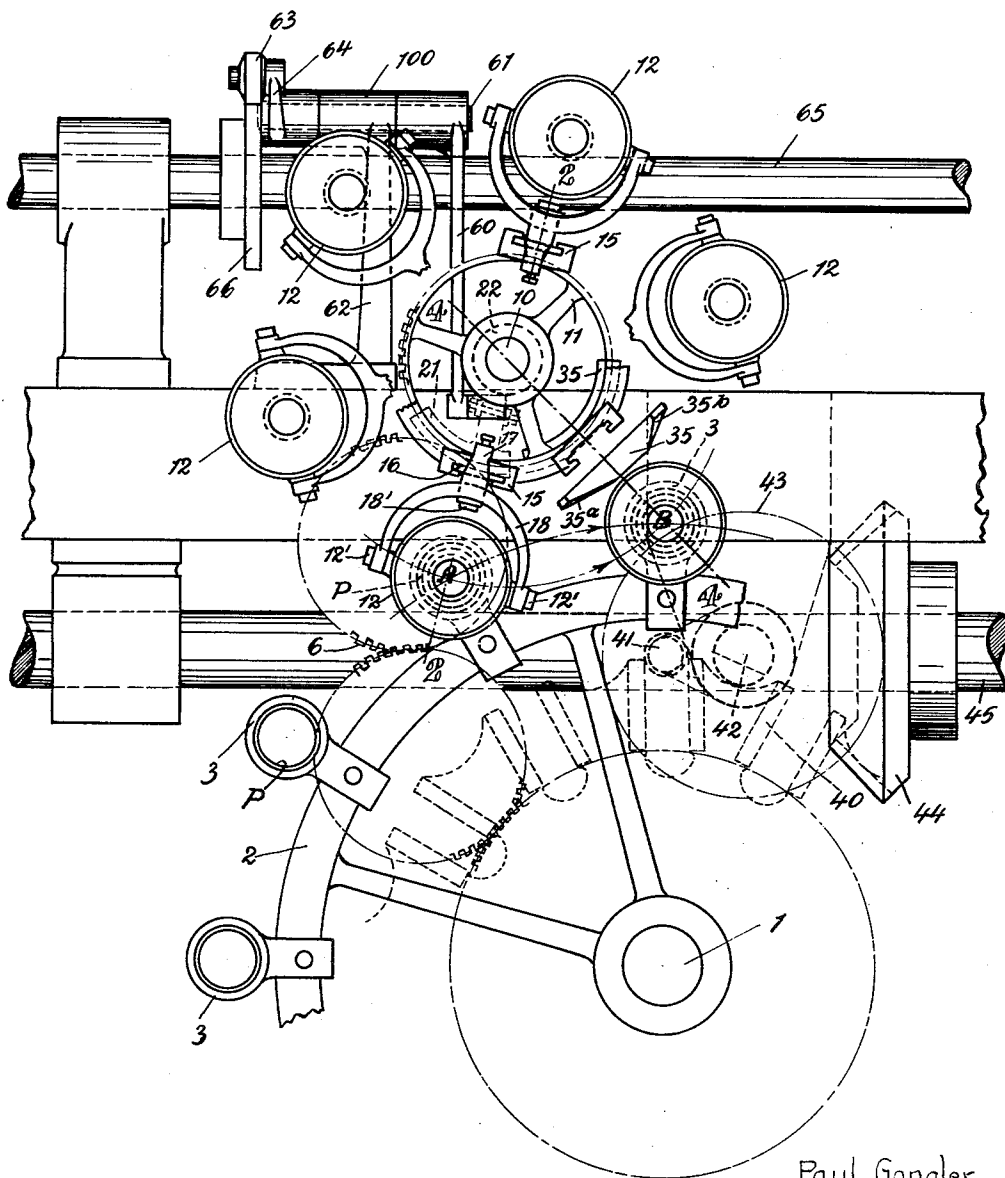


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3 Sheets-Sheet 1

FIG. 1



INVENTOR:

By *Attorney*
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Jan. 9, 1934.

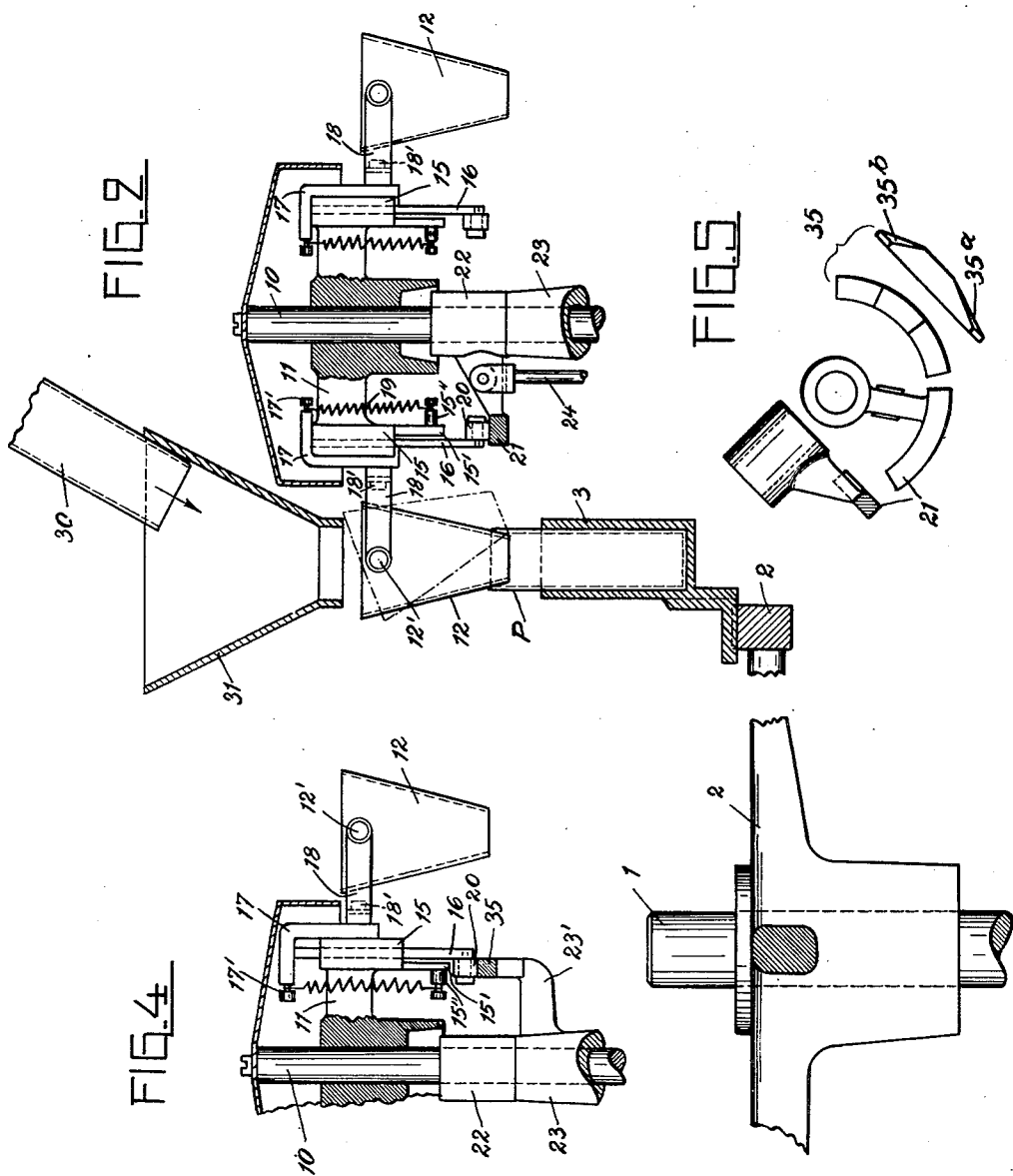
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1,943,013

FILLING DEVICE FOR PACKING MACHINES

Filed Aug. 30, 1932

3 Sheets-Sheet 2



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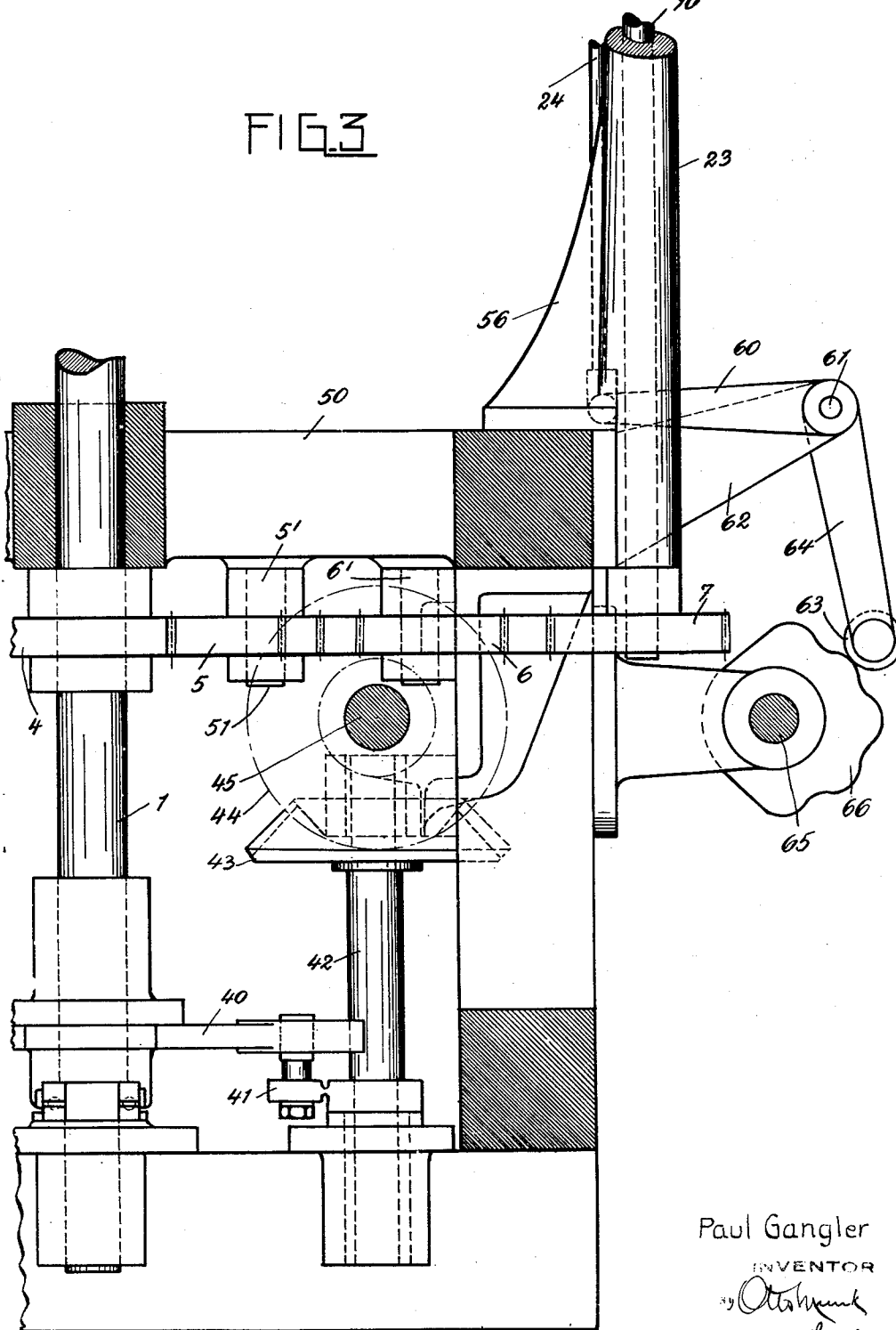
1,943,013

FILLING DEVICE FOR PACKING MACHINES

Filed Aug. 30, 1932

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FIG. 3



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1,943,013

FILLING DEVICE FOR PACKING MACHINES

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Application August 30, 1932, Serial No. 631,021,
and in Germany August 26, 1931

6 Claims. (Cl. 226—96)

My invention relates to a device for filling pack-
ages on filling and closing machines, in which the
packages contained in receptacles of a suitable
feeding or conveying device are passed along be-
low the filling stations. In existing filling and
closing machines of this kind, the filling of the
individual packages usually takes place at a single
operating station of the machine. This method
has a number of drawbacks, the primary one of
which is that in high-speed machines the ma-
terial to be filled in has not sufficient time to
pass into the packages, which results in the con-
tents of the packages having an inaccurate
weight. This method of filling, furthermore, lim-
its the speed of the machine.

The filling device according to my invention is
so designed that the filling of the packages takes
place along a longer path while the feeding de-
vice of the filling machine is in motion. This
has the advantage that the material has sufficient
time to flow from the filling funnel, which moves
together with the package, into the package
without the necessity of limiting the operating
speed of the machine for this purpose.

In the accompanying drawings, an embodiment
of the invention is illustrated by way of example.

Fig. 1 shows a plan view of a filling device
according to my invention, and a part of the
machine,

Fig. 2 shows a section on the line 2—2 in Fig. 1,
Fig. 3 shows a sectional view of the driving
mechanism,

Fig. 4 shows a sectional view of a part of the
filling wheel on line 4—4 in Fig. 1, and

Fig. 5 shows, in side-elevation, two cam pieces
forming part of the filling mechanism.

The conveying mechanism for the packages P
in the filling and closing machine may consist
in the well known manner of a wheel 2 mounted
on a vertical shaft 1 and provided with a suit-
able number of pockets or receptacles 3 for re-
ceiving the packages P to be filled. An intermit-
tent rotation is imparted to the wheel 2 so as to
feed the receptacles 3 with the packages P step-
wise and successively to the various operating
stations of the packing machine. The intermit-
tent rotation of the shaft may in the well known
manner be effected by means of a Maltese cross
wheel 40 secured to the shaft 1 and driven by a
crank 41 which is secured to the shaft 42. Con-
tinuous rotation is imparted to this shaft 42 by
means of the gearing 43 and 44 from the main
driving shaft 45 of the machine which is rotated
by a driving pulley, a motor or the like. In the
embodiment illustrated, the receptacles 3 serv-

ing for the reception of the packages consist of
cylindrical sleeves.

From the shaft 1 is driven a spur wheel 7 keyed
on a vertical shaft 10, by means of a train of
spur wheels 4, 5 and 6. The spur wheel 4 is se-
cured to the shaft 1, and the spur wheels 5 and
6 are journaled on bolts 5' and 6' suitably se-
cured to the machine table 50. The shaft 10 is
journaled in a sleeve 23 of a bracket 56 secured
to the machine table 50 and carries a conveying
wheel 11 supporting a suitable plurality of filling
funnels 12 for the material to be packed. In the
present embodiment, there are provided six fun-
nels. On the periphery of the wheel 11, there
are mounted a corresponding plurality of verti-
cal guides 15. In each of these guides is adapted
to slide a rail-like carriage 16 which is provided
at its upper end with an angular member 17
having a suitable boss at its under end in which
a yoke 18 is pivotally mounted by means of a
bolt 18'. The yoke 18 embraces with its ends
the filling funnel 12, which may be round which
is likewise pivotally mounted in the said yoke
by means of suitable pivots 12'. The free hook-like
end 17' of the angular member 17 is engaged by
a helical spring 19, the other end of which is
secured to a pin 15" screwed in a depending ex-
tension of the guide 15, so that the slide 16 as
well as the funnel 12 mounted on it by means
of the yoke 18 will always have the tendency to
assume their lowermost position.

At its lower end the slide 16 is provided with
an anti-friction roll 20 which is adapted to run
on a lifting or cam track 21 by means of which
the slide 16 and consequently the funnel 12
may be moved in a vertical direction. The lift-
ing track 21 may, for instance, be mounted on
a sleeve 22 which is freely slideable upon the
shaft 10, and which is adapted to be displaced by
means of a connecting rod 24 from an arm 60
secured to a bolt 61 which is journaled in the
bearing 100 of a bracket 62 secured to the ma-
chine table 50. On the bolt 61 is secured an arm
64 which has an anti-friction roll 63 in oper-
ating contact with an eccentric 66 mounted on a
shaft 65 which is rotated from the main driving
shaft 45 by a suitable gearing in the well known
manner.

The wheel 11 is mounted at one side of and
above the wheel 2 so that upon rotation of said
wheels 2 and 11 the circular path described by
the filling funnels 12 will intersect the circular
path described by the receptacles 3 of the feed-
ing device 2 at the operating station A and will

leave this circle again at the operating station B, as is clearly shown in Fig. 1.

If during their advance a package and a funnel intended for filling this package approach the operating station A, said filling funnel 12 is raised from its lowest position, in which it is held by the action of the spring 19, by means of the roll 20 of the pertaining slide 16 running on to the cam piece 21, which is lifted by the rod 24 and its described operating gear, the filling funnel being raised by the said cam piece 21 to such an extent that the funnel will be situated above the upper edge of the package when the package and the funnel arrive at the operating station A. When the funnel 12 and the package have in this way reached the operating station A, the funnel is lowered into the interior of the package, (Fig. 2), due to a suitable shape of the cam 21 and lowering of the same by means of the rod 24.

At the operating station A there is provided a stationary supply hopper 31 above the filling funnel 12, which hopper receives the material through a suitable supply pipe 30. Such hopper and supply pipe are well known in the art and need, therefore, no further description or illustration. The delivery mouth of the supply hopper 31 is so wide that the material will drop from the mouth of the hopper 31 directly into the filling funnel 12. A part of the material will also pass into the package P at this station. Immediately after the material has passed from the supply hopper 31 into the charging funnel 12, the feeding wheel 2 is advanced one step and the package P with the funnel 12 projecting into it proceeds towards the operating station B. In consequence of the described gimbal suspension of the filling funnel 12 on its conveying wheel 11, the funnel is able to yield or swing out laterally to a sufficient extent to follow with its under mouth the circular path described by the package, as, for example, indicated in broken lines in Fig. 2.

During the travel from the operating station A to the operating station B, the material has thus sufficient time to flow from the filling funnel 12 into the package P. A shaking motion may, if desired, be imparted to the funnel by means of the cam track 21, the latter being in this case moved up and down by means of its described operating gear and the circumference of the eccentric 66 being suitably designed, so as to make quite sure that all the material from the funnel passes into the package.

At the end of the path from stations A to B, the funnel 12 is lifted out of the package P by the roll 20 of the slide 16 running off the cam piece 21 and on to an ascending surface 35^a of a stationary cam piece 35, for instance, whereby the funnel is raised above the edge of the package. Said cam piece 35 is supported by an arm 23' of the sleeve 23. When the funnel and the package reach the operating station B, the funnel is thus again outside the package, and during the further advance of both conveyor wheels 2 and 11 the funnel is again free to recede from the package. The funnel then descends again into its lowest position, in consequence of the roller 20 of the slide 16 running off the cam 35 along the inclined surface 35^b at its far end.

It will be readily understood that modifications may be made without departing from the spirit of my invention and the scope of the appended claims.

I claim as my invention:—

1. A package filling device comprising charg-

ing means and a conveyor wheel adapted to feed the packages successively beneath said charging means, the charging means comprising a separate conveyor wheel carrying a plurality of charging funnels and adapted to feed the charging funnels successively above the packages to be filled by them and to move the funnel filling a package commonly with the package for a definite length of the feed of the packages, the two conveyor wheels being arranged above each other so that the circular paths described by the funnels and the packages, respectively, during the rotation of these conveyor wheels will overlap each other for a certain distance, the charging funnels being mounted on their conveyor wheel so as to be able to be lifted and lowered as well as to oscillate.

2. A package filling device comprising charging means and a conveyor wheel for feeding the packages successively beneath said charging means, the charging means comprising a separate conveyor wheel carrying a plurality of charging funnels and adapted to feed the charging funnels successively above the packages to be filled by them and to move the funnel filling a package commonly with the package for a definite length of the feed of the package, the two conveyor wheels being arranged above each other so that the circular paths described by the funnels and the packages, respectively, during the rotation of these conveyor wheels will overlap each other for a certain distance, the charging funnels being gimbal suspended on slides adapted to be vertically displaced in guides of the conveying wheel carrying the funnels.

3. A package filling device comprising charging means and a conveyor wheel for feeding the packages successively beneath said charging means, the charging means comprising a separate conveyor wheel carrying a plurality of charging funnels and adapted to feed the charging funnels successively above the packages to be filled by them and to move the funnel filling a package commonly with the package for a definite length of the feed of the packages, the two conveyor wheels being arranged above each other so that the circular paths described by the funnels and the packages, respectively, during the rotation of these conveyor wheels will overlap each other for a certain distance, the charging funnels being gimbal suspended on slides adapted to be vertically displaced in guides of the conveying wheel for the funnels, and lifting and cam tracks being provided and adapted to operate upon the slides carrying the funnels in such a manner that for the common advance of a funnel and a package the funnel is raised above the edge of the package and lowered into same, and that at the end of said advance the funnel is reversely operated.

4. A package filling device comprising charging means and a conveyor wheel adapted to feed the packages successively beneath said charging means, the charging means comprising a separate conveyor wheel carrying a plurality of charging funnels and adapted to feed the charging funnels successively above the packages to be filled by them and to move the funnel filling a package commonly with the package for a definite length of the feed of the packages, the two conveyor wheels being arranged above each other so that the circular paths described by the funnels and the packages, respectively, during the rotation of these conveyor wheels will overlap each other for a certain distance, the charging funnels being gimbal suspended on slides adapted to be verti-

cally displaced in guides of the conveying wheel for the funnels, and lifting and cam tracks being provided and adapted to operate upon the slides carrying the funnels in such a manner that for
5 the common advance of a funnel and a package the funnel is raised above the edge of the package and lowered into same, and that at the end of said advance the funnel is reversely operated, the lifting track being adapted to impart to the funnel
10 during the filling process a shaking motion.

5. A package filling device comprising means for charging the packages and a rotatable conveyor device adapted to feed the packages successively beneath said charging means, the charging
15 means comprising a separate rotatable conveyor device carrying a plurality of charging funnels and adapted to successively advance the charging funnels above the packages to be filled thereby and to move the funnel filling a package
20 commonly with the package being filled for a definite length of the feed of the packages, the two conveyor devices being arranged in superimposed relation so that the paths described by the cen-

tral axes of the funnels and by the packages, respectively, during the rotation of said conveyor devices overlap each other for a certain distance.

6. A package filling device comprising means for charging the packages and a rotatable conveyor wheel cooperable with said means and adapted to feed the packages successively beneath said charging means, the charging means comprising a separate rotatable conveyor wheel carrying a plurality of charging funnels and adapted to successively advance the charging funnels above the packages to be filled thereby and to move the funnel filling a package commonly with the package being filled for a definite length of the feed of the packages, the two conveyor wheels being arranged in superimposed relation so that the circular paths described by the central axes of the funnels and by the packages, respectively, during the rotation of these conveyor wheels overlap each other for a certain
95 distance.

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