BRADLEY

B-2

HAMMERS

C. C. BRADLEY & SON

Incorporated

Syracuse, N. Y.

Established 1832

Makers of

The Bradley Cushioned Helve Hammer

The Bradley Upright Strap Hammer

The Bradley Upright Helve Hammer

The Bradley Compact Hammer

Heating Forges for Hard Coal or Coke

The BRADLEY Hammer

The hot and cold forging and forming of metals is one of the oldest, as well as one of the most important single operations in industry. We are concerned, primarily, with hot metal technique.

In the earliest days of the utilization of metal, particularly of iron, it was discovered that by heating and pounding the material its original strength and toughness was increased and that by this kneading process many of the impurities of the stock were forced to the surface and cast off.

Probably the best example of this ancient art of blacksmithing is the Japanese sword of centuries ago. Melting processes were of the crudest but these workmen, by constant heating and hammering by hand, folding the metal over upon itself as it became thin and beating the folds into one mass again by hand so refined the material that the result was a fine piece of steel capable of holding a razor edge and of taking a high temper. This process probably took months.

Modern steels are practically free of all impurities so that the refining process by hammering is not essential. Pressing or hammering of metals today is confined to the production of all types of special shapes and sizes, to the compression and elongation of grain structures to the end that such items as cutting tools of all types may have a longer life before redressing.

Present day production of forged work might be divided into four general classes, beginning with the steel mills where heated ingots are pressed and rolled into sheets and shapes. A second stage might come under the general classification of flat die forging. In this, air or steam hammers are used for the forming of bars, rings, flanges and other special shapes. This classification depends largely upon skilled hand labor and accurate forging with dies is practically nonexistent.

The third classification, perhaps, is the board or steam drop forging with impression dies, for quantity production of identical pieces. In this same classification also comes the production of forgings on bull-dozers and upsetters with an increasingly popular use of forging presses.

The fourth general classification concerns **BRADLEY** Forging Hammers. These Hammers have been designed and built to operate at high speed, to center each blow so that a match is obtained between the impressions in the upper and lower dies, and to deliver an impact type of blow which will flow the metal into the desired shape. There are four types of **BRADLEY** Hammers, each type being produced in various sizes, in order to cover a wide range of light to medium weight forging.

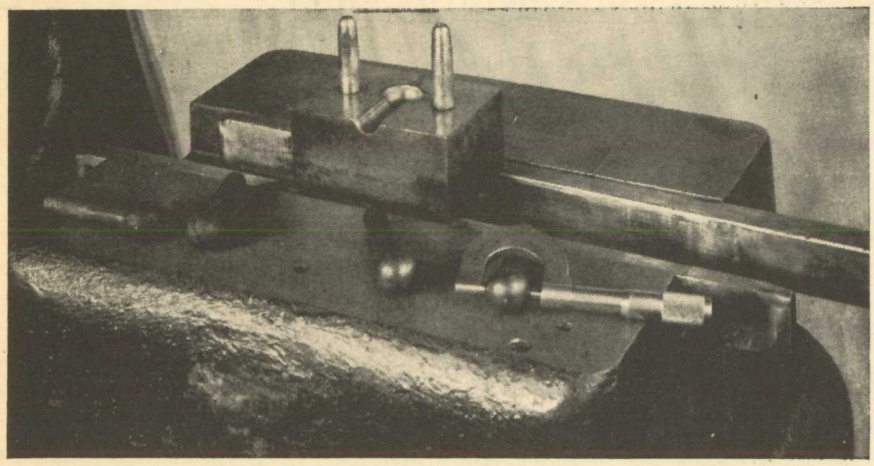
Of the four models of **BRADLEY** Hammers, the most widely used is the Cushioned Helve Hammer. This tool is designed for rapid drawing at high speeds, for commercial drop plant installations, welding, edging, plating and forming.

The Upright Helve Hammer is hard hitting and, by the use of a guided head, close tolerances are held on this tool where used with impression dies.

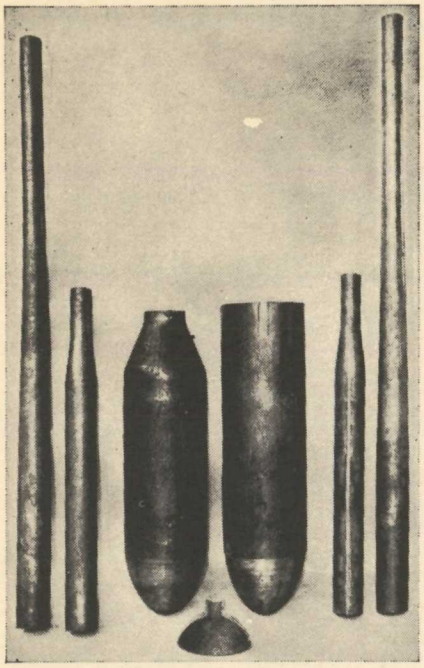
The Upright Strap Hammer fills the Helve specifications except that a greater die opening is possible making it more practical for certain classes of work.

The Compact Hammer is designed for general blacksmithing and should be considered wherever the work is interlaced.

Our Engineering Department is most anxious to have the opportunity of reviewing your produc-



Cold restrike dies for flash removal and finish sizing



Examples of tube forming

tion requirements in order to make their recommendations as to the size and type of unit best suited to your needs. We believe that we could best serve you in this way.

BRADLEY Forging Hammers date back to the first crude model produced in 1872. At the present, about 6,000 of our hammers are in active production throughout the world. Their versatility is revealed by the wide range of application. They are used in steel mills for the forging of special bar shapes. Railroad car shops use them to forge discarded car axles into useful hand tools of all sorts.

At the other end of the scale, smaller models are used for hammering gold leaf—so thin that it may be used as a light filter for a camera. This leaf actually finishes to a thickness of .0000075".

Also consider such diverse uses for this type of hammer as the welding, forming, blading and finishing of scythes—and the beating of ash logs into strips for basket weavers, with many hundreds of intermediate applications.

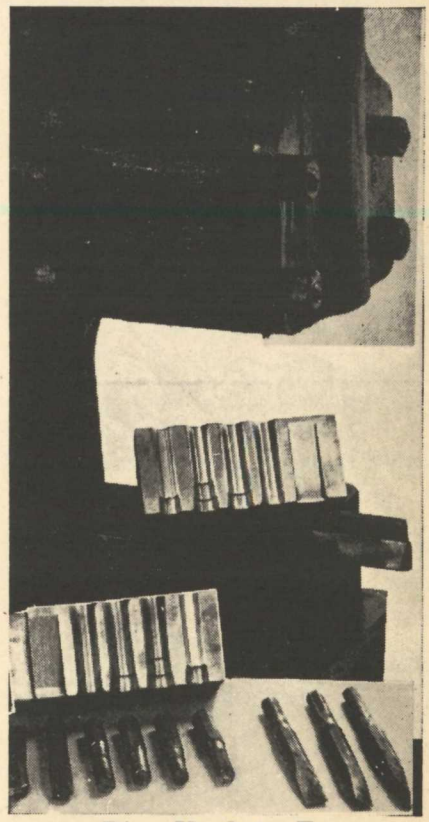
In modern production shops, these hammers are doing work considered impossible a few years ago. For instance, in two drop forging plants in the East, employing board drop hammers, practically every drop in these shops has its accompanying **BRADLEY Hammer.** In these applications, the **BRADLEY Hammers** are used for breakdown tools, breaking and forming the bar stock for the board drop hammers. This avoids such breakdown impressions in the board drop dies, extending the life of the drop hammer dies, heads and guides by eliminating off-center blows. At the same time, through the use of crews of drop men, continuous production is achieved at a much higher rate than by the older method.

Another extremely important application has just been initiated in the automotive field. Carbide tipped tools, because of their ability to make cuts at extremely high speed are finding increasing application. One major difficulty in using these high speed tools on forgings was the overcoming of any suggestion of flash lines. The forging, turning at high speed and with a very slight projection of flash from the forging body, tended to shatter carbide tipped tools under the repeated hammer-like impacts.

In overcoming this, the **BRADLEY** Hammers are equipped with suitable impression dies to permit an extremely rapid cold forging or coining operation on the forgings prior to machining. This eliminates any semblance of flash marks and at the same time brings the forgings to very close tolerances. It is evident that, as this type of operation becomes more generally known, it will be widely adopted.

In the field of small tool manufacturing, these hammers perhaps have shown their greatest versatility. An interesting application is in the production of wood and ship auger bits of all sizes. These tools are manufactured from bar stock in a single heat. Under the dies, the bit is twisted perfectly. The shank is drawn and tapered—the point forged and the resultant forging finished except for a final grind and polish.

Here is an idea of the production rate on such work, citing an observation made at one of the small tool shops in New England. The operator used a small gas forge and an Upright Helve Hammer. The product was a one-half inch wood bit, the twisted section being 12 inches long with an additional three inches of shank. Eighteen seconds



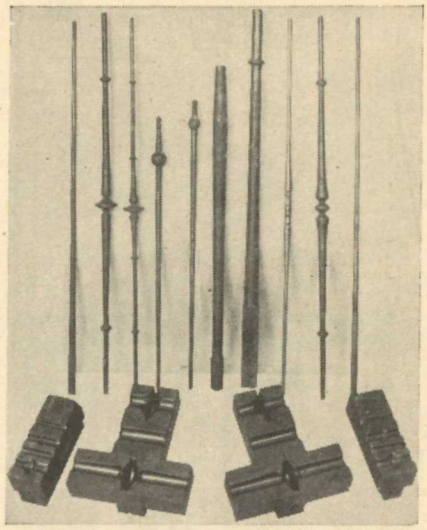
Dies Used to Form Air Hammer Chisels

sufficed for removing the straight piece of bar stock from the forge, hammering the twisted section, applying the point, tapering the shank and placing the finished piece in a tote box for removal to the grinding room. In this same category are included chisels, prick punches, screw drivers and other hardware items.

Another interesting job is the cold forming of stainless steel rods used in door locking assemblies of streamlined trains. In this instance, it was found that heating the bars impaired the stainless qualities.

The dies shown in the photograph below proved adequate for bending these ¾" rods. Another point in the cold forming of stainless is that lighter multiple blows give the desired section without so many contributions to the rejection pile, caused by severe single forming blows.

The hammer used for this was a 150-lb. Upright and dies such as these cost from $45.00 to $100.00 a pair.



Dies and products of the Cushioned Helve Hammer

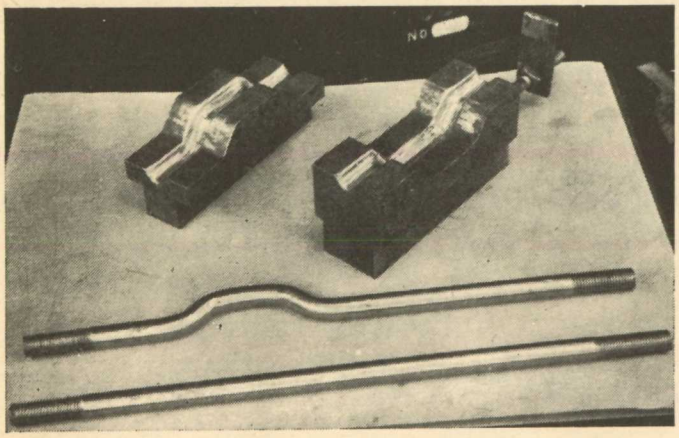
Our die department is experienced and we would like an opportunity to quote on your die requirements.

The illustration above right shows a variety of special shapes including ornamental stair rail spindles, automobile gear shift lever and an automobile rear axle.

Examples of the types of dies for this work are also shown. It has been found practicable for short runs on special shapes to use cast dies. In any event, die cost is of minor importance because when the impressions grow beyond the maximum tolerance, the dies may be placed on a grind table and the bumping surfaces ground until the impressions reach minimum requirements once more. This simple operation may be repeated many times. The examples shown represent but a small portion of the possible types.

Small tool forging with dies of the multiple impression type are shown on the preceding page. In this way, ¾" chisels can be produced with any of the three standard shanks, in one heat and from hex stock. Further, the tolerance on the finished product should be within four to five thousandths. In other words, it will be finished to the final grind operation. On heat, one operation and from 50 to 70 finished pieces per hour—that's the production possible. For closer tolerances, control pins are set in the face of the lower die, with corresponding holes in the upper die face.

In this general field of forging there are many similar products: star drills, screw drivers, rivet sets, punches, crow and wrecking bars, cutting blades of various types, surgical instruments and dental tools. The multiple snap blows of the hammer compress and refine the grain of the material, resulting in longer life for the point, edge or blade.



Examples of dies used for cold forming of stainless steel rods

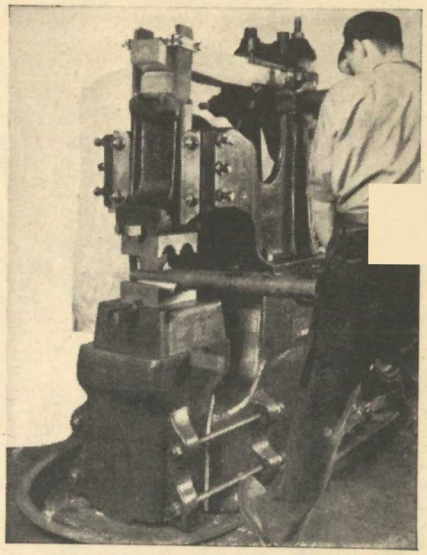
The ball joins shown on Page 1 require a die of simple design, with half of the impression in each section. Dimensions of the impression are those of the minimum tolerance of the finished piece. In this particular instance, .002" was specified. The guided head of the hammer assures almost perfect matching of the dies for every blow.

A cold restriking operation was done in this case by holding the stems in a pair of tongs and rotating the ball heads briefly in the impression of the die. The two pieces at the left show the forgings as received by the hammer. At the right are shown two pieces as they come from the ham-

mer. The cold operation completely eliminated the flash marks, brought the pieces to absolute symmetry and most of the excess stock flowed out the ends of the balls to form a little tit. A relief port for the elimination of this stock can be seen at the far center of the lower die.

While a number of these cold restrike operations are performed on drop forgings, it must not be overlooked that many upsetter products as well as forging press products could be so processed and the cost of such operations should show a saving over machining or rough grinding.

Another line has to do with the drawing and forming of tubing. The illustration on Page 2 shows the tapering of automobile torque tubes. Two die passes are used in this operation. The first pass is a rough breakdown which reduces the tube approximately to size. The hot tube is in this impression 8 to 10 seconds, the operator turning the tube as he moves it forward in the die.



Two pass die for tube or bar reduction or tapering

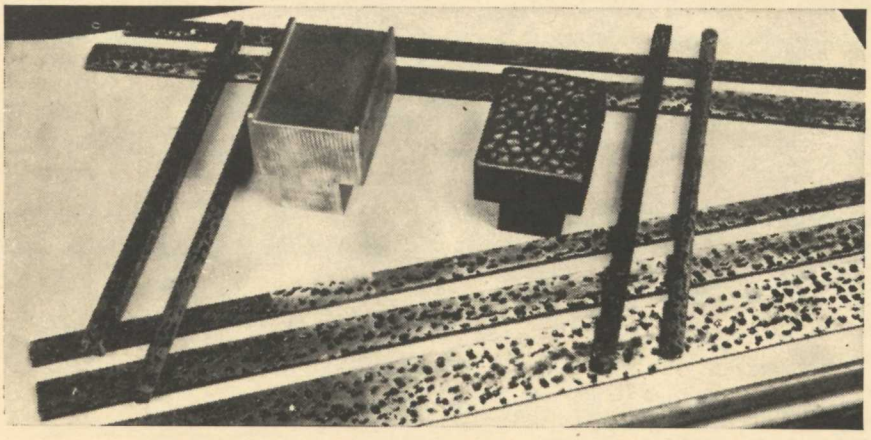
When the tube reaches the stop at the rear of the die, it is moved back, entered into the second impression, moved forward, turned rapidly and finished to size, the operationg requiring 11 to 14 seconds. Two impressions are required in this case because the tube was roughly welded and care was necessary to prevent breaking out the weld. A single pass would suffice for seamless tubes.

Other tubular sections, necked and drawn are shown, the long tubes being torque sections. The taper is 27″ long.

The inside pieces in the illustration on Page 2 are airplane bombshells. On the right is the shell as receveide from the draw table. The completed piece is shown at the left. One die pass is used to form the neck. The neck wall thickness is doubled. The small piece at the bottom of the illustration is a metal bottle neck, revealing the increased wall section.

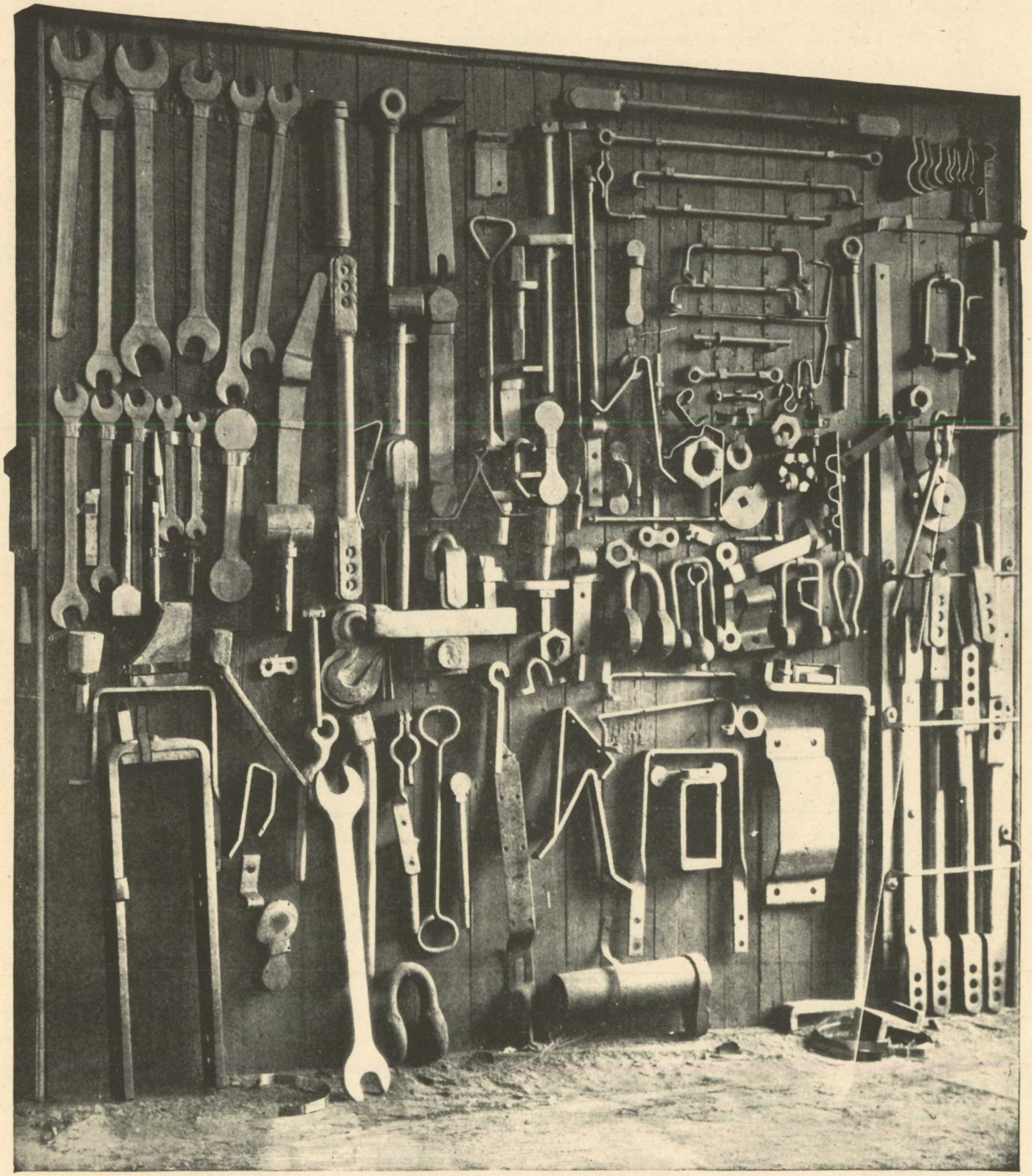
Equipment for tubular reductions should be of the Upright Hammer type. The torque tubes were produced under a 150-lb Hammer. Large sections such as the bombshells are worked more efficiently under 200 or 300-lb. units due to the necessity of carrying greater die weights. Die costs for work of this type range from $200.00 to $400.00 depending on the number of passes required.

The illustration below shows an inexpensive method of producing hand hammered finishes on steel and iron sections for ornamental iron products.

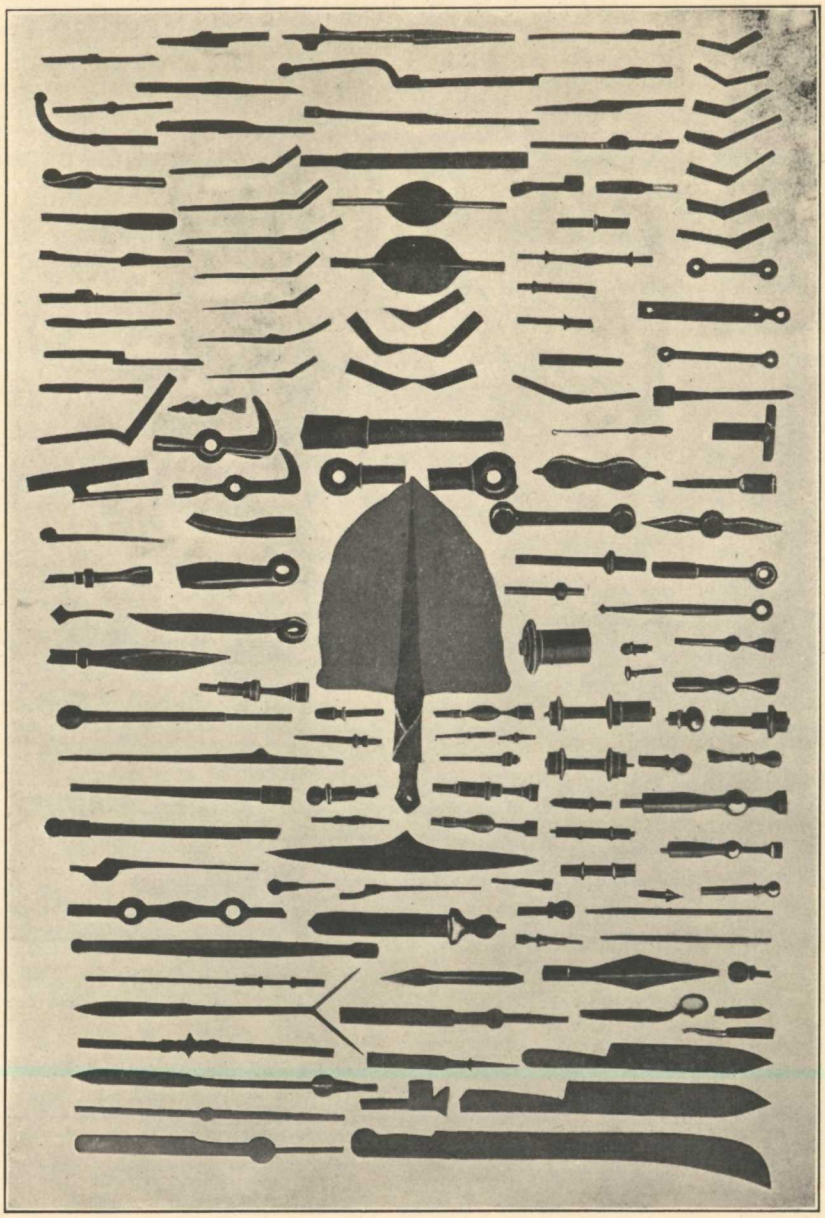


Specialty Dies and examples of their work

A cast steel heat treated upper die is used and it is plentifully supplied with knobs, producing replicas of the peening blows of a blacksmith's hammer. The companion die, mainly a depth control element, is used for flat bars. The raised edges of this die prevent the knobbed upper die from driving too deeply and distorting the section. Using control type dies, it is possible to draw full length bars through the hammer, producing the hand hammered finish uniformly over the entire length.



The variety of forging and hammering operations which may be profitably performed on Bradley Hammers is amazing. The above illustration shows a few of the many things made with a Bradley in a railroad blacksmith shop.



Production Elements . . .

Illustrated above are a few samples of the hundreds of forgings coming from Bradleys on straight line continuous production. Both the guided head and Cushioned Helve Type units are production units in many leading shops. Small drop type forgings are also profitably produced. Dies for impression forging are easily designed and machined and expensive die sinking equipment is not required. The extensive experience of our engineering Department is at your service.

The BRADLEY Hammer

Has been manufactured since 1872. The first made are still in active service. Modern Production Demands necessitate the continuous operation of hammers 24 hours per day. The New Bradley Hammer has been improved and strengthened in every way to meet these requirements. Each new Hammer is built to satisfy the particular needs of the customer and at the same time be a rugged machine to stand up under the general work it may be called upon to do. Our experience in this line is extensive. Let us know your forging problems and permit us to make you our recommendations.

In Bradley Hammers of every style and size, the anvil block is separate and distinct from the main frame, has a separate foundation and is easily shifted to align the dies.

The Cushions have been constantly improved with the science of rubber molded goods. Our latest cushion contains ingredients, unknown a few years ago, put into the compound for the express purpose of taking care of the great heat caused by the compression to which the cushions are subjected. Their duty is to cushion the jar of the blow, increase its force and impart snap and elasticity. In doing these things it adds to the life of the Hammer, making it practically indestructible.

Cushions are absolutely indispensable in any Hammer and nothing but rubber, and that of the best, can accomplish these results.

The Helve is made of laminated sections of clear, hard-grained maple, thoroughly seasoned.

The Eccentric—hub, shell and strap, are accurately machined, with large wearing surfaces, and the shell is faced with babbitt.

The Main Shaft, upon which the eccentric is keyed, is of steel, of large diameter and runs in babbitted bearings.

Motion is imparted to the Hammer by means of a treadle operating an idler pulley against the down moving side of a constantly running loose belt.

A slight pressure of the foot upon this treadle will at once start the Hammer and varying this foot pressure regulates the force and rapidity of the blow. The treadle extends around three sides of the Hammer so that the operator may stand on either side or in front.

A brake connected with the foot treadle acts as the balance wheel as soon as foot is removed from treadle, stopping the Hammer at once.

Dies are open when Hammer is at rest.

Anvil Blocks and Anvils are regularly made of a special mixture of cast iron. Where the work is of a very heavy nature, with the hammer running on continuous production we recommend these parts to be made of cast steel.

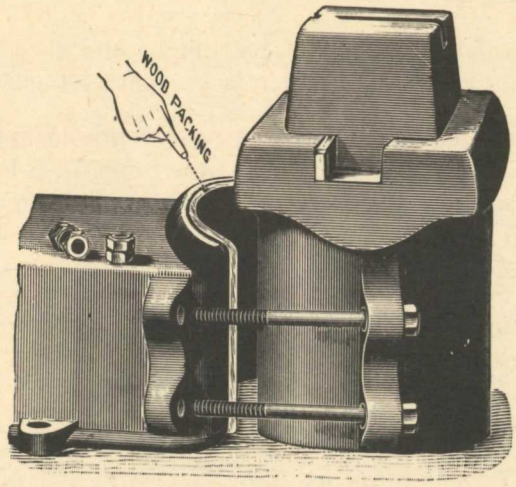
Dies—A pair of drawing dies with half the face flat, the other half slightly rounded, as shown in our illustration of Hammer, is a part of each Hammer.

Special Dies—We are in position to make up special dies and test them out in our own forge shop under our Bradley Hammers before making delivery. In this way the dies are proven right. We are pleased to handle any die orders that our customers send us.

The Hammerman who has worked with but one hammer is quite likely to become filled with prejudice in favor of that particular hammer simply because he knows all about that one and nothing about any other. We therefore suggest that before selecting a hammer, the work be submitted to us, either as samples or by drawings, no matter how roughly made. From them we would be able to make suggestions as to the style and size hammer to best do the work.

The first purchase is where the above applies. There are shops with ten to fifty Bradley Hammers in use wherein their own problems are worked out better than we could hope to do it. The beginner is the one liable to make the mistake. Let us know what you want to do. Not every piece of forging is a **BRADLEY** Hammer job, and if it is not we will frankly give you our opinion and recommendations.

Separate Adjustable Anvil Block

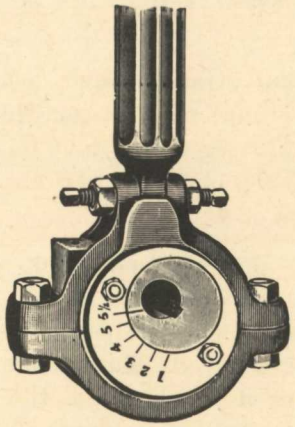


THIS ILLUSTRATION shows the Anvil Block of a Bradley Hammer in connection with the Main Bed. It is a separate casting and has its own separate foundation. By no other construction can the breakage of frames by crystallization be avoided. It will also be noticed that the Block and Bed where they come together are circular in shape with a thin packing of wood between, and the Block is held in place by bolts. This shape permits shifting the Block if necessary to bring dies into alignment, while the bolts hold it secure where placed.

★

The Bradley Eccentric

THIS ILLUSTRATION shows the Eccentric, by which the length of the stroke is adjusted on all Bradley Hammers. It consists of a Hub, a Shell and a Strap. The Hub is keyed to the drive shaft. The Hub and Shell are bolted together and revolve in the Strap. To change length of stroke loosen the two bolts in Shell, move mark on Hub to mark on Shell indicating length of stroke desired and tighten bolts. It will be understood by hammermen that some classes of work require short, quick, snappy blows, while with others a slower and longer stroke is better. This device makes it possible to change length of stroke quickly and accurately.



The Bradley Upright Strap Hammer

The BRADLEY HAMMER is UPRIGHT of that class in which the head or ram is operated vertically in guides or ways.

As the dies in this style of hammer are always parallel, regardless of the opening between them, it is a most desirable style for general jobbing, where frequent variation in the size of stock occurs, or where forgings are made from flat stock that must be edged up.

Rubber cushions which give force, life and spring to the blows and absorb all shock and jar, are at the rear of the helve.

Pressure upon the foot treadle, which extends around front and both sides of the Hammer base, brings the idle pulley against the down-traveling side of a constantly running loose belt, and sets the Hammer in motion. As treadle is released a brake stops the Hammer. The speed and force of blows are thus completely under the control of the hammerman.

The Bradley Upright Hammers are made in two styles, the **Upright Strap** shown on the opposite page, and the **Upright Helve** as shown on Page 13.

The Upright Strap is so called because its ram is carried by a leather belt or strap.

The difference in these Hammers lies wholly in the manner of carrying the ram.

Whether to select an Upright Strap or Upright Helve Hammer depends upon the nature of the forging and whether the work is intermittent or continuous.

The leather strap allows a greater throw or swing to the ram than is possible in the helve style, and this greater throw tends to increase the force of each blow and permits of a somewhat greater range of work.

In severe and continuous forging, the leather strap has a tendency to get hot because of the friction between the strips of leather, and hot leather is short-lived. This tendency to heat is greatly reduced by keeping the leather strap strained up taut all the time.

The conclusion is that if the work is of an intermittent nature where there are frequent stops between operations, the Upright Strap should be used.

Buf if the work is continuous and severe, the Upright Helve Hammer is the better tool.

We have found that a ram weighing approximately 200 pounds is about the limit for a leather strap, so that our 300-pound and 500-pound Upright Hammers are made in the Upright Helve style only.

In these suggestions we are referring to such forgings as may be made to better advantage by an Upright Hammer than by the Bradley Cushioned Helve Hammer.

If you will let us know just what you want to accomplish, giving us the size and nature of the rough stock, we will be glad to give you the benefit of our experience in suggesting the best style and size of hammer for the work submitted.

The Bradley Hammer has its anvil block separate and distinct from the main bed, and it is so formed and connected to the bed that it may be quickly and accurately adjusted or shifted to bring dies into perfect alignment.

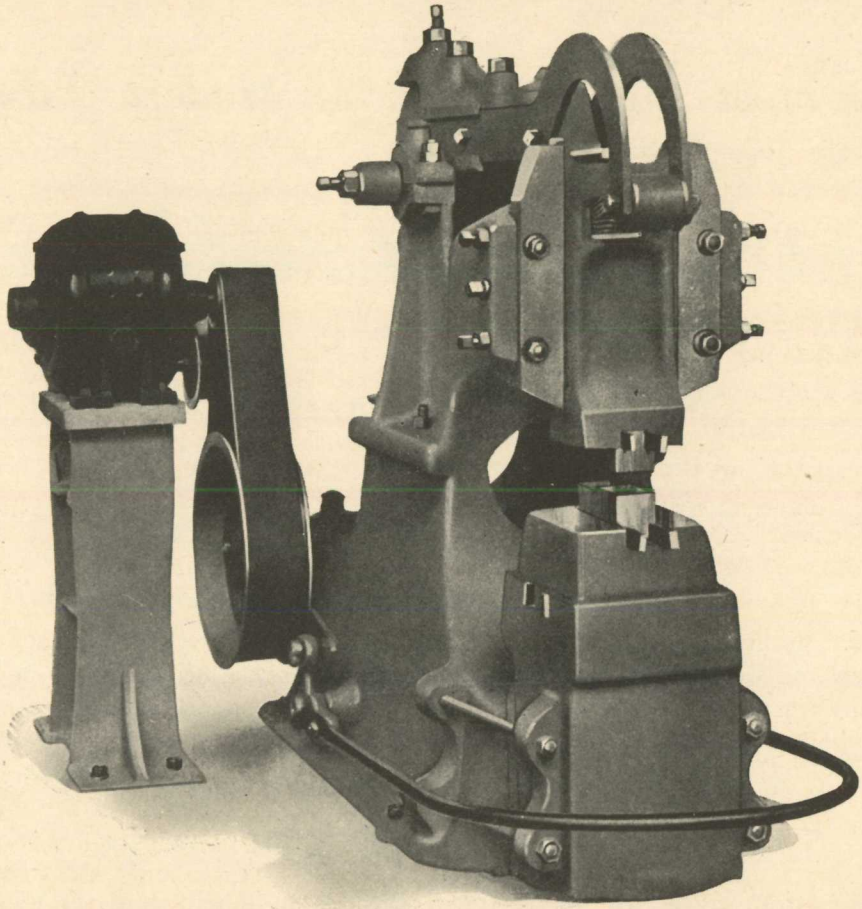
The Bradley Hammer is operated from its main shaft by an adjustable eccentric by means of which the length of the stroke of the ram may be increased or decreased as desired, but the stroke should always be as short as the nature of the forgings will admit.

The Bradley Hammer is provided with a slip sleeve or grip upon the pitman by which the opening between the dies may be regulated to admit small or large work.

Dies. A pair of drawing dies, with half the length of face flat, the balance rounded slightly, as shown in our illustration, is a part of each Hammer.

Special Dies. We are constantly called upon to make up special dies and try them out in our forger shop under our own BRADLEY Hammers before making delivery. In this way the dies are proven right. We are pleased to handle any die orders that our customers send us.

The Bradley Upright Strap Hammer



MOTOR DRIVEN

The Motor is mounted on a separate stand, free from all the vibrations of the hammer, thus insuring long life to the electrical equipment.

SPECIFICATIONS

Size	Diameter of Hammer Pulley	Width of Drive Belt	Horse Power of Motor	Speed of Motor No Load	Degree Basis of Rating	Diameter of Motor Pulley	Speed of Hammer	Average Size of Work	Floor Space Over All (Approximate)	Weight (Approximate) Pounds	Upper Die Not Incl. Tongue
15-lb.	8 in.	3 in.	1	900	40	. . .	. . . . .	5/8 to 3/4 in.	21 in. x 36 in.	800	2 x 5 x 1 1/4
50-lb.	14 in.	4 in.	3	900	40	5 in.	300 to 315	1 1/4 in.	32 in. x 54 in.	3200	2 1/2 x 6 x 1 5/8
100-lb.	18 in.	6 in.	5	900	40	6 in.	275 to 300	1 3/4 in.	39 in. x 60 in.	4700	2 3/4 x 7 x 1 5/8
150-lb.	18 in.	6 in.	7 1/2	900	40	6 in.	250 to 275	2 1/2 in.	41 in. x 78 in.	5750	3 1/2 x 9 x 2 3/4
200-lb.	22 in.	6 in.	7 1/2	900	40	6 in.	200 to 225	3 in.	42 in. x 78 in.	6800	4 x 11 x 3

We are prepared to quote on Motor Driven Hammers complete with motor, or we will quote on hammers arranged for motor drive, customer to supply his own motor.

If an alternating current motor is used, its no load speed should be 900 R.P.M. When a direct current motor is used, the speed should be 850 to 860 R.P.M.

If 50-degree motors are to be used, the next H.P. rating is recommended, as the 50-degree motor has no continuous overload capacity, as is needed on the hammer.

When asking quotations on Motor Driven Hammers, state whether for alternating or direct current; also voltage, phase and cycle.

The Bradley Upright Helve Hammer

Built to meet the Demands of Modern Production

THE BRADLEY UPRIGHT HELVE HAMMER has a helve of wood and the head or ram is carried by a strip of leather belting, with a buffer or cushion of rubber between the ram and the helve to provide the snap and elasticity to the hammer blow which is a feature of the Bradley Hammer. In other respects the Bradley Upright Hammer is practically identical with the Bradley Upright Strap Hammer.

The 300 pound size and the 500 pound size have eight rubber cushions at the rear of the helve; the smaller sizes have four.

The two sizes—the 300 lb. and 500 lb.—are made in the Upright Helve style only. The other sizes—except 15 lb., which is made in Upright Strap only—may be had in either Upright Strap or Upright Helve.

We recommend the Upright Helve Hammer when the work is severe and continuous.

Bradley Hammers contain more material. The Anvil Blocks are much heavier in proportion to weight of head. Their design and workmanship are of the highest order. They are Cushioned Hammers in the very best sense of the word. These are some of the features that justify us in guaranteeing them to do more work with less power and fewer repairs than any other belt Hammer in the world.

MOTOR DRIVEN

The motor is mounted on a separate stand, free from all the vibrations of the hammer, thus insuring long life to the electrical equipment.

SPECIFICATIONS

We are prepared to quote on Motor Driven Hammers complete with motor, or we will quote on hammers arranged for motor drive, customer to supply his own motor.

If an alternating current motor is used, its no-load speed should be 900 R.P.M. When a direct current motor is used, the speed should be 850 to 860 R.P.M.

If 50-degree motors are to be used, the next higherH. P. rating is recommended, as the 50-degree motor has no continuous overload capacity, as is needed on the hammer.

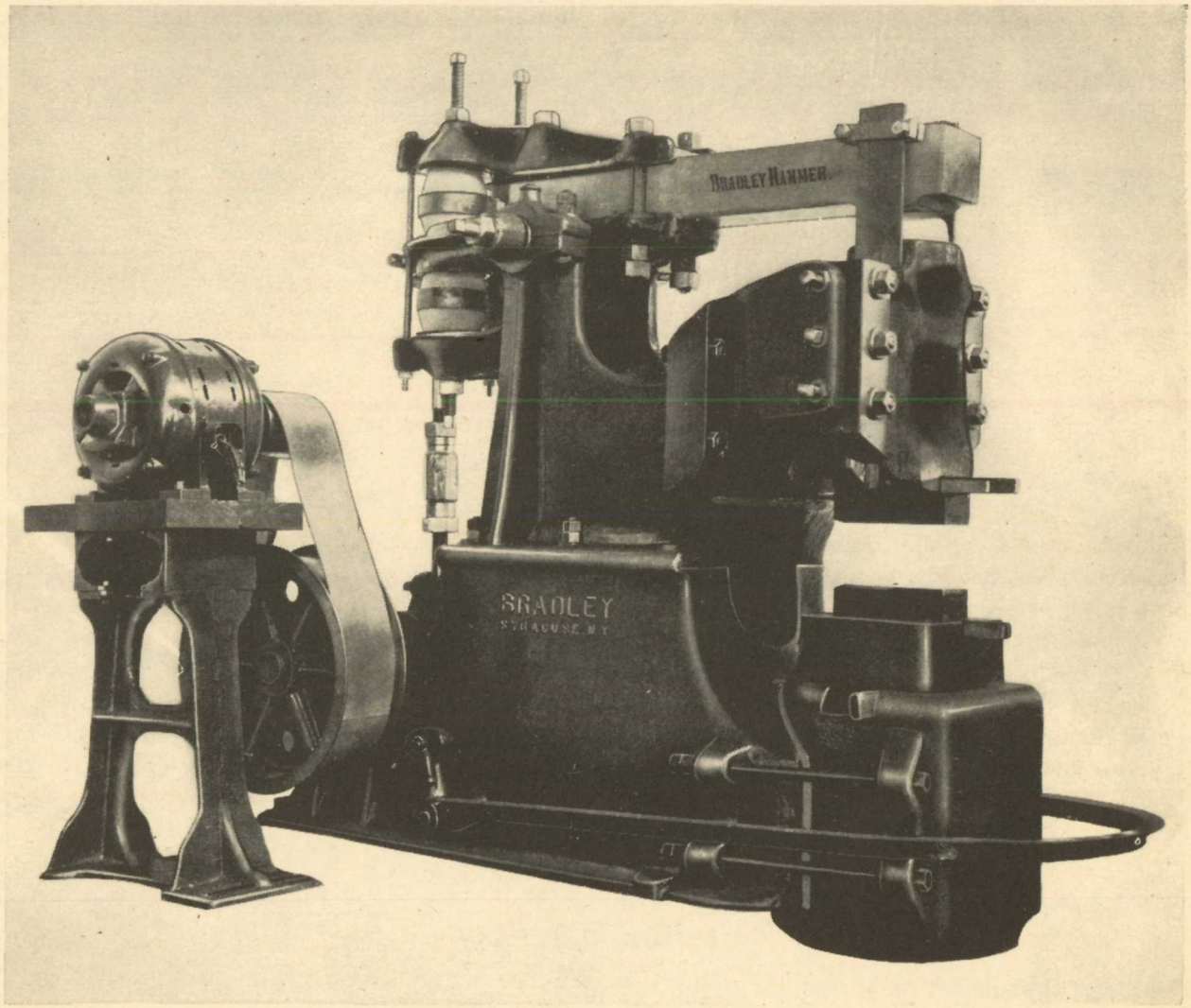
When asking quotations on Motor Driven Hammers, state whether for alternating or direct current; also voltage, phase and cycle.

The 15 lb. size is furnished in **Upright Strap** style only.

The 50 lb. to 200 lb. sizes are furnished in either **Upright Strap** or **Upright Helve** style as required.

The 300 lb. and 500 lb. sizes are furnished in **Upright Helve** style only.

The Bradley Upright Helve Hammer



Size	Diameter of Hammer Pulley	Width of Drive Belt	Horse Power of Motor	Speed of Motor No Load	Degree Basis of Rating	Diameter of Motor Pulley	Speed of Hammer	Average Size of Work	Floor Space Over All (Approximate)	(Approximate) Weight Pounds	Upper Die Not Including Tongue Inches
50-lb.	14 in.	4 in.	3	900	40	5 in.	300 to 315	1¼ in.	32 in. x 54 in.	3200	2½x6x1⅝
100-lb.	18 in.	6 in.	5	900	40	6 in.	275 to 300	1¾ in.	39 in. x 60 in.	4700	2¾x7x1⅝
150-lb.	18 in.	6 in.	7½	900	40	6 in.	250 to 275	2½ in.	41 in. x 78 in.	6700	2¾x7x1⅝
200-lb.	22 in.	6 in.	7½	900	40	6 in.	200 to 225	3 in.	42 in. x 78 in.	7800	3½x9x2⅜
300-lb.	26 in.	8 in.	10	900	40	6½ in.	175 to 190	3½ to 4 in.	52 in. x 96 in.	15400	4x11x3
500-lb.	26 in.	8 in.	15	900	40	6½ in.	150 to 175	4..to..5 in.	52 in. x 96 in.	17900	5x13x3

The Bradley Cushioned Helve Hammer

Has more Good Points, Less Complication, More Adaptability, Larger Capacity, Takes Less Power, Does More and Better Work, and Costs Less for Repairs Than Any Other Hammer in the World.

Rubber Cushions that absorb all concussion.

A separate Anvil Block with special foundation.

Anvil Block adjustable to keep dies in alignment.

Eccentric and Strap with great wearing surfaces.

Slip Sleeve to instantly change position of head.

Sectional Eccentric to quickly change length of stroke.

Sizes refer to the weight of heads, bolts, die and keys.

Any material increase in the weight of upper dies will overweight the Hammer and an overweighted Hammer is not 100% efficient.

The speed of any Hammer may be run up 10 to 20 per cent. faster than our schedule by an experienced hammerman with a proportionate increased output.

There can be no rule for the selection of a Hammer for the size of the material to be forged. A larger Hammer is necessary to work tool steel than iron; to forge a foot in length than an inch; to forge than to weld; to reduce an inch than a quarter inch, etc. Also much work can be done to better advantage under the Bradley Upright Hammer. Let us know what you want to DO. A Hammer too small for its work is impractical.

MOTOR DRIVEN

The motor is mounted on a separate stand, free from all the vibrations of the hammer, thus insuring long life to the electrical equipment.

SPECIFICATIONS

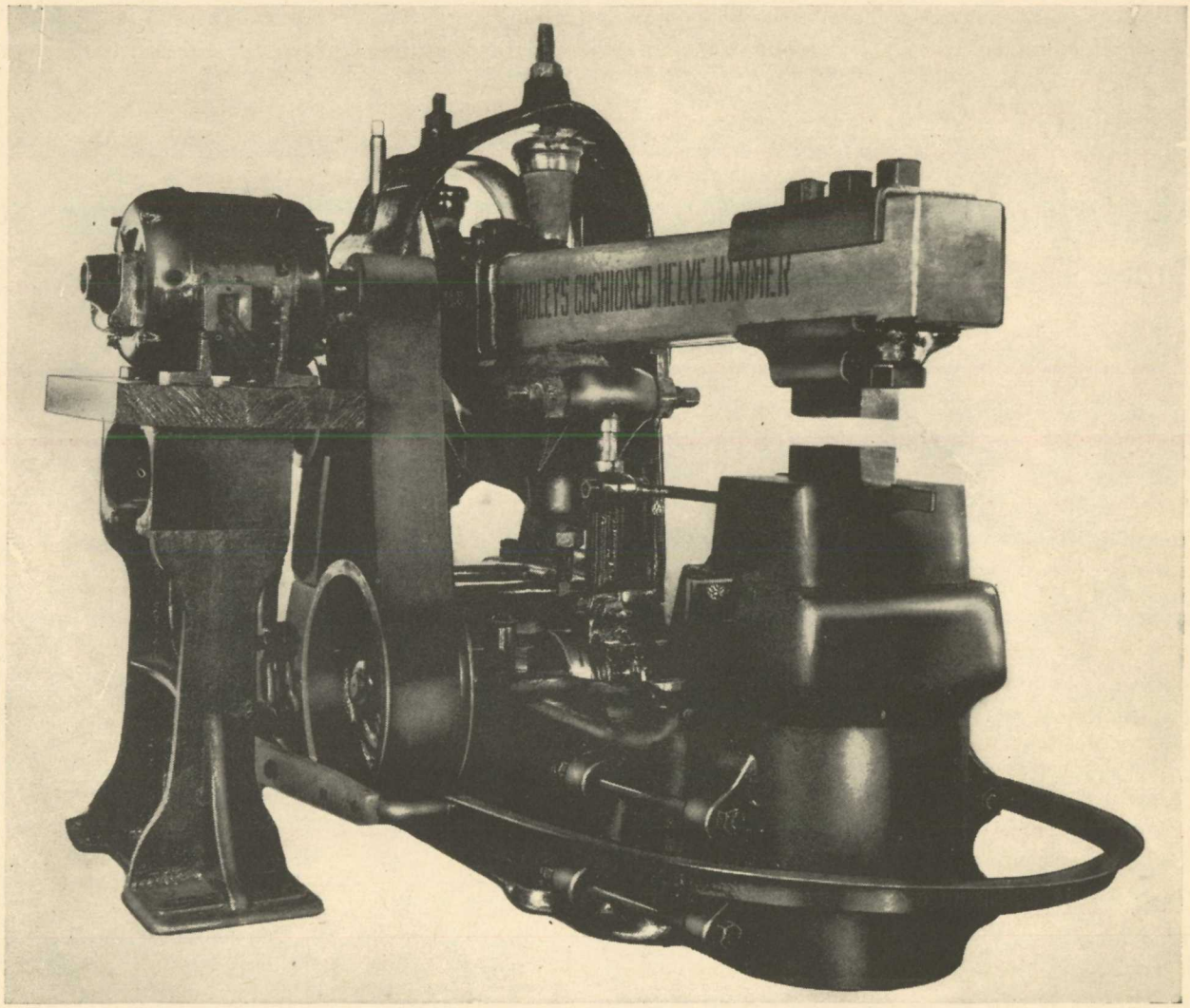
We are prepared to quote on Motor Driven Hammers complete with motor, or we will quote on hammers arranged for motor drive, customer to supply his own motor.

If an alternating current motor is used, its no-load speed should be 900 R.P.M. When a direct current motor is used, the speed should be 850 to 860 R.P.M.

If 50-degree motors are to be used, the next higher H. P. rating is recommended, as the 50-degree motor has no continuous overload capacity, as is needed on the hammer.

When asking quotations on Motor Driven Hammers, state whether for alternating or direct current; also voltage, phase and cycle.

The Bradley Rubber Cushioned Helve Hammer



MOTOR DRIVEN

The motor is mounted on a separate stand, free from all the vibrations of the hammer, thus insuring long life to the electrical equipment.

SPECIFICATIONS

Size	Diameter of Hammer Pulley	Width of Drive Belt	Horse Power of Motor	Speed of Motor No Load	Degree Basis of Rating	Diameter of Motor Pulley	Speed of Hammer	Average Size of Work	Floor Space Over All (Approximate)	Weight (Approximate) Pounds	Std. Upper Die. Not Incl. Tongue
25-lb.	12 in.	3 in.	3	900	40	5½ in.	400	1 in.	68 in. x 29 in.	2100	2 x 5 x 1¼
60-lb.	18 in.	6 in.	5	900	40	6½ in.	290 to 300	1¾ in.	91 in. x 43 in.	5250	2¾ x 7 x 1⅝
100-lb.	18 in.	6 in.	5	900	40	6 in.	275	2½ in.	96 in. x 48 in.	6650	3 x 8 x 2
200-lb.	26 in.	8 in.	10	900	40	7 in.	225 to 240	3½ to 4 in.	106 in. x 54 in.	10200	4 x 11 x 3⅜

The Bradley Compact Hammer

This type of Bradley Hammer will appeal to many Hammer users because of the small amount of floor space required, the general compactness of its design, and the high speed at which it may be run.

They are designed for light and heavy railroad, machine and general blacksmithing; for plating, drawing, swaging, collaring, welding or spindle work.

Its weight is somewhat less than other styles of Bradley Power Hammers of corresponding rating, and it has fewer parts, so that while the highest grade of material is used and the workmanship is of the very best as in all Bradley Hammers, it can be offered at a somewhat less net price.

The cushioning of the blow by rubber cushions or springs, always a leading feature in Bradley Hammers, has been retained in this, but with less weight of rubber.

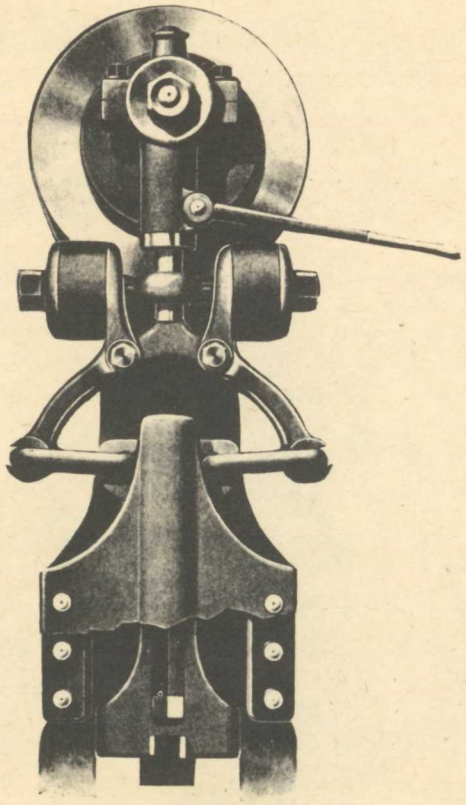
A glance at the illustrations will indicate that the working parts of the Hammer occupy but small space and are in plain view of the operator.

Force and elasticity are given the blow by the manner in which the head or ram is connected with the crank, aided greatly by the rubber cushions, which add life and snap to the action of the Hammer, and so cushion the working parts against jar and concussion that wear and breakage are reduced to a minimum.

Rubber replaces the steel spring used in inferior Hammers, eliminating entirely the ever present hazard of serious human injury caused by flying pieces of crystallized metal.

Length of stroke is adjusted by shifting the position of the crank pin in slot in balance wheel. Sometimes short, quick, snappy blows are required; at other times, full length strokes.

The opening between dies is quickly regulated to accommodate work of various thicknesses by the slip sleeve and its lever, connected directly with the crank pin. There must always be some opening between the dies, varying with the size to which the work is to be finished.



Showing the working parts only of the Bradley Compact Hammer

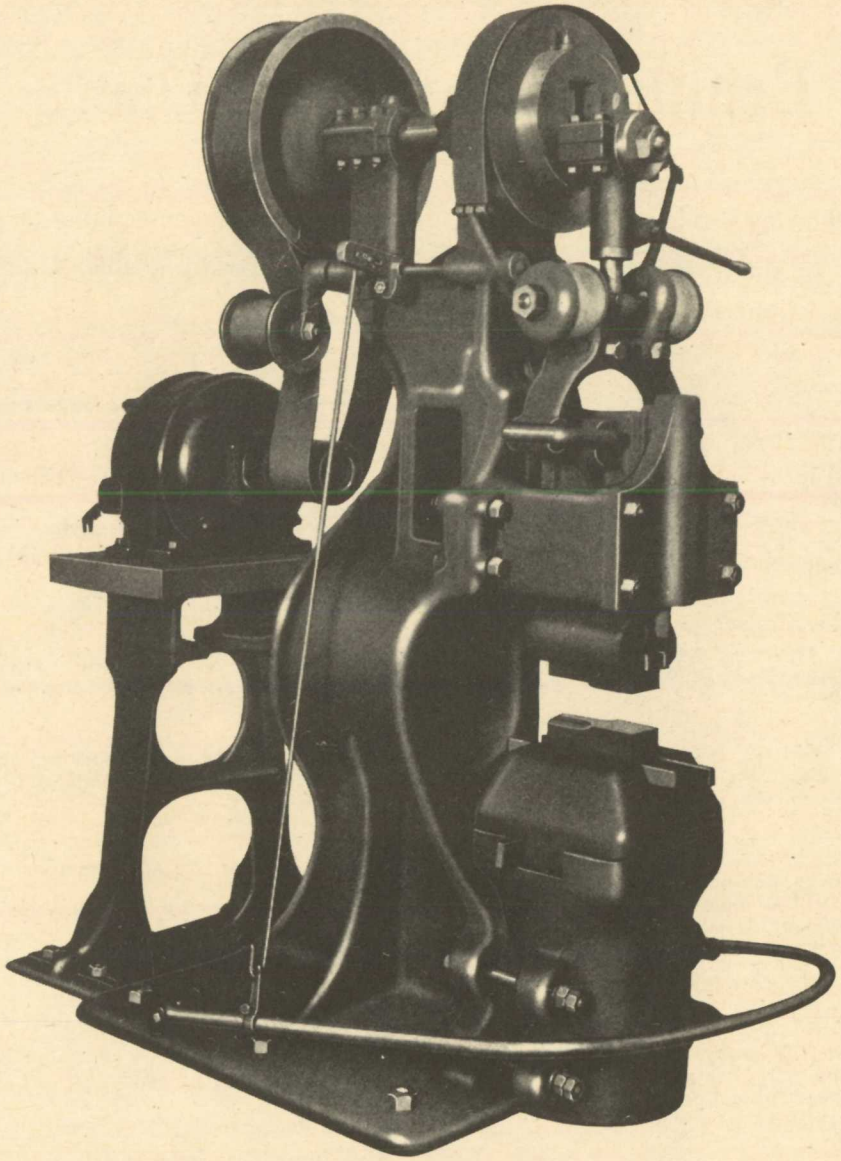
The anvil block is a separate casting, circular in shape, so that by adjusting the bolts which hold it against frame the dies may be perfectly aligned—a feature found in no other Hammer.

The anvil or lower die holder and the anvil block under it are regularly made of cast iron, but for constant hard work we would recommend cast steel, which we can furnish at additional cost.

In making a comparison of this Compact Hammer with other makes of similar appearance it is well to note the rugged construction of this Hammer.

The table on the next page shows the weight of material in this hammer.

The Bradley Compact Hammer



MOTOR DRIVEN

The Motor is mounted on a separate stand, free from all the vibrations of the hammer, thus insuring long life to the electrical equipment.

SPECIFICATIONS

Size	Diameter of Hammer Pulley	Width of Drive Belt	Horse Power of Motor	Speed of Motor No Load	Degree Basis of Rating	Diameter of Motor Pulley	Speed of Hammer	Average Size of Work	Floor Space Over All (Approximate)	(Approximate) Weight Pounds	Upper Die Not Including Tongue Inches
30-lb.	11½ in.	3 in.	3	900	40	6 in.	450 to 475	⅞ in.	28 in. square	2000	2½x6x1⅝
100-lb.	14 in.	5 in.	5	900	40	6 in.	350 to 375	1½ in.	32 in. square	3500	2¾x7x1⅝
150-lb.	17½ in.	6 in.	7½	900	40	6½ in.	325 to 350	2½ in.	40 in. square	4500	3½x9x2⅜
200-lb.	21½ in.	6 in.	10	900	40	7½ in.	300 to 325	3 in.	44 in. square	5700	4x11x3
300-lb.	24 in.	8 in.	15	900	40	6 in.	175 to 200	4 in.	58 in. x 44 in.	10700	5x13x3

Representative Bradley Hammer Users

The following list represents less than one per cent of our customers. It is merely to illustrated the diversity of industries served by Bradley Hammers.

Automobile Manufacturers

Chrysler Corporation
General Motors Corporation—practically all their branches
Ford Motor Company
Nash Motor Company
Packard Motor Company
Reo Motor Car Company
Studebaker Company

Automobile Accessory Manufacturers

Wilcox-Rich Corporation—valves
Thompson Products, Incorporated—valves
A. W. Smith Company—frames

Ball Bearings

Standard Steel & Bearing Company
Timken Roller Bearing Company

Cutlery and Small Tools

Peck, Stow & Wilcox Company
Cleveland Twist Drill Company
Collins Company of Collinsville
Nicholson File Company

Car and Engine Manufacturers

American Locomotive Company
Baldwin Locomotive Company
American Car & Foundry Company
American-LaFrance Engine Company

Drop Forgings—Manufacturers

Moore Drop Forging Company
Billings & Spencer
Great Lakes Forge Company
Brewer-Titchener Company

Foundries

American Steel Foundries Corporation
Canadian Car & Foundry Company

Electrical Equipment

General Electric Company
Westinghouse Electric Manufacturing Company

Fire-Arms

Colts Patent Fire Arms Manufacturing Co.
Remington Arms
Union Metallic Cartridge Company
Winchester Repeating Arms Company

Harvester Machinery and Equipment

International Harvester Company (over 100 hammers)
Advance-Rumley Company
John Deere Plow Company
Massey-Harris Company (Canada)
Sunshine Harvester Works (Australia)
American Fork & Hoe Company

Hardware

Yale & Towne Manufacturing Company
Cleveland Hardware Company
Sargent & Company

Mining

International Nickel Company

Oil Refiners, Producers and Distributors

Standard Oil Company
Atlantic Refining Company

Railroads

Practically every railroad in the United States and Canada
Great Western Railways (England)
London Midland & Scottish Railway

Railroad Equipment

Ramapo Ajax Corporation
Ralston Steel Car Company

Steel Fabricators and Mills

Crucible Steel Company
Pittsburgh Steel Products Company
McClintic-Marshall Company
National Tube Company
Republic Iron & Steel Company
Vickers, Ltd. (England)

Shipbuilders and Ship Repairs

Practically every plant in the United States and Great Britain

Foreign Representatives

Buck & Hickman, Ltd.—Great Britain and Ireland
Mitsubishi Co.—Japan
Amtorg Corporation—Soviet Russia
Machine Tools, Ltd.—C. Warren-Boulton—India
E. P. Bevan & Son, Ltd.—Australia
Chinese Engineering & Development Co., China

Memorandum

Memorandum

Important . . .

It is, of course, impractical to propound any general rule for the selection of a hammer. But if you will outline for us your requirements we will gladly furnish recommendations.