said parts.

A shaft, M, serves to rotate the heater H and the stirring apparatus in the vessels A A′, and also to drive the agitator E in the vessel G. This shaft, together with the conveyer J and the press I, are all driven from a power-wheel, K, by means of suitable belting L, connecting-shaft N, and other mechanism described and shown in my said application for Letters Patent on the press.

The arrangement of the mixing-vessel G at right angles to the heater H and vessels A A′ is obviously not necessary, nor is the arrangement of the conveyer J parallel to said vessels; but they may be arranged in any manner which in any particular manufactory will be most convenient for all the purposes required.

The passage of the materials into, through, or from the heater H, from the vessels A A′, and through or from the mixer G, may be controlled, adjusted, or regulated by suitable means. In the form of construction herein shown such objects may be accomplished by means of valves and by regulating the speed of the several shafts through the operation of shifting gearing, or pulleys, brakes, or other instrumentalities well known in the arts for similar purposes.

The apparatus will operate well with a single vessel, A, but the operation of mixing the stone and melted asphalt may, in that case, be interrupted occasionally by the introduction of fresh unmelted asphalt into said vessels A. By combining two asphalt-heaters, one may be delivering its charge of melted asphalt while the other is heating up a fresh charge, and the rest of the mechanism may thus be kept in continuous operation, and a considerable saving in time be effected.

A single furnace may be constructed by means of suitable compartments or flues, hot-air pipes, or hot water or steam pipes, to do the work of heating the heater H and the vessels A A, and also G, in which case the heat of the various compartments or flues may be regulated by suitable valves, dampers, cold-air flues, &c. I prefer, however, to use separate furnaces for the purpose, as represented in the drawings, and I regard the use of a single furnace, with means for adjusting the temperature under the different heaters and boilers, as equivalent to the use of separate furnaces for the purposes herein referred to.

The various agitators, and especially those employed in stirring the asphalt in the vessels A, may be made with hollow shaft and hollow arms, as represented, and heated by means of superheated steam, so that the heat radiated and conducted therefrom will assist in liquefying the asphalt.

It will be observed that the operation of this improved device is entirely automatic, from the delivery of the materials into the heaters to the delivery of the completed block, requiring no hand-labor, except for starting, stopping, and regulating the mechanism, and supplying fresh asphalt to the vessels A.

In this respect it is believed to differ from, and to constitute a very important improvement upon, all other inventions heretofore brought into use, and the process of thus heating and melting the materials, uniting them together, conveying them to the press, and molding, compressing, and delivering the blocks by the continuous action of machinery, without the intervention of hand-labor, is regarded as constituting an important element of the invention.

I claim as my invention—

1. The combination of the furnace F, heater H, furnace F^1 or F^2, vessel A, pipes D *d*, vessel G, agitators *a* E, and press I, with the driving mechanism, substantially as and for the purposes herein set forth.

2. The two vessels A A^1, provided with separate agitators *a* and discharge-pipes *d*, and heated by separate furnaces, in combina- with the heater H and mixing-vessel G and its appliances, substantially as described, for the purposes set forth.

3. The process of heating the stone, heating and stirring the asphalt, delivering the stone and the asphalt into the same mixing-vessel, mixing them thoroughly therein, discharging them, thus mixed, into the press, and molding and compressing them into blocks, and delivering the blocks from the press, finished and ready for use, by the operation of machinery, as above described, and without the intervention of hand-labor at any stage, substantially as herein set forth.

THOMAS COOK.

Witnesses:
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M. CHURCH.