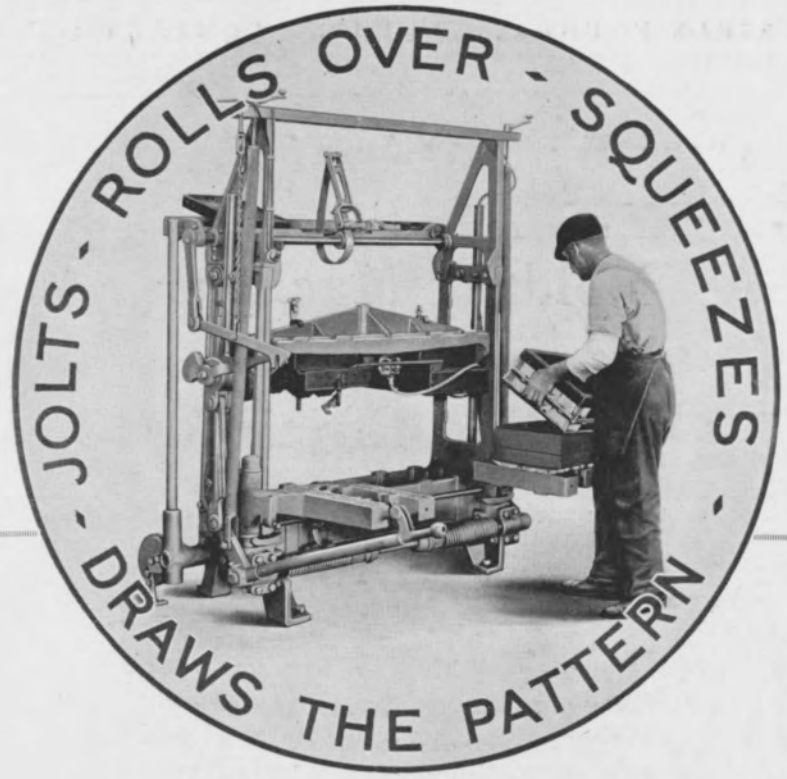


Skilled Molding Mechanically Done

A machine that does the work of an expert molder in less time and without any expense for compressed air.

Makes cope and drag simultaneously. Especially suited for deep draw work where accuracy is essential.

The American Foundry Equipment Co.

366 Madison Avenue, New York

PHILADELPHIA CLEVELAND YORK PITTSBURGH CHICAGO DETROIT

Molding Machine Factory — York, Pennsylvania

Bulletin No. 559

"American" Molding Machine No. 611

What It Does:

1. *Jolt-rams the mold.* This thoroughly settles the sand no matter how deep the flask. An easy operation owing to spring counter-balancing of the weight. The jolt may be omitted when not necessary as on very shallow work.

2. *Rolls the mold over.* The entire cradle with load makes a half revolution within its large trunnion bearings.

3. *Squeezes the mold.* The long leverage provided gives a very powerful squeeze with but little effort. Any desired degree of pressure can be applied.

4. *Draws the pattern.* This takes scarcely any effort, the spring counterbalancing causing the cradle to rise automatically when the squeeze pressure is released.

Special Points of Economy

1. *Makes cope and drag together.* The No. 611 does all the foregoing on both cope and drag at the same time, thereby saving duplication of work and greatly speeding production.

2. *Does not require compressed air.* There is no compressor to buy for this machine. All such expenses, together with power, air piping, and their incidental troubles, do not enter into the use of this molding machine at all. It is entirely and easily operated by hand.

3. *Does not require costly metal plates.* Our system of pattern mounting employs the original working pattern, wood or metal. An exact transfer is made in non-shrinking American Pattern Compound, which molds like sand but sets hard and durable. Your own pattern maker can mount patterns by our system. Any good molder soon learns to do so by our instructions.

4. *Does not require a skilled molder.* Most of the No. 611 Machines we have furnished are operated by ordinary unskilled men. All the necessary "skill" is incorporated in the pattern mounts and the machine construction. The mere operation takes no skill and is quickly learned by anybody.

Field of Work

It is a mistake to confuse this with the squeezer type of molding machine.

The No. 611 is a deep-draw, jolt-ramming machine with squeeze and roll-over features. It is intended for work more complex and difficult than the ordinary run of squeezer work. Though it will do that simpler class of work, it is especially valuable for patterns with

Molding Machines

vs.

Molding Efficiency

Foundries everywhere are considering whether they can increase and improve their production by putting in molding machines.

Molding machines are of many types. Some only squeeze the mold; others do jolting only; others jolt the mold and roll it over; still others jolt and squeeze. Some machines draw the pattern; others do not. The various machines differ greatly in nature, in capacity, and in price; yet all are known as "molding machines."

It is therefore evident that much more than the name must be known about a molding machine in order to judge intelligently of its value. One does not want merely a "molding machine"; he really wants "mold-making efficiency." That is what we are offering in the American Molding Machine No. 611.

Placing Flask Sections on Pattern Mounts

Any type of flask may be used. American Taper Snap Flask shown.

The two pattern mounts (cope and drag) rest solidly upon planed grooves of the cradle. Each mount is held by a hook bolt from beneath.

Patterns shown both above and below are mounted in American Pattern Compound, and the partings formed permanently in compound.

The cradle is held down against spring tension in the position shown by a latch.

Hook Bolts Hold Mounts Securely Upon Cradle.

Filling Flask Sections with Sand

Before filling flasks the patterns are dusted with parting compound, and facing sand riddled on as usual.

The loaded cradle, with flasks filled as shown, is counter-balanced by the front horizontal springs and the two vertical side springs, so that it is held in a suspended or floating position and can be moved upward or downward with but slight effort.

Tension adjustments are provided for each set of springs. They are adjusted for the job when making the first mold from a pattern; after that no further adjusting of the springs is necessary until changing to another job.

The front horizontal springs are adjusted by a large wrench which is provided.

The vertical side springs are adjusted by the two cranks shown at the top of the machine.

irregular partings and deep pockets, using a considerable depth of sand and requiring a deep, accurate pattern draw.

The maximum flask size is 16 x 24 inches, and both cope and drag are made at the same time. Practically any two-part job that will go into a flask of that size or smaller can be molded on the No. 611 machine, provided the pattern draw does not exceed six inches or eight inches.

Speed

Making both cope and drag side by side at the same time is a great speed advantage.

The low cradle makes an easy sand lift in filling flasks.

Spring counter-balancing and high-grade machine construction relieve the operator of fatiguing labor.

All the operations follow one another with a natural sequence that saves lost motion.

These factors make for speedy production. Of course much depends upon the industriousness of the operator. We have known many instances where our machine has outstripped air-operated molding machines in the number of molds made per day from the same pattern. And its work is mechanically accurate.

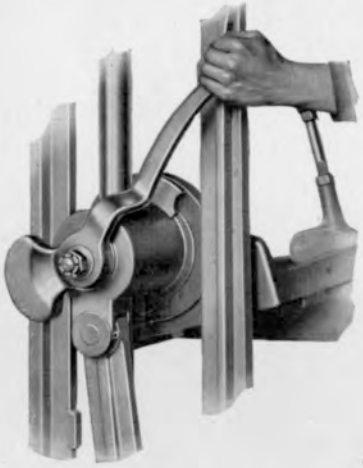
Steps in Making a Mold

The views on pages immediately following show the operations of making a mold on Molding Machine No. 611. By studying these views it will be seen that the ordinary principles of mold making are followed, though this machine performs more of the work than most molding machines do.

Snap work done on three "American" Machines.

Rolling Over the Cradle

A hand lever operating a friction clutch releases the cradle, allowing it to revolve a half turn in its large trunnion bearings. This brings the work into position for the squeeze action which immediately follows.



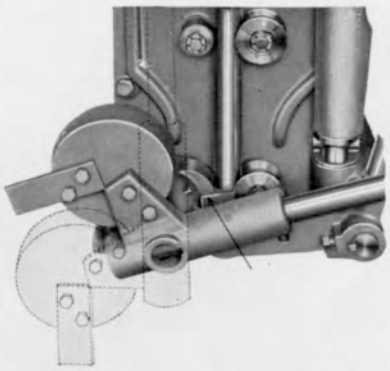
Clutch Lever Released and Cradle Partly Rotated. The large trunnion bearings assure accuracy and long life.

Squeezing the Mold

By depressing the long lever at the left end of the machine the entire cradle is drawn downward equally at both ends by a cam mechanism. Any degree of pressure desired may be applied.

The clamp bar during this momentary squeeze automatically unhooks and drops to a rest in the machine base.

The operator is also snapping on the switch of the electric vibrator.



Powerful Cam Squeeze Action, the same at both ends of the machine.

Jolt-ramming the Mold

A few light snappy pulls on the flexible jolting handle as shown thoroughly settle the sand no matter how deep the flask. Usually no hand ramming is necessary.

The loaded cradle being flexibly suspended by weight-carrying springs, the operator does not lift the cradle in jolting. Rather, he drives it downward upon the bumpers below, from which it rebounds by spring tension to the suspended position.

As many jolts as the job requires may be given in rapid succession.

The jolting mechanism is sensitive, and the motion made in an easy bodily position which is not fatiguing.

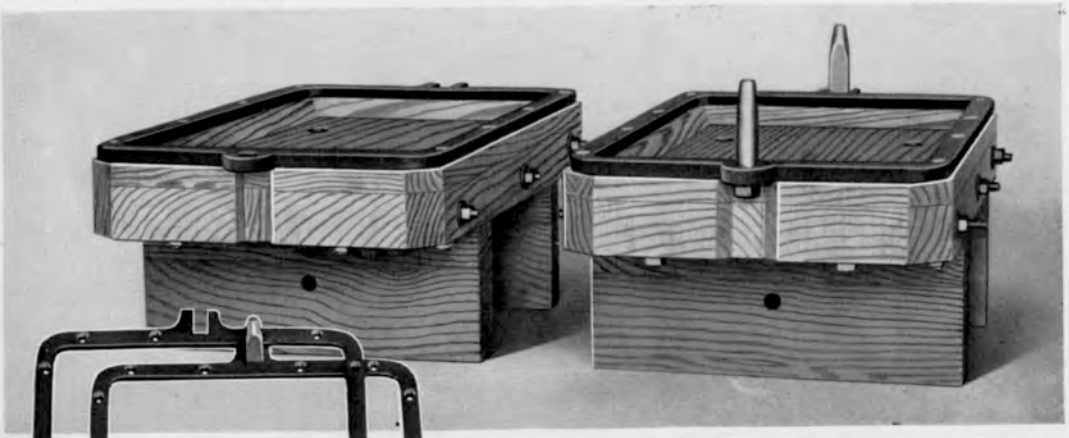
Some operators prefer to jolt by the knob-handled lever at the left side of the machine. This gives exactly the same effect.

Striking off Surplus Sand after Jolting

Surplus sand above the flask is removed by a sweep of a straight-edge in the usual manner.

Squeeze Plates and Clamp Applied

These plates and clamp hold the flask sections and sand while rolling over to the squeeze position. The clamp is a quick-acting device consisting of an eccentric bar with bearing ends, and an adjustable hook connected to the center of the cradle.



Pair of mounts ready for composition and pattern.

Pair of beveled steel pattern frames.

Pattern Mounting

Cross-section of Frame

Patterns for use on the No. 611 Molding Machine must be mounted in pairs on plates or boards, the cope in one mount and the drag in the other. Hardwood battens attached to the under side are for raising the mounts to the proper respective heights to level the two halves of the mold for squeezing.

Many years' experience has convinced us that the most satisfactory mounts for this machine are those made in American Pattern Mounting Compound as here shown. They cost less than metal plates, but are thoroughly durable and unusually accurate, because the original working pattern is incorporated in the mount, and the transfer of the reverse side is made in a material which does not shrink.

We will mount the first set of patterns at shop cost for labor and materials, and this will serve the customer as a guide for future work.

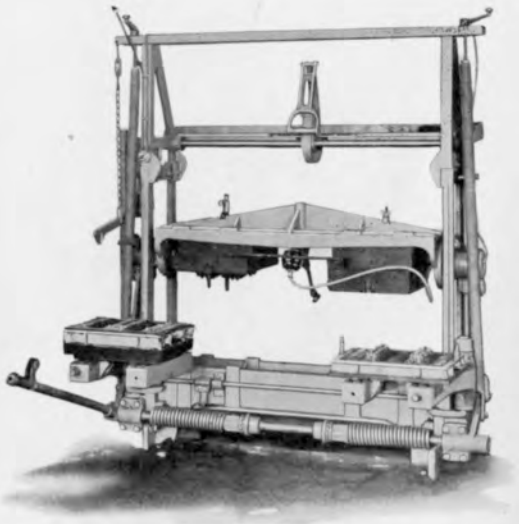
American Pattern Mounting Compound, sold by the bag, barrel, or ton.

Drawing the Pattern

Upon releasing the squeeze lever the cradle, with patterns attached, automatically rises by spring tension, under control of the pattern draw lever (in operator's right hand). This gives a clean vertical draw of the pattern mounts, aided by the electric vibrator, if furnished, or by rapping the cradle with a rawhide maul.

It is impossible to draw a pattern by hand with such accuracy. The casting is consequently accurate, and metal saved.

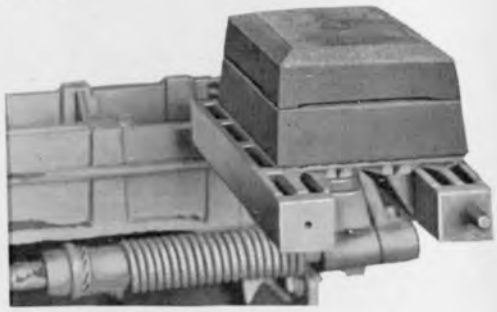
Finished cope after pattern is drawn.



Mold Ready to Close

Drawing the pattern leaves the two halves of the mold each resting upon one of the swinging tables, which are here shown swung outward, clear of the machine. These tables lift slightly by a pedal release, and swing out smoothly upon large grit-proof bearings. During earlier operations these tables rest solidly upon the base and serve as bumpers in jolting.

Cores, if any, are set at this point. The mold is then closed and set down for pouring.



Snap mold closed and ready to pour.

Distinctive Points of Construction

High grade machinery castings used.

Steel castings used for parts subject to heavy strain.

Machining and fitting done to the accurate standards followed in building machine tools.

Extensive use of castellated nuts and cotter pins prevents loosening through jolting.

Weight-carrying springs are of highest grade, oil tempered.

Bearings are of ample size and provided with dust-proof oilers.

The vertical slide-ways and crossheads of the cradle, formerly used, have been replaced by accurately aligned trunnion bearing shafts operating vertically between upper and lower pairs of eccentrically adjustable rollers. All gumming and packing with grit is avoided by this new construction, saving friction and wear, and giving a most accurate pattern draw.

Each machine built is carefully tested in our own foundry. Patterns mounted by us are proved by making and submitting actual castings.

Replacement parts stocked at York, Penna., for immediate delivery.

Dimensions and Weights

Flask capacity, 16 x 24 inches and smaller. Takes both cope and drag together.

Pattern draw, 6 inches (8 inches when specially ordered).

Width, over all, 72 inches.

Height, over all, 83 inches.

Depth, with swinging tables out, 48 inches.

Weight, net, 1700 lbs.

Weight, boxed for export, 2250 lbs.

Dimensions, boxed, 74 inches long, 32 inches wide, 60 inches deep (one box).

Rate of Production

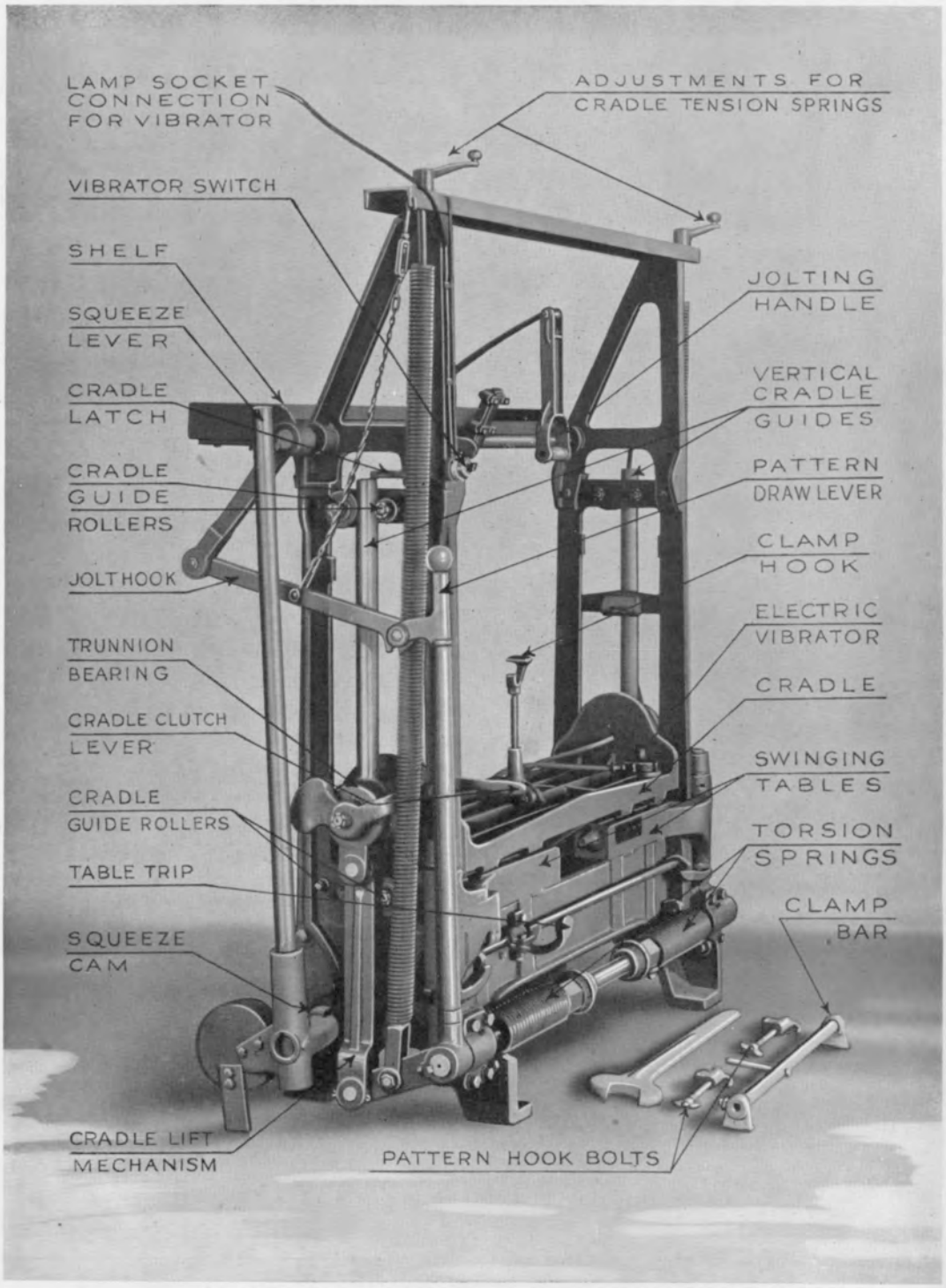
So many variable conditions enter into and affect the rate of production of a molding machine that it is impossible to say in general terms how many molds a machine will produce in a day or an hour. Only by an examination of the pattern or a sample casting can the approximate rate of production be satisfactorily determined. We will make a conservative estimate of the production on any piece if a sample casting or a pattern be sent to our York factory, 501 East Market Street, York, Pa. In submitting sample casting or pattern, please indicate the desired location of the gating.

Sand Cutters: Three Styles, Twelve Sizes

Sand Blast: Tanks, Guns, "Humane" Rooms, Barrels, Rotary Tables, Cabinets, Down Draft Rooms

Other "American" Equipment for the foundry

Snap Flasks
Dust Arresters
Oven Trucks
Core Machines
Charging Buckets
Pouring Jackets
Steel Flask Bars



"American" No. 611 Molding Machine with names of principal parts.

Comments by a Few Users

Lebanon Steel Foundry, Lebanon, Pa.

"We started to use these machines about four years ago and have constantly increased their number. It is one of the few machines that will ram the mold, roll it over and draw the pattern on work up to 18-inch square flasks."

Norfolk & Western Railway Co.,
Roanoke, Va.

"We have four of these machines. They have been in service several years, and have given satisfaction."

Hershey Machine & Foundry Co.,
Manheim, Pa.

"We have a number of these Jar-Squeeze-Roll-over-Pattern-Draw Machines that have been in continuous operation for six or seven years, and have had satisfactory service and production from them."

The Chandler & Price Co., Cleveland, O.

"We have been able to get large production."

Topton Foundry Company, Topton, Pa.

"We have nine machines in use, find them perfectly satisfactory, and have adopted this style of machine in preference to many others we have tried."

American Bronze Corporation, Berwyn, Pa.

"On one job alone the machine not only more than paid for itself, but also for all the auxiliary equipment in the way of flasks, etc."