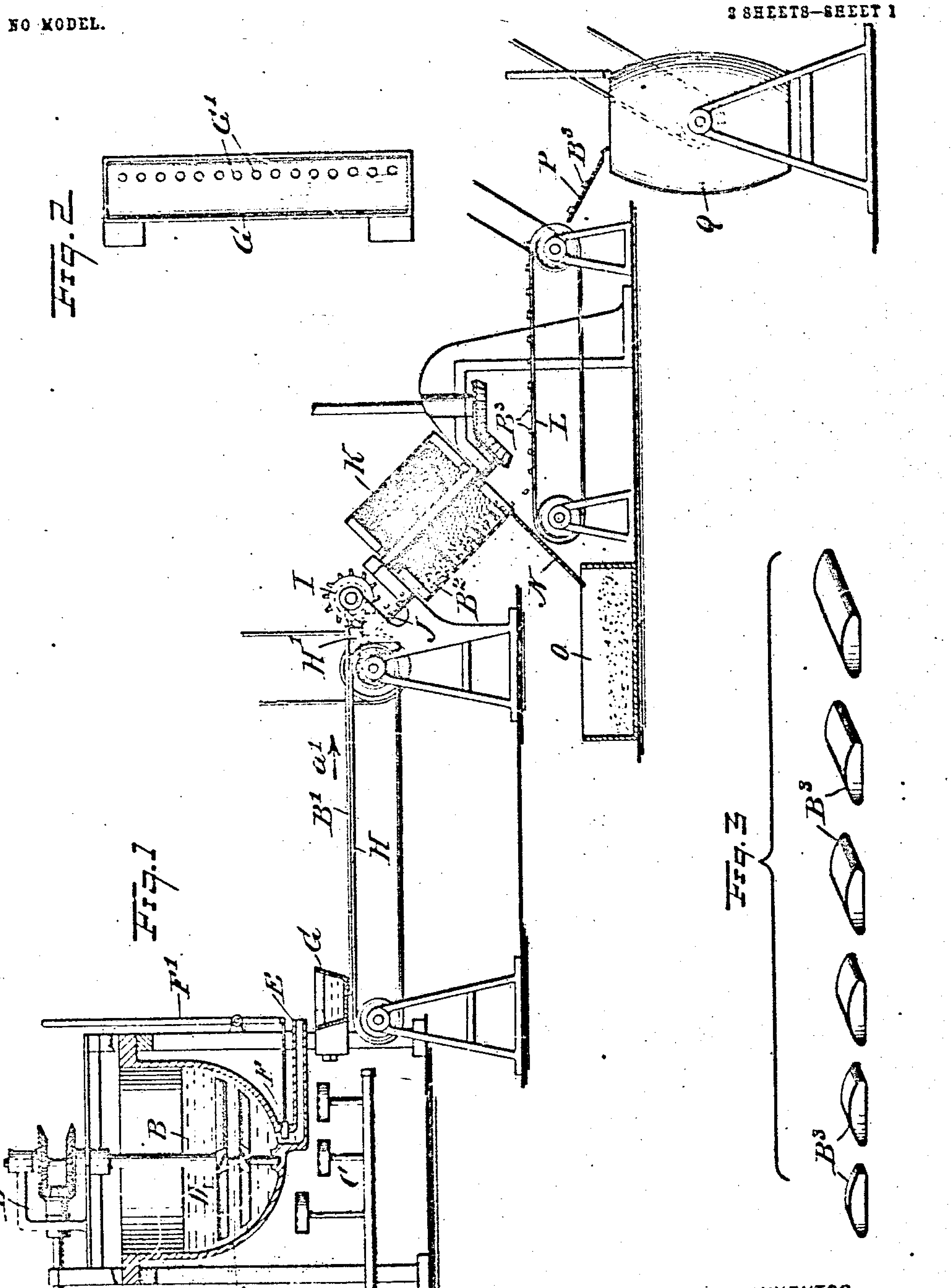
No. 767,160. PATENTED AUG. 9, 1904.

C. A. MEADOWS.

METALLIC ALLOY.

APPLICATION FILED FEB. 16, 1904.

NO MODEL. 2 SHEETS—SHEET 1.



WITNESSES:

John a Bergstrom

Geo. G. Hosker

INVENTOR

Charles A. Meadows

BY

Munn & Co

ATTORNEYS

No. 767,160. PATENTED AUG. 9, 1904.

C. A. MEADOWS.

METALLIC ALLOY.

APPLICATION FILED FEB. 16, 1904.

NO MODEL. 2 SHEETS—SHEET 2.

Fig. 5.

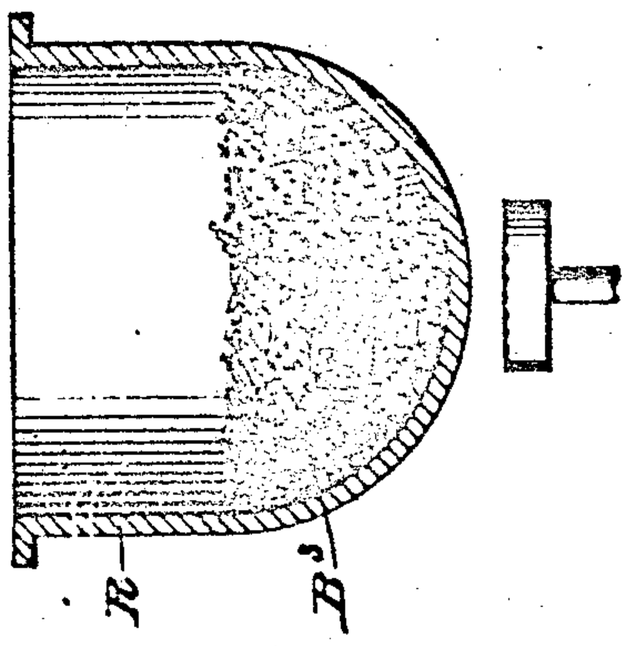


Fig. 6.

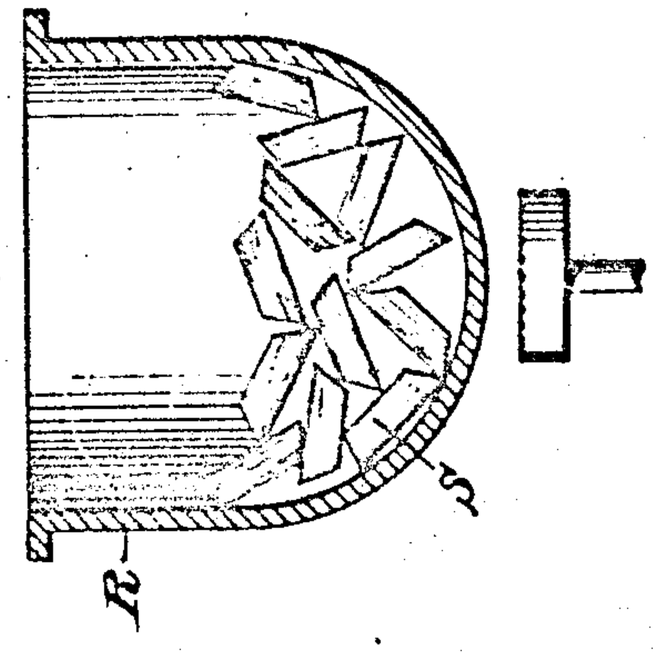
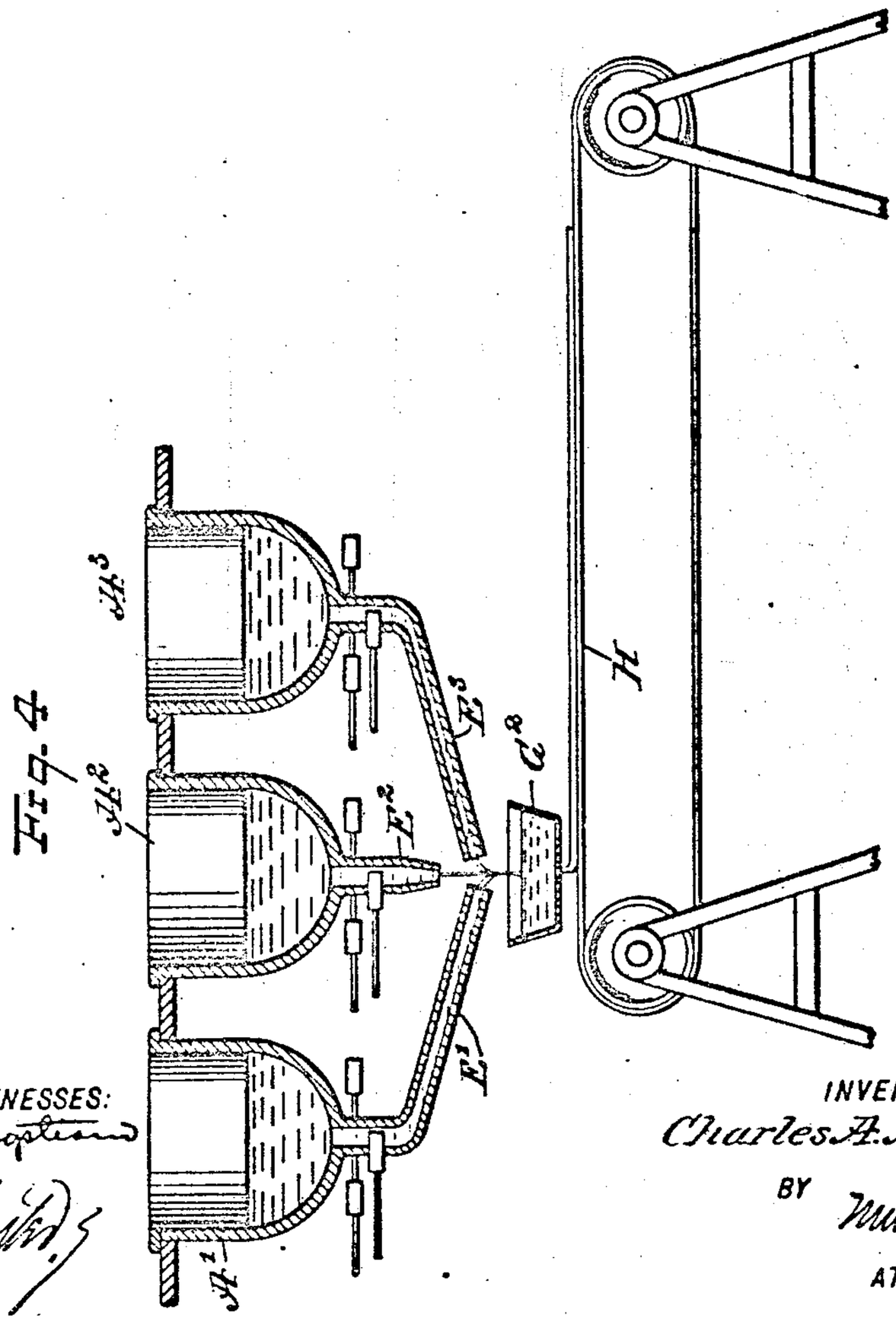


Fig. 7.



WITNESSES:

John A. Brophy

Geo. J. Howson

INVENTOR

Charles A. Meadows

BY Munn & Co.

ATTORNEYS

No. 767,162. Patented August 9, 1904.

UNITED STATES PATENT OFFICE.

CHARLES A. MEADOWS, OF YONKERS, NEW YORK.

METALLIC ALLOY.

SPECIFICATION forming part of Letters Patent No. 767,162, dated August 9, 1904.

Application filed February 16, 1904. Serial No. 193,773. (No specimens.)

To all whom it may concern:

Be it known that I, CHARLES A. MEADOWS, a citizen of the United States, and a resident of Yonkers, in the county of Westchester and State of New York, have invented new and useful Improvements in Metallic Alloys, of which the following is a full, clear, and exact description.

The invention relates to metals such as are used in casting-machines of any construction for forming ordinary types, stereotypes, monotypes, slugs, Babbitt bearings and other bearings, solders, and other articles in which a uniform or even distribution of the constituent metals of the alloy is desirable and essential.

The object of the invention is to provide certain new and useful improvements in the manufacture of metallic alloys whereby a more even and uniform blending of the constituent metals is obtained, the product being in the form of fragments or small particles which can be conveniently handled, shipped, and finally fed into the melting-pot to be reduced to a molten state therein, the molten metal when cast into the desired article producing an article possessing a high quality, as the constituent metals are intimately blended in the desired proportions.

The invention consists of a mass of alloy for charging or as a charge for a melting-pot in the form of small pieces or bits, said pieces or bits being thoroughly mingled or mixed together, whereby the constituent metals of the alloy, though perhaps existing in different proportions in different individual particles or bits, are nevertheless distributed uniformly throughout the total mass of particles in the proper proportions. The alloy itself is composed of metals, one or more of which are when the mixture or alloy is in a molten state susceptible to separative influences, which destroy or prevent uniformity or homogeneity of composition. Among such influences may be mentioned gravity, by which the metals may be caused to separate according to weight, centrifugal force, as when rotation is imparted to part or all of the molten mixture, and the selective cooling or freezing of eutectiferous alloys—*i. e.*, alloys whose constituents solidify selectively. The result of such influences is that large solid masses of the alloy are not uniform in composition. The heaviest component may be in the bottom of the bar or pig, or the components may have segregated themselves in irregular masses on account of their selective solidification, or gravity or centrifugal force may have caused such segregation in the mixing-pot that the first pig cast, the metal of which it is composed having been taken necessarily from the top or bottom or some other particular part of the molten mass, is not the same as to the proportions of its constituents as a bar composed of metal taken from another part. This makes a great difference in the composition of bars or pigs of the first run of metal as compared with others cast later. By my invention this lack of uniformity is overcome, however non-uniform the alloy may have become in the molten state. The method by which I produce a mass of uniform composition consists, essentially, in mixing together the constituent metals in the molten state, dividing the resultant product into small pieces or bits, and blending this divided product by thoroughly commingling or intermixing the pieces or bits of which it is composed.

In order to carry this method into effect, I prefer to use apparatus such, for instance, as shown in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a sectional side elevation of the apparatus for forming well-blended alloys in the form of fragments. Fig. 2 is a plan view of the distributing-box for pouring the molten metal in separate streams onto a carrying-belt. Fig. 3 is a perspective view of the finished article, various sizes being shown. Fig. 4 is a sectional side elevation of a modified form of part of the apparatus. Fig. 5 is a sectional side elevation of the melting-pot and the alloy fragments therein ready for melting; and Fig. 6 is a like view of a melting-pot, showing the ordinary bars or blocks in position in the pot ready for melting.

The apparatus illustrated in Figs. 1 and 2 is provided with a large furnace or melting-pot

A, in which the constituent metals for the alloy B are placed in about the desired proportions, the metals being heated by suitable burners C and intimately mixed or blended with each other by suitable stirrers or agitators D, mounted to revolve in the pot A and driven by a suitable overhead driving device D'. The blended metals forming the allow B are discharged through a spout E from the pot A, the outflow of the molten metal being controlled by a valve F, arranged in the spout and connected with a lever F' under the control of the operator. The molten alloy flows from the spout E into a distributing box or trough G, provided in its bottom with a row of apertures G', discharging the molten metal in separate streams onto the upper run of an endless belt H, driven by a suitable mechanism in a forward direction—that is, in the direction of the arrow *a'*—so that the molten alloy hardens into bars, finally passing over a table H', to be cut into small fragments B^2 by the use of a suitable cutting device I, preferably in the form of a driven rotary cutter, as indicated in the drawings.

The fragments B^2 drop over a chute J into a tumbling or cleaning barrel K, preferably set in an inclined position and provided with a screen-rim and spiral retainers inside of the rim, so that when the barrel is rotated the fragments B^2 are caused to rub against each other and against the rim while being fed downward at the same time in the barrel K, owing to the action of the spiral retainers. By this action the fragments B^2 are freed of scales or other external extraneous matter, so that the fragments in a cleaned and somewhat-polished state fall finally onto a belt L, while the removed scales or other extraneous matter passes through meshes of the barrel-screen onto a chute N to be discharged into a receptacle O. The cleaned fragments B^3 are carried by the belt L in a forward direction to be finally discharged from the belt over a chute P into a mixer Q, preferably in the form of a barrel adapted to be rotated, so as to mix the fragments B^3 while in bulk to insure a thorough intermingling of the several fragments. These fragments can be readily packed and conveniently shipped to be finally subjected to heat in a melting-pot R of any approved construction to produce a molten alloy, which when cast into ordinary types, stereotypes, monotypes, slugs, Babbitt bearings, solders, and like articles produces such articles in which a uniform even distribution of the constituent metals of the alloy is had.

In pouring the molten alloy from the pot R, as required, it is evident that for a continuous operation solid metal in some form must be fed periodically into the pot, and by having the metal in fragment form it is evident that the molten metal already in the pot is not liable to be chilled to an undesirable degree and at the same time a quick remelting of the metal fragments takes place in the pot R, so that the molten metal in the said pot is always in a proper condition for being cast into the desired article.

As heretofore practiced large metal-alloy blocks or bars S, as shown in Fig. 6, were employed; but it is evident that such large blocks or bars have a tendency to chill the metal already in the pot and owing to their size require a large amount of heat before passing into the molten state.

In the modified form (shown in Fig. 4) a number of furnaces or pots A', A^2, and A^3 are employed, each containing a constituent metal for the alloy—that is, one may contain lead, another antimony, and a third silver—and the several spouts E', E^2, and E^3, leading from the pots, for conducting the molten metals to the distributing-box G^2, are so arranged as to run the several constituent molten metals together and mix the same previous to passing the metals into the distributing-box G^2. The blended metals in a molten state are run from the distributing-box G^2 onto the belt H to be formed into solid bars, which are then chopped or cut up into fragments and further treated, as above described with reference to Fig. 1.

In either of the two cases mentioned the constituent metals are well blended while in a molten state, and the resultant fragments are again mixed in bulk, so that the intermingled fragments of the constituent metals are so well distributed that when used in the pot R a molten metal is produced which allows of forming types and other articles of a very high quality.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

A body of alloy for charging melting-pots, to be cast into bearings, printers' types or the like, containing constituents susceptible to separative influences when the alloy is in a molten state, said body or charge consisting of a mass of the alloy converted into small solid pieces or bits thoroughly comminged, the constituent metals of the alloy being distributed throughout the mass or charge in the proper proportions, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES A. MEADOWS.

Witnesses:
THEO. G. HOSTER,
JNO. M. RITTER.