AMERICAN

WHEELABRATOR DIGEST

NOVEMBER-DECEMBER 1943

How Would You Like A Slice of Meleagris?

Which do you prefer, the breast or leg of a nice plump Meleagris? Never had any? Don't be silly. In fact, it is possible that you may even have gone so far as to eat your portion of an M. Gallopavo! Why, OF COURSE, you've eaten turkey. Tch! Tch! However, we'll forgive you this time, for we see no more reason for those silly Latin names than you do. Who would think of stuffing a Meleagris? The darned thing already sounds stuffy. Bring on that turkey!

Those awful sounding Latin names aren't the only thing about the turkey that is little known. For instance: although the turkey is a native of this hemisphere, and had never been seen in Europe prior to 1530, our present-day Thanksgiving and Christmas fowl is probably the result of careful breeding in an England now seen only in historical pictures.

When these shores first were settled, M. Gallopavo (forgive us) was abundant in all parts of this country, then observed, and in southern Canada. Mexico had a somewhat smaller variety. Our present-day bird is derived from the Mexican kind, probably crossed in England with the northern fowl of that formidable name. This made a turkey suitable for the families of that day but hardly one for a kitchenette oven. The chances are that your six-to-ten-pound turkey is a Mexican by descent. But, North American, anyway.

Records indicate that the Indians and the New England settlers partly domesticated the turkey. (It is still half-wild in habits.) But, forests abounding close by, the lucky stiffs found the nearby woods about as convenient as a barnyard, with no feeding trouble and no hunting licenses. Maybe those tales of pioneer hardship are overdrawn.

So, if you are fortunate enough to have turkey for Thanksgiving or Christmas (or both . . . but don't dare tell us), salute it. It's a true American.

Gentlemen, we give you . . . The Turkey! . . . long may its oven-steam enchant American olfactory senses. Smell that? U-m-m-m!

AMERICAN WHEELABRATOR DIGEST

Published by American Foundry Equipment Co., Mishawaka, Indiana, and devoted to the advancement of Better Metal Cleaning Methods.

NOVEMBER - DECEMBER 1943

As This Year Draws to Its Close

We are nearing the close of another year . . . a year born of anxiety, but one that is closing with more confidence than we had a right to expect so soon. A year ago, German armies were striking eastward and southward, while still others were nearing Alexandria and Suez, threatening to form a junction with the detested Japanese. Now, the tide has turned.

As we pen these lines for this, the last issue of The Wheelabrator Digest for 1943, we are mindful of the many reasons we have for giving thanks. We are thankful not only for the victories over our nation's enemies, but also for the friends and customers we are privileged to serve. It is people like you who make up this, our America . . . the America which tyranny finds invincible.

We give thanks for the free enterprise system under which our nation has grown great. Without that system, there would be no "arsenal of democracy" to supply the fighting men of the United Nations. It has proved itself equal to the great tasks and responsibilities which war has thrust upon it. It will prove itself equal to the challenge of the peace to come . . . when new and expanded industries must provide more jobs than ever before, so that the men who will return may find their rightful place in the American economy.

We give thanks for the freedoms inherited from a glorious past . . . for the priceless privilege of being a part of a country founded on the idea that "all men are created equal, that they are endowed by their Creator with certain inalienable rights, that among these rights are life, liberty and the pursuit of happiness."

And, as we give thanks, we also make a wish . . . that the coming holiday season will bring happiness to you and yours, and that the year we are about to greet will bring you continued prosperity. During this coming year, as in the past, we shall do our best to deserve your friendship.

ALSET

for a big cleanup

Based on an interview with Walter Glenn Scott, National Stamping Co., Detroit, Michigan

Appeasement of the staggering hunger of today's brand of War Gods has taxed productive capacity to the limit — yet the cavernous mouths yawn for more.

Among the "expendables," few war materials can compare with the astronomic production required for metallic belt links.

Millions upon millions of these are processed each day. And the amazing fact is that each one is individually tested and inspected, because failure in action might mean disaster at a crucial moment.

Cleaning Metallic Belt Links at National Stamping Co.

But production problems on this important war item have been surmounted by a mechanical ingenuity that is typical of American industry. Of special interest is the productive set-up used by National Stamping Company, Detroit, one of the largest link producers in the field.

Here one finds the latest of modern equipment, integrated into a comprehensive production system that is a model for effectiveness. Everywhere the flow of work proceeds smoothly, and in seeming unhurried speed. No single function has been left unstudied. Clever, yet simple, devices relieve or assist purely manual work. The rhythm of operation is almost clock-like.

The guiding hand behind this marvel of productive genius is Walter Glenn Scott, a man whose 30-year professional career has embraced the design, development and layout, the economic mechanization of innumerable processes in modern industry — from steel mills to foundries, machine shops, gauges and tools, glassware, clothing, radio tubes and many chemical processes.

Paralleling and supplementing an almost automatic functioning of the link manufacturing process, Mr. Scott has introduced various exacting production, time, quantity, and expense controls. Balances of materials in various stages of the process are only sufficient for maintenance of uniformity to scheduled outputs.

Of all productive operations in this plant, none is more interesting or unique than the shot blast cleaning function, because it typifies the modern thinking that has gone into the whole production set-up.

Six Airless Wheelabrators Used

Like many other producers of metallic belt links, National Stamping Company relies entirely upon the airless Wheelabrator abrasive blasting process manufactured by American Foundry Equipment Company. A battery of six 27"x36" Wheelabrator Tumblasts, equipped with rubber conveyor belts, is used in this department. Auxiliary equipment includes time signal clocks to regulate the duration of the blast, and ammeters for determining the abrasive input to the Wheelabrator blast units.

Queried about his investigation of other cleaning methods before purchasing Wheelabrators, Mr. Scott said: "We considered the sand and granite-screening wet-process barrel method and tried it out, but Wheelabrator Tumblasts are by far the most economical method. Certainty of process control is by far the greatest argument for the Tumblast method. We cannot afford to hazard valuable products to methods less subject to exacting control, especially when each 5-ft. batch is worth from $50 to $120."

"Untouched by Human Hand"

In the manufacture of metallic belt links at National Stamping Company, the common practice after stamping and forming is to harden, degrease, shot blast, draw, and Parkerize. From the time the rolls of strip steel are mounted at the forming machine, until final inspecton, no link is touched by human hand.

You would be amazed to know the staggering number of links produced in this plant each day, but war censorship regulations prevent our revealing this information. Suffice to say that the full impact of their production is being felt by the enemy — all of which is much the same as the story about the badly pummeled boxer whose second said, round after round, "You're doin' swell, Kid, he ain't laid a glove on ye"; whereupon the pug replied, "Keep an eye on the referee, then, because somebody's beatin' hell outa me."

Loading and Unloading the Cleaning Mills

Following the hardening operation, which occurs at ground level, the links are electrically hoisted to an overhead mezzanine in baskets having a capacity of 20 to 23.5 cubic feet, and holding approximately 800 to 940 pounds of links.

Upon reaching the upper level, the baskets are moved electrically to a point above any one of six storage hoppers, each of which has a capacity of

Fig. 1 — Dumping mechanism empties uncleaned belt links into storage hopper.

90 to 110 cubic feet. Here the basket is positioned in a cradle-like dumping mechanism as shown in Fig. 1. A back-geared ratchet device enables the operator, by means of a crank, to dump the basket into the hopper.

With five-cubic-foot loads being cleaned in each machine at one time, there is sufficient capacity, when each Tumblast handles four to five loads per hour for 3.6 to 4.5 hours of operation, with minimum hopper loading.

Measured Loads Standardize Operations

The hoppers are located above and behind the skip bucket loaders used for charging the mills. A balanced spout, located at the bottom of the hopper, and facing the loader (as shown in Fig. 2 and Fig. 3) is so designed that approximately one

Fig. 2 — Filling the Wheelabrator Tumblast loader from the storage hopper.

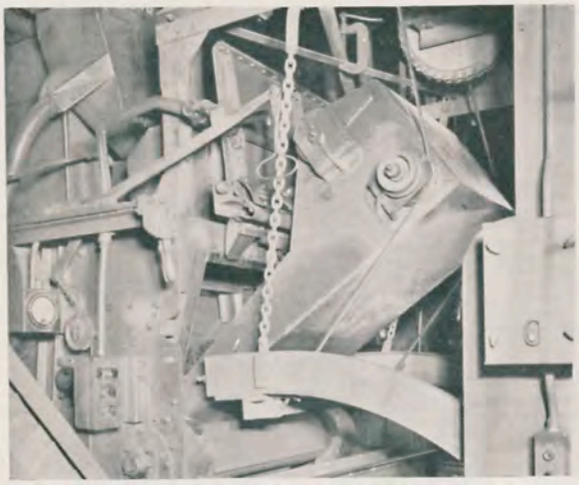


Fig. 3 — Filling Tumblast with a load of belt links for cleaning.

skip hoist load of links is handled by one dumping action. Spouts can be so manipulated that skip hoist loads are always very nearly five cubic feet, because each skip bucket is marked at certain levels to indicate the capacity. A full 5-cubic-foot load comprises 20,000 No. 30 caliber links, or 5,000 No. 50 caliber links. Filling the skip bucket is a matter of only five seconds.

In order to facilitate operating and maintenance functions, platforms and walkways are arranged above and around all six machines, as well as at the front, over the skip hoists and hoppers (see Fig. 4).

This two-level platform-walkway arrangement makes it possible for one crane operator on the upper level to handle the loading of links into the reserve hoppers, as well as the loading and unloading operations in connection with the two degreasers, eight draw furnaces and one draw furnace dumping mechanism. Approximately one-third of the crane operator's time is actually applied to loading the shot blast reserve hoppers.

Fig. 4 — Upper level showing hoppers above machines.

One Operator Serves All Six Mills

Only one operator on the floor level is required to operate and load the six machines. In addition, this man is required to handle the four-way bin storage system at the end of the conveyor, and to handle the auxiliary draw furnace baskets to the Parkerizing drum dumping mechanism. He also closes the Parkerizing drums and pushes them into the Parkerizing department. Only one-fourth of his time is applied to the shot-blast conveyor and the four-way bin system.

Summarizing: One-third of the crane operator's time is applied to the shot blast loading. One floor operator handles all six shot blasts, and half of his time is devoted to handling the conveyor and the four-way bins. The entire set-up requires the manpower of only 1.800 operators. Approximately one-third of the foreman's time supervises these operations. Occasionally general help aids in bringing in abrasive and loading it into the system.

The Cycle of Operation is Progressive

The cycle of operation of the six Tumblasts is progressive, with the operator working from one end of the system to the other. Charging the mill with the skip bucket loader takes 30 seconds, the mill is timed to turn with the blast on 10 minutes, and with the blast off another minute to sift out good abrasive, followed by an unloading period of 30 seconds. These operations are followed successively for all six mills.

A two-line conveyor, approximately 16 inches wide and operating at a rate of 120 feet per minute, is located along the front of the six Tumblasts. The conveyor belt has apron pockets 12″ long by 4″ wide by 5″ deep. The wire mesh bottom of the belt allows excess abrasive to drop through the belt to suitable pans directly under the upper belt section, from which the abrasive is collected periodically and returned to the mills.

A hopper with movable baffle plate is located immediately above the conveyor and directly under the discharge point of each mill. The hopper extends slightly beyond the width of the cleaning chamber. (See Fig. 5.) By turning the handle at the side of the hopper, the links can be diverted or spouted to either one or the other side of the conveyor belt, depending upon the ulimate delivery point desired.

Fig. 5 — Closeup of unloading operations. Note split conveyor.

Special Bin Design for Segregating Links

The conveyor leads forward and upward to a four-way bin dumping mechanism, as shown in Fig. 6. Notice the baffle arrangement to divert and segregate the discharging links into the proper compartments. The vertical baffle separates the two halves of the conveyor, while the movable baffle, activated by a lever, shunts the links into the correct bin on either side of the hopper. Links stored here are spouted by gravity directly to draw furnace baskets or Parkerizing drums. Each bin handles 15 cubic feet of material.

Exceptionally Low Cleaning Cost

The speed of Wheelabrator cleaning, plus the ingenious handling system and close observation and control of all operating and maintenance function, has resulted in a very low cleaning cost. According to figures supplied by Mr. Scott, a load of 5,000 No. 50 caliber links or 20,000 No. 30 caliber links is cleaned at a grit cost of only 12.65 cents.

Fig. 6 — Four-way bin-dumping mechanism.

Economic Use of Abrasive Studied

Indicative of the thoroughness with which operations are controlled is the intensive study being given to the economic usage of abrasive. In the words of Mr. Scott: "It is an important controlling factor in the cost of manufacture of 30 and 50 caliber links. If abrasive feed valves, loads, speed and duration of the blasting operation, together with the condition of the wheel impeller blades and other controlling elements, are not handled properly, excess unused abrasive goes over into the dust collector.

"When this happens, the abrasive has not been sufficiently pulverized — that is, hasn't been sufficiently used — and in such instances, of course, is a direct loss.

"If we shot blast unnecessarily for too long a period, this uses abrasive in direct proportion to the length of the blast time and, of course, wastes it, if it is not required to give adequate burring or proper finish for Parkerizing.

"Shot blast periods are ten minutes of blasting time for both 30 and 50 caliber links. Abrasive usage should average approximately 3⅓ pounds per ten-minute period, in which approximately 20,000 No. 30 or 5,000 No. 50 links are processed in each load. The less the load the less the required period, so sizes of loads should be made definite for uniform shot blast action.

"In controlling the inordinate use and consumption of abrasive (since the average cost is around 4c a pound), shop men should periodically remove the residue in exhaust pipes leading to dust arresters, watch for losses from holes in bags in which abrasive is shipped, also in cars and conveyances, from which each delivery is received.

"In order to salvage every last vestige of abrasive that might be lost by spilling, we also clean the floor regularly with a vacuum system."

Precision and Standardization

Reprinted from August, 1943, Automotive War Production

The clue to the "mystery" of how unfamiliar war products are mass-produced.

To attain unquestionable mastery of mass production, two qualities have existed in Americans since America's beginning — the ability to shape hard physical things to such precise measurements that they are interchangeable under all conditions, and the ability to co-operate to such an extent that uniform standards of precision measurement in manufacture can be agreed upon and maintained.

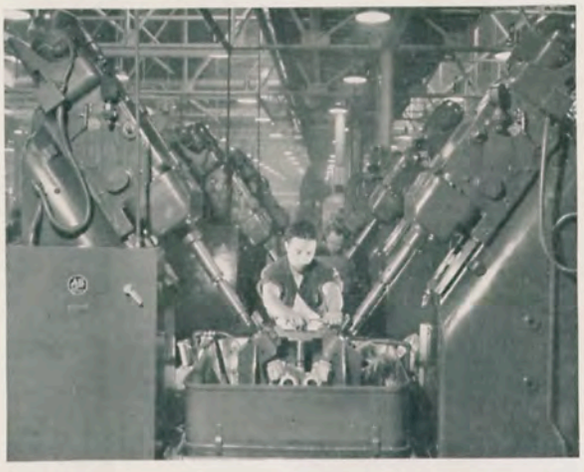
From the time Eli Whitney dumped a box of gun parts on the floor of a Washington office nearly 150 years ago, and then amazed War Department officials by putting 10 perfect guns together from the pile, the principle of mass production was established. From that beginning, ingenious and enterprising Americans have been constantly striving always for greater exactitude in machining, greater precision in measurement, more and more standardization, more and more perfect interchangeability of parts.

In 1906, Henry Martyn Leland, one of the motor car pioneers, took a leaf out of Eli Whitney's book when he sent a group of his engineers to England with crates of motor car parts for assembly before the startled eyes of members of the Royal Automobile Society. Picking parts at random from the jumbled piles, the engineers assembled three automobiles which they then drove to victory in a contest for the Dewar Trophy.

This demonstration proved to the skeptics that quality automobiles, hitherto toolmakers' file-and-fit creations, could be made in quantity.

Though convinced of the necessity for interchangeable parts, each of the early motor car manufacturers built cars to standards peculiarly his own. Thus, by his own standards, his own factory's parts might be interchangeable, but, since these early manufacturers were mainly assemblers of parts bought from other factories, interchangeability tended more and more to become a myth. It was a myth too expensive to maintain. Without agreement on standards, there was so much duplication of effort and waste of labor in the suppliers' shops that the costs, passed on to the manufacturer and then to the public, tended to defeat the manufacturer's purpose: increasing output at decreasing cost.

To correct such conditions, the Society of Auto-



With precision built in machines, novices do work once requiring high skills.

mobile Engineers was organized in 1906. Composed of engineering experts of the motor car industry, it set out to establish standards of engineering practice in the industry. Later, it mapped out standards for parts and accessories, specifications for materials and guides to follow in the acceptance or rejection of purchased parts or materials. Its pioneering proved so valuable, not only to the automobile industry but to other and similar industries, that its name was changed to Society of Automotive Engineers.

Under the aegis of the SAE, even the most thorough-going individualists could co-operate. Standards were adopted only after unanimous consent by all interested individuals. The incentive was that constantly beckoning but never attainable goal: still more output at still lower cost.

As an example of how such standardization in the automotive industry redounded to the public's benefit, take rubber tires. Before standards were agreed upon, there were scores of different types and sizes, all of them expensive because none of them could be made in quantities really great enough to bring about the desired reductions in price. Today, more than 80 per cent of the tires on the road are of one size. They are interchangeable between different makes of cars. They cost considerably less than their prototypes and they last longer.

The dollar value of such standardization to the public is incalculable. Several years ago it was estimated that the automotive industry alone had thus saved the consumer about $840,000,000 annually.

The motor car manufacturers' pursuit of interchangeability of parts spurred machine tool builders to develop and improve precision instruments for industrial measurement. The progress made in this field is shown by the fact that World War I was tooled up to tolerances of 1/1000th of an inch, while this war's accuracy demands are geared to 1/10,000th of an inch.

This, of course, means superior weapons for the United Nations from American factories. It also means weapons in greater quantity.

As an example of this industry's ability to mass-produce precision products, take the automatic pilot, or "Iron Mike," used on U. S. bombing planes. This complex instrument is so meticulously made of such precisely accurate parts that a pencil mark on one of its parts is enough to render its operation inaccurate. Considered a watchmaker's

Work here may mean difference between life and death on battlefronts.

product before Pearl Harbor, it is now being made in quantity in an automotive accessory company's plant, and by women workers, most of whom are industrial novices.

In some quarters there were expressions of amazement recently, when several aircraft engines, made by an Eastern aircraft company and its licensee manufacturers in the automotive industry, were disassembled, scrambled, reassembled with ease, and operated satisfactorily. There was no occasion for the amazement. As one veteran automotive engineer put it, "Whenever high precision has been needed, this industry has delivered the goods — with something to spare."

Standardization, precision manufacture, parts interchangeability — these have played a vital part in many an Allied victory so far in this war. In those early months when "Too Little and Too Late" summarized defeat after defeat, the men on many a battlefront often held their wavering lines by "cannibalization," the makeshift practice of assembling usable parts from wrecked machines to build a "new" machine. General Chennault's "Flying Tigers" accounted for many Jap Zeros in such rebuilt fighter planes. Marshal Rommel's "Afrika Korps" was held with such salvaged equipment.

Recalling his experiences with the "Flying Tigers" in those days when all the remaining planes were "cannibalized" products, one engineer says:

"Every time this trick was pulled, I said a little prayer for American standardization and interchangeability."

Prayer of an Outdoor Man

With the leafy branches of the forest trees, I lift my arms to pray;

With the babbling brooks and singing birds I raise my voice in praise:

I thank Thee for the out-of-doors;

I thank Thee for the solitude of wild places, the strength of the hills and the calmness of quiet streams;

I thank Thee for old clothes, rough work, and the right to let my beard grow;

I thank Thee for the curling smoke of a campfire in the early morning;

I thank Thee for steaming coffee, sizzling bacon and an outdoor appetite;

I thank Thee for the swish of my paddle, and the joy of watching fleecy clouds roll by;

I thank Thee for the call of a whippoorwill at dusk, across a silent lake;

I thank Thee for silvery moonbeams on rippling water;

I thank Thee for the singing of my reel and the bending of my rod as a Big One strikes;

I thank Thee for the contentment that comes with the patter of rain on my tent at night;

I thank Thee for wild blackberries along an old stump fence;

I thank Thee for my dogs, my gun, and the flaming colors of the autumn woods;

I thank Thee for wild ducks flying south against a dull grey sky;

I thank Thee for the glory and majesty of the stars;

I thank Thee for strong winds pulling at my hair roots and for the spray from the lake on my cheeks;

I thank Thee for old trails, for rocks, for raging rapids, and for a glimpse of deer drinking in a secluded pool;

I thank Thee for the drum of the partridge, for squirrels, trailing arbutus, the aroma of pine needles, sunshine through the leaves, and all the other eternal miracles of the out-of-doors.

—Wilferd A. Peterson

Improving the Machinability of Heat-Treated Parts by Wheelabrating

By J. R. McAllister, Plant Metallurgist, Syracuse Heat Treating Co., Syracuse, N.Y.

Today, more and more companies in the various metal working industries are specifying heat treatments giving specific micro-structures and hardness requirements, but too few are giving the proper thought to surface condition both before machining and before final finishing operations, such as grinding, plating, coloring or polishing. There can be considerable saving of both precious time and money if the proper method of surface preparation is employed for the various finished conditions.

Let us take, for instance, rough forgings that have been properly normalized and annealed for their particular machinability problem. Naturally, as the slug of steel is heated in ovens at the forging plant prior to forming under the hammer, it oxidizes due to the relatively high temperatures needed to condition the steel for hammering. Plus having this scale formed by the oxidation of the metal, it can be noted under the microscope that a large percentage of the surface has been burned away by the oxygen in the surrounding air. The so-called forging scale formed under these conditions is usually of a compound nature having a layer of rather tight scale covered by loose or "feather" scale. The "tight" inner scale is formed in the heating furnaces under the hammer and the loose "feather" is formed on cooling after the piece has been forged into shape. After the forging is cold, it is sent to the heat treater, who then takes his turn at adding and subtracting to the scale condition of the piece. Some of the loose forging scale will drop off while handling from one department to another and more will become free in the heat treating furnace, but chances are that the furnace heat will replace a good share of this loose scale because atmospheres are not generally watched too closely on this rough grade of work.

Now that the forging and heat treating operations are complete and we have a supply of scale which is very hard and brittle, and decarburization which is very soft and weak, our problem is to get a tool to make an even and uniform cut along the surface. This is not a simple problem with the material in this condition. The tool will often times get under way in a normal manner in the soft matrix of decarburization and suddenly hit a hard spot of scale. The easiest thing for the tool to do under these conditions is to break and sometimes cause a many-thousand-dollar shut-down.

At the Syracuse Heat Treating Company, Syracuse, New York, one of the leading Eastern heat treating concerns, three Wheelabrator Tumblasts, a 15" x 20", a 20" x 27" and a 27" x 36", are employed to handle the complete cleaning of heat treated parts. With these machines they are equipped to process metal pieces weighing from a few ounces to over 75 pounds apiece.

There are two major methods of eliminating this condition before machining operations are started. One is pickling and the other is some method of blasting the work with sand, steel grit, or steel shot. The pickling method is being used less and less by commercial heat treaters and forgers because of the danger of pitting the work too deeply so it cannot be cleaned up and also because of the general messiness of the operation.

With the use of Wheelabrator Airless speed cleaning machines the removal of heat treat scale is a simple matter because the hard hitting steel abrasive quickly removes the baked-on-scale right down to the virgin metal. Every nook and cranny of the part is completely scoured until every last vestige of scale is removed.

The Wheelabrator method of cleaning is also very effective for removing heat treating scale from machined parts or castings before grinding, plating, coloring and polishing. When cleaning before grinding, the use of a medium sized grit or shot will leave the surface bright and smooth, thus keeping the grinding wheels from loading up with scale and dirt. It is also found that a much larger percentage of work can be ground between wheel trimming operations if a clean scale-free surface is used.

The use of grit blasting for surface preparation of metal to be painted or plated is advisable because the smooth surface is broken up by the force and sharp points of the grit.

Reclaiming Steel Shot

Many large castings containing deep pockets and cavities which are cleaned in Wheelabrator Special Cabinets retain considerable quantities of abrasive in these pockets as they leave the blast cleaning cabinet.

The job of removing this valuable steel abrasive is sometimes difficult, requiring various methods of shakeouts, etc. To simplify this abrasive recovery, those plants which have available vacuum suction facilities will find it a simple matter to insert the vacuum hose into the pocket or recess.

The high suction immediately draws the shot into the hose and carries it away to an intercepting collector, which traps the abrasive, but allows any dirt and dust to pass on through to the main combination separator.

A Burlap Sack Facilitates Unloading

If you are cleaning very small parts in a Wheelabrator Tumblast intended for much larger pieces and experiencing some difficulty in unloading them from the machine, this practical idea might be applicable in your plant:

A Providence, R. I., drop forge plant discovered that while unloading cleaned small forgings from the Wheelabrator Tumblast, pieces were falling under the overlapping staves into the screw conveyor. This resulted in a clogged abrasive recycling problem.

To overcome this condition, which occurred only when the small pieces were handled, a piece of burlap approximately 10 feet long and a little wider than the apron conveyor was used in this manner: One end of the burlap is slipped over the conveyor belt at the front and the conveyor started.

As the small parts tumble, they fall onto the burlap, which rides up with the turning conveyor. When all parts are on the burlap, the conveyor is stopped and the burlap folded over the pieces. By reversing the conveyor belt the wrapped parts fall out of the machine in a bundle.

Wheelabrating Relieves Surface Tension

Problem: 10,000 coil springs were found to exceed compression specifications by one-half to one pound each, at a Michigan spring manufacturing plant. Scrapping the entire lot was inevitable unless specifications could be met.

Solution: A 25-minute shot blast treatment in a 20″ x 27″ Wheelabrator Tumblast with No. 25 steel shot effectively relieved surface tension, enabling the manufacturer to use all springs.

No Nicks — No Knocks

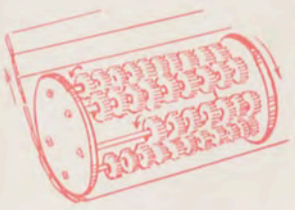
An Illinois heat treating concern was using a 20″ x 27″ Wheelabrator Tumblast for removing scale from miscellaneous parts. Desiring to use the machine for cleaning heat treated gears ranging in size from 2½″ to 3″ diameter, they were baffled in the search of a method suitable for handling the parts in the Tumblast which would not nick the finished gears.

The problem was not only one of obtaining a perfect finish, but also to clean the gears with absolutely no trace of nicks. In fact, the job was so exacting that they intended to microscopically examine the gears after cleaning.

Finally, one of the engineers designed the fixture illustrated below which enabled them to handle the gears:

The gears are mounted on a number of rods fixed to two circular side plates, one of which is removable. The rods are positioned so that the gear teeth never come in contact with the apron conveyor.

Two fixtures are employed: While one fixture is in the cleaning chamber, the other is being loaded, and vice versa.



Brillion Iron Works Finds Wheelabrator Tumblast a Production Giant

Due to the government's increasingly large requirements for army trucks, the Brillion Iron Works, Inc., Brillion, Wisconsin, a production gray iron foundry specializing in high tensile strength gray iron castings for truck parts, found it necessary in 1942 to increase their capacity. One of their greatest problems was in the castings cleaning room where excessive man-hours, costs, and slow cleaning with tumbling barrels were a bottleneck to the high-production requirements.

After a thorough investigation of modern cleaning methods based upon the size and type of castings to be cleaned, a 36″ x 42″ Wheelabrator Tumblast was purchased and installed in August of 1942. With the installation of this Wheelabrator speed cleaning equipment, the Brillion Iron Works, Inc., in the words of Mr. C. A. Pagel, Factory Office Manager, are getting "Faster cleaning, better appearing castings with less noise and at greatly reduced cost."

An example of the increased production is found in their manufacture of specification brake drums for government and army trucks, tanks and utility motors. The usual dimensions of these drums are 19″ diameter by 7″, weighing 71.5 pounds apiece. Approximately 42 of these brake drums are cleaned hourly with a five-minute blast cycle per load cleaned.

Other work cleaned in the Wheelabrator Tumblast which operates on an average of 102 hours per week, includes flywheels, gear cages, brake rings, cylinders, transfer cases and crankcases.

Whereas the former tumbling barrels were loaded and unloaded by hand with a cleaning production of only .45 ton per hour, the Wheelabrator Tumblast with its automatic loading and unloading and thorough speed cleaning has raised this cleaning production to 1.85 tons per hour.

Maintenance costs, including repair labor, are only 46c a ton, with other operating costs surprisingly low for the heavy production being cleaned with the Wheelabrator machine.

The American Tabl-Spray Metal Washing Machine with its uniform and thorough cleaning is designed for high speed washing of parts requiring care in handling.

As the parts rotate on the work table, they are deluged with cleaning solution from all sides, top and bottom. Only a few minutes exposure is required for most metal pieces.

For complete details of this new American metal washer, write for Bulletin No. 19. Construction details, specifications and operating sequences are fully covered.

Ohio Brass Company Slashes Cleaning Time with Wheelabrators

Little indication of the types of products manufactured by the Ohio Brass Co., Mansfield, Ohio, is given from the firm name, but this concern is a prominent parts-supplier in a score of industries.

Its complete line of brass valves and fittings is standard equipment in domestic and governmental construction projects. The majority of electrical transit lines are equipped with O-B overhead devices — frog assemblies, trolley bases and shoes, current collectors, etc. The mining industry has long been specifying O-B malleable cast parts, electrical trolley wire fittings, hangers, rail bonds, circuit breaker stations, automatic couplers, etc. Electrical insulators, bushings, suspension hardware are found on hi-tension electric lines, substations and power plants throughout the country.

Four Wheelabrator Tumblasts installed in this plant are enabling them to keep pace with the customers' demands for additional supplies. Two 36″ x 42″ Wheelabrator Tumblasts are used for cleaning malleable castings prior to galvanizing, and the smaller sized 20″ x 27″ and 27″ x 36″ Wheelabrator Tumblasts are employed for cleaning brass castings.

Consistent with their policy of providing the best foundry equipment available in their malleable foundry for producing dependable castings, the two 36″ x 42″ Wheelabrator Tumblasts were installed, in 1937. Over a ton of castings are cleaned hourly in each machine.

Wheelabrating is only one of the advanced steps in this modern malleable foundry. Their progressive policy is responsible for the uniformity, the long life, the strength of O-B parts using malleable iron castings.

In their brass foundry, where castings are mostly small valves and fittings, the smaller Wheelabrator Tumblasts are cleaning loads of brass in seven minutes, which formerly had required 25 to 30 minutes in an old air blast machine. Nine to ten tons of brass parts are Wheelabrated daily.

The installation of the Wheelabrator Tumblast provided improved working conditions in their grinding and cleaning room, due to the complete

Fig. 1 — Unloading brass valves from the 27″ x 36″ Wheelabrator Tumblast.

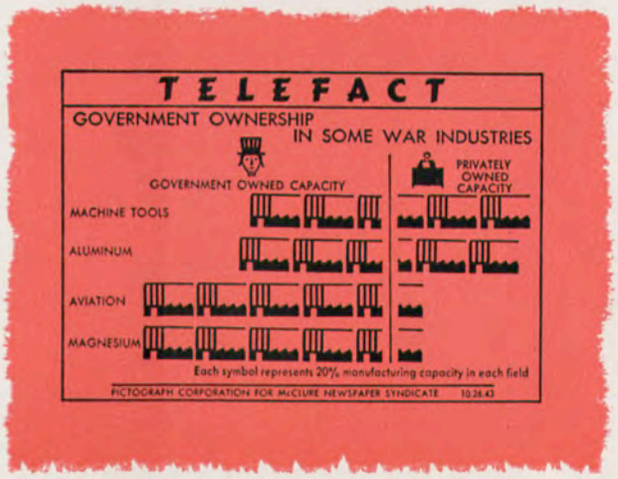


Fig. 2 — More than a ton of malleable castings are cleaned hourly in this Wheelabrator Tumblast.

absence of dust from cleaning operations. As shown in Fig. 3, all brass castings are ground immediately prior to Wheelabrating.

By means of an ingenious handling device the castings are quickly moved from the grinding stands to the Tumblasts for final cleaning. Fig. No. 4 illustrates this device: An angle is bolted in the Tumblast door roller guide and the loading pans in which the castings are placed after grinding are hooked in these angles by means of an electric hoist traveling on a train rail. After the pans are hooked over the angle, the two front chains are released, and the pan is raised by the third chain until a height is reached to permit the castings to slide easily from the pan.

Fig. 4 — Loading the smaller Wheelabrator Tumblasts is facilitated with this handling device.

Fig. 3 — All brass castings are ground prior to Wheelabrating.

Science Shorts

The neckerchief worn by the enlisted men of the navy has an interesting background. It was first worn in the British Navy at the funeral of Admiral Nelson, as a sign of respect and mourning. Our navy copied it.

* * *

Greasing the ways to permit thousands of tons of steel to slide smoothly into the water requires about forty-five tons of a special grease, compounded for that express purpose — if the ship is a battleship. Once when a surplus of over-ripe bananas was a disposal problem in one port, they were used to grease the ways — and worked excellently, too.

* * *

Lime phosphates constitute 6/7 of the solids in human bones.

* * *

A considerable part of the retina of every human eye is color-blind, says the Better Vision Institute; the outer edge is totally color-blind, only in the center of the retina are all colors seen.

* * *

Eye examinations show that about one in every four working persons in their twenties have visual defects; at 40, approximately 50% of all workers have defective vision.

* * *

Magnesium will compete strongly with aluminum in lightweight construction after the war as raw materials are plentiful; 15 plants are producing large amounts now for war uses both from common minerals and from seawater.

* * *

Chromated zinc chloride forced into lumber in pressure chambers increased the length of life of the lumber from three- to ten-fold.

Whittling Joe

Here's a fellow you'd like to know,
A citizen named Whittling Joe.
Joe is whittling in a plant,
Whittling things the Axis can't,
Whittling with his sharp machines
Cargo ships and submarines,
Whittling bombers, whittling tanks,
Whittling shells in shiny ranks—
Shave a sliver off Benito,
Slice a slab off Hirohito,
And Joseph really whets his whittler
Whistling as he whittles Hitler.
That's a job that Joe enjoys,
Whittling down the Axis boys.
Whittling Joe is never through;
He likes to whittle with dollars, too,
So every payday Joe is fond
Of whittling Hitler with a bond.
Multiplied by fifty million,
Whittling Joe is some civilian.

— Ogden Nash.

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