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GEOLOGY SHOULD BE TAUGHT AS THE FUNDAMENTAL SCIENCE

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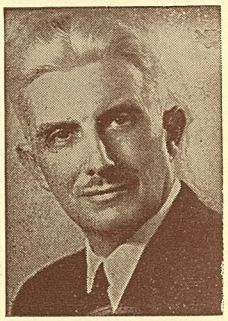
President
THE KRAISSL COMPANY, INC.

Engineers like to believe that they can see clearly the road to a given objective and while this must be devious on occasion to circumvent obstacles both psychological and physical, the important thing is that the road be built and communication established. This type of indoctrination and an unwillingness to be frustrated constitute some of the most important facets of the training of an engineer.



Consulting Engineer
Kraissl Associates

When we look backward over our curricula, we can agree with Huxley that the function of an education is to teach us how to think and where to find the information we need when we need it.

This brings us to the science of geology. It is my opinion that it occupies a much too inconspicuous place in the field of MUST subjects that are required as fundamentals. The young man interested in engineering very understandably wants to do things and accomplish miracles, but all of our disciplines agree that we must first master the fundamentals. Well, what is more fundamental than geology? On the assumption that other well educated engineers may have had only minor exposure to this subject during their academic years, let us give it a good inspection.

First, a broad definition of geology is the science of the earth, its composition and its inhabitants. Now what could be more fundamental than this to an earth inhabitant? Most approaches break this down into two broad fields, descriptive geology which deals with the composition of the earth and historical geology which deals with events that took place in or on the earth including the advent of various inhabitants from flora to fauna, including man.

From there on, geology fans out into numerous specialized fields such as economic geology which includes everything from mining to oil production and can carry the pure scientist into the study of archeological life down to the present. There are the fields of the botanist, the zoologist, the anthropologist and you name it as long as it is related to the world we live in, it is part of geology, but to the engineer who has dedicated his career to applying the laws of nature for the benefit of mankind, the background of geology would appear to be essential.

Because geology starts at the beginning, many seem to feel that it is an archeological subject. Nothing could be further from the truth. It is as modern as the latest volcano in Mexico or tracing the possible relationship of the trilobite to the current horseshoe crab.

It is true, of course that studying the events of the past helps explain many of the things of the present, but that is what is meant by a foundation. Most engineers insist that before a structure of any type can be commenced, the foundations must be in place and secure.

Why do we not insist on this in the teaching of science? Why do we not teach geology first and build on this foundation to carry the student through his chosen specialty?

As a by-product it might also teach homo sapiens a little modesty. He might learn that if the age of the earth were compressed into one year, man as we know him would appear on the scene approximately the last fifteen minutes and recorded history would comprise approximately one minute.

Engineers are and must be planners. They know that nothing constructive can occur without a plan. When they understand the relationship between living cells and living composites that finally are produced as compared with electrons, atoms and the compounds formed, including definite mineral configurations together with the environments needed by creatures to live, they can emphasize to the neophytes that all these laws function in an orderly manner in accordance with the plan of the law giver, our Creator. This should induce an overwhelming reverence that will act as a stabilizing influence throughout the life of the student who will constantly be encouraged to learn more, which will result in opening doors to such vast and infinite horizons that as he learns more and more, he appreciates he knows less and less as compared with the infinite and he is happy to apply what has been learned for the benefit of mankind without having his head turned by the kudos he may receive. This should lead to a full and interesting life with no possibility of ever being bored.

FORCE FEED LUBRICATION FOR AIR PUMPS.

Most of our customers know that the patents under which we are licensed by Kraissl Associates relate to force feed lubrication and oil recovery from from the discharge air but many do not understand the importance of this.

Let us go back to the early models of automobiles. Some old timers and many owners of antique cars know that drip lubricators were installed on the dash board, now known as the instrument panel. It was necessary to adjust the drip lubricators so that the specified number of drops per minute were supplied to the motor or disaster happened. Like many current old car enthusiasts, I was one in my young days and had this happen to me. Later when I was production manager of a glass fabricating shop, the air blast was supplied by air pumps with drip lubricators. When these ran out of oil the pumps would sieze up and it was my job to pull the pumps apart, reface gouged surfaces and put them back into operation while the glass blowers were standing around at even then much too high rates to permit wasted time.

Consequently I determined that at some opportunity in my career, I would design air pumps employing the principles of force feed lubrication which the automotive industry successfully introduced in making the modern automobile engine so reliable. As long as oil of the proper grade and quality is kept in the crank case, and the

cooling system kept operational, the modern automobile engine is designed to run continuously. This is the type of service for which Kraissl force feed lubricated pumps are designed.

Illustrations in Figure 1 show the oil reservoir in connection with the Class 21 series design. It will be noted that the vertical oil pipe from the pump head dips into the oil reservoir and the differential of pressure within the pump whether vacuum or pressure sends the oil through the provided channels to all parts of the pump to be lubricated and returns the excess back to the oil reservoir.

CLASS 21 SERIES MECHANISM

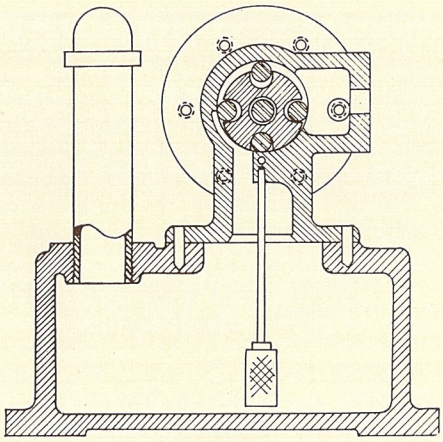
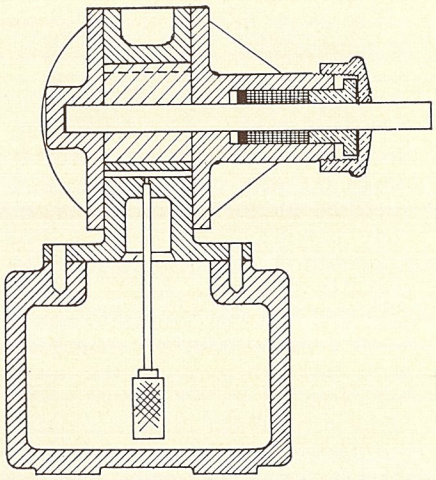


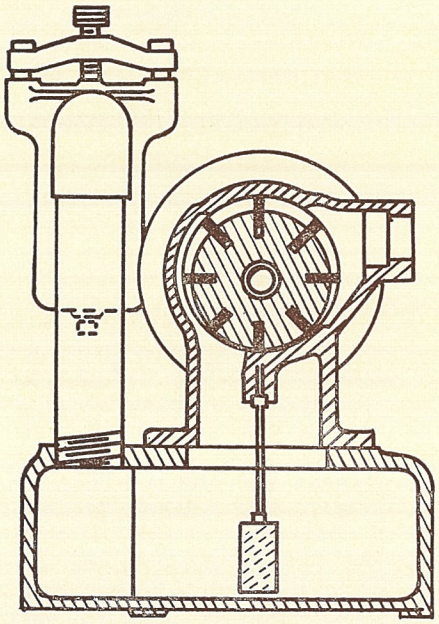
FIGURE 1

SIDE VIEW



The same principle applies to our Class 25 series design, see Figure 2. A slight digression will explain the reason for both designs. The Class 21 or roller mechanism is best suited to applications where corrosive or gum forming vapors are involved. This could be in the smaller capacity ranges where the circulation of corrosive gases through gas analyzing equipment is the requirement, or automatic filling machines of the vacuum actuated type.

FIGURE 2
CLASS 25 SERIES MECHANISM



Since the roller presents only a one line seal it does not develop quite as high vacuum as the Class 25 series mechanism and due to the fact that the roller takes up more room in the displacement chamber than blades utilized, the Class 25 series design has approximately 1½ times the displacement of the Class 21 design in a housing having the same internal dimensions. Consequently there are many gray areas where the advantages of each can be evaluated and the best selection made and tested for confirmation.

While making a comparison of our force feed lubricating system with automotive engines, it might be well to carry this a little further to give an idea of the oil consumption standards we use as guide lines. An automobile running at 60 miles per hour would cover 1440 miles in 24 hours. Many auto manufacturers suggest a renewal of oil every 1000 miles. So we feel that we are conservative if we suggest that the oil be checked for renewal at least each 24 hours after a previous test has indicated at the end of three eight hour periods there is sufficient oil indicated in the oil sight gage to lubricate the pump.

Some services are more rigorous than others and will consume more oil so the initial test is mandatory to determine the actual oil consumption with each application.

Our oil recovery systems also manufactured under Kraissl Associates patents are of two types, the mechanical oil separator design indicated by our S series designations and the coalescing filter design utilizing our Class 26 series filters, designated our F assembly.

Both start off by having the flow of oil from the discharge minimized by an air gap in the vertical stand pipe which retains much of the liquid oil that might tend to follow the air stream. The effectiveness is further increased by having the internal orifice in the discharge air gap no smaller in area than the intake pipe area. This means that the exit velocity should not exceed the inlet velocity. It should be stated that for many of the smaller sizes of pump applications this is sufficient oil retention and is indicated by the V designation when so offered.

The Class 75A discharge separator utilized in the S assembly can be in one or more stages depending upon application. The exit air first impinges on a baffle which diverts the air around through a maze that collects the oil, drops it through a rat trap hole, into a visible sight gage sump, then through a fine mesh screen which guards a return orifice to the intake of the pump. In either one or more stages this assembly contributes a most efficient means of separation and return of oil in the liquid phase. Where a small amount of oil vapor in the discharge air is acceptable such as oil burner service, this may be the best selection.

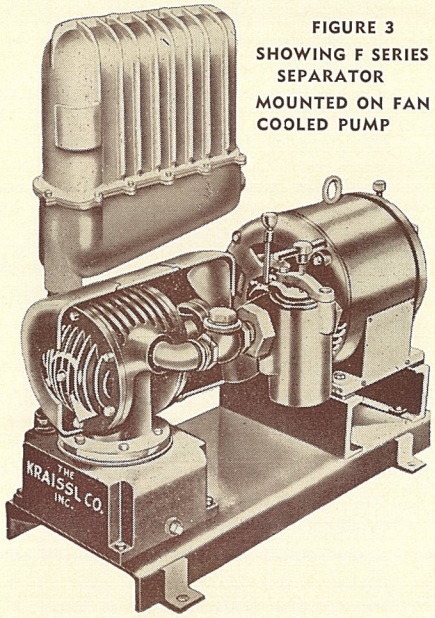


FIGURE 3
SHOWING F SERIES SEPARATOR MOUNTED ON FAN COOLED PUMP

The F series separators shown in Figure 3, employ the patented Class 26 series design. The discharge air from the vertical stand pipe goes first around the circular or elliptical path which separates the oil in the liquid phase and returns it to the oil reservoir. Oil in the vapor phase then goes through the coalescing units in the second stage that converts much of the oil in the vapor phase back into the liquid phase which is returned to the collection sump and back through the pump suction to the oil recirculating system.

Both of these systems purify the oil, the second more than the first, of nearly everything except contaminating or oil soluble vapors. The filter system will remove dust and dirt from the circulated air which builds up a cake on the surface of the coalescing filter cells. It is for this reason that occasional filter pack replacements are necessary. They work best when oil saturated so replacement time is merely a matter of the amount of dirt in the intake air. The choice of which of these two systems to employ is based on the amount of oil vapor in the discharge air that can be tolerated and secondly on economics, which is another way of considering whether the time saved in less frequent oil inspections plus oil salvaged from the discharge air, justifies the additional cost of the filter units, plus servicing the filter when required.

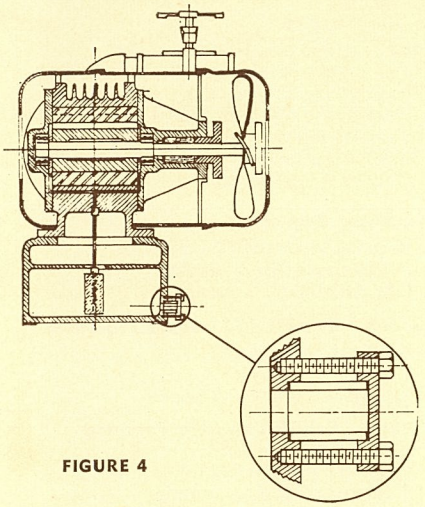
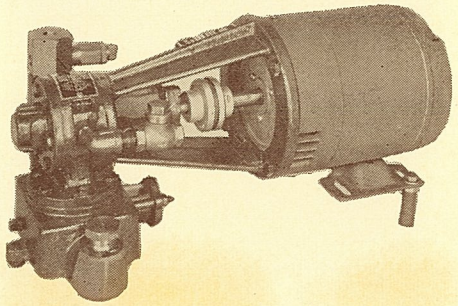


FIGURE 4

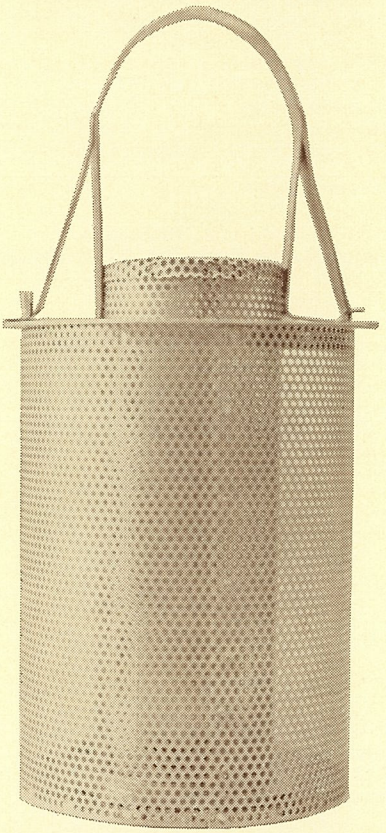
The information on oil consumption is so easily obtained that there is no excuse for not immediately determining the facts for each type of service. A sight glass assembly is available for every unit. Instructions indicate how high the oil level should be when checked with the dip gage carried in the recess of the fill plug. This must be removed from the fill plug to obtain a correct reading. The position on the sight gage should be determined at both high and low levels. The dip gage can then be returned to the recess and only need be used for checking purposes as oil consumption can be determined by reference to sight gage.



Following the line of cutting costs where possible, our new model AMD line will be made available on the basis of meeting production needs. These include our most modern systems of oil separation. An example is indicated in the cut of the small AMD unit as covered by the two latest patents under which we are licensed.

FREDERICK KRAISSL, JR., P.E.

LOCKING DEVICES FOR MULTI-ELEMENT BASKETS

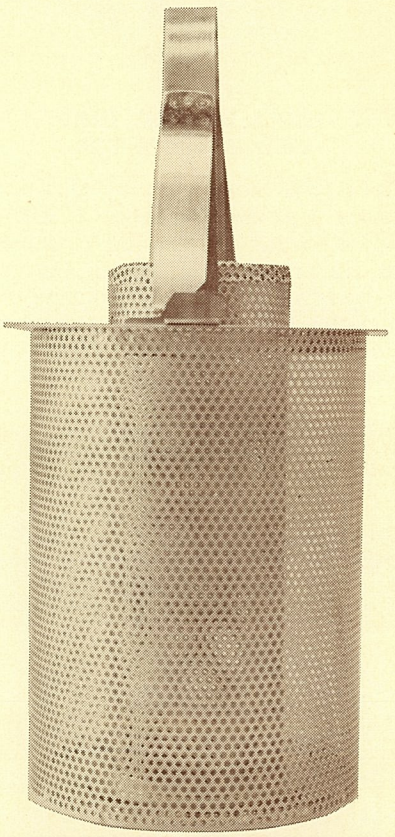


While there is no reported incident of a multi-element separator basket unit with present vertical engagement clips, unintentionally becoming disengaged, the question was raised as to whether this was possible. Since the cross bar assembles by being rotated clockwise into the clip recess against tension, it takes a good strong counterclockwise rotation to cause disengagement. Consequently, the answer must be, "Very unlikely" although not impossible if the fluid being handled is very adhesive and could conceivably cement a separator basket unit to the seat on which it rests, and if through thoughtlessness the basket is turned counterclockwise for some reason.

For the great majority of applications, where separation in the order of straining magnitude is involved, our standard units should suffice. To be more specific, we classify a separator unit as a strainer when fabricated from perforated metal. The smallest perforated metal available is 1/64" in perforated brass and 1/32" in monel or stainless steel. Where a finer degree of separation is involved, material of smaller openings than above indicated must be used. At the present time this construction is provided by covering a supporting perforated backing material with fine mesh wire screen. This is of the alternate over and under strand weave made from as great or greater diameter strands than the space between them, so the screen does not seal against the supporting backing and there is liquid access without interference to the nearest perforation. The open area is therefore the limiting percentage of either support or filter screen whichever is the smallest.

As the dimensions of the particles desired to be retained become smaller and more minute in the small micronic range, the question of whether a multi-element basket unit could become unintentionally disengaged, becomes more pertinent.

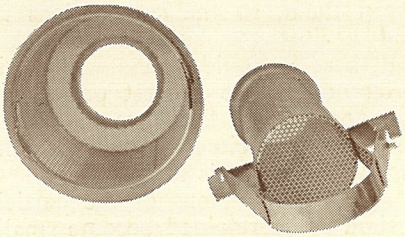
It is for this type of service that our locking device was particularly made available although it can be applied wherever it is considered important for any application.



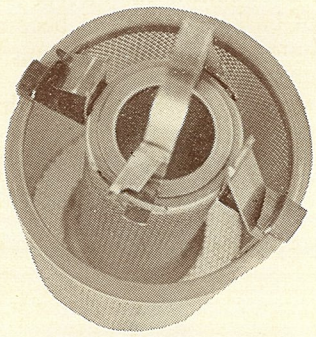
SIDE VIEW SHOWING LOCKING LUGS IN POSITION

We show several views of this basket construction with locking device, so that it can be better understood. It is assembled by squeezing the spring of the locking device and rotating clock-

wise, the inner element, until the cross bar slides into the notches in the vertical side clips. Then the locking springs are released and their projection snaps into position behind the vertical clips and locks the unit in this assembled position. To disengage, the locking devices are squeezed as the basket handle is grasped. This retracts the locking extension, after which the inner element or elements may be disengaged from the vertical clips by rotating the handle counterclockwise.



DISMOUNTED VIEW



TRIPLE ELEMENT UNIT VIEWED FROM TOP

It is our hope that by this forethought and development, it will be evident to our friends and customers, that we are always alert to the possibility of improving our products even when there is no indication from the field that difficulty has been experienced.

SALES REPRESENTATION

HOME OFFICE

We have reserved the areas of Connecticut, Delaware, Metropolitan New York, including the Hudson valley, Long Island, New Jersey and eastern Pennsylvania less Philadelphia District for coverage by Kraissl Company personnel.

Northeast Region

John S. Stone
P.O. Box 247, Holcomb, N. Y.
Williams Bros., Inc., 70 Commercial St., Portland 3, Me.

Eastern Region

Boston-Cooper Company
95 Holland Street
Somerville, Mass.
Valley Equipment Company
201 Penn Center Blvd.
Pittsburgh, Pa.
J. W. Pearson Co., Box 282
Hatboro, Penn.
Shanklin Company
410 East 25th St., Baltimore, Md.

Southeast Region

Power Equipment Co.
1307 West Main St., Richmond, Va.
Dillon Supply Company—Main Office
Raleigh, N. C.
Dillon Supply Company
Durham, No. Carolina
Dillon Supply Company
Rocky Mt., No. Carolina
Dillon Supply Company
Goldsboro, North Carolina
Dillon Supply Company
Charlotte, No. Carolina
Boiler Supply Company, Inc.
490 Craighead Street, Nashville, Tenn.
1628 Island Home Ave., Knoxville, Tenn.
Applied Engineering Co., Inc.
P.O. Box 506, Orangeburg, S. C.
Spotswood Parker & Co.
313 Techwood Drive, Atlanta, Ga.
T. W. McCuiston
540 S. W. 69th Ave., Miami, Fla.

North Central Region

Charles R. Davis
2970 W. Grand Blvd., Detroit, Mich.
Hetler Equipment Co.
P.O. Box 1904
Grand Rapids, Mich.

Central Region

W. G. Taylor Co.
1900 Euclid Bldg., Cleveland, Ohio
The Jordan Engineering Co.
7401 Shewango Way, Cincinnati 43, Ohio
T. A. Heidenreich Co., Inc.
5250 Keystone Ct., Indianapolis 20, Ind.
Lowden & Comany
1909 West Grand Ave., Chicago, Ill.
A. K. Howell Co.
1001 Bellevue Ave., St. Louis, Mo.

South Central Region

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Tulsa, Okla.
Creole Engineering Co.
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Albert Sterling & Assoc., Inc.
2611 Crocker St.
Houston, Texas
I. P. Newby & Assoc.
P. O. Box 35846
Dallas, Texas

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Seattle, Washington

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Power Engineering Co.
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Vernon Hines
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Denver 23, Colorado

Southwest Region

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Canada—Ontario and Quebec Provinces

Kirk Equipment Ltd.
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Montreal, Quebec, Canada

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