



Office de la Propriété
Intellectuelle
du Canada

Un organisme
d'Industrie Canada

Canadian
Intellectual Property
Office

An agency of
Industry Canada

CA 2913652 A1 2017/05/30

(21) **2 913 652**

(12) **DEMANDE DE BREVET CANADIEN
CANADIAN PATENT APPLICATION**

(13) **A1**

(22) Date de dépôt/Filing Date: 2015/11/30

(41) Mise à la disp. pub./Open to Public Insp.: 2017/05/30

(51) Cl.Int./Int.Cl. *B60C 25/135* (2006.01)

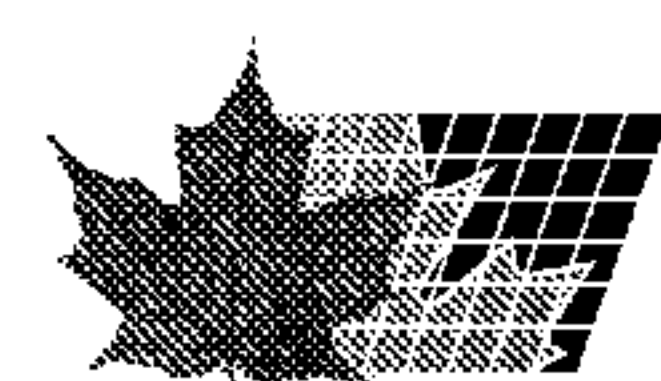
(71) Demandeur/Applicant:
WILSON, DONALD A., CA

(72) Inventeur/Inventor:
WILSON, DONALD A., CA

(74) Agent: NA

(54) Titre : DISPOSITIF DE CHANGEMENT DE PNEU A GAZON

(54) Title: TURF TIRE CHANGER



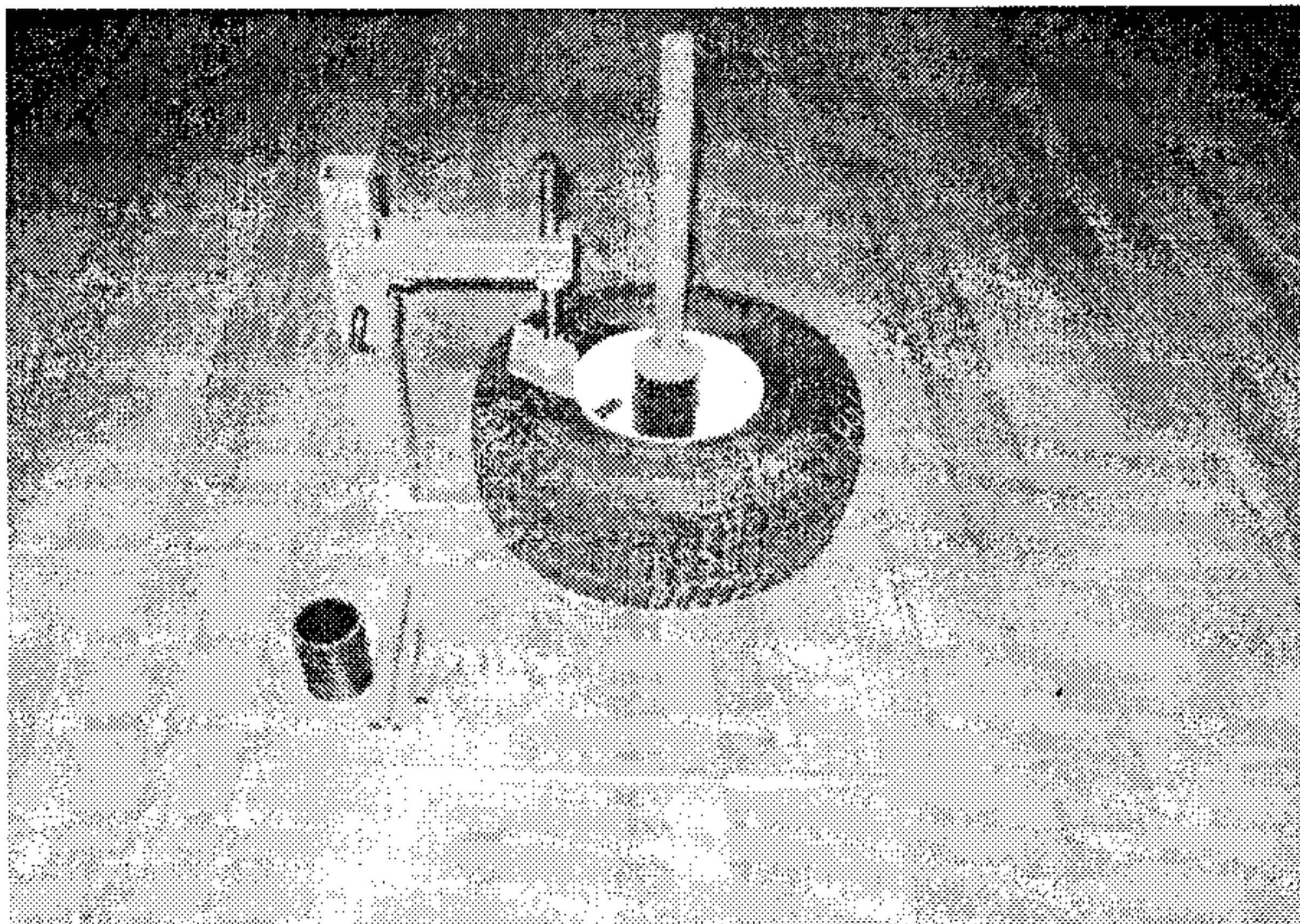
Turf Tire Changer

Invented September 2015

by Donald A Wilson

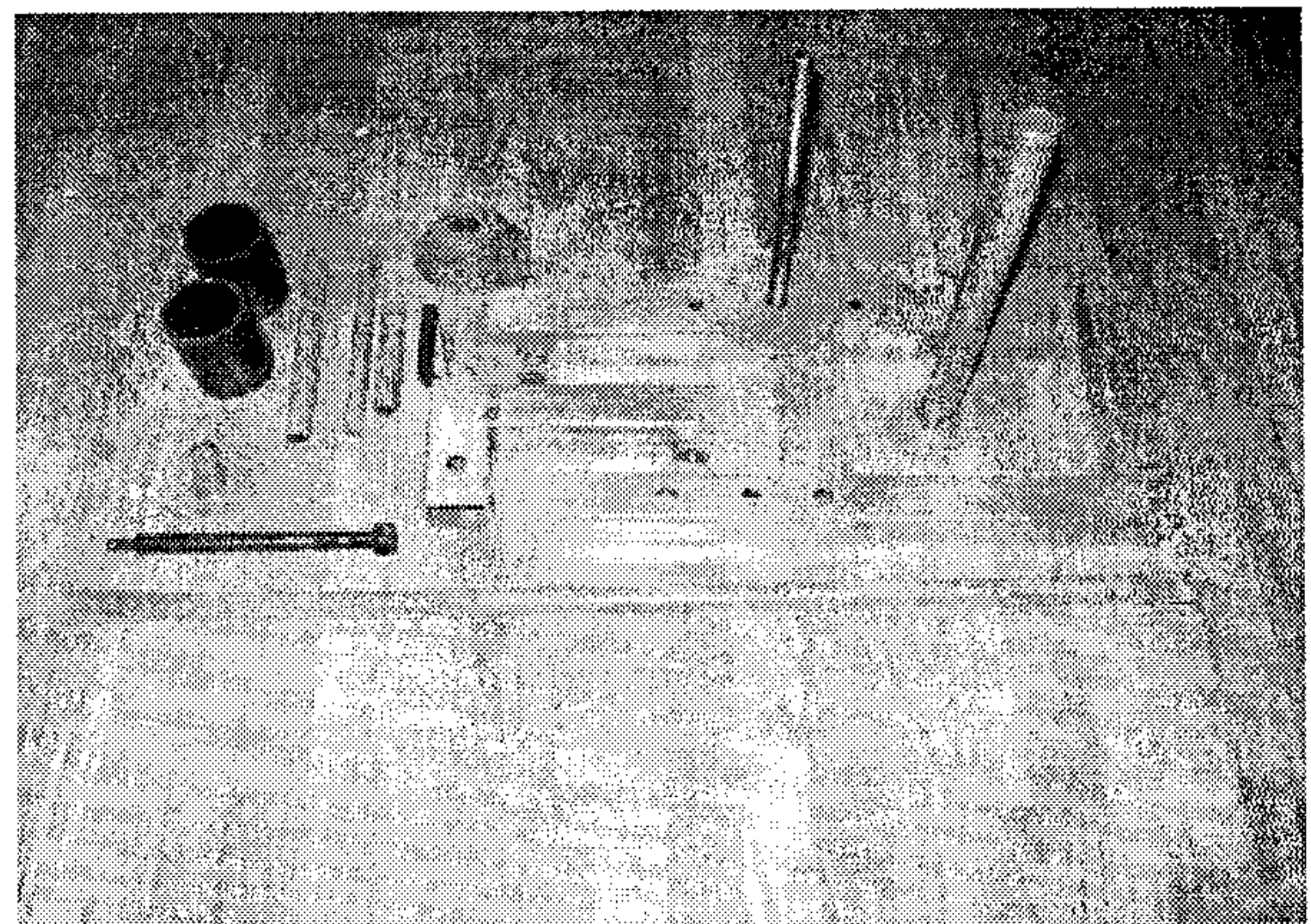
495529 Gray RD. #2
Ravenna, Ontario N0H 2E0

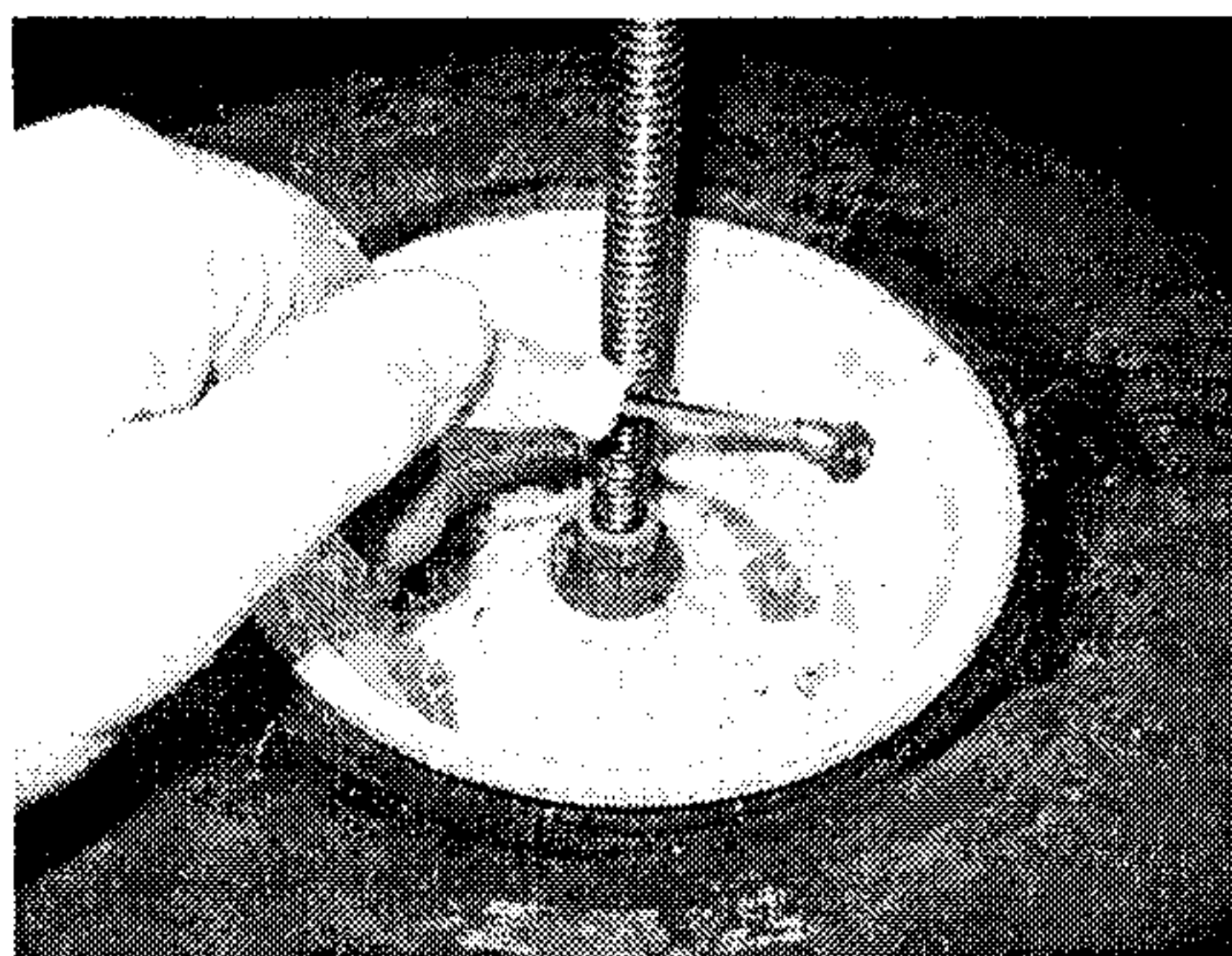
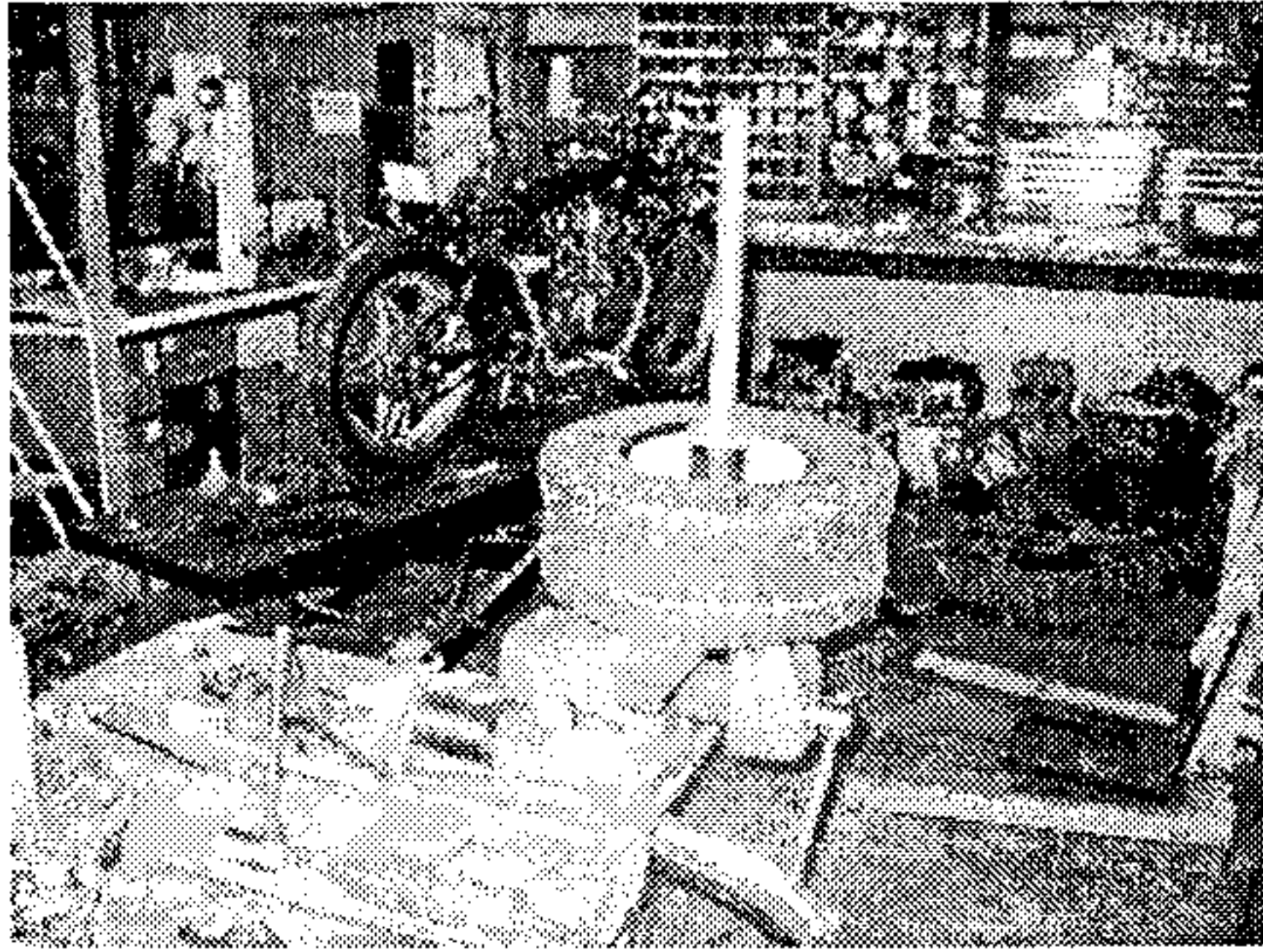
I created this device especially for very small tires that the rims mount directly to the axle drive shaft, steering spindles, or mounting directly on a bolt. The most common center holes sizes being 1/2," 5/8," 3/4 ". I have created specially sized sleeve adapters. I also have included 2" by 3 1/2 tapered cone that accommodates bolt on hubs designs is well. This tire tool is well constructed, light weight, portable is easy to use. It works by holding down the difficult to hold small rims securely. Using the specially made tire removal and installation tool, makes this difficult and time-consuming repair job easy. Normally repairs to little tires can take up to an hour to complete with the use of this tool, tire repairs can be done in a fraction of the time with



very little effort. This device fits into an ordinary bench vice, or can be mounted more permanently to suitable work surface. It has a detachable tire bead breaker that is easy to use, and has been designed to handle even the most difficult to break tire beads. This tire changer is suitable for most tires with rim sizes ranging from 6" to 12". Wheels that can be found on handcarts, wheelbarrows, turf, utility machines, ATVs, Snow blowers, and trailer tires. The following pages are in sequence

photo showing this tool being setup, and how it is used.

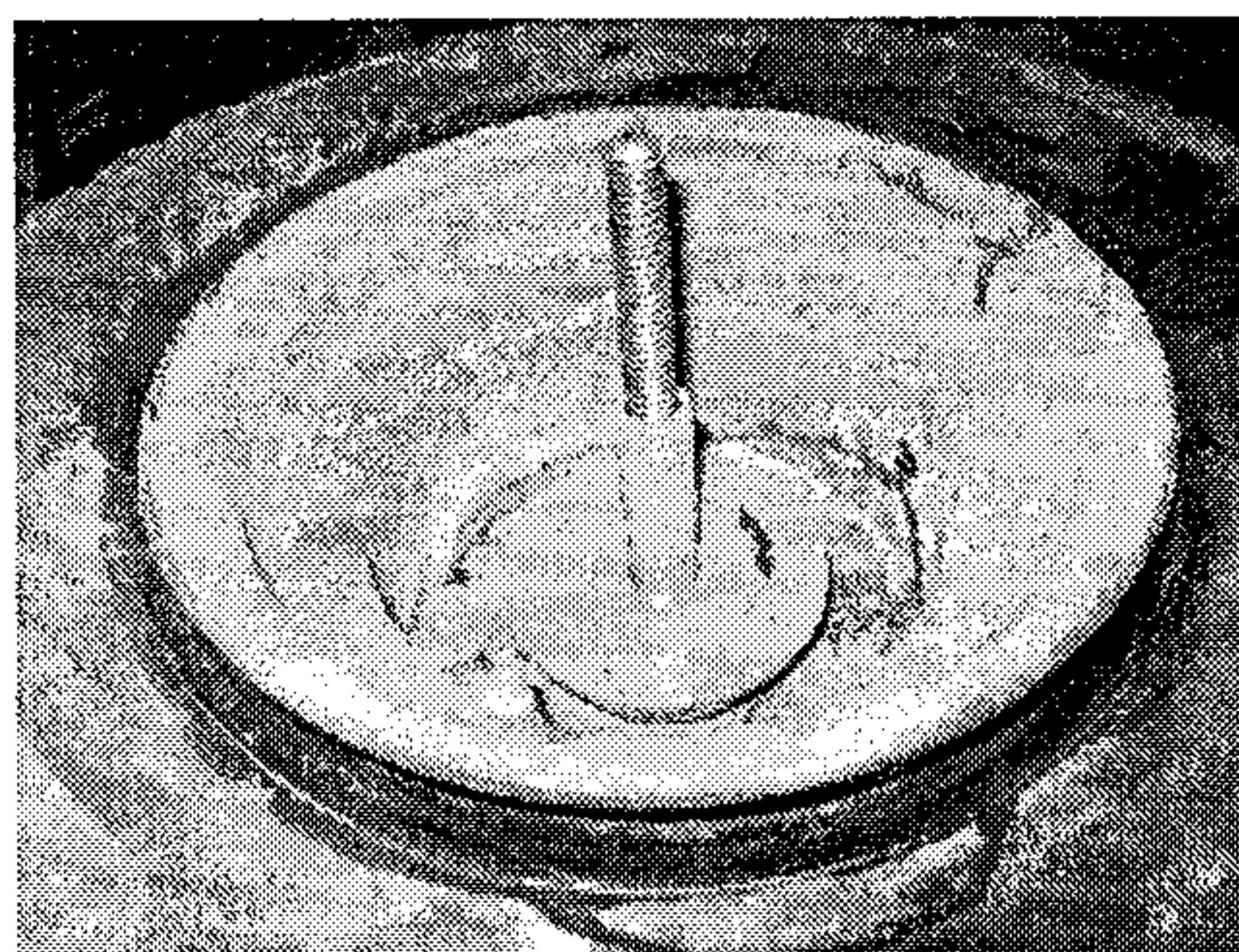
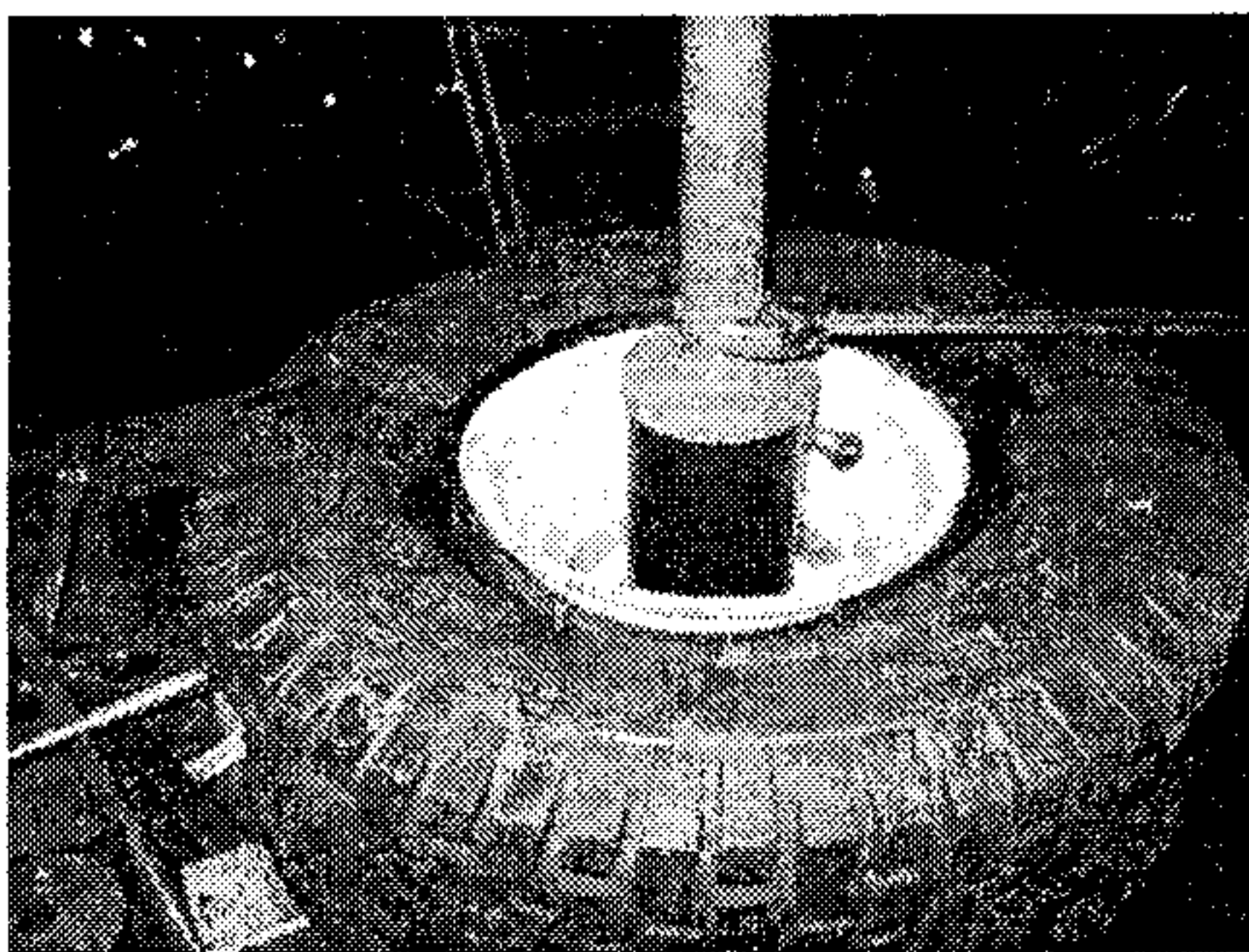




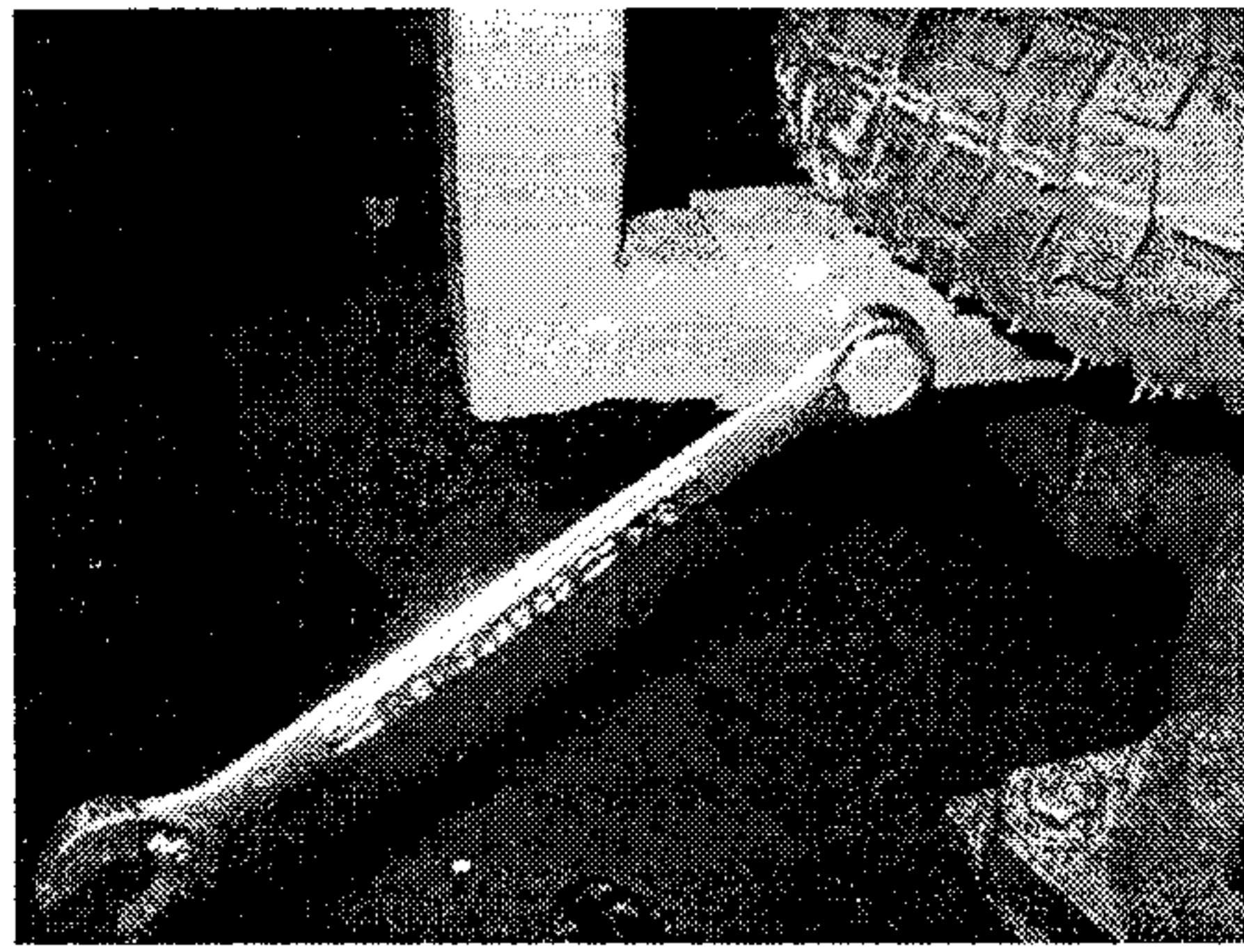
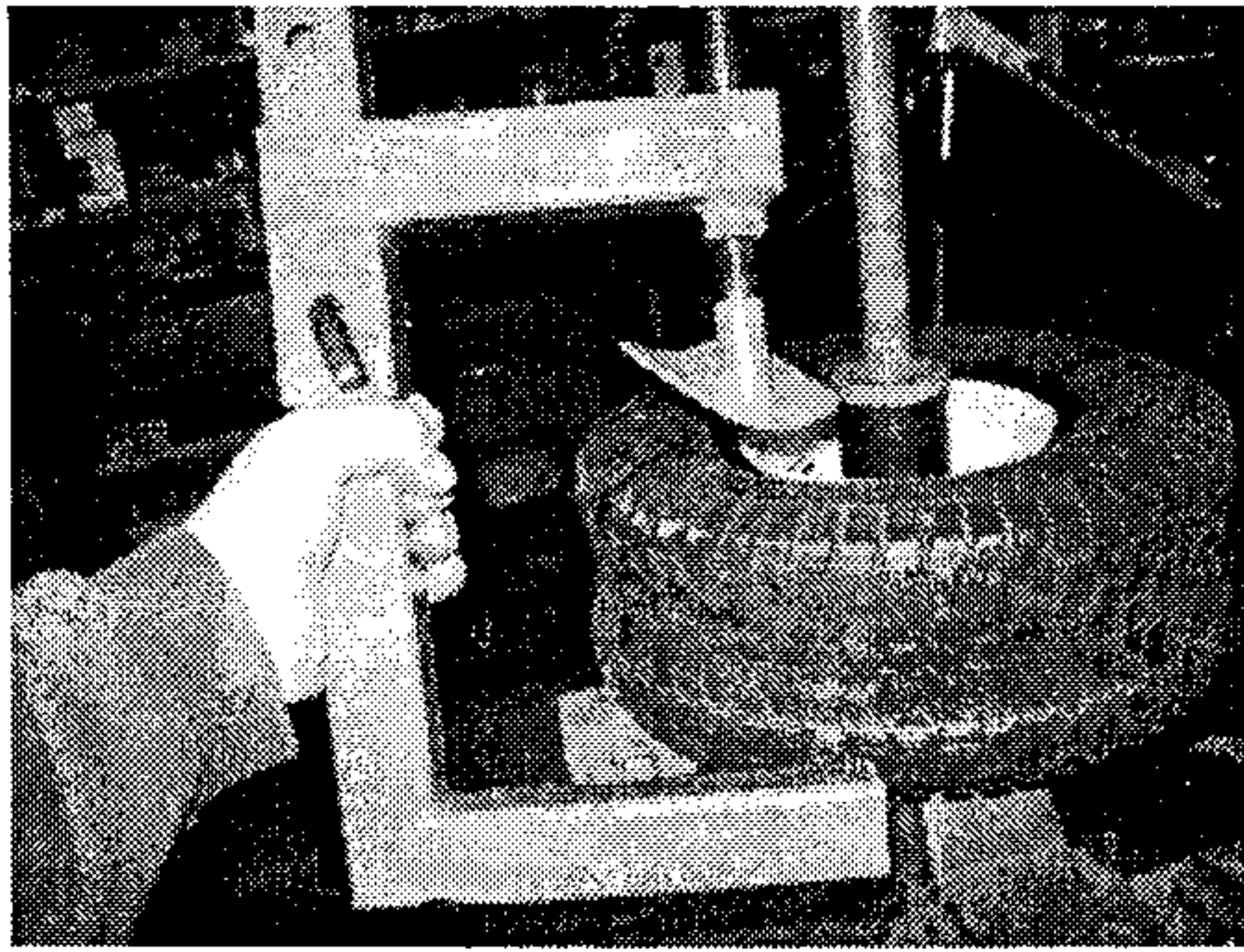
Installing the tire on the main base and inserting the appropriate adapter for centering the tire

Removing the valve core from the tire to ensure there is no air trapped inside before using the bead breaker.

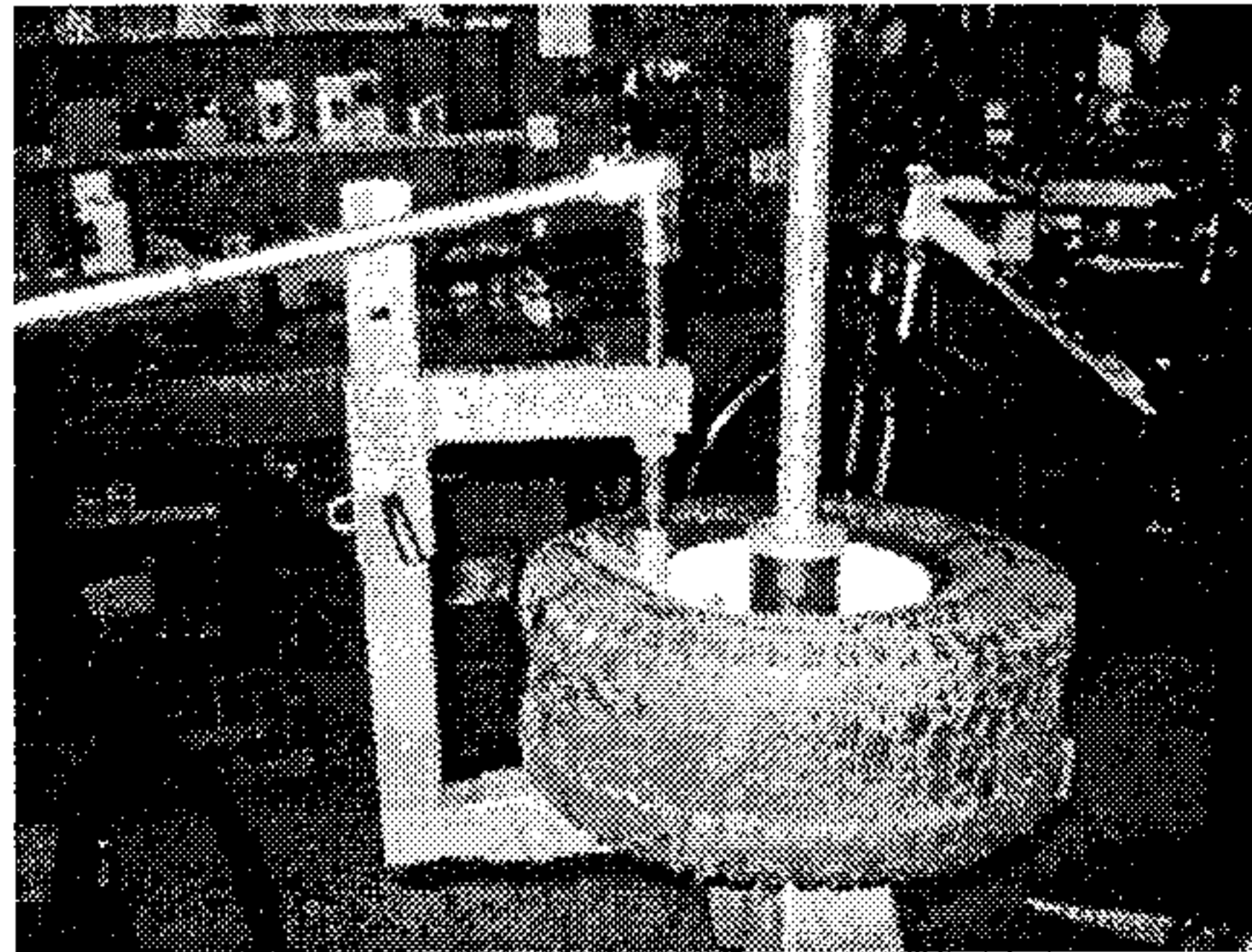
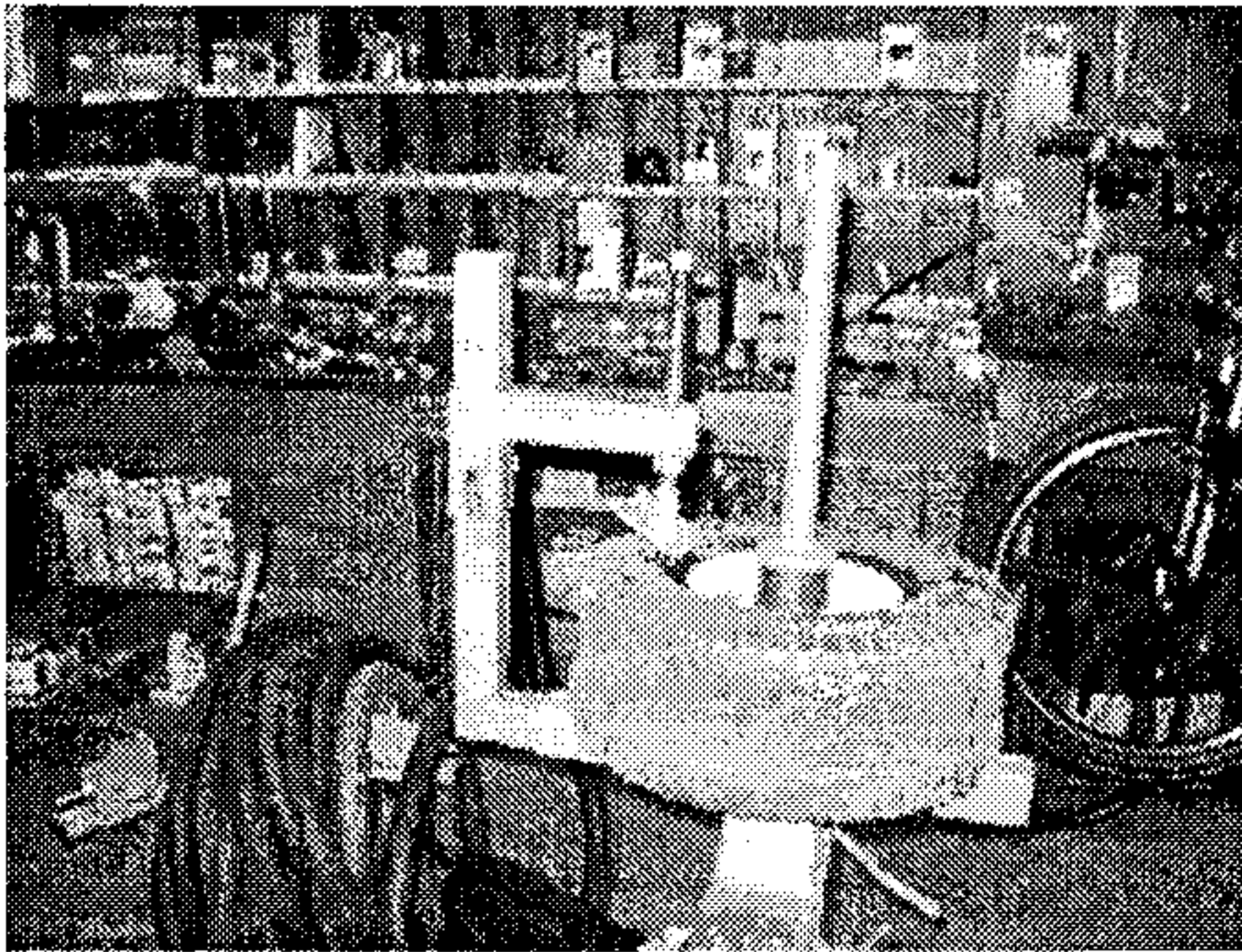
After the valve core has been removed secure the tire in place with the plastic cylinder and the removable center posted threads in place.



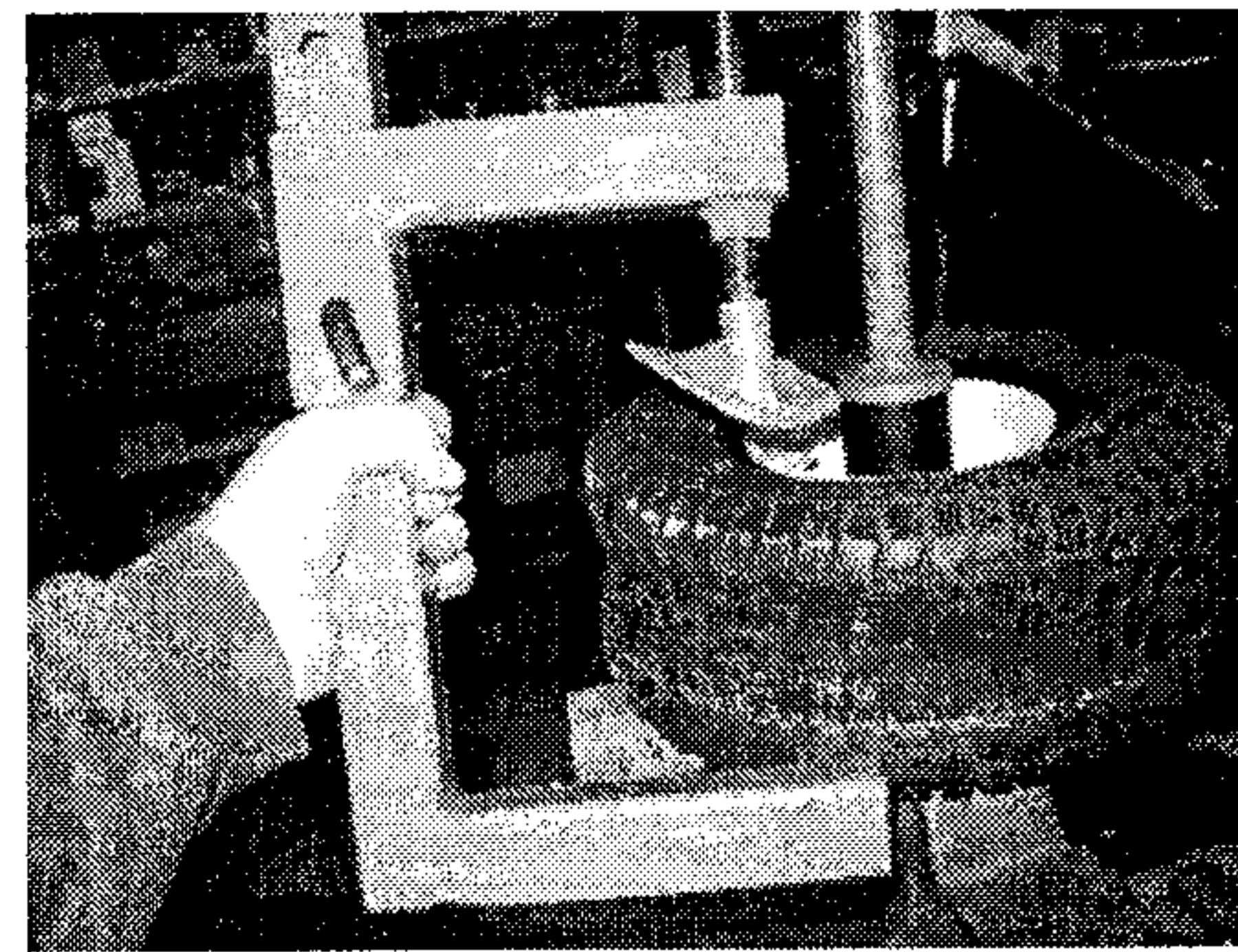
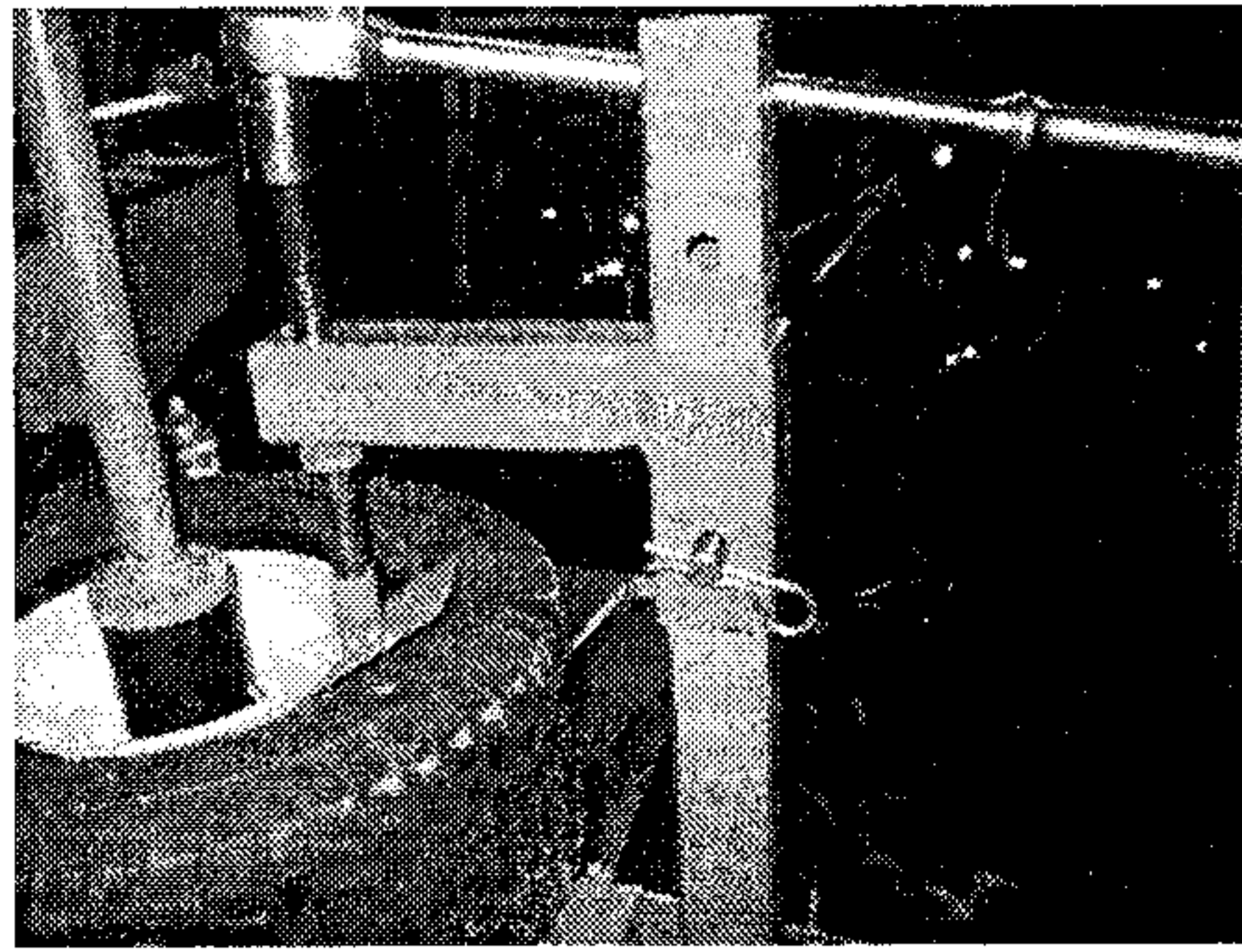
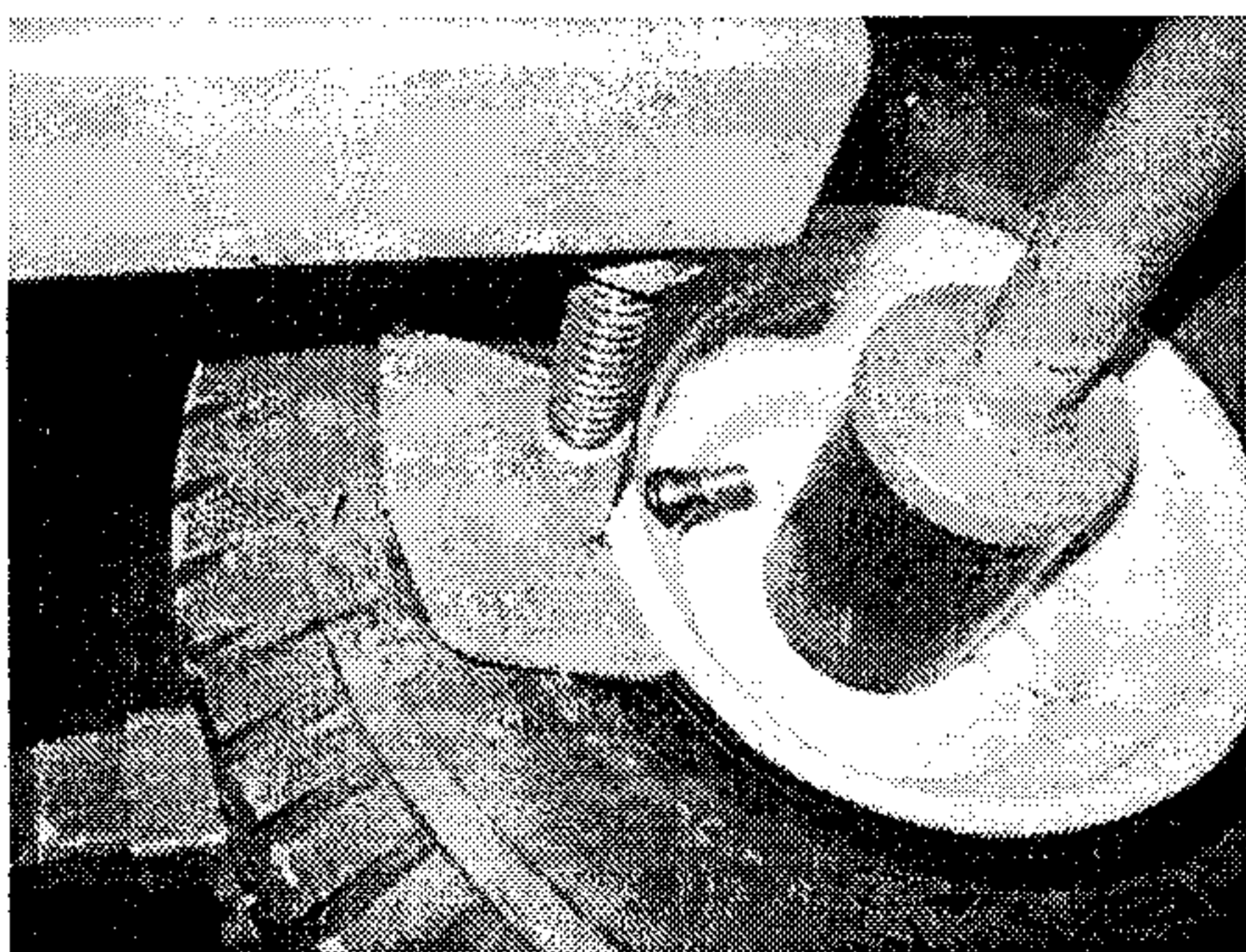
I have included a photo of a rim with bolt on hub. Showing the tapered cone being used on the dismounting and mounting sequences are the same for this design of rim.



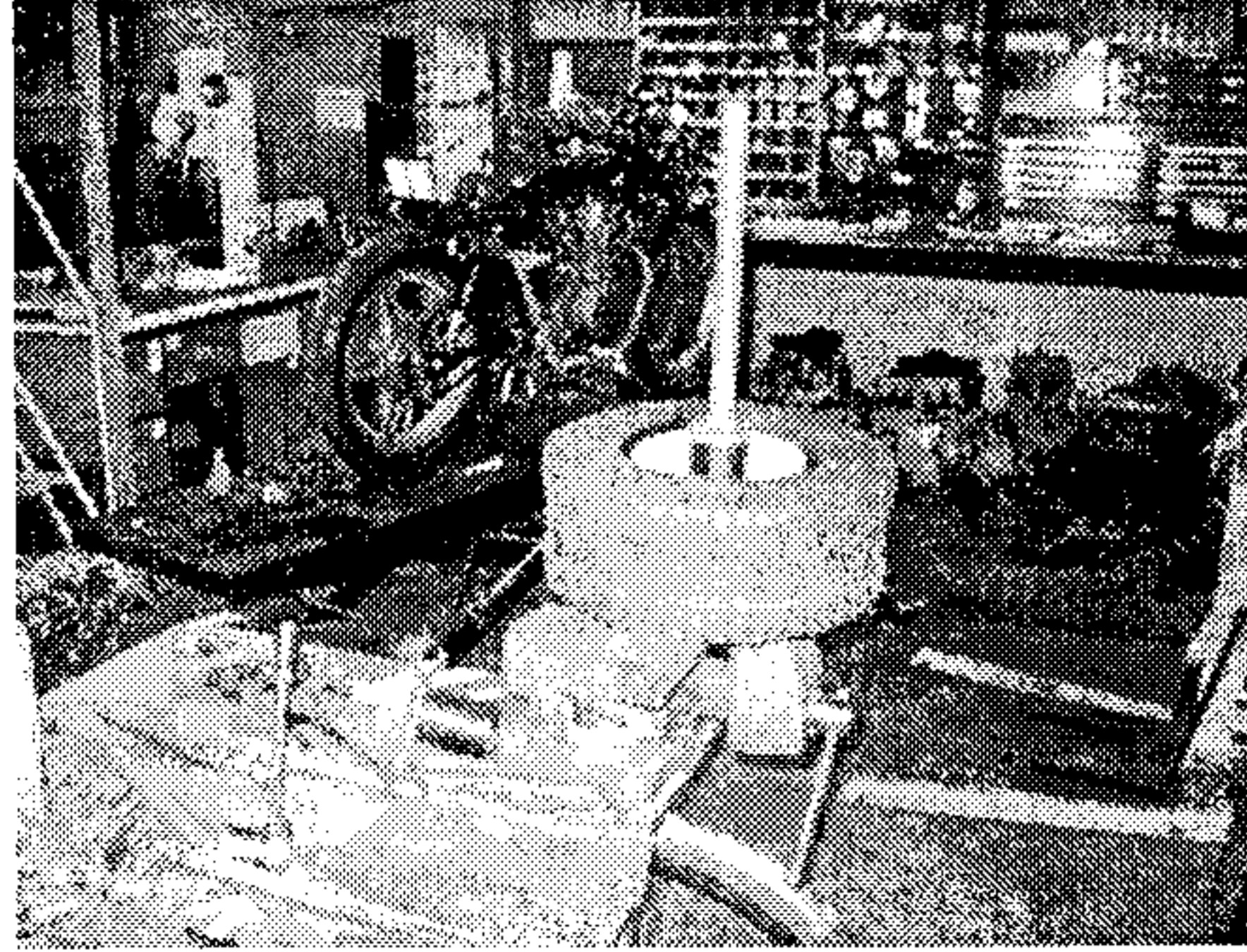
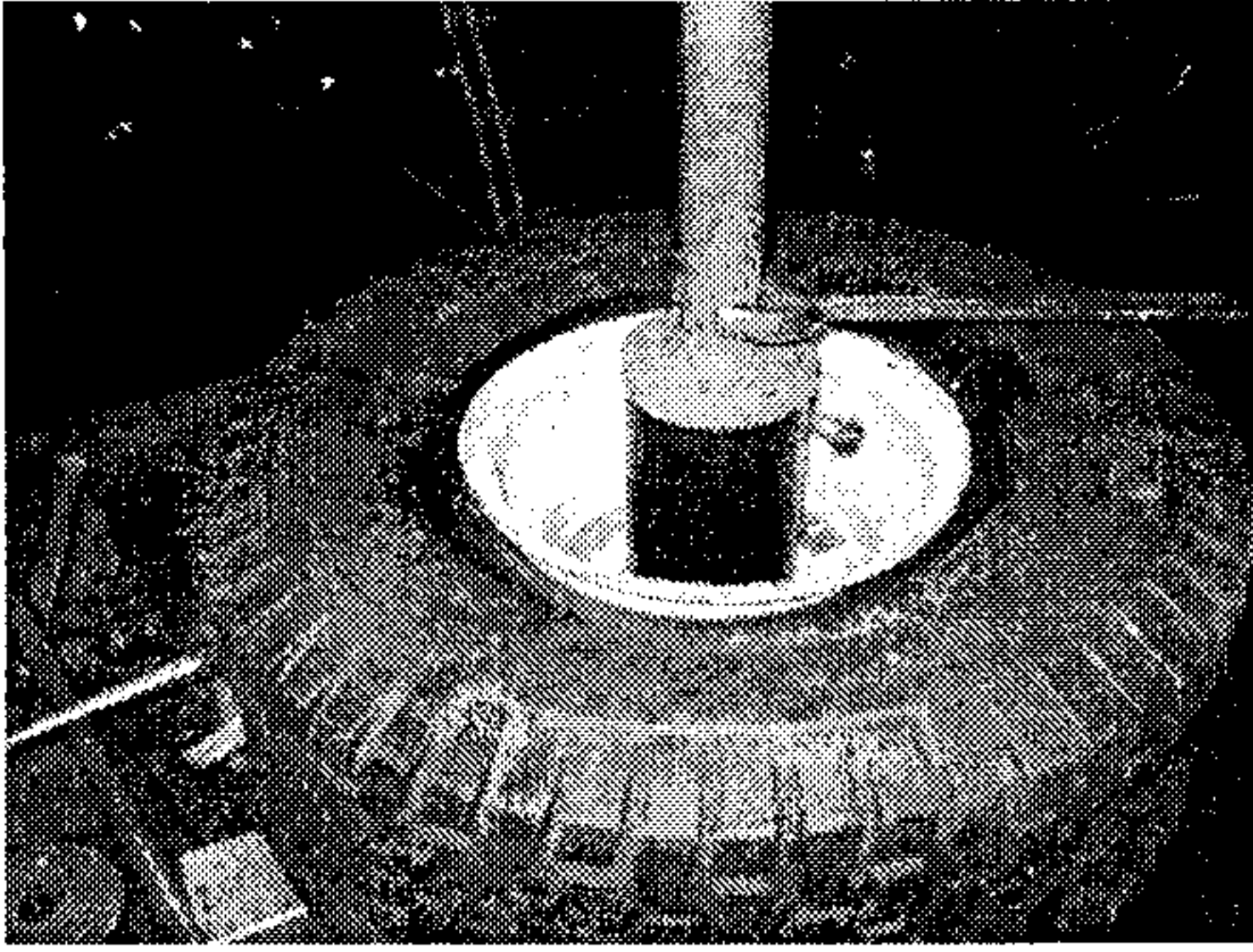
Install the detachable bead breaker assembly adjusted it fit the tire and lock it in place



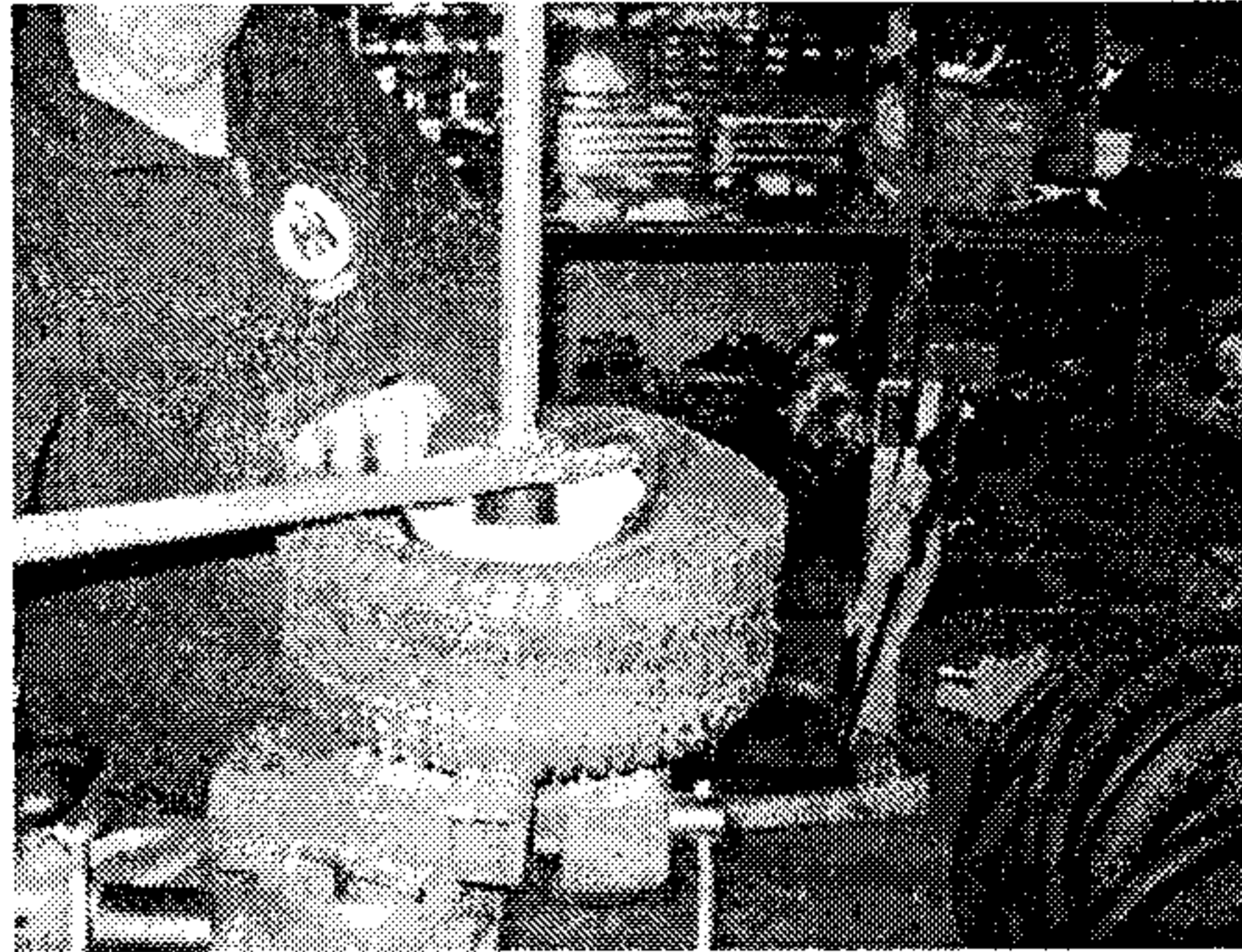
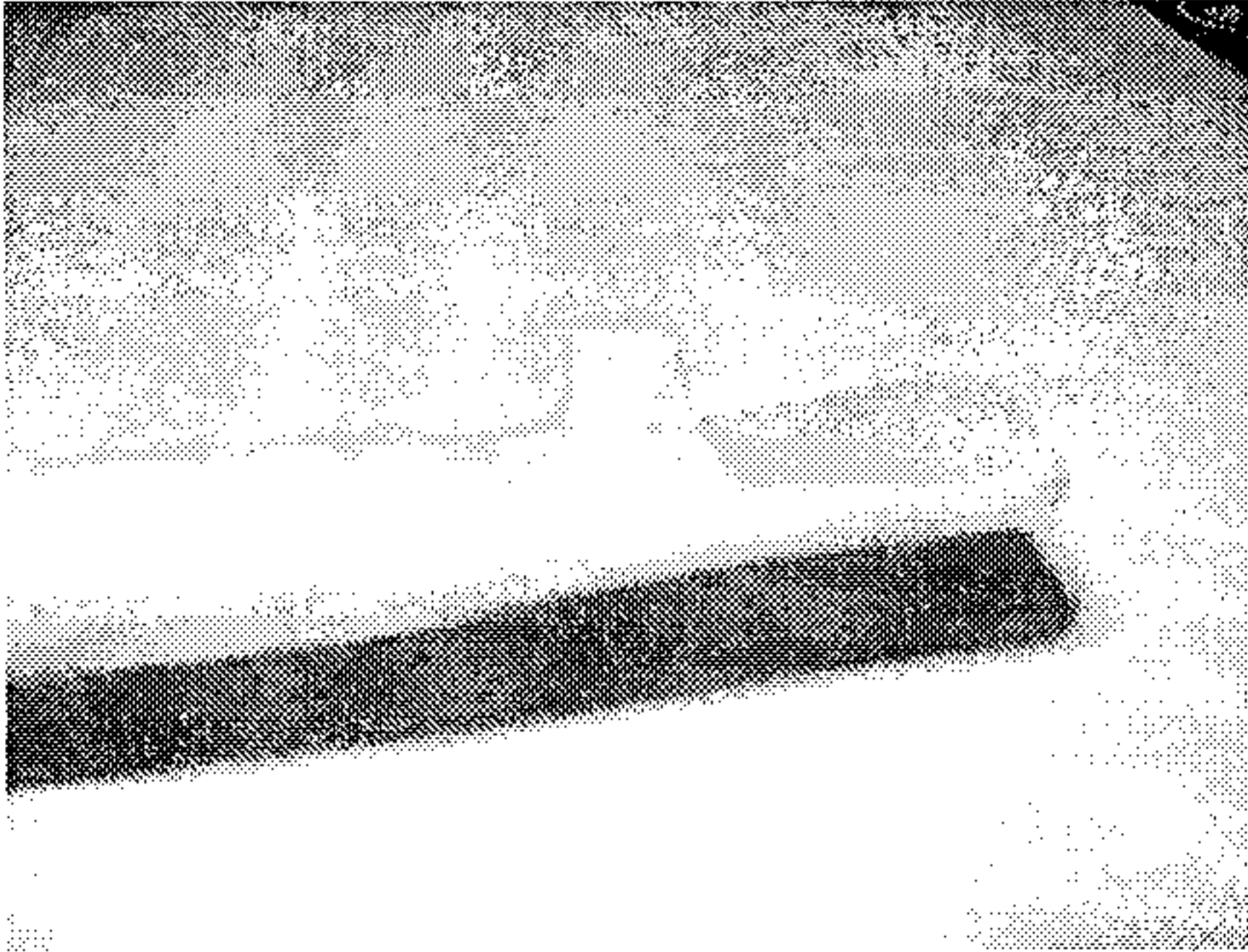
using the 7/8" socket thread the bead breaker down until the bead is separated from the rim, you will have to remove the tire and turn it over to break the bead on the opposite side of the same sequence is followed.



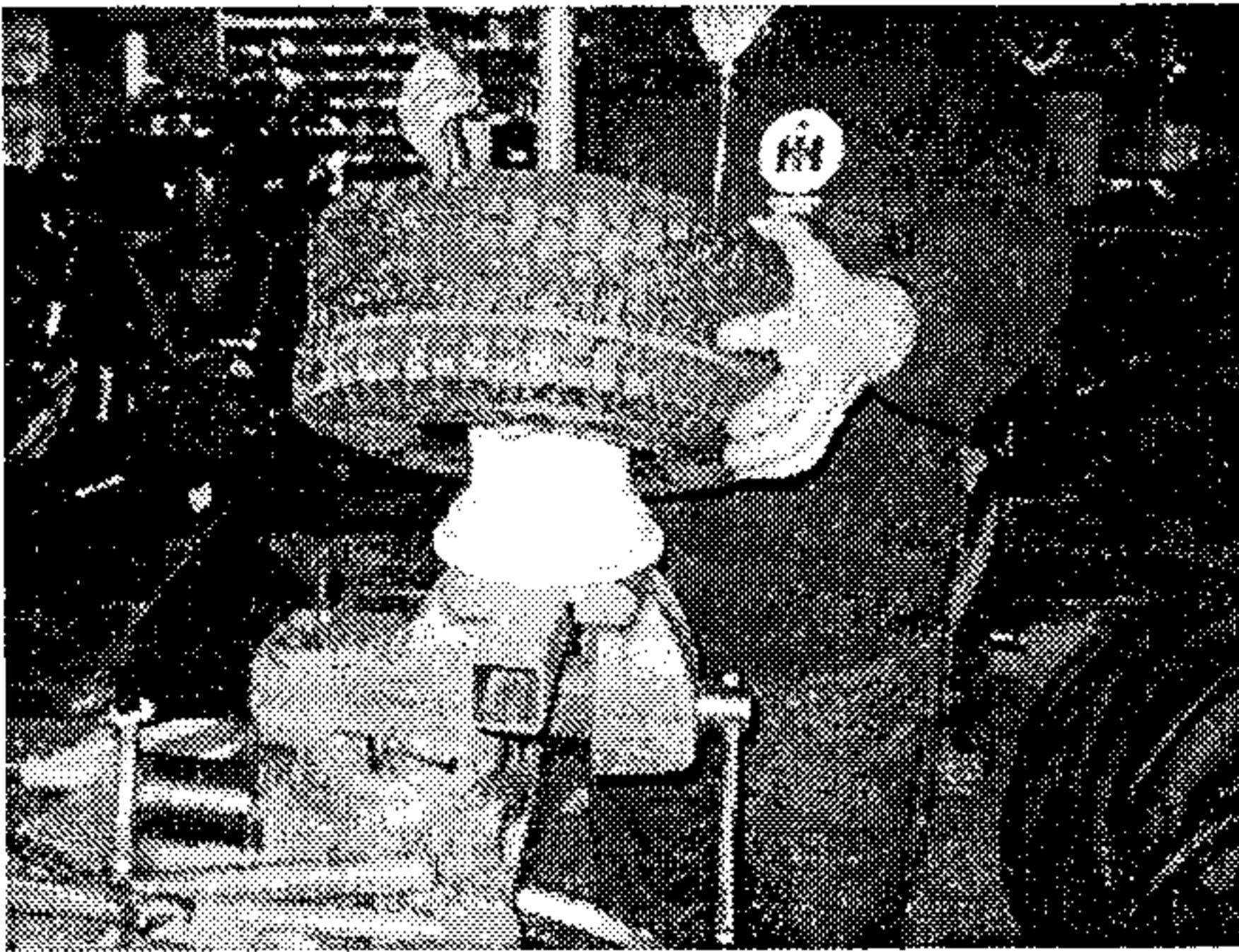
Once you have broken the bead, removed be breaking portion of the tool.



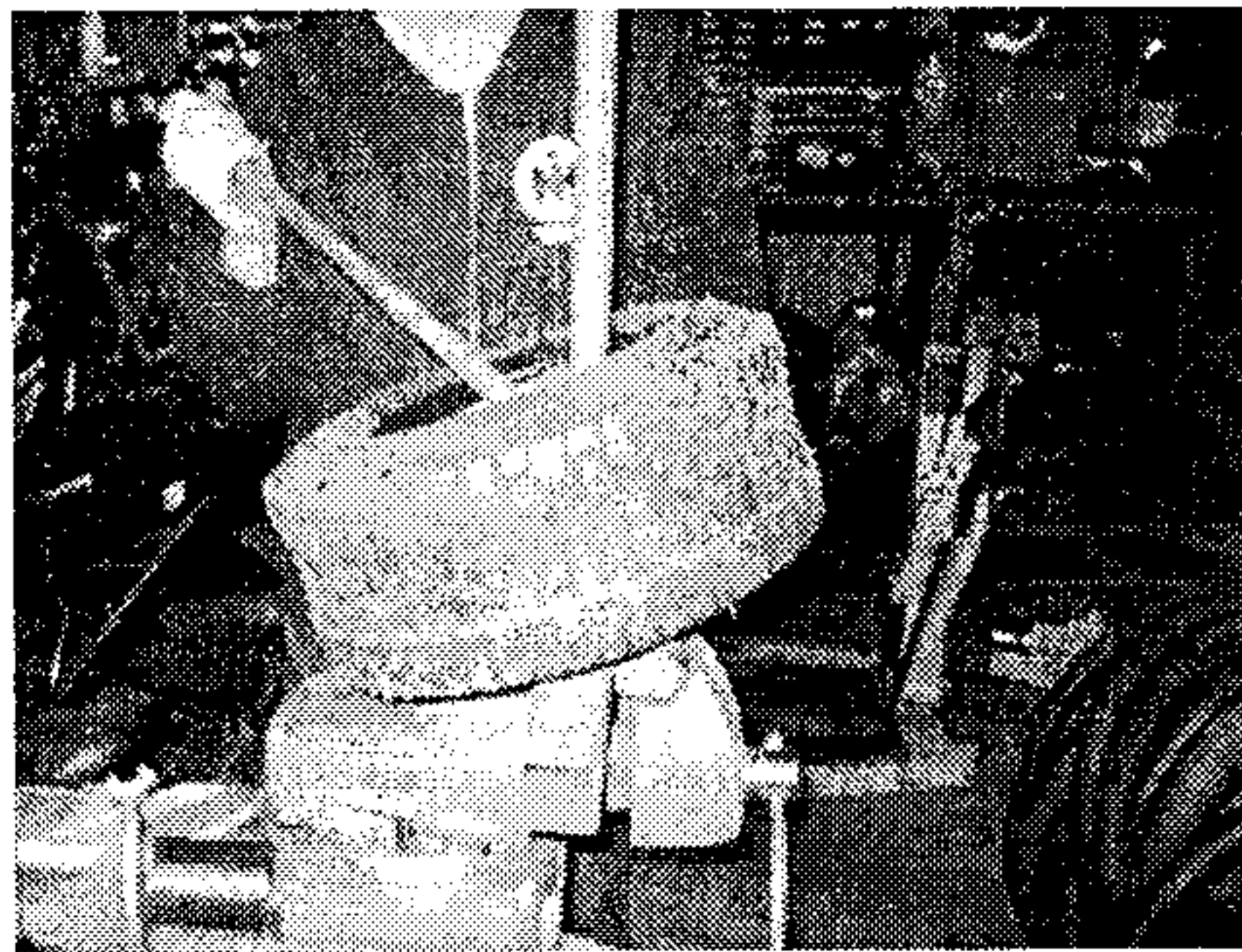
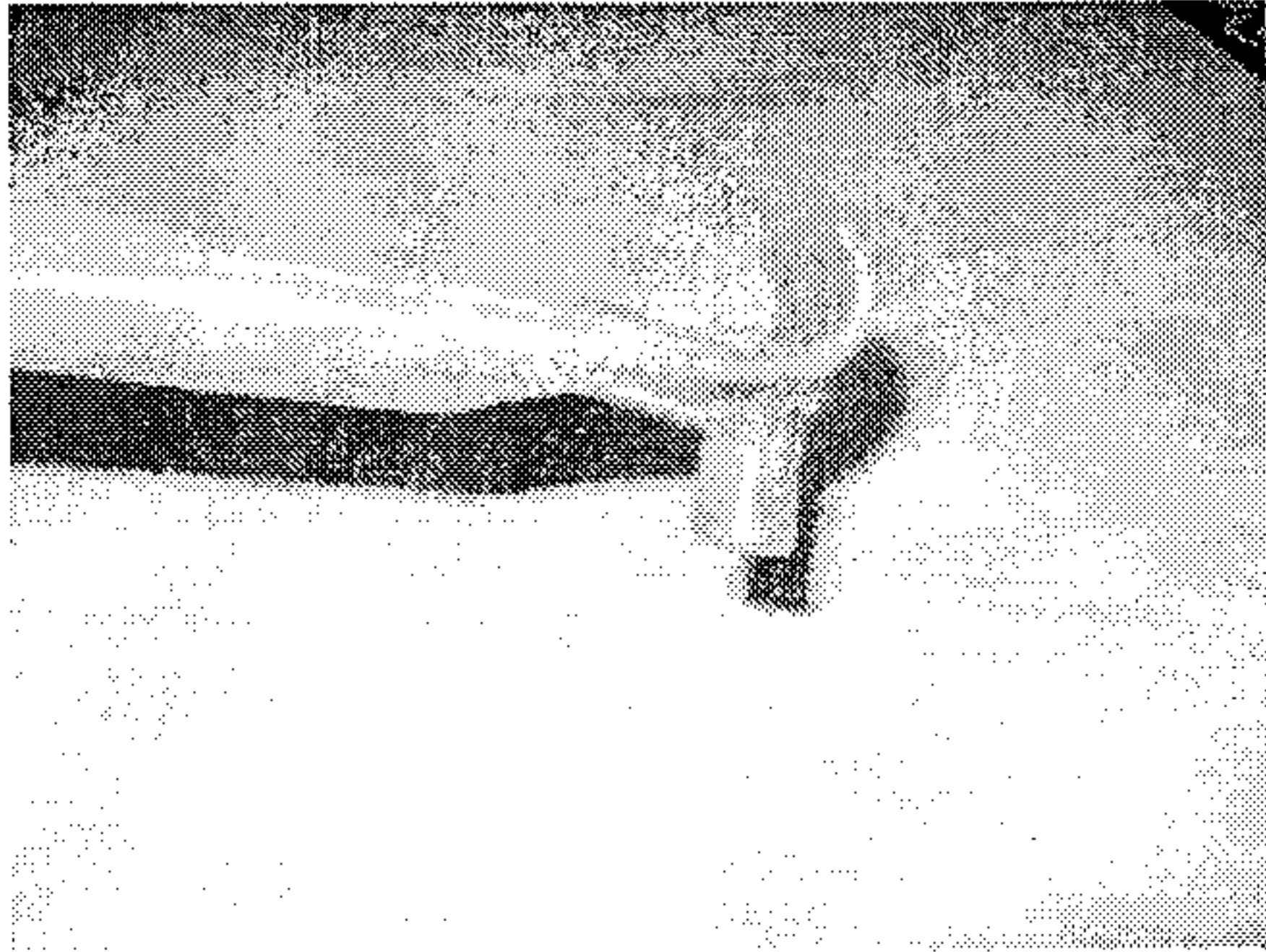
Before removing the tire from the rim remember to tighten the tire down so it does not spin.



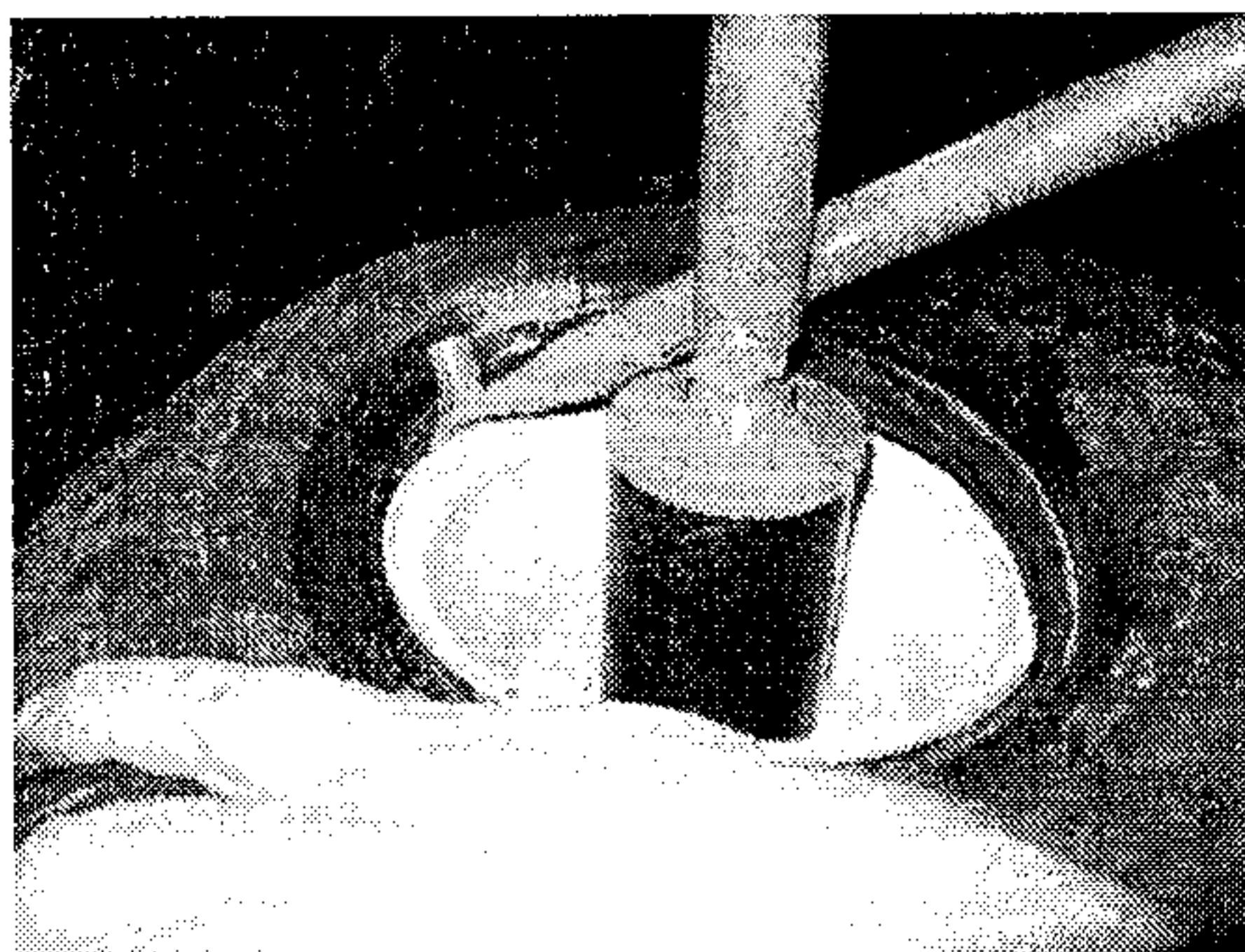
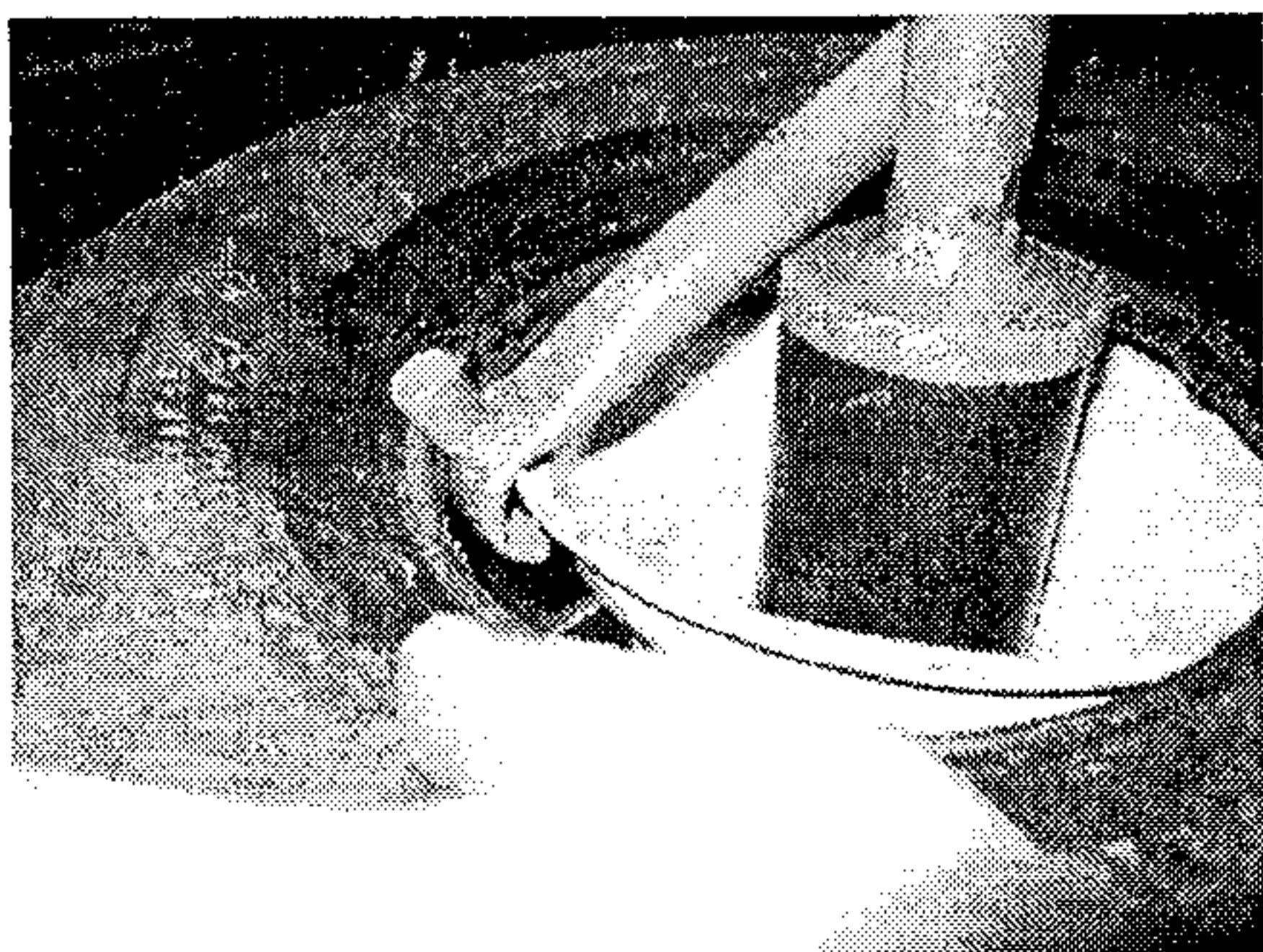
Using the removal portion of the tire tool, for best results remember to use the appropriate tire lubricant, as not cause damage to the tire bead, and it makes it slide apart much easier, (not shown here)



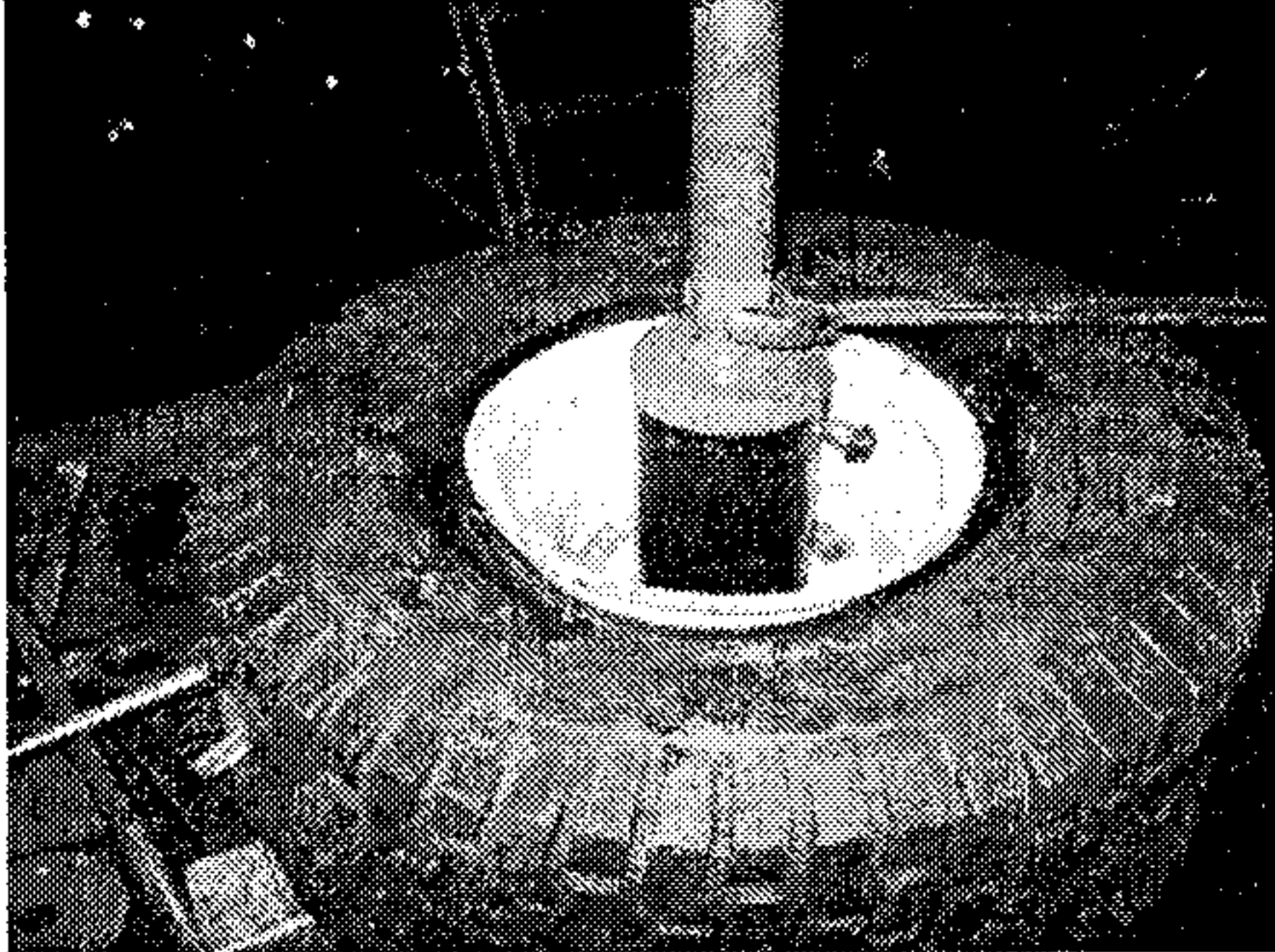
When you're finished with the repairs to the tire and are ready to reinstall, using the curled end of the tire tool for reinstalling.



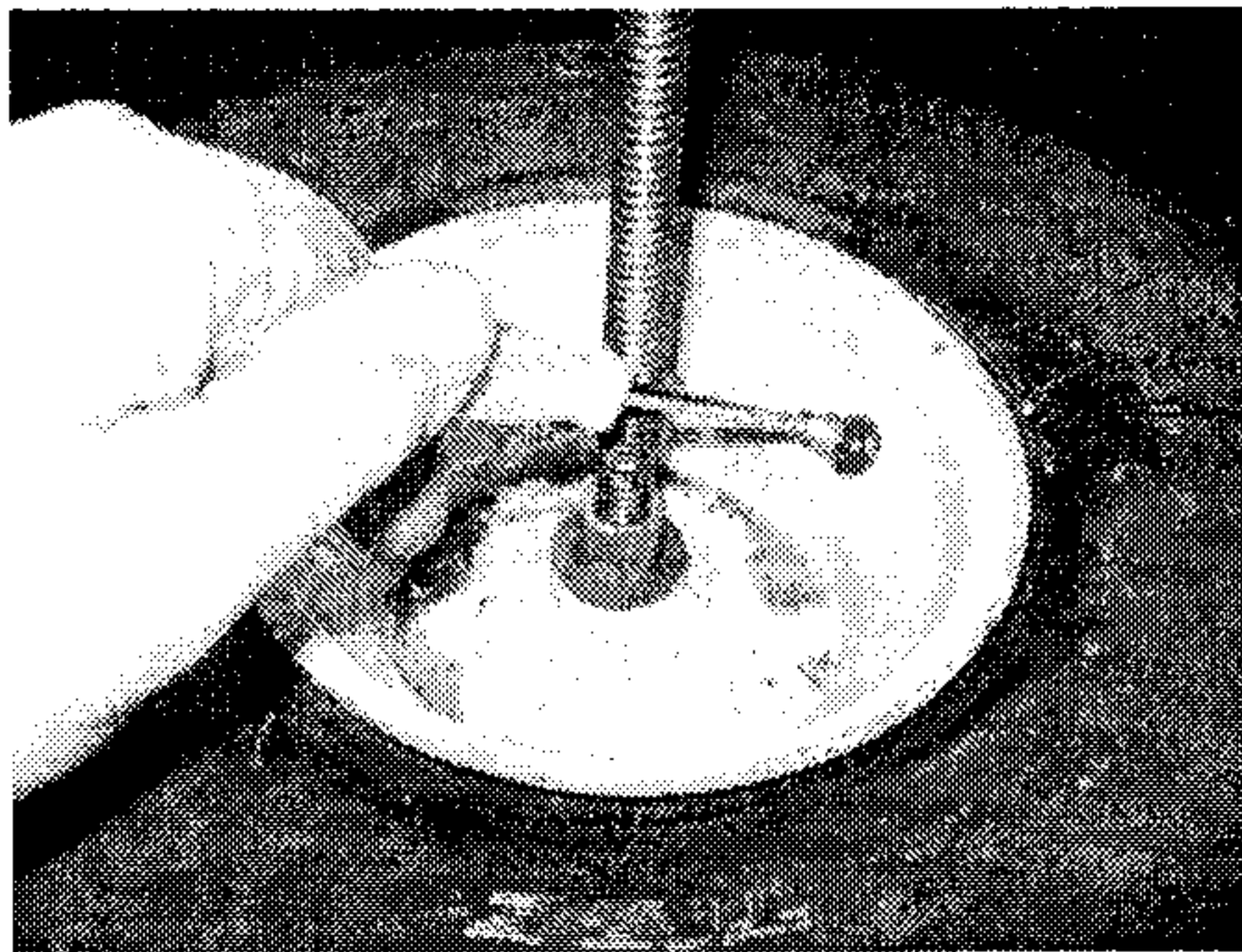
Hooking the tool over the rim, it works best to have the bead of the tire riding on top of the curled portion of the tool, right up tight to the little post welded to the tire tool



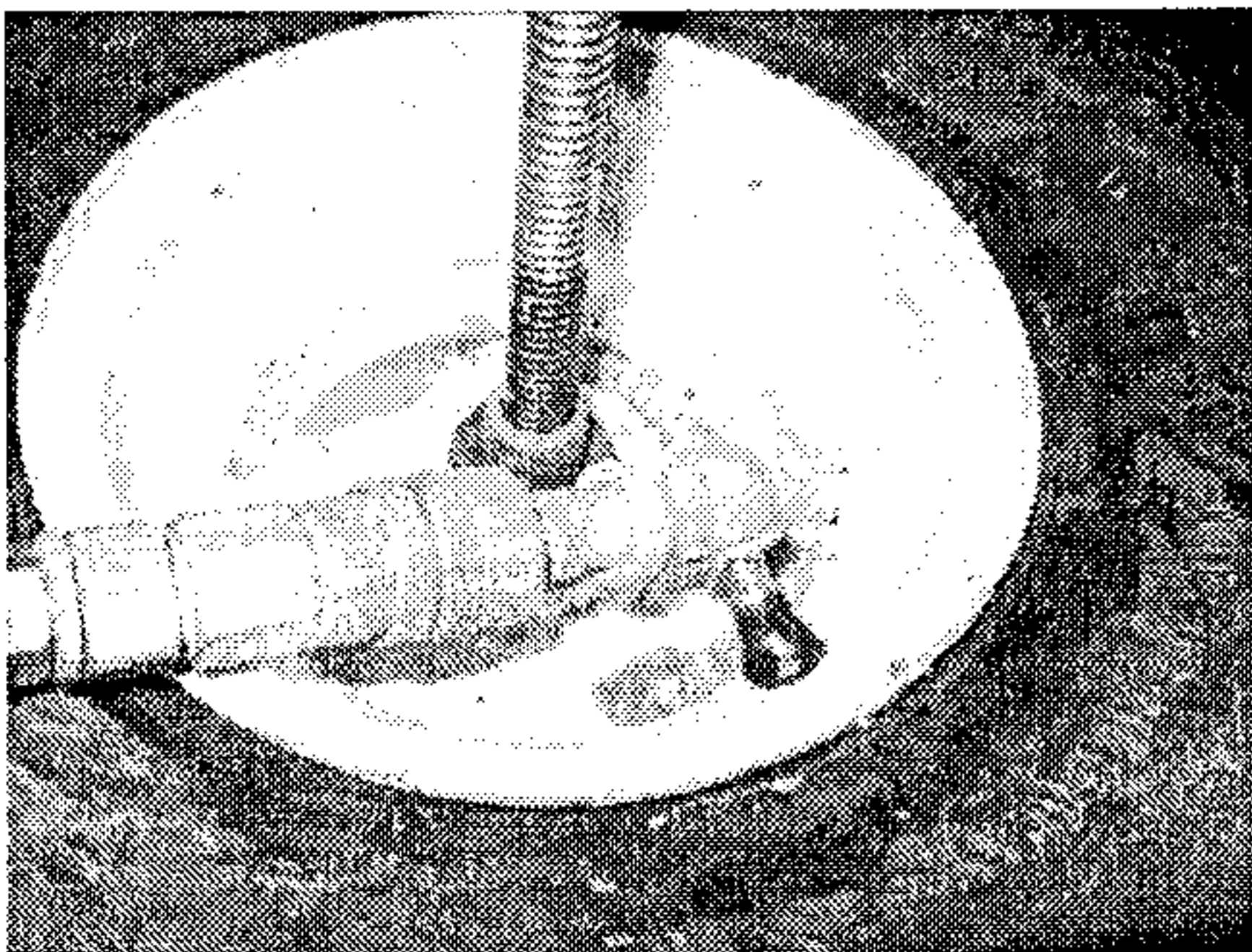
. Remember to use the appropriate tire lubricant. To prevent damaging the bead during reinstallation, and it also makes slide together so much easier, (not shown here).



Remove the center post, and the plastic cylinder.



Reinstall the valve core. Only reflate the tire only after the tire tool has been loosened off.



Reflate tire seating the tire beads to the rim. Inflate tire to manufacturer specifications.

Turf Tire Changer

Drawings November 14, 2015

By Donald A Wilson

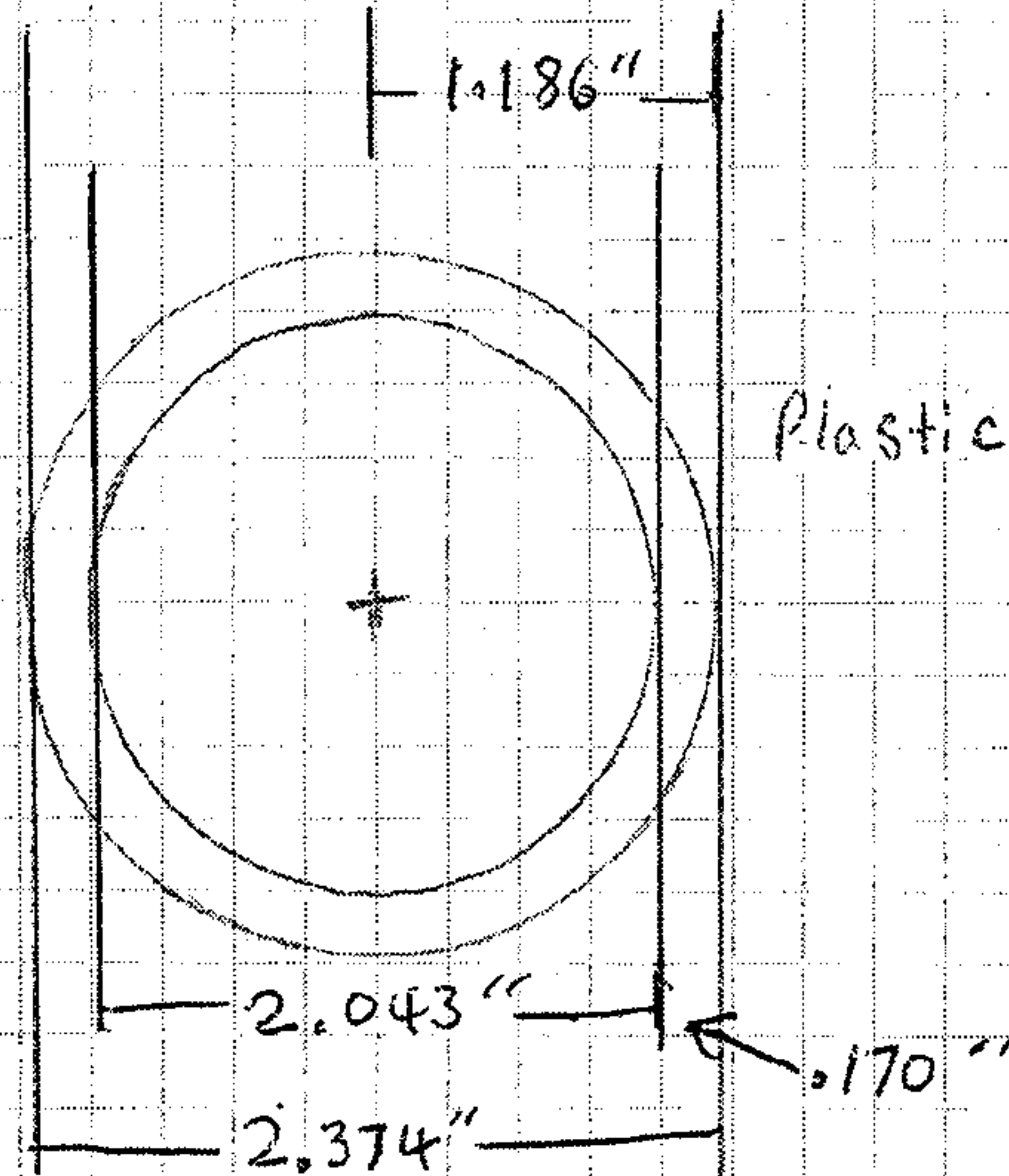
Q95529 Gray RP.#2

RR#1 RAVENNA, Ontario NOH 2EO

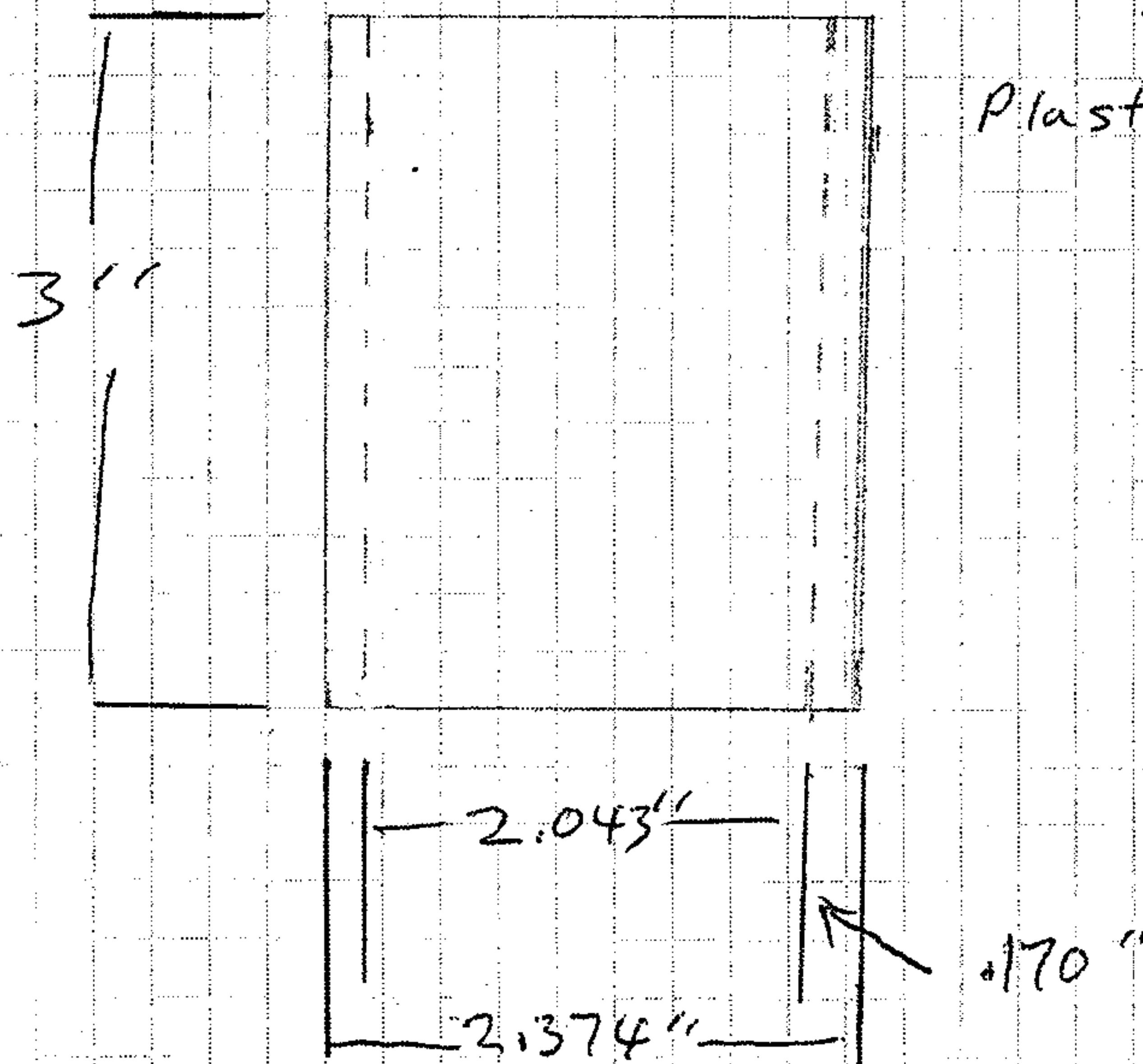
1 to 1 Scale

Two matching Plastic
cylinder one set
of Drawings.

The plastic cylinder adapters
are used as spacers there
is a recess machined into
the center post to center
the plastic cylinder on
the rim. To Squeeze the
rim between the two
plastic cylinders.



Top View
Plastic cylinder adapter



Side View
Plastic cylinder adapter

Turf Tire Changer

Drawings November
14, 2015

By Donald A Wilson

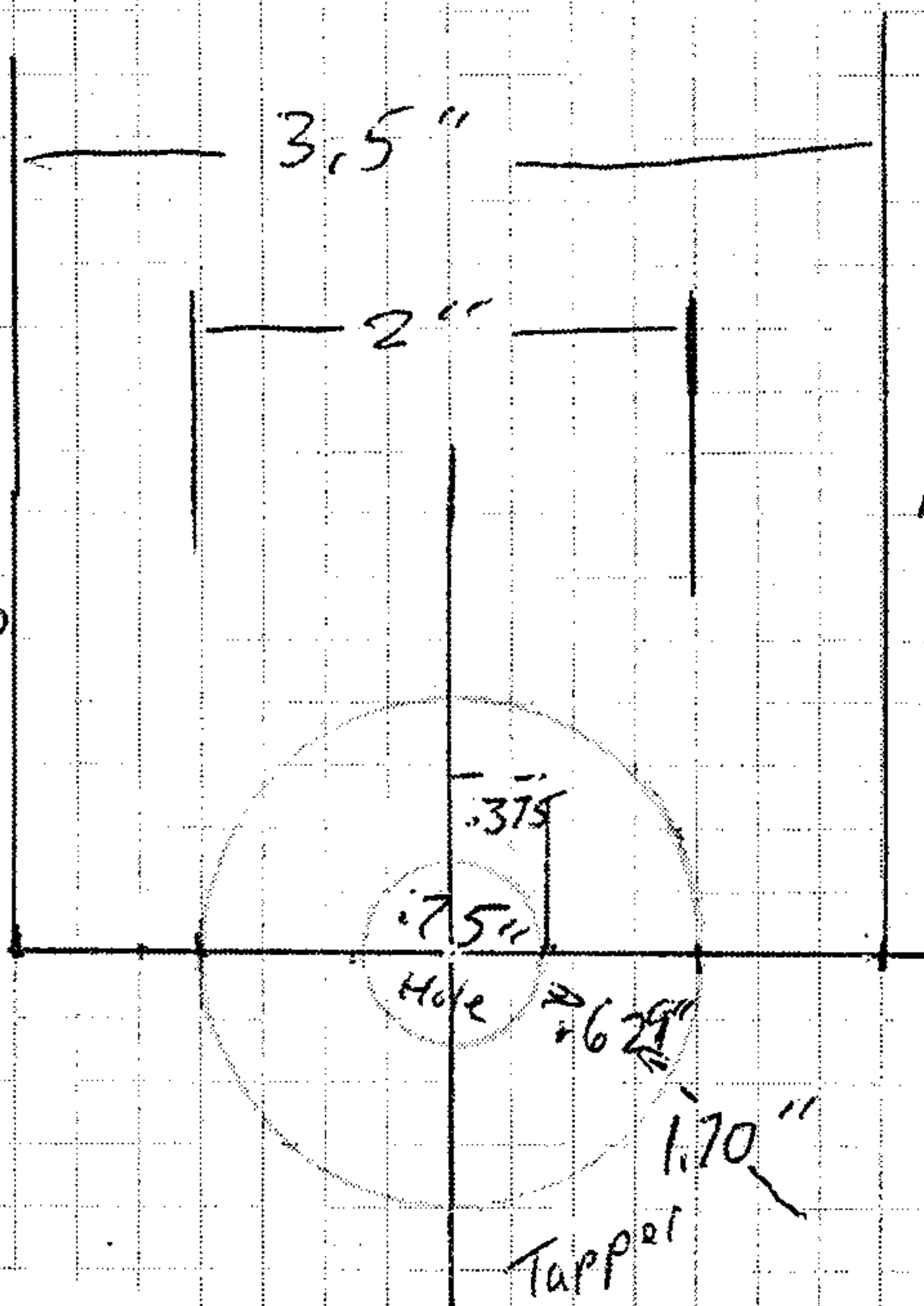
495529 Gray R.D.#2

RR#1 RAVENNA, Ontario N0H 2E0

1 to 1 Scale

Tapered cone
machined out of steel

Top View

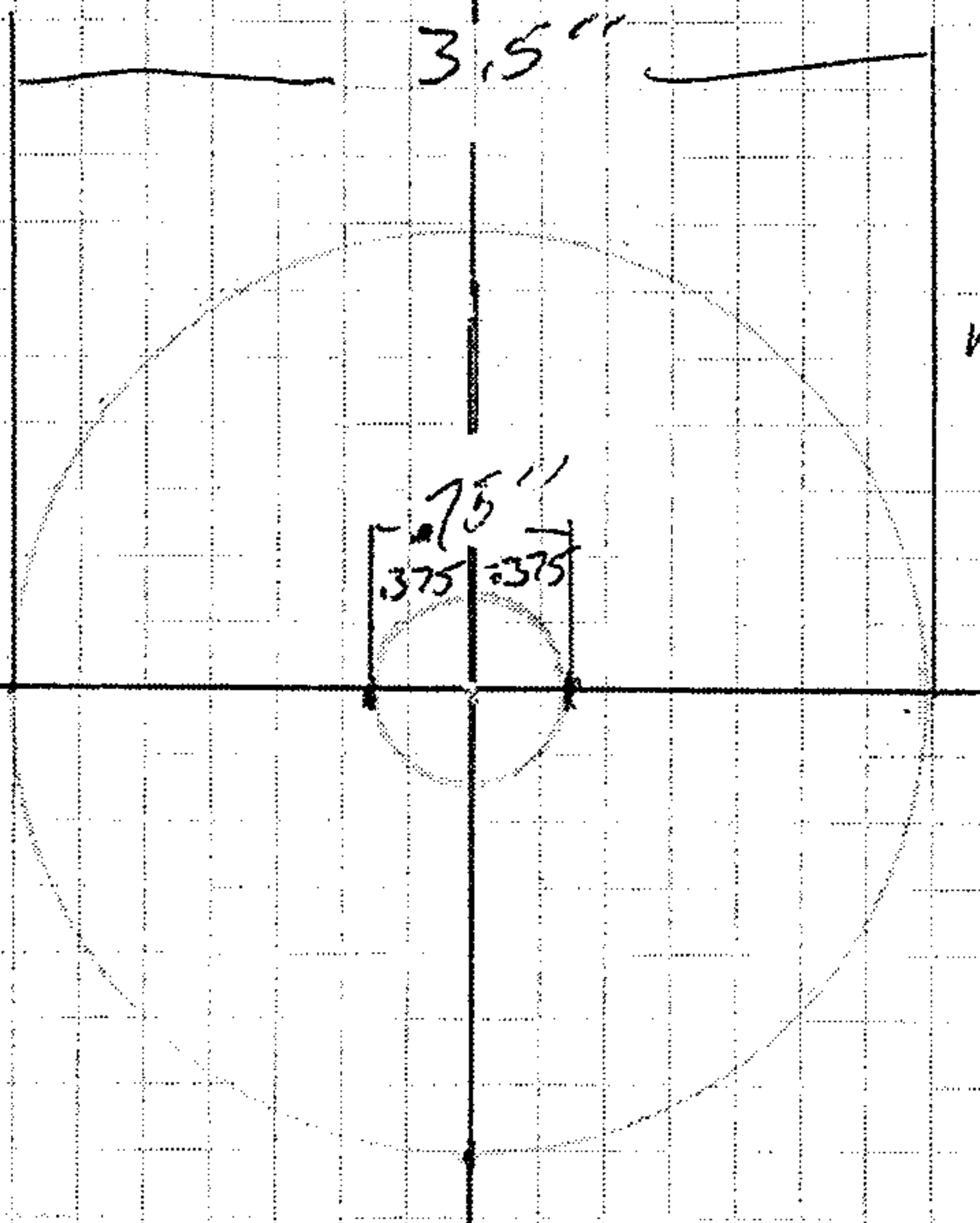


Optional method of
Manufacturing
tapered cone made of
cast iron or
hard plastic

The tapered cone
adapter is made for
rims that are bolted
to a hub and have
large open center.

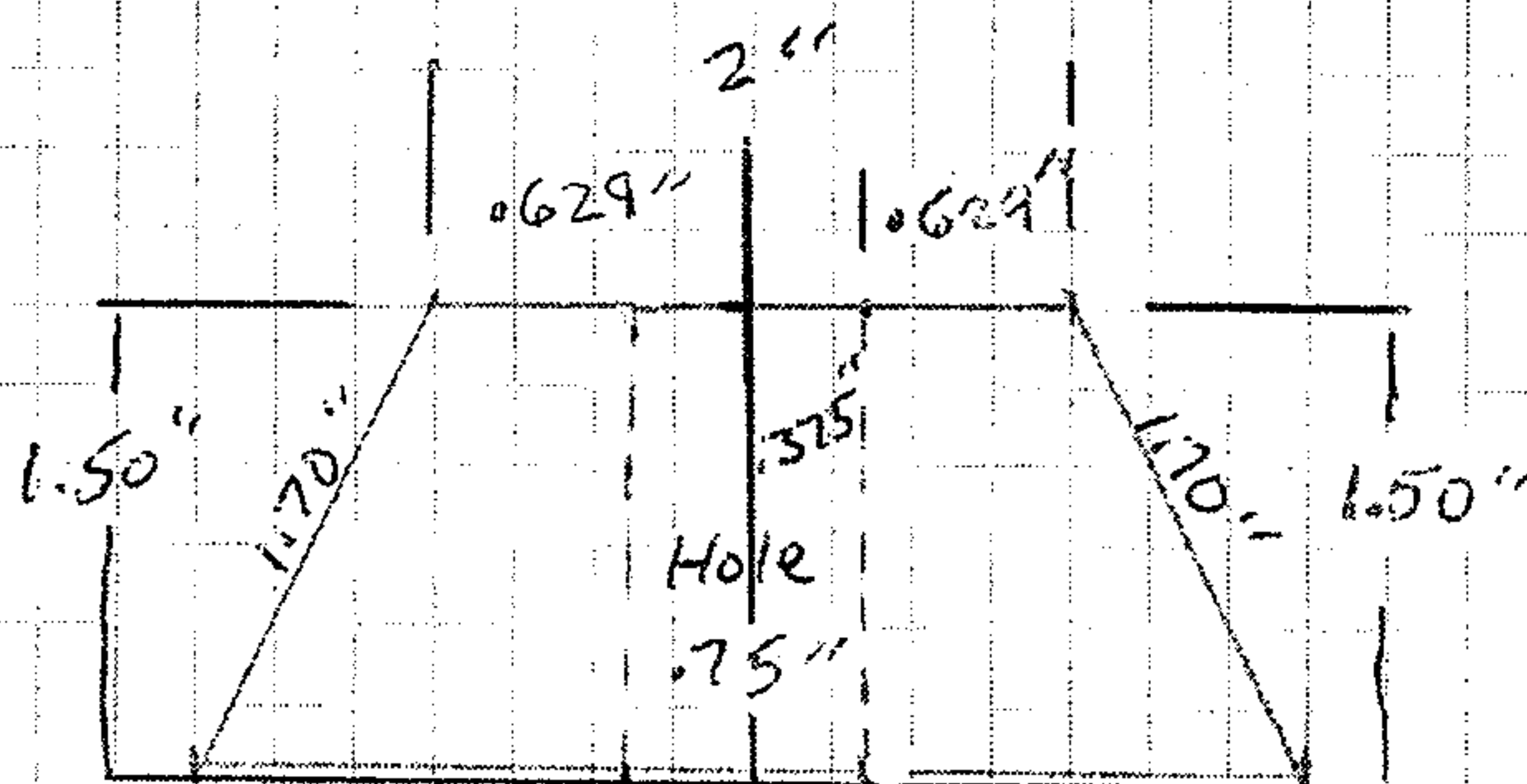
Tapered cone
machined out of steel

Bottom
View



Tapered cone
machined out
of steel

Side
View



Tuff Tire Changer
Drawing November 16, 2015

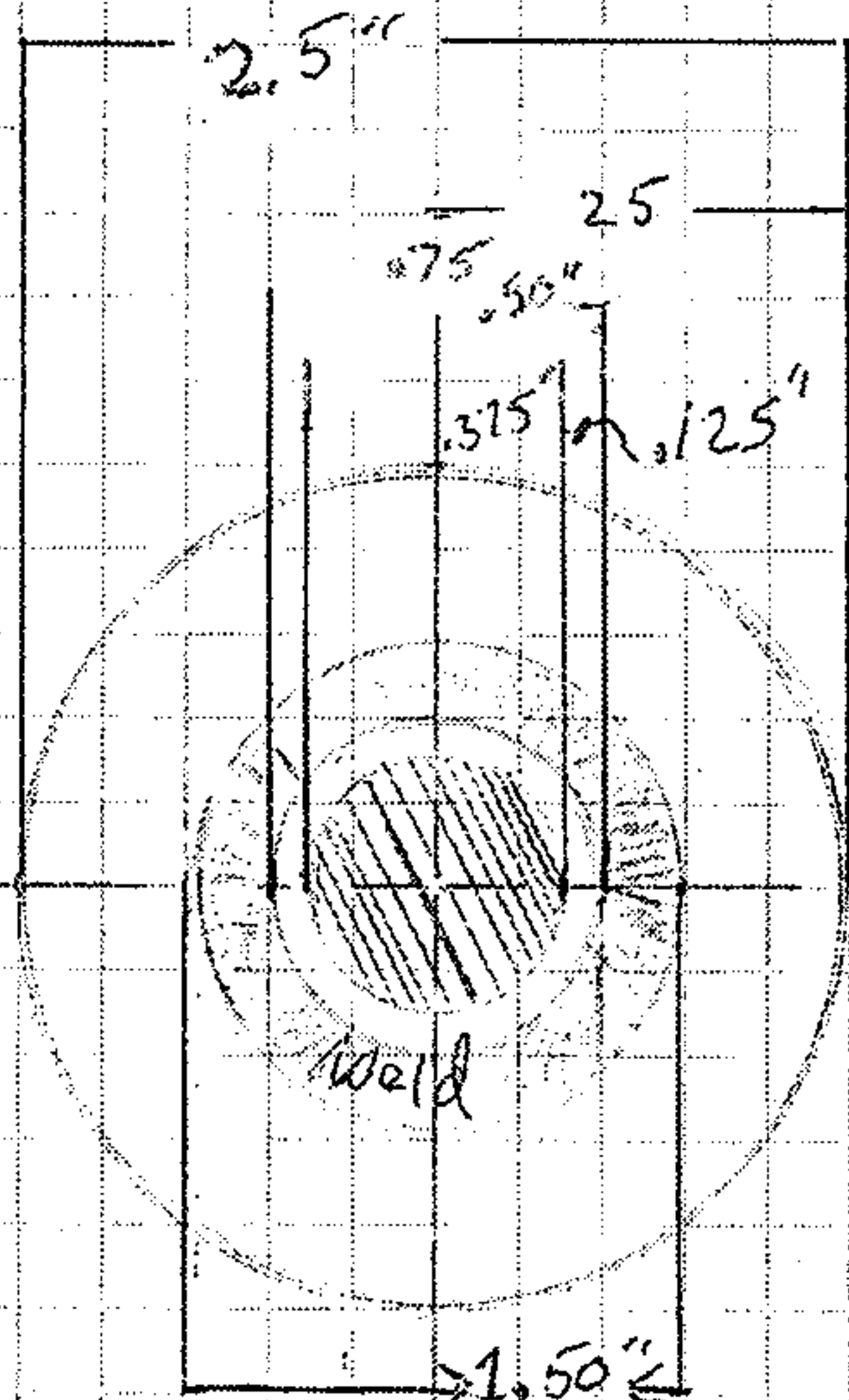
By Donald A Wilson

495529 Gray RD. #2

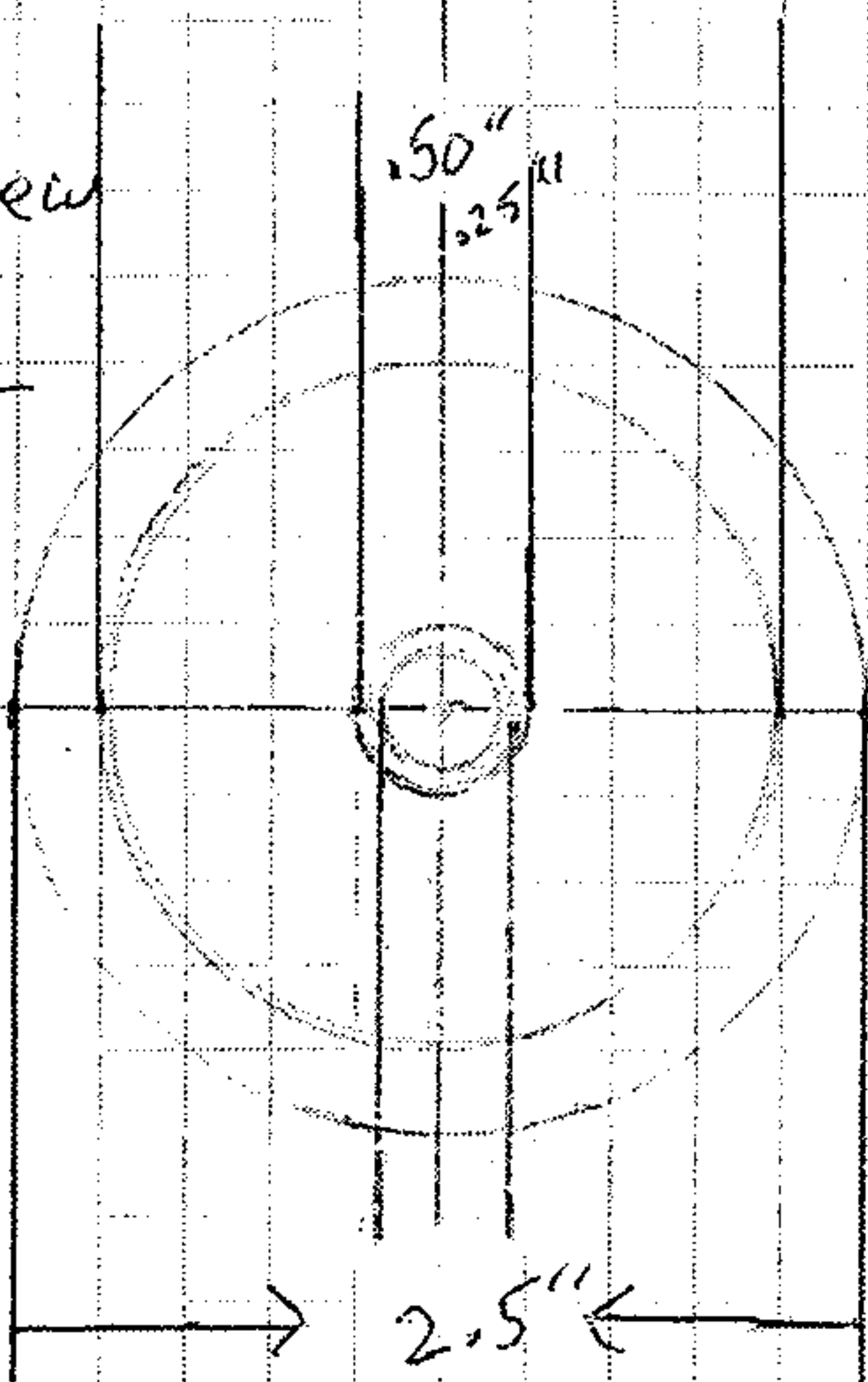
RR #1 RAVENNA, Ontario NOH 2EO

1 to 1 Scale

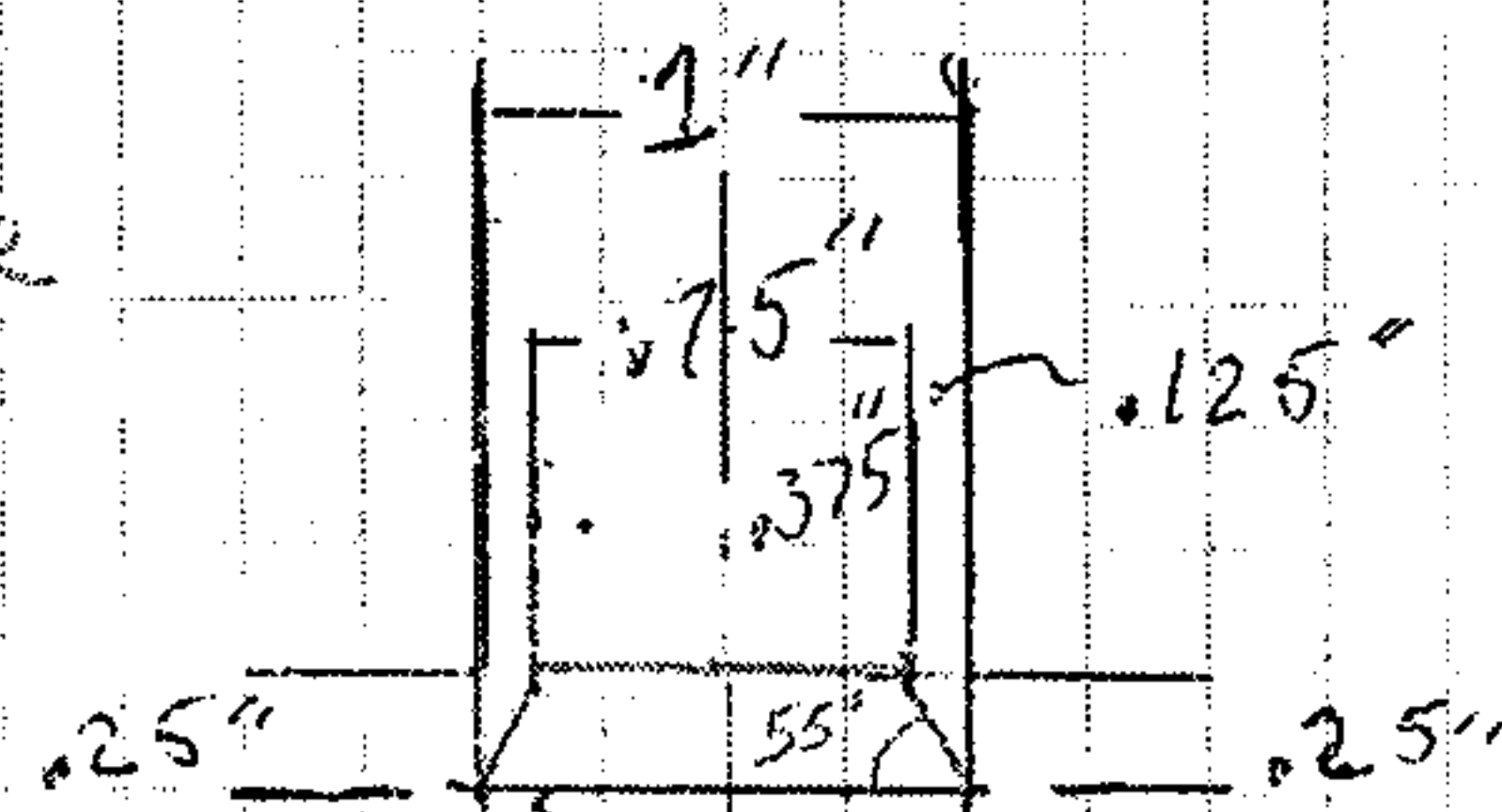
Top View
Removable
center Post



Bottom View
Removable
center Post

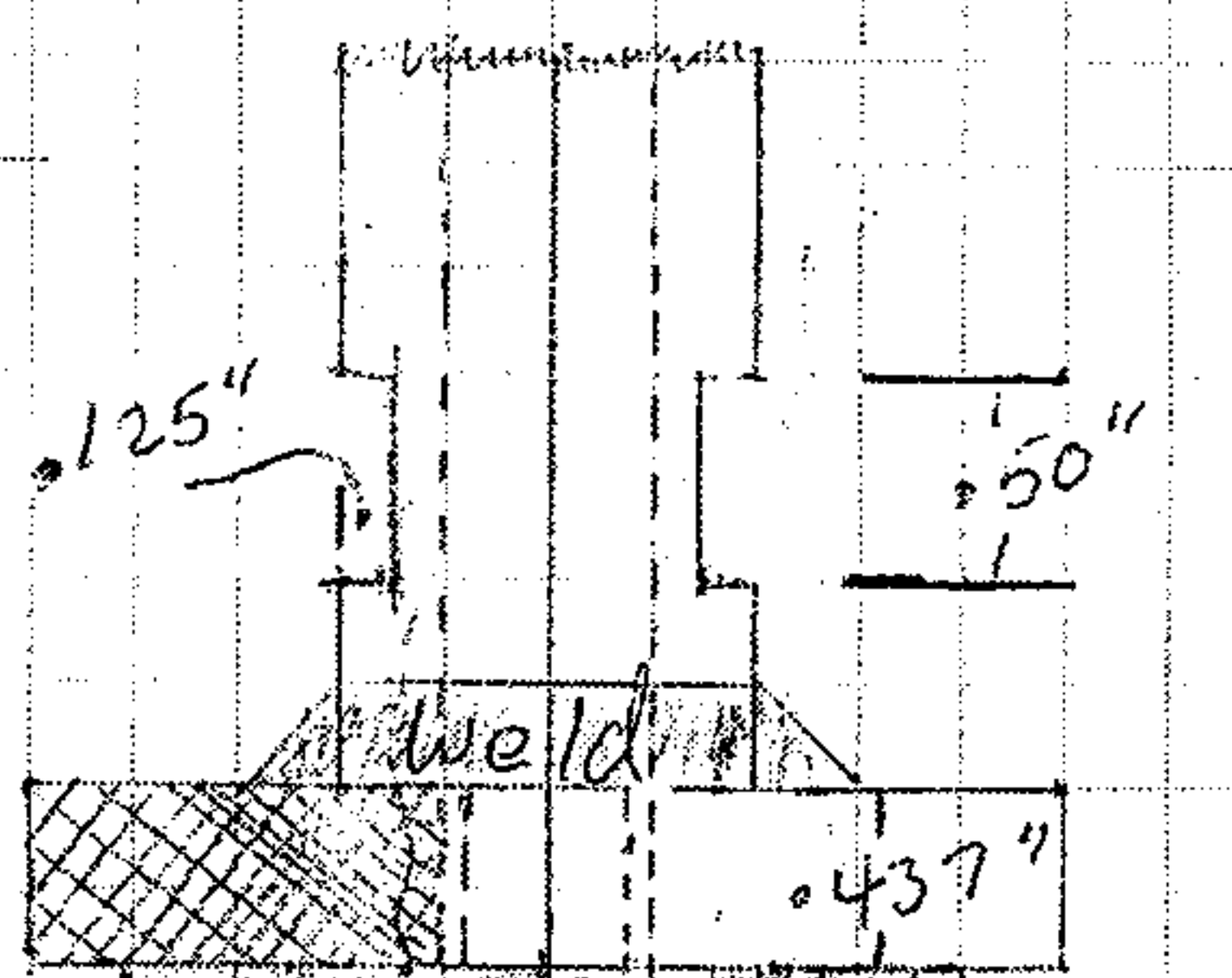


Side View
Removable center
Post



Overall
height
12.5"

cut away of Post
Side view
turned 90
show end view of
flat machine surface
for a 7/8" wrench.



knurled
surface

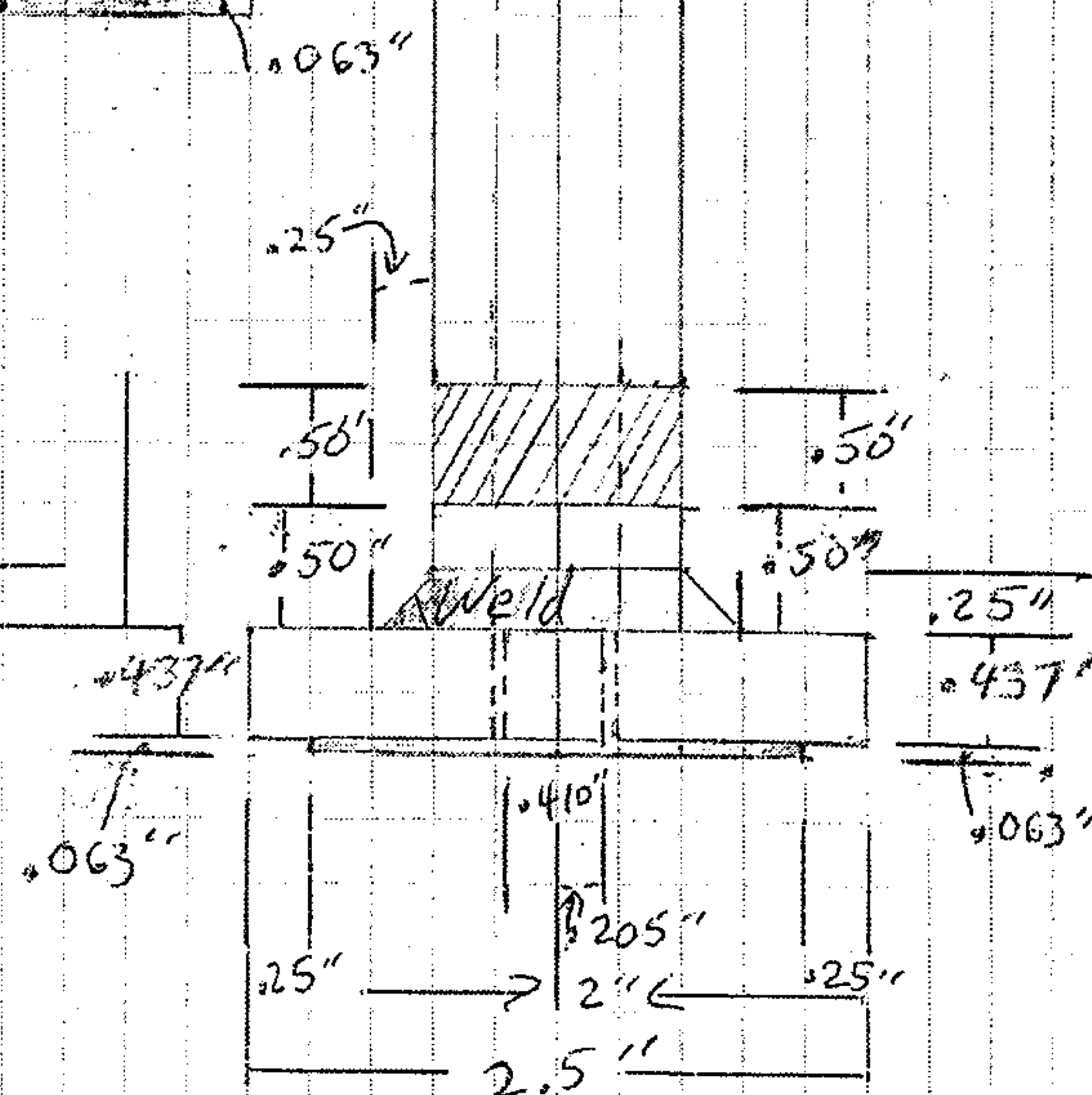
- at base of Removable center post is a .50" by 1" by .125" flat machine surface, same on the flip side so a wrench can be used
- Top of the Removable center Post .25" chamfer
- Welded Joint

Joining Post to the flanged base

- Center Post Drill .50" hole, flanged base
- Drill .410" and tapped .50" #10 pitch Acme thread.

- flange base knurled surface machined on it.

- The Bottom of the flanged face as .125" indentation machine in it to hold the plastic cylinder centered on the wheel rim.



Turf Tire changer

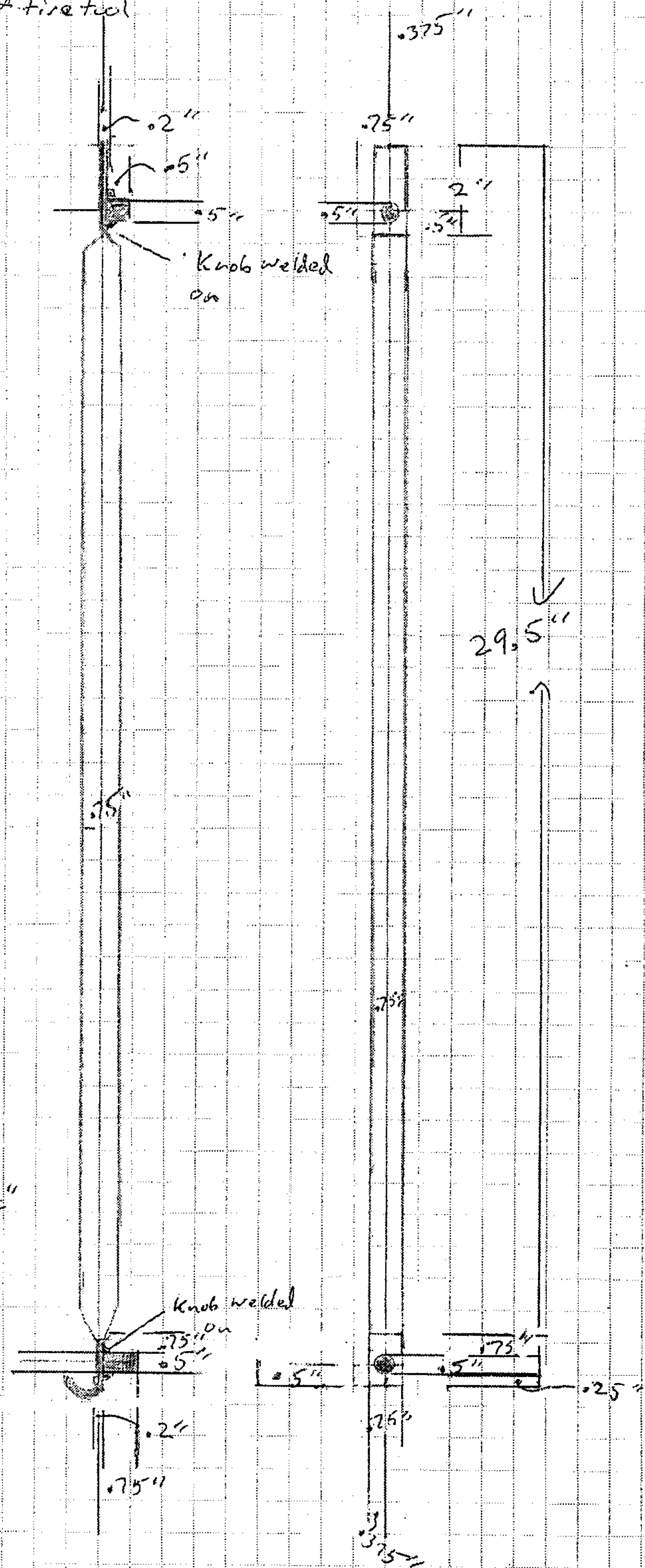
Drawings November 20, 2015

By Donald A Wilson

495529 Gray RD. #2

R # RAVENNA, Ontario

NOH 2EO

Scale $\frac{1}{3}$ of 1"Side view
of tire toolTop View
of tire tool

The tire removal and reinstalling tool has two different shaped ends. Straight end is for removing the tire. I welded a $\frac{1}{2}$ " knob to seat against the tire bead to prevent the entire tool from sliding inside the tire. The curled end of the tire tool is for reinstallation of the tire.

The curl is to hang on to the edge of the rim. I welded a $\frac{1}{2}$ " by $\frac{3}{4}$ " knob, to the reinstalling end of the tool. It is designed to push the bead back on the rim. The tire tool is made of $\frac{3}{4}$ " by 30" hollow round metal stock making it very lightweight but strong. The ends were heated and hammered into shape, then the knobs were welded into place.

Turf Tire Changer

Drawings November 17, 2015

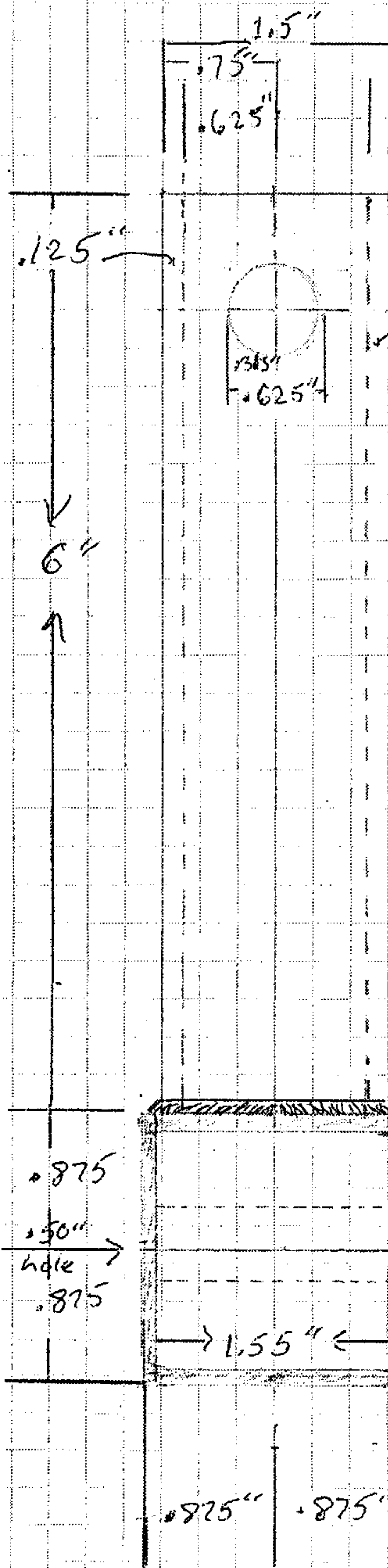
By Donald A Wilson

495529 Gray RD. #2

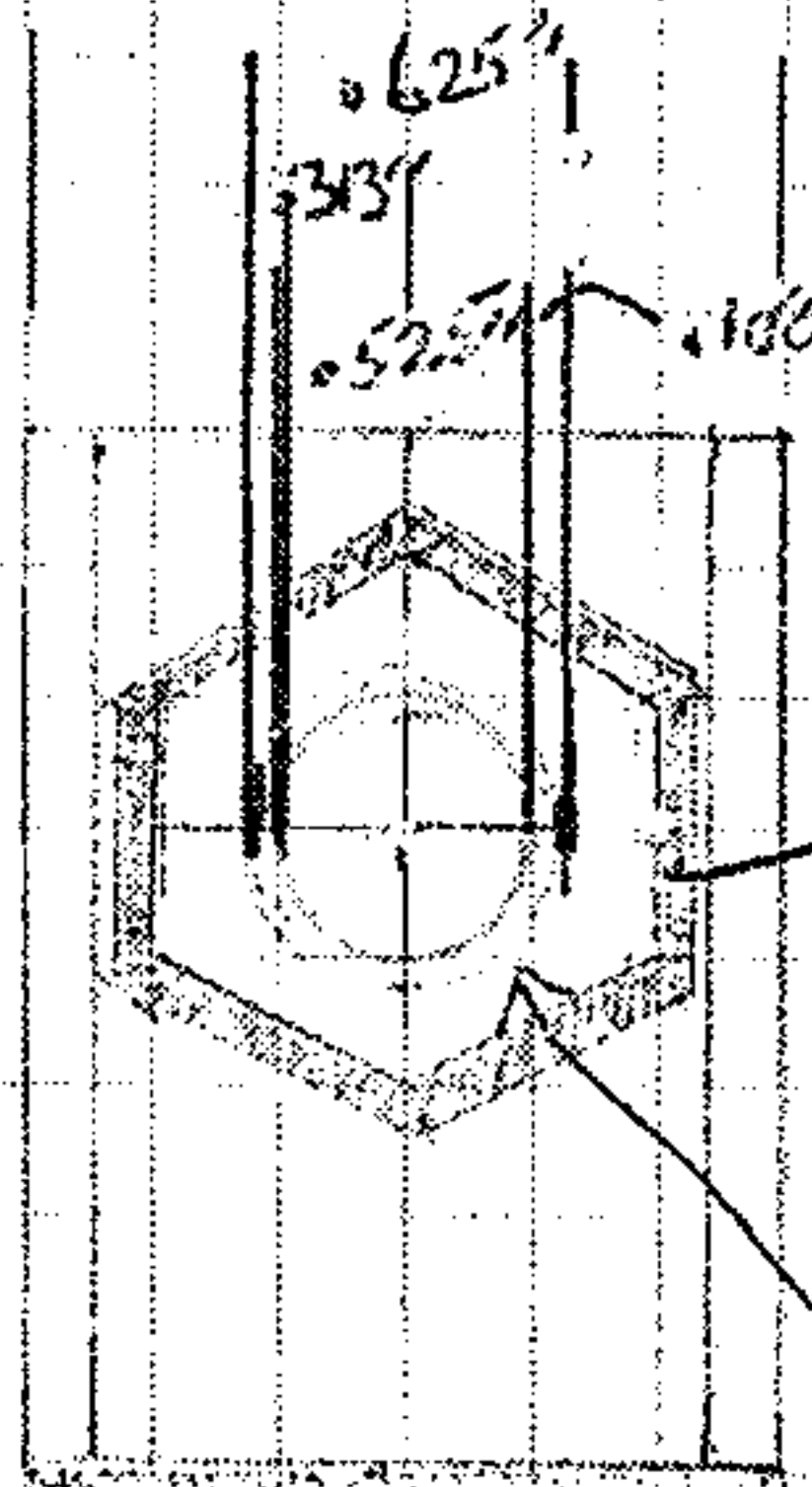
RR#1 RAVENNA, Ontario N0H 2E0

1 to 1 Scale

Top View

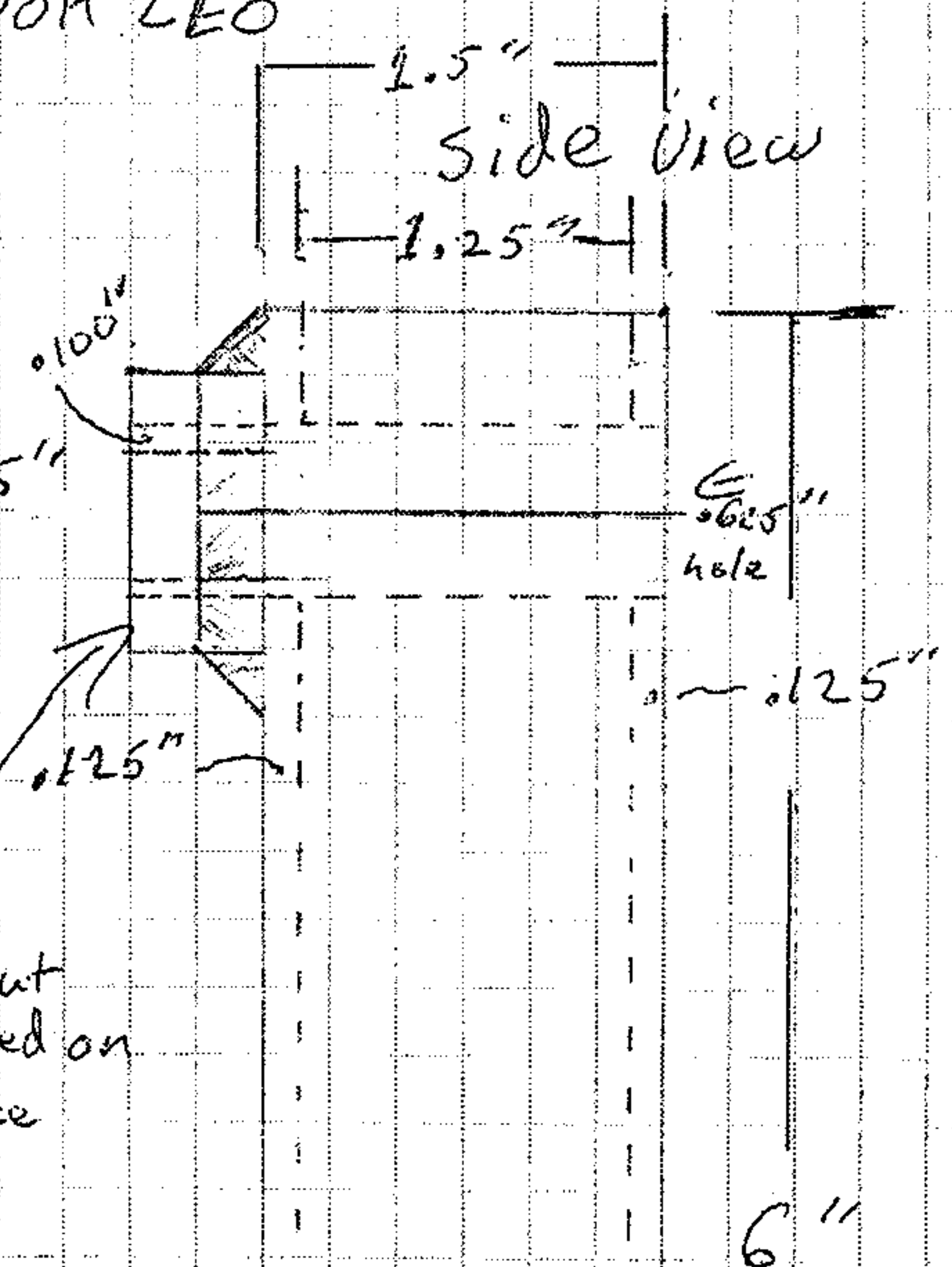


5/8" nut
welded on
#8 thread
Pitch



Cut away
Bottom
View

Side View

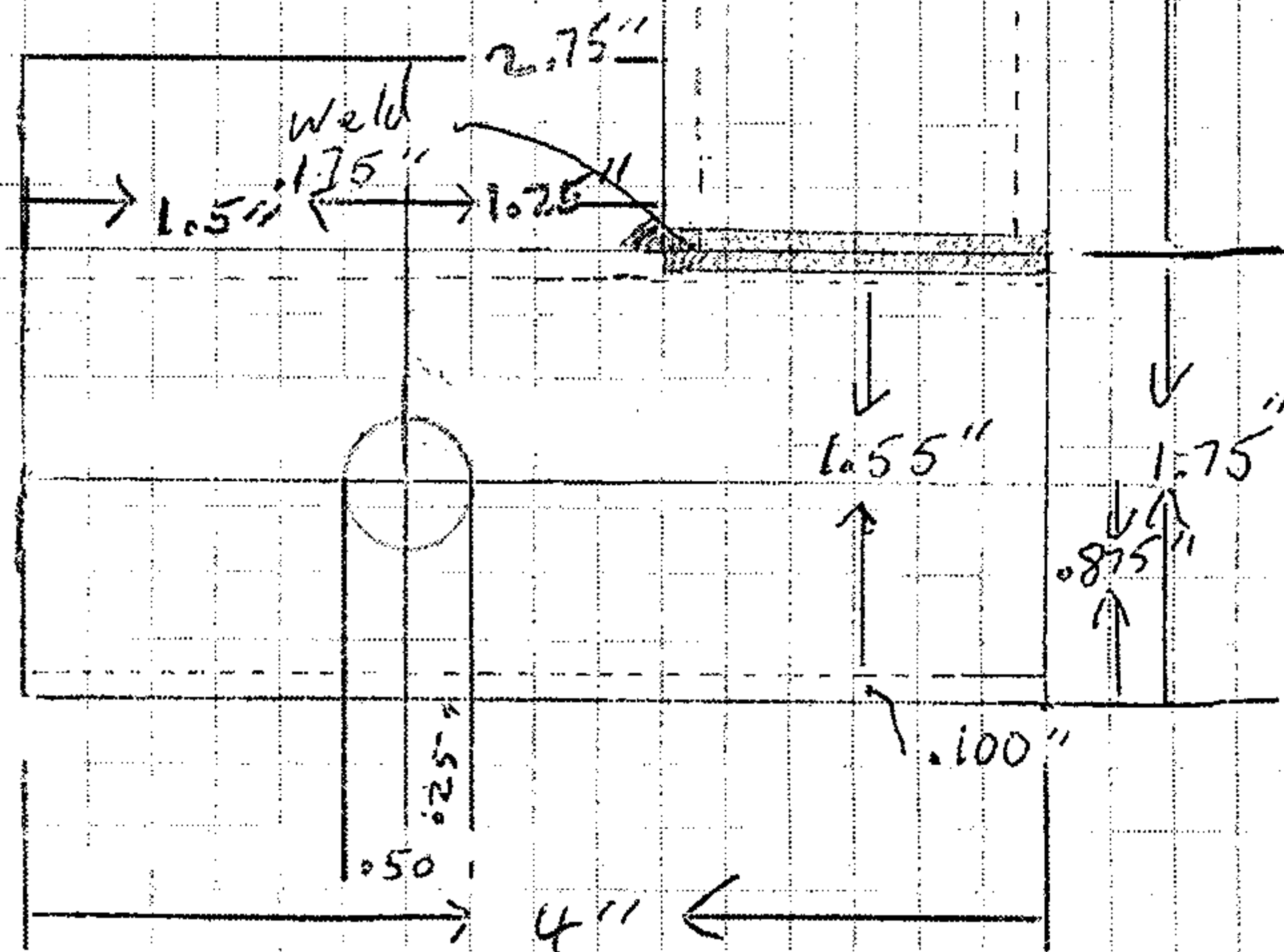


Top Section of tire bead
breaker

0.0625"
Welded
Joint

0.50"
hole

0.100"



- This is the top section of the tire bead breaker made of 1.5" and 1.75" square tubing designed to slide over top of the bottom section and is held in place with 7/16" locking pin.
- The top section also hold the 5/8" bolt, specially made to fit in to the plate that presses down on the bead of the tire.

Turf Tire Changer

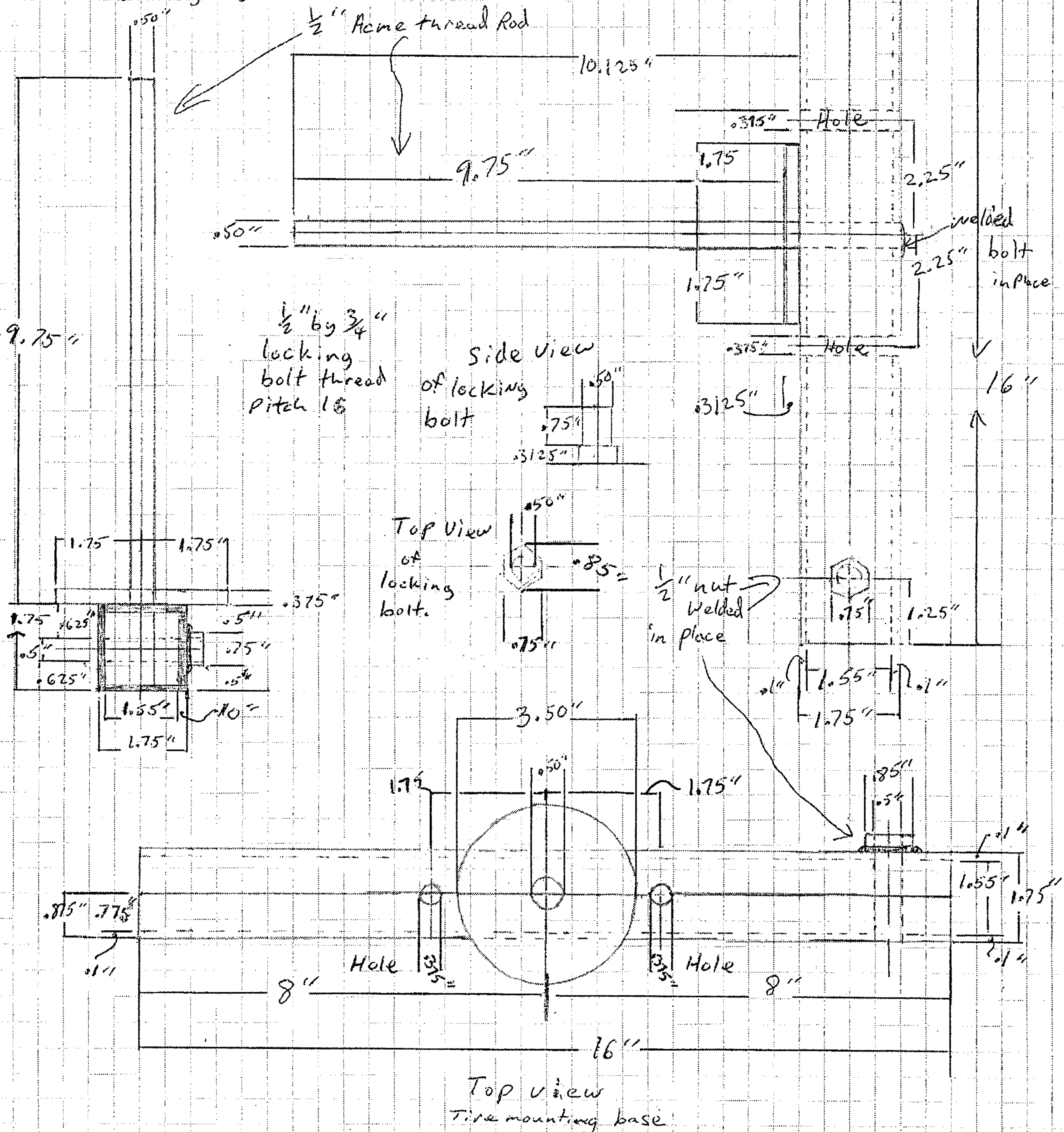
Drawings November 19, 2015

By Donald A Wilson

Scale .60" = 1"

495529 Gray RD# 2 RR# 2 RAVENNA, ONTARIO NOH2EO

This is the main Turf tire mounting base
made of $1\frac{3}{4}$ " square tubing 16" long.
12" $\frac{1}{2}$ " Acme threaded Rod thread pitch #10
the threaded is welded into the base
the $3\frac{1}{2}$ " by $5\frac{1}{16}$ " Disk thread on and
is welded in place for add strength.

Side view
tire mounting
base.end view
Tire mounting base

CA 02913652 2015-11-30
Turf Tire Change

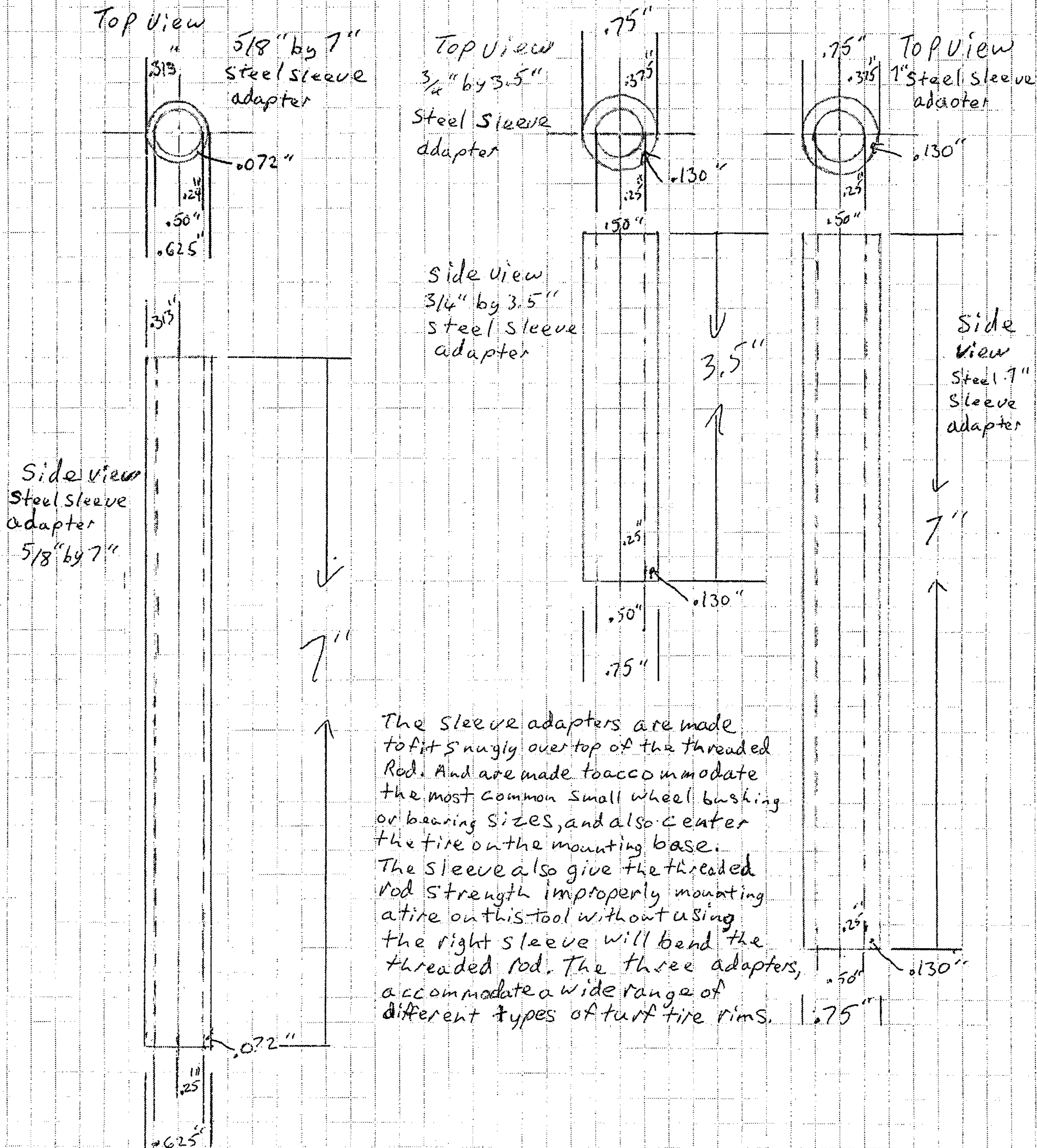
Drawings November 14, 2015

By Donald A Wilson

495529 Gray RD. #2

RR#1 RAVENNA, Ontario N0H 2E0

1 to 1 scale



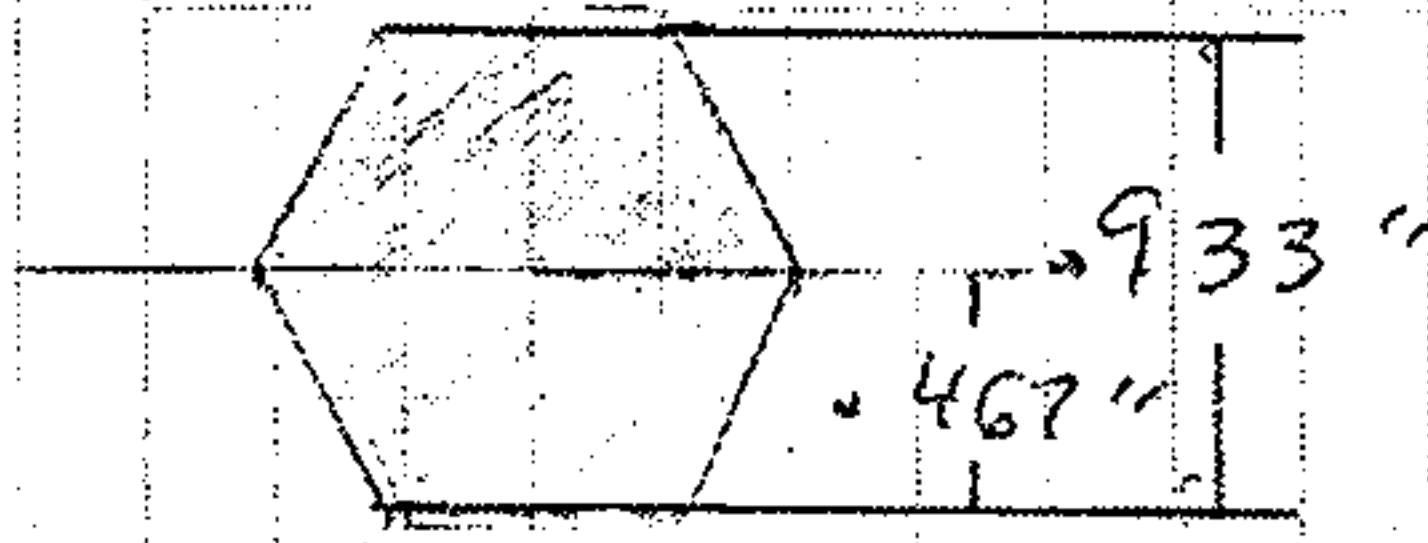
Turf Tire Changer

Drawings November 18 2015

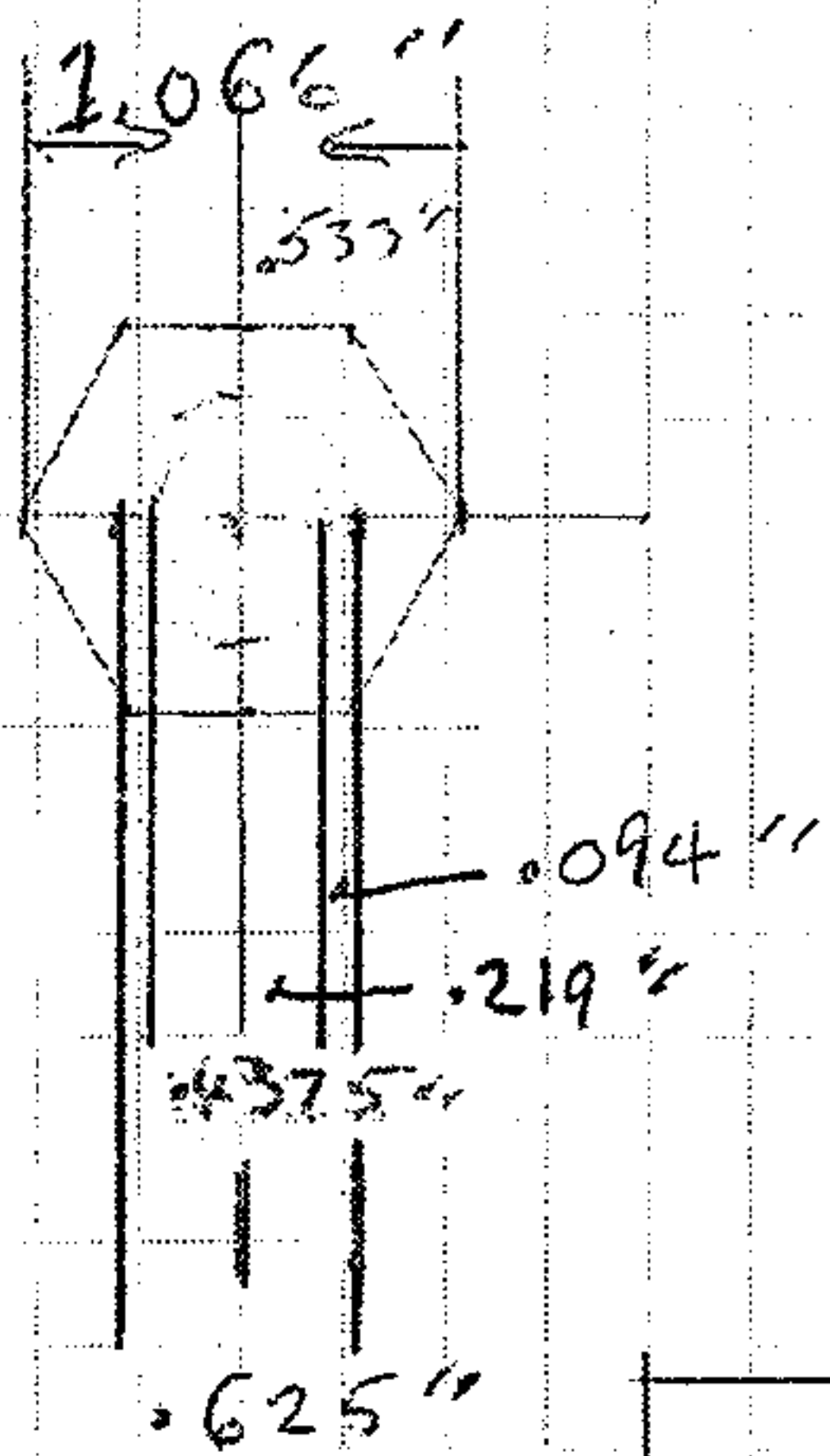
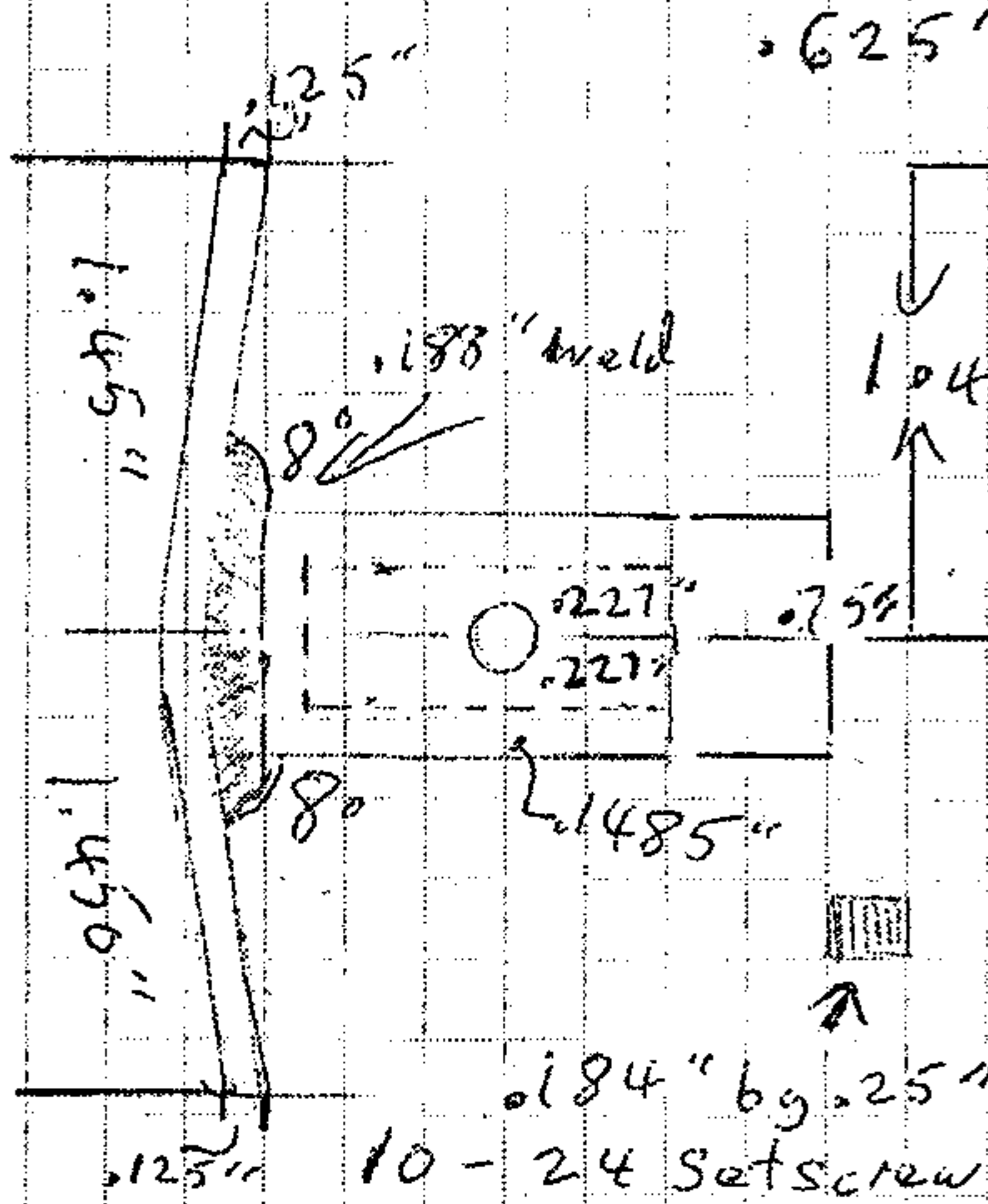
By Donald A Wilson

495529 Gray Rd. #2

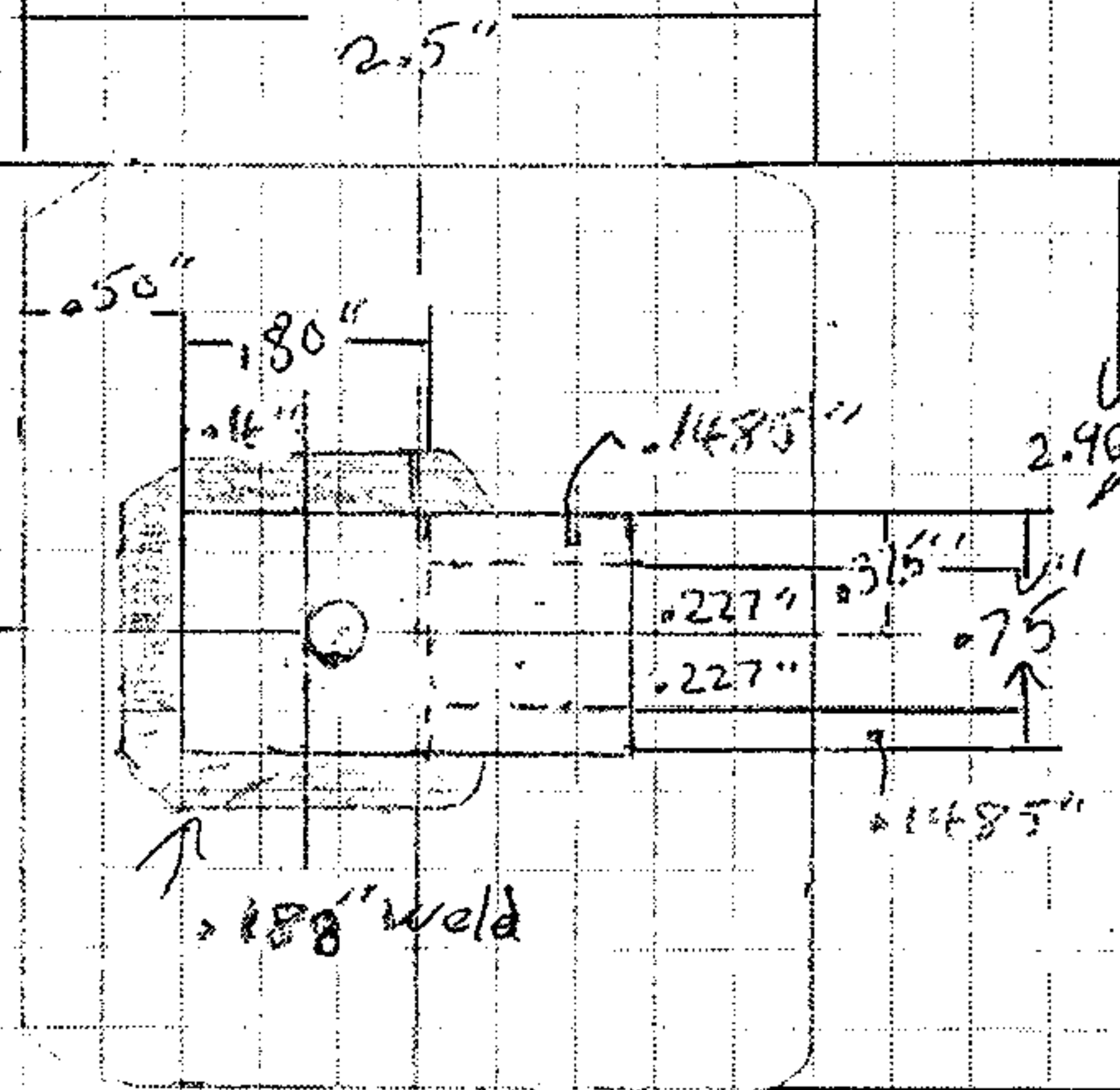
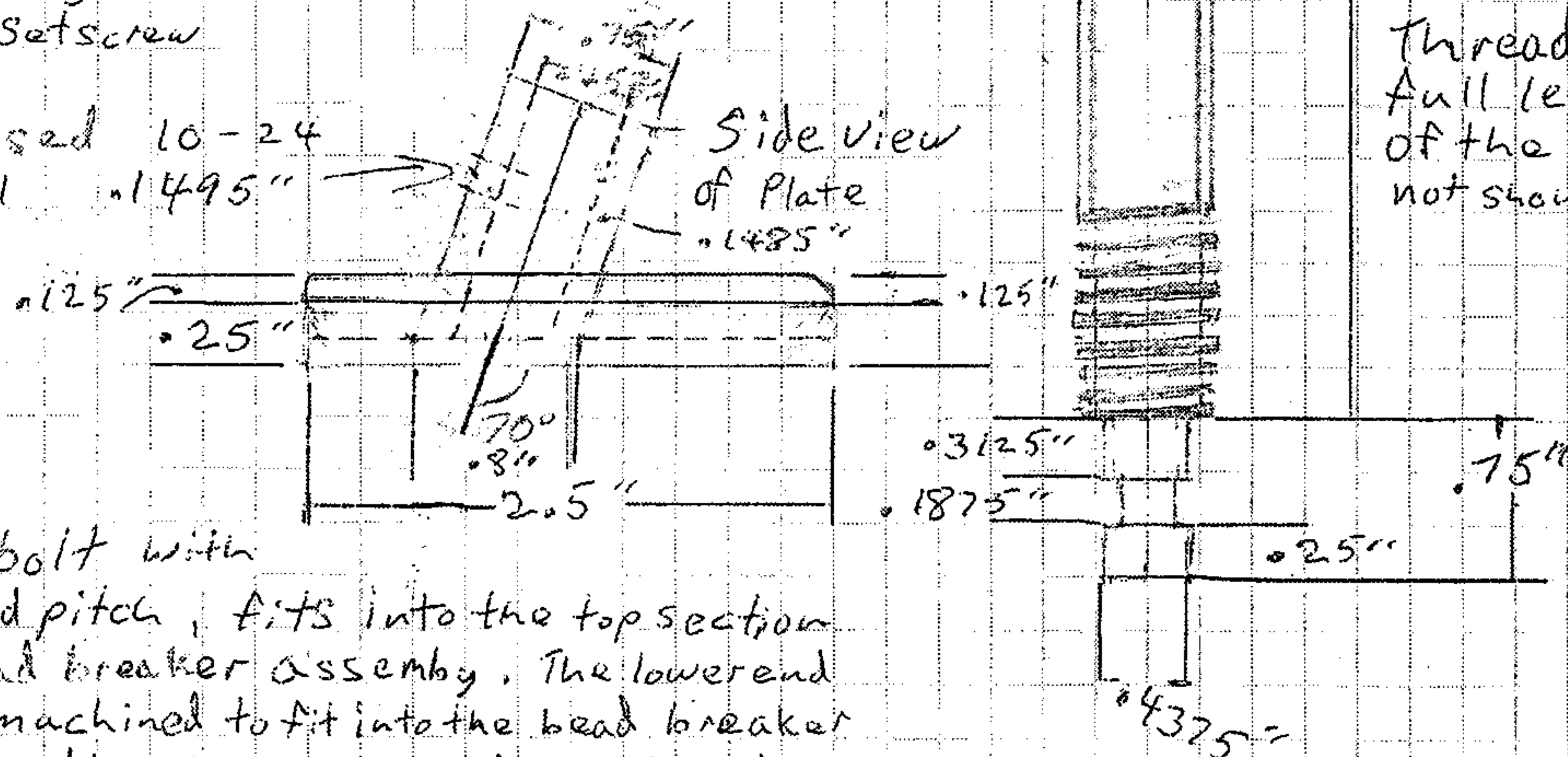
RR#1 RAVENNA, Ontario NOH 2E0

Top View
of $\frac{5}{8}$ " Bolt $\frac{15}{16}$ " fits
Wrench

1 to 1 Scale

Bottom
View
of $\frac{5}{8}$ " BoltWelded nut
on top of $\frac{5}{8}$ " bolt
and grinded smoothSide View
of $\frac{5}{8}$ " Bolt $\frac{5}{8}$ " bolt
with #8 Acme
thread pitchFront view
Plate

10 - 24 Setscrew

Top View
of Platetop used 10-24
DrillSide view
of PlateThe bolt is
Threaded
Full length
of the bolt.
not shown

The $\frac{5}{8}$ " bolt with #8 Acme thread pitch, fits into the top section of the tire bead breaker assembly. The lower end of the bolt is machined to fit into the bead breaker Plate, its gentle 8° curve and smooth edges of the plate, allows for a tight fit against the rim. The 70° angle of the Plate fits the curvature of the tire and allows for the maximum power of the pressing action of the bolt. The shape of the plate is what

Turf Tire Changer

Drawings November 14, 2015

By Donald A Wilson

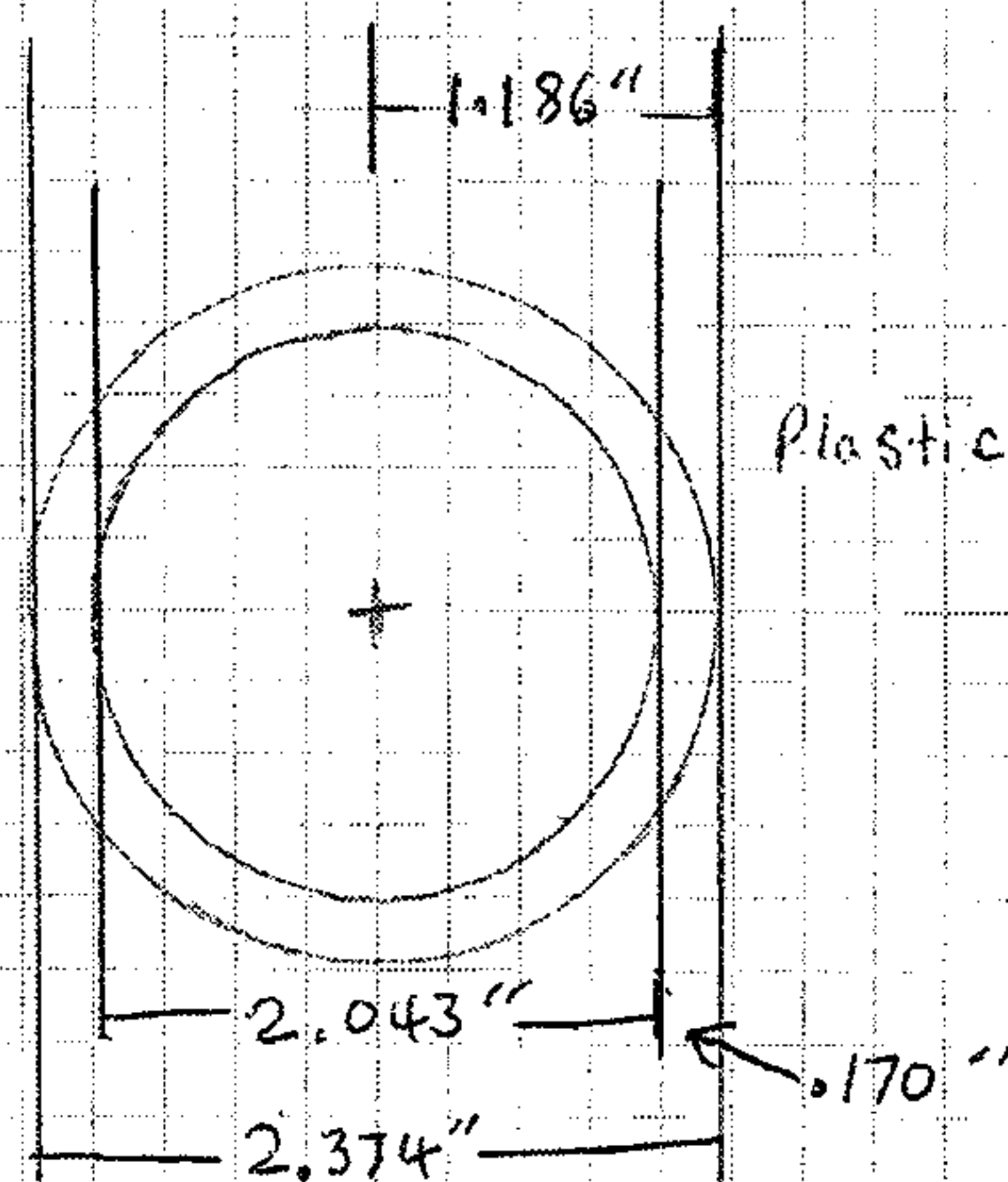
495529 Gray RP.#2

RR#1 RAVENNA, Ontario N0H 2E0

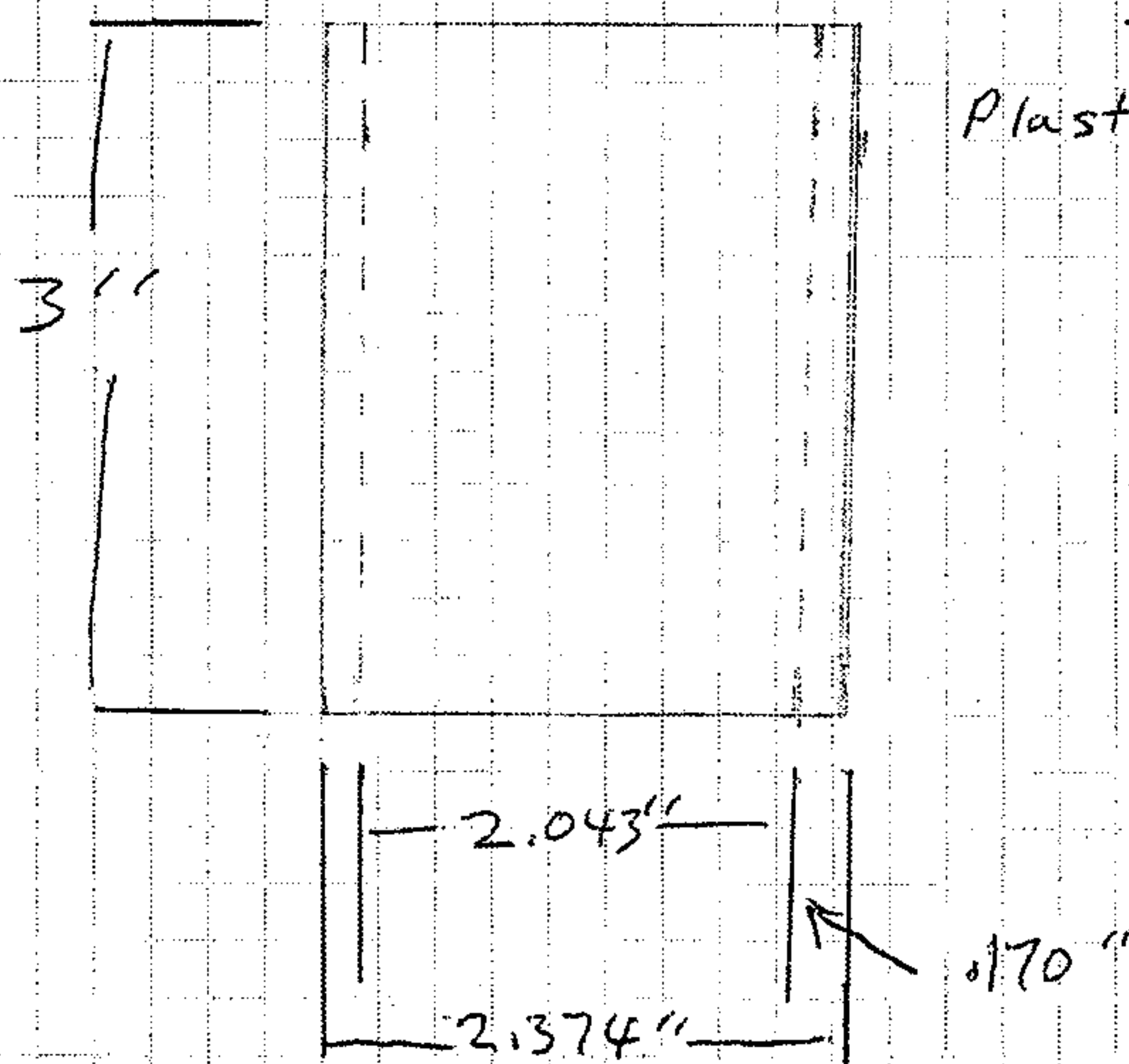
1 to 1 Scale

Two matching Plastic
cylinder one set
of Drawings

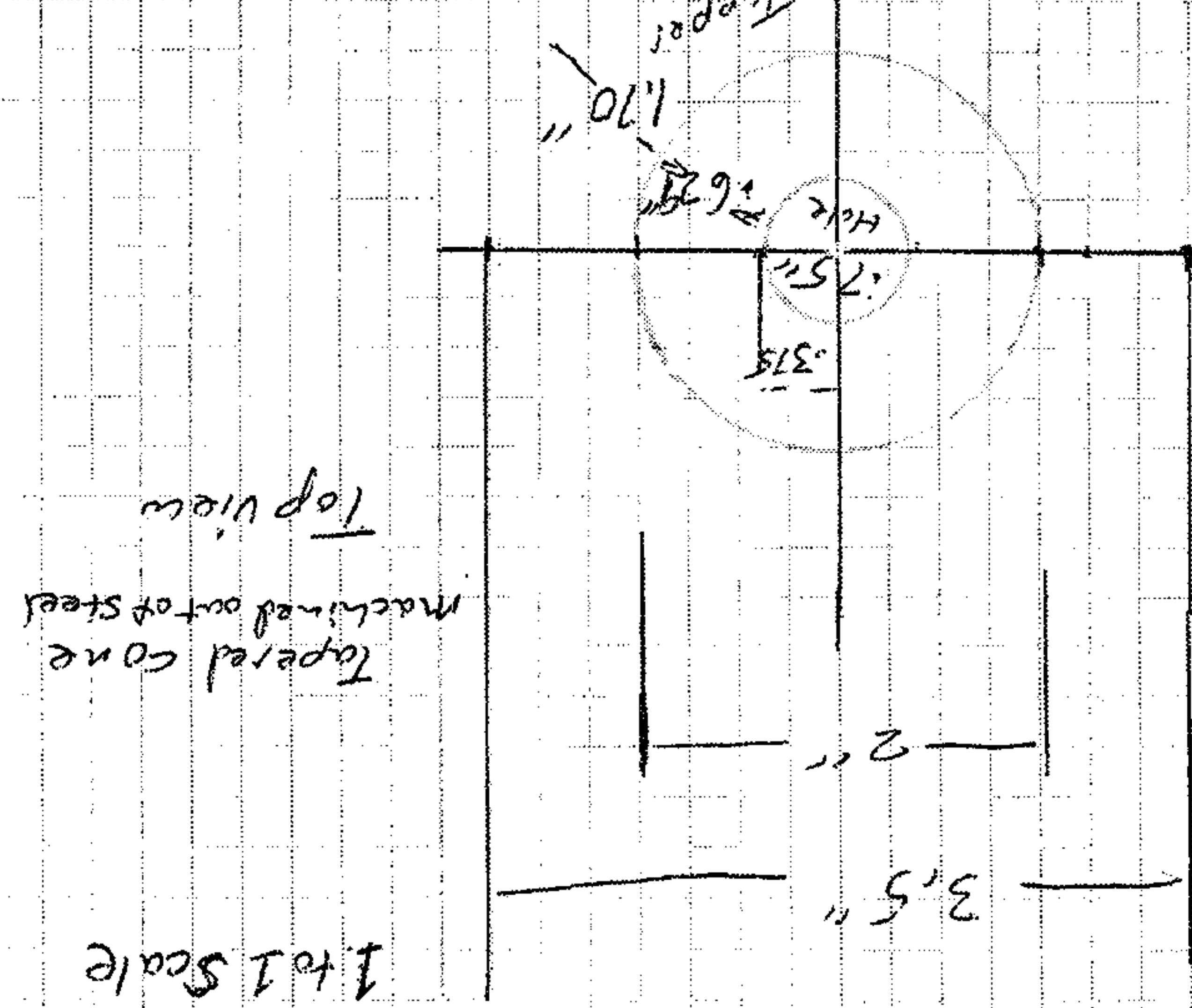
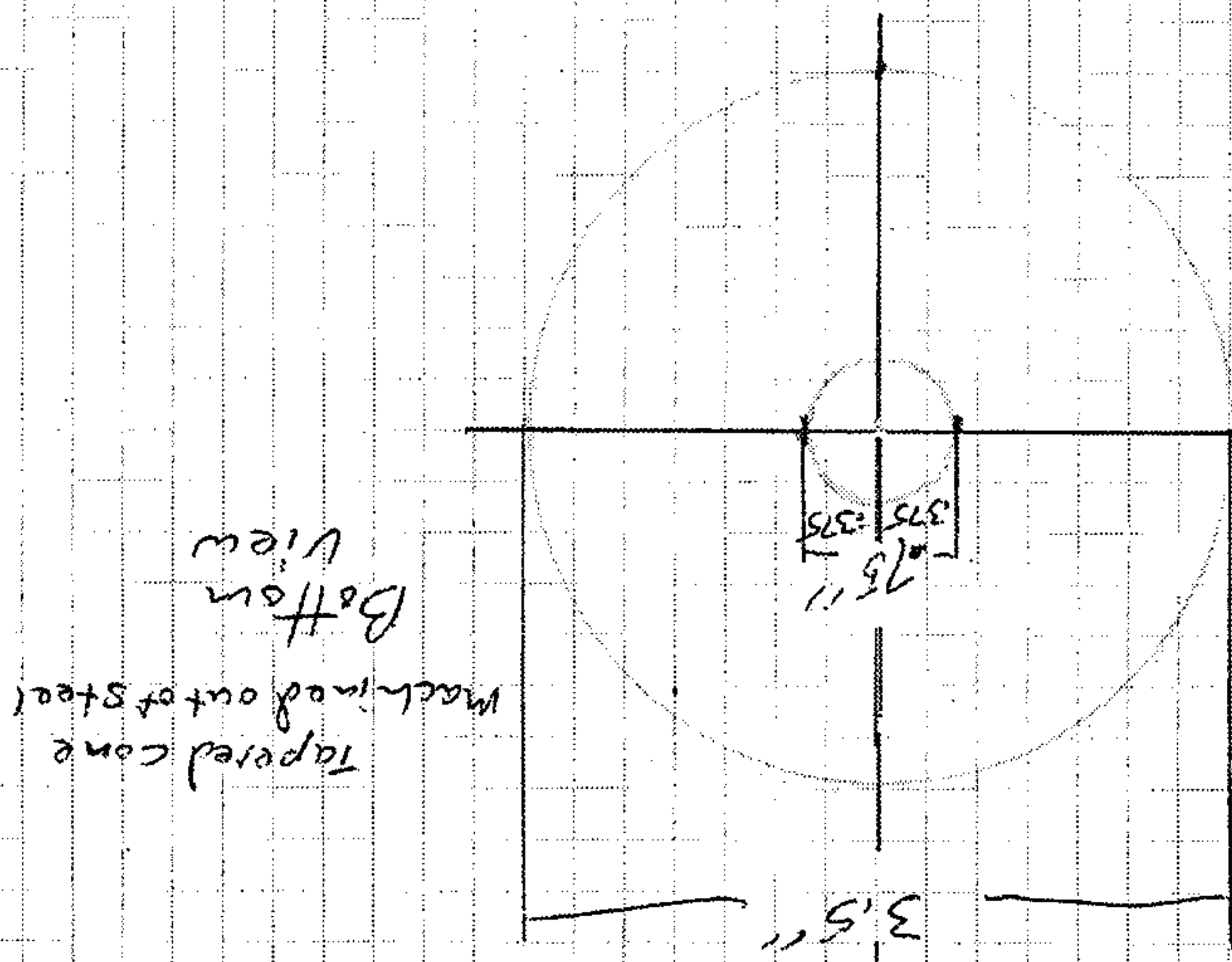
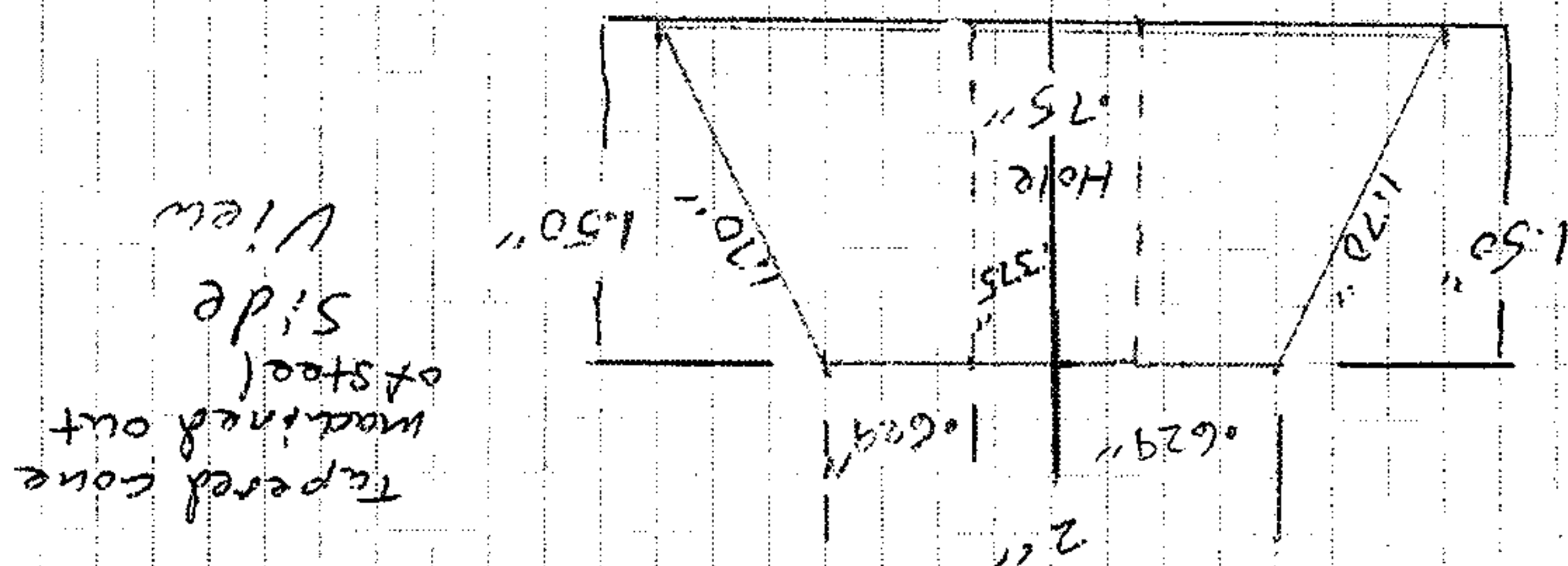
The plastic cylinder adapters
are used as spacers there
is a recess machined into
the center post to center
the plastic cylinder on
the rim. To Squeeze the
rim between the two
plastic cylinders.



Top View
Plastic cylinder adapter



Side View
Plastic cylinder adapter



Optional method of
manufacturing
tapered cone made of
cast iron or
hard plastic.
The tapered cone
adapters is made for
rims that are bolted
to a hub and have
large open center.

Turf Tire Changer
Drawings November
14, 2015
By Donald A. Wilson
495529 Gray R.D.#2
RR#1 RAVENHUR, Ontario M0H 2E0

1 to 1 Scale

Tuff Tire changer

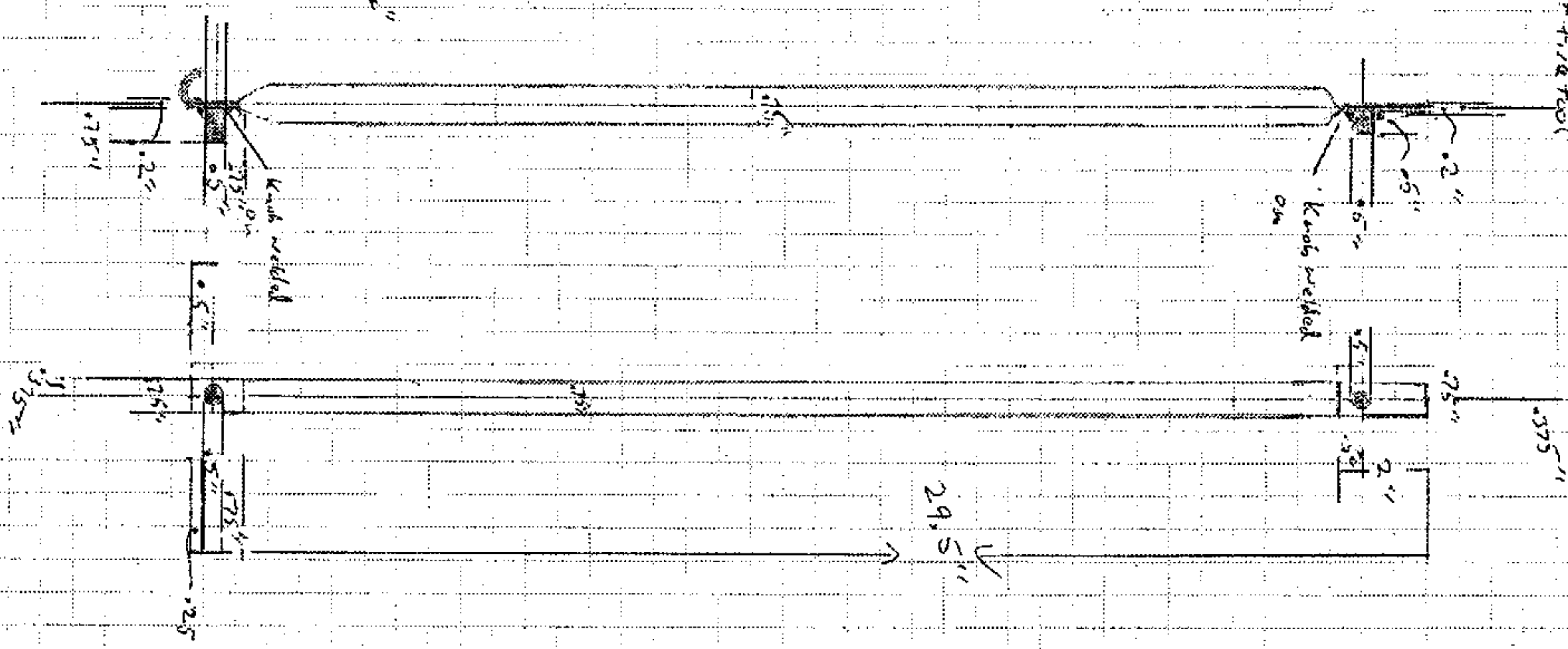
Drawings November 20, 2015

By Donald A Wilson

445624 Croy RD. #2

R #RAVENNA, Ontario

MOH 2EO

Scale $\frac{1}{3}$ of 1"Side view
of tire toolTop view
of tire tool

The tire removal and re-installing tool has two different shaped ends. Straight end is for removing the tire. I welded a $\frac{1}{2}$ " knob to seat against the tire bead to prevent the entire tool from sliding in side the tire. The curved end of the tire tool is for reinstallation of the tire. The end of the handle is welded a $\frac{1}{2}$ " by $\frac{3}{4}$ " knob, for the re-installing end of the tool. It is designed to push the bead back on the rim. The tire tool is made of $\frac{3}{4}$ " by 30" hollow around metal stock making it very lightweight but strong. The ends were heated and hammered into shape then the knobs were welded into place.

Turf Tire Change

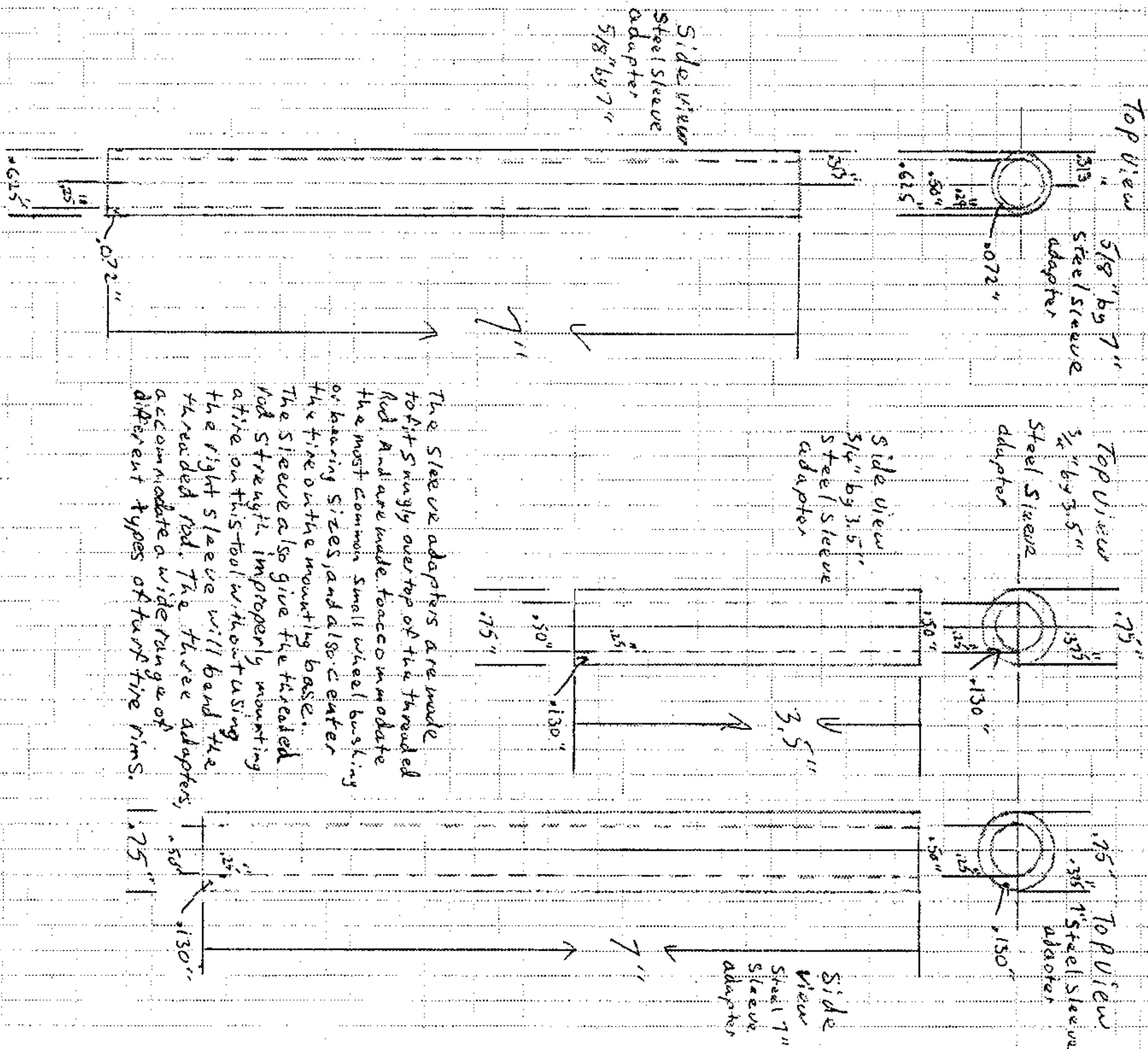
Drawings November 14, 2015

By Donald A Wilson

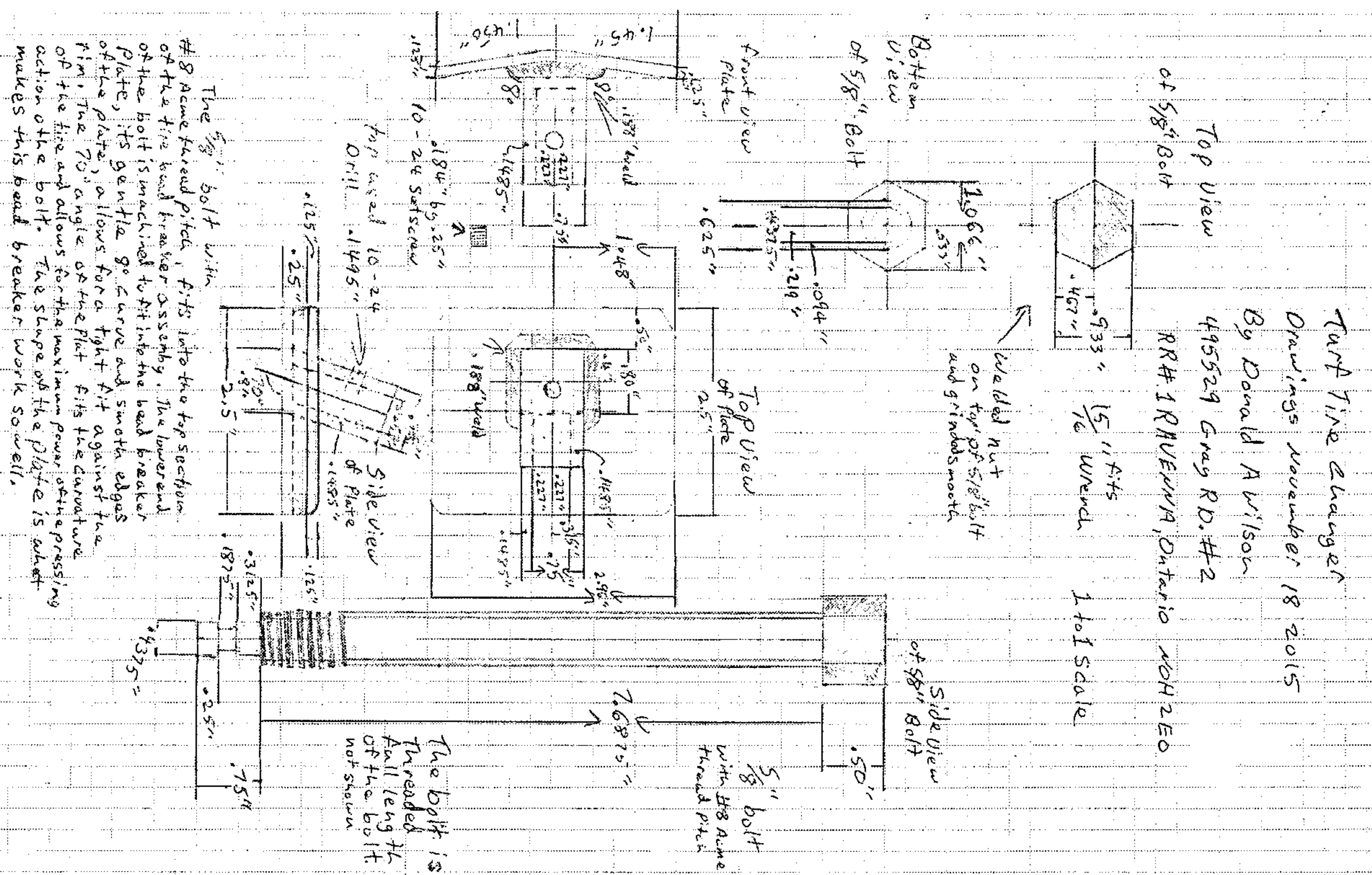
495629 Gray RD.#2

R#1 RAVENNA, Ontario N0H 2E0

1/2 Scale



The sleeve adapters are made to fit snugly over top of the threaded Rod. And are made to accommodate the most common small wheel backing or bearing sizes and also cater the tire to the mounting base. The sleeve also give the threaded Rod strength, improperly mounting a tire on this tool without using the right sleeve will bend the threaded Rod. The three adapters, accommodate a wide range of different types of turf tire pins.



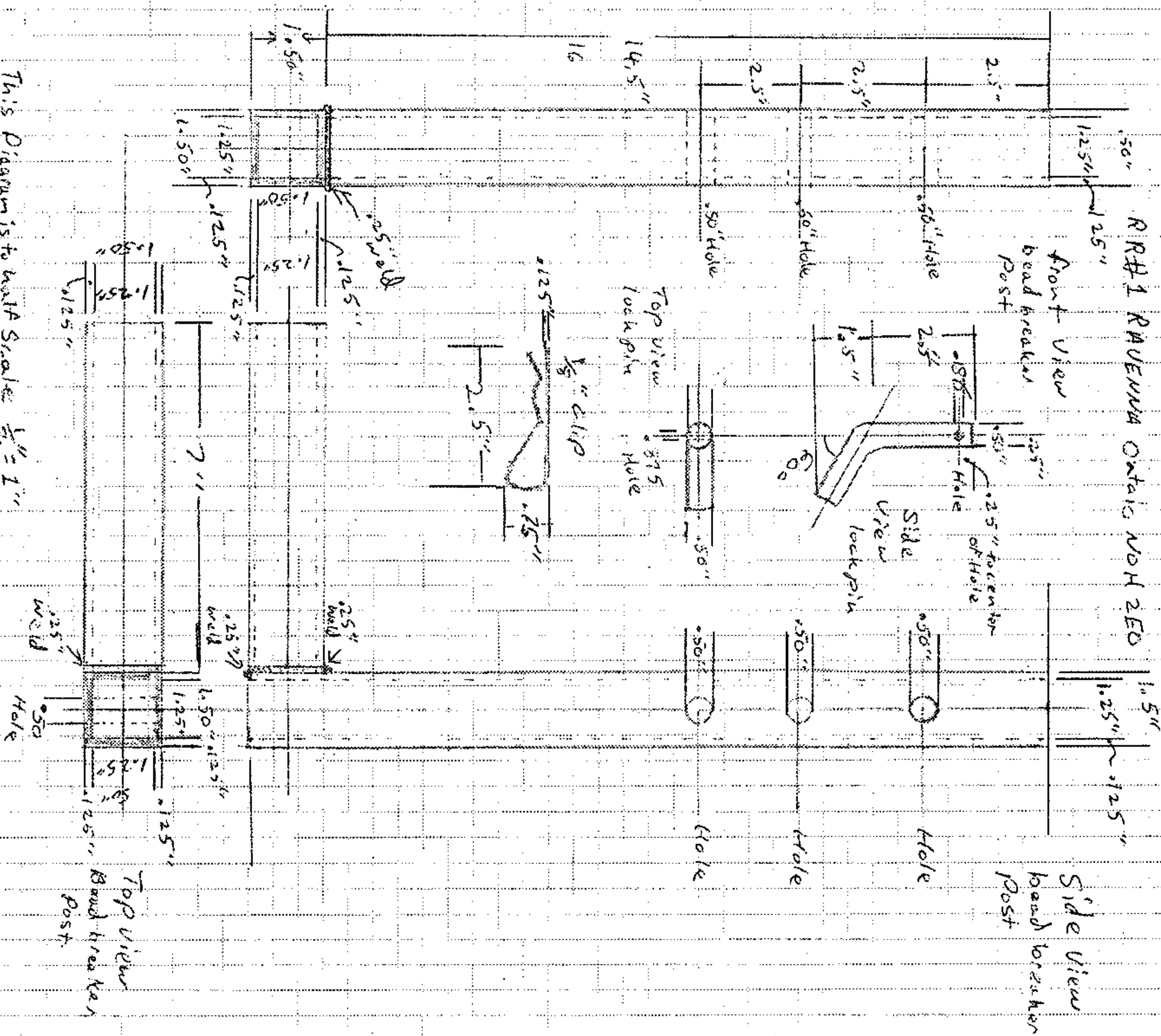
Tuff Tire Changer

Drawings November 18, 2015

By Donald A. Wilson

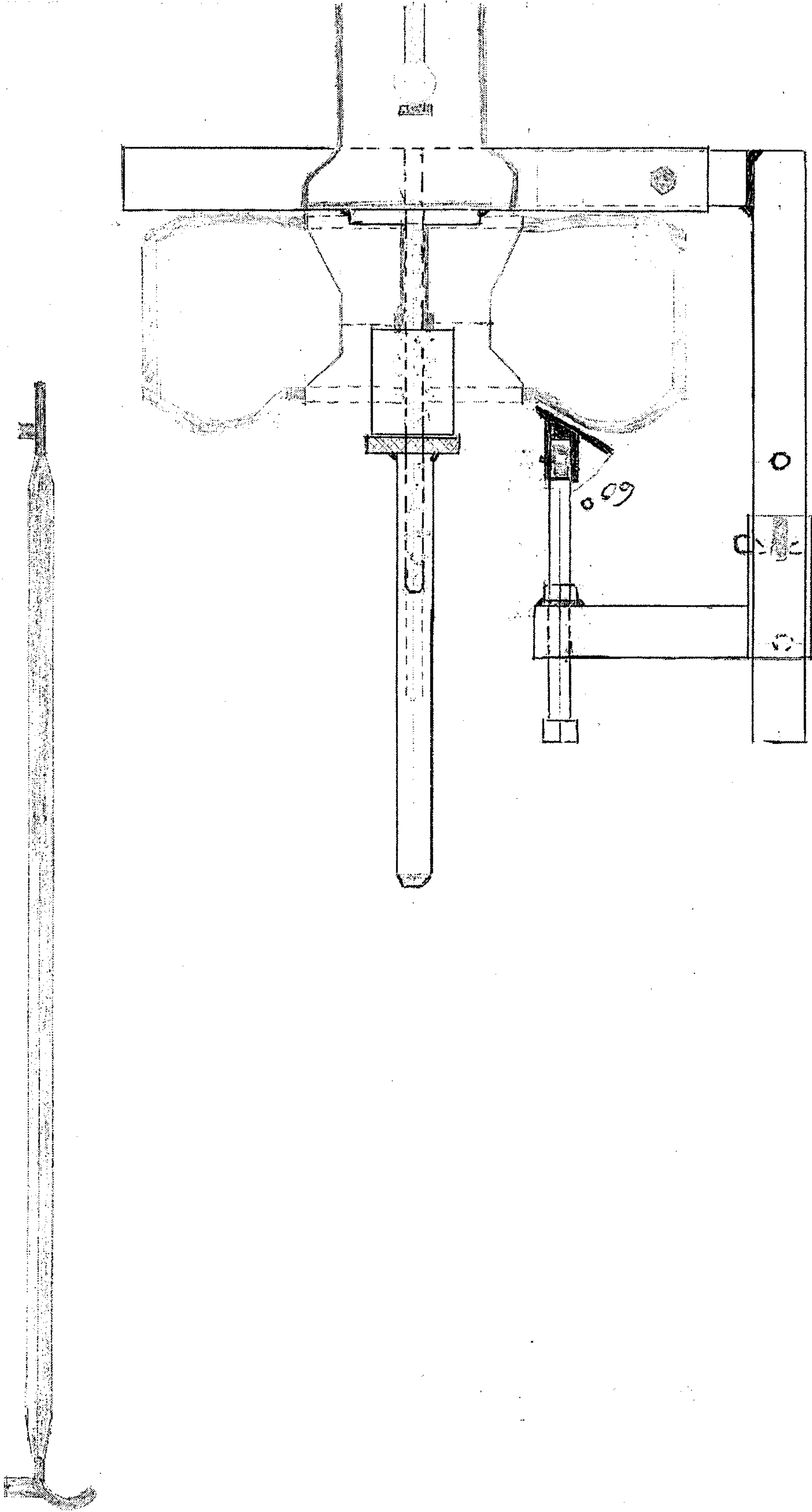
495524 Gng RD #2

Scale .50" = 1"



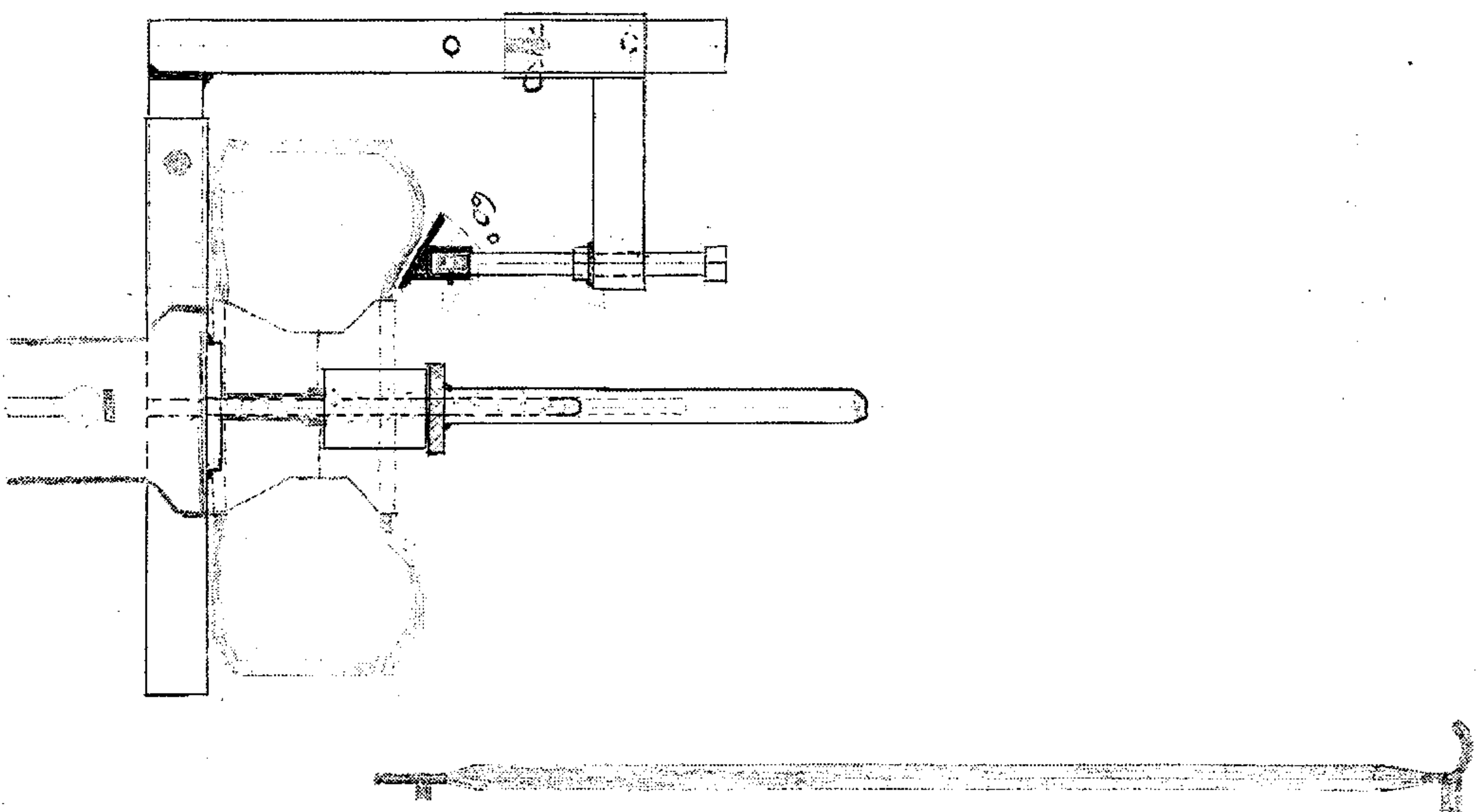
This diagram is to built a scale 1/2" = 1" square tubing. The top section of the tire bead breaker slides over top of the upright post and is held in place by a 1/2" lock pin and is secured in place with a 3/8" clip in one of three 1/2" hole can be selected for different width of tires. The bottom section of the bead breaker slides in to the main tire changer base and is adjustable for different sizes of tires, and is locked in place with a 1/2" bolt.

Turf Tire Changer Invented by
Donald A Wilson #95529 Gray RD #2
RR#1 Ravenna, Ontario NOH2EO
Scale $\frac{1}{2}$ of 1"
Drawing November
27, 2015



Turf Tire Changer Invented by
Donald A Wilson #45529 Grey Rd #2
RR#1 Ravenshoe, Ontario NOH2E0

Scale $\frac{1}{2}$ of 1"
Drawing November
27, 2015



Turt Tire Changer

Drawings November
14, 2015

By Donald A Wilson

495529 Gray R.D.#2

RAVENNA, Ontario N0H 2E0

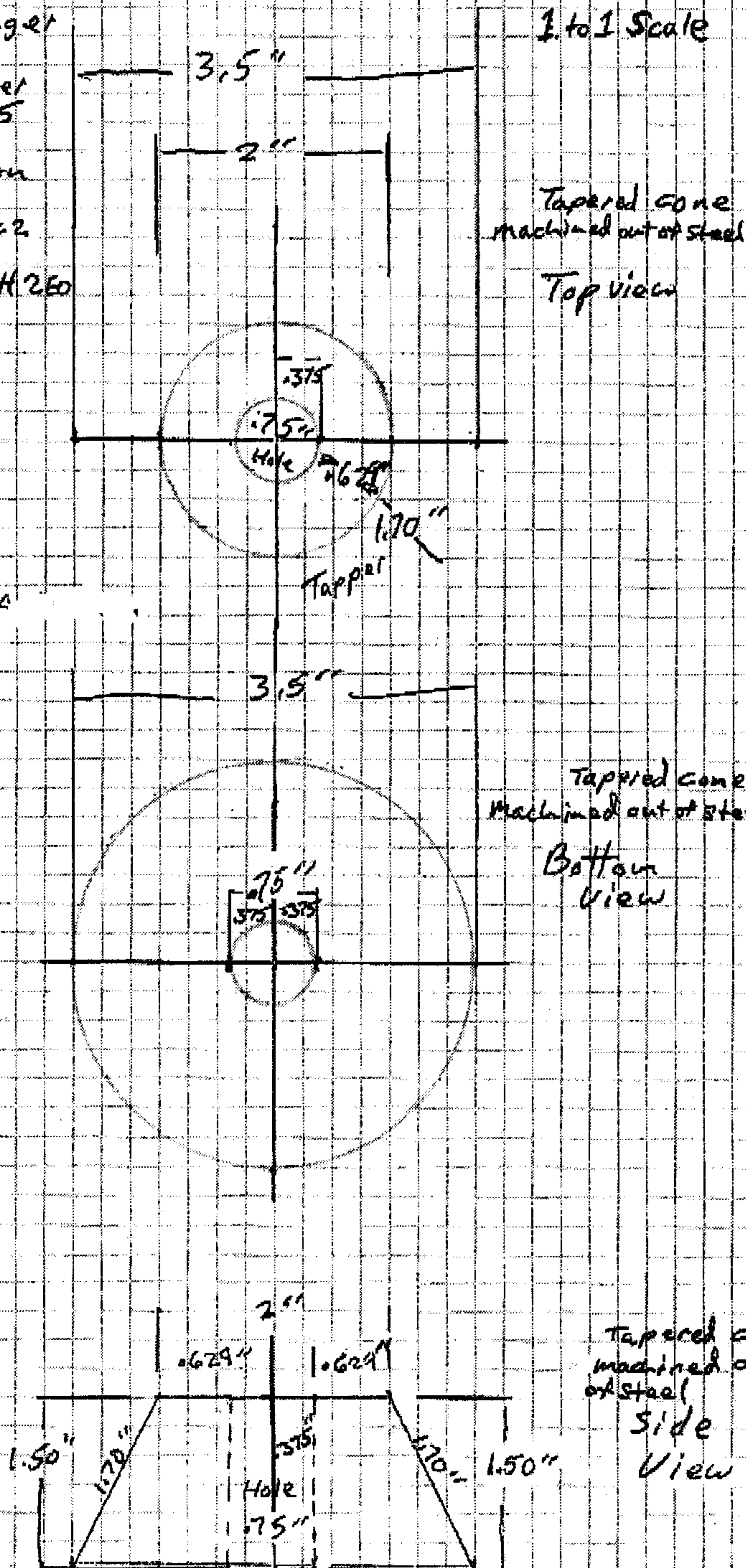
1 to 1 Scale

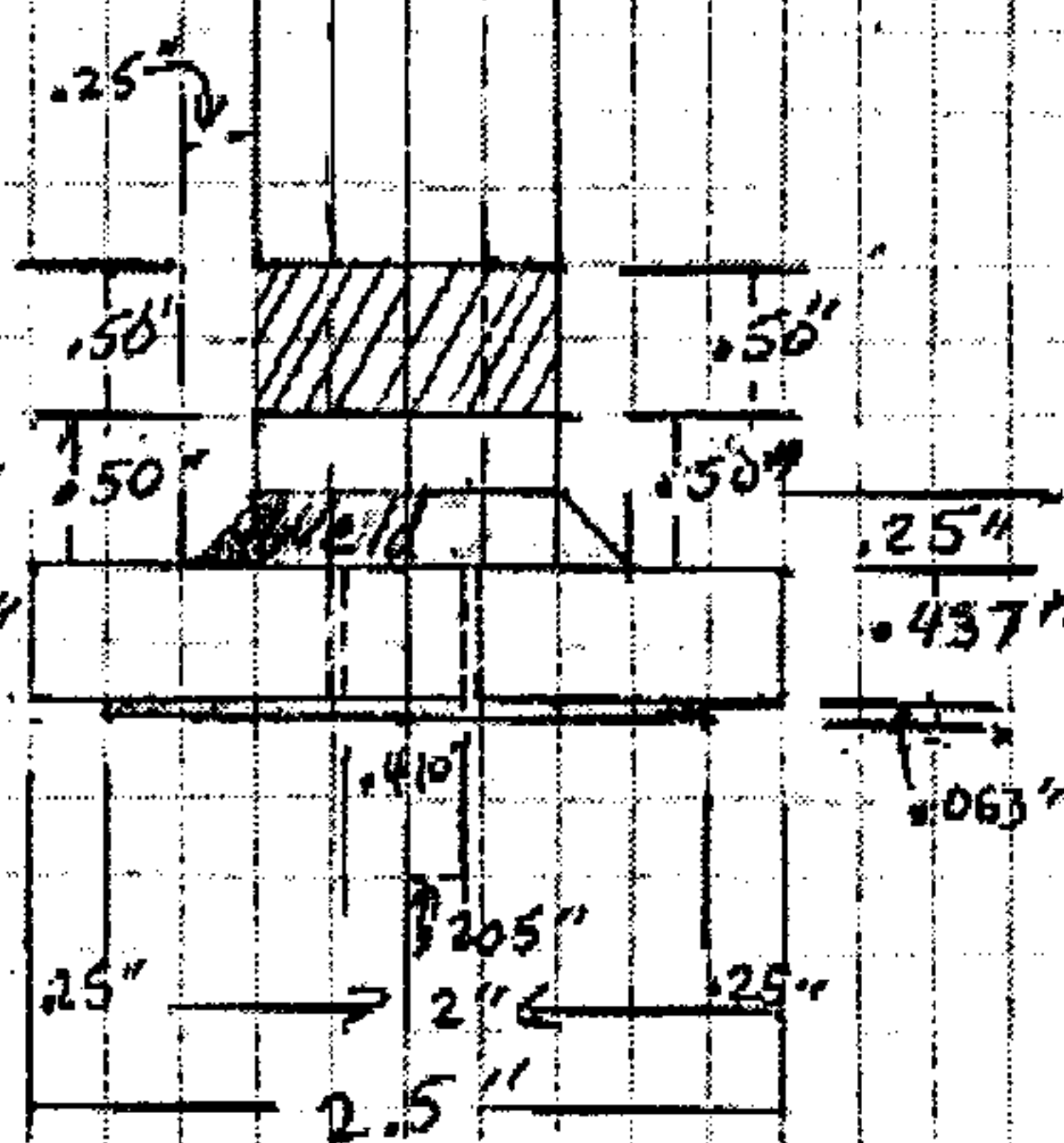
Tapered cone
machined out of steel

Top View

Optional method of
Manufacturing
tapered cone made of
cast iron or
hard plastic

The tapered cone
adapter is made for
rims that are bolted
to a hub and have
large open center.

Tapered cone
machined out of steelBottom
ViewTapered cone
machined out
of steelSide
View



Turf Tire Changer

Drawings November 17, 2015

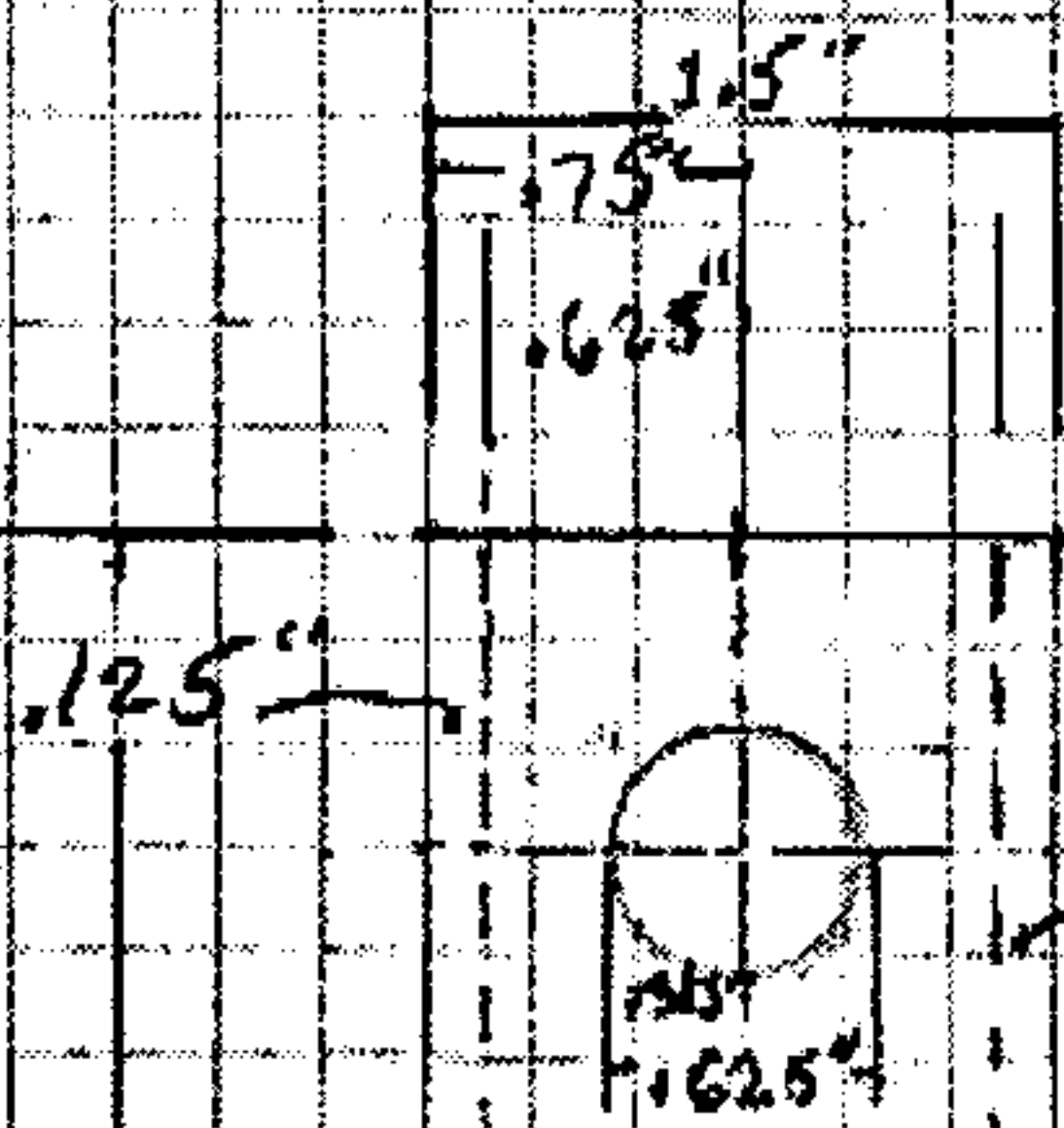
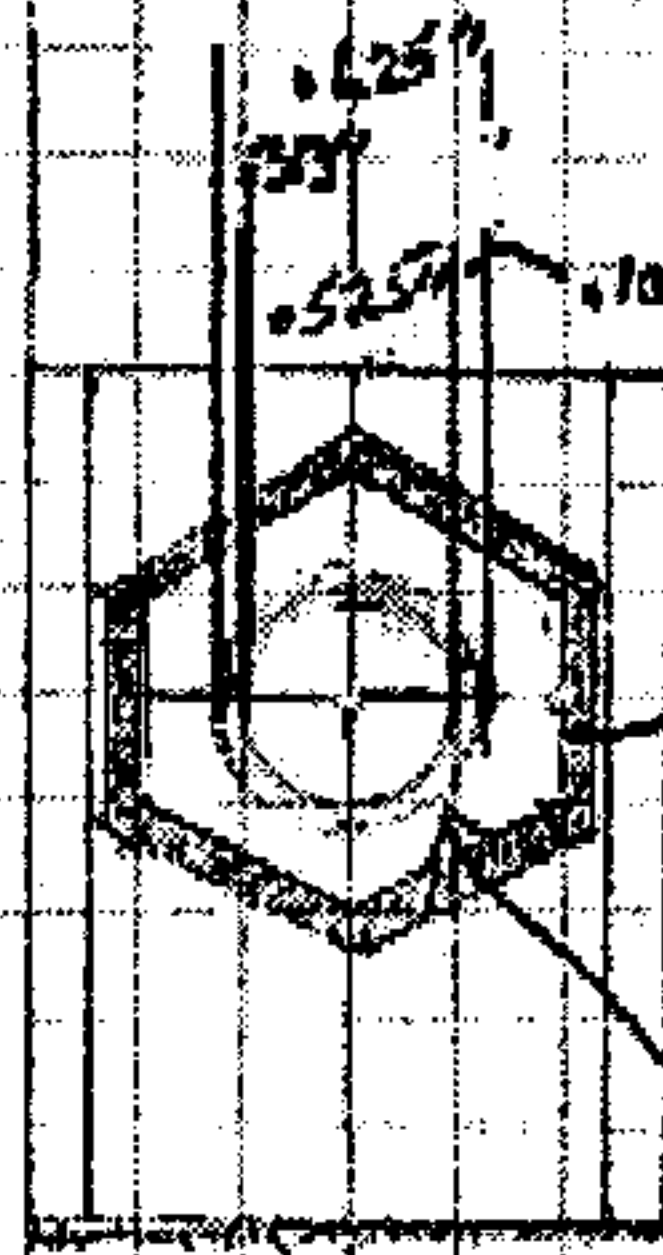
By Donald H. Wilson

495529 Grap RD #2

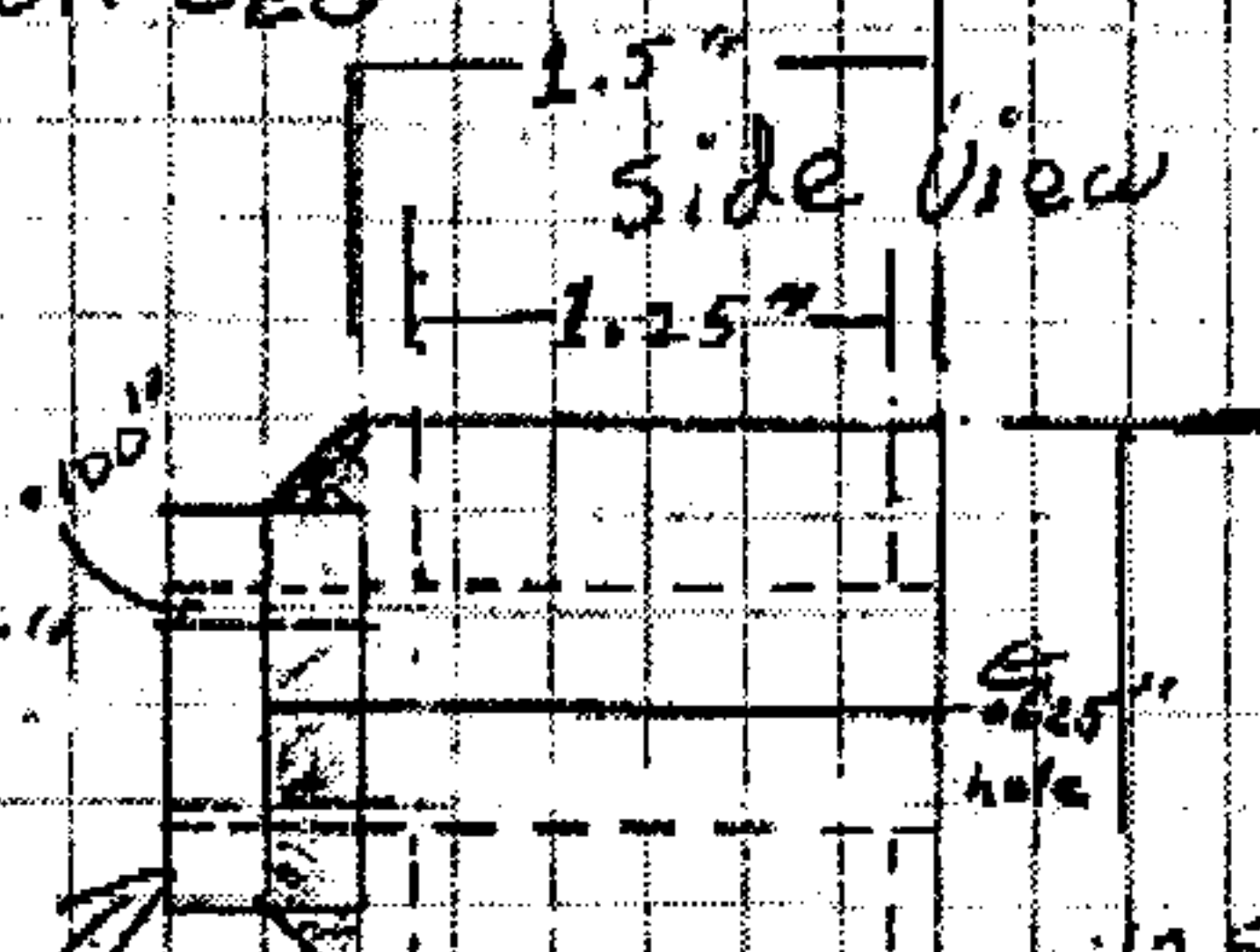
RR#1 RAVENNA, Ontario N0H 2E0

1 to 1 scale

Top View

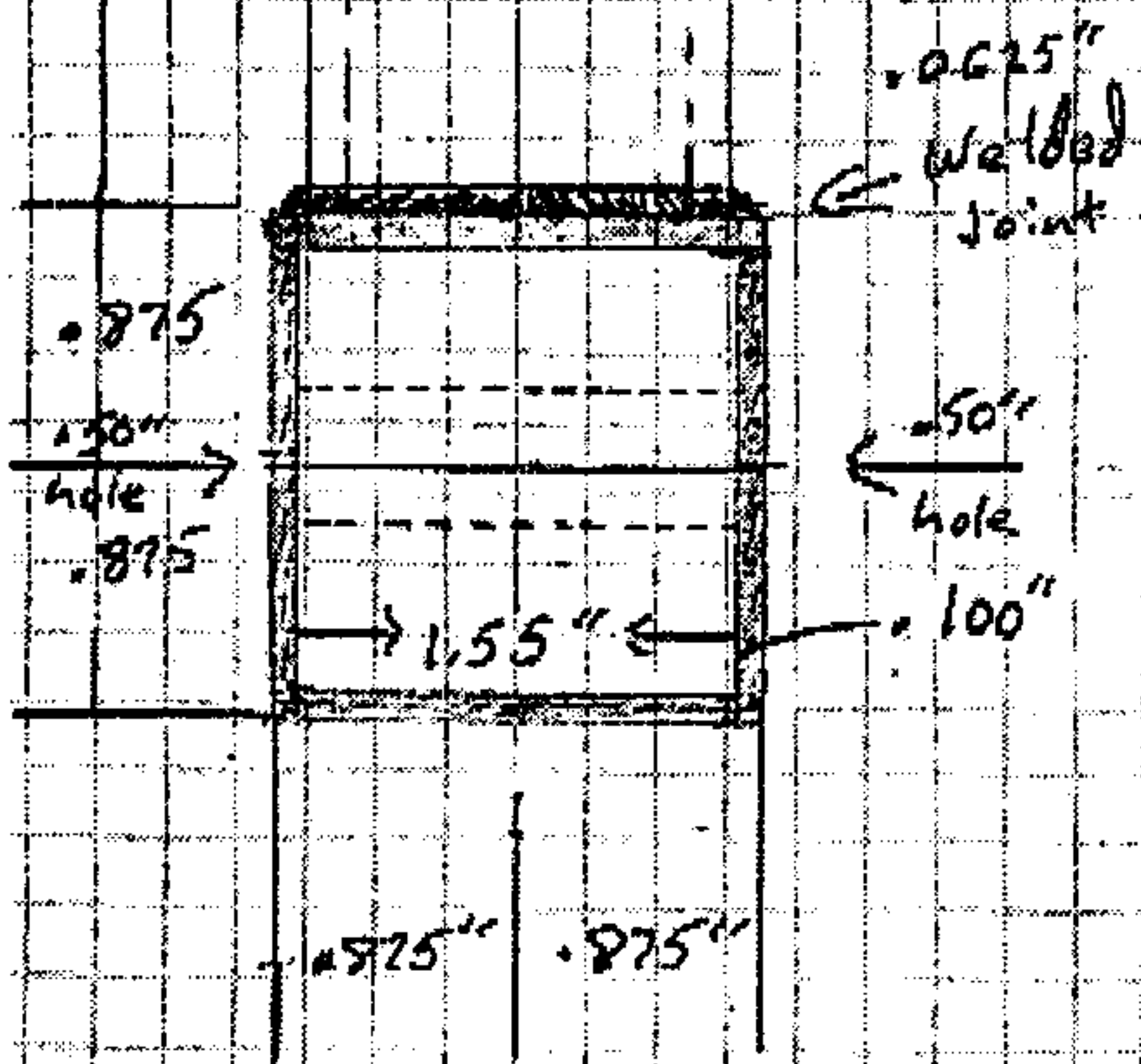
V
6"
15/8" nut
welded on
#8 thread
pitchcut away
Bottom
View5/8" nut
welded on
surface

Side View

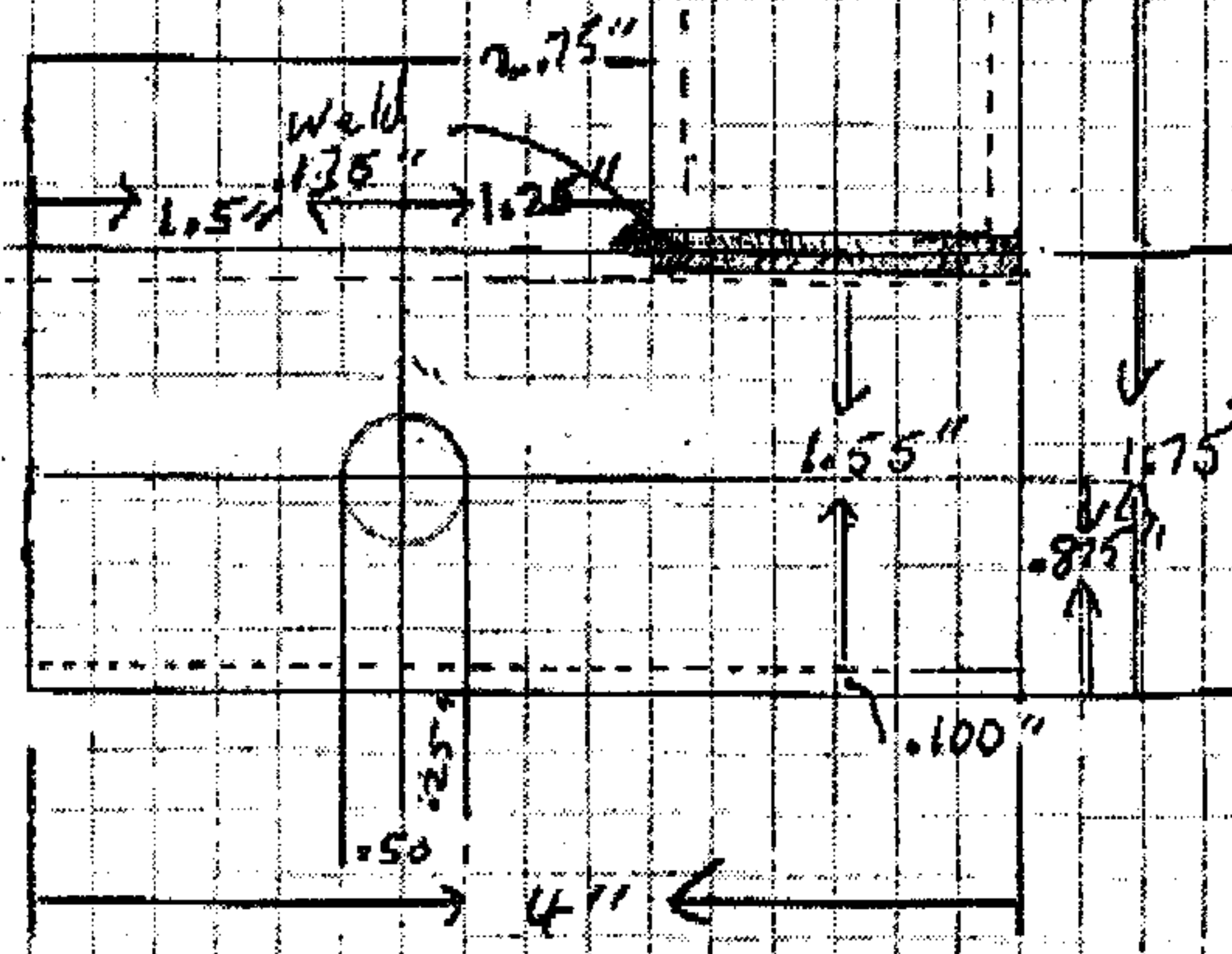


.525" hole

6"

Top section of tire bead
breaker.875"
1.50" hole
.875".0625" weld
joint.50" hole
.100"

.875" .875"

Weld
1.35"

2.75"

1.55"

.100"

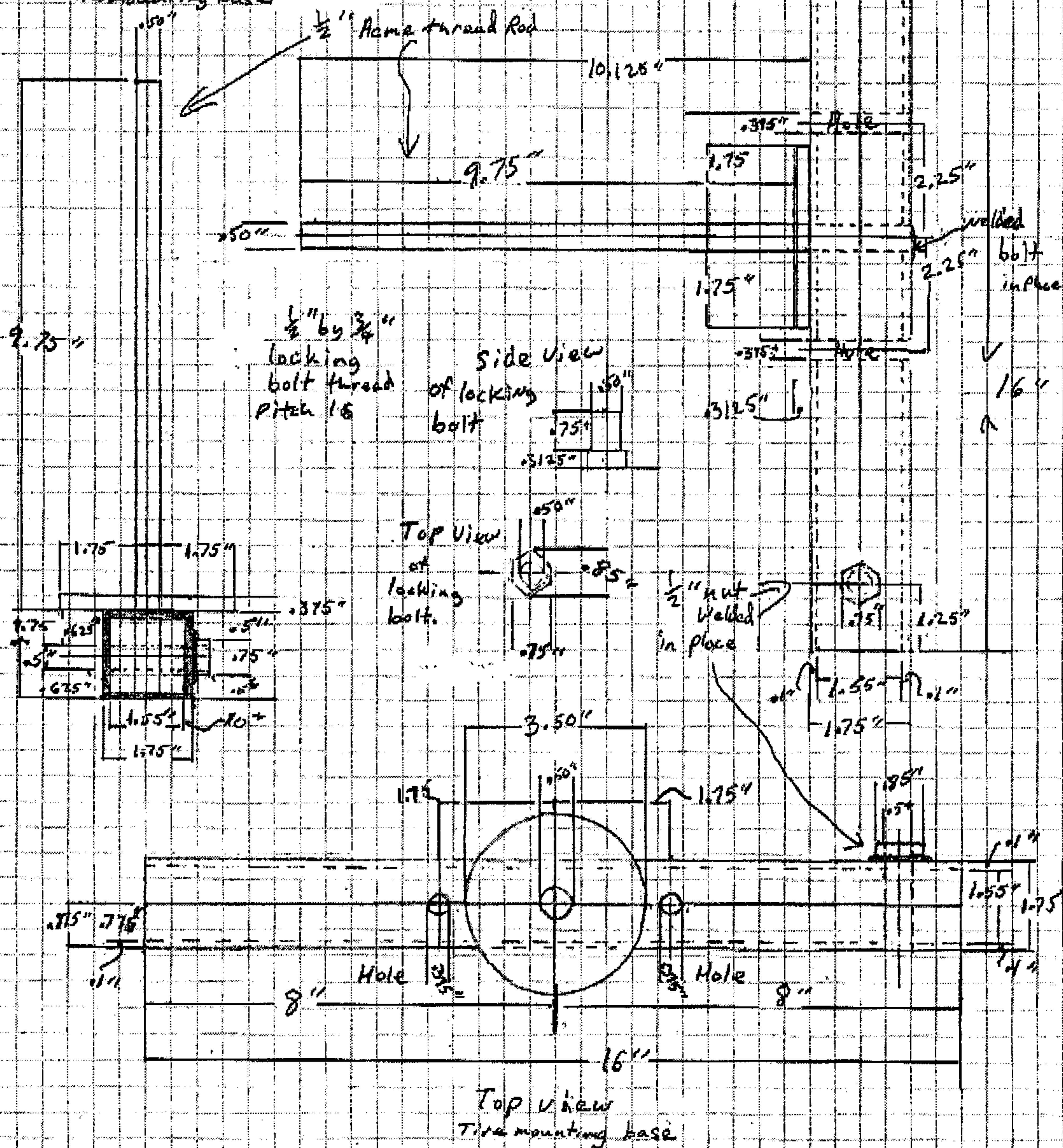
.50"

4"

1.75"
.875"

- This is the top section of the tire bead breaker made of 1.5" and 1.25" square tubing designed to slide over top of the bottom section and is held in place with 2 1/2" locking pin.

- The top section also hold the 5/8" bolt, specially made to fit in to the plate that pressed down on the bead of the tire.



Turf Tire Change

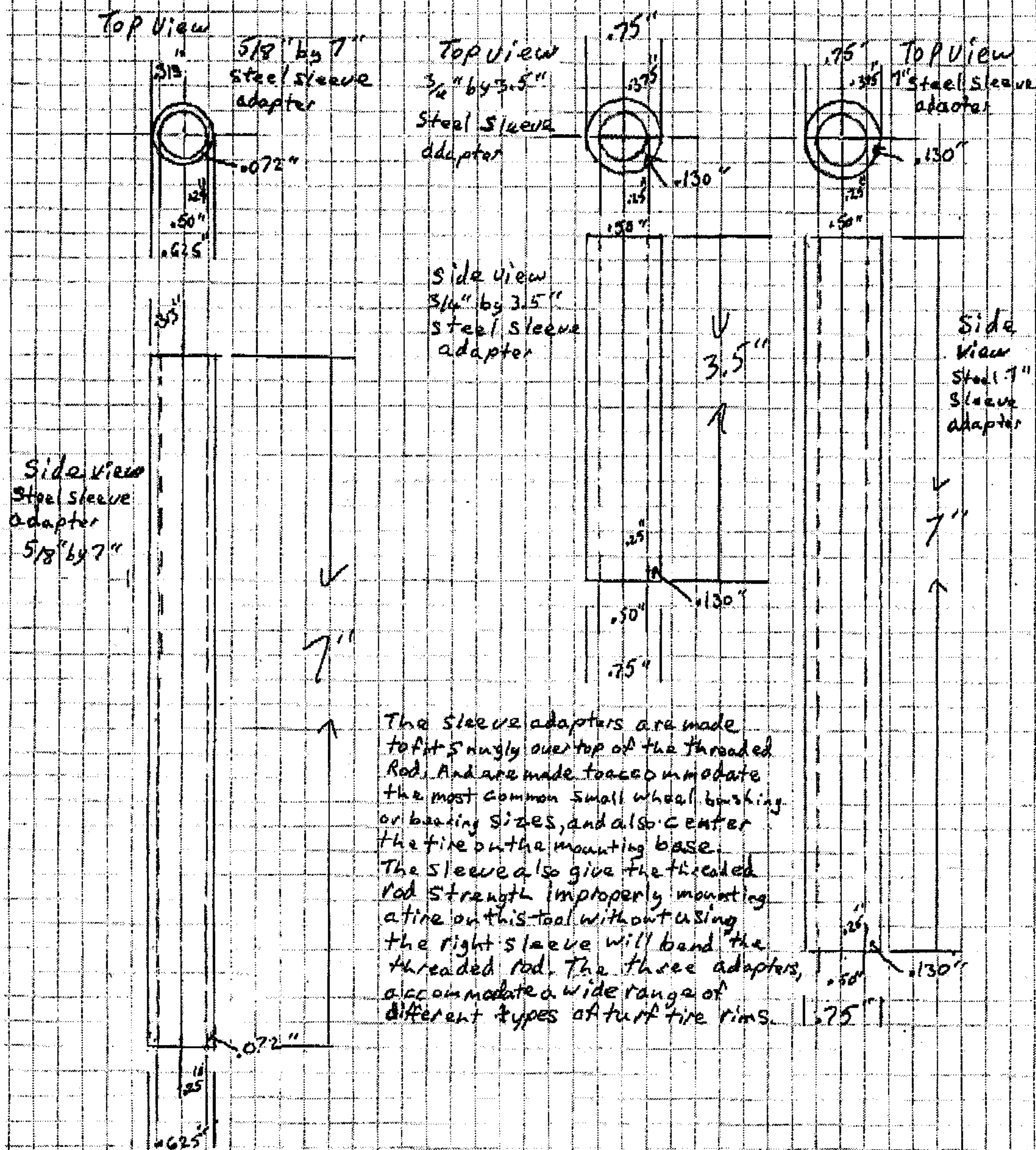
Drawings November 14, 2015

By Donald A Wilson

495629 Gray R.D. #2

RR#1 RAVENNA, Ontario N0H 2E0

1 to 1 Scale



15" Fits
 16" Wrench
 1 to 15 scale

9.33"
 4.67"

3.066"
 5.17"
 1.094"
 .219"
 .4375"
 .625"

Bottom View
 of 5/8" Bolt

Front View
 Plate

Top View
 of Plate

Side View
 of 5/8" Bolt

5/8" bolt
 with #8 Acme
 thread pitch

.178" weld
 .180" weld
 .184" by .25"
 10 - 24 setscrew
 top used 10-24
 Drill .1495"

Side View
 of Plate

The bolt is
 threaded
 full length
 of the bolt.
 not shown

The 5/8" bolt with
 #8 Acme thread pitch, fits into the top section
 of the fire head breaker assembly. The lower end
 of the bolt is machined to fit into the head breaker

The $\frac{5}{8}$ " bolt with #8 Acme thread pitch, fits into the top section of the tire bead breaker assembly. The lower end of the bolt is machined to fit into the bead breaker plate, its gentle 80° curve and smooth edges of the plate, allows for a tight fit against the rim. The 70° angle of the plate fits the curvature of the tire and allows for the maximum power of the pressing action of the bolt. The shape of the plate is what makes this bead breaker work so well.

