H. S. WEYANT.

PACKING MACHINE.

APPLICATION FILED AUG. 23, 1912.

1,192,250.

Patented July 25, 1916.

2 SHEETS—SHEET 1.

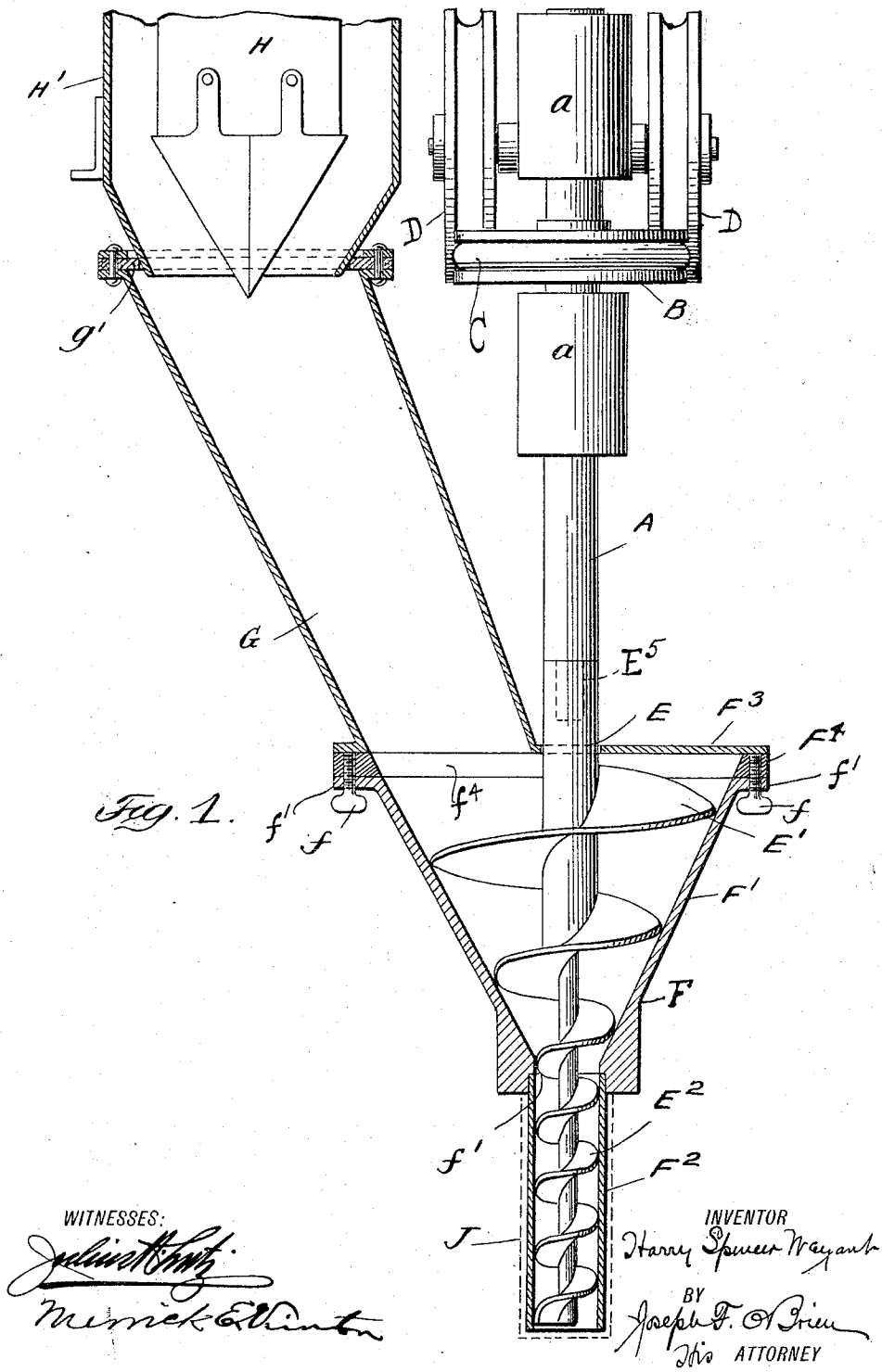


Fig. 1.

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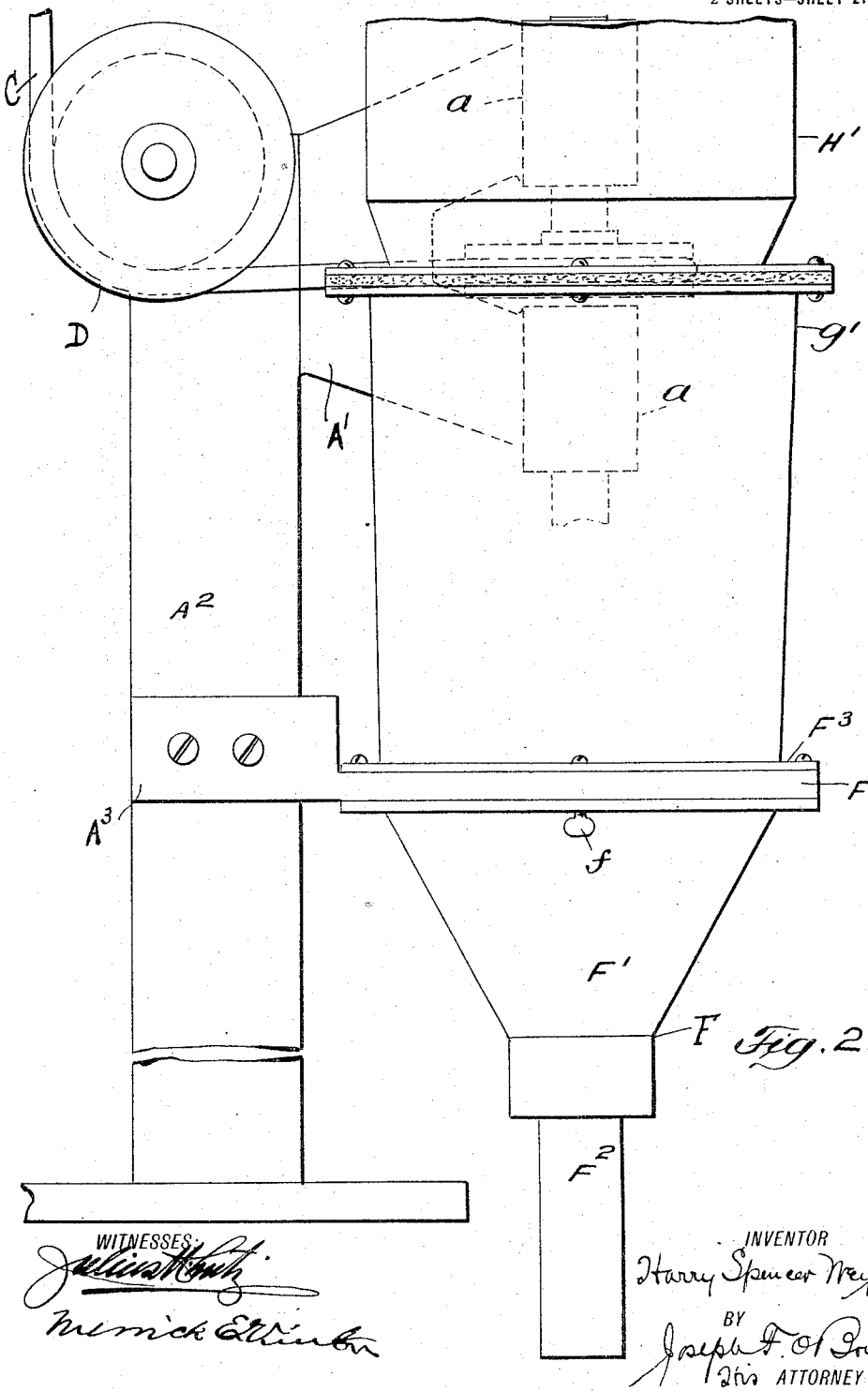


Fig. 2.

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UNITED STATES PATENT OFFICE.

HARRY SPENCER WEYANT, OF YONKERS, NEW YORK.

PACKING-MACHINE.

1,192,250. Specification of Letters Patent. Patented July 25, 1916.

Application filed August 23, 1912. Serial No. 716,599.

To all whom it may concern:

Be it known that I, HARRY SPENCER WEYANT, a citizen of the United States, and residing at Yonkers, in the State of New York, have invented certain new and useful Improvements in Packing-Machines, of which the following is a specification.

This invention relates to improvements in packing machines and is particularly adapted for packing powdered materials into cartons, cans, or other packages.

By the use of my invention a predetermined amount of material which may be fed from an automatic weighing machine is initially packed before delivery to the package and the operator may further pack the same as densely as required by simply exerting an upward yielding pressure on the package, the density of the packing being regulated and controlled by the degree of initial packing and the amount of such upward pressure.

In the preferred embodiment of my invention, a shaft provided with a tapering screw is supported in a vertical position and such tapering screw is provided with an inclosing conical casing having feeding and delivery apertures and closely fitting over the tapering screw so that all material fed into the casing will be acted upon by the tapering screw, initially packed thereby and delivered to and packed into a suitable package or receptacle.

In the accompanying drawings in which similar reference characters designate corresponding parts throughout the several views, Figure 1 is a vertical section partly in elevation of a machine embodying my invention; and Fig. 2 is a side elevation showing the means for supporting the casing and screw.

Referring now to these drawings, A designates a vertical shaft suitably journaled to rotate in bearings *a a* supported by a bracket A′ extending from standard A^2. As illustrated, a horizontal pulley B is fixed to the shaft intermediate its bearings and is rotated by means of a belt C driven from any suitable source of power (not shown) and as shown guided around pulley B by vertical pulleys D D. Connected to the said shaft A at its lower end is a conveyer screw E, having its upper portion E′ gradually diminishing in diameter from its upper end toward its lower end, or in other words being downwardly tapering, and having its lower portion E^2 of constant diameter and preferably being a diameter slightly smaller than that of the package which it is desired to pack and being of sufficient length to extend to the bottom of such package.

The screw E is inclosed in a casing F fitting closely over the conveying spirals or wings of the screw. The inclosing casing F, as illustrated, is formed in two parts, the upper part F′ being frusto-conical in shape and closely fitting over the tapering portion of the screw and the lower part F^2 being cylindrical and closely fitting over the lower or constant part of the screw. A cover F^3 closes the upper part of the inclosing casing with the exception of a feeding aperture f^4 which communicates with a chute G also supported from the standard A^2 by means of brackets *g* and preferably so supported independently of an automatic weighing machine H which delivers loads of the powdered or granulated material to be packed into the chute G. The casing F and screw E are detachable from their supports to permit ready substitution of screws and casings of proper size or diameters for any given load of predetermined volume. As illustrated the screw E is connected to the shaft by screw threads at E^5, and the casing is detachably connected by means of flanges *f′* and thumb screws *f f* to a ring F^4 supported from standard A^2 by bracket A^3.

The casing F, as shown, is formed in two parts, and the lower part F^2 is so connected to the upper part as to provide a flush joint at f^5 between the two casings.

The weighing machine bucket H and chute H′ will of course deliver loads of predetermined volume to the chute G and the chutes G and H′ of the packing and weighing machines respectively are supported from entirely separate standards or supports to prevent the transmission of vibrations to the weighing mechanism, and a felt gasket *g′* is preferably interposed at the joint between said chute H′ and the chute G so as to form as close a connection as possible, and at the same time prevent the transmission of such vibrations.

It will be seen that when a load is discharged from the bucket H of the weighing machine into the chute G it will fall on the spiral wing E′ of the tapered portion of the screw and if the load is properly proportioned to the capacity of the screw and the screw is properly fitted within the casing,

the rotation of the screw will, by reason of the gradually diminishing diameter of the screw, initially pack such load before it reaches the lower or constant end thereof. Such lower or constant portion of the screw will preferably be proportioned according to the length and diameter of the package to be packed and in the beginning of the packing operation will extend to the bottom of the package which I have indicated by dotted line J. The package will, of course, preferably be cylindrical in shape and be of approximately the same diameter as the lower portion F^2 of the casing so that it may be readily guided into position for packing.

Assuming that a package is positioned as above indicated, that the screw is being rotated and that a load of powdered or granular material is delivered through the chute G, the load will strike the upper part of the downwardly tapering screw and the continued rotation of such screw will as aforesaid cause the material to be initially packed before it reaches the lower portion, and the operator will by holding the package yieldingly up against the action of the screw be enabled to pack the package with great ease, compactness and rapidity and a larger amount of powdered or granular material may be forced into a package of given size than has heretofore been possible. Furthermore, owing to the absence of hammering or jarring, I am enabled to pack powdered or granular material into glass jars or other brittle receptacles without breaking the same and also simultaneously or in one operation to line the packages with paper bags or other suitable lining and pack the material into the same.

Having described my invention, I claim:

1. In a package filling and packing machine, the combination with a vertical shaft supported to rotate and means for rotating the same, of a vertically disposed screw connected to said shaft, said screw having a spiral with an uninterrupted flat conveying surface and comprising an upper portion gradually diminishing in diameter from its upper to its lower end and a lower portion of constant diameter; an inclosing casing for said screw comprising an upper tapering portion closely fitting over the tapering portion of the screw and a lower portion closely fitting over the entire length of the lower portion of the screw and adapted to fit closely within the package to be filled and packed, whereby a predetermined load of material delivered at the upper end of said casing may be packed within a package of given size.

2. In a package filling and packing machine, the combination with a vertical shaft supported only at its upper end and means at such upper end for rotating the same, of a screw connected to said shaft, said screw having a spiral with an uninterrupted flat conveying surface and comprising an upper tapering portion gradually diminishing in diameter from its upper to its lower end and a lower portion of constant diameter; an inclosing casing for said screw supported independently thereof and comprising an upper portion closely fitting over the tapering portion of the screw and a lower portion closely fitting over the entire length of the lower portion of the screw and adapted to enter and closely fit within the package to be filled, a cover for said casing and a feeding chute communicating with said casing at one side of its longitudinal axis and extending upwardly at an angle to such axis, whereby a predetermined load of material delivered to said device may be evenly packed within a package of given size.

3. In a package filling and packing machine, the combination with a vertical shaft supported at its upper end and means for rotating the same, of a screw detachably connected to said shaft, said screw having a spiral with an uninterrupted flat conveying surface and comprising an upper portion gradually diminishing in diameter from its upper to its lower end and a lower portion of constant diameter; an inclosing casing for said screw supported independently thereof and comprising separable upper and lower sections fitted together to provide a flush inner surface, the upper section fitting closely over the tapering portion of the screw and the lower section fitting closely over the entire length of the lower portion of the screw and adapted to enter and closely fit within the package to be filled and packed.

In witness whereof, I have signed my name to the foregoing specification in the presence of two subscribing witnesses.

HARRY SPENCER WEYANT.

Witnesses:
FREDERICK P. RANDOLPH,
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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."