No. 722,664. PATENTED MAR. 17, 1903.

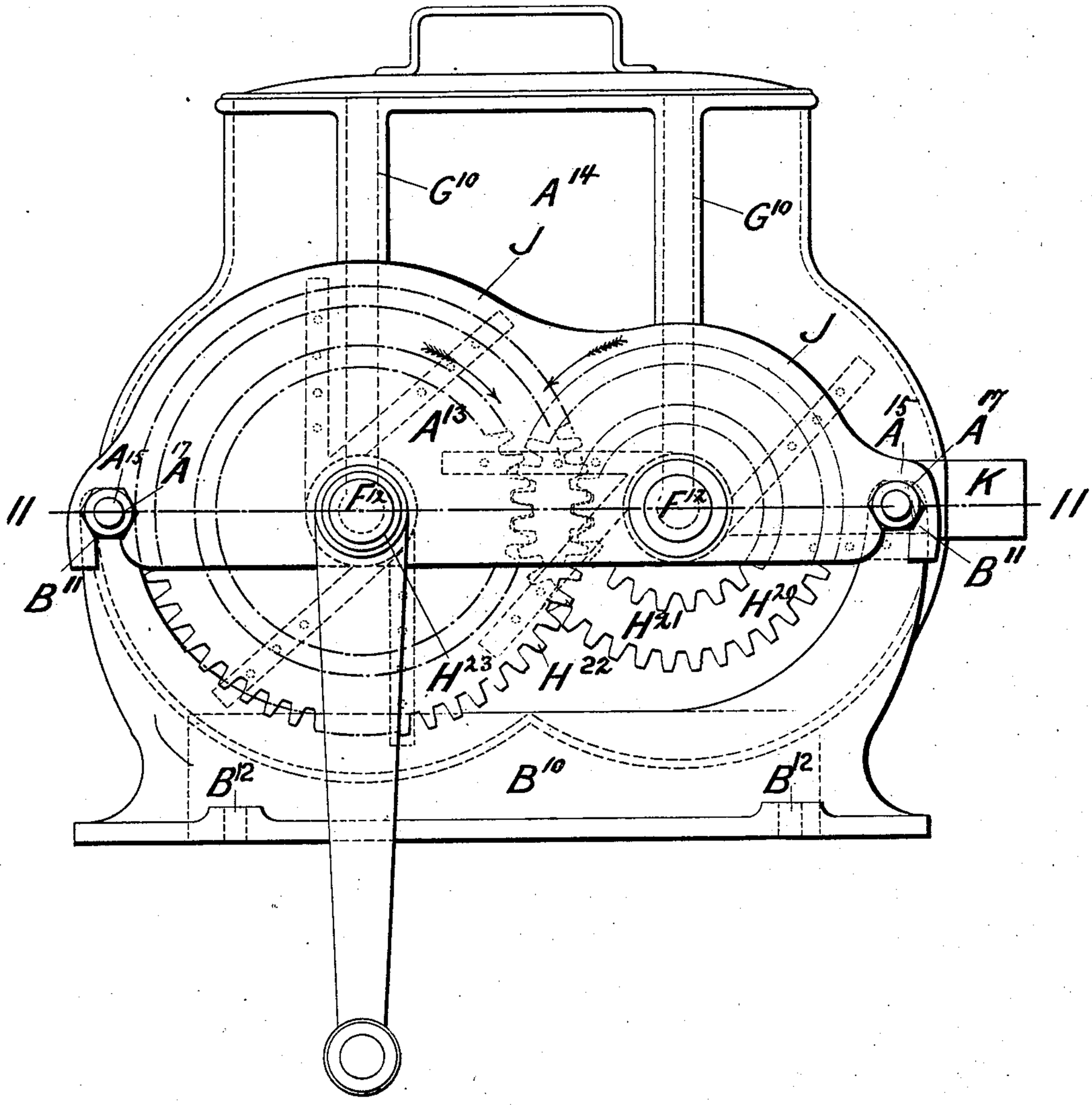
# W. K. & G. S. BAKER.

## WHISKING, MIXING, OR SIMILAR MACHINE.

APPLICATION FILED APR. 26, 1899.

NO MODEL. 5 SHEETS—SHEET 1.

FIG. 1.

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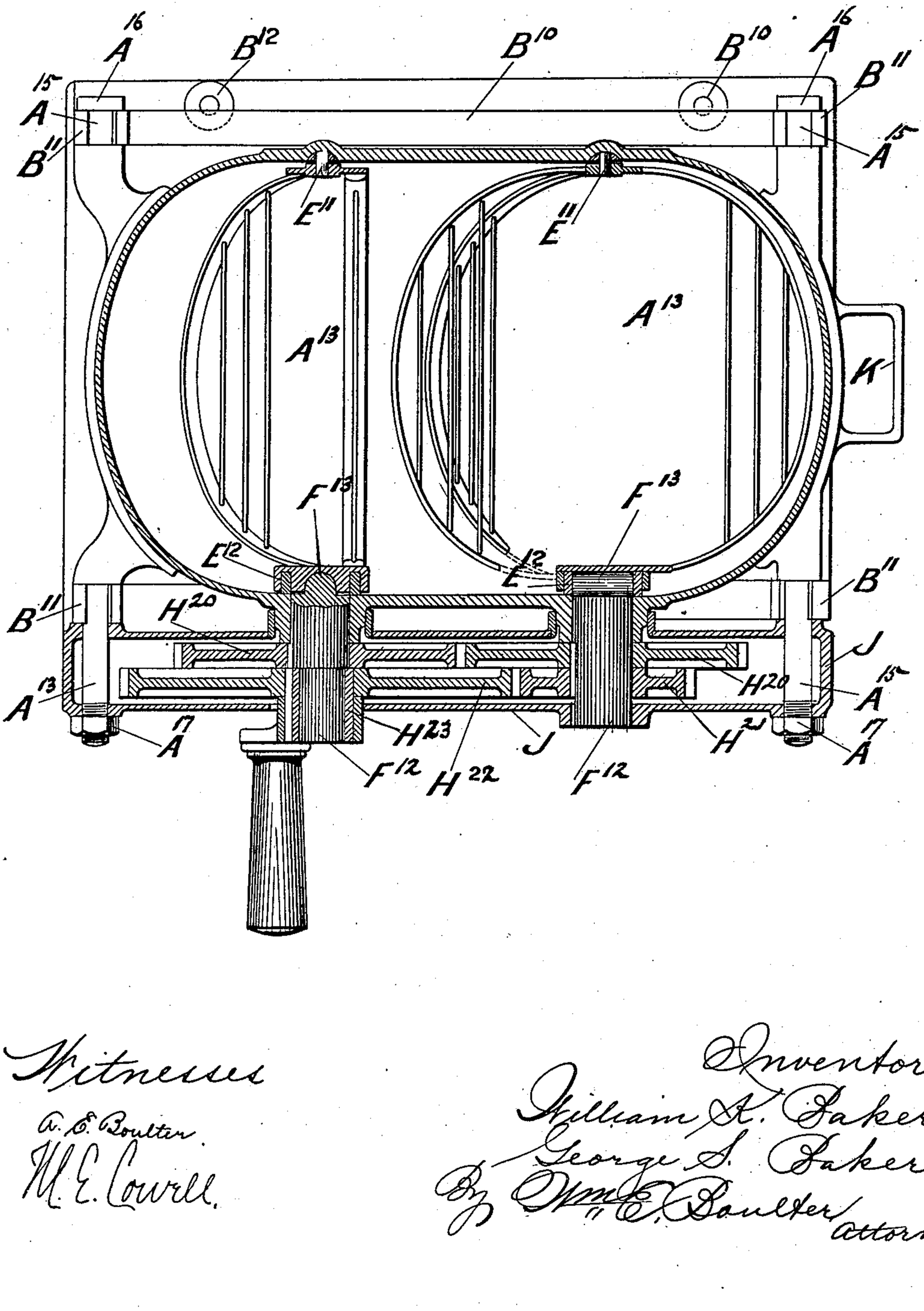
NO MODEL. 5 SHEETS—SHEET 2.

FIG. 2.

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NO MODEL. 5 SHEETS—SHEET 3.

Fig. 4

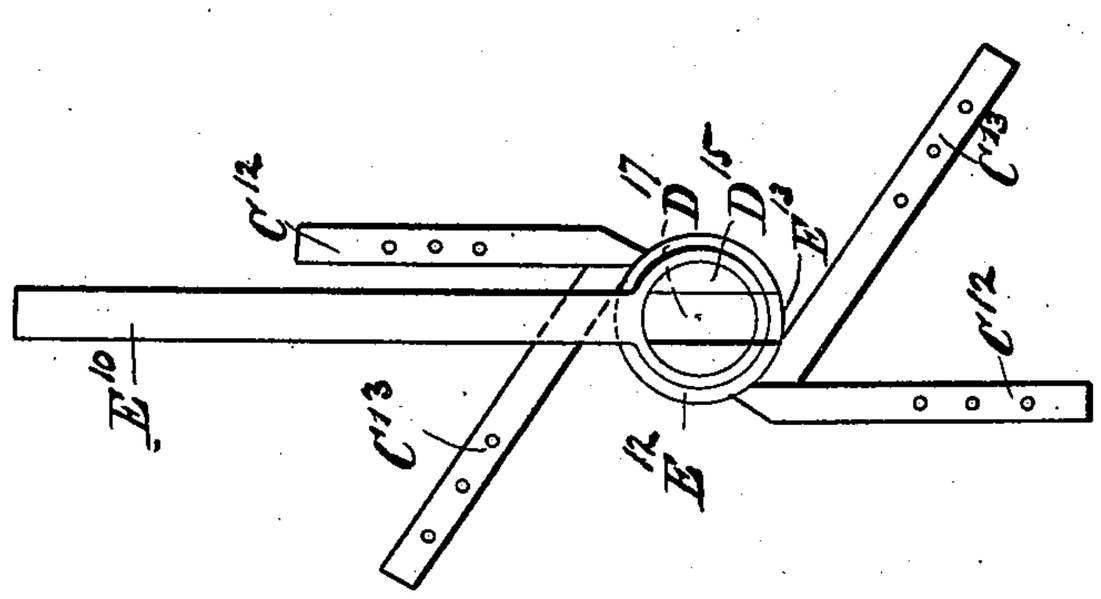



Fig. 5.

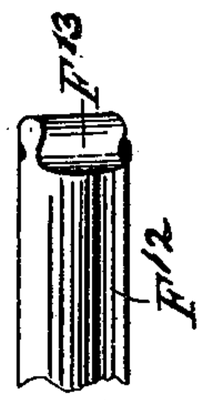
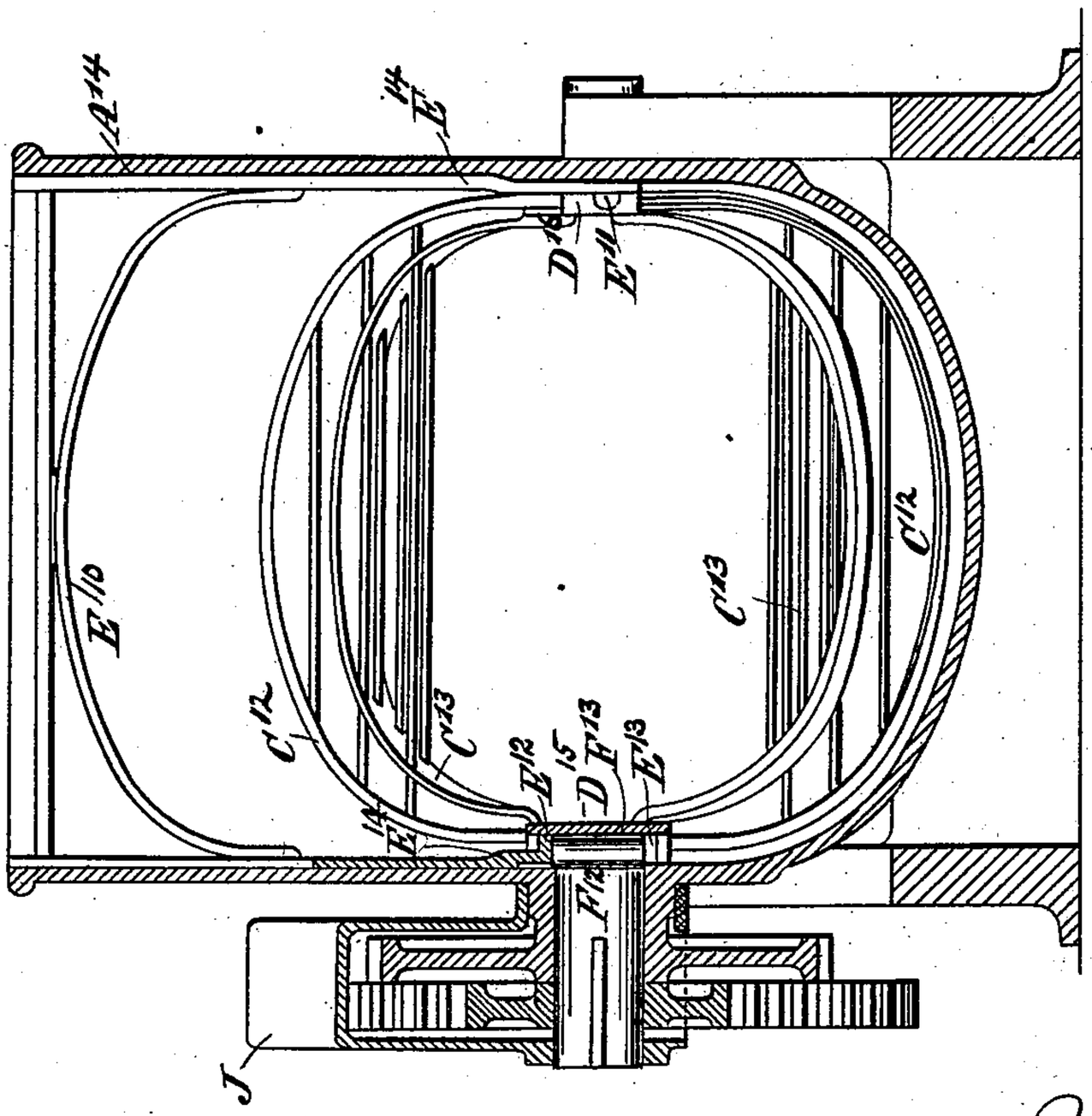



Fig. 3

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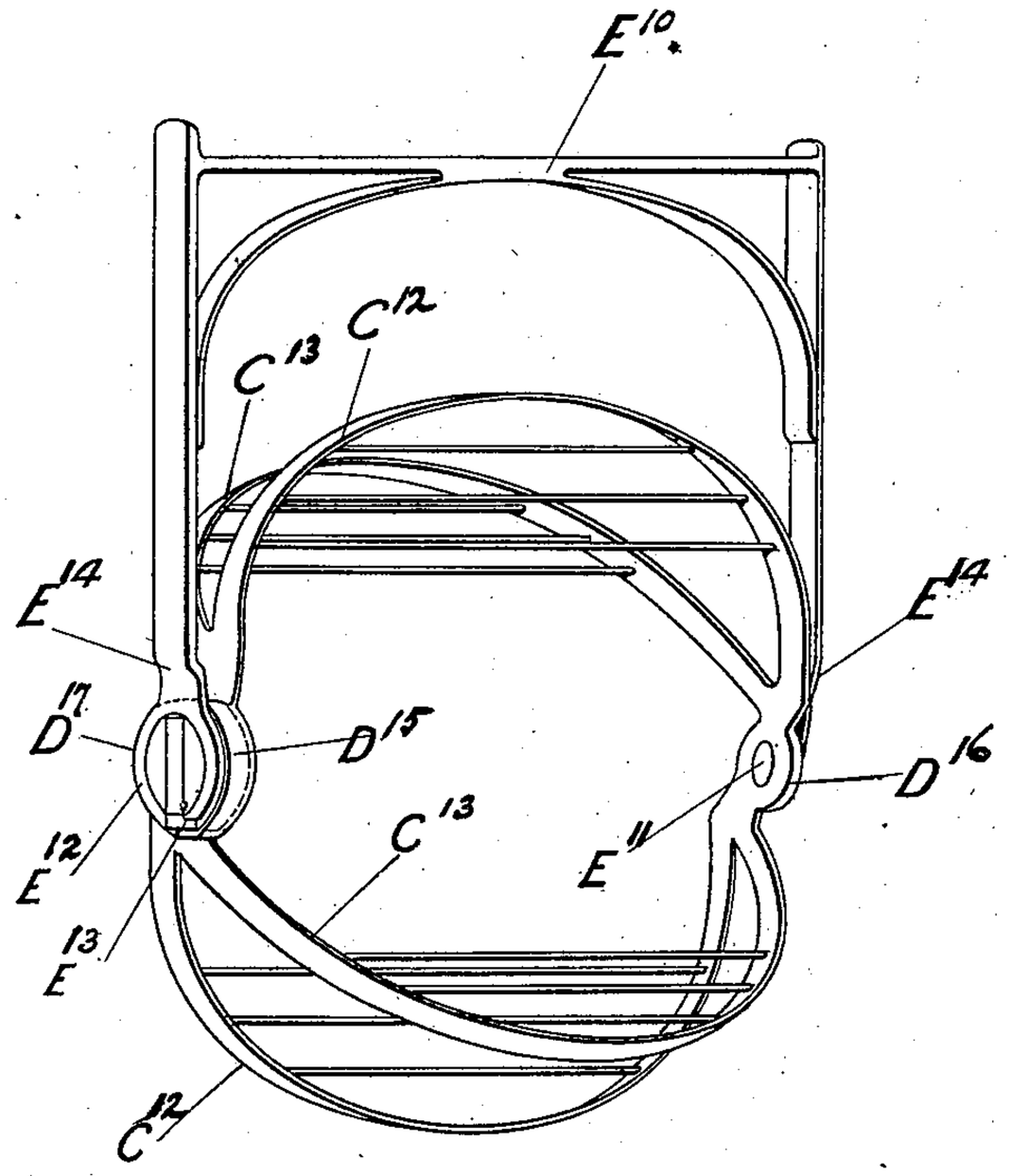
NO MODEL. 5 SHEETS—SHEET 4.

FIG. 6.

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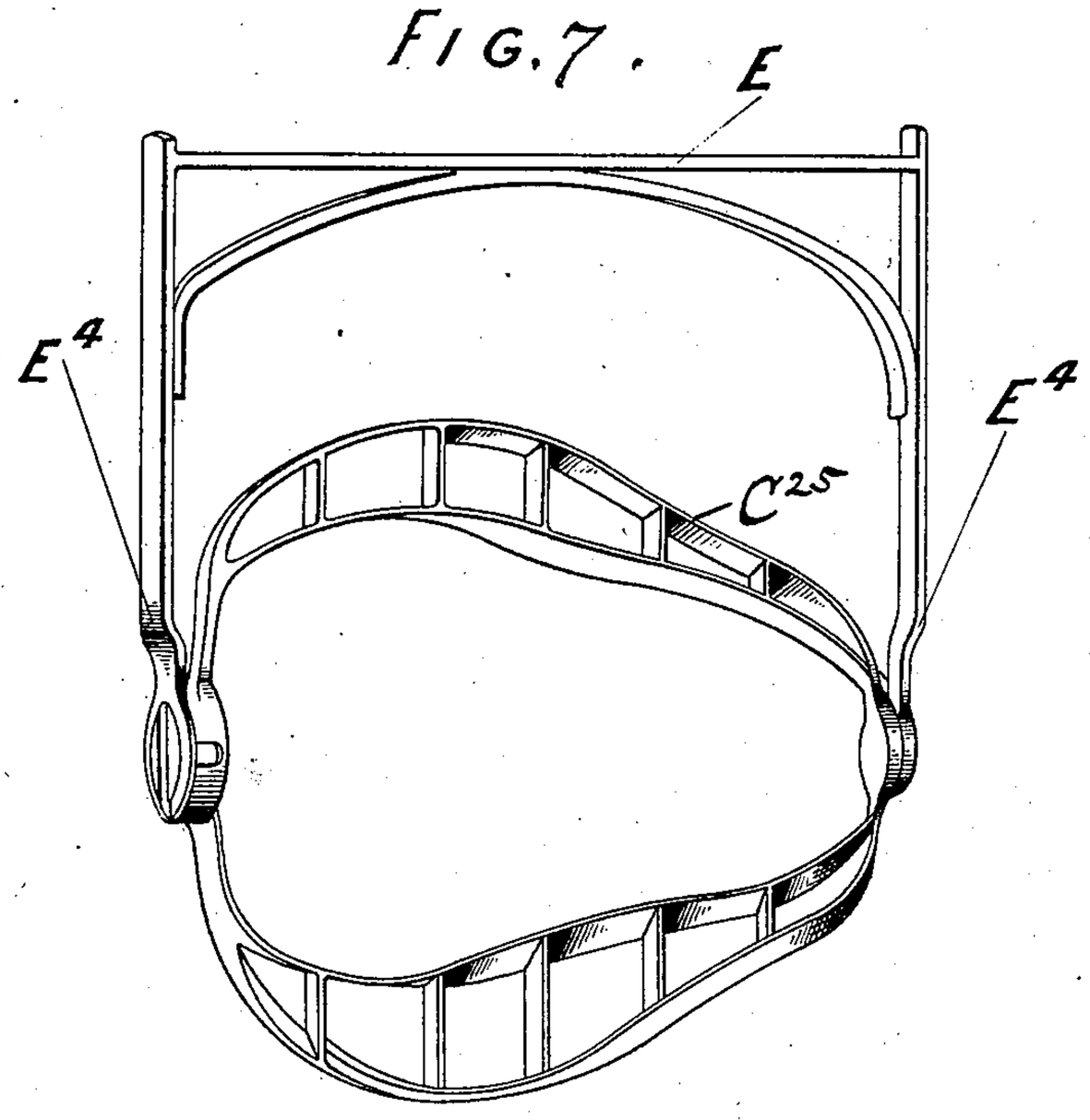
# WHISKING, MIXING, OR SIMILAR MACHINE.

APPLICATION FILED APR. 26, 1899.

NO MODEL. 5 SHEETS—SHEET 5.

FIG. 7.

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# UNITED STATES PATENT OFFICE.

WILLIAM KING BAKER AND GEORGE SAMUEL BAKER, OF LONDON, ENGLAND.

## WHISKING, MIXING, OR SIMILAR MACHINE.

SPECIFICATION forming part of Letters Patent No. 722,664, dated March 17, 1903.

Application filed April 26, 1899. Serial No. 714,531. (No model.)

*To all whom it may concern:*

Be it known that we, WILLIAM KING BAKER and GEORGE SAMUEL BAKER, subjects of the Queen of England, residing at London, England, have invented certain new and useful Improvements in or Relating to Whisking, Mixing, or Similar Machines, (for which we have made application for Letters Patent in Great Britain under No. 4,163, dated February 24, 1899,) of which the following is a specification.

This invention relates to improvements in single and duplex whisking, mixing, or similar machines, wherein revolving beaters or whisks are employed, and has for its object to facilitate the insertion or removal of the latter into or from the casing of the machine.

A further object of this invention is to insure a thorough mixing of the material without the use of stationary blades or concentric blades working in opposite directions usually employed in conjunction with the revolving beater.

In carrying out this invention a "hanger" or holder is adapted to receive the spindle of the beater in such a manner as to facilitate the insertion or removal of the same and render possible removal of a beater from the holder and the substitution of a fresh beater therefor without the necessity of operating any fastening device.

In order to oppose as far as possible the tendency of the material under treatment to fly centrifugally from the beater-blades, they are disposed tangentially around their spindle, the use of stationary blades or their equivalent being thereby rendered unnecessary.

In conjunction with the beater device specially-shaped bodies may be employed adapted to fit in and fill the casing above the space required for the beaters to revolve in. These bodies or "fillers" have their surfaces shaped so that they form with the concave bottom of the casing a complete or nearly complete spherical or globular mixing-chamber. The material is thus to a considerable extent confined to the space swept out by the beaters in the chamber, and accumulation of the material in the portions of the casings beyond the reach of the beaters is entirely obviated.

In the accompanying drawings, Figure 1 is a side elevation of a duplex mixing-machine according to this invention. Fig. 2 is a horizontal section on the line 11 11 of Fig. 1. Fig. 3 is a vertical section through one of the chambers of the duplex machine, taken through the left-hand spindle F of said Fig. 1. Fig. 4 is an end view of a beating device, which is shown also in position in the duplex machine above referred to. Fig. 5 is a perspective view of a detail of Fig. 3. Fig. 6 is a perspective view illustrating a means of mounting a beater in an elastic hanger such as is hereinbefore referred to. Fig. 7 is a view similar to Fig. 6, except that the beaters $C^{25}$ are helical and of twisted form.

The duplex machine illustrated in the drawings consists of a casing having two intersecting spherical or globular chambers $A^{13}$ $A^{13}$ and a hopper $A^{14}$, common to both these chambers. Within each chamber is mounted a beating device preferably of such a construction as is hereinafter more fully described. The casing is provided externally with four projecting studs $A^{15}$, and these are supported by jaws $B^{11}$ upon the framing or base $B^{10}$ of the machine, which may be secured to the floor or to a suitable base by screws or bolts at $B^{12}$. The two studs upon one side of the machine are screw-threaded at their ends, while those on the opposite side have bolt-heads $A^{15}$, bearing on the outer faces of the jaws. By screwing up the nuts $A^{16}$ they and the bolt-heads $A^{15}$ are caused to bear hard upon the contiguous surfaces of the jaws $B^{11}$, and thus the casting is securely clamped to its framing. The beaters preferably used with this duplex construction are each of the type shown in Figs. 4 and 6. Each beater comprises two pairs of blades $C^{12}$ $C^{13}$, arranged tangentially to two disks $D^{15}$ $D^{16}$, upon which they are mounted. It is arranged that the beaters shall revolve at equal speeds in opposite directions, and it is therefore necessary that one be "right-handed" and the other "left-handed," as indicated by dotted lines in Fig. 1, in order that the blades of each beater may operate to oppose the centrifugal tendency of the material in contact with it.

The beaters (see Figs. 1 and 2) are geared together by the arrangement of gearing here-

inafter described and are so set in relation to each other that when either is vertical the other shall be horizontal, and the configuration of each beater is such that the lower portion of a beater stopped in the vertical position extends but slightly beyond the vertical plane containing its axis of rotation, so that it can be withdrawn vertically from the casing without fouling the adjacent end of the companion beater.

The hanger $E^{10}$ employed consists of a rectangular frame, one extremity being provided with an inwardly-projecting pin $E^{11}$ and the other with an inwardly-projecting ring $E^{10}$, cut through at $E^{13}$. The former is placed in the recess in the disk $D^{16}$, and the ring is caused to enter an annular groove in the disk $D^{15}$. The elasticity of the hanger allows of the extremities $E^{11}$ $E^{12}$ to be moved apart in releasing or receiving the beating device and also retains the latter without the aid of fastenings. The beating device is now free to revolve upon the pin $E^{11}$ and ring $E^{12}$, which serve as bearings.

In order to permit of the communication of motion to the beaters, the gear-wheel spindles $F^{12}$, which project into the casing, are provided with dovetail ends $F^{13}$. (See Fig. 5.) The disk $D^{20}$ has a correspondingly-shaped groove $D^{21}$, capable of being alined with the opening in the ring $E^{12}$.

In order to place a beating device in operative position in either chamber, the dovetail projection $E^{11}$ in that chamber is brought to the vertical. The hanger is then lowered and the opening $E^{13}$ in the ring $E^{12}$ engages with said projection $F^{13}$ and the beater is turned until its groove $D^{17}$ is also brought into engagement with the projection $F^{13}$. Further lowering of the hanger is then prevented by the projecting portions $E^{14}$ coming into contact with similar projections in the casing.

Suitable vertical guides $G^{10}$ for the hangers $E^{10}$, Fig. 1, are sometimes employed to facilitate the insertion and removal of beaters.

The gearing for operating simultaneously the two sets of beaters is best seen in Fig. 2. Upon the spindles $F^{12}$ are secured exactly similar wheels $H^{20}$, gearing with one another. Upon the right-hand spindle is secured a smaller wheel $H^{21}$, gearing with a hand-operated wheel $H^{22}$, mounted upon a sleeve $H^{23}$, which revolves freely upon the left-hand spindle. Upon turning the handle the right-hand spindle is driven by the gear-wheels $H^{22}$ $H^{21}$, and at the same time an equal and opposite motion is conveyed to the other spindle through the medium of the wheels $H^{20}$, and the beaters are therefore always maintained in the angular relationship previously referred to.

In the machines illustrated in Figs. 1 and 2 the contents may be poured from the vessel after the mixing operation by loosening the nuts and lifting one end of the vessel by means of the handle K, the pins $A^{15}$ at the other end serving as trunnions.

The gearing (see Figs. 12 and 13) is shown provided with a box or casing, and in this instance the pins $A^{15}$ pass through the casing. In the operation of clamping the vessel to the framing the nuts $A^{17}$ act upon the jaws B through the intermediary of such casing.

The operation is similar in all the machines herein described. The mixing-chambers are charged with material, and the beaters being placed in position are revolved in the direction indicated by the arrow on each.

Although fillers and guide-blades are not shown or described with reference to Figs. 1 to 5, it is to be understood that they may be employed with any machine in conjunction with any design of beater. It is also obvious that fillers or guide-blades of modified shape might be required for the duplex machine and they could be made in conjunction or not with the lid or cover of the vessel, as desired. Holders or framings common to a number of vessels might also be employed for duplex machines.

The blades of the beating devices hereinbefore described are as shown constructed of an open frame having a suitable number of cross-bars; but it is to be understood that any other type of blade might be employed in the manner indicated.

We claim—

1. In a whisking, mixing or similar machine, the combination with a casing, of a plurality of revoluble beaters each consisting of an open frame arranged tangentially upon disks, bars extending transversely across each frame, an elastic hanger for each beater comprising a loop-handle portion and spring-arms, coöperating projections and eyes connecting the spring-arms to the beater-disks, a recess in one of the beater-disks, a driving-spindle and a projection on the end of the spindle engaging with the recess in the beater-disk, substantially as described.

2. In a whisking, mixing or similar machine, the combination with a casing, of two revoluble beaters consisting of open frames, each frame being arranged tangentially upon and formed integral with two grooved disks, means for revolving the beaters simultaneously in opposite directions to each other, bars extending across the frames, a rectangular hanger for each beater having inwardly-extending pins to engage with the disks at one side of the beaters and inwardly-extending projections engaging with the disks at the other side of the beaters substantially as described.

3. In a whisking, mixing or similar machine the combination with a casing of two revoluble beaters consisting of open frames each frame being arranged tangentially upon and formed integral with two grooved disks, bars extending across the frames, means for simultaneously revolving the beaters at equal speeds in opposite directions to each other, a rectangular hanger having inwardly-extending pins for the disks at one side of the beat-

ers, inwardly-extending projections on the hanger engaging with the disks at the other side of the beaters, driving-spindles operatively connected together, projections on the ends of the driving-spindles engaging with the grooves in the disks at the other side of the beaters substantially as described.

4. In a whisking, mixing or similar machine, the combination with a casing of two revoluble beaters consisting of open frames, bars extending across the frames, grooved disks upon which the frames are arranged tangentially and formed integral therewith, mechanism for revolving the frames simultaneously and at equal speeds in opposite directions to each other, the beaters being so set in relation to each other that when either is vertical the other shall be horizontal and the configuration of each beater being such that the lower portion of the beater stopped in the vertical position extends but slightly beyond the vertical plane containing its axis of rotation so that it can be withdrawn vertically from the casing without fouling the adjacent blade of the companion beater, a rectangular hanger having inwardly-extending pins for the disks at one side of the beaters, an inwardly-extending projection on the hanger engaging with the disks at the other side of the beaters, driving-spindles operatively connected together and projections on the ends of the driving-spindles engaging with the grooves in the disks at the other side of the beaters substantially as described.

In testimony whereof we have hereto set our hands in the presence of the two subscribing witnesses.

WILLIAM KING BAKER.
GEORGE SAMUEL BAKER.

Witnesses:
WM. JNO. TENNANT,
HARRY B. BRIDGE.