Areca Nut Peeling Machine

Abstract

The areca nut peeling machine is being design to mechanized the highly profitable areca nut Superi sector with view to enhance the rate of production & to eliminate the risk of labors hand being cut while peeling. In this machine the peeling is achieved with the help of reciprocating cutter and twisting cutter whose motion is synchronized in such a way that when reciprocating cutter push forward twisting cutter remains still and while twisting cutter gives the twist the reciprocating push cutter remains still. This motion is achieve through an especial design relay crank mechanism by the innovator.

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Operation Details:-

Operation wise the crank rotation is divided into three equal segments. When the crank is at 0° The areca nut enters the housing shaddle As it rotates from 0°- 120° the push cutter moves forward to press and penetrate the nut shell and at the same and penetrate the nut shell and at the time the ejector rod moves backward. As the push cutter press the nut hard against the twisting cutter the nut gets penetrated in the back side too by the protruding twisting cutter.

N.B. At this segment of cycle there is absolutely no motion of twisting cutter i.e. it remains still.

As the crank rotates from 120° to 240° the push cutter remains still and also the ejector rod does not move. Only the twisted cutter along with the attached lever system gives a twist to the areca nut squeezing the outer shell of the nut to make the shell free from the real nut. The action resembles the squeezing out water from cloth by catching it at one end and twisting at the other end. In this way the shell of the nut get torn of throughout the length at the nut.

And as the crank rotates from 240° to 360° to complete the cycle, the push cutter moves back and the ejector rod comes forward to kick off the nut from the straddle and at the same time the twist cutter along with the shaddle housing rolls back to the original position to allow the fresh area nut to enter the shaddle.

CLAIMS

I claim:

1. An Areca nut peeling machine comprising:

Push cutter to hold the areca nut firmly and split the outer cover,

A twist cutter to provide twisting to areca nut so that outer shell peels off,

A saddle to hold the areca nut,

A chute to guide the areca nut to saddle,

A hopper to hold the areca nut in bulk quantity,

A drive pulley to provide the mechanical energy to the machine,

A crank to transfer the energy from pulley to cutters via connecting

Three connecting to provide

Connecting 1- responsible for reciprocating motion of the push cutter.

Connecting 2- responsible for reciprocating motion of the ejector rod.

Connecting 3- responsible for twisting movement of the twisting cutter.

A motor or prime movers with the features in known art to provide the energy to pulley.

A limit switch to control the movement of the push cutter and twisting cutter and saddle.

2. The Areca Nut peeling machine of claim 1 further comprising: Synchronized Crank having slots to connect the connecting rods to carry out the three typical functions namely pushing the side cutter, twisting cutter and twisting of the twisting cutter.

3. The push cutter of claim 1 further comprising:

Cutting edges of two, three or multiple there of having internal angle of 10 to 60 assembled over circumference of diameter 5 mm to 200 mm to hold the nut firmly.

4. The push cutter of claim 3 further comprising: continuous Cutting edges or teethes with sharp piercing leading edge. Further the cutting edges may made out of material having sufficient strength for the operation of piercing and holding the nut.

5. The push cutter of claim 3 further comprising: a case; a channel in the case, having a slot for holding the push rod attached to push cutter, a limiting rod for detaching the nut while backward motion of the push rod. The case and the push cutter assembly is attached to the base of the peeling machine.

6. The twist cutter of claim 1 further comprising: Cutting edges of two, three or multiple there of having internal angle of 10 to 60 assembled over circumference of diameter 5 mm to 200 mm to hold the nut firmly.

7. The twist cutter of claim 6 further comprising: continuous Cutting edges or teethes with sharp piercing leading edge. Further the cutting edges may make out of material having sufficient strength for the operation of piercing and holding the nut.

8. The twist cutter of claim 6 further comprising:

a case; a channel in the case, having a slot for holding the push rod attached to push cutter, Bearing to hold the push rod. The case and the twist cutter assembly is attached to the saddle.

9. The twist cutter of claim 6 further comprising:

ejector rod housed with in the twist cutter to eject the areca nut. Ejector rod is connected to the crank through liver.

10. The saddle of claim 1 further comprising:

tube of length of 20 mm to 400 mm having lateral opening to accommodate the nuts; One side of the saddle is attached to push cutter and the other side is attached to the twist cutter. The entire assembly is attached to the base of the machine.

11. The saddle of claim 10 further comprising:

bearings of the size that fits to the push rods of the push cutter and twist cutter.

12. The crank of claim 1 further comprising:

circular object having slots of 10 to 30 mm width at an offset of 5 to 40 mm from center of the crank. The crank is connected to the motor by means of the shaft coupling techniques known in the prior art. Ex. Pins etc.

13. The crank of claim 12 further comprising:

connecting which moves with in the slot provided in the crank.

14. The crank of claim 12 further comprising:

15. Guides positioned at top and bottom of position with roller bearings or rollers to guide the movement of ejector rod connected to crank and the twisting cutter.

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The Controller of patents

The patent office,

At KOLKATTA

Uddhab Kumar Bharali

Uddhab Kumar Bharali
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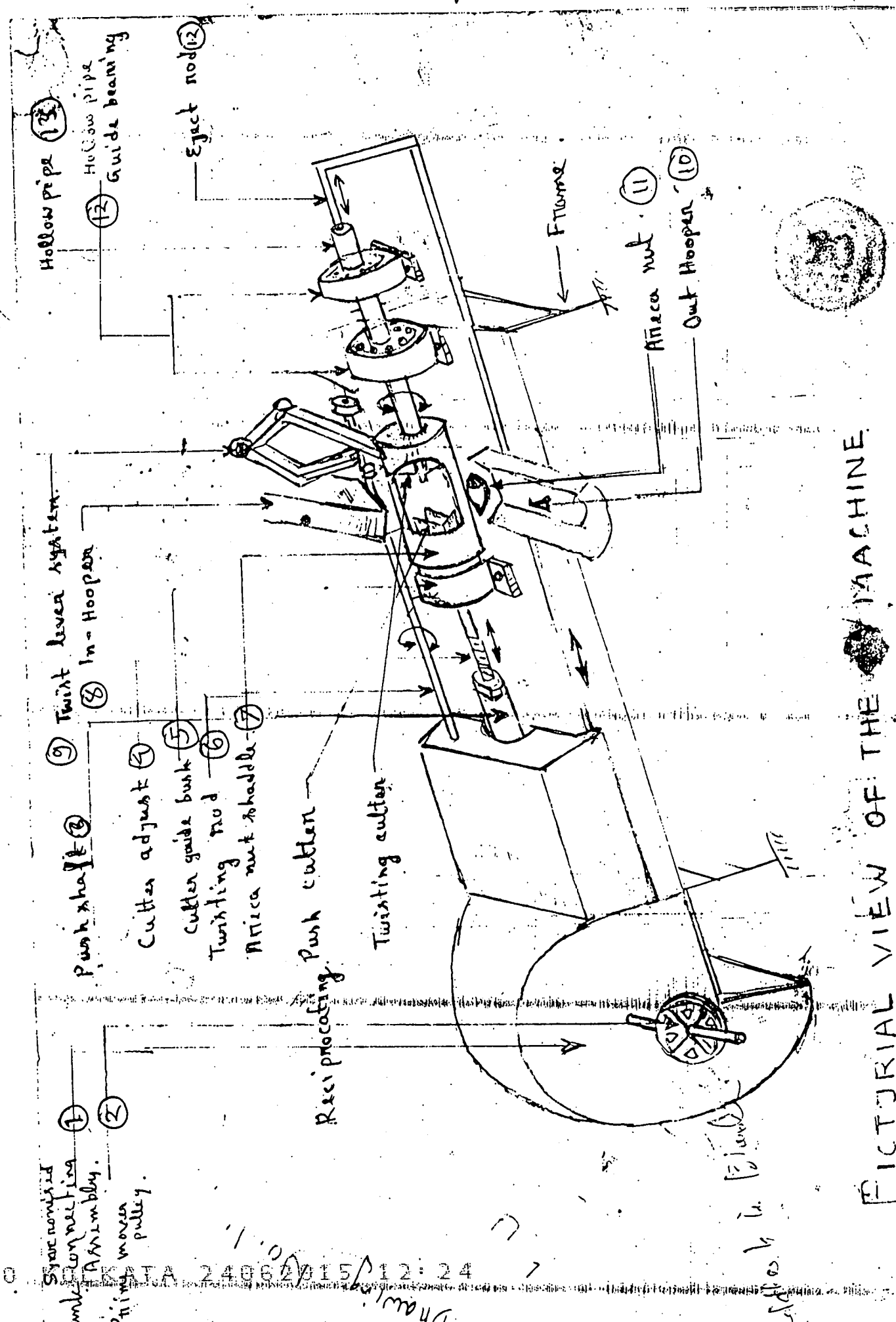
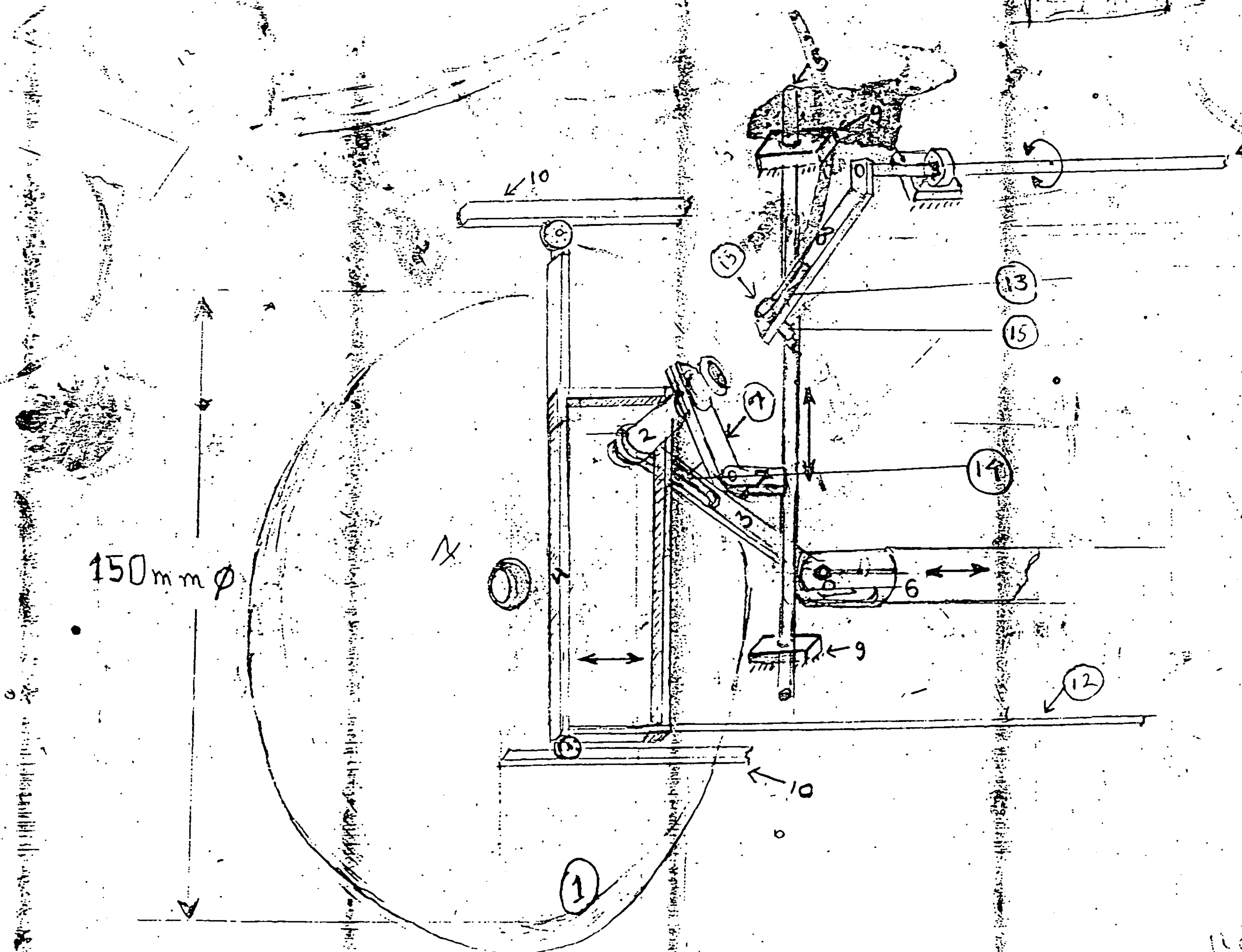


PICTURIAL VIEW OF THE MACHINE

Fig 1.



SYNCRONISED RELAY & CRANK CONNECTING ASSEMBLY Fig 2

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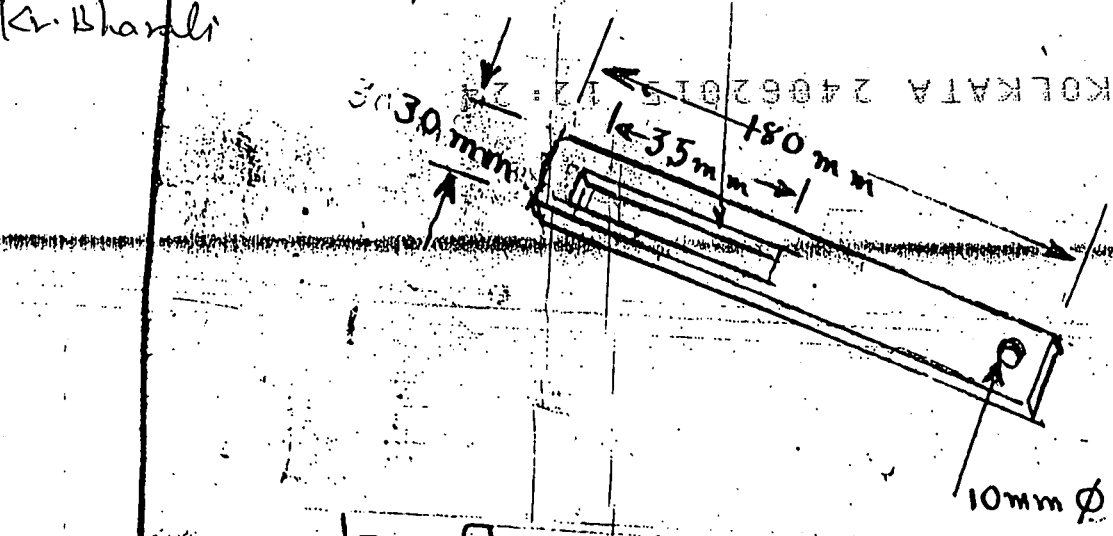
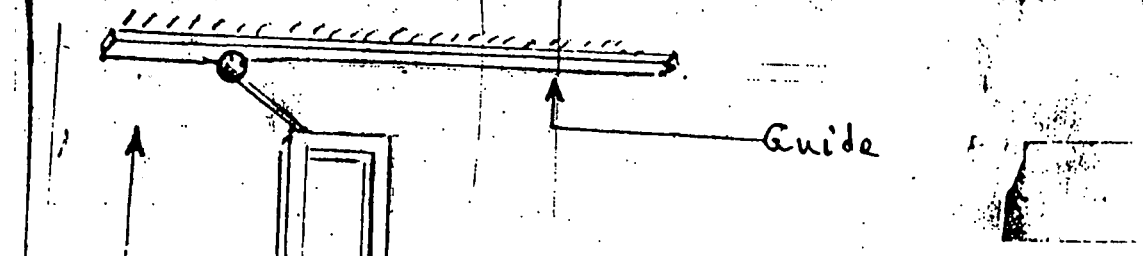
Slit.



1ST CONNECTING
Fig 2-A



2nd. CONNECTING
Fig 2-B

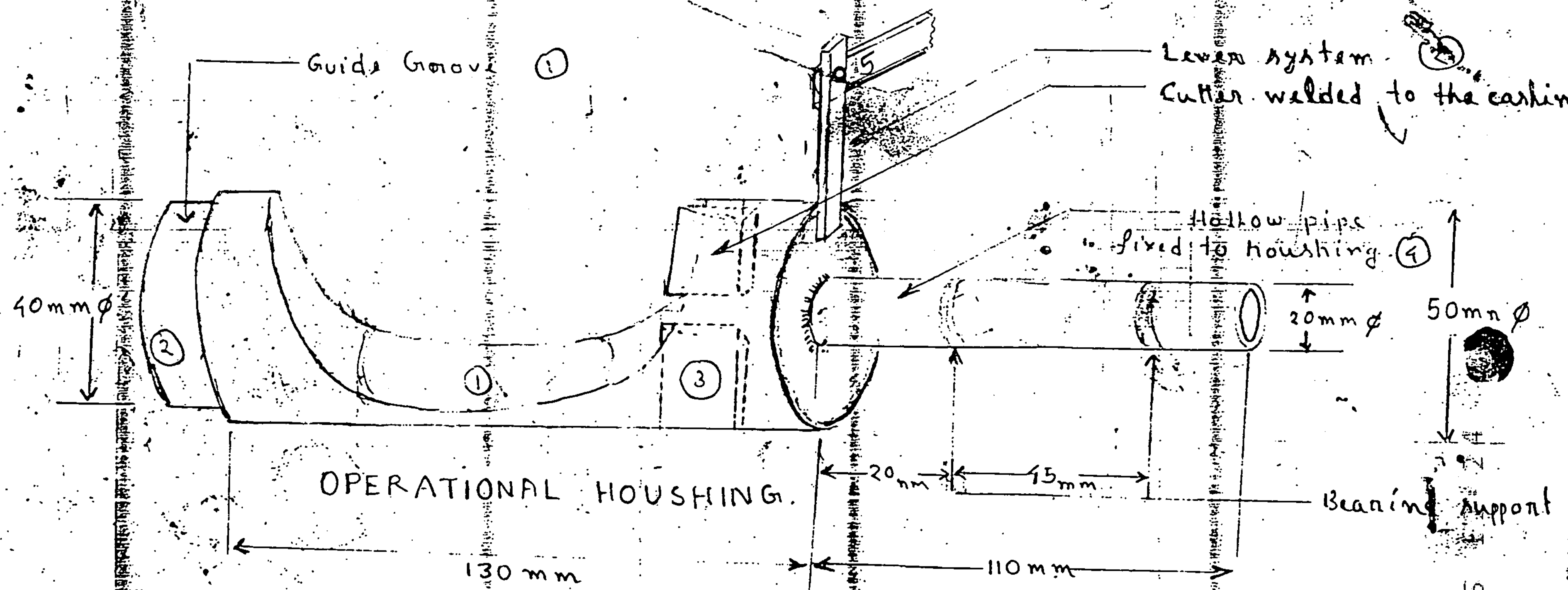


Fig 3

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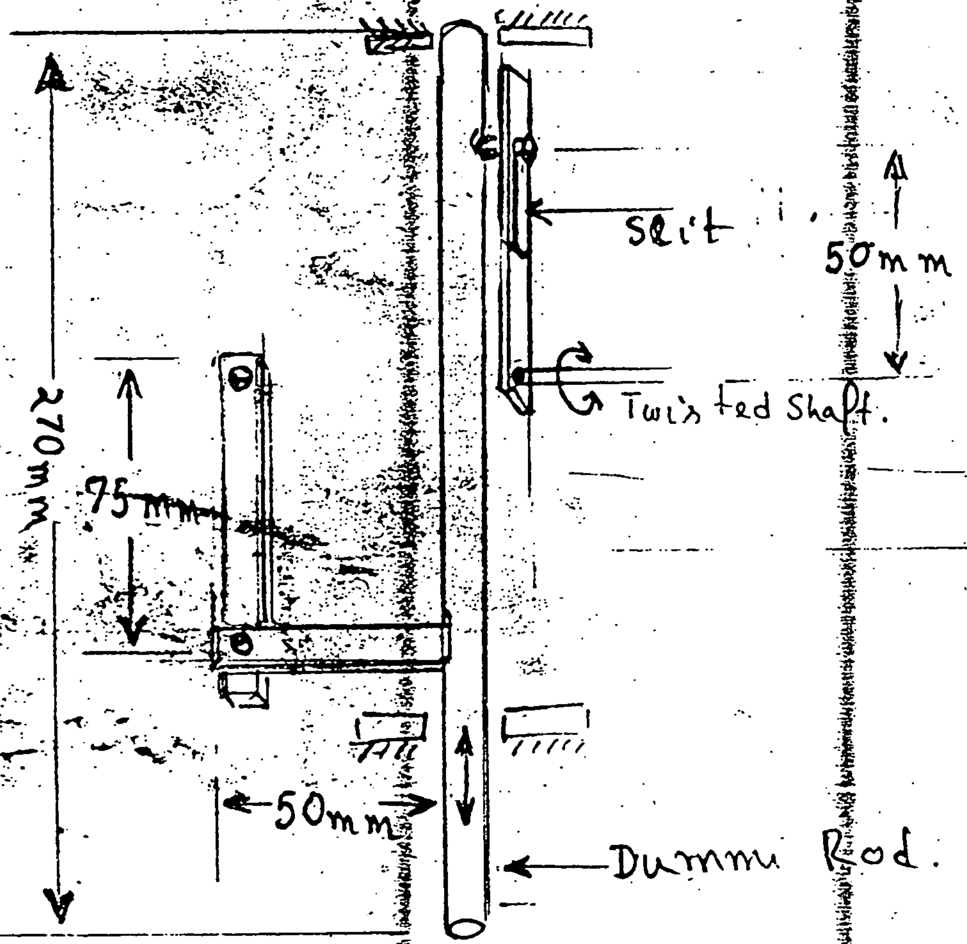
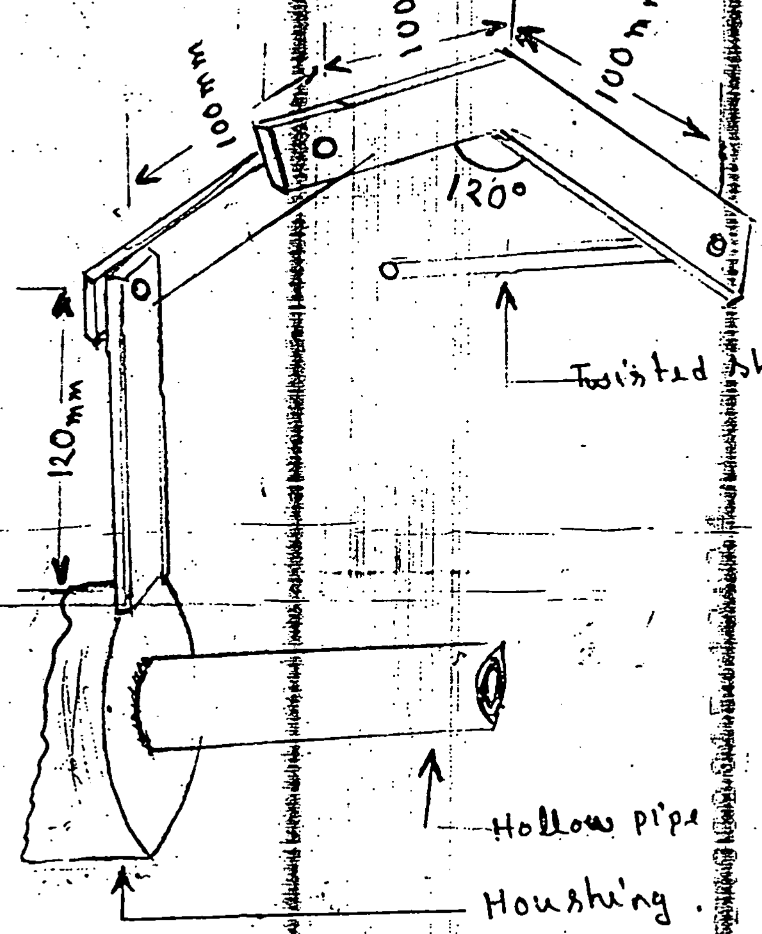


3rd CONNECTING
Fig-2-c



LEVER SYSTEM.
Fig-3-A

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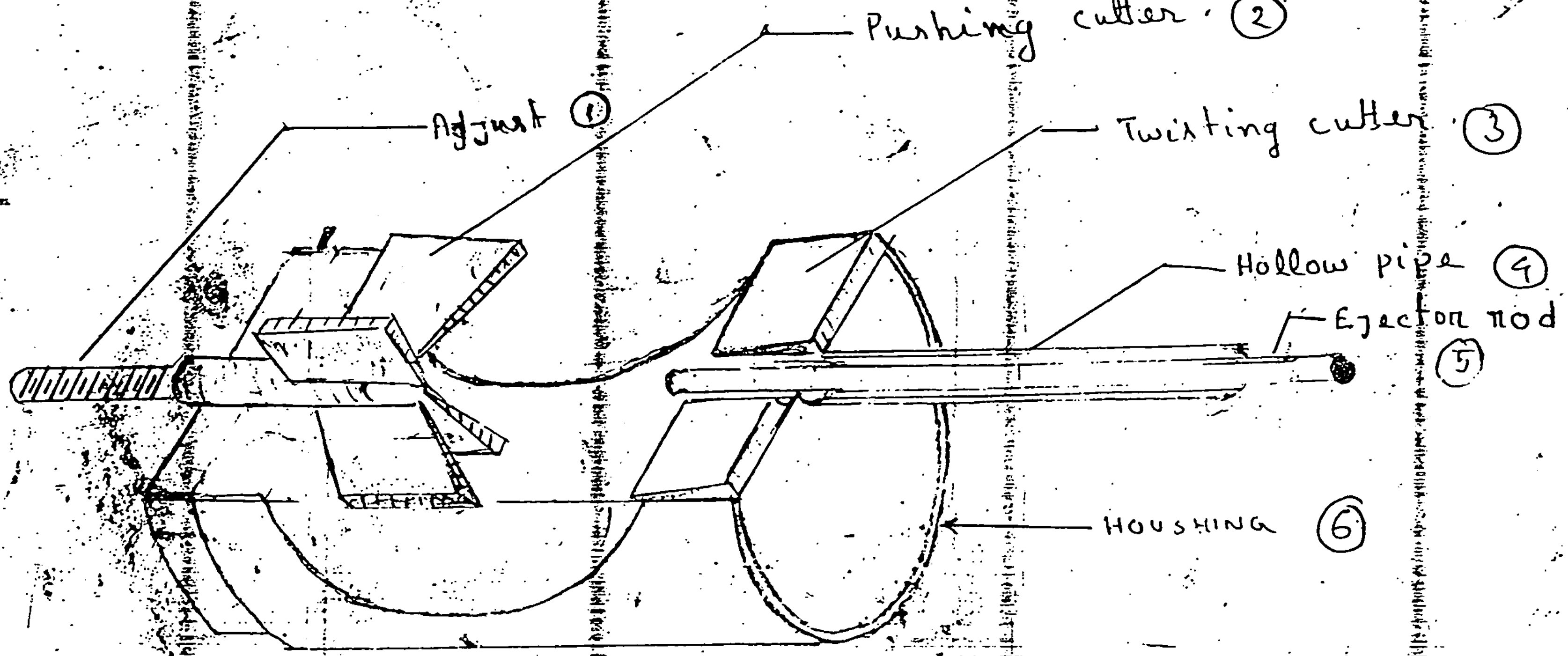

CROSS SECTION of HOUSHING SHADDLE
SHOWING PUSHING & TWISTING CUTTER
& EJECTOR ROD

fig 4

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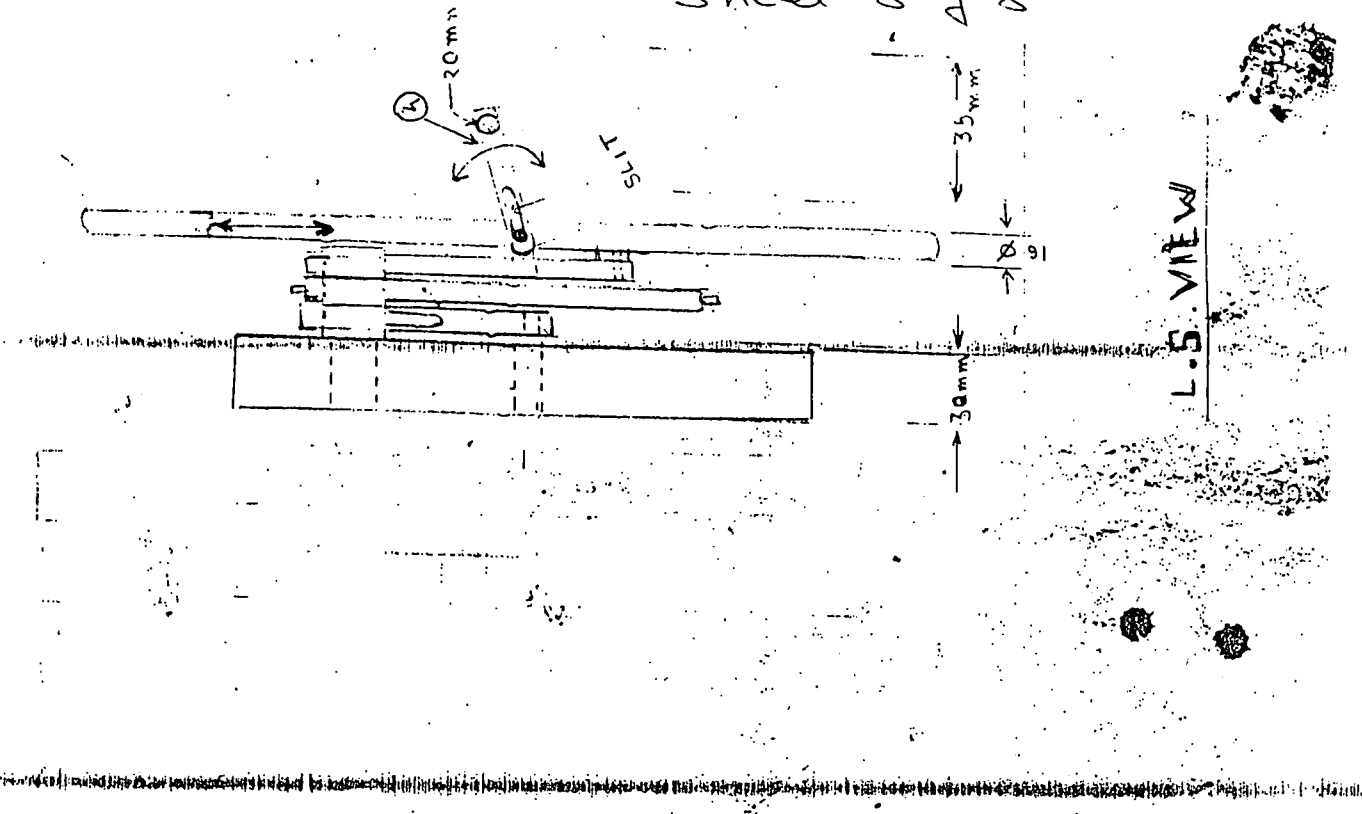

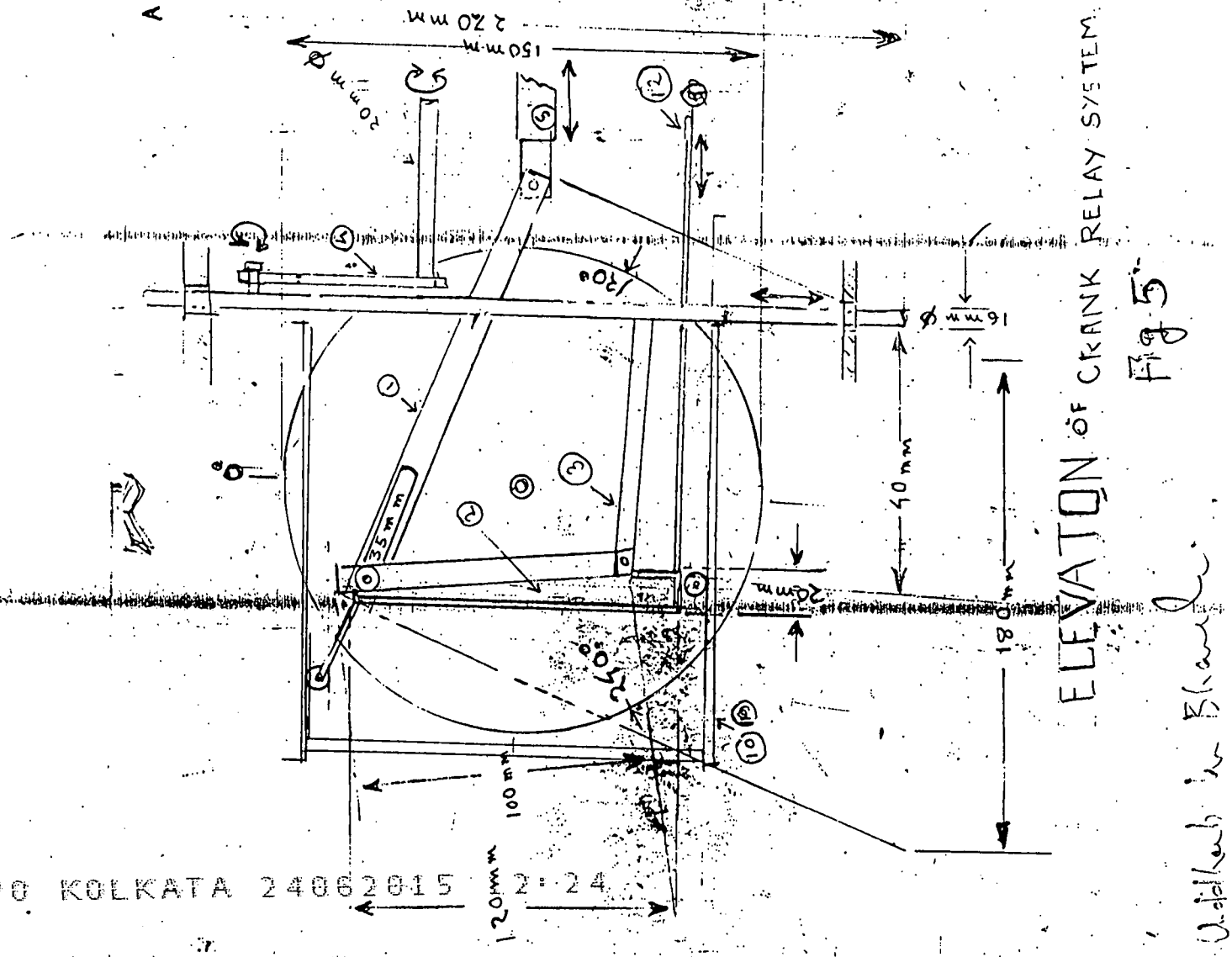

ELEVATION OF CRANK RELAY SYSTEM

Fig 5

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Description prior Art:

Traditionally the peeling is done by use of "dao" only which is very risky when needs arises to do it speed i.e. for commercial purpose as they have to use very sharp "dao". Superi Industry deals in "Katcha nut". And the nut remains katcha" for maximum 3 month. If they have to meet the demand of market, they are bound to engage a huge number of labour. It does have negative effect on the production cost and large space is required.

These factors demanded the needs for a compact peeling machine like this one which could be even manually operated.

Summary of Invention:-

In this machine a reciprocating push cutter fig (4) enters the areca nut shaddle fig (3) & (4) pressing and penetrating the nut shell and while doing this the nut under pressure also gets penetrated by the twisting cutter which remains still during the push. This twisting cutter is fixed welded to the inner periphery of the 'saddle'. After completion of the pushing operation the twisting cutter along with the shaddle gives a twist with a jerk to peeled of the nut shell. And then only a reciprocating ejector rod fig (4) & fig (1) which suitably accommodated inside the twisting cutter comes forward through out of the shaddle and at same time shaddle also twist back to its original position to accommodate next areca nut.
The twisting cutter gives the twist with the help of a especially design lever system fixed to the shaddle housing (fig, 3) .

This operation is achieved in just one cycle of the especially design relay crank assembly fig (2). And as far as the different size of the areca nut is concern, provision is being given to adjust the push-cutter as shown in fig (1) & (4).

Brief Description of the Drawing:-

The figures given are self illustratory and self explanatory.
Fig.1. Pictorial view of the machine as a whole.

Fig.2. Pictorial view of the relay crank connecting assembly used in the machine.

Fig.2.(A). Pictorial views of the 1st connecting with dimension and also slit responsible for synchronized relay system.

Fig .2.(B). Pictorial view of the 2nd connecting showing its rectangular hollow shape with dimension and attachment of the sliding rod (Ejector)

Fig.2.(C). Pictorial view of the 3rd connecting with dimension exhibiting the slit in the 2nd limb, dummy rod & attachment of the twisting shaft to the connecting.

Fig.3. Pictorial view of the main operational housing i.e. Areca nut shaddle showing attachment of twisting lever system & the hollow pipe to accommodate the ejector rod.

Fig 3. (A). Pictorial view of the elaborate lever system responsible for relaying the twisting motion from the twisting shaft to the twisting housing.

Fig.4 Cross sectional view of the operational housing showing placement of reciprocating push-cutter, twisting cutter welded to the cashing, Ejector rod and the hollow pipe accommodating to ejector rod.

Fig.5. Elevation and side view of the crank connecting system. Clearly indicating the dimension of different connecting and the "slit" provided in the connecting which is responsible for the relay motion and synchronization.

Detailed description:-

The areca nut peeling machine disclosed in the invention having dimension 1·2m × 0·5m×1m. The operation structure of the machine is supported by a rectangular M.S. frame. At the extreme right end lies the prime mover pulley of 12". To which the crank is attached with the help of shaft mounted on two bearing on the frame well this is especially design crank of 150 mm Ø and 30 mm Ø thickness which accommodate three typical functions

Connecting 1- fig 5 responsible for reciprocating motion of the push cutter.

Connecting 2-fig 5 responsible for reciprocating motion of the ejector rod.

Connecting 3- fig 5 responsible for twisting movement of the twisting cutter.

To hold the three connecting a especially designed knob (Item 2 -fig 2)is provided in the crank..

Connecting 1:- It is a flat connecting made of mild steel with slit of 35mm length at the crank –knob end and a hole of 8mm Ø dia at he other end to connect with the reciprocating push cutter (5-fig 5) when the crank rotates it gives reciprocating motion to the push shaft i.e. pushing cutter (Fig-2-A).

N.B. Three is absolutely no movement of the connecting so for the crank does not cover the 35mm " slit" provided in the connecting.

Connecting 2 refer 4fig 2 & fig 2- B

This is rectangular shape connecting too made of mild steel hang on the knob of the crank. It does slides on two guide fixed to the frame of the machine with help two bearing. (Wheel).

This sliding motion transferred to the back of the machine i.e. to the ejector rod with the help of a rod (Item 12-fig 2,5) attached to the edge of the connecting.

Connecting 3. This connecting caprices of a rod (5- fig 2) having a coupling type connecting (7- fig 2) at the crank end and a slit type connecting (8- fig 2) connected to the other end, which is fixed to twisting rod (II- fig 2). As the cranks rotates the coupling type connecting (7- fig 2) gives the vertical reciprocating motion to the rod (5- fig 2). The rod reciprocates through to vertical guide bush (9 – fig 2) attached to the frame of the machine the another connecting which is attached to a pin (15 – fig 2) provided an the rod is of flat type having a slit at the pin end. This 2nd connecting has its other end fixed to the twisting rod (II- fig 2) This reciprocating motion of the rod gets converted to twisting motion of the twisting rod through this 2nd connecting as the crank rotates. Again there is absolutely no movement in the twisting rod so far as the reciprocating rod does not cover the " slit" provided in the 2nd connecting –Refer fig 2-C.

The two slit provided in the 1st & 3rd connecting is responsible for the synchronized relay crank mechanism. Another interesting factor of the machine is that, the twisting motion resulted by the 3rd connecting is being transferred to twisting cutter through a typically design lever system attach to the other end of the twisting rod (5-fig.2 & fig 1). The other end of the lever system is fixed to the twisted cutter housing shaddle. (fig -3-A).

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