In [125]:
```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import cv2
```

In [142]:
```
def GetIndices(file_name):
    img = cv2.imread(file_name,0)
    bg=img[0,0]

    set1=np.array([],int)
    for i in range(200):
        if np.sum(np.array(img[:,i]!=bg))>50:
            set1=np.append(set1,i)
    pos1=int(np.mean(set1))


    set2=np.array([],int)
    for i in range(pos1+50,350):
        if np.sum(np.array(img[:,i]!=bg))>50:
            set2=np.append(set2,i)
    pos2=int(np.mean(set2))



    set3=np.array([],int)
    for i in range(pos2+50,500):
        if np.sum(np.array(img[:,i]!=bg))>50:
            set3=np.append(set3,i)
    pos3=int(np.mean(set3))


    ## Below are the row and colum slicing indices for the three segments img[ro
#     segment1=[5:175,pos1-70:pos1+70]
#     segment2=[5:175,pos2-70:pos2+70]
#     segment3=[5:175,pos3-70:pos3+70]

    segment1=[pos1-70,pos1+70]
    segment2=[pos2-70,pos2+70]
    segment3=[pos3-70,pos3+70]

    return [segment1,segment2,segment3]
```

In [143]:
```
def Processimage(file_name):
    img = cv2.imread(file_name,0)
    ker=np.ones((4,4))
    ret,thresh = cv2.threshold(img, 0, 255, cv2.THRESH_BINARY_INV|cv2.THRESH_OTS
    img2=cv2.erode(thresh,ker,iterations=1)

    #img2=255-img2 ##to return white image instead of black image

    return img2
```

In [144]:
```
def GetSegmentedImages(file_name):
    a=GetIndices(file_name)
    img2=Processimage(file_name)
    image1=img2[5:145,a[0][0]:a[0][1]]
    image2=img2[5:145,a[1][0]:a[1][1]]
    image3=img2[5:145,a[2][0]:a[2][1]]
    images=[image1,image2,image3]
```

```
    images =[image1,image2, image3]

    return images
```

In [145]:
```
images=GetSegmentedImages("8.png")
for i in range(3):
        ax = plt.subplot(1, 3, i+1)
        plt.imshow(images[i].astype("uint8"), cmap='gray')
        #plt.title(class_names[labels[i]])
        plt.axis("off")
```

In [146]:
```
images=GetSegmentedImages("16.png")
for i in range(3):
        ax = plt.subplot(1, 3, i+1)
        plt.imshow(images[i].astype("uint8"), cmap='gray')
        #plt.title(class_names[labels[i]])
        plt.axis("off")
```

In [148]:
```
images=GetSegmentedImages("11.png")
for i in range(3):
        ax = plt.subplot(1, 3, i+1)
        plt.imshow(images[i].astype("uint8"), cmap='gray')
        #plt.title(class_names[labels[i]])
        plt.axis("off")
```

In [ ]: