In [7]:
```
import cv2
import random
import os
import numpy as np
import matplotlib.pyplot as plt
%matplotlib inline
```

In [10]:
```
imdir = "C:\\Users\\User\\ocr"
imfiles = os.listdir(imdir)
```

In [9]:
```
os.getcwd()
```

Out[9]:
```
'C:\\Users\\User'
```

In [28]:
```
image_path = "{}/{}".format(imdir, "car_1.jpg")
```

In [29]:
```
image = cv2.imread(image_path)
gray = cv2.cvtColor(image, cv2.COLOR_BGR2GRAY)
```

In [30]:
```
def plot_ima(img1, img2, title1="", title2=""):
    fig = plt.figure(figsize=[15,15])
    ax1 = fig.add_subplot(121)
    ax1.imshow(img1, cmap="gray")
    ax1.set(xticks=[], yticks=[], title=title1)

    ax2 = fig.add_subplot(122)
    ax2.imshow(img2, cmap="gray")
    ax2.set(xticks=[], yticks=[], title=title2)
```

In [31]:
```
plot_ima(image, gray)
```

In [32]:
```
blur = cv2.bilateralFilter(gray, 11,90,90)#noise removal
```

In [33]:
```
plot_ima(gray, blur)
```

In [34]:
```
edges = cv2.Canny(blur, 40,200)
```

In [35]:
```
plot_ima(blur, edges)
```

In [36]:
```
cnts, new = cv2.findContours(edges.copy(), cv2.RETR_LIST, cv2.CHAIN_APPROX_SIMPLE
```

In [37]:
```
image_copy = image.copy()
```

In [38]:
```
_ = cv2.drawContours(image_copy, cnts, -1, (255,0,255),2)
```

In [39]:
```
plot_ima(image, image_copy)
```

In [40]:
```
cnts = sorted(cnts, key=cv2.contourArea, reverse=True)[:30]
```

In [41]:
```
image_copy = image.copy()
_ = cv2.drawContours(image_copy, cnts, -1, (255,0,255),2)
```

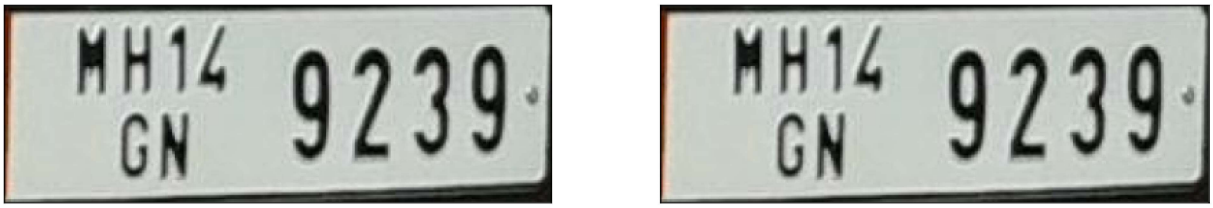
In [42]:
```
plot_ima(image, image_copy)
```

In [43]:
```
plate = None
for c in cnts:
    perimeter = cv2.arcLength(c, True)
    edges_count = cv2.approxPolyDP(c, 0.02* perimeter, True)
    if len(edges_count) == 4:
        x,y,w,h = cv2.boundingRect(c)
        plate = image[y:y+h, x:x+w]
        break

cv2.imwrite("plate.jpg", plate)
```

Out[43]: True

In [44]:
```
plot_ima(plate, plate)
```



In [ ]: