July 10, 1923.

1,461,145

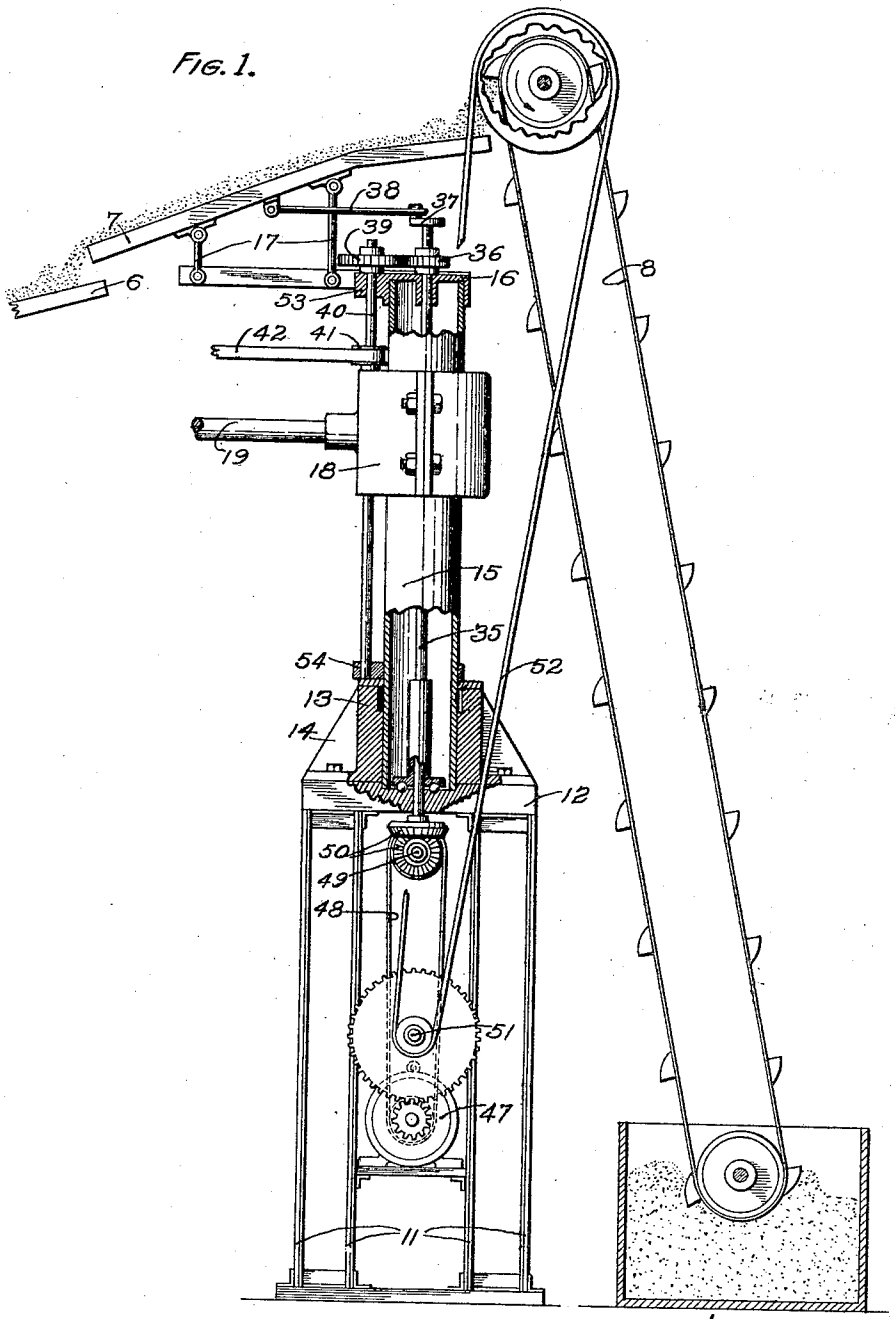
H. E. HENRICKS

MOLDING MACHINE

Filed July 9, 1920

2 Sheets-Sheet 1

FIG. 1.



INVENTOR:
HENRY E. HENRICKS
By Mitchell Strauss & Co.
ATTYS.

July 10, 1923.

1,461,145

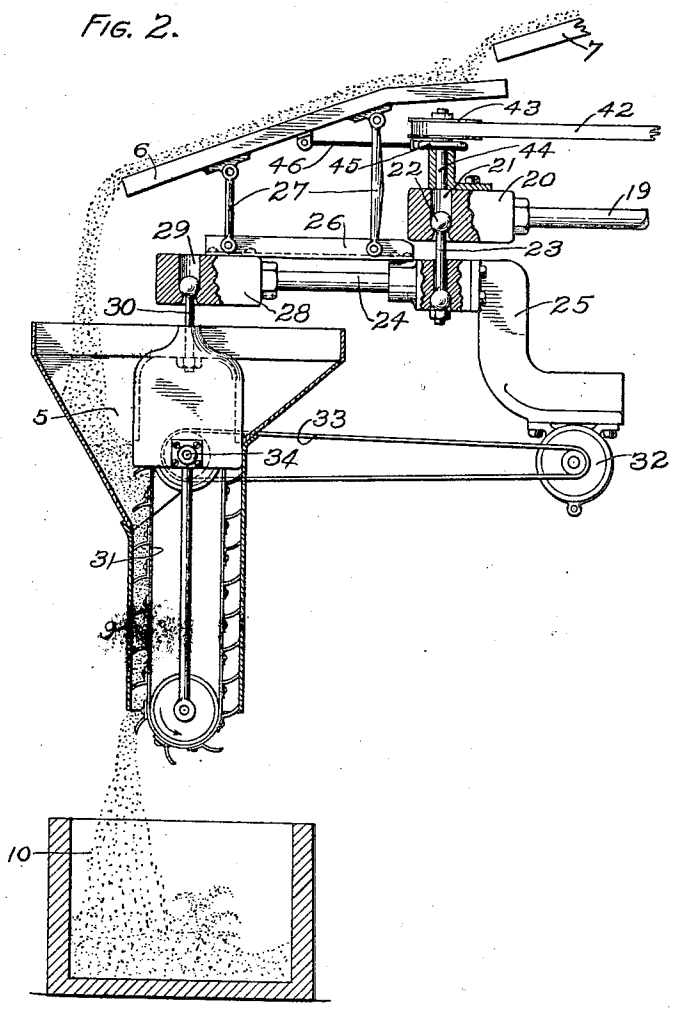
H. E. HENRICKS

MOLDING MACHINE

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2 Sheets-Sheet 2

FIG. 2.



INVENTOR:
HENRY E. HENRICKS

By Wilson & Thomas

ATTYS.

Patented July 10, 1923. 1,461,145

UNITED STATES PATENT OFFICE.

HENRY E. HENRICKS, OF OAK PARK, ILLINOIS, ASSIGNOR OF ONE-THIRD TO ARNOLD H. SCHLEGEL, OF OAK PARK, ILLINOIS.

MOLDING MACHINE.

Application filed July 9, 1920. Serial No. 394,921.

To all whom it may concern:

Be it known that I, HENRY E. HENRICKS, a citizen of the United States, residing at Oak Park, in the county of Cook and State of Illinois, have invented new and useful Improvements in Molding Machines, of which the following is a specification.

This invention relates to apparatus for delivering sand to mold flasks, and its object is to provide a novel and improved apparatus which delivers the sand in such a manner that it is properly compacted in the flask without the employment of the usual ramming or packing devices.

The invention also has for its object to provide an apparatus of the kind stated which is readily adjustable to direct the sand to any desired portion of the mold.

The objects stated are attained by means of a combination and arrangement of parts to be hereinafter described and claimed, and in order that the same may be better understood, reference is had to the accompanying drawings forming a part of this specification.

In the drawings,

Figure 1 is an elevation partly in section of a portion of the apparatus, and

Fig. 2 is a similar view of a continuation thereof.

Referring specifically to the drawings, 5 denotes a hopper which is positioned beneath the lower or discharge end of an inclined table 6, which latter, in turn, has its upper or receiving end positioned beneath the lower or discharge end of a second inclined table 7. At 8 is shown an endless conveyer which delivers sand to the table 7 from which latter it slides onto the table 6, and drops from the latter into the hopper 5. The conveyer 8 is charged from a suitable sand reservoir. The bottom of the hopper 5 has a depending outlet spout 9 beneath which is located a flask 10 to be charged.

At 11 is shown a suitable stand having a heavy squared top 12 from which rises a crown 13 reinforced by radial webs 14. The crown 13 is hollow to seat and hold the lower end of a hollow post 15 rising to a suitable height to serve as a support for the apparatus. The top of the post 15 is fitted with a head 16 projecting laterally therefrom a sufficient distance to pivotally support a pair of upstanding parallel link bars 17 supporting the table 7.

On post 15 is also rigidly clamped a heavy two-part sleeve 18 supporting a horizontally projecting arm 19 fitted at its outer end with a head 20 having a socket 21 to seat the spherical upper end 22 of a stem 23 which depends from the head and supports a beam 24, the latter being swiveled to the lower end of the stem. One end of the beam 24 is counter-weighted, as shown at 25, and its opposite end carries an angle bar 26 to which are pivoted parallel link bars 27 supporting the table 6.

On the outer end of the beam 24 is a head 28 having a socket 29 to seat the spherical upper end of a stem 30 supporting the hopper 5, which latter is therefore swiveled so that it may be rotated and also swung in any direction to direct the sand to any portion of the flask 10. As the beam 24 from which the hopper 5 is hung is swiveled and counterweighted, it can be easily tilted to elevate or lower the hopper, and also swung horizontally to swing the hopper bodily.

In the hopper spout 9 is mounted an endless conveyer 31 for carrying the sand down the same and forcibly discharging it into the flask 10. The conveyer 31 is driven at a high rate of speed, with the result that the sand is thrown into the flask 10 with such force that it is properly rammed or compacted therein without further compression, and it is not necessary to resort to the use of a ramming or tamping tool.

The conveyer 31 is, of course, vertically positioned, its upper end extending far enough into the hopper 5 to gather the sand therein, and its lower end being positioned at the bottom or discharge end of the spout 9.

The conveyer 31 is driven by an electric motor 32 mounted on the counterweighted end 25 of the beam 24 so that it also acts as a counterweight. A belt drive 33 is provided between the motor shaft and the upper conveyer shaft 34.

The blades of the conveyer 31 are curved to gather the sand from the hopper 5 and throw it downwardly rather than laterally at the bottom of the spout 9.

The tables 6 and 7 are adapted to be shaken or agitated to break up all lumps in

the sand, the following means being provided for this purpose:—

In the post 15 is housed a vertical shaft 35 projecting from the top of the post and having here a gear 36 and a crank disk 37, the latter being connected to the table 7 by a pitman 38. The gear 36 is in mesh with a gear 39 on a vertical countershaft 40 located outside the post 15 and having a pulley 41 which is connected by a belt 42 to a pulley 43 on a shaft 44 supported in a bearing on the head 20. The shaft 44 drives an eccentric 45 having its rod 46 connected to table 6. It will therefore be seen that the tables 6 and 7 are given a vibratory motion when the shaft 35 is in motion.

The shaft 35 is driven by an electric motor 47 supported by the stand 11. The shaft of this motor is belted, as shown at 48, to a horizontal shaft 49 having a driving connection, through a bevel gearing 50, with the shaft 35.

The shaft of the motor 47 is also geared to a pulley shaft 51 belted, as shown at 52, to the conveyer 8 for driving the same.

The head 16 has a bearing 53 supporting the upper end of the shaft 40, the lower end of said shaft being supported by a bearing 54 on the crown 13 of the stand 11.

The shaft 35 has a ball step bearing on the top 12 of the stand 11.

The clamp 18 is adjustable up or down on the post 15 to locate the hopper 5 and the parts associated therewith the proper distance above the flasks 10. When this adjustment is made, the pulley 41 must first be released from the shaft 40 so that it may be slid up or down thereon to follow the clamp 18, and after the desired adjustment is effected, the pulley can be again made fast to its shaft.

Inasmuch as the parts suspended from the swivel stem 23 are dirigible, the second table 7 is necessary to direct the sand from the conveyer 8 to the table 6, it being understood that the latter table moves with the hopper 5 when the latter is swung around.

I claim:

1. In a mold-flask charging apparatus, a support, a horizontal arm extending from the support, a beam swiveled to the arm to swing vertically and horizontally, a hopper and a shaking table carried by the beam, the table discharging into the hopper, means associated with the hopper for forcibly ejecting the contents thereof, a second shaking table carried by the support and discharging on the first-mentioned table, a drive shaft on the support, a counter-shaft on the support obtaining motion from the drive shaft, driving means for the first-mentioned table carried by the aforesaid arm, a driving connection between said means and the countershaft, and a driving connection between the drive shaft and the first mentioned table.

2. In a mold-flask charging apparatus, a support, a hollow post rising from the support, a head mounted on the top of the post and having a lateral extension, upstanding parallel links carried by said extension, a shaking table supported by the links, a sleeve clamped on the post, a horizontally projecting arm carried by the sleeve, and having a head at its outer end provided with a socket, a depending stem carried by said head, the upper end of the stem being spherical to seat in the socket, a beam swiveled to the lower end of the stem, a motor carried by one end of the beam, a socketed head on the other end of the beam, a stem depending from the head and having a spherical upper end seating in the socket thereof, a hopper supported by said stem, an endless conveyer working in the hopper for forcibly ejecting the contents thereof, a driving connection between the conveyer and the aforesaid motor, a second shaking table carried by the aforesaid beam and positioned to discharge into the hopper, and having its receiving end located beneath the discharge end of the first mentioned table, a drive shaft in the hollow post, a countershaft supported alongside the hollow post, a gearing between said shafts, an actuating connection between the drive shaft and the first mentioned table, and a driving connection between the counter shaft and the second mentioned table.

3. In a mold-flask charging apparatus, a support, a hollow post rising from the support, a head mounted on the top of the post and having a lateral extension, upstanding parallel links carried by said extension, a shaking table supported by the links, a sleeve clamped on the post, a horizontally projecting arm carried by the sleeve, and having a head at its outer end provided with a socket, a depending stem carried by said head, the upper end of the stem being spherical to seat in the socket, a beam swiveled to the lower end of the stem, a motor carried by one end of the arm, a socketed head on the other end of the beam, a stem depending from the head and having a spherical upper end seating in the socket thereof, a hopper supported by said stem, an endless conveyer working in the hopper for forcibly ejecting the contents thereof, a driving connection between the conveyer and the aforesaid motor, a second shaking table carried by the aforesaid beam and positioned to discharge into the hopper, and having its receiving end located beneath the discharge end of the first mentioned table, a drive shaft in the hollow post, a countershaft supported alongside the hollow post, a gearing between said shafts, an actuating connection between the drive shaft and the first-mentioned table, a shaft carried by the head of the aforesaid horizontally projecting arm, a driving connection between said shaft and the second-

mentioned table, and a driving connection between the last-mentioned shaft and the countershaft.

4. In a mold-flask charging apparatus, a support, a beam carried by the support, a ball-and-socket connection between said beam and the support, a hopper carried by the beam, a ball-and-socket connection between the hopper and the beam, and means associated with the hopper for forcibly ejecting its contents.

In testimony whereof I affix my signature.

HENRY E. HENRICKS.