UNITED STATES PATENT OFFICE.

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SAND-MOLD-CHARGING APPARATUS.

No. 899,640.


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To all whom it may concern:

Be it known that I, WALTER H. WANGELIN, a citizen of the United States of America, residing at the city of Belleville, in the county of St. Clair and State of Illinois, have invented certain new and useful Improvements in Sand-Mold-Charging Apparatus, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to an apparatus for charging sand into flasks in which molding operations are performed and it has for its object the production of an apparatus of this character of simple, inexpensive and efficient nature.

Figure I is a side elevation of my mold charging apparatus. Fig. II is an enlarged vertical longitudinal section taken through the apparatus. Fig. III is an enlarged vertical transverse section taken through line III—III, Fig. I. Fig. IV is a vertical section taken on line IV—IV, Fig. II. Fig. V is an elevation of the vibrator that receives the sweep of the apparatus.

In the accompanying drawings, 1 designates a hopper that is adapted to receive the sand to be delivered to a molding flask A, illustrated in Fig. I. In this hopper is a feeder by which the sand, whether in a dry or wet condition, is conveyed in a downward direction to the bottom of the hopper. The feeder, for which no invention is herein claimed, comprises a frame 2 unsupposed at its upper end and rockably mounted at its lower end upon a shaft 3, and an endless carrier 4 that is operable upon toothed wheels 5 fixed to the shaft 3 and toothed wheels 6 fixed to a shaft 7 mounted in the upper end of the frame 2.

Beneath the hopper 1 is a receiver 8 and in this receiver is a winged drum 9 supported by a rotatable shaft 10. Extending from the bottom of the receiver 8 is a chute or runway 11.

12 designates a charging barrel that has communication with the receiver 8 through the medium of the chute 11 and which is provided with an outlet spout 13 located at its lower side and beneath which the flask A is adapted to be placed, as seen in Fig. I. 14 is a shaft which extends transversely through the barrel 12.

15 is a sweep arm sleeve that is secured to the shaft 14 so that it will be rotated by said shaft within the charging barrel and which is provided with one or more sweep arms 16 that carry a sweep plate 17. The sweep, composed of the members just referred to is adapted to be rotated by the shaft 14 in the direction indicated by the arrow, Fig. II, so that its plate will oppose the feed of, and gather sand as it enters into the charging barrel through the chute 11 and carries such sand in an upward direction and then throws it in a downward direction with force through the spout 13 of the charging barrel and into the flask placed beneath said spout. By this action of the sweep, the sand is delivered into the flask in a manner to efficiently pack it therein in the process of forming a mold in the flask.

18 designates a vibrator that is adapted to be engaged by the sweep during its operation in the charging barrel 12. This vibrator is pivotally supported by a rod 19 and has an arm 20 located exterior of the barrel and a finger 21 located interior of the barrel.

22 is a retracting spring that connects the arm of the vibrator to the charging barrel and serves to normally hold the inner arm of the vibrator in the path of travel of the sweep plate 17.

In the operation of my apparatus, the sand to be packed in a flask such as A located beneath the spout of the charging barrel 12, is fed from the hopper 1 into the receiver 8 by the carrier 4 and from said receiver to the chute 11 and charging barrel by the winged drum 9. At the same time rotation is imparted to the sweep in the charging barrel so that it will move in the opposite direction to the feed indicated by the arrow, Fig. II. The parts just described are driven by suitable mechanism, such as illustrated in Fig. I or any other desirable form of mechanism. As the sweep is rotated in the charging barrel, it first carries the sand in an upward direction against the feed and then, after reaching a position at the top of the barrel and beginning its downward movement, the sweep throws the sand through the spout 13 of said barrel forcibly, with the result of causing the sand to enter the flask placed beneath said spout to be packed solidly therein, as will be readily understood. Each time that the sweep reaches the vibrator 18 its plate 17 strikes against the finger 21 of the vibrator thereby imparting a shock to said sweep with the result of jarring particles of sand from the plate that may have adhered thereto, so
that the plate will be in a clean condition to
pick up the next charge of sand in its next
circular movement. The vibrator being
spring controlled, yields to the pressure of
the sweep thereagainst immediately after it
has served its function of jarring the sweep,
and the sweep plate may therefore pass the
vibrator which will be returned to its normal
position by the spring 22, in order that the
sweep plate may engage it upon its next
movement thereto.

I claim:

1. In an apparatus of the character de-
scribed, the combination of a charging barrel
having an inlet and an outlet, said outlet be-
ing substantially off center, and a sweep ro-
tatably mounted in said barrel; said barrel
being entirely closed aside from its inlet and
outlet to provide for material being forcibly
driven from the barrel through its outlet
when said sweep is rotated, substantially as
set forth.

2. In an apparatus of the character de-
scribed, the combination of a charging barrel
having an outlet, means for delivering the
material into said barrel, a sweep rotatably
mounted in said barrel, and means for rotat-
ing said sweep, against the feed, and throw-
ing it through the outlet; substantially as
set forth.

3. In an apparatus of the character de-
scribed, the combination of a charging barrel
having an outlet, means for delivering mate-
rial into said barrel, a shaft rotatably
mounted in said barrel, and a sweep carried
by said shaft in the opposite direction to the
feed; said sweep gathering the material and
throwing it through the outlet; substantially
as set forth.

4. In an apparatus of the character de-
scribed, the combination of a charging barrel
having an outlet, a chute leading to said bar-
rel, means for feeding material through said
chute to said barrel and a revolveable sweep
operable in said barrel and which is adapted
to gather the material as it enters said barrel
against the feed and discharge it through said
outlet, substantially as set forth.

5. In an apparatus of the character de-
scribed, the combination of a hopper, a re-
ceiver having communication with said hopp-
er, a feeder in said hopper a feeder in said
receiver, a chute leading from said receiver,
a barrel with which said chute communicates
and which is provided with an outlet
spout, and a sweep revolveably mounted in
said barrel to operate in the opposite direc-
tion to the feed; said sweep gathering the
material and throwing it through the outlet,
substantially as set forth.

6. In an apparatus of the character de-
scribed, the combination of a charging barrel
having an outlet, means for delivering mate-
rial into said barrel, a sweep operable in said
barrel, means for rotating said sweep, and a
vibrator arranged in the path of movement
of said sweep, substantially as set forth.

7. In an apparatus of the character de-
scribed, the combination of a charging barrel
having an outlet, means for delivering mate-
rial into said barrel, a sweep operable in said
barrel, means for rotating said sweep, and a
spring controlled vibrator arranged in the
path of movement of said sweep, substan-
tially as set forth.

WALTER H. WANGELIN.

In the presence of—
LILY ROST,
L. C. TAAGE.