No. 870,869. PATENTED NOV. 12, 1907.

E. A. CUSTER.

APPARATUS FOR HOLDING AND POURING METAL INTO MOLDS FOR CASTING MACHINES.

APPLICATION FILED APR. 26, 1907.

2 SHEETS—SHEET 1.

Fig. 1.

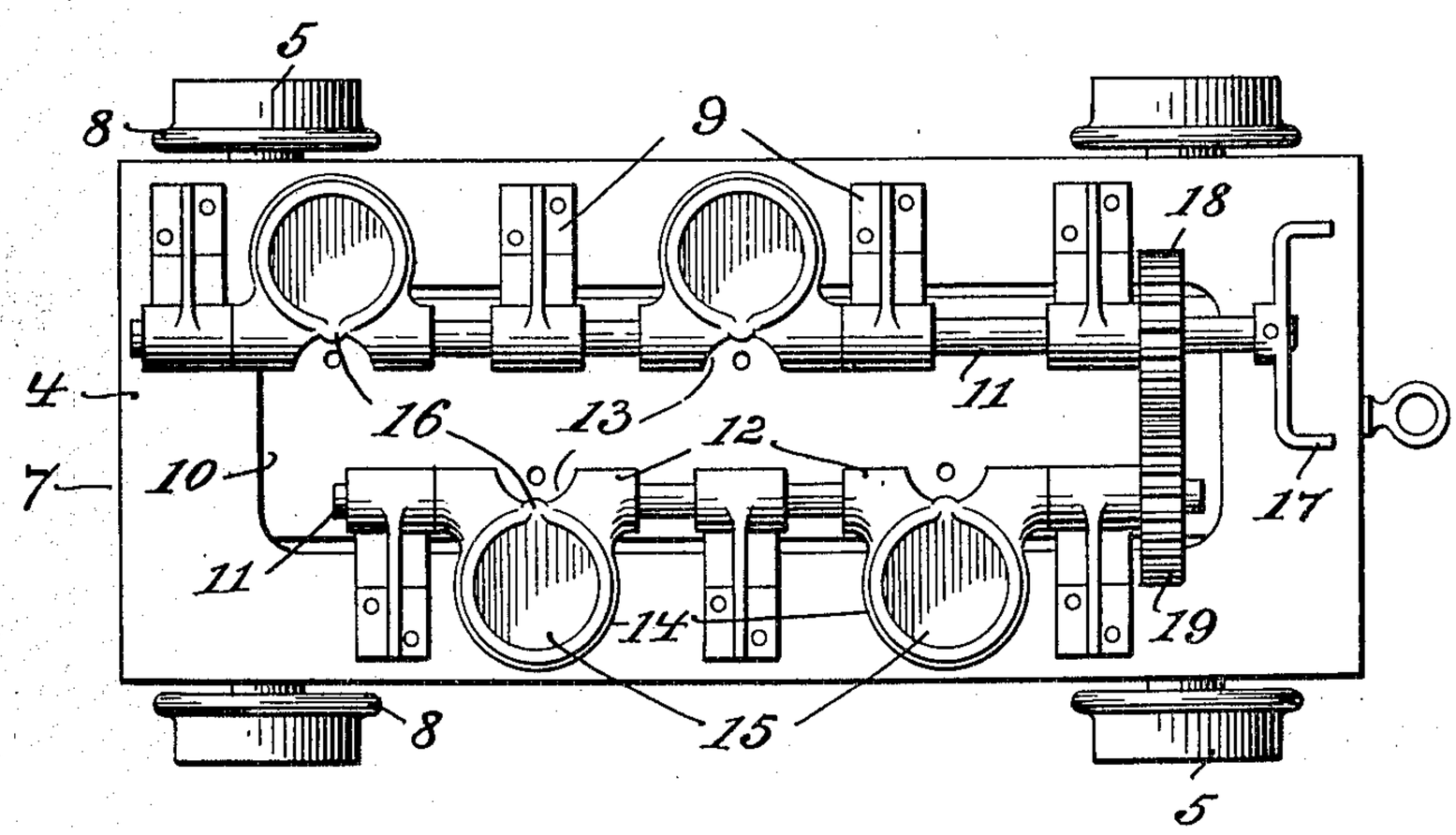
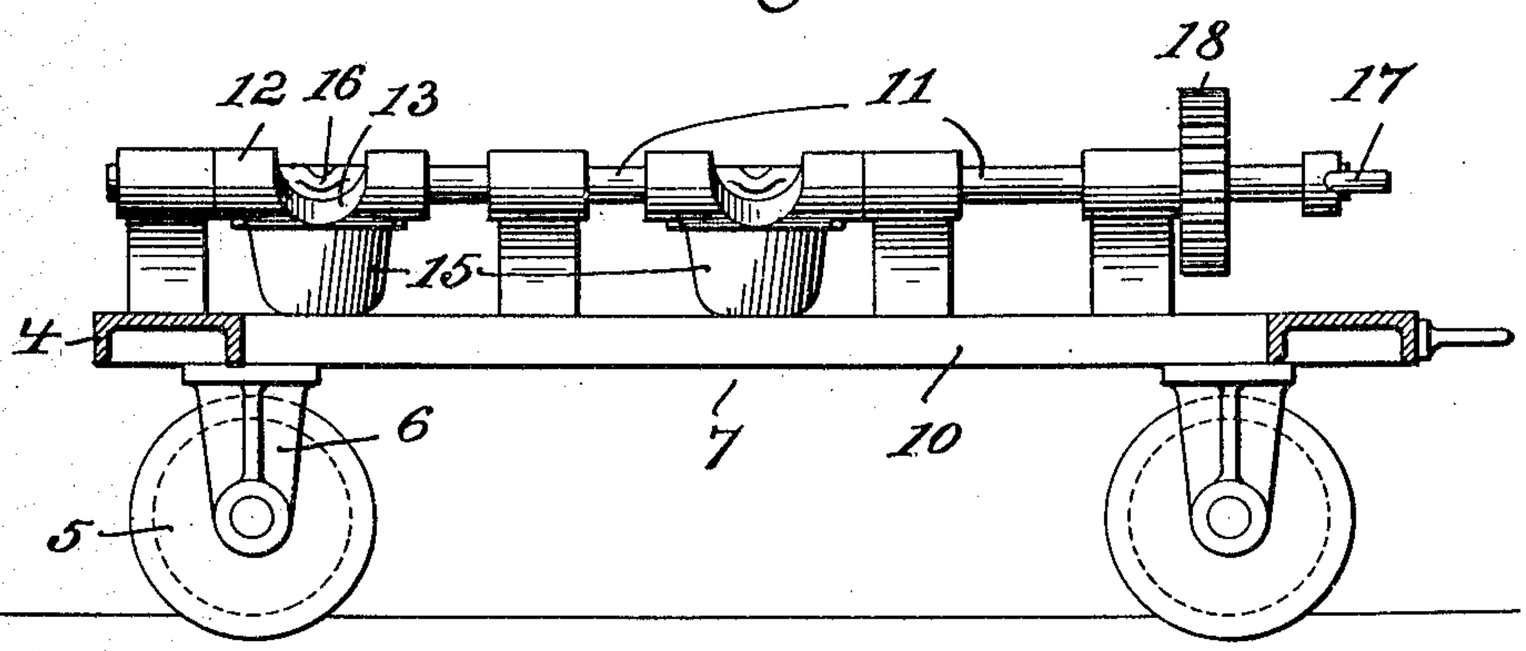


Fig. 2.



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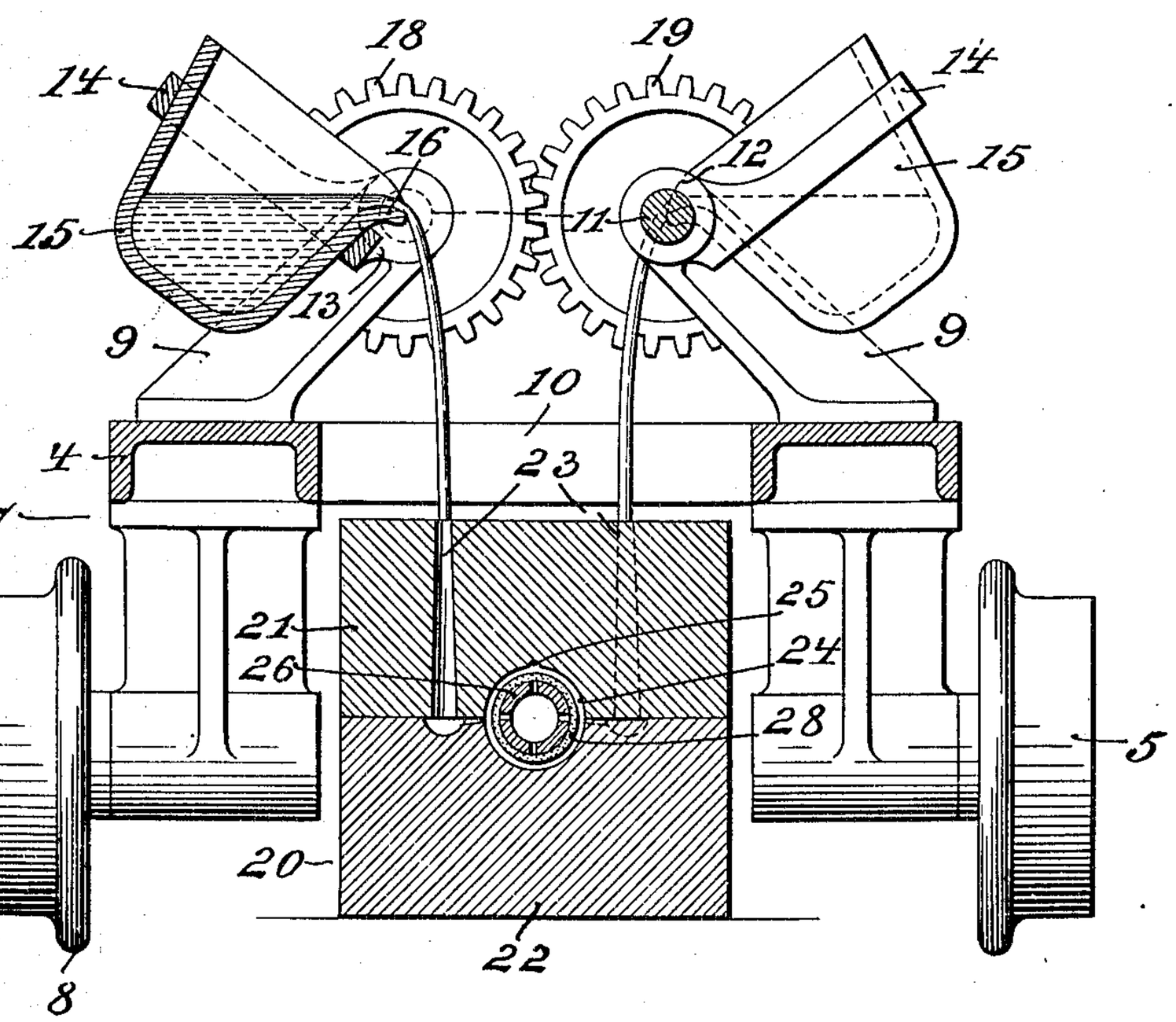
2 SHEETS—SHEET 2.

Fig. 3.



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APPARATUS FOR HOLDING AND POURING METAL INTO MOLDS FOR CASTING-MACHINES.

No. 870,869. Specification of Letters Patent. Patented Nov. 12, 1907.

Application filed April 26, 1907. Serial No. 370,444.

To all whom it may concern:

Be it known that I, EDGAR A. CUSTER, a citizen of the United States, residing in the city of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Apparatus for Holding and Pouring Metal into Molds for Casting Operations, of which the following is a specification.

My invention has relation to an apparatus for holding and pouring molten metal into molds for casting operations; and in such connection it relates more particularly to ladles containing the molten metal and means for supporting and tilting the ladles.

The principal objects of my invention are first, to so support a ladle or ladles as that their pouring spout or spouts, during the tilting to discharge the molten metal therefrom is or are held and maintained at substantially fixed position with respect to a mold; second, to so support the ladles that the same are held with their spouts in the same horizontal plane, and thus at a uniform height above a mold located beneath the ladles; third, to provide ladles with substantially the same shaped outlet spouts to insure discharge of equal quantities of molten metal therefrom; and fourth, to provide means for supporting and uniformly tilting the ladles during the discharge of the molten metal therefrom.

The nature and scope of my invention will be more fully understood from the following description taken in connection with the accompanying drawings forming part hereof, in which,

Figure 1, is a view illustrating in top or plan, a movable truck, bearings for shafts carrying supports for two sets of oppositely arranged ladles mounted thereon, and forming the continuations of the shafts, means for positively actuating one of the divided shafts, and means for transmitting the movements of one shaft to the other, all embodying main features of my said invention. Fig. 2 is a view, illustrating partly in longitudinal section and partly in elevation, the truck and one of the series of ladles supported by the same; and Fig. 3 is a view enlarged, illustrating partly in cross-section and partly in elevation, the truck, the support for the ladles and the ladles in a tilted position for pouring molten metal into a mold placed beneath the truck.

Referring to the drawings: 4, represents an oblong base, platform or frame, forming in conjunction with wheels 5, connected therewith, by bearings 6, a movable truck 7. The wheels 5, may be provided with flanges 8, to hold the truck in position on rails or a trackway, not shown, or may be minus such flanges to permit of the shifting of the truck to any place desired. Upon the platform 4, are arranged bearings 9, supporting respectively, shaft sections 11, over an opening 10, in the platform, which sections in the present instance, are united to each other by supports 12, each having a substantially semi-circular depression 13, extending beyond the central longitudinal axis of the shaft-sections 11, held in alinement to each by the supports 12. Each of the supports 12, is provided with a ring-shaped extension 14, serving as a seat for a ladle 15. As shown in Figs. 1 and 2, the ladles 15, rest upon the platform 4, and are held by the bearings 9, shaft-sections 11, and supports 12, in staggered relationship with respect to each other, and with their discharge spouts 16, over the depressions 13, in such a position as that their supports 12, terminate in the longitudinal central axis of the shaft sections 11. It must be borne in mind, however, that the sectional shafts 11, supports 12, and their extensions 14, may be replaced by a single or solid shaft so shaped as to form the necessary seats for ladles 15, while at the same time so arranged as not to obstruct the discharge spouts 16, thereof.

One of the sectional shafts 11, is provided with a hand-crank 17, adapted to permit of the manual rotation of the shaft 11, carrying the crank and thus of a tilting of the sets of ladles 15, supported by such shaft. In order to insure the uniform tilting of both sets of oppositely arranged ladles 15, the positively rotated shaft 11, carrying one set of ladles 15, is provided with a gear-wheel 18, meshing with a gear-wheel 19, secured to the shaft 11, carrying the second set of ladles 15. Thus the movement of one shaft 11, is transmitted to the other of the shafts 11, and both sets of ladles are tilted at exactly the same time, and with exactly the same speed. As the spouts 16, of each of the two sets of ladles 15, terminate in the longitudinal central axis of the shafts 11, it follows, that during the tilting and discharge of the molten metal from the same, the spouts of the ladles will remain in this position irrespective of the extent of tilting of the ladles. The discharge of the molten metal from each of the ladles 15, will therefore, take place in the same horizontal plane and thus at a uniform height above a mold 20, over which the truck 7, has been shifted, so as to bring the pour-holes 23, of the cope 21, thereof, directly below the discharge spouts 16, of the ladles 15. As the spouts 16, of the ladles are of substantially the same size, equal quantities of molten metal will be discharged from the same, due to the maintenance of the spouts in a fixed position with respect to the mold 20, and such discharges will be at the same pressures and velocities. The molten metal entering the pour-holes 23, of the cope 21, of the mold will thus reach the depressions 24, forming the mold proper, in the cope 21, and drag 22, under the same pressures and velocities and the flow of each portion of the molten metal in the depressions 24, will be uniform, thereby insuring a casting of an article perfect in outline and shape. To impart a smooth surface to the article cast, the mold is preferably formed of a permanent unyielding material, such as metal, which is adapted to retain

heat absorbed from the molten metal and which heat thereby aids in the formation of a perfect pipe having a smooth external surface. To form a harbor for the gases, the cope 21, is provided with a channel 25, while the core used in conjunction with the permanent unyielding mold may be formed of a perforated unyielding hollow body 26, which serves as a support for a covering of gritty material 28, such as sand.

The ladles 15, may be of any size and shape desired, as long as their spouts 16, are of uniform size, and terminate and are maintained during the tilting thereof in substantially a fixed position and at the same horizontal plane, with respect to the pour-holes 23, of the mold 20. Moreover, the ladles 15, may be arranged in a single row and caused to assume a staggered position in respect to each other, if desired.

Having thus described the nature and objects of my invention, what I claim as new and desire to secure by Letters Patent is:—

1. The combination, in an apparatus for pouring molten metal, of a mold, a ladle adapted to contain molten metal having a spout and means for supporting the ladle so as to hold and maintain said spout in substantially a fixed position with respect to said mold and with the pouring point for the metal at about the point of support of said ladle.

2. The combination, in an apparatus for pouring molten metal, of a mold, ladles adapted to contain molten metal having discharge spouts, and means for supporting said ladles and holding the spouts in the same horizontal plane and in substantially fixed position with respect to said mold in the discharge of the metal from said ladle.

3. The combination, in an apparatus for pouring molten metal, of a mold, a ladle adapted to receive molten metal having a spout, a support for said ladle, and means for holding and actuating said support to maintain the spout of such ladle in substantially a fixed position with respect to said mold at and during the discharge of the metal therefrom.

4. The combination in an apparatus for pouring molten metal, of a mold, two series of ladles, each having a spout, means for supporting each of said ladles so that the spouts thereof at and during discharge of the metal are held in substantially a fixed position with respect to said mold.

5. In an apparatus of the character described, a movable truck, bearings supported thereby, shafts and supports carried by said bearings, ladles each having a spout, said ladles adapted to receive molten metal carried by said supports and held with their spouts in the longitudinal central axis of said shafts at and during discharge of the metal therefrom.

6. In an apparatus of the character described, a base, bearings supported by the same, shafts carried by said bearings, ladles, each having a spout carried by said shafts, said ladles adapted to receive molten metal and to be held with their spouts in the longitudinal central axis of said shafts at and during discharge of the metal therefrom.

In witness whereof, I have hereunto set my signature in the presence of two subscribing witnesses.

EDGAR A. CUSTER.

Witnesses:
EMMA D. CHAPPELL,
THOMAS M. SMITH.