

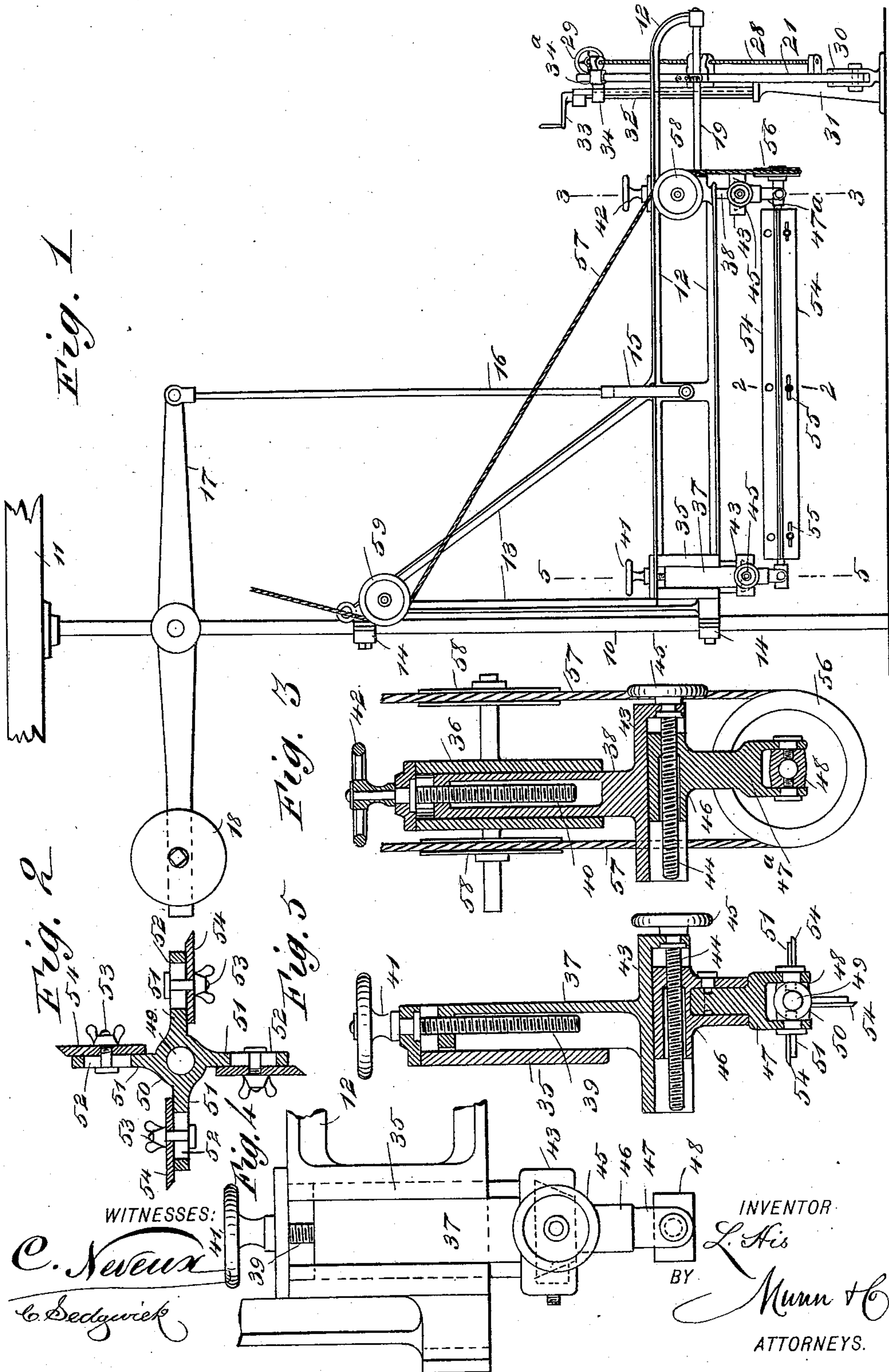
(No Model.)

2 Sheets—Sheet 1.

L. HIS.
MOLD FORMING MACHINE.

No. 532,460.

Patented Jan. 15, 1895.



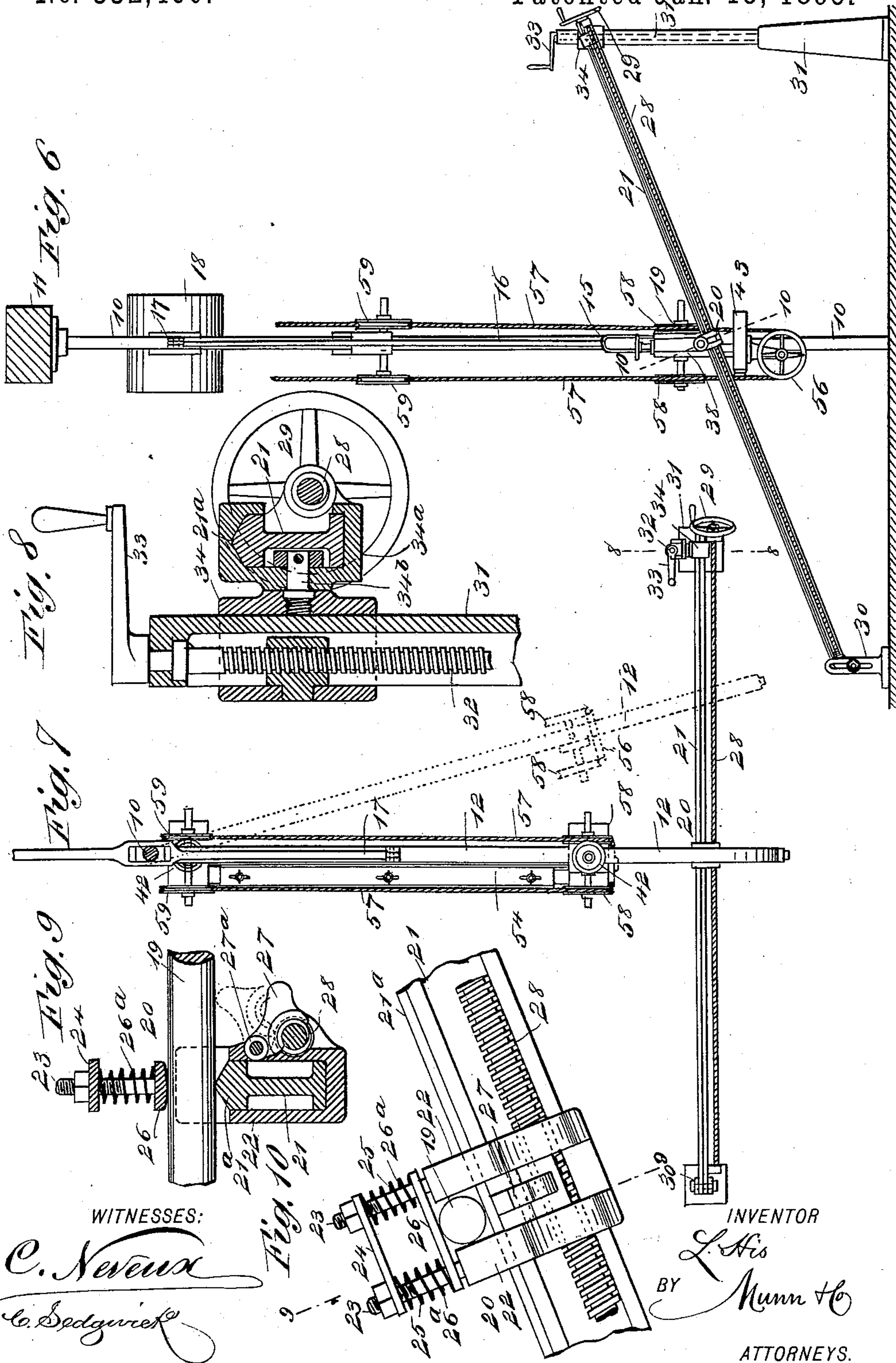
(No Model.)

2 Sheets—Sheet 2.

L. HIS.
MOLD FORMING MACHINE.

No. 532,460.

Patented Jan. 15, 1895.



UNITED STATES PATENT OFFICE.

LOUIS HIS, OF NEW YORK, N. Y.

MOLD-FORMING MACHINE.

SPECIFICATION forming part of Letters Patent No. 532,460, dated January 15, 1895.

Application filed March 6, 1894. Serial No. 502,540. (No model.)

To all whom it may concern:

Be it known that I, LOUIS HIS, of the city, county, and State of New York, have invented a new and Improved Mold-Forming Machine, of which the following is a full, clear, and exact description.

My invention relates to improvements in that class of devices which are used for forming or shaping molds in plastics, preparatory to making castings, and particularly to such devices as are adapted for use in preparing molds for casting propellers.

The object of my invention is to produce an apparatus which is perfectly adjustable either vertically or laterally, and which is provided with a rotary knife or cutter-head adapted to accurately and perfectly form the mold, the cutter-head being under perfect control while it is in motion, so that it may be given any desired pitch.

To these ends my invention consists of certain features of construction and combinations of parts, which will be hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of my improved apparatus. Fig. 2 is a cross section through the cutter-head and knives on the line 2—2 of Fig. 1. Fig. 3 is an enlarged vertical section on the line 3—3 of Fig. 1, showing the means of adjusting one end of the cutter-head. Fig. 4 is a detail side elevation of the mechanism for adjusting the inner end of the cutter-head. Fig. 5 is a vertical section on the line 5—5 of Fig. 1. Fig. 6 is a front elevation of the apparatus. Fig. 7 is a sectional plan view of the same. Fig. 8 is an enlarged detail section on the line 8—8 of Fig. 7. Fig. 9 is a cross section on the line 9—9 of Fig. 10; and Fig. 10 is a sectional elevation on the line 10—10 of Fig. 6, showing in detail the clamp by which one end of the knife-carrying frame is held to the inclined bar at the outer end of the machine.

The apparatus is provided with a main post 10 extending from the ground to a support 11 above the same, and hung on this post is a laterally-extending frame 12 which is adapted to hang over the flask in which the mold is to

be made, the frame 12 having preferably at its inner end a suitable brace 13, provided with suitable keepers 14, which slide freely on the post 10 and permit the frame to turn on the post. In order that the frame may be easily moved it is counterbalanced, and to this end it is provided with a bail 15, to which is attached a rod 16 extending upward and connected with one end of a lever 17 which is fulcrumed on the post 10, and has at its opposite end a weight 18 sufficiently heavy to nearly counterbalance the frame.

At the outer end and lower side of the frame 12 is a bar 19, which is rigidly secured to the frame, and this is attached by means of a clamp 20 to an inclined bar 21 which has its upper side formed into an edge 21^a to enable it to nicely fit the bar 19 without regard to the pitch of the bar 21. The clamp 20 has a clip 22 which rides on the bar 21 and straddles the bar 19, the clip having at opposite sides upwardly-projecting bolts 23 which are connected by a cross plate 24 beneath which is a second cross plate 26, serving as a brake shoe, this being pressed against the bar 19 by springs 26^a encircling the bolts, as shown best in Fig. 10. The clip is also provided with an upwardly swinging lug 27 which is journaled to the clip, as shown at 27^a in Fig. 9, and is provided with a half thread on its inner side shaped to fit the thread of the screw 28, which is journaled on the slide bar 21 and extends parallel with and the full length of the slide bar. By throwing the lug out of engagement with the screw, the clamp may be moved by hand, and by throwing the lug into engagement with the screw the screw moves the clamp. The screw is provided at one end with a hand wheel 29 by which it may be turned, and it will be seen that by turning the screw and throwing the lug 27 into engagement with the screw, the clamp 20 may be moved longitudinally on the bar 21 and thus the outer end of the frame 12 may be supported at any desired height, and may be moved so that the frame may project at a right angle from the post 10.

The bar 21 is at one end supported on a short post 30, see Fig. 6, in which it is vertically adjustable by means of a slot in the post and a bolt in the bar, and at its other end the bar is supported on a taller post 31 which is

provided with a vertical screw 32 which is journaled on the post and is provided at its upper end with a crank 33 by which it may be turned. The screw carries a slide 34 which supports the upper end of the bar 21, as best shown in Fig. 8, the bar resting in a lug 34^a, which is pivoted to the slide 34, as shown at 34^b. It will thus be seen that by simply turning the crank 33, the pitch of the bar 21 may be regulated.

On the frame 12, near its inner and outer ends, are slideways 35 and 36, see Figs. 1, 3 and 5, in which slideways are arranged the hangers 37 and 38 which support the cutter-head. The hanger 37 is carried by a screw 39 which is journaled in the top of the slideway 35 and is provided with a hand wheel 41 by which it may be turned, and the hanger 38 is carried in a similar way by a screw 40 journaled in the top of the slideway 36 and provided with a hand wheel 42 to turn it. Thus either hanger may be adjusted vertically so as to hold the knife or cutter-head below it at a desired height.

Each hanger 37 and 38 has at its lower end a transverse slideway 43, these having extending longitudinally through them adjusting screws 44 which are turned by means of hand wheels 45, and the screws carry brackets 46 which are movable in the slideways, and the inner bracket 46 has a removable end 47, this end and the lower end of the other bracket 46 carrying boxes 48 in which the trunnions 49 of the cutter-head 50 are journaled.

It will be seen that by turning the screws 44 the cutter-head may be moved transversely, while by turning the screws 39 or 40, the cutter-head may be adjusted vertically and thus the cutter-head may be brought to any necessary position. The cutter-head is provided with radial arms 51, which extend the full length of the cutter-head and these are slotted transversely, as shown at 52, to receive the bolts 53 by which the knives 54 are secured to the arms, thus providing for the adjustment out and in of the knives, and the knives are slotted longitudinally, as illustrated at 55 in Fig. 1, and thus the knives may be adjusted either laterally or longitudinally.

The shaft or trunnion at the outer end of the cutter-head is provided with a pulley 56 on which runs a driving belt 57, this extending upward over guide pulleys 58 on opposite sides of the slideway 36 and over guide pulleys 59 near the upper end of the brace 13, and the belt may be moved in any convenient manner and provision may be made for raising or lowering it so as to correspond with the up and down movement of the cutter-head.

In using the apparatus the flask, in which the sand has been properly tamped, is placed beneath the cutter-head and the cutter-head is moved by means of the adjusting screws 39 and 40, so as to carry the cutter-head into contact with the sand, and then the cutter-head is revolved and scoops out the sand and,

at the same time, the pitch, the height, and the longitudinal direction of the cutter-head may be changed and controlled by means of the vertical screws 39 and 40, the horizontal screws 44 and the screw 28 and inclined bar 21.

It will be observed that by means of the screw 23, the frame 12 and all the mechanism carried thereby may be swung, as shown by dotted lines in Fig. 7, and the height of the frame is thus changed, but the cutter-head may be lowered in relation to the frame by means of the screws already referred to.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A mold forming machine, comprising a supporting post and a laterally extending frame held to slide vertically and swing on the post, a revoluble cutter-head suspended on the frame, and means for revolving the cutter-head and adjusting it vertically and laterally in relation to the frame, substantially as described.

2. A mold forming machine, comprising a supporting post, a laterally extending frame held to swing and slide on the post, a counterbalance for the frame, a revoluble cutter-head suspended from the frame, and a screw mechanism for adjusting the cutter-head vertically and laterally, substantially as described.

3. A mold forming machine, comprising a supporting post, a laterally extending frame held to swing and slide on the post, means for adjusting the outer end of the frame vertically and holding it fixed when adjusted, a horizontal, revoluble cutter-head suspended from said frame, and means for revolving it, substantially as shown and described.

4. A mold forming machine, comprising a supporting post, a laterally extending frame held to swing and slide on the post, an adjustable support for the outer end of the frame, vertically adjustable hangers on the frame, a revoluble cutter-head suspended in the hangers, means for adjusting said cutter-head and for revolving it, substantially as shown and described.

5. The combination, with the supporting post and the swinging frame having slideways arranged vertically therein, of the vertically adjustable hangers in the slideways, the laterally adjustable brackets in the hangers, the revoluble cutter-head carried by the brackets, means for revolving said cutter-head, substantially as described.

6. The combination, with the supporting post and the laterally extending swinging frame thereon, of the vertically arranged slideways in the frame, the movable hangers in the slideways, the screws for adjusting the hangers, the lateral slideways at the lower ends of the hangers, the brackets adjustable in the lateral slideways, and the revoluble cutter-head suspended in the brackets, substantially as described.

7. The combination, with the supporting

post and the laterally extending frame carrying a cutter-head, as described, of the inclined bar at the outer end of the frame, a screw on the bar, a clamp operated by the screw and
5 sliding on the inclined bar, and a connection between the clamp and the frame, substantially as described.

8. The combination, with the supporting post and laterally extending frame carrying
10 a cutter-head as specified, of the inclined bar near the outer end of the frame, mechanism for regulating the pitch of the bar, a clamp carried by the inclined bar and held to engage the frame, and a revoluble screw on the
15 inclined bar to operate the clamp, substantially as described.

9. The combination, with the supporting post and the laterally-extending frame thereon carrying a revoluble cutter-head, as specified,
20 of the inclined bar near the outer end of

the frame, a screw mechanism for changing the pitch of the bar, a clamp held to slide on the inclined bar and engage the frame, a revoluble screw on the inclined bar, and means
25 for throwing the screw into and out of engagement with the clamp, substantially as described.

10. The combination, with the knife carrying frame having an outwardly extending bar, of the inclined bar beneath the frame, the inclined bar having its upper side terminating
30 in an edge, a clamp to move on the inclined bar, the clamp having a spring-pressed shoe to engage the bar of the frame, and a revoluble screw to move the clamp, substantially as
35 described.

LOUIS HIS.

Witnesses:

WARREN B. HUTCHINSON,
C. SEDGWICK.